PASSERELLE
www.coredem.info N°13 11/2015

The Climate: Active Transition or Change Inflicted?

coredem
ritimo
coalition climat 21

The Climate: Active Transition or Change Inflicted?

PASSERELLE
www.coredem.info

The Passerelle Collection

The Passerelle Collection,realised in the framework of the Coredem initiative (Communauté des sites ressources pour une Démocratie Mondiale – Community of Sites of Documentary Resources for a Global Democracy), aims at presenting current topics through analyses, proposals and experiences based both on field work and research.

Each issue is an attempt to weave together various contributions on a specific issue by civil society organisations, media, trade unions, social movements, citizens, academics, etc. The publication of new issues of Passerelle is often associated

to public conferences, "Coredem's Wednesdays" which pursue a similar objective: creating space for dialogue, sharing and building common ground between the promoters of social change.

All issues are available online at: **www.coredem.info**

Coredem, a Collective Initiative

Coredem (Community of Sites of Documentary Resources for a Global Democracy) is a space for exchanging knowledge and practices by and for actors of social change. More than 30 activist organisations and networks share information and analysis online by pooling it thanks to the search engine Scrutari. Coredem is open to any organisation, network, social movement or media which
consider that the experiences, proposals and analysis they set forth are building blocks for fairer, more sustainable and more responsible societies.

Ritimo, the Publisher

The organisation Ritimo is in charge of Coredem and of publishing the Passerelle Collection. Ritimo is a network for information and documentation on international solidarity and sustainable development. In 90 locations throughout France, Ritimo opens public information centres on global issues, organises civil society campaigns and develops awareness-raising and training sessions. Ritimo is actively involved in the production and dissemination of plural and critical information, by means of its website: **www.ritimo.org**

The Coalition Climat 21

As France prepares to host the United Nations Summit on Climate Change from 30 November to 11 December 2015, more than 130 civil society organisations, from labour unions to associations for international solidarity, including religious organisations, NGOs defending human rights and the environment, as well as social movements, have joined each other under the wings of the Coalition Climate 21.
Together, these organisations affirm that the negotiations, though a necessary step, will not be enough to combat climate disruption and its resulting inequities. That is why they are calling on to citizens to take advantage of the political and media exposure offered by the COP21 to organise and mobilise in great number in order to together launch a strong and sustainable movement for climate justice. Open to all, this movement finds its strength in its diversity.

Contents

Preface

PETER LIPMAN, CHAIR TRANSITION NETWORK

JULY 2015

I'm delighted to have been invited to contribute this preface to the 13th issue of the Passerelle Collection on climate issues in the lead-up to COP21. My own work is founded on a passionate belief that, for us to have a chance of responding adequately to the challenges we face, we must have a massive bottom up citizens' movement. COP 21 epitomises a top down approach, and while such an approach is also crucial, the COP process so far has been both dangerously weak and has not delivered anything like the fundamental change so urgently required.

I was asked to write this piece in my capacity as chair of Transition Network which seeks to support the Transition movement around the world. We founded Transition Network in response to a number of deep and overlapping challenges, including in particular climate change, resource scarcity [especially as manifested by peak oil] and inequality. Inequality is key, as we can't really explore how we use resources without looking at who has access to those resources and who controls them, including deciding how they should be used – or not used. In that context, arriving last year at the extraordinary situation where 85 individuals have as much accumulated wealth as half of the entire world population is a shocking reminder of just how distorted our lives have become.

At the core of the Transition movement is a belief that there is an immense creativity and courage in us all which is best unleashed through communal, collaborative activity – that we can explore our capacities and fulfil our human potential through taking responsibility for the changes so needed, rather than by waiting for wise leaders to make the decisions for us. In addition my reading of history is that it is hard to find convincing precedents for the powerful taking decisions of their own volition which are for the benefit of all.

Bottom up pressure, and activity, can enable institutions to change, even when it is hard for them to do so. It should be obvious how dangerous climate change

is and how inevitable are the consequences of continuing on our current trajectory. Yet when we take into account the fact that the carbon emissions from burning fossil fuels are tied to economic growth, and that our capitalist system requires such growth, that inability to change our direction becomes easier to understand. The entrenched nature of the dominant economic paradigm is very deep, and we will need an enormous worldwide popular movement to shift it. In that context, recent indications of an emerging and growing understanding in established institutions of just how important change is – such as the Pope's *Laudato Si* Encyclical and recent ruling by a Dutch court that the Dutch government must reduce emissions by 25% within five years to protect its citizens from climate change in the world's first climate liability suit – add to my feeling that consciousness is starting to shift, and that relatively positive outcomes to the predicament we face may be achievable. Despite that mainstream analysis, such as that of the COP process so far, has remained firmly rooted in the financial logic which is inextricably linked to our current predicament.

It's fundamentally important that we do all we can to stop our changing of the climate we so rely on. At the same time we should not fall into the trap of treating climate change if it were the only significant ecological challenge which we face. After all, it is just one of nine planetary boundaries[1] which scientists suggest must not be crossed if we wish to continue enjoying a stable, healthy planetary environment, and yet already we're transgressing four of those nine. This means that as well as acting on climate change we urgently have to address the mass extinctions of other species, ocean acidification, topsoil erosion and deforestation.

While such lists of environmental challenges are daunting, I cannot see how we can respond proportionately to them unless we also make dealing with inequality just as central to our movements. Yotam Marom, an Occupy activist, very acutely pointed out after Hurricane Sandy that sluggishness on climate justice can be tantamount to climate change denial

"Defeating climate change doesn't have to mean dropping everything to become climate activists or ignoring the whole thing altogether. The truth is exactly the opposite. We have to relearn the climate crisis as one that ties our struggles together and opens up potential for the world we're already fighting for."

In her work on a "doughnut" for human activity, Kate Raworth suggests we think of the resources we need to use to ensure that all of us are safe, fed, housed and enjoying reasonable wellbeing as the inner circle a doughnut. She posits that we can think of the outer circumference as being the representation of the nine planetary boundaries, and that we must find of way of keeping our

[1] " Planetary Boundaries 2.0 – new and improved ", *Science,* n° 16, January 2015: www.stockholmresilience.org/21/research/research-news/1-15-2015-planetary-boundaries-2.0---new-and-improved.html

collective impact between those two circles. Embedding climate justice at the core of our movements is key to our finding a way of ensuring that we inhabit the space between those boundaries and make the changes needed to result in wellbeing for all of us, not just those who own or can access money or land or other key resources.

This leads to issues such as how we will feed ourselves in a world of climate change, growing inequality and expanding land grabs by the rich and powerful. Recent research supported by Lloyds of London, the centre of global insurance and re-insurance, finds that continuing on our current paths will lead to a risk of a catastrophic collapse in our ability to feed ourselves by the middle of the current century, with climate change playing a significant role. Knowing better, agro-ecological ways of feeding ourselves is really important, but we need to be using those methods in as stable a climate as possible.

We've already hard wired into our world more extreme weather such as storms, draughts, and floods. These will cause growing damage, and increasing stresses - how will we react? When the stress hits, for me what really matters is what are the deep, underlying stories which we tell ourselves without realising that we're doing so. In the neo-liberal world of economics, two key such stories are about prosperity and security. In the prosperity story meaning and happiness comes via pursuit of material acquisition and money, and in the security story we believe that we live in an ever more dangerous world, and need stronger police and army, with more powers, to defend ourselves. These are not necessarily explicit stories, rather they underpin the logic, the normal interpretation of the narratives in the news in which we all swim.

That takes me back to the approach shared by the Transition movement with many others in the bottom up citizen movements around the world of highlighting the importance of practices which build solidarity and respect for diversity. The Transition movement puts great attention onto exploring healthy processes and focussing on our need for connection, for love, as being absolutely central in building a movement which can deep enough to sustain itself in developing ways of being, and doing, which can replace our current cultures of ill-health and disease.

Transition has spread to nearly 50 countries, with many successes and many failures, and is changing and growing as it does so. Our REconomy programme, looking at developing ways in which we can find livelihoods which don't damage our future, is now being piloted in 11 countries, showing the immense power in a decentralised network to spread good ideas, to test them in differing cultures, and to learn and improve continually.

Pulling all of what I've said above together, if we are to respond to the challenges we face I believe that we will need to ask ourselves fundamental questions about

our economic system, our use of and relationship to technology, what democracy means and how we live – and how we treat each other. If we are to change such deeply embedded practices, and the stories which we tell ourselves about what is possible, then we need an unprecedented depth and heath of societal engagement and participation. And it's very urgent – the time we have to do something meaningful about climate change is passing rapidly.

A deeply acute cultural commentator, Edward Said, rightly pointed out that political activism needs optimism. The corollary is also true - engaging in such activism enables optimism. From this positive feedback loop we can begin to achieve our immense potential.

Despite the scale and urgency of what is needed, I have incredible joy in my life. That joy comes from the shared endeavour of collaborating to build a movement and resulting cause for optimism despite the grim trends we see. As I write I can feel myself looking forward to what emerges from our joint movement with great hope and excitement.

"For over 40 years, climate change has been challenging our models of development"

NICOLAS KRAUSZ AND JULIEN WOESSNER

There's nothing new about the climate issue. The climatologist Wallace Broecker1 was already talking about global warming in the journal Science as early as 1975. Twelve years later, the UN and UNEP2 set up the IPCC (Intergovernmental Panel on Climate Change). The UN Framework Convention on Climate Change was then established in 1995. It thus took two decades for scientific knowledge to translate into a political framework on an international scale; and it's been over twenty years that the international community meets each year for the COP (Conference of Parties)3 to discuss actions to curb climate change.

These annual meetings represent recurring disappointment: State representatives struggle to make serious commitments and instead prioritise the pursuit of short-term economic growth at the expense of all other development indicators, as alarming as these indicators may be. The prospect of a legally-binding agreement is perpetually put off, replaced by unilateral commitments which change according to the economic priorities and which, in the absence of any binding enforcement mechanism, are sometimes not even respected.

No significant global shift indicates that we are winding down our growing use of carbon resources. The prevailing model is that of industrial development, oriented towards mass consumption, driven by economic growth and based on extractivism and the massive use of fossil fuels. Between 1975 and 1995,

[1] Wallace S. Broecker, Newberry Professor of Geology, University of Columbia, www.earth.columbia.edu/articles/view/2246.
[2] United Nations Environment Programme.
[3] Also called Conference of the Parties to the United Nations Framework Convention on Climate Change.

greenhouse gas emissions increased from less than 30 gigatonnes to nearly 40 gigatonnes, and between 1995 and 2010, they bordered on 50 gigatonnes, continuing at this runaway pace without any sign of slowing down.

The advent of "peak oil",[4] predicted since the 1950s, is constantly being staved off by experts who endlessly find less accessible resources to set their sights on. Some are quick to announce that these "new reserves" could ensure the perpetuation of the current model for the duration of the next century . . . if we were to disregard the numerous climatic, environmental, health and social consequences! Yet if we wish to avoid such repercussions and keep global warming below the 2°C limit set by the IPCC, we need to leave over half of known fossil fuel reserves[5] in the ground and promptly implement a comprehensive range of measures that will enable us to transition to post-carbon societies. The latest report by the IPCC states that global CO2 emissions need to be reduced by 40-70% by 2050 – no mean feat. Each country is supposed to submit a cross-sector "climate change action plan" that includes policies on energy, agriculture, transport, housing, etc. to be implemented over the decades ahead. Such challenges require serious political determination. Instead we are witnessing systematic contradictions between climate commitments and the economic policies being implemented by governments who seem able to make ambitious promises to reduce greenhouse gas emissions with one hand while they authorise drilling in previously protected sites[6] with the other, giving the impression of a double talk. The needed radical and systemic changes are not initiated and the blind faith in the curative effects of economic growth and technology dominates political choices.

Despite the gloomy outlook, there has been some progress over the last forty years. Although no universal, binding agreement on intergovernmental processes has yet been signed, countries' quantitative commitments are becoming increasingly well-defined and a number of action plans and climate laws have been implemented all over the world, with results that, although remain inadequate, are nevertheless tangible. The principle of countries' common but differentiated responsibilities in tackling climate change has been adopted, although only after much heated debate. Evidently it did not deter emerging nations from also engaging in a high carbon economy, but at least there has been some recognition that the commitments of so-called "developed" countries are proportionate to their greater share of responsibility in contributing to climate change. An international fund (evidently under-funded for the moment) has been

[4] The point in time when the maximum rate of extraction of oil is reached, after which the rate of production is expected to decline due to depletion of oil reserves.
[5] "The geographical distribution of fossil fuels unused when limiting global warming to 2 °C", published on the 8 January in the journal *Nature*, by Christophe McGlade and Paul Ekins from London's Institute for Sustainable Resources. This article states that to keep warming below the 2 °C limit, a third of our oil reserves, half of our gas reserves and over 80% of our coal reserves should remain in the ground.
[6] See, among other examples, Barack Obama's visit to Alaska and his speech on the 31st August 2105 warning against the consequences of climate change, while in May 2015, he authorised the Anglo-Dutch oil company Shell to drill in the Arctic waters off the coast of Alaska.

set up to assist countries in financial difficulty. In the scientific community, the work of the IPCC and other research groups have played an important role in clearing up any doubt or contestation as to the role human activity has played in causing global warming. Experts have managed to convince, with supporting evidence, the vast majority of decision-makers of the situation's pressing urgency. Procedures for measuring and monitoring carbon emissions have become much more precise and have resulted in improved scientific monitoring of emissions and the implementation of public policies that aim to reduce them. There are of course still numerous issues remaining, particularly regarding the "grey area" of accounting for indirect CO2 emissions caused by items consumed by the inhabitants of a given area: some think these emissions should be attributed to consumers, others believe they should be attributed to the place in which the items are produced.

But it is mostly at the local scale, both in the Global North and the Global South where concrete progress is being made. The emergence and empowerment of actors and networks working locally has been instrumental in establishing concrete, tried and tested alternatives that are guiding the way towards post-carbon societies. Those taking action at this level can be divided into two groups: local governments and civil society organisations and movements. Within these two substantial groups, there are a number of organisations working for change in different ways.

All over the world, networks of cities and towns are developing common tools to measure and report on their contributions to reducing national CO2 emissions. In this way they operate as partners of national governments and participate in policy process parallel to the intergovernmental processes. Local authorities make quantified commitments to their electorate, aligning local actors with ambitious joint objectives and with the implementation of progressive local policies. Citizens are rallying together to denounce the effects of climate change on people's livelihoods and on their environment, and are finding other ways of producing and consuming without waiting for change to come "from above". Far-reaching campaigns that bring together actors from a wealth of backgrounds are working to pull financial investments out of fossil fuels and redirect them into renewables. Many are advocating for a democratic and ethical approach to the climate issue, and for the protection of vulnerable populations already affected by climate change. Legal proceedings have been successful in condemning inadequate government policies that fail to take into account the risks of climate change on the common good. These actions are often isolated and sometimes too different to come together as a joint force, and although they don't currently constitute a common, united front, there is more and more that links them together, opening up the horizon for a citizen-fuelled movement for climate justice.

The common thread in these local initiatives is that they are moving at a faster

rate and going further than the current inter-state processes. The majority of them are aware that the changes required are of a systemic nature. This is exemplified in the slogan that captures the drumbeat of a number of movements: "Change the system, not the climate!" Because, beyond the climate issue, at play is the underlying need to transition to another economic system that is more respectful of social and environmental balances. Faced with the current deadlock on inter-state negotiations and the need to involve a whole array of actors in this race against time, it is crucial that we foster all incentives towards a cohesive fabric, building on common visions of the issues and objectives in order to build fair, sustainable societies.

The simple aim of this issue of Passerelle is to play a role in fostering these connections by giving a voice to the rich diversity of local authorities networks and representatives of civil society. It seeks to build ***passerelles*** or bridges between these worlds that, although sometimes unaware of one another's existence, are all, in their own way, resolutely working to accelerate the transition towards post-carbon societies.

Published in three languages and downloadable at www.coredem.info, this thirteenth issue of the Passerelle Collection will be presented at various debates around COP21, held in Paris from November 30th to December 12th 2015. Above and beyond this event, we hope it will inspire different actors to come together over the long term and concretise the systemic changes needed to build human societies that are founded on living well together while respecting the planet's natural limits.

01

ROOT CAUSES OF THE CLIMATE CRISIS: SYSTEMIC ISSUES

According to the UN, the year 2015 should mark a turning point. On 25 September 2015, the UN adopted the Sustainable Development Goals (SDGs), to be implemented from January 2016, with the aim of putting an end to worldwide poverty by 2030. This new roadmap replaces the Millennium Development Goals (MDGs) and aims to usher the world towards the transition to fair, sustainable societies, an objective closely aligned to that of COP21, which should establish a new climate agreement to replace the Kyoto Protocol.

Yet no country seems ready to step up and lead the way. Instead the current productivist development model, which for so long has been dedicated to meeting the growth and consumption needs of a small minority in the Global North, is now that of the BRICS, particularly China, the world's biggest emitter of greenhouse gases. In an international community where power relations are ever more complex, this geo-economic game has resulted in a deadlock in achieving ambitious and binding commitments based on compromise.

In addition, countries are held back from taking effective social and environmental action due to pressures of allegedly "unavoidable" obligations, short-term economic results and industrial lobbying groups whose financial interests are very effectively defended at UN level.

Far from initiating any kind of paradigm shift, the official solutions to climate change only serve to reinforce the model responsible for it.

A. A Productivist and Merchant Model

The Anthropocene: a New Geological Era for Better... or Worse?

SOPHIE CHAPELLE

We have entered a new phase in industrial civilisation. According to a number of scientists, the level of its geological force is so great it could determine the Earth's future. Our environmental footprint is so big we are already feeling its impact: an increase in the global temperature, the "6th extinction", ocean acidification, to name just a few. We are entering the Anthropocene, "the new age of man". Far from being inevitable, these effects have been determined by the political, economic, and ideological choices made by a small proportion of humanity. How can humanity collectively take control of its fate?

The end of the Holocene

"We are no longer in the Holocene but in the Anthropocene!" stated Nobel Prize Laureate in chemistry Paul Crutzen to an audience of scientists. Fifteen years later, an increasing number of scientists believe that we have changed our geological epoch. The history of the Earth is divided into geological epochs of thousands to millions of years, each marked by a biological, climatic or seismic event, as reflected in the earth and its sedimentary layers. The upper Jurassic saw the apparition of the first birds, and 70 million years later, the late Cretaceous marked the end of the dinosaurs. We are currently living in the Holocene, which began 11 500 years ago with the emergence of agriculture and settlement living.

Yet the human race has become a geological force influencing fauna, flora and the climate in the same way that earth currents shape continents. "Human activities have become so pervasive and profound that they rival the great forces

© NARDINO

of Nature and are pushing the Earth into planetary terra incognita," explains Paul Crutzen. The advent of such an extensive impact thus marks the end of the Holocene and the beginning of the Anthropocene – derived from the ancient Greek anthropos (human) and kainos (recent or new). A working group of the International Union of Geological Sciences is preparing a report to see if this new geological epoch should be formalised in the geologic time scale. It will be available in 2016.

In what respect has humanity become such a major geological force?

We are surrounded by industrial areas, highways, towns, housing estates, as well as pasture lands and planted forests. While these artificialised natural areas represented only 5% of the earth's surface in 1750, they now represent almost one third of the earth's surface. Other less noticeable natural disruptions are also at work. 90% of photosynthesis on Earth today is carried out by ecosystems which have been altered by humans. For 150 years, new substances such as plastic or endocrine disruptors have been left in the atmosphere, leaving their mark in sediments and developing fossils.

In order to assess the full extent of humanity's impact on the environment, scientists have studied 24 factors which, since 1750, have contributed to changes in the Earth's climate system including the population increase, the advent of motor vehicles, deforestation, phone equipment, fertiliser use, severe flooding,

etc.[1] These factors multiplied in the 19th century, aggravated by the soaring levels in energy consumption. The rise in the global temperature, depletion of the ozone layer, retreating glaciers, rising sea levels, and ocean acidification all represent planetary changes that have occurred in a very short time frame due to extreme exploitation of the ecosystem.

When did the Anthropocene begin?

There are several hypotheses as to the Anthropocene's beginnings. The American palaeoclimatologist William Ruddiman sets it as being between 5 000 and 8 000 years ago. Humans may have already emitted enough greenhouse gases through deforestation, paddy fields, and livestock farming to alter the trajectory of the Earth's climate. Other scientists situate it as occurring more after World War II, with the significant changes related to the nuclear, petrochemical and electronic era.

The most widely-accepted theory is that the Anthropocene began in the late 18th century. Paul Crutzen suggests specifically the year 1784, the year of James Watt's patent on the steam engine, and a symbol of the beginning of the industrial revolution. "If we compress the history of our planet (4.5 billion years) into a 24-hour day, the Industrial Revolution occurs in the last two milliseconds," illustrates David Brower, founder of Friends of the Earth.

Will the Anthropocene lead to a "sixth extinction"?

"We have destabilised the world to such an extent that we have reason to believe that the process is practically irreversible," explains glaciologist Claude Lorius[2] to Médiapart. Returning to "normal" is not feasible. Scientists have also identified several tipping points beyond which the human race will be faced with an uncertain future. Three planetary boundaries – the nitrogen cycle, greenhouse gas emissions, and biodiversity loss – have already been transgressed, with the risk that things will suddenly spiral out of control.[3]

This first tipping point is evident in the state of the atmosphere. The concentration of carbon dioxide increased from 280 parts per million (ppm) just before the industrial revolution to 400 ppm in 2013, an unprecedented level in 3 million years. In addition to altering the chemical composition of the atmosphere, the rate of species extinction is 100 to 1000 times higher than the normal extinction rate. The change is so dramatic that biologists are now talking about the "sixth extinction" – the fifth being that which saw the end of the dinosaurs 65 million years ago...

[1] Data gathered from igpb.net, W. Steffen (dir.), *Global Change and the Earth System: A planet under pressure*, New York, Springer, 2005, p. 132-133.
[2] LORIUS Claude and CARPENTIER Laurent, *Voyage dans l'Anthropocène, cette nouvelle ère dont nous sommes les héros*, Actes Sud, January 2011.
[3] According to the scientific team at the Resilience Centre in Stockholm. Source: Anthony D.; Barnosky et al., "Approaching a state shift in Earth's Biosphere", *Nature*, vol. 486, 7 June 2012, pp. 52-58.

Are we all to blame?

The issue with linking the role our societies have played in forming a new geological period is that there is the implication that the "human race" is overall responsible. It doesn't take into account that US, Chinese and British banks are the frontrunners in highly polluting investments. Nor does it consider that an average American consumes 32 times more resources and energy than an average Kenyan. Pointing the finger at the entire human race represents a way for those involved to evade responsibility – yet responsibility needs to be assumed if we want to do something about the current state of the world. The issue of the historical responsibility of industrialised countries will be a central question at the 2015 Climate Change Conference in Paris.

The scientific version of the Anthropocene also involves the idea that the human race supposedly destroyed nature "accidentally", which French historians Jean-Baptiste Fressoz and Christophe Bonneuil, authors of *L'Evénement Anthropocène*[4], call a "fable". Their work revisits the history of energy in terms of political, military and ideological choices. Domestic use of solar energy was, in fact, highly developed in the US at the beginning of the 20th century before a coalition of developers led by General Electric impeded the development of solar water heaters in favour of electric heating. The United States also ushered in the oil era in order to circumvent labor movements in the mines, despite oil's higher price.

The reign of techno-science?

Faced with this promethean challenge, which is hard enough to apprehend at the level of a single individual's lifetime, let alone in terms of a particular political term, does collective action still serve any purpose? "The Anthropocene and its spectacular time scale anaesthetises the politician," fear the two historians. The Anthropocene could signify both humans' attaining the magnitude of a geological force and the advent of their powerlessness[5]. In such conditions, will experts and scholars be able to take command of a disordered world? "A daunting task lies ahead for scientists and engineers to guide society towards environmentally sustainable management in the era of the Anthropocene," predicts Paul Crutzen. Several large-scale technical fixes to climate change, otherwise known as "geo-engineering", are already being funded and in their experimental phase. This approach implies abandoning "bottom-up" experiments in self-imposed moderation and ecological and social change, opting instead for a return to the "techno-science" approach, to the military-industrial complex and its worship of impenetrability. "It's a mistake to play God with the future of our planet," warns

[4] Editions du Seuil, 2013.

[5] *The idea of "powerful powerlessness" was raised by Michel Lep*esant at the *Rendez-vous de l'Anthropocène*, co-organised by the EHESS and the Institut Momentum in Spring 2013.

the Australian economist Clive Hamilton[6]. "For true Prometheans it is not enough to regulate today's climate; we need to take control of geological history itself". Can democratic movements get things back on track?

Complaints of damage caused by so-called "progress" date a long way back. The 1789 list of grievances cite numerous complaints against industrial activities, accused of causing deforestation and increasing the price of wood.[7]. There was also an extensive movement protesting against mechanised production and attacks on machines in the late 18th century. There was already discussion at that time of the consequences of deforestation on the climate. "Resistance was not to technology as such but against one technology in particular, and to its potential to crush others," note the two historians. At the time, the industrial elite and supposed progressivists did not take such opposition seriously and it was not long before the subject was long forgotten. Will new forms of resistance against political and economic decisions made by a privileged few suffer the same fate? The dream of material abundance is turning to dust. The reality of scarcity is taking shape. How can we build democratic values in such a context? The idea of "resilience" is one important notion that citizens and researchers are talking about: the ability of a system to adapt to external events and changes inflicted upon it. This represents one of the key concepts of the Transition Town network, which is exploring ways in which to help towns and their residents break their dependence on oil. "The challenge is to transform our societies while preserving their social cohesion, ecological capital and stability," says one of its initiators, Rob Hopkins[8].

Will existence in the Anthropocene make us more responsible?

Despite the technological nature of the Anthropocene, it is wreaking havoc on the world and demands our attention. In this new era, even the word "crisis"is shrouded with misleading optimism, as it suggests a period whose end is imminent. "Living in the Anthropocene involves breaking free of repressive institutions, domination and alienating unrealities; it could be an incredibly liberating experience," remark Jean-Baptiste Fressoz and Christophe Bonneuil. They are calling for societies to "politically reclaim control of institutions, the social elite, symbolic systems and powerful tools responsible for tipping us over the edge." The Anthropocene inexorably condemns humanity to taking responsibility for the challenges of climate change.

[6] HAMILTON Clive, *Earthmasters: Playing God with the climate*, coll. Anthropocène, Ed. Seuil, 2013.
[7] BROSSELIN Arlette, CORVOL Andrée and VION-DELPHIN François, "Les doléances contre l'industrie", in Denis Woronoff (dir.), *Forges et forêts. Recherches sur la consommation proto-industrielle de bois*, Paris, EHESS, 1990, pp. 11-28.
[8] Rob Hopkins, *The transition handbook: from oil dependency to local resilience*. Green Books, 2008.

Private Banks Fail to Save the Climate

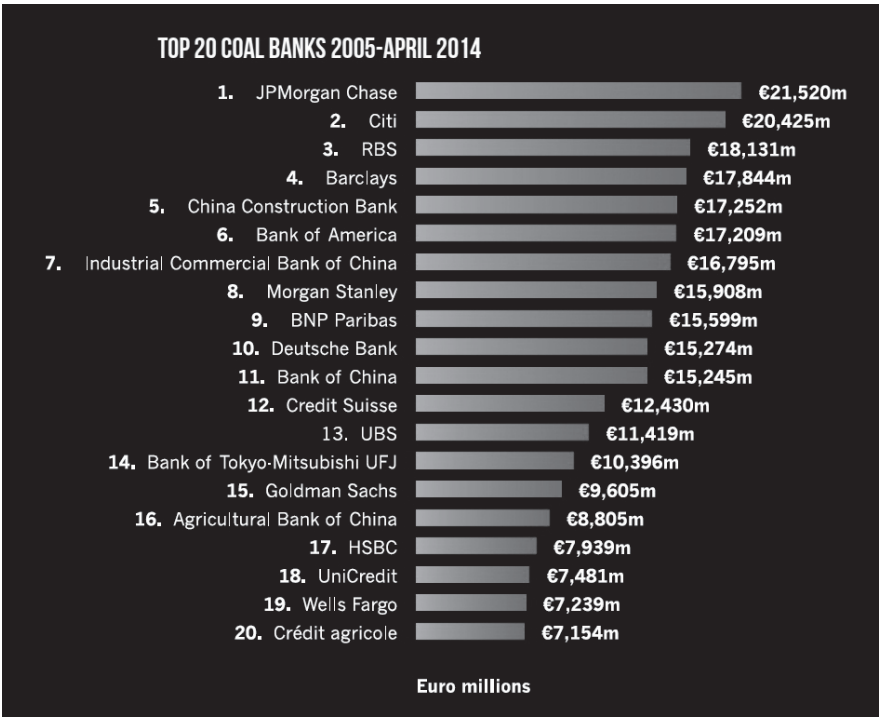
YANN LOUVEL

Behind the faces of polluting fossil fuel companies are the more shadowy figures of their financiers, among which private banks feature in large majority. Despite their alleged commitments to renewable energy projects, they are also accountable for the climate, environmental and social damage caused by fossil fuel companies and the projects that these banks happily bankroll. After the first victorious outcome in reducing public financing of coal (World Bank, European Investment Bank, etc.), citizens have rallied together and blocked recent climate-killing projects, such as the Galilee coal mining basin in Australia, the world's second biggest "carbon bomb". In order to step up the pace, BankTrack and a number of its NGO partners launched the Paris Pledge campaign[1] last summer, calling for private banks to sign the Pledge, which would commit them to phase out their involvement in coal, the most carbon-intensive form of fossil fuel.

The fossil fuel pie shared by a handful of banks

When we think about climate change, it is the fossil fuel bigwigs that come immediately to mind: the oil, gas and coal companies, as well as the automative industry. But we rarely think of the institutions that enable them to carry out their harmful activities, the agents that provide the capital that allow them to continue; the culprits that are, by and large, private banks. Similarly, when we are choosing a bank or withdrawing money, we rarely think of what our money is being used for. Some people even think that their money is safely locked away in the bank where they opened their account! Don't count on your banker to keep you informed on where your money's going; often they even have no idea...

[1] See the pledge: www.dotheparispledge.org



And yet the investigative work of BankTrack and its international partners over the last decade has revealed that just a handful of major international banks are responsible for financing fossil fuels. This is particularly true for the coal sector, the most detrimental for the climate, with environmentally and socially disastrous effects on local communities all over the world. In its latest report on the subject, "Banking on Coal 2014",[2] BankTrack analysed the financial relation between 92 international banks[3] and 93 companies[4] involved in coal mining and coal-fired plants around the world between 2005 and April 2014. The results illustrate that about three quarters (73%) of 373 billion euros in loans and share issues and bonds listed were financed by only 20 international private banks from 7 countries. Chinese banks are alone responsible for 28% of this amount, ahead of American banks with 23% and English banks with 11%. Included in the top twenty banks involved in the coal sector are also French, German, Swiss, Japanese and Italian banks. But it is the overall emerging trend that is most disturbing: private banks increased finances injected into the coal industry by more than 360% between 2005 and 2013. 2013 represented a record year with over 65 million euros in financing!

[2] Read the report: www.banktrack.org/download/banking_on_coal_2014_pdf/banking_on_coal_2014.pdf.
[3] http://coalbanks.org/bank.
[4] http://coalbanks.org/company.

Dodgy deals with disastrous environmental and social impacts

Aside from the general amount of money they are channeling into the coal industry as a whole, private banks are also more specifically involved in dodgy deals[5] all over the world, usually in addition to public financing from international financing institutions.

One of the most controversial projects tracked by BankTrack and its international partners over recent years is the coal-fired power plant in Tata Mundra[6], India. The plant, financed in 2008 by the World Bank, the Asian Development Bank, several Indian banks and BNP Paribas (a sponsor of COP21!) is now fully operational, and is wreaking havoc on the environment and its inhabitants: 30 million tons of carbon dioxide emitted every year, pollution of rivers, destruction of mangroves, threatened livelihoods of local fishermen, population displacement, an escalation in respiratory diseases, increase in electricity prices, etc. The list of devastating effects caused by the 4000MW plant, whose capacity is eight times greater than an "average" plant, goes on and on. Several reports by Ombudsmen on the World Bank and the Asian Development Bank have recently documented the banks' violation of their policies, and for the first time a complaint has been lodged against the World Bank by the communities directly affected.

There has also been much written about the Medupi[7] and Kusile[8] mega coal-fired power plants in South Africa, each with a 4800MW capacity, but which are still under construction, and far from being finished. Financed by the World Bank, several other development banks, export credit agencies and private banks from various countries, the two projects have attracted criticism from South African and international civil society from the outset due to their colossal environmental impact. The Kusile plant is being built in an area that is already heavily polluted by the coal industry and where emissions exceed authorised limits. Further mining developments will be necessary in order to supply these energy monsters with coal, resulting in disastrous impacts on the environment, particularly in regards to the already scarce water resources. To cover the excessive additional costs due to delays in the two projects (Medupi should become fully operational in 2019, four years behind schedule) Eskom has significantly raised the price of electricity. It is thus the poor that will bear the exuberant costs of the loans while these projects will primarily benefit the major companies that consume most of the electricity produced, yet pay up to seven times less.

Greenwashing at its worst

Under the pretence of bank confidentiality, banks refuse to disclose the names of their clients and their financial transactions. Yet the majority of these appear

[5] http://coalbanks.org/dodgydeal.
[6] http://coalbanks.org/dodgydeal#tata_mundra_ultra_mega_power_plant_umpp_
[7] http://coalbanks.org/dodgydeal#medupi_coal_power_plant
[8] http://coalbanks.org/dodgydeal#kusile_coal_power_plant

in international financial databases, which are publicly accessible... for those who pay – a blatant hypocrisy that NGOs have denounced for years given the fact that banks never miss an opportunity to flaunt figures when it comes to the amount they are injecting into the renewables sector.

If, unlike a few years ago, banks no longer systematically call into question the very idea that they are accountable for the environmental and social impacts of the companies they finance, we are facing a flagrant discrepancy between their speeches[9] and the actions they set in motion. The number one coal bank, JPMorgan Chase, claims to be "transitioning towards a low-carbon economy". Second in line is Citi, which maintains that it "has made tremendous progress in reducing its environmental footprint". What makes matters worse, though, is that these claims concern the bank's so-called "direct" impact – its consumption of paper and water in offices, the greenhouse gas emissions of its branches, etc., and not its core activity, i.e., what it is actually financing and investing in. Other banks are even more aggressive in their communication strategies, like BNP Paribas, which claimed in one of its recent annual reports that it "Acts against climate change". It has also plastered posters touting its support for research on the impacts of climate change all over the windows of its French branches, earning it a nomination for the Friends of the Earth "Pinocchio Award" in its greenwashing category. And as previously mentioned, it won't have escaped anyone that BNP Paribas[10], the French bank by far the most embroiled in the coal sector, has been selected as a sponsor for COP21: greenwashing at its worst.
Growing mass mobilisation gives rise to first victories

Faced with this state of affairs, mass mobilisation against climate-damaging banks has been gathering momentum over recent years and been meeting with increasing success.

The best example to date is the worldwide battle being currently fought to keep the second biggest "carbon bomb" underground: that of the Galilee coal mining basin in Queensland, North-East Australia. The most advanced projects in the region are the Alpha Coal[11] and Carmichael[12] mines, proposed to be constructed by Indian multinationals GVK and Adani, and backed by local and national governments. The until recently Australian Prime Minister Tony Abbott declared just last year that "coal is good for humanity". This statement incited NGOs to turn to banks likely to finance these projects and prevent them from going forward. The projects would, in addition, impact upon the Great Barrier Reef, a UNESCO world heritage area. To date, three banks already involved in the projects have pulled out, thanks to actions taken by the international NGO campaign: the

[9] www.banktrack.org/show/pages/banks_climate_quotes.
[10] http://coalbanks.org/bank#bnp_paribas
[11] http://coalbanks.org/dodgydeal#alpha_coal_project
[12] http://coalbanks.org/dodgydeal#carmichael_coal_mine_project

French bank Société Générale, involved in the Alpha Coal project; the English bank Standard Chartered and the Australian Commonwealth Bank, involved in the Carmichael projects. Twelve other banks have also agreed not to finance the expansion of Abbot Point coal terminal and/or all projects in the region: Deutsche Bank, HSBC, RBS, Barclays, Citi, Goldman Sachs JPMorgan Chase, Morgan Stanley, Crédit Agricole, BNP Paribas and National Australia Bank.

Another example is the coal mining in the Appalachian Mountains using the barbaric "Mountaintop removal"[13] technique, which consists of using explosives to literally blow off the tops of mountains. A number of NGOs, notably the Rainforest Action Network (RAN) in the US, have recently pushed to stop the financing of this mining technique by inviting representatives from the communities directly affected by the mining and its terrible environmental, social and health impacts to speak at the banks' General Meetings. And the results have been that the major American banks involved in the sector have committed to reducing their financing exposure, and the European banks BNP Paribas, RBS, Société Générale, Barclays, ING, Natixis and Crédit Agricole have committed to no longer financing the main mining companies active in this sector.

Aside from specific controversial projects, Bank of America and Crédit Agricole were the first major international banks to announce, in the spring of 2015, that they would reduce financing to the coal mining industry, which is a first.

A campaign for COP21: the Paris Pledge

Building on this progress, this summer BankTrack launched a new campaign: "Banks: Do the Paris pledge!"[14] urging banks to sign the Paris Pledge before the COP21 and requesting them to publish a plan to phase out coal finance no later than six months after the COP. Already in mid-September this initiative is supported by more than 120 organisations and more than 1200 people worldwide. It is actively promoted by Friends of the Earth (France,) urgewald (Germany) RAN (US) and Market Forces (Australia), and six banks have already signed the Pledge! The pressure is sure to mount in the run-up to COP21, but there's still a long way to go before banks quit financing the coal industry and even further before they quit fossil fuels altogether...

[13] http://coalbanks.org/dodgydeal#mountain_top_removal_coal_mining
[14] http://dotheparispledge.org/

Are Multinationals Climate-Compatible?

OLIVIER PETITJEAN

With the approach of the Paris Climate Change Conference, there's a lot of talk (somewhat inevitable with intergovernmental negotiations...) about the role and commitments of different countries. Will the United States and China agree to binding objectives in reducing their emissions? Will the EU keep playing its "pioneer" role as it so likes to brag?

Although these are legitimate questions, they also detract somewhat from the real issues. What remains of the EU's "green" image (already significantly watered down) when we are well aware that European consumerism is contributing to deforestation and raising greenhouse gas (GHG) emissions in other parts of the world? In other words, in our current globalised economic system, does it make any sense to set GHG emission targets for each country when some of them are just "outsourcing" a significant percentage of their emissions ?

Eyes naturally turn to the other "bad boys" on the great climate battleground, the other rulers of the global economic order: multinational companies. Yet although there is much talk, well-justified as might be, of the central role these energy giants in oil and gas play in this field, we should also pause to consider the overall role of major companies. Ultimately, it is not only a specific sector that the climate crisis is calling into question, but the entire economic system. Or, at least, it should be.

The climate "bad boys"

In December 2013, a scientific study relayed by the *Guardian* bared all: it would seem that 90 companies (both public and private) were responsible for 63% of the world's GHS emissions between 1751 and 2010, i.e., 914 billion tons of CO2. The chief culprits of this historic contribution to climate destabilisation are supermajors like ExxonMobil, Chevron, BP and Shell. It is no coincidence

© AGÊNCIA BRASIL FOTOGRAFIAS

Demonstration in front of the Petrobrás head offices, Rio de Janeiro, 2014.

that these companies boast the highest turnover and profits in the world – well above that of most countries.

These figures give an idea of the issue at hand. The official goal of keeping global warming below 2ºC implies committing to a trajectory that would involve a drastic reduction of our emissions and which would force companies into leaving the majority of their reserves in the ground and closing their doors. Obviously, they don't want to hear about it. The oil and coal majors, particularly those in the US, are notoriously at the forefront of attempts to sabotage national and international actions in fighting climate change, whether this be in the form of financing lobby groups advocating climate scepticism, crusading against attempts to regulate GHG emissions, or proposing fanciful (to one degree or another) "solutions" that would allow them to emit as much carbon into the atmosphere as before.

Recently the European heavyweights have adopted a more subtle strategy, promoting gas as the "cleanest" of fossil fuels – deliberating leaving out the fact that gas still emits a high quantity of GHG, particularly non-conventional gases such as shale gas. However, the oil and gas giants, whether they be European, American or other, continue to invest in developing new oil and gas wells, often in increasingly extreme conditions (deep offshore, Arctic) or in a way which is increasingly polluting (oil sands, shale gas).

Faced with the apparent impotence of political leaders, civil society movements are changing tactics and increasingly striking out at the oil, coal and gas multinationals directly. This takes the form of direct actions such as attempts to blockade major emblematic projects such as the Keystone XL pipeline in the US and, more recently, offshore drilling equipment that Shell is about to send into the Arctic Ocean. This also comes in the form of targeting the sources that finance these companies, such as the global divestment movement, which appeals to all public and private investors (universities, churches, pension funds, etc.) to withdraw their funds from the major companies active in the coal, oil and gas sector.

Hydrocarbons represent the lifeblood of the economy

One of the problems encountered by activists targeting multinational fossil fuel companies is that, apart from their own already-considerable weight, they continue to form the backbone of our economies, which is why they enjoy the full support of all national and international business lobby groups.

One doesn't have to look far to see that all sectors of the economy are inextricably tied up in fossil fuels:

- Directly related to the hydrocarbon sector are the so-called "oil service" companies (Technip, Vallourec (France) and Halliburton), which specialise in serving oil companies. Water and waste management companies, such as Suez and Veolia were also positioned in recent years in this market (wastewater treatment, decommissioning, etc.).
- The companies responsible for electricity and gas production and distribution are also directly dependent on the majors for their supply, and through their energy choices, play a role in maintaining the kingdom of hydrocarbons.
- Many industrial sectors, such as that of cement or steel, are major consumers of coal (coke), which puts them among the leading GHG emitters. Companies like ArcelorMittal (steel) and Lafarge (cement) also have coal mines.
- Other mining companies, even when they are not directly active in coal or other hydrocarbons, require massive amounts of energy.
- Chemical companies are major consumers of oil and gas, which are used as raw materials. This explains why this sector is first in line to defend shale gas exploitation in France and Europe.
- In turn, the food-related businesses also depend on the hydrocarbon sector for fertilizers and pesticides.
- The automobile and airline sectors also evidently have a business model that relies on fossil fuel consumption, and it would seem that their interests clearly lie in unrestrained consumption.
- Not to mention banks and other financial institutions, whose business in financing hydrocarbon projects and large extractive projects is often very lucrative. The successfully conducted campaign in France against the involvement of French banks in Galilee Basin coal mine projects is an illustration of their crucial role in this area.

Solutions

We can thus say that virtually all multinationals, irrespective of the sector, have at least an indirect interest in the perpetuation of the current economic system and its intensive consumption of fossil fuels. There has, however, recently been an increasingly marked trend of appealing to big companies to make a "contribution" to reducing global warming. Multinationals are being granted an increasingly significant role in the intergovernmental climate conferences. This is evident in the fact that the French government chose several French multinationals to sponsor COP21, despite their questionable track records in this area.

The usual argument of those who support the involvement of multinational companies is that these companies play an instrumental role in promoting changes (or not promoting them). We are told that "we need answers that work economically", that "those who are part of the problem are also part of the solution". The issue with this line of thinking is that it endorses the idea that any climate action should not, under any circumstances, undermine the established economic order.

The "solutions" put forward by multinational companies are often structurally limited by their business model and by the economic system itself which is integral to their existence. These consist generally of "market-based" solutions, which just shift problems around and/or are easily manipulated. More often than not, the climate issue is simply seen as a new source of potential profit, often guaranteed by the government (e.g., offshore wind markets in France). "Solutions" of this kind have been around for fifteen years (carbon markets, for example) and have had no impact whatsoever in altering GHG emissions, and it's a safe bet that this is not about to change, for the simple reason that they don't call into question the pillars of the system: consumerism and the logic of accumulation.

Underlying issues

Essentially, it is often the economic model of these companies that should be questioned. Take the case of Suez Environnement, one of the official sponsors of COP21. Is the "solution" to global water issues really to develop costly and energy-intensive technologies such as desalination, which only rich countries could afford, and which would involve privatising an essential service? Or is it instead to fundamentally change how water is used, particularly in industrial sectors, mining and industrial farms? Is the "solution" to the waste problem to build giant incinerators or biomethanation plants ? Or is it a preventative policy such as that promoted by the Zero Waste movement?

It is the same story in other sectors. Is the "solution" in the clothing sector to simply "maximise" a business model like that of LVMH (another official sponsor of COP21), based largely on expanding consumerism worldwide, with the corollary of tax chicanery and in many cases, violations of workers' rights? Should it

involve supporting small-scale organic farming or improving the "environmental performance" of multinational supply chains like Coca-Cola, Danone and Carrefour? These are just a few of the questions that need to addressed at COP21.

Not to mention the fundamental issue of the distribution of wealth, a question that is virtually never addressed in climate discussions. Are not all these companies that distribute billions of dividends each year the same ones that go on endlessly about the need for adapted, progressive, "market-based" measures, and that they should be entitled to exemptions and public assistance in order to ensure their economic viability throughout the transition process?

Economic model

In short, if multinationals are actually expected to play a leading role in the Paris Climate Conference, and more generally in climate action, the sad reality is that two things are already certain: Firstly, the measures taken or announced in December 2015 will remain minimal, and will fall far short of what is needed to prevent the dramatic effects of climate change. Secondly, it will be the citizens, users and consumers who will pay the price, not companies and their shareholders.

Instead of entrusting the climate's fate to multinationals, we and our leaders would be better set to reassert power and responsibility through a policy that sets the rules for the operation of economic activities according to goals that are focussed on the public good and protecting the climate. In addition, we need to fully embrace a genuine economic pluralism, which today has been undermined by the exclusive and extremely reductive model of the "company". Climate change essentially requires us to find a happy medium between the local and the global, with economic activities that, as well as private companies, also include public services, a social and solidarity economy, commons and various forms of non-monetary exchange.

Will certain multinational companies still be able to fit into such a world? That is the million-dollar question.

Climate Change and the Extractive Model

JOSE DE ECHAVE

"To prevent global temperatures increasing by two degrees Celsius, emissions of Greenhouse Gases must be reduced by between 40 and 70% by 2050 and almost completely eliminated by 2100. If the model is not changed, the risks are scarcity of food and water, displaced populations and major conflicts". That is how Rajendra Pachauri, Director of the Intergovernmental Panel of Experts on Climate Change began his address at the COP20 in Lima.

"Nature is trying to tell us that we need a radically different economic model", highlights, for her part, the Canadian researcher Naomi Klein. The need to drastically adjust the paradigms of economic growth comes, to a large extent, from the fact that the growing use of natural resources faces physical limitations and clear ecological restrictions.

It is therefore necessary to question the relationship between climate change and the extractive model that has been expanding massively over the past two decades in various regions of the planet generating controversy and conflict, and affecting the rights of populations and Nature. What is clear is that the pressure of extractive activities on different ecosystems and the intensive exploitation of natural resources is on the increase, and with it its contribution to the rise in Greenhouse Gases.

Here we will consider some of the elements for analysis based on experiences of extraction industries such as mining and hydrocarbons, with a particular emphasis on the experience of Latin America, particularly Peru.

Copper mine, La Oroya, Peru.

Extraction and extractivism

Eduardo Gudynas, defines extractivism as a case of the extraction of natural resources that contemplates at least three basic dimensions: volume of resources extracted, intensity of the extraction and the destination of the resources. Volume here does not only refer to the mineral extracted, but also to other materials extracted, water consumed, energy used, etc.; the sum of this is known as the "ecological rucksack"[1]. The intensity refers to the ecotoxicity: the generation of contaminants, use of toxic substances, use of explosives, negative effects on species at risk, emission of greenhouse gases, etc. Finally, in terms of destination, the central point of reference is whether the production is predominantly for external markets.

Taking these criteria into account, it is clear that a significant number of countries have seen extractivist models implemented in their territories in recent decades. Latin America and particularly countries such as Peru, are good examples of this tendency, although it has not necessarily developed in the same way: in some countries there has been what could be described as a classic extractivist model – characterised by majority control by transnational corporations and a State that assumes the role of guaranteeing a favourable climate for investments; and in others, there is what is described as a neo-extractivist model – characterised by a greater presence of the State, seeking to

[1] Citing other authors, E. Gudynas mentions that for each tonne of copper obtained, 500 tonnes of other materials are extracted.

capture income from extraction, either through direct control of production, higher taxes,tariffs, etc.

Nevertheless, despite these variations, the different extractivisms present common features: they affect the rights of populations, particularly indigenous peoples and peasant farming communities; social conflicts are on the rise as a consequence of the expansion of extraction activities; there are irreversible impacts on ecosystems; economies become excessively dependent on incomes from extraction, etc.

How is all this related to the issue of climate change?

In a number of different ways: The extractivist model is expressed in specific laws promoting mining and hydrocarbons that also allow other types of intensive extraction such as deforestation "which is the principal cause of the loss of ecosystems and biodiversity and is one of the principal contributors to climate change"[2] in Latin America.

The central tenet of extractivism is to exploit as much as possible in the shortest possible time frame. Whether it is renewable or non-renewable resources that are being extracted, the logic of exacerbated growth, which is at the heart of the economic system, expresses the extractivist model in all its dimensions. To achieve these aims, the countries and the territories have to adapt: it requires laws that seek to improve the climate for the flow of investments while at the same time weakening environmental and social relations; the forced displacement of populations; and the effects on eco-regions. For example it is estimated that 20% of the Amazon Rainforest has already been lost and a further 20% will seriously deteriorate.

It is clear that the extractivist model has a great impact on ecosystems that are destined, in a scenario of climate change, to play a determining role in countering the environmental deterioration of the planet. An significant part of the territory occupied by Latin America provides a good example of these tendencies: there are regions of the globe that have gas and others that have oil or mineral resources and even significant reserves of fresh water; however, perhaps the only area of the world that has all of these things together is that at the foot of the Andean-Amazonian mountains in South America.

The most recent report by the IPCC (2014) states that since the mid-1970s the temperature has increased in South and Central America between 0.7° and 1° C, which is already having repercussions for the rain cycles, the health of the

[2] Gerardo Honty y Eduardo Gudynas (2014): Cambio Climático y Transiciones al Buen Vivir. Alternativas al desarrollo para un clima seguro. Centro Latinoamericano de Ecología Social (Claes).

forests, particularly the Amazon Rainforest, water sources, receding glaciers, etc. By 2100 temperatures may increase to up to 4° C in Central America and 6.7° C in South America, and the impacts will continue to get worse.
From what has been described here, it is clear that the pressure of extraction has been enormous for the Sub-Continent and it will certainly continue to be so, despite recent fluctuations in international prices for the principal commodities. The history of the Latin American economies demonstrated the menace of extractive activities, both in times of boom and in times of crisis. "Extractivism is expressed in predatory terms, with high environmental and social impacts, violations of the rights of people and nature, and a variety of effects on the economy, the politics and the culture of a country"[3]. The last 20 years have been a clear example of this tendency.

Furthermore, this is happening in territories identified as vulnerable to climate change. For example, Peru has been identified as one of the most vulnerable countries on the planet owing to the great variety of climates, ecological levels and biodiversity. The country presents seven of the nine characteristics recognised by the United Nations that increase vulnerability to climate change: low coastal regions; arid and semi-arid regions; areas exposed to flooding, drought and desertification; fragile mountainous ecosystems; zones prone to disasters; urban areas with high levels of atmospheric contamination; and economies that depend to a large extent on income from the production and use of fossil fuels.

Nevertheless, in the economic model that has been in place in Peru since the 1990s, extractive activities – particularly mining and to a lesser extent fishing and hydrocarbons – are considered crucial for economic growth, exports, private investment and tax collection. Currently, following more than 20 years of the expansion of the extractivist model, the government of Peru is still backing the same horse and has presented a budget for investment in mining comprising 52 mega-projects for the coming years that together amount to $61,279 million USD.

In this context it is worth asking about the implications of the rise of extractivism for the care of the environment, the emission of greenhouse gases, deforestation, and, of course, climate change. Furthermore, these questions are posed taking into account the economic costs of environmental degradation: the World Bank estimated, some years ago, that environmental degradation in Peru represents 3.9% of GDP.

The greatest costs are associated with healthcare and water supplies; atmospheric contamination; natural disasters; lead poisoning; soil degradation and deforestation. On this last point, it is worth noting that more than 9 million

[3] Gerardo Honty and Eduardo Gudynas (2014).

hectares of the Amazon have been deforested and every year a further 150 thousand hectares are lost: this is Peru's principal contribution to the emission of greenhouse gases.

In terms of the costs associated with climate change in Peru, a study by the Andean Community of Nations (CAN by its Spanish initials) projects losses equivalent to 4.4% of GDP for the year 2025. In a similar vein, based on projections for temperature rises and variations in rainfall, a study by the Central Reserve Bank of Peru (BCRP by its Spanish initials) estimates that in 2050 losses will be more than 20% of GDP. It is therefore clearly established that the costs of climate change in a country like Peru will be large.

On the other hand, according to a study by Peru's Ministry for the Environment, it is estimated that the costs of the necessary mitigation measures and adaptations did not even reach 0.5% of GDP in 2013. As a consequence, the immediate adoption of mitigation measures and adaptation to climate change is profitable not only from a social point of view, in terms of environmental sustainability and the welfare of future generations of Peruvians (and the planet), but also from a financial point of view.

Nevertheless, the plans for adaptation and mitigation remain ambiguous, with few examples of concrete aims. Furthermore, in the countries that attempt to continue to opt for the extractivist model, there is no real assessment of the risk when productive projects that threaten vulnerable ecosystems are approved: for example, in Peru, the National Strategy Against Climate Change does not set precise targets to be met, nor does it define time frames or indicators that would be verifiable by independent bodies – national or foreign – nor can it be monitored by civil society and the communities directly affected, including indigenous peoples. This type of strategy therefore lacks the necessary force to drive overall policy-making in these countries and fact the real challenges posed by the climate crisis.

In this context, it is urgent that productive processes be adjusted to achieving the target of stabilizing the climate. The Intergovernmental Panel on Climate Change proposes a series of measures to achieve these ends: increased energy efficiency, greater penetration of renewable energy, capture and storage technologies, rationalisation of the transport system.

For these reasons, a climate policy appropriate to the challenges facing humanity should not only reduce the presence of fossil fuels in the energy matrix, but also avoid the continued advance of the extraction frontier. To prevent planetary temperature rises of more than 2 degrees Celsius, it has been shown that 70%

of known reserves of gas, oil and other fossil fuels must stay in the ground[4]. In other words, they are counting on massively greater reserves of fossil fuels than can in fact be used if we are to avoid planetary warming reaching unmanageable levels. There is no sense in continuing to explore, and less sense in continuing to extract; the exacerbated extraction model is unsustainable and needs to transition as fast as possible to post-extractivist scenarios.

REFERENCES

- ACOSTA Alberto, La maldición de la abundancia. CEP, SwissAid, and Abya Yala. Quito, 2009.
- BEBBINGTON Anthony, Minería, movimientos sociales y respuestas campesinas. IEP y CEPES. Lima, 2007.
- DE ECHAVE José, DIEZ Alejandro, HUBER Ludwig, REVESZ Bruno, RICARD Xavier et TANAKA Martín, Minería y conflictos sociales. IEP, CIPCA y CBC. Lima, 2007.
- DE ECHAVE José, Diez años de minería en el Perú. CooperAccion. Lima, 2007.
- Defensoría del Pueblo, Informe Extraordinario. Los conflictos socio ambientales por actividades extractivas. Lima, 2007.
- GIRAUD Pierre-Noël, L´Economie mondiale des matieres premieres. Repères, Paris, 1999.
- GUDYNAS, Eduardo, "Geografías fragmentadas, sitios globalizados, áreas relegadas". Revista del Sur. Montevideo, 2005.
- HONTY Gerardo and GUDYNAS Eduardo, Cambio Climático y Transiciones al Buen Vivir. Alternativas al desarrollo para un clima seguro. Centro Latinoamericano de Ecología Social (CLAES). Montevideo, 2014.
- LATOUCHE Serge, Le pari de la décroissance. Fayard, Paris, 2006.
- LATOUCHE Serge, Sortir de la societé de consommation. Les liens qui liberent, Paris, 2010.
- MACHADO Roberto, Cambio climático y las industrias extractivas en el Perú. CooperAccion, Lima, 2014.
- MARTINZE ALIER Joan, El ecologismo de los pobres. Espiritrompa Ediciones, Lima, 2010.
- ROUTILLOM Gilles, Economie des ressources naturelles. Repères, Paris, 2010.

[4] If global warming of more than 2ºC is to be avoided, only 565 gigatons of CO2 can be emitted; the known reserves of gas, oil and coal, represent 2,795 gigatons.

Getting the Economy to Wake up to the Damage it's Done

WOJTEK KALINOWSKI

Business communication is awash with commitments to environmental and social sustainable development, yet the concrete results of their actions prove generally very disappointing. NGOs regularly speak out against multinationals' cynicism and greenwashing – yet this is the approach on which the entire economic system is based; it doesn't measure what is really important and steers players in the wrong direction. When a business actually does try to do something to genuinely change things, it runs into the system's brick wall; those involved in fair trade, for instance, are not only struggling to get out of the "market niches" in which they are confined, but are facing increasing pressure from the mass retail sector.

Alongside the need for alternative economic models and local initiatives, there is also the need (not an easy undertaking admittedly) to persevere in changing the structural framework in which businesses, consumers and all other players in the system are evolving. The tools with which this can be achieved are numerous: there are some more conventional approaches such as taxes or tradable quotas while others are more iconoclastic such as the current propositions to overhaul the whole money system itself. Despite the fact that such tactics would require a certain technical expertise, the reality is that, given the powerful interests at stake, imposing them on the current system would represent fundamentally a political endeavour.

Changing relative prices: standards, taxes, quotas . . .

The fundamental economic problem is that of monetary value, or more gener-

© PAUL FALARDEAU

ally, measurement. Economic activity is in constant interaction with the physical world, taking all the resources it needs and rejecting the waste/pollution, but its monetary values and the whole system of indicators are (almost) entirely blind to these interactions. With the work of British economist Arthur Cecil Pigou (1877-1959), conventional environmental economics consisted of measuring the "negative externalities" of activities, i.e. situations where environmental costs related to a given decision are deferred to a third party while the benefits remain individual. The idea is to "internalise" these costs in the prices of market goods and services – a task that goes far beyond the capacities of the market itself, despite the excessive confidence that liberal economists place in it. It is thus not about leaving market players to set a price on different kinds of damages, but introducing a "social value" for each type of damage as established by the State or an external regulator. The regulatory tools involved in such an approach are well known and include green taxes, bonus-penalty systems, pricing systems, etc. The desire to put a cost on "negative externalities", although obviously essential, is also often ineffective because it is based on the altogether unrealistic idea of measuring the ecological impact of each activity or product. Fortunately, there is an alternative: directly enforcing environmental standards, i.e., maximum pollutant/emission limits, and banning products and technical processes that don't comply. This was how leaded gasoline was abolished in Europe: by phasing out the amount of lead added until its total abolition in 2000. This is also how the "EURO" standards are succeeding in reducing emission levels of new cars – although, due to resistance from manufacturers and inadequate State support, this is a slow process.

The most reliable standards and those easiest to introduce are "price signals", but

it is easier to apply these to products than to human behaviour. It is one thing to limit a car's emissions per kilometre, but to limit the amount of kilometres available to each driver is something else altogether (despite the fact that such rationing is not actually that technically difficult; it could be achieved, for example, using "carbon credit cards", an idea gaining ground among researchers and activists, although not yet among political parties). But what actually matters is total consumption levels, as efficiency gains per unit are often compromised by increased consumption. Where regulations exhibit political or practical limits, action needs to be taken on relative prices, leaving businesses and households with the task of making their own choices: either continue as before and pay more, or revise one's consumption levels, invest in new technical processes, adopt a different lifestyle, etc.

More recently, in addition to standards and environmental taxes, was the introduction of tradable emission allowances, applied to the most energy-intensive industrial operations (power plants, oil refineries, cement, steel and paper industries, etc.). The European Union was the first to introduce, in 2005, an Emissions Trading System, concerning more than 11,000 installations over Europe[1], responsible for approximately 40% of its overall emissions, but similar systems are gradually emerging all over the world. There is currently much debate between economists on the choice between a tax or an emission allowance;[2] the first has an effect on variable prices and leaves the market to dictate the final quantity of emissions, while the other immediately sets a given amount of authorised emissions and leaves it to the market to dictate the price. Although it may theoretically seem more important to limit the volume of emissions, the fact is that so far the European Trading System has failed to encourage companies to reduce their emissions. Standards and taxes seem to be more reliable tools as they also give players more scope in planning ahead.

The monetary system as the root issue

The backbone of all these tools is the monetary system itself, (set to) the parameters of which are defined by infinite accumulation and exponential growth of wealth. However physical wealth is a *flow* that can not be stored – at least, not without much difficulty. There is an obvious contradiction between the physical limits of the planet and the "purchase rights" on its future physical wealth (future production), which in our current global system continues to accumulate. The value of assets under management – pension funds, mutual funds, insurance companies, etc. – currently amounts to some 70,000 billion dollars, i.e., equivalent to the current global GDP and will, according to analysts' forecasts, increase some 100,000 billion by 2020.

[1] More specifically, in the 27 countries of the European Union as well as in Norway, Liechtenstein and Iceland.

[2] See, for example, Roger Guesnerie, Pour une politique climatique globale. Blocages et ouvertures, Editions rue d'Ulm, Collection Cepremap, 2010.

It is obviously a fundamental monetary illusion to see in these figures certainty of a world of unlimited wealth; yet it is an illusion powerful enough to shape reality, to an absurd degree: the asset managers in charge of this stack of financial assets have long promised returns unrelated to the physical limits of the planet, engaging in increasingly speculative activities in order to keep the illusion alive. Frustrated by the slump in global growth and destabilised by the financial crisis for which they were partly responsible, they are now seeking new speculative activities despite the fact that there is insufficient investments in ecological transition projects – projects that we need for our very survival. It would be hard to find a more tragic illustration of the legend of King Midas, who almost died of hunger because of his belief that true wealth was that of gold.

Regulating globalisation

These different tools, once properly introduced into the system in which we measure and validate economic activities, will reveal the number of hidden costs of globalisation. Whether an economic activity be regional, national or global, the current blindness is clearly the same – and just because something is "local" does not necessarily make it sustainable. But in an economy where the supply and production chains are predominantly globalised, multinationals can, for instance, choose to carry out production in areas where environmental protection laws are more lenient. In some situations, the local public voice succeeds in preventing such ecological dumping. In others, however, this voice does not get heard and political leaders are too tied up in the economic interests responsible for the degradation of the natural environment.

Another related issue concerns the ecological impact of supplying goods from distant countries. The volume of goods transported across the globe has multiplied 32-fold since 1950 and currently represents about 10% of global CO2 emissions. Based on recent trends, where freight growth was closely correlated with GDP growth, the OECD predicts that between 2010 and 2050 freight transport will increase six-fold in developing countries and two-fold in OECD countries. It therefore seems necessary to reduce this amount by being more selective in what is transported across the world and in what is produced locally. The good news is that the answer to the freight problem largely lies in the energy sector. In terms of tonnage, freight is primarily used to transport coal and oil, which represents nearly 12 billion tons per year, i.e., half the world tonnage. Transitioning to clean energies thus represents a fast track to reducing needs in long-distance trade.

Thirdly, globalisation cultivates an economies of scale logic and the quest for markets capable of absorbing an ever greater supply. The resulting obsession with abundance generates productive overcapacity and its corollary: economic models based on hype, planned obsolescence, and environmental waste. Highly

specialized areas become vulnerable to fluctuations in demand, and monocultures of intensive agriculture collapse as soon as there is the slightest change in the climate. If resilience is the ability to withstand external shocks and recover after such shocks occur, it is easy to see that a system based on spatial concentration taken to the extreme is not resilient: productivity gains are shared between consumers, wealth and employment, but the social and environmental damage falls on the shoulders of the inhabitants of the areas concerned.

Hence the idea of green protectionism measures, such as EU border carbon taxes instead of a global tax (preferable but even more unlikely). But the overall answer would involve integrating, through industry chain agreements or other tools, social and environmental standards in the global production and supply chains, i.e., reconstruct the regulatory framework from the extraction of raw materials to recycling[3]. Framework agreements negotiated between unions of developed countries and multinationals are an example of attempts in this direction.

Increasing the resilience of regions

At the same time, introducing true sustainability criteria would involve emphasising the regional scale and supporting local production. Again it is not so much a question of choosing between these either of these options – integration in external markets or endogenous development – but of striking the right balance between the two, which would be different in each specific market: agriculture and renewables lend themselves to radically "de-globalised" forms of production intended solely for local or regional markets, and even non-market production methods, whereas other sectors require some degree of physical concentration in order to be able to implement the principles of industrial ecology where the waste of one becomes the raw materials or energy source of another.

Protectionism is therefore not automatically "green". Its scope is not local but national, and the obstacles this raises in terms of freight transport are often blind to natural circumstances. Fluvial and shipping routes, largely preferable to freight trucks, are a means to connect different regions regardless of the political borders that divide them. It is not a national predilection that should govern how the production and distribution chains of tomorrow are organised but the measurement of material flow and energy consumption.

A resilient region is not one "free" of globalisation: it is rather one that reorganises industry chains and a polycentric economy, incorporating several spheres of exchange (local, regional, global, etc.), which while being interconnected are also relatively autonomous, able to offer individuals purchasing power and

[3] We could call this a "sustainable industry chain": for a more detailed description of this concept and industry chain agreements, see Pierre Calame, *L'Essai sur l'Oeconomie*, Editions Charles-Léopold Mayer, 2009, pp. 34.

protection irrespective of what is happening in other spheres. This relative autonomy should be protected and reinforced with tools that foster and give value to local production, such as local currencies. These currencies are emerging all over the world but, for now, are grounded in initiatives that are purely local and therefore remain fragile; although they are colliding head-on with the current economic system and point to a fundamental problem, they are failing to provide a solution. As a result, the impact of local currencies is primarily in the area of citizen awareness. In order to make local currencies a lever for a more resilient economy, they need to be supported by a consistent public policy, such as one that would authorise regional authorities to accept a proportion of local taxes to be paid in the local currency, or which uses the lever of public procurement, etc.[4]

[4] See Wojtek Kalinowski, "The Socio-Economic Impact of Local and Complementary Currencies", http://www.veblen-institute.org/The-Socio-Economic-Impact-of-Local?lang=en,Veblen Institute, November 2014.

The New Face of Climate Scepticism

SOPHIE CHAPELLE

It would be difficult today to brazenly deny the major role human activity has played in causing climate change. Even the mainstream media doesn't have much time for seasoned climate sceptics such as Claude Allègre. But by avoiding assessing the changes that need to happen to limit global warming, other more subtle, subversive strains of climate scepticism – be they conscious or subconscious – are emerging, despite greenwashing tactics.

The definition of climate sceptic, as entered in the dictionary in 2015, is someone who "doubts, if not the existence of climate change, at least the role of human activity in causing this phenomenon." But are climate sceptics still very present in France? One of the most prominent media personalties in this area is Claude Allègre. In his book L'imposture Climatique ("The Climate Imposter"), published in 2010, the former minister accuses climatologists in particular of "monopolising scientific journals" using a "mafia-driven and totalitarian system" to inflict their views on their detractors. Although he acknowledges that climate change is real, he believes human activity has nothing to do with it...

Claude Allègre's claims have been discredited by over 600 researchers in climate science, who published a letter of protest against his book in which they denigrate his theories and highlight numerous factual errors[1]. In France today, apart from the philospher Luc Ferry, who is always quick to promote Allègre's latest book in the French newspaper Le Figaro[2], there are few media outlets that would give him the time of day.

[1] www.lemonde.fr/mmpub/edt/doc/20100409/1331505_4cf6_allegre9avril.pdf.
[2] "Claude Allègre vu par Luc Ferry", *Le Figaro*, 19 February 2015.

"Traditional" climate scepticism on its way out

Failing his presence in newspaper columns, Claude Allègre, who is a geochemist, officiates at the "Académie des Sciences" alongside the geophysicist and self-proclaimed climate sceptic Vincent Courtillot. The Academy, which has a role in representing French science, has to adopt an opinion on climate change in preparation for the international conference in Paris in late November (COP21). But as the newspaper Le Monde[3] points out, the Academy's new "expertise charter" provides that in case of disagreement within a workgroup, a minority opinion – such as that of Vincent Courtillot – which casts doubt on human responsibility in climate change and highlights the role of the Sun instead – can be added to the majority opinion. However, such an addition would not be at all well received by the international community at COP21...

"It's true that since the 1992 summit in Rio, there have emerged individuals in the scientific community and in certain disciplines that have expressed hostility to the environment," analyses Amy Dahan, Emeritus Research Director at CNRS[4]. Environmentalism is perceived as an obstacle to science, as backward and detrimental to scientific and technological progress. Although there are few overt, self-proclaimed climate sceptics, environmentalism seriously divides the scientific community not only in France but also in the United States and in several other European countries."

Climate scepticism still a very anglo-saxon trend

Although climate scepticism generally remains limited to a few isolated individuals in France, in the US there exists a vast web of think tanks, closely aligned to the Republican Party, that contest global warming's existence. 53% of the Republican Caucus in the House of Representatives are climate sceptics and 70% in the Senate[5]. In early May, on the other side of the Pacific, Maurice Newman, a close advisor to the Australian Prime Minister Tony Abbott[6], said that global warming is an invention defended by the UN to "create a new world order (...) opposed to capitalism and freedom"[7]. "I have noticed that the older one is and more responsibilities one has, the more one's climate scepticism is blatantly expressed," notes Valérie Masson Delmotte, palaeoclimatologist and member of the IPCC[8].

In response to climate sceptics that refuse to overthrow a global economy dependent on fossil fuel consumption, opposition movements are stepping up the pace. The Guardian launched its iconic "keep it in the ground" campaign in Jan-

[3] "Regain climatosceptique à l'Académie des sciences", *Le Monde,* 21 May 2015.
[4] Amy Dahan is co-author (along with Stefan Aykut) of Gouverner le climat ? 20 ans de négociations internationales (Ed. Presses de Sciences Po, 2015).
[5] Source: Center for American Progress**.**
[6] *T*ony Abbott is a notorious "climate-sceptic", calling the link between human activity and global warming "absolute crap".
[7] "The UN is using climate change as a tool not an issue", *The Australian,* 8 May 2015.
[8] Intergovernmental Panel on Climate Change

uary 2015, multiplying investigations into the financial backers of these climate sceptic think tanks. The British newspaper also chose to support the divestment movement involving some 220 institutions around the world and representing more than 50 billion dollars in assets (44 million euros) (according to the NGO 350.org). All these institutions undertake to divest in fossil fuels.

Technology is bliss

"Climate scepticism has changed," says Pablo Servigne, independent researcher and co-author of Comment tout peut s'effondrer[9]. "We are no longer dealing with people that deny the existence of global warming but dealing with people that think technology will save us." A perfect example is Maud Fontenoy, who has been the focus of much recent media attention.The former sailor and environmental representative for the right-wing party Les Républicains has claimed "for over fifteen years to be deeply committed to protecting the environment," while also somehow promoting the use of diesel, nuclear energy, GMOs and shale gas. Even from someone who claims to promote "realistic and reasonable" ecology, this seems to be going a bit far.

It's not insignificant that in Fontenoy's latest book, the VIP darling thanks both the CEO of MEDEF Pierre Gattaz, and Vincent Bolloré whose company is one of the thirty supporters of the Maud Fontenoy Foundation. They all encourage in some form or another green growth and new technologies – such as electric vehicles promoted by Bolloré and widely promoted with the energy transition law introduced by Ségolène Royal. "Myths are always more powerful than facts," analyses Pablo Servigne. "Our myth is that of infinite growth, that techno-science dominates nature." Whether it be research into large-scale climate intervention techniques, i.e., geo-engineering, or building massive dams in the Amazon, over-investment in the dream that technology will save the day is being blindly and carelessly pursued.

Greenwashing

Laurent Fabius, the French Minister of Foreign Affairs, recently released the list of COP21 sponsors, which include Engie (GDF Suez) and EDF. As highlighted in the alternative report of the Multinationals Observatory, Engie sells itself as a frontrunner in energy transition, yet only 4% of the group's energy production is derived from renewable sources. The remainder comes from gas, coal (which emits 30% more CO_2 than natural gas), nuclear, and large dams located mostly in the Brazilian Amazon, with disastrous environmental and social impacts. The same goes for EDF, which has done very little to move towards increasing its renewable energies. Faced with industrial greenwashing, policies may not deny

[9] Ed. du Seuil, 2015.

global warming itself, but they refuse to acknowledge the ensuing consequences. It is the same scenario at European level. 94% of the appointments of European Climate Commissioner Miguel Arias Cañete have been with business lobbyists representing fossil fuel sectors[10]. This figure is around 70% for European Commission vice-president for energy Maroš Šefčovič. "The way in which the European Union acts over the next five years both at regional and international level will be key in determining whether we can avoid catastrophic climate change," remarks Pascoe Sabido, campaigner at the Corporate Europe Observatory (CEO). "But Cañete & co are too embroiled in the fossil fuel industry to stop themselves from rushing headlong towards a climate disaster". Miguel Arias Cañete presided an oil company domiciled in a tax haven until 2012. He has also been criticised by Spanish ecologists for authorising the extraction of shale gas and hydraulic fracturing.

Climate change opportunism

French Ecology Minister Ségolène Royal has hammered home the message that she does not wish to engage in what she calls "punitive ecology". One can see, reading between the lines, that such statements are driven by concern for her vote count. "The climate is not a priority for people who have other more immediate concerns such as employment. They see climate change as being far on the horizon," notes Amy Dahan. "Yet this vision of climate change as being something in the distance is very widespread, and that is a societal problem! Already in Copenhagen Heads of State that were supposed to be saving the climate were addressing a public that they knew was not ready to make serious sacrifices for the climate. There is the responsibility of politicians, but there is also an immaturity in the global public opinion, particularly in developed societies." Green growth has thus become the new buzzword of governments. And industrial lobbies have decided to milk the "green" speech as much as possible. According to Sylvain Laurens, Associate professor at EHESS, there is increasingly less denial of global warming's existence. "The issue for companies," explains the researcher who specialises in European employers' lobbies, "is no longer fundamentally opposing environmental standards but using these standards as a way to penalise the competition. For example they are proactive in ensuring higher plastic production standards in order to ward off Chinese companies". The economic strategy of industrial groups has thus been converted into ecological terms as a way to eliminate competition. "Big companies are quick to recognise ecological issues wherever and whenever there's an opportunity to turn the ecological argument against the competition. It would seem that for the corporate world, the climate's pain is their gain.

[10] "Big energy has 'privileged access' to top EU climate officials, claim campaigners", *The Guardian,* 28 May 2015.

Climate evasion

There are also those that choose to entirely avoid the subject. "There are certain political parties, such as France's far-right party the National Front, that make no mention of climate change in their political declaration. I see this group as "covert climate sceptics," remarks Valérie Masson Delmotte. The National Front's climate scepticism is conveyed in the way in which the party's regional councillors systematically refuse to address any environmental questions whatsoever[11]. In February 2012, the Front National party in the region of Nord-Pas-de-Calais voted against assessing the issue of climate change.

"The closer we get to securing a binding agreement at COP21, the more aggressive the climate sceptic is going to get," says Valérie Masson Delmotte. "I'm dreading there will be a similar scenario as at the Copenhagen Summit in 2009 with climategate[12], where there was this desire to drag the IPCC people through the mud. For the moment there is only been a sort of indifference: as the voluntary commitments have been fairly lukewarm, there has not even been that level of conflict!"

[11] "Municipales : le visage anti-social et anti-écolo du Front National", www.bastamag.net: www.bastamag.net/Conseils-regionaux-le-visage-anti (20 March 2014).

[12] In November 2009, hackers disclosed private correspondence between several climatologists, several of which were collaborating in writing the IPCC reports. The hackers saw apparent evidence of data manipulation in this correspondence. However, Nature, a reputable scientific journal, deems the affair "a joke": there is nothing in these emails that refutes the scientific fact that global warming is real". Yet such rationalisation was in vain; the blogosphere was set ablaze by climategate.

B. Weak Intergovernmental Processes for the Climate

Paris, COP21: a "Historic Agreement" and a New Approach to Climate Change

CATHERINE AUBERTIN, AMY DAHAN AND MICHEL DAMIAN

Twenty-three years after the UN Framework Convention on Climate Change (UNFCCC) was signed at the Earth Summit in Rio in 1992, the 21st Conference of the Parties (COP21), to be held in Paris in 2015, should mark a departure in the way in which the climate issue is addressed and how negotiations are handled.

The way in which the climate issue has been constructed is effectively no longer viable. Despite the fact that the goal of establishing an "universal, ambitious and binding" historic agreement remains a priority, the organisers of COP21 are well aware that this will consist of a bottom-up movement based on each country's Intended Nationally Determined Contributions, determined by their resources, their development priorities and their support from civil society, and will consist of voluntary contributions towards tackling climate change. Along with the international agreement and national contributions, the "agenda of solutions" will represent another instrumental line of attack, enabling all non-State actors – NGOs, mayors, local authorities, industrialists – to share their pro-climate initiatives. The climate issue's initial frame of reference is about to radically change.

Let's go over how the climate issue was constructed (both its definition and its governance) by the UN Framework Convention on Climate Change, drawing heavily on the work of IPCC scientists. Global warming, was presented as a pollution problem measured in terms of accumulating greenhouse gas (GHG) emissions through a single unit equivalent to one tonne of CO2 emissions. Market mechanisms were supposed to reduce GHG emissions at the least possible cost through an emissions trading system.

UN Flag.

Global techno-scientific governance

This physicochemical vision has resulted in a top-down technical objective: a multilateral agreement orchestrated by the United Nations on emission reduction targets, a "burden" to be shared between all countries. This initially took the form of the Kyoto Protocol, which committed developed countries to reduce emissions, in accordance with the principle of "common but differentiated responsibilities", as formulated in the 1992 Rio Declaration, and which exempted developing countries from this commitment. This principle served to reinforce conflict between the Global North and the Global South. It was not until 2007, after reaching a deadlock in negotiations and recognising an increase in emissions, that the subject of adaptation was addressed at the COP held in Bali. This highlighted both an awareness that the ultimate goal of mitigation will not happen at a rate that would allow ecosystems to naturally adapt to climate change (article 2 of the Convention), and the economic awakening of developing countries, throwing into question the goal of mitigation, which represents an obstacle to their development, while they are the first to bear the brunt of climate change. The highly political subjects of adaptation and equity were thus introduced late in the negotiation process, breaking with the scientific and technical approach of mitigation, and providing a new framework for development aid.

Copenhagen (2009) marked the failure of this top-down approach. Developing countries opposed extending the Kyoto Protocol, which would affect them after 2012. They opposed establishing voluntary reduction commitments, determined by each country. They did, however, agree to the common goal of a 2°C climate target, undoubtedly cajoled by the promise of financing to the tune of 100 billion dollars per year (as of 2020) to cover their mitigation and adaptation costs. COP16 in

Cancun decided to seek an agreement that would involve all countries and created the Green Climate Fund. The "Durban Platform", established at the 2011 COP17, anticipated an agreement based on commitments from all countries, which was to be signed in 2015 and implemented by 2020. It is then at COP21 in Paris that this agreement , the legal form of which remains to be defined, is to be reached. It is unlikely that this will take the shape of a third phase of the Kyoto Protocol, binding for all countries; it will most probably be based on a voluntary and amendable contribution system (the term "commitment" will no longer be used).

Belief in a self-regulating market

According to the neoliberal context of the time, the Kyoto Protocol and its problematic construction are based on the belief in market self-regulation as the answer to climate change. It is based on neoclassical economic theory applied to environmental issues. CO_2 emissions are considered to be "economic externalities", waste due to human activity, which can simply be integrated into the market, i.e., internalised, by defining property rights (through emission permits), allowing markets to reveal their prices through the process of supply and demand, thus creating goods. The conveyed "price signal" is supposed to change the behaviour of businesses and lead to the use of low carbon technologies. These choices point to a dematerialisation of the economy: an immaterial good (ton of CO2 not emitted) governed by a price system that is subject to financial speculation. There has been no attempt to directly question the cause of emissions, the growth model or a lifestyle based on fossil fuels. The "Carbon Dioxide Equivalent" has also been a way to avoid thinking about the different ways that greenhouse gases are produced. These choices have proven ineffective. By prioritising a financial approach, these approaches offer no scope for thinking through the issue in terms of production, technological innovation and consumption. Yet the main headway towards reducing GHG emissions has been made by changing production processes, introducing energy-saving technologies and establishing pollution control standards. Drawing attention to consumption patterns would represent a way to empower local initiatives and civil society. It would also be a way to take into account the influence of international trade on the location of emissions, i.e., calculate emissions based not on only where they are produced but also on where they are consumed. Importing countries should thus be accountable for the carbon content of goods manufactured in china or for agricultural commodities from Brazil.

Constructing the climate risk as the chief concern

The negotiations of the UNFCCC and the work of the IPCC, have presented climate risk as the ultimate environmental issue, taking precedence over social and local realities that we face everyday (economic crisis, public health, inequalities, to name just a few) and over all other environmental issues (biodiversity, desertification). Negotiations have long been detached from international trade issues (WTO standards and binational and regional agreements), energy policies, geopolitics (post 9/11, wars

in the Middle East, the growth of China and other emerging nations) and from the economy in general. This has resulted in twisted situations: while climate negotiations remained preoccupied with sensitive formulations around commitments, international agreements such as the Transatlantic Trade Investment Partnership (TTIP) or national policies in favour of coal or shale gas would validate strategies that run counter to the necessary energy transition.

The Kyoto Protocol did not anticipate geopolitical changes either. Between now and 2030 the majority of emissions will be produced by the US and China, two countries that have not signed the Protocol. Given the growth of emerging economies, Europe will thus produce less that 5% of global emissions. UN classifications of developed and developing countries are no longer relevant to account for a country's emissions.

This climate-centred vision, which has prioritised emission reduction targets over development challenges while refusing to acknowledge geo-political issues, has failed to include society in the political debates around the issues of climate change, or to link global governance, public policies and local initiatives together. Local and regional approaches, such as those of global associations of large cities around the world and various citizen movements, carried out alongside negotiations, offer another vision of expertise and action, and include issues such as land management, access to sustainable energy, public health, and the fight against poverty, etc. Policies that have an impact on reducing GHG can not be separated from other national, regional and local issues; and involve trade-offs with other concerns, such as the right of countries to exploit their natural resources, including their oil and coal revenue. The concept of the co-benefits of climate policy plays an increasingly important role in negotiations.

The Paris Conference represents an opportunity to break away from the climate issue's initial framework. The legitimacy of climate policy can not rely solely on the legitimacy of science. It is now important that all actors, industrialists, researchers and social movements be involved in multi-objective policies. Greater emphasis needs to be put on broad-based innovation, technological partnerships, solidarity and changing our way of producing and consuming.

The question remains whether national contributions and the proposed solutions, which will inevitably be diverse, will address the issues at hand and prove consistent with the 2°C target. The scientific conference, *Our Common Future Under Climate Change*, held in Paris at Unesco in July 2015, reiterated that although it is too late to prevent global warming, there is still time to limit the damage.

THIS ARTICLE IS BASED ON TWO RECENT PUBLICATIONS:

- AUBERTIN C., DAMIAN M., MAGNY M., MILLER C., THEYS J., TREYER S. (éds.), *"Les enjeux de la conférence de Paris : penser autrement la question climatique." Natures, Sciences, Sociétés*, 23 (Supl. June), 2015 : www.nss-journal.org/articles/nss/abs/2015/02/contents/contents.html
- AYKUT S., DAHAM A. *Gouverner le climat?* Presse de Sciences Po, Paris, 2015.

COP21 Won't Save Us Until We Save Ourselves

PASCOE SABIDO

World leaders will flock to Paris this December for COP21, the latest round of UN talks intended to avoid catastrophic climate change. It's being called a historic moment. If so, it won't be because the pledges countries make – all signs show the negotiations won't deliver what's needed to halt the planetary emergency. Rather, Paris could be historic as a turning point in the bigger battle between people and polluters.

COP21 not going to save the climate

Why won't the talks deliver? It's all in the name: COP21 will be the twenty-first of such meetings in which we have moved progressively further from the science- and justice-based agreement we need. Inversely, the influence of big business over the UN process has grown, from the business-government "Mexican Dialogues"[1] at COP16 in Cancun to the business-only pre-negotiations[2] at COP19 in Warsaw. The Polish hosts also invited fossil fuel companies responsible for climate change to sponsor the talks[3], a feat being repeated for COP21[4] in Paris. The pull from the UN to involve big business has been equalled by their insistence to be included, yet again calling for a seat at the negotiating table[5] during COP20 in Lima.

[1] "Mexican Dialogues": www.wbcsd.org/work-program/energy-and-climate/international-climate-policy/mexican-dialogues.aspx
[2] "Big business allowed to precook climate negotiations behind closed doors – for the foreseeable future": www.corporateeurope.org/blog/big-business-allowed-precook-climate-negotiations-behind-closed-doors-foreseeable-future
[3] "Auction Our Climate Highest Bidder": www.corporateeurope.org/blog/auction-our-climate-highest-bidder
[4] "COP21: Sponsors Are Not So Climate-Friendly": www.corporateeurope.org/pressreleases/2015/05/cop21-sponsors-are-not-so-climate-friendly
[5] "Business Wants a Seat at the Negotiating Table": www.corporateeurope.org/blog/business-wants-seat-climate-negotiating-table

It's the (fossil) economy, stupid

But the main reason talks are unlikely to deliver what's needed is that climate change is not a scientific problem but an economic one, caused by our current model of production and consumption.

Tackling climate change – which the talks are supposed to do – would mean leaving more than 80% of known fossil fuel reserves in the ground and not looking for any more, i.e. an end to the fossil fuel business model[6]. This would be life-changing to the communities whose livelihoods and environments are being destroyed by extractivism, but not too popular among Big Oil, Coal and Gas shareholders – which include most public and private pension funds. Nor with the banks, who earn large profits from lending to dirty energy projects[7]. Or among energy intensive industries that rely on cheap fossil fuels, or those that use them to make products such as plastics or chemicals.

As the saying goes, "it's the economy, stupid", and fossil fuels are at the heart of it. Moving away from them would make losers out of some of the most powerful interests in society, which has led to aggressive lobbying against changing course.

But even businesses not reliant on fossil fuels are still lobbying against radical action because doing what's needed means serious regulation across all sectors of the economy, contradicting the neoliberal deregulatory regime which has grown since the 1980s and made many corporations very rich. This phenomenon has also seen political power increasingly transferred into the hands of the biggest businesses, and made politicians far less willing to introduce public interest laws that might get in the way of profit.

COP failure a symptom of national failure

But while Christiana Figueres, head of the United Nations Framework Convention on Climate Change, (UNFCCC) has actively encouraged the participation of dirty energy – as well as promoting carbon markets and other false solutions – failure is not just the fault of the UNFCCC, which remains the only multilateral space where all countries are able to participate on climate (in theory at least), and is a far more inclusive and transparent body than the G8 or G20.

The failure of the international climate talks is a symptom of a national-level problem: our governments turn up to the COPs with their positions already shaped by dirty energy companies. US reticence is unsurprising given how its politics is awash[8] in oil and gas money. Canada's polluting tar sands industry has had a

[6] "Shell Wants to Go Artic": www.energypost.eu/shell-wants-go-arctic
[7] "Record Year for Bank Coal Financing as Latest UN Climate Warning Looms": www.banktrack.org/show/news/_record_year_for_bank_coal_financing_as_latest_un_climate_warning_looms
[8] Dirty Energy Money : www.dirtyenergymoney.com

similar impact[9] on the country's commitment to tackling climate change under the UNFCCC. The same can be said for Japan[10] and Australia[11], who have both slashed their climate target over the past few years. Equally, the EU has given in to pressure[12] from energy intensive industries to massively reduce its ambition.

These countries, the most responsible for climate change – and who are now rich because of it – are leading the race to roll back climate action and instead increase fossil fuel production.

Failure dressed as success

If dirty industry's initial tactic was to undermine the science[13], today's reality may be far more dangerous: it now claims it has accepted climate change and is part of the solution. Of course the proposed 'solutions' – techno-fixes, market mechanisms or just plain PR spin – do not challenge their basic extractivist business model, allowing them to continue trashing local communities and the climate.

The United States negotiators told the climate talks how much it supported the move to 'clean energy', only to reveal by this it meant fracking, a controversial and highly damaging technique of hydraulic fracturing rock beds to extract natural gas, which scientists show could be worse for the climate than coal[14] and has disastrous impacts on local communities and their environments.

The European Union is equally excited about natural gas as a 'bridge' from coal

[9] "Tar Sands Interrupted a Canadian Political Explosion": www.forbes.com/sites/jamesconca/2015/05/07/tar-sands-interrupted-a-canadian-political-explosion
[10] "As Japan burns more coal, climate policies under pressure": www.reuters.com/article/2014/12/11/us-climatechange-japan-idUSKBN0JP0O520141211
[11] "Australia Risks Climate Credibility with Coal-Friendly Target": www.rtcc.org/2015/03/30/australia-risks-climate-credibility-with-coal-friendly-target/
[12] "Ending Affair between Polluteers and Politicians" : www.corporateeurope.org/climate-and-energy/2014/03/ending-affair-between-polluters-and-politicians
[13] *Funding climate deniers* : www.corporateeurope.org/sites/default/files/sites/default/files/files/article/funding_climate_deniers.pdf
[14] "McKibben to Obama: Fracking May Be Worse Than Burning Coal": www.ecowatch.com/2014/09/08/mckibben-obama-fracking-worse-than-coal

to renewable energy, with plans to build a whole new generation of pipelines and ports[15]. This ignores the reality that any infrastructure built now will still be there in 50 years time, far too late to save the climate.

Key to continued fossil fuel extraction is 'carbon capture and storage' (CCS), an expensive and experimental technology supposed to capture CO2 emissions from power plants which can then be buried underground. Yet even its proponents claim it is decades away from commercial readiness. But because CCS would hypothetically allow the continued use of gas, oil and coal, industry lobbying has been both fierce and successful. Not only have companies received hundreds of millions[16] in public money for failed CCS pilots, the IPCC and the UNFCCC hold it up as a central solution to tackling climate change.

In Latin America and Africa, big energy utilities are pushing large hydro electric dams[17], which not only destroy local communities and environments, but according to the Intergovernmental Panel on Climate Change (IPCC) can be worse for the climate than coal. Ironically, much of the electricity from new plants will power fossil fuel mines and the most polluting industries, compounding the problem. However, dam developers like Italian utility Enel or Spanish gas giant Endesa still earn 'carbon credits' under the UN's 'Clean Development Mechanism' for the supposedly-clean energy generated, which can then be sold to offset emissions in Europe or other industrialised countries.

Good old-fashioned spin

Spin can be as important as technology – gas being a solution rather than the problem, or coal suddenly becoming 'clean'. During COP19 in Warsaw, industry presented more efficient plants as a climate solution, re-branding it as 'clean coal', despite it still being the most carbon polluting fossil fuel. More efficient coal plants are also eligible for carbon credits, which can then be bought as offsets by others.

Carbon markets are also spun as a solution. Despite the complete failure of the European emissions trading scheme, the EUETS[18] (delivering windfall industry profits rather than emissions cuts), the main message from big business is that markets are more efficient than state regulation. The market is supposed to set a 'carbon price', i.e. an indication to industry of how much it costs to emit carbon, and the call for a carbon price has become the global corporate mantra[19].

[15] *Corporate Conquistaros - the Many Ways Multinationals Both Drive and Profit from Climate Destruction* : www.corporateeurope.org/sites/default/files/corporate_conquistadors-en-web-0912.pdf
[16] Idem.
[17] Ibid.
[18] "Scrap the ETS": http://scrap-the-euets.makenoise.org/KV/declaration-scrap-ets-english/
[19] Press release of the Business Climate Summit 2015 : www.businessclimatesummit.com/wp-content/uploads/2015/05/Business-Climate-Summit-Press-release.pdf

However, energy intensive industries in Europe (along with the UK government) have used the call for a carbon price under the ETS to stop binding regulations on renewable energy and energy efficiency. They claim a price is enough to drive investment in the 'right' technologies (think 'clean coal', gas, CCS) rather than 'imposing' known and effective carbon cutting methods, and moving us away from fossil fuels. So a call for a global carbon price may be more sinister than it sounds.

In short, the same corporations causing climate change and trashing communities are not just lobbying against real solutions, they're now profiting from false ones. They deserve the label of 'corporate climate criminals'.

Politicians singing from big business' song-sheet

Perhaps most worrying is that world leaders are singing from the song-sheet of these corporate climate criminals. When French President Francois Hollande addressed the corporate-organised Business & Climate Summit[20] in Paris this May, he sounded like any other CEO present, eulogising the role and importance of business. The next day he made a public statement endorsing the key message of the Summit: a global carbon price.

On other panels, CEOs and ministers told the thousand-strong audience of business representatives that CCS, markets, a carbon price, business as almost-usual, would be enough to save the planet. The Norwegian Minister for Europe and Statoil both called for 'sustainable' oil and gas extraction, rather than leaving it in the ground; Christiana Figueres applauded the direction business was taking, describing it as "irreversible". She went on to say that anyone who thinks tackling climate change will happen from confrontation can "forget it"; it's all about collaboration. So when Shell, Total, GDF Suez, Glencore, Statoil and others publicly claim during the Summit that we will be heavily reliant on fossil fuels in 2050 (because their business model needs that to be true), they are still part of the solution.

Unless the conditions on the ground change, the biggest winners from COP21 will be those same corporate criminals. Our political leaders said as much at the Business and Climate Summit: COP20 President, Manuel Pulgar-Vidal, called for business to be formally included in the talks, while incoming COP21 President, Laurent Fabius, called for the government-business dialogue to start before the talks and continue well after. More emphatically, US Secretary of State John Kerry – via a recorded video message – told the Summit that business holds the key to COP21. Why are our political leaders enamoured with the same industries wrecking the planet?

[20] *Business Climate Summit* : www.businessclimatesummit.com

Changing the status-quo

It doesn't have to be this way. The tobacco industry used the very same tactics: undermining science, aggressive lobbying particularly using ex-government staff, providing its own false solutions, sponsoring conferences etc. But a movement of civil society groups from the global South, working with key governments, managed to push the UN's World Health Organisation to tackle the problem head-on and introduce a firewall[21] between tobacco lobbyists and public health officials. No more sponsorship, no more lobby meetings, no more participation in negotiations. No more access. And not just at the international level but the national level. We need a similar firewall against the corporate climate criminals, and many groups heading to Paris are making such a call[22], because the same industries causing climate change have no right to be alongside the decision makers trying to tackle it.

But action only comes through public pressure on our elected leaders, enough for them to stand up to vested interests. Civil society walked out of COP19 talks[23] because the excessive influence of dirty industry. If Paris can create that pressure, inside and outside the talks, (many grass-roots groups have been meeting to plan mass actions of civil disobedience during and after COP21 with strong anti-corporate lobbying framing), then while the agreed text won't save the climate, December 2015 could be the beginning of the end for the excessive lobbying influence of dirty industries and their grip over politics and our economy. Only then can we move beyond corporate interests towards the fair and just transition for workers, women, indigenous peoples, peasant farmers and everyone else based on social, economic and climate justice.

[21] *The Global Tabacco Threat* : www.healthjustice.ph/wp-content/uploads/2014/10/The-Global-Tobacco-Treaty.pdf
[22] See the call: www.kickbigpollutersout.com/?code=CAI
[23] "Polluters talk, we walk": www.corporateeurope.org/blog/polluters-talk-we-walk

How Trade Liberalisation and Foreign Investment is Sabotaging the Climate and the Transition

MAXIME COMBES

"The Climate or TTIP, Make Your Choice!"[1] These have been our words to François Hollande and to Governments and Heads of State of the EU and US. It's not just a catchphrase; it sums up the fundamental crux of the climate crisis. Trade liberalisation policies and the expansion of investors' rights serve only to widen the global gap in production systems, globalise the western way of life, lengthen production and consumption chains and assign more importance to the rights of investors than to those of the environment and democratic choice. It essentially means that energy systems will remain heavily dependent on international trading of fossil fuels, with barriers that make it difficult to implement policies that have a real impact on advancing the energy transition and tackle climate change effectively. Yet governments, multinational corporations and international institutions insist on carrying on down this destructive path.

Free trade for the good of the climate and the environment!

For over fifty years, the OECD's reports have repeatedly insisted that there is nothing contradictory between the expansion of international trade, policies that encourage growth, and environmental protection. And it has somewhat succeeded in selling its message[2]. Thus at the 1972 Stockholm Conference, countries undertook not to "invoke environmental concerns as a pretext

[1] See the document by Attac France and Aitec: "Climate or TTIP, make your choice!", https://france.attac.org/IMG/pdf/note_tafta_lima_-en.pdf.

[2] PESTRE Dominique, "L'économisation de l'environnement. Un travail à partir de l'OCDE, 1968-2012", typescript of a presentation made at the GASTEG seminar, 3 December, Paris, Centre Alexandre Koyré, 2013.

© LAETITIABLABLA

Stop TAFTA action, Paris, October 2014.

for discriminatory trade policies or for reduced access to markets" (recommendation 105). This means it is possible to protect the environment as long as it does not interfere with trade liberalisation. This approach has been honed since the 1990s: trade liberalisation and foreign investment has been sold as the best way to protect the environment and combat climate change. According to the theory of so-called "mutual support", trade liberalisation would ensure growth while protecting the environment, as open global markets would make "green" innovative technologies available to everyone.

This is the theory behind a number of important international documents. In 1992 at the Earth Summit in Rio de Janeiro, paragraph 2.19 of Agenda 21's action plan translated the idea as follows: "Environment and trade policies should be mutually supportive. An open, multilateral trading system makes possible a more efficient allocation and use of resources and thereby contributes to an increase in production and incomes and to lessening demands on the environment. It thus provides additional resources needed for economic growth and development and improved environmental protection".

This principle was even integrated into the official text on international climate negotiations. There is nothing ambiguous in Article 3.5 of the UN Framework Convention on Climate Change established in 1992 in Rio de Janeiro: "Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade." The document on which negotiations are based thus sanctifies trade liberalisation and foreign investment; it seems nothing should jeopardize it, not even climate change.

In 2009, this approach was summed up in a new report[3] by the WTO and the UNDP several months before the pivotal Copenhagen Climate Summit. Again, the promise of a low-carbon economy was made, the increase in revenue generated by opening up international markets would "give wealthier societies the opportunity to demand higher environmental standards including those relating to greenhouse gas emissions". For Pascal Lamy, then director-general of the WTO, there is "no time to lose in our fight against climate change. Let us put trade to the service of the international climate agenda".[4]

A lame approach, debunked by the facts

Theoretically-speaking, opening up international trade would have three overall effects on the environment - since 1950, it volume has been multiplied by thirty-two, and the global consumption of natural resources has increased by 50% in thirty years - : the scale effect of increased pollution due to increased economic activity; the composition effect due to economic specialisation, which alters each sector's relative share in the economy; and the technology effect linked to the availability of (supposedly) cleaner production methods. The net effect is the total sum of these three effects. In terms of CO2 emissions, studies show different results. Yet it would appear that the scale effect – the increase of emissions due to an increase in production – outweighs the technology effect, particularly for those countries that are not members of the OECD.

This approach of "mutual support" is also based on what economists call the Kuznets "inverted U curve", which establishes a link between income growth and an increase in pollution: Once a certain income level is reached, living standards supposedly rise and pollution levels drop. The theoretical and empirical foundations of this curve are shaky to say the least,[5] and are very contentious. Yet this is the curve international institutions are leaning on to illustrate that it is wealthy countries that are most attached to a clean, unharmed environment, and that we must pursue trade liberalisation in order to enable poorer countries to become rich and thus improve their environmental standards.

However the theory of mutual support does not hold up. Many studies[6] show

[3] WTO & UNEP, *Trade and Climate Change*, Geneva, World Trade Organisation and UNEP, www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf.

[4] LAMY Pascal, "Il n'y pas de solutions unilatérales aux problèmes mondiaux; Copenhague doit être notre point de mire", 26 June 2009, www.wto.org/french/news_f/news09_f/dgpl_29jun09_f.htm.

[5] According to Medhi Abbas, op cit., only 28% of scientific articles illustrate the existence of a turning point, while 40% of studies on CO2 fail to establish a turning point: since the foundational work of Shafik and Bandyopadhyay in 1992, we know that the Kuznets curve does not apply when concerning pollution linked to economic growth such as CO2. Shafik and Bandyopadhyay, "Economic growth and Environmental quality: Time-series and cross-country evidence," World Bank policy research working paper, n° WPS 904, Washington DC: World Bank.

[6] Cited in Mehdi Abbas, "Libre-échange et changements climatiques: 'soutien mutuel' ou divergence ?", *Mondes en développement*, no. 162, February 2013, pp. 33-48, www.cairn.info/resume.phpID_ARTICLE=MED_162_0033.

that trade liberalisation fails to have the promised positive effect on reducing GHG emissions, and actually has quite the opposite: an increase in international trade increases emissions; the more that is traded globally, the more pollution is emitted. Trade, therefore, is a major contributor to climate change: it would appear that freight is responsible for 10% of global emissions.[7] If we factor in diversification of goods, unbundling of production and increased volume of merchandise traded, some experts assess international trade to be responsible for 20% of total emissions.[8] The OECD and the International Transport Forum estimate that emissions from freight transport - which will quadruple by 2050 - will increase by 290%, becoming the main CO2 emissions source for surface transportation, replacing passenger transportation[9].

The overall figures of international trade tend to mask the actual reality of trade and its ensuing inequalities, both in terms of energy and resource flows and in terms of environmental damage. One gets a better idea of the metabolism of the global economy by observing these global flows, which reveal how liberalisation creates ecologically unequal exchange[10] between the great powers and the rest of the world. Opening up trade caused global consumption of natural resources to surge by 50% over thirty years. This extractive bulimia is what continues to feed the unsustainable consumption patterns of the world's rich: in industrialised countries, the average per capita consumption of resources per year is nearly two times higher than the world average, and four to five times higher than that of the poorest developing countries. Barely 20% of the world population consumes 80% of the energy produced on the planet, inhabitants of rich countries consuming an average of ten times more natural resources than those of poor countries.

Finally, the reality of WTO law also seems to be at odds with the theory of mutual support: the international agreement on the protection of intellectual property rights (TRIPS) established constraining rules on intellectual property, hindering the distribution of (so-called) green technologies. Far from facilitating the availability of these technologies, the rules of international trade limit their distribution to economic players that can pay the firms that hold the patents. This generally rules out poor countries, despite the fact that it is often precisely these countries that are in need of such technologies in order to adapt to the impacts of climate change.

[7] AVY Michel and al., "Le fret mondial et le changement climatique", La Documentation française / Centre d'analyse stratégique, "Reports and Documents", 2010, www.ladocumentationfrancaise.fr/var/storage/rapports- publics/104000665/0000.pdf

[8] PETERS G. P. and HERTWICH E. G, "Embodied in international trade with implications for global climate policy", *Environmental Science & Technology*, 42(5), 2008, 1401-1407, cited in Mehdi Abbas, op. cit.

[9] International Transport Forum at the OECD, Tansport Perspectives 2015, January 2015, see a summary : www.internationaltransportforum.org/Press/PDFs/2015-01-27-Outlook2015-FR.pdf

[10] HORNBORG Alf, "Ecological economics, Marxism, and technological progress: Some explorations of the conceptual foundations of theories of ecologically unequal exchange", *Ecological Economics* 105 (2014), 11–18.

An obstacle to the transition

Governments and Heads of State, international institutions, experts and multinational corporations are thus acting as though it were possible to combat climate change effectively while continuing down the path of economic and financial globalisation, which drives a limitless consumption of resources. This contradiction in terms, which has been coined the "reality gap", forms the crux of current public debate and negotiations on climate change. It is characterised by a "widening gap between an external reality, i.e., that of market globalisation and the unbridled exploitation of fossil resources" and the "arena of climate negotiations and governance".[11] This gap is blindingly obvious: in twenty-five years of negotiations on climate change – and on trade liberalisation and foreign investment – global GHG emissions have shot up by 60%.

There's no shortage of examples. On the 2nd of November, 2014, IPCC experts published a summary of their fifth report confirming the seriousness of the situation, and outlining the responsibility of States in exacerbating climate disturbances. This was the day chosen by François Hollande to fly to Alberta in Canada to encourage French companies to continue investing in tar sands oil extraction.[12] He took the opportunity to welcome the recent signing of trade liberalisation and foreign investment agreement between the European Union and Canada (CETA – negotiations began in 2009). This Canadian episode is not just an unfortunately-timed one-off incident, but conveys a strong message to the business community: there's no way private investments should be sacrificed for the sake of the climate or to comply with the recommendations of climate scientists. Instead the French State is endorsing new free trade treaties that aim to secure their investments.

Another example is that of the Canadian province of Ontario, where a programme (Feed-In Tariff – FIT) was set up guaranteeing preferential rates for solar PV and wind energy per-kWh to companies using local labour and expertise, an initiative that clearly supports local companies and which encourages them to use local manpower and supplies, instead of importing them. In two years more than 20,000 jobs were created, and it was estimated that 50,000 would be created over the long term. Japan and the European Union, representing the interests of their respective private sectors, subsequently launched a dispute settlement proceeding against the FIT programme with the WTO Dispute Settlement Body (DSB). The DSB deemed that there had been a breach of the "national treatment" rule which forbids giving preferential treatment to local companies over multinational corporations. Ontario had to suspend the program. Thousands of jobs were lost and the development of renewables was brought to a halt. The United States recently won a similar arbitration case against India.

[11] AYKUT S. and DAHAN A., *Gouverner le climat ?*, Presses de Sciences Po, 2015.
[12] SEGAUNES Nathalie, "Hollande, plus pro-business qu'écologiste au Canada", *L'Opinion*, 3 November 2014, www.lopinion.fr/3-novembre-2014/hollande-plus-pro-business-qu-ecologiste-canada-18036.

Stop trade liberalisation to get the transition moving

Trade liberalisation and foreign investment policies thus undermine ecological norms and hinder polices that advance the energy transition, giving commercial law precedence over environmental law and over the climate challenge. By supporting such a hierarchical system, the WTO and the bilateral/regional agreements that liberalise trade and foreign investment significantly hamper the ability of governments and local authorities to support the development of renewables in their respective regions and to implement policies that advocate energy conservation and efficiency. Environmental protection measures are contested and invalidated on the grounds of being a "disguised restriction on international trade". There are severe constraints on the right to regulate, which are not conducive to promoting renewables or to fostering local-based economic activities. Instead, through liberalisation of trade and capital, governments' power is dangerously being signed over to the market and to multinational corporations.[13]

INTERNATIONAL TRADE DRIVES CARBON FLOWS

Emissions embedded in traded goods and services move from one country to another by way of international trade. According to several studies, these emissions, which result from the production of these goods and services and the intermediate inputs required, represent nearly 28% of current global CO2 emissions, compared to 18% in 1990. These emissions flow between producer countries and consumer countries. Over the long term, international trade has grown faster than the GDP; emissions embedded in traded goods increase at a faster rate than global emissions: an average of + 4.3 % annually between 2000 and 2008, against + 3.4 % for global emissions. Just as there are countries that export more than they import and have a positive trade balance (trade surplus), the same principle applies to emissions, with net exporters and net importers of carbon emissions. Wealthy countries are mostly net importers of emissions. There is thus a distortion in how emissions are calculated. So China exports 395 million tonnes of CO2 to the USA, which exports only 26 million tons to China. In 1990, France released 540 million tonnes of "domestic" emissions and 659 million in total including imported emissions; In 2010, it released 480 million tonnes of domestic emissions (a 11.1% reduction), and a total of 733 million (a 11.2% rise).[1] So in France, the carbon footprint per capita is actually the equivalent of 11.6 tonnes of CO2, i.e., four times more than the official figure if we factor in emissions due to imported consumer goods.2

[1] http://www.developpement-durable.gouv.fr/IMG/pdf/Rep_-_Chiffres_cles_du_climat_France_et_Monde.pdf.
[2] http://www.terraeco.net/Le-CO2-importe-plombe-la-facture,60043.html.

[13] STRANGE Susan, *Le Retrait de l'État - La dispersion du pouvoir dans l'économie mondiale*, Temps présent, 2011.

Although with the approach of COP21, speeches are being greenwashed left, right and centre, as soon as trade and growth come into the picture, climate change is suddenly no longer an issue. Instead, those who hold the reins seem eager to save trade from any restrictions that true pro-climate policies would involve. Although European Commission's impact studies on TTIP estimate an increase in greenhouse gas (GHG) emissions, the negotiation mandate given to the European Commission by EU member countries, simply fails to show any respect for the urgency of the climate situation,[14] to such an extent that the negotiations on TTIP (EU-USA) and CETA (EU-Canada) could reinforce the transatlantic energy systems' dependence on fossil fuels, intensifying their unsustainability.

The supremacy of trade law is thus a direct attack against people attempting to shift towards societies that "as well as being fairer, are more social, united, humane and more enjoyable to live in".[15] If we wish to work towards a true ecological and social transition, we need to put a stop to the expansion of free trade and the supremacy of business law over our lives.

[14] The EU Member States finally declassified the negotiating mandate which began in October 2014, more than a year after negotiations began, http://data.consilium.europa.eu/doc/document/ST-11103-2013-REV-1-DCL-1/fr/pdf.

[15] "Call to Multiply the Village of Alternatives", www.bizimugi.eu/fr/creons-10-100-1-000- alternatiba-en-europe/.

Can the European Investment Bank Become a Leader in Climate Issues?

MARK FODOR AND XAVIER SOL

The European Investment Bank is poised to see its role bolstered in Europe with the new European Commission's investment plan. But while certain governments are jeopardising Europe's climate goals for 2030, the self-proclaimed "EU Bank" is putting an end to its climate-harming practices and has finally earned its position as frontrunner in fighting climate change among international financial institutions. Before establishing its Climate Policy, the EIB held a public consultation in the first half of 2015. The NGO Counter Balance and CEE Bankwatch Network explore the issues at hand.

The European Investment Bank (EIB), the public institution set up under the Treaty of Rome in 1958, makes annual investments of around 70 billion Euros in order to support the objectives of the European Union. Over the next three years it will have to mobilise 315 billion euros worth of additional investments in Europe to boost growth in the region. The EIB spends up to 7 billion Euros outside Europe as part of its "development" budget designated by the European Union to support investments in other areas of the world.

In recent years, the EIB has invested about a quarter of its lending portfolio to climate-oriented projects, as part of its Climate Action Programme. Although what the bank defines as relevant climate action should be met with a sceptical eye, it nevertheless remains a significant change for a bank, which, since its creation, has financed large-scale infrastructure projects such as roads, airports and pipelines. However, there is currently no guarantee that the remaining three-quarters of its investment portfolio do not undermine efforts to combat climate change.

European Investment Bank, Luxembourg City.

In the past, the EIB has financed a number of climate-damaging projects, denounced by local communities and civil society. For example, in February 2005, the EIB (which aims to reduce poverty in Africa) invested 48 million euros in the Mopani copper mine in Zambia. The European and Zambian NGOs have since then reprimanded the bank for the disastrous ongoing impacts of the project on the local population: job insecurity, forced evictions of farmers, water contamination with sulphuric acid, sulphur dioxide air pollution, resulting in serious health consequences. Closer to home, the EIB financed the coal-fired power plant in Sostanj (TES 6) in Slovenia. It is unlikely Slovenia will meet its 2050 climate targets given the fact that this plant alone will emit the maximum number of greenhouse gas emissions for the country.

Yet, in 2013, the EIB became the first major public investment bank in the world to move forward on climate issues, temporarily upholding its leadership role. The bank has indeed adopted a new energy policy and a system for measuring emissions, committing to no longer financing highly polluting infrastructures such as coal-fired power plants. This represented a victory for NGOs campaigning for the end of public funding of coal via EIB as it existed in 2010.

But although a restriction on investments in carbon-intensive energy projects represents a step in the right direction, what of the bank's ongoing support for pipelines, refineries, highways and airports – climate-damaging projects that pose a threat to the European Union's long-term goal of a low-carbon economy by 2050?

By clearly separating its climate-beneficial loans from the rest of its activities, perverse effects are achieved: the EIB boasts about its climate programme, but

the bank still loans three quarters of its research budget (around 10 billion euros each year) to the automotive industry. Moreover, efficiency improvements at coal-fired or gas-fired plants are categorised as climate-friendly investments when in fact they prolong the carbon-emitting lifetimes of the plants, leading to more emissions than are cut via efficiency measures. And the EIB's speeches remain ambiguous when it comes to new energies such as shale gas that threaten the health of the climate.

Establishing an ambitious climate policy

These questions have become even more pertinent with the new Juncker[1] Commission's investment plan, the financial backbone of which will be the EIB. While the climate summit in Paris will see climate negotiations finalised by late 2015, there are already concerns as to where environmental and climate issues will fit into this plan. The EIB's stance on these issues will be pivotal in regards to the message it transmits to other international financial institutions.

The EIB is a key player in financing the European Projects of Common Interest – a set of cross-border projects in the energy, transport, and digital industries. Among the 248 projects on the list include nearly 100 projects dedicated to the delivery of natural gas, in particular new pipelines that would bring natural gas into Europe. This represents the kind of project that only threatens to foster the current addiction to fossil fuels and delay a true ecological transition.

However if Europe wishes to make the economy carbon neutral by 2050, as it claims, climate issues need to be fully integrated into the different economic activities in Europe – including via public funding. Marginally increasing climate-friendly investments while continuing to support fossil fuels does not represent a viable solution. The EIB, whose goal is to implement European objectives through its investments must therefore establish a solid Climate Policy that undertakes to formally phase out its support for fossil fuels by 2016.

The EIB needs to thus plot out a binding roadmap, which aims to gradually increase its annual investments in renewable energy and energy efficiency projects in order to reduce energy demand and move towards upgrading to a power grid that will accelerate transition towards a carbon neutral future.

In addition, the EIB needs to adopt a Climate Policy that prioritises climate issues in its project selection process. For example, in the transport industry, the potential projects should be judged on how climate-beneficial they are, in order to reduce total greenhouse gas emissions from the bank's loan portfolio in this sector and leave carbon-intensive projects aside.

[1] Former conservative Prime Minister of Luxembourg, Jean-Claude Juncker was appointed to head the European Commission in 2014 following the European elections of May 2014.

Local energy projects awaiting funding

At the same time, the EIB's current energy-saving initiatives such as the JESSICA[2] and ELENA[3] programmes receive only limited attention from Central and Eastern European countries whose economies, including those of households and the public sector, are the most carbon-intensive in Europe. The bank's new Climate Policy should feature a better understanding of these countries' needs as well as promote already available solutions.

The EIB often attempts to justify its involvement in polluting projects by claiming that there is a lack of concrete projects in the green energy sector. However, this situation is also due to the fact that the bank favours dialogue with large companies and familiar business partners such as large national energy monopolies. This partiality towards established relationships runs counter to proactive research into projects of a smaller scale, which are more in need of public loans at interest rates lower than those charged by commercial banks.

A truly constructive Climate Policy should target small and medium enterprises such as cooperatives, community, and municipal initiatives where there is a wealth of sustainable initiatives but where funds are sorely lacking.[4]

The experience of the 2007-2013 European funding period illustrates that when small-scale energy conservation and renewable energy investment plans are launched at national scale, the financing gap immediately becomes evident.

In a number of European countries, community-led renewable energy projects are just in their early stages and access to funding is still uncertain. While many commercial banks lack know-how and interest in this type of financing, it represents a real opportunity for the EIB to develop unique expertise in supporting these kinds of initiatives and demonstrate that what currently appears as an economic niche could represent a promising sector for responsible investors.

Such projects demonstrate the enormous potential for the EIB, guided by a robust Climate Policy, to lead the way in weaning Europe from its dependence on fossil fuels and contribute to both the continent's energy security and its decarbonisation.

[2] JESSICA (Joint European Support for Sustainable Investment in City Areas) is an initiative of the European Commission developed in co-operation with the EIB and the Council of Europe Development Bank. It supports sustainable urban development and regeneration through financial engineering mechanisms.

[3] ELENA (European Local Energy Assistance) was launched by the European Commission and the European Investment Bank (EIB) in December 2009 to provide financial and technical assistance to help local and regional authorities attract funding for sustainable energy projects.

[4] See the European Commission's "Community Power" Programme: http://ec.europa.eu/energy/intelligent/projects/en/projects/co-power.

C. Financial and Technological Illusions

Nuclear is Not Good for Climate and Good for the Phase-out

VLADIMIR SLYVIAK

Anti-nuclear movement worldwide is alerted by attempts of nuclear industry to present its risky technology as climate-friendly one.

Launched in the run-up to COP21, an international campaign dubbed *Don't Nuke the Climate* warns that "the nuclear power industry will attempt to use this forum to gather formal support for their obsolete, failed technology as a climate solution" and urges to take action immediately.

The *Don't Nuke the Climate* campaign is a joint initiative of several well-known organizations, including WISE (World Information Service on Energy), Germany's BI Lüchow-Dannenberg, Russia's Ecodefense, Austria's Global 2000, the Nuclear Information and Resource Service (NIRS), France's Sortir du nucléaire, and Women in Europe for a Common Future (WECF).

French giant EDF, the world's largest power producer and nuclear power plant operator, is among COP21's major sponsors and is "shamelessly using the context of these negotiations to promote its nuclear electricity as climate-friendly and carbon-free", according to environmental groups.

A signature-collecting website[1] has been set up by the campaign to support a petition "to leave the unsustainable path of nuclear energy now"; this petition is to be taken to Paris in December. There, an anti-nuclear march is scheduled for December 12, following the close of climate talks.

Let's take a closer look into what's nuclear industry can do and if it can make any influence at all.

[1] The petition is available here: www.wiseinternational.org/campaign/sign-petition

Doel, Eastern Flanders, Belgium.

Is nuclear a truly carbon free technology?

Nuclear power could at most make a modest contribution to climate change abatement. The main limitation is that it is used almost exclusively for electricity generation, which accounts for less than 25% of global (anthropogenic) greenhouse emissions.

Doubling current nuclear capacity would reduce emissions by roughly 6% if nuclear displaced coal – or not at all if nuclear displaced renewables and energy efficiency. Doubling nuclear power generation would require building 437 reactors to add to the 437 existing 'operable' reactors (380 gigawatts). It would also require new reactors to replace shut-down reactors – the International Atomic Energy Agency (IAEA) anticipates almost 200 shut downs by 2040.

Nuclear power is actually more greenhouse intensive than most renewable energy sources and energy efficiency measures. Greenhouse emissions arise across the nuclear fuel cycle – uranium mining, milling, conversion, and enrichment; reactor construction, refurbishment and decommissioning; waste management (e.g. reprocessing, and/or encasement in glass or cement); and transportation of uranium, spent fuel, etc. and lifecycle greenhouse emissions from nuclear power will increase as relatively high-grade uranium ores are mined out and give way to the mining of lower-grade ores.

"To provide just a rough estimate of how much equivalent carbon dioxide nuclear plants emit over the course of their lifecycle, a 1,000 MW reactor operating at a 90 percent capacity factor will emit the equivalent of 1,427 tons of carbon dioxide

every day, or 522,323 metric tons of carbon dioxide every year. Nuclear facilities were responsible for emitting the equivalent of some 183 million metric tons of carbon dioxide in 2005. Assuming a carbon tax of $24 per ton – nothing too extreme – and that 1,000 MW nuclear plant would have to pay almost $12.6 million per year for its carbon equivalent emissions. For the global nuclear power industry, this equates to approximately $4.4 billion in carbon taxes per year"[2].

In this ground-breaking study, Sovacool screened 103 lifecycle studies of greenhouse emissions from the nuclear fuel cycle to identify the most current, original, and transparent studies. He found that the mean value from those studies was 66 grams of carbon dioxide equivalent per kilowatt-hour (gCO2e/kWh):

"Offshore wind power has less than one-seventh the carbon equivalent emissions of nuclear plants; large scale hydropower, onshore wind, and biogas, about one sixth the emissions; small-scale hydroelectric and solar thermal one-fifth. This makes these renewable energy technologies seven-, six-, and five-times more effective on a per kWh basis at fighting climate change. Policymakers would be wise to embrace these more environmentally friendly technologies if they are serious about producing electricity and mitigating climate change."

In a 2009 paper prepared for the Australian Uranium Association, academic Manfred Lenzen concluded that life-cycle greenhouse emissions for nuclear power range from 10–130g CO2e/kWh with the main variables being ore grades, enrichment technology, reactor fuel re-load frequency and burn-up, and to a lesser extent enrichment level, plant lifetime, load factors, and enrichment tails assay. Lenzen calculates a "worst case" – 0.01% ore grade, 75% load factor, 25 year lifetime, only diffusion enrichment, and a carbon-intensive background economy – resulting in emissions of 248 gCO2e/kWh.

Others calculate still higher values, for example by assuming energy- and emissions-intensive burial of large volumes of low-level ore, waste rock, and mill tailings, rather than the current practice of surface storage.

Lifecycle greenhouse emissions from nuclear power will increase since high-grade uranium ores are mined out. Writing in the *Journal of Industrial Ecology* in 2012, Warner and Heath stated that emissions from the nuclear fuel cycle could increase by 55–220% with declining uranium ore grades.

The vast majority of the world today's uranium is low-grade. CO2 emissions from mining, milling and enrichment of low-grade uranium are substantial, and so total CO2 emissions from the nuclear fuel cycle become greater than or equal to those of a gas-fired power station.

[2] Benjamin Sovacool, "Nuclear power: False climate change prophet?", 2008: http://scitizen.com/futureenergies/nuclear-power-false-climate-change-prophet-_a-14-2136.html

Some nuclear lobbyists claim that Generation IV fast neutron reactors would reduce emissions from the nuclear fuel cycle by using waste products (esp. depleted uranium and spent fuel) as fuel instead of mined uranium. However, one of the problems with that argument is that Generation IV reactors are – and always have been – decades away. The Generation IV International Forum states: "Depending on their respective degree of technical maturity, the first Generation IV systems are expected to be deployed commercially around 2030–2040." And a 2015 report by the French government's Institute for Radiological Protection and Nuclear Safety states: "There is still much R&D to be done to develop the Generation IV nuclear reactors, as well as for the fuel cycle and the associated waste management which depends on the system chosen."

Nuclear power is too slow and expensive while results are needed fast

Expanding nuclear power is impractical as a short-term response to the need to urgently reduce greenhouse emissions. The industry does not have the capacity to rapidly expand production as a result of 20 years of stagnation. Limitations include bottlenecks in the reactor manufacturing sector, dwindling and aging workforces, and the considerable time it takes to build a reactor and to pay back the energy debt from construction.

One constraint is the considerable time it takes to build reactors. The World Nuclear Industry Status Report 2014 noted that the average construction time of the last 37 reactors that started up was 10 years; and that at least 49 of the 67 reactors listed as under construction have encountered construction delays.

The IAEA sets out a phased "milestone" approach to establishing nuclear power in new countries, lasting from 11–20 years: a pre-project phase 1 (1–3 years), a project decision-making phase (3–7years) and a construction phase (7–10 years).

In addition to reactor construction, further 6-7 years elapse before nuclear power has generated as much as energy as was expended in the construction of the reactor. By contrast, construction times for renewable energy sources are typically months not years, and likewise the energy pay-back period is typically months not years.

Moreover, some countries are planning to replace fossil fuel-fired power plants with nuclear power in order to increase fossil fuel exports. In such cases any potential climate change mitigation benefits of nuclear power are lost.

Climate and environmental risks

Climate change is already affecting nuclear industry very much. Nuclear power plants are vulnerable to threats which are being exacerbated by climate change. A

2013 report by the US Department of Energy details many of the interconnections between climate change and energy. For example, increasing risk of shutdowns at thermoelectric power plants (e.g. coal, gas and nuclear) due to decreased water availability which affects cooling, a requirement for operation. There is also higher risks to energy infrastructure located along the coasts due to sea level rise, the increasing intensity of storms, and higher storm surge and flooding. Another thing that may happen is disruption of fuel supplies during severe storms and power plant disruptions due to drought. Also, power lines, transformers and electricity distribution systems face increasing risks of physical damage from the hurricanes, storms and wildfires that are growing more frequent and intense.

Reactors in several countries have been forced to close during heat waves, when they're needed the most. For example, France had to purchase power from the UK in 2009 because almost a third of its nuclear generating capacity was lost when it had to cut production to avoid exceeding thermal discharge limits.

Climate-related threats pose serious risks, such as storms cutting off grid power, leaving nuclear plants reliant on generators for reactor cooling.

Besides, "Water wars" will become increasingly common with climate change – in particular, disputes over the allocation of increasingly scarce water resources between power generation and agriculture. Nuclear power reactors consume massive amounts of water.

The Union of Concerned Scientists argued in a 2013 report that low-carbon power is not necessarily water-smart. Electricity mixes that emphasize carbon capture and storage for coal plants, nuclear energy, or even water-cooled renewables such as some geothermal, biomass, or concentrating solar could worsen rather than lessen the sector's effects on water. That said, renewables and energy efficiency can be a winning combination. This scenario would be most effective in reducing carbon emissions, pressure on water resources, and electricity bills. Energy efficiency efforts could more than meet growth in demand for electricity in the US, and renewable energy could supply 80% of the remaining demand.

Good news is that nuclear if not really needed because effective alternative – various renewable technologies - already in operation.

Global renewable power capacity more than doubled from 2004 to 2014 (and non-hydro renewables grew 8-fold). Over that decade, and the one before it, nuclear power flatlined.

Global renewable capacity (including hydro) is 4.6 times greater than nuclear capacity, and renewable electricity generation more than doubles nuclear gen-

eration. A growing body of research demonstrates the potential for renewables to largely supplant fossil fuels for power supply globally.

Energy efficiency and renewables are the Twin Pillars of a clean energy future. A University of Cambridge study concluded that 73% of global energy use could be saved by energy efficiency and conservation measures – making it far easier to achieve a low-carbon, nonnuclear future.

While nuclear industry was unable to solve all its well-known problems existing for over half of century, its price was all the time growing (as new generations of reactors were appearing). Price for a 1000MW reactor was around $1bln back in 1990, now it is between $6bln and $15bln. Nuclear waste problem still doesn't have final solution and it is not clear how much money will be required to in the future to treat various radioactive wastes. Accidents similar to Chernobyl and Fukushima may still happen in the future – industry was unable to design 100% safe nuclear reactor. This threat is even growing today as many countries that have old reactors in operation are attempting to extend time of this operation whereas older reactors are more likely to have various accidents.

All in all, we are speaking about technology that is risky, inefficient and very expensive. Giving it another chance to be promoted around the world as climate-friendly would not only increase existing risks, but also disrupt the development of truly climate-friendly renewable technologies. The most of developed countries are not building new reactors or totally phasing-out nuclear. And time is coming to shut down old nuclear units while no replacement is coming. It is time to switch and put an end to nuclear which was obviously one of main mistakes of 20th century.

• • •

"Nuclear monitor" by WISE/NIRS was used to prepare this article.

Monetizing Nature: Taking Precaution on a Slippery Slope

BARBARA UNMÜSSIG

In the wake of declining political will for environmental protection, many in the environmental community are advocating for the monetization of nature. Some argue that monetization, by revealing the economic contribution of nature and its services, can heighten public awareness and bolster conservation efforts. Others go beyond such broad conceptual calculations and seek to establish tradable prices for ecosystem services, claiming that markets can achieve what politics has not. However, such an approach collapses nature's complex functions into a set of commodities stripped from their social, cultural, and ecological context and can pose a threat to the poor and indigenous communities who depend on the land for their livelihood. Although the path from valuation to commodification is not inevitable, it is indeed a slippery slope. Avoiding this pitfall requires a reaffirmation of the precautionary principle and a commitment to democratic decision-making and social justice as the foundations of a sound environmental policy for the twenty-first century.

The Promises and Perils of Ecological Economism

Do nature's services need a monetary value? Over the past decade, members of the environmental community have been increasingly saying "yes," arguing that conservation policy must have an economic motive to get sufficient attention from policymakers and the public. Among the proponents of this new ecological economism, one can find two distinct approaches.

One approach seeks to monetize the value of nature simply in order to reveal its immense economic contribution to society. Its champions point out that the significant value created by nature and its diverse services to humanity often

goes unnoticed. Quantifying its full extent, they claim, would help to generate the political will to prevent the further destruction of nature and to facilitate its rehabilitation. The best way to reveal nature's value, they conclude, is to present it in the terms policymakers understand best: money.

A second group of thinkers is taking such economism even further. They argue that monetization is only meaningful and effective if there are markets to set prices for the ecosystem services in question. Markets for such commodified ecosystem services, they argue, can protect conservation policy from the vagaries of political will. Roll back bureaucratic red tape, and let the market work its magic to save nature.

The line between valuation and commodification, although clear in theory, becomes blurred in practice. To be sure, valuation alone does not inevitably entail the risks to the preservation of nature intrinsic to commodification. Nevertheless, it changes how we see and relate to nature and can inadvertently pave the way for the privatization of ecosystem services that the advocates of valuation often oppose. We must, therefore, approach the issue of monetizing nature with grave caution and not allow it to weaken the precautionary principle, nor the principle of democracy itself, both of which we need for scientifically sound and socially just environmental policy.

Where There Is No Will, Can There Be a Way?

Among nature conservationists, a deep-seated frustration prevails. Although the loss of biological diversity and the degradation of ecosystems are proceeding at an unprecedented scale, nature conservation remains politically unpopular. The implementation of the political directives and multilateral commitments from the Convention on Biological Diversity has been halting at best. The biodiversity targets of the Millennium Development Goals (MDGs) have been spectacularly missed. Funds are lacking for maintaining old, let alone establishing new, protected areas. The political will to prioritize the conservation of nature over resource extraction or infrastructure development is itself rapidly becoming an endangered species.

As a result, conservationists have sought a new strategy and have settled on monetization. Although the concept of valuing ecosystem services goes back to the 1970s and has appeared in conservation debates ever since, it has gained renewed attention over the past decade. In 2001, Kofi Annan commissioned the Millennium Ecosystem Assessment on behalf of the United Nations to reveal the unnoticed contributions of nature to human well-being[1]. Although the report, released four years later, produced no noticeable political shift in support for environmental protection, it sparked an interest in incorporating economic incentives into envi-

[1] For a recent review of such efforts, see Robert Costanza et al., "Changes in the Global Value of Ecosystem Services," Global Environmental Change 26 (2014): 152-158, www.sciencedirect.com/science/article/pii/ S0959378014000685; Millennium Ecosystem Assessment, Ecosystems and Human Well-Being: Synthesis (Washington, DC: Island Press, 2005).

ronmental policy. The year 2005 marked the launch of the EU's Emission Trading Scheme (ETS), which applied market principles to climate change mitigation. The United Nations Framework Convention on Climate Change (UNFCC) also began to develop a scheme known as REDD+ (Reducing emissions from deforestation and forest degradation), which some policymakers have sought to turn into a carbon offset market. In 2008, the TEEB study (The Economics of Ecosystems and Biodiversity), commissioned by the G8 member states, took the economistic approach of the Millennium Ecosystem Assessment a step further with its policy recommendations. The report sought to bring the economic value of nature into the calculation of national economic accounts and advocated for the incorporation of biodiversity offsets into domestic and international conservation policy[2].

Environmentalists, business leaders, and policymakers have all sought to make environmental protection an economic rather than just a political issue. The introduction of "no net loss" policies, which allow economic development to proceed as long as the net acreage of a specific type of ecosystem is maintained, has effected a paradigm shift in environmental policymaking. However, offsetting ignores how unique and interconnected biodiversity is, and it overlooks the importance of nature for local communities and the ways they suffer when their ecosystems are damaged. Land-use policies based on whether a company can pay for an offset, and not on what local communities and humanity need to survive, undermine basic rights and democratic principles.

Not Seeing the Forest for the Trees (Nor the People in the Forest)

As advocates of nature valuation point out, national economic accounts such as GDP remain blind to the services of nature. Such accounts likewise fail to distinguish between constructive and destructive economic activity with respect to human and ecological well-being. The razing of a forest contributes to the GDP whereas its protection, by leaving it untouched, will not. Revealing the full value of nature to the economy, advocates argue, would not only encourage stronger policy, but also support public mobilization against environmentally destructive policies and for environmentally restorative ones.

A number of improvements on national accounting systems have thus been proposed. The Genuine Progress Indicator, which has attracted the attention of policymakers across the United States and European Union, subtracts the costs of ozone depletion, pollution impacts, and loss of farmlands and wetlands from the total GDP[3]. The

[2] Naturkapital Deutschland—TEEB DE, Der Wert der Natur für Wirtschaft und Gesellschaft—Eine Einführung (Bonn: Federal Agency for Nature Conservation, 2012), 15, www.bfn.de/fileadmin/MDB/documents/themen/oekono- mie/teeb_de_einfuehurung_1seitig.pdf.

[3] See, for example, the FRESH (Forwarding Regional Environmental Sustainable Hierarchies) project in the EU (http://freshproject.eu/index.php) as well as recent efforts in Maryland (www.dnr.maryland.gov/mdgpi/) and Vermont (http://vtgpi.org/about.html) in the United States.

World Bank has begun a new initiative called Wealth Accounting and Valuation of Ecosystem Services (WAVES) to expand the reach and applicability of such revised economic accounting systems.

Needless to say, a deeper understanding and greater awareness of the relationship of society to nature is always welcome, but the rigor and usefulness of GDP-level information remains questionable. In order to convert the information about nature's services into a form appropriate for national accounting, analysts must aggregate the data from all existing ecosystems and allocate their increased or decreased value to each nation-state. Moreover, determining an economic value for ecosystem services requires first describing all the services provided by a particular ecosystem–a formidable task.

Delineating an individual ecosystem from the complex fabric of nature poses numerous significant challenges. For example, the provision of oxygen for humans and animals to breathe is an ecosystem service of global scale. But how do we value the contribution of individual sub-systems like a single forest to this global service? We could all still breathe if one forest is cut down, but not if all forests were cut down. At a local scale, quantifying the value of a tree is problematic because even a single tree provides many services. Its roots provide benefits to the soil, its leaves provide oxygen, and its trunk could provide lumber or paper for industry. If valuing an identifiable part of an ecosystem like a tree is difficult, valuing a regional ecosystem, such as a grassland that nourishes wild animals and stores carbon in the soil, is even more methodologically intractable. Beyond the daunting technical difficulties, embarking upon the path of valuation also changes the way we see and understand nature. In order to determine the value of an ecosystem for policy purposes, such as conducting a cost-benefit analysis for a new development project, we need to take into account all aspects of the ecosystem. But the value of the whole ecosystem to society is more than the sum of its monetized parts: reducing its value to mere monetary terms, even if it were technically practical, strips away its cultural and spiritual value. A bad policy can be replaced, but the holistic functions of nature cannot.

Interacting with ecosystems as economic entities and disaggregating them into various "services" thus puts us on the path toward viewing such services as mere commodities. Through disaggregation, each service can be rendered into a discrete monetizable "package" so that it can have its own market and its own price. Such an approach tilts policymaking in favor of the interests of the economically powerful. The least powerful actors–often local communities, indigenous peoples, women, small-scale farmers, etc.–get pushed to the margins, their voices ignored.

Offsetting schemes have increasingly entered the complex spheres of forest and habitat preservation. For example, with the backing of the country's agribusiness lobby, Brazil recently launched the Rio de Janeiro Green Exchange (Bolsa Verde), which allows individual and corporate landowners to buy their way out of previous legal obligation to maintain a certain proportion of their land in near-pristine con-

dition. The degradation of land in one area of Brazil can proceed apace with little concern, as payments for offset certificates—the conservation of an "equivalent" piece of land elsewhere in the country—simply become the cost of doing business. There are even reports of purely speculative certificate purchases where corporations buy up remote Amazonian land in order to sell forest conservation certificates to conserve land and forests that would never have been disrupted anyway[4].

Such tradable certificates raise serious questions about the imbalance of power between market actors. Many ecosystems that are still reasonably intact are home to poor and indigenous communities. Under a trading scheme, a large corporation could purchase such land for an offset, expelling those who have depended on it for their livelihoods for centuries. Furthermore, such traditional communities have a very different concept of property than Western capitalism. No single person "owns" the land when resources are treated as a commons; however, the establishment of a market for tradable certificates depends on the principle of private property, a threat to the commons governance often found in indigenous communities. The risk of abuse when forest offset certificates are applied in the context of communal ownership are thus immense, especially since these communities lack the political, legal, and economic power enjoyed by the prospective buyer.

Back to First Principles

In order to prevent monetization from slipping into commodification, we must revisit one of the hallowed principles of environmental policy: the precautionary principle. It states that when an action or policy could pose a substantial risk to the environment, a very high burden of justification should fall on those seeking to take such an action. Like the classical mantra of medical ethics, the precautionary principle insists upon first doing no harm.

The precautionary principle illuminates the clear difference between a payment for preservation and a license to destroy. For example, policymakers sometimes seek to prioritize biodiversity preservation over agricultural or infrastructural development in a certain area, where this lack of development might come at a lost opportunity cost to the farmers or other owners of the land. Thus, to compensate them for the forgone economic opportunity, the state provides a direct payment to the land owners, essentially a payment for the "ecosystem service" maintained. Such conservation payments are, in fact, central to US and EU agricultural policy. No new commodity or market is created: the public (as opposed to the private) sector is the only actor to provide the compensation, and the policy aims to maintain nature in its current state. Such payments for ecosystem preservation are quite distinct, conceptually and practically, from the implementation of market-based environmental trading

[4] KILL Jutta, "Trade in Ecosystem Services: When 'Payment for Environmental Services' Delivers a Permit to Destroy" (Montevideo, Uruguay: World Rainforest Movement, 2014), www.wrm.org.uy/html/wp-content/uploads/2014/04/ Trade-in-Ecosystem-Services.pdf.

schemes. Under a trading scheme, investors need not forgo economic development; rather, they can compensate society for the resultant destruction by paying for the preservation of an "equivalent" piece of land elsewhere. From the perspective of the developer, this new piece of land takes the form of a certificate for an ecosystem service, but it is detached from its physical reality.

Monetization can also be appropriate in the application of the "polluter pays principle," a key part of international environmental law. According to this principle, in the event of unavoidable environmental damage (such as an environmental disaster), the responsible entity must provide appropriate compensation for the value of the damage. As the damage has already been done, the demand for repayment can serve as a deterrent, raising the economic stakes of future disasters. The focus is no longer on estimating the value of the ecosystems themselves, but on the cost of the necessary repair. As the repairs proceed, the cost estimate can be adjusted appropriately, making the need to estimate the value of nature in the abstract irrelevant.

Consider, for example, the Deepwater Horizon oil spill from 2010. When the drilling platform exploded, an estimated 800 million liters of oil flowed into the sea over many weeks, in one of the worst environmental disasters of its kind. The resulting damage to the flora and fauna of the Gulf region, as well as to the surrounding fishing industry, was immense. Through 2012, British Petroleum (BP), the owner, was required by law to reimburse public and private entities a total of $43 billion for the consequential damages. The damage done to the Gulf of Mexico, however, was largely irreversible: no amount of money can completely undo the damage. The counsel of the precautionary principle remains paramount: the drilling should have never started in the first place.

Over the past several decades, we have seen not only increasing environmental degradation, but also the erosion of the concepts of the public good and collective responsibility to preserve nature. In embracing the monetary valuation of nature as a strategy for mobilizing support for environmental conservation, environmentalists are resigning themselves to a political status quo that can only comprehend value in terms of money and markets. By viewing ecosystems and their services through a pecuniary lens, monetization profoundly changes our relationship with nature, and, if taken to the point of commodification, can subject the fragility of nature's balance to the destructive logic and volatility of markets. Even though the trend toward the privatization of public goods has been pervasive over the past decades, we should not acquiesce so easily in allowing the privatization of the most basic public good of all—nature itself. We must meet the grave environmental challenges of the twenty- first century with boldness and prudence, using the precautionary principle, along with the principles of fairness and democracy, to set boundaries that human action must not transgress.

• • •

Barbara Unmüßig, "Monetizing Nature: Taking Precaution on a Slippery Slope." Great Transition Initiative (August 2014).

"Climate-Smart Agriculture": Agriculture Handed Over to the Financial Sector and Transnational Corporations

MAXIME COMBES

Behind the virtuous, sensible image evoked by climate-smart agriculture, promoted by international institutions, is the reality that it puts biotechnology techniques and carbon offset schemes ahead of the know-how and practices of farmers striving to protect the climate and the environment.

A magic formula to increase yields, strengthen resilience and reduce greenhouse gas emissions!

Global warming is provoking a number of challenges for the planet's various agricultural and food systems. Seasonal changes, increased frequency and intensity of extreme weather events and the rise in the average temperature all represent threats to the future of farming practices in many areas of the world as well as to the livelihoods of hundreds of millions of smallholder farmers who live off what they produce, often with limited resources. Climate change is also affecting industrial exports: climate change has reduced the global yield of corn by 3.8% and wheat by 5.5% since 1980, compared to how yields might have fared in the absence of warming.[1]

Agricultural and food systems are also sources of greenhouse gas emissions, some more than others. In total, global agriculture represents almost 14% of

[1] AFP, "Le réchauffement climatique a réduit la production mondiale de maïs et blé", 2011, www.ladepeche.fr/article/2011/05/06/1075829-rechauffement-climatique-reduit-production-mondiale-ble.html. Barbara Unmüßig, "Monetizing Nature: Taking Precaution on a Slippery Slope." Great Transition Initiative (August 2014).

© IFPRI -IMAGES

China, a farmer spreading pesticides.

global emissions – and nearly 25% if we include all land use – due to methane emissions (livestock and soil), nitrous oxide (nitrogen fertilisers and animal waste management) and carbon dioxide (energy consumption). Nitrogen fertilisers, particularly the synthetic variety, are a significant source of greenhouse gas emissions: they release nitrous oxide, a greenhouse gas that is three hundred times more potent that carbon dioxide. Intensive livestock farming is also responsible for a significant amount of emissions. The meat-centred diets of the world's rich thus play a big role in global warming.

Along with these factors, international institutions generally add that of world population growth. In order to feed the nine billion human beings predicted to inhabit the planet by 2050, the Food and Agriculture Organisation (FAO) recommends agricultural production be increased by 60% by 2050. Along with the World Bank, the FAO promotes climate-smart agriculture which is presented as the three-in-one solution to these challenges. According to the official documentation,[2] it could serve to 1) sustainably and equitably increase agricultural productivity and incomes, 2) adapt and build a greater resilience of food systems and livelihoods from agriculture, 3) reduce and/or remove agriculture-related greenhouse gas emissions. A magic solution to simultaneously increase yields, increase resilience and reduce greenhouse gas emissions!

[2] FAO definition: "Agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes greenhouse gases (mitigation), and enhances the achievement of national food security and development goals", *Climate-Smart Agriculture Sourcebook*, FAO, 2013, p. 548, www.fao.org/docrep/018/i3325e/i3325e.pdf.

International Alliance for Climate-Smart Agriculture

A Global Alliance for Climate-Smart Agriculture was established on 23 September 2014, at the Climate Summit convened by Ban Ki-moon in New York. It brings together[3] countries (including the Netherlands, Mexico, New Zealand, Norway, Vietnam, USA, Switzerland, Spain and France), as well as multinational corporations such as Danone and professional alliances like the International Fertiliser Industry Association and the "Fertiliser Institute", a member of which is Yara, the world's largest fertiliser company. The World Business Council for Sustainable Development (WBCSD), which includes a large number of multinational corporations, also joined this Alliance. Conservation NGOs such as IUCN (International Union for Conservation of Nature), the Nature Conservancy and the Environmental Defence Fund also joined the alliance, as well as several universities (California, Missouri, Colorado) and research centres such as CIRAD.[4] So did CropLife, the biotech industry lobby group[5], which includes multinational corporations such as Monsanto, Syngenta and McDonalds, all of which are regularly invited to international conferences on the subject.[6]

Various sourcebooks and "success stories" have been compiled, primarily by the FAO.[7] They feature what the FAO deems the ten achievements of climate-smart agriculture. They cite only projects carried out in the Global South and there is not a single example of an agro-ecological conversion of previously industrial agricultural systems either in the Global North or the Global South. There seems to be an implication that industrial agriculture is already climate-smart. Yet the fact is that it is a major contributor to climate change, and is largely responsible for the predominance of unsustainable production and consumption models, and for the disappearance of small-scale agriculture, which is extremely favourable to job creation and has little impact on the climate.

The FAO sourcebook does not rule out the use of chemical inputs (fertilisers, pesticides, herbicides, etc.) and GMOs, nor the production of industrial agrofuels. Instead, developing high-yield varieties, including through biotechnology and genetic engineering, is presented as having positive effects on food security and adaptation to climate change. While the agricultural modernisation processes of the last decades have sterilised soils, destroyed humus, and been responsible for the disappearance of many farmers, serving only to increase the wealth of agro-industrial companies, there remains the unshakeable notion that small-scale agriculture needs to be modernised and made "smart".

[3] Member list as of 19 January 2015: http://foris.fao.org/preview/42196-01e5a219d926c5f169170aa545c52fd9c.pdf

[4] www.cirad.fr/actualites/toutes-les-actualites/articles/2014/institutionnel/le-cirad-rejoint-l-alliance-globale-pour-l-agriculture-climato-intelligente-gasca.

[5] CropLife International is the international federation of multinational corporations specialising in agricultural biotechnology, and includes BASF, Bayer CropScience, Dow AgroSciences, DuPont, FMC Corp, Monsanto, Sumitomo, Syngenta, etc.

[6] "CropLife America Joins the North American Climate-Smart Agriculture Alliance", www.croplifeamerica.org/news/cla/2315-CropLife-America-Joins-the-North-American-Climate-Smart-Agriculture-Alliance.

[7] See the sourcebook: www.fao.org/docrep/018/i3325e/i3325e.pdf, and "Success Stories": www.fao.org/3/a-i3817e.pdf.

Dominance of techno-scientific fixes

Techno-scientific solutions are therefore promoted, undermining small-scale agricultural projects and food sovereignty practices. By way of technical expertise and big data analytics, the latest techno-scientific innovations for measuring emissions and CO2 reserves (all of which generate revenue for private consulting companies) promote high-yield crop varieties tolerant to herbicides and drought: biotechnology and genetic engineering are endorsed for their supposed positive effects on food security and their adaptability to climate change. Farmers are also encouraged to adopt insurance and forecasting tools in order to cope with climate-related weather events.

Much importance has been placed on certain projects that are supposedly conducive to carbon sequestration. Robert Zoellick, former American President of the World Bank, sees it as a no-brainer: "With the right soil carbon policies, you could absorb about 13 to 14 per cent of greenhouse gases, this could fit very nicely with ways to improve the productivity of the soil, improve the resiliency of the agricultural crops, there's a nice win-win venture with soil carbon and agricultural productivity".[8] However, using the soil as a carbon storehouse, in addition to being difficult and expensive to measure, is extremely volatile and may not constitute a long-term solution. The global temperature increase and changing moisture levels are likely to have a significant impact on the quantity of carbon that can be stored in the ground, both over the medium and long term. In addition, all regions considered inadequate or unprofitable carbon sinks would be neglected.

The Alliance's[9] stated objective is to change public agricultural policies (international, regional and local). It advocates developing food security programs and development aid in order to encourage the implementation of climate-smart technologies, agricultural practices and systems. The Alliance also seeks to redirect public and private financing: the International Fund for Agricultural Development (IFAD) and the World Bank announced that 100% of their agriculture investment portfolios, i.e., roughly 11 billion dollars, would be "climate-smart" by 2018. This includes funding supposed to benefit poorer farmers. Part of this funding is to be injected into developing technological research and innovation as well as into awareness-raising, popularisation and technical assistance. The Consultative Group on International Agricultural Research (CGIAR), a member of the Alliance, will allocate over ten million dollars over ten years to research projects in this field.

The advocated projects and success stories have no social or environmental criteria that ensure the projects are actually of value. The knowledge and cultural

[8] Statements made in 2011, when he was president of the WB, www.brettonwoodsproject.org/art.shtml?x=568881.

[9] See the framework document available on the FAO website: www.fao.org/climate-smart-agriculture/download/40866-0c9e778d91d19de0edba36c41b66491ad.pdf.

© IAN MACKENZIE

La Via Campesina march, Cancun, 2010.

practices of farmers are undermined and delegitimised against the the knowledge and techniques of academic or corporate experts. The wealth of agro-ecological experiences that are already around in the world, often on a significant scale, are dismissed. In the end, it is hard to see anything else in the promotion of climate-smart agriculture other than the desire to extend the carbon offset concept to the world of agriculture, trying to use the label "climate" as if it were synonymous with the pursuit of intensified global agriculture. Carbon finance and financial investors will play an integral role, as the deployment of climate-smart agriculture projects relies heavily on carbon finance mechanisms. Although agriculture doesn't currently constitute a negotiating sector in its own right in international climate negotiations, appending documents could effectively endorse the Global Alliance's agenda, despite the fact that climate-smart projects at best only shift the problem.

The Global Alliance for Climate-Smart Agriculture, which only validates the perpetuation of a productivist system, under the guise of new biotech fixes, financial engineering and techniques that aim to manipulate and reproduce living organisms, has been rejected by a large majority of NGOs[10] and social movements, including the main international farmers' movement, La Via Campesina[11]. "We, small-scale farmers, can cool down the earth," they proclaim.[12]

[10] See the rejection letter signed by a number of international NGOs: "Corporate-Smart Greenwash: why we reject the Global Alliance on Climate-Smart Agriculture", www.climatesmartagconcerns.info/rejection-letter.html

[11] Via Campesina, "Un-Masking Climate Smart Agriculture", www.viacampesina.org/en/index.php/actions-and-events-mainmenu-26/-climate-change-and-agrofuels-mainmenu-75/1670-un-masking-climate-smart-agriculture.

[12] Declaration made at International Forum for Agroecology, February 2015, http://viacampesina.org/en/index.php/main-issues-mainmenu-27/sustainable-peasants-agriculture-mainmenu-42/1749-declaration-of-the-international-forum-for-agroecology

The New Face of Geoengineering on the Road to Paris: Technofixes and False Solutions from "Plan B" to "Net Zero"

ETC GROUP

As climate negotiations repeatedly confirm that the world's largest industrial powers refuse to meaningfully reduce their climate emissions, attention has shifted to what many have called climate's "Plan B": Geoengineering refers to a set of technologies that attempt to modify the climate through planetary-scale technical interventions rather than phasing out fossil fuels immediately.

An early example was "ocean fertilization." Proponents say that dumping iron filings into the sea would stimulate plankton blooms to capture carbon dioxide and then fall to the bottom of the sea. Many strongly opposed it, saying there is no evidence that the carbon will be permanently removed, and citing unintended impacts like deoxygenation. A rogue ocean fertilization scheme initiated by Planktos, an American company, met with a major fights with civil society in 2007 and 2012. In response, moratoria prohibiting geoengineering activity have been established at the London Convention and the UN Convention on Biological Diversity.

Another plan - known as Stratospheric Particle Injection for Climate Engineering, or SPICE - aimed to test out one variation of Solar Radiation Management, which refers to various methods which propose to reflect sunlight back into space, thus cooling the planet. SPICE was suspended after a public outcry shortly after it began in 2011.[1]

[1] See GeoengineeringMonitor.org

© D.R.

Opposition has largely succeeded in making geoengineering politically unpalatable, for now. When it comes to blocking the sun or fertilizing the ocean, there are enormous uncertainties. On an intuitive level, the potential dangers of technologies that aim to modify the planet scarcely need to be pointed out, but computer models suggest that blocking sunlight could have devastating effects on weather patterns in the global South, while ocean fertilization runs the risk of creating vast deoxygenated "dead zones" at sea. A larger question is whether we want to grant control over global temperatures and weather patterns to a handful of powerful governments.

While the risks for people and the planet are grave, the fossil fuel industry continues to see the benefits of a "Plan B". Their reasoning is practical. The fossil fuel industry currently benefits from trillions of dollars in public subsidies and booked assets; indeed, their stock values are based on these. But to keep global temperature increases under two degrees, most of those assets must remain in the ground.

Short of denying the link between CO_2 and climate change, geoengineering is the last escape hatch available for the fossil fuel industry. Without a "Plan B", the fossil fuel majors could lose their estimated $5.3 trillion in subsidies, over $20 trillion in fossil fuel reserves, and $55 trillion in fossil carbon infrastructure assets.

Plan B's "Net Zero" Makeover

The term "net zero emissions" has recently burst onto the scene, backed by some major players. The World Bank, the G7, a coalition of business leaders led by Richard Branson, and oil companies like Shell have all endorsed it. Talk has begun to shift from "emissions reductions" to "net zero emissions". Why the sudden consensus?

On closer examination, net zero is actually a shiny package for variations on old geoengineering schemes. All of the scenarios put forward by the Intergovernmental Panel on Climate Change (IPCC) for net zero emissions involve extensive use of Bioenergy with Carbon Capture and Storage (BECCS).

BECCS is a multi-phase process that, in theory, removes carbon from the atmosphere. It involves harvesting biomass, burning it for energy, capturing the resulting carbon emissions before they enter the atmosphere, and then permanently storing these underground. The idea is that because the biomass crops

absorb CO_2 while they grow, repeated use of BECCS will reduce the amount of carbon from the atmosphere.

However, this technology is purely hypothetical and many scientists have raised the alarm about the implications of basing a plan to address climate change on BECCS.

ActionAid International recently released a report[2] warning that expansions of BECCS could multiply already-epidemic land grabs and food scarcity:

Adding 'net' to a goal of 'zero emissions' may prove to be a trap that delays real climate action, and which could drive devastating land grabs and hunger through the large-scale use of land, biofuels and biomass to absorb rising carbon dioxide emissions. Instead of requiring real emissions cuts, 'net' counting could allow for business-as-usual greenhouse gas emissions, offset by massive-scale mitigation through the land sector.

The IPCC's "net zero" scenarios, the report explains, would require between 500 million and 6 billion hectares of land to keep climate emissions from heating the earth by more than 2 degrees. The total area of India is 328 million hectares, which means that according to the most conservative estimate, the land grab required to get the planet to "net zero" is over one and a half times the world's seventh-largest country...

Rachel Smolker of BioFuelsWatch argues that the fertilizer use, transportation and soil disturbance involved in continuous harvest of vast areas of land for biomass will create significant carbon emissions in and of itself. The underlying assumption of the IPCC's accounting of BECCS is that fossil fuels are "carbon neutral" because more biomass will grow where crops have been cut down. However, changes in land use not to mention industrial-scale harvesting and processing operations are a significant cause of climate emissions. Additionally, forests that reach maturity store significantly more carbon than forests that are harvested regularly.[3]

There are even more challenges on the carbon capture and storage part of BECCS. To put things in perspective, burning wood for electricity generation produces 50% more electricity per megawatt than coal does.[4] Either way, Carbon Capture and Storage (CCS) has been a commercial failure to date.

Data from the world's only operational CCS plant in Canada's prairie province of Saskatchewan suggests that investing in renewables would have been a

[2] See the report: www.actionaid.org/publications/caught-net-how-net-zero-emissions-will-delay-real-climate-action-and-drive-land-grabs
[3] "Uncertainties is an understatement, when it comes to BECCS": http://dcgeoconsortium.org/2014/11/10/uncertainties-is-an-understatement-when-it-comes-to-beccs/
[4] "Biomass Incineration and Climate": www.energyjustice.net/files/biomass/climate.pdf

cheaper and far more efficient way to reduce carbon emissions. The plant in question, the Boundary Dam Power Station, will receive an estimated $2 billion in subsidies over 30 years.

What is more disturbing, however, is what renders Boundary Dam's CCS operations slightly more economical: The power company that runs the plant is selling the captured carbon to oil companies, which are using it in Enhanced Oil Recovery (EOR) techniques. EOR involves pumping liquid carbon into nearly-exhausted oil wells in order to extract hard-to-reach oil deposits. Consequently, the world's only CCS plant is actually a subsidy for extracting more fossil fuels!

The question of where to store the CO_2 poses yet another costly and dangerous challenge. Annual emissions were 33 billion metric tonnes in 2010. That means that conservatively speaking, tens of billions of tonnes of carbon will have to be stored safely and permanently underground every year for the next century.

Carbon is heavier than air, so when it escapes, it can pool in low-lying areas, creating toxic bubbles. Which countries will take on the risk and cost of storing this carbon on a permanent basis?

Pipe dream or pie in the sky?

For all of the reasons listed above, many do not believe that net zero emissions scenarios are viable or economical at anything approaching the scale required. That, however, has not stopped net zero's momentum.

David Hone, a "climate advisor" at Shell Oil, for example, was recently at pains to note that while many have interpreted the G7's widely publicized declaration about going "fossil fuel free" by 2100, the declaration *actually* advocates for reaching "net zero" by 2100. Shell's scenarios, Hone writes, "illustrate how a net zero emissions world can potentially evolve, with extensive use of CCS making room for continued use of fossil fuels in various applications."[5]

Six oil companies, including Shell, BP and Statoil, recently wrote a letter making the case for carbon pricing, which would be a first step to lay the groundwork for rendering CCS profitable. That may not be enough, however. Signs point to a need for massive public subsidies to make CCS economical.

Subsidies or no subsidies, the likelihood of building a global infrastructure that is proportional in size to the pipelines and processing devoted to oil, gas and coal extraction, is close to nil.

[5] "Four demands for Paris": http://blogs.shell.com/climatechange/2015/06/fourdemands/

Why place hope in BECCS and CCS if they won't work? Quite simply, to buy more time to extract more fossil fuels. The false hope that "net zero" represents is the best bet of the "carbon majors" -- the giant multinational extractors of fossil fuels -- to squeeze as much profit from their trillions in infrastructure, subsidies and booked assets as they can.

A possible outcome of the adoption of net zero scenarios is that we'll end up considering the least-desirable form of geoengineering: Solar Radiation Management (SRM). This would involve blocking sunlight by spraying reflective agents, likely sulphur dioxide, into the stratosphere.

Computer models suggest that SRM would have drastic and unpredictable effects on rainfall and weather patterns in Africa, Asia and South America, among others. Naturally, we have no idea what the actual effects of long-term tinkering with the atmosphere and sunlight will actually be.

The United Kingdom's Royal Society believes that the need for SRM may be unavoidable, and it has been working with counterparts in other countries to explore ways in which its use should be governed. Earlier this year, the US National Academies of Science gave the technique a tepid endorsement, and the Chinese government announced a major investment in weather modification, which could include solar radiation management. Russia is already at work developing the technology.

By the time BECCS and CCS have failed, it will likely be too late for anything other than full-scale SRM. That is, of course, if net zero's proponents are able to sell it as a substitute for absolute cuts to climate emissions from fossil fuels.

From Pontification to Liberation

With climate meetings in Paris looming, where does the geoengineering gambit leave us ? Net Zero appears increasingly likely to be casually adopted as a set of integral assumptions for addressing climate change. If that happens, those participating in the COP process will have many questions to ponder.

Pope Francis' unlikely rehabilitation of the core of "Liberation Theology" – the radical Catholic message of Latin American clergy of the 1960s and 70s that called for social change – has come at an opportune time. In 2014 and again this year, however, Francis met with social movements and their supporters (including ETC Group), to discuss what some have described as a second phase of Liberation Theology. The Pontiff's new encyclical, Laudato Si', certainly echoes the philosophy's emphasis on social justice.

While the focus is on climate change and the need for revolutionary action to

protect "Sister Earth"[6] and humanity, the Pope deals harshly with the fossil fuel industry, demanding an urgent withdrawal from fossil carbon[7] and rejecting industry's enthusiasm for carbon credits as a dangerous distraction.[8] But he goes beyond the Old Fossils to broadly confront corporate power and calls for an end to private-sector dominance over national governments. Pope Francis wants a stronger multilateral system[9] in which governments recover their policy role and where popular participation is encouraged.[10]

Pope Francis critiques the corporate control of technologies in general and warns repeatedly that governments and industry's "blind confidence" in techno-fixes is dangerous.[11] An entire chapter of the encyclical focuses on the promises and threats of technology and the risk for humanity of unassessed technologies.[12] Recalling his mentor, Pope John XXIII in the early 60s, Francis gives priority to socioeconomic solutions to social problems as embraced by Liberation Theology over Liberation Technology – the treacherous assumption that humanity can let industry invent technological responses for all our economic, environmental and equity issues. The encyclical makes a clear call for technology assessment and the Precautionary Principle.[13]

This is a message for the climate change negotiators who will be in Paris at the end of this year. Clearly, Francis doesn't buy the bold assertions of the G7 and the fossil majors that a combination of voluntary reductions and the invention of mythical unicorn technologies means that the companies can continue to extract their trillions of dollars in carbon assets and still reach "Net Zero" by 2100. Francis has been joined by many environmentalists and economists – including the Financial Times – in acknowledging that the conclusions being crafted for Paris are likely to increase CO2 levels from today's 400 ppm to 700 ppm by 2100 and increase temperatures well past 2°C (as the G7 have pledged) to at least 3.5°C.

Although the encyclical does not address climate geoengineering or, more specifically, the threat of planet-scale techno-fixes such as Solar Radiation Management or BECCS, its tone leaves little doubt that Francis would not welcome a technological elite controlling the Earth's thermostat.

This Pope is not opposed to science and technology. Indeed, he is throwing his weight behind the independent science-based IPCC and Francis strongly supports the role of science in addressing climate change and many other social issues. Mindful of the Church's experience with Galileo and Copernicus, the

[6] Laudato Si', paragraph 53
[7] Paragraph 26
[8] Paragraph 171
[9] Paragraph 175
[10] Paragraphs 14 and 135 but throughout the text
[11] Paragraph 14
[12] Paragraphs 102 through 121
[13] Paragraphs 135, 177, 186, 187 and 188

Pope's clearly on the side of science – but not on the side of profit-driven and industry-directed technologies that may have direct or collateral damage for Sister Earth and her citizens.

This encyclical will certainly influence the negotiations in Paris but it will also be remembered for its broad critique of corporate control over both governments and technology. However, its greatest legacy may be in the Pontiff's call for a renewed multilateral system led by governments and engaging civil society. As the World Social Forum warned earlier this year, COP21 in Paris in December – if it doesn't meet the expectations of the Pope and of the people – should not be allowed to bumble on to COP22 next year but should lead to COP1 – a Congress of the Peoples with a new start in a revitalized United Nations.

If the Paris Conference adopts some version of Net Zero as its goals and attempts to portray it as a legitimate solution to climate change, it will bend the credibility of the UNFCCC process to its breaking point. What happens when the carbon majors take us past it? The time has come to envision and build a process that can go beyond deferrals and technofixes and address the issue of CO2 emissions at its source.

02

LOCAL MOBILISATIONS FOR A TRANSITION TOWARDS FAIR AND SUSTAINABLE POST-CARBON SOCIETIES

Given the evident resistance to change by national governments, their multilateral bodies and the economic entities that influence them, what are the levers to accelerate the energy transition? In a global context where the dominant paradigm can be increasingly summed up by the equation "happiness = consumption", we need to empower citizens by giving them the means to access alternatives that can make a difference, and open up horizons for a better quality of life.

Beyond all the false solutions based on the premise that technology, the market and financial mechanisms will somehow naturally protect the planet from climate change, there exist some real alternatives out there. A number of local authorities are already experimenting with new systems of production and consumption, and are promoting sustainable alternatives. In a number of sectors including that of agriculture, energy, waste management, transport and construction, citizens all over the world are conceiving and fuelling initiatives that are playing a part in reducing greenhouse gas emissions and improving people's quality of life.

The current actions taking place are living proof that, all over the world, whether at local, regional or global level, men and women are taking action, driven by the desire and the need to build societies that are fairer and more respectful of the planet's limits. The success of these initiatives helps to shift the balance of power towards the transition.

A. Towards New Urban and Energy Governance Patterns

The Local Government Voice in International Climate Processes and Negotiations: a History of Climate advocacy

INTERNATIONAL COUNCIL FOR LOCAL ENVIRONMENTAL INITIATIVES (ICLEI)

Why giving a voice to local governments matters

The importance of hearing the voice of local government at the international climate action debate, and bringing its perspectives into the process, can best be explained by tracing the history of local government climate leadership and advocacy.

The year is 1990. Following the release of the Brundtland Commission Report three years prior, which called for multilateral climate action, for the first time in history, 200 city leaders from over 50 countries gathered at the United Nations Headquarters on a New York September, with a common mission: "to build and serve a worldwide movement of local governments to achieve tangible improvements in global sustainability with special focus on environmental conditions through cumulative local actions." This marked the Founding Congress of the International Council of Local Environmental Initiatives, known today as ICLEI - Local Governments for Sustainability (ICLEI).

The underlying purpose of ICLEI's inception was to unite cities across the globe and, for the first time, bring the voice of local governments to the global arena calling for what we today call "sustainable urban development". The timing of ICLEI's formation could not have been more vital.

The 1992 UN Earth Summit in Rio de Janeiro resulted in the three key "Rio Conventions", which continue to anchor and drive international climate change policy today:
• The United Nations Framework Convention on Climate Change (UNFCCC)

- The Convention on Biological Diversity (CBD)
- The United Nations Convention to Combat Desertification (UNCCD)

ICLEI played a unique technical and coordinating role in the establishment of local governments as a keystakeholder group in these UN Convention processes, especially in the Framework Convention on Climate Change (UNFCCC) and the Convention on Biodiversity (CBD). Additionally, ICLEI worked closely with the UNCED Secretariat to develop the "Local Authorities Initiatives in Support of Agenda 21", a crucial chapter of the Convention's Agenda 21 action plan for global action on sustainable development.

The outcome of the Earth Summit was monumental, in that Local Authorities were included as one of the nine Major Groups of Agenda 21. This placed sub-national governments, along with Local Government and Municipal Authorities (LGMA), as one of the few recognized UNFCCC Constituencies.

Both the UNFCCC and the Kyoto Protocol, however, overlooked the critical role that local and sub-national governments (should and do) play in the reduction of GHGs and in tackling climate change adaptation. The lack of reference to local and sub-national governments, once again resulted in national government-centric strategies.

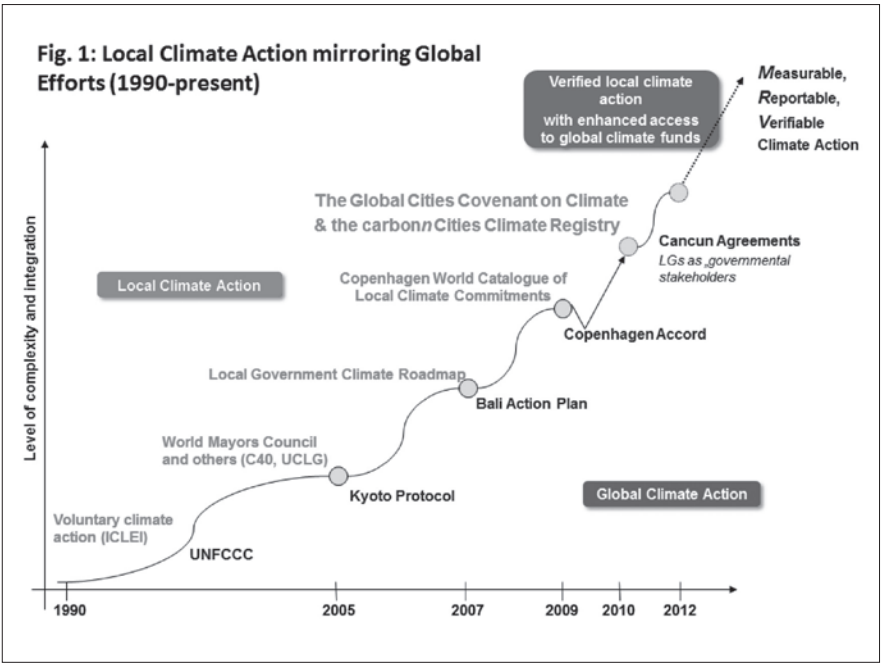
Launching local government leadership – the Municipal Leaders' Summits

In response to the slow uptake of local government within the national-level climate frameworks, in 1993 ICLEI provided the launching pad for multi-level climate leadership at the Municipal Leaders' Summit on Climate Change[1] in New York.

The Summit launched the Cities for Climate Protection (CCP) Campaign as the global response of local governments to the adoption of the UNFCCC. Based on the achievements of ICLEI's Urban CO_2 Reduction Project in 1991, the CCP Campaign[2] focused on local climate action, aiming to strengthen local governments' ability to develop and implement municipal energy policies that reduce urban GHG emissions. It offered a 5-milestone process addressing progress in climate change mitigation.

Following, the Second Municipal Leaders' Summit on Climate Change[3] was convened in Berlin in March 1995, which coincided with the first Conference of Parties (COP 1) to the UNFCCC. The Summit resulted with the establishment of the Local Authorities and Municipal Authorities (LGMA) Constituency, alongside

[1] ee the declaration: archive.iclei.org/documents/Global/1st_Summit_Declaration.pdf
[2] See the campaign: www.iclei.org/fileadmin/user_upload/ICLEI_WS/Documents/advocacy/Bonn_2014/ADP2.5-Support_Files/ICLEI_TheBirthofCCP_1993.pdf
[3] www.archive.iclei.org/index.php?id=9735



business and environmental NGO groups. A significant result of the Summit included "The Communiqué" to the COP, on behalf of 150 municipal leaders from over 50 countries urging that the COP create a local authority subsidiary body to support efforts to help UNFCCC signatories comply with the treaty.

Copenhagen or bust – exhibiting local advocacy climate leadership from 1995 to 2007

Since 1995, ICLEI has been present at each annual UNFCCC Conference of the Parties. ICLEI has brought local leaders to these events, and organized side-events and meetings championing local authorities and providing them with platforms for the recognition of their ambitious climate mitigation and adaptation actions.

Regardless of the event or location, the message remained consistent: local governments act and have committed to substantive GHG emissions, the time has come for national governments to recognize these efforts, to follow suit and support their cities' further ambitious efforts. This early advocacy was based on strong local action and a wide variety of regional and national programs to support cities' climate action, in measureable and reportable ways.

The Local Government Climate Roadmap

In 2007, when the impending expiration of the Kyoto Protocol became apparent, climate negotiations entered into a new phase. The UNFCCC COP13 in 2007,

hosted by the government of Indonesia in Bali, saw commitment from various nations through the development of the Bali Action Plan. The Bali Action Plan, which pushed national governments to adopt "measureable, reportable, and verifiable" GHG mitigation actions, laid the foundation for further progress on greenhouse gas mitigation and a post-2012 climate agreement to come. As the UN's Roadmap established in Bali did not include sub-national governments, ICLEI responded to the void by designing the "Local Government Climate Roadmap" as a parallel and accompanying process.

The efforts from Bali to Copenhagen were a wake-up call for other global and regional city networks to become engaged, also with some of them registering as UNFCCC Observers. ICLEI facilitated the creation of the Local Government Climate Roadmap as a joint effort of interested city networks as a united voice aimed to give recognition to local and sub-national governments as key stakeholders in dealing with the consequences as well as causes of climate change.

Roadmaps for local-global Advocacy and Action

The Local Government Climate Roadmap[4] (LGCR) is a coalition and advocacy process of local governments and municipal authorities as well as their networks – established by ICLEI in 2007 to **recognize**, engage and empower local governments in global climate negotiations. ICLEI facilitated the LGCR, which is supported by numerous other city networks, such as United Cities and Local Governments (UCLG), Metropolis and CityNet to guide nations in determining a global action plan towards a post-Kyoto framework on climate change that involves and benefits from the potential of all stakeholders.

Throughout the years, the LGCR gives voice to local authorities mirroring global climate negotiations and efforts

In 2009, in Copenhagen, the largest ever delegation of local government representatives at a climate COP and the second largest delegation at this COP as such: 1,200 people of which 100 were mayors expressed commitment and most of them came to Copenhagen. The event saw the launch of the Copenhagen World Catalogue of Local Climate Commitments, the first ever online database to centralize 3,000 climate local climate action commitments (this Catalogue is now part of the carbonn Climate Registry[5]).

In 2010 in Cancun Mexico, the Global Cities Covenant on Climate, the Mexico City Pact and the carbonn Climate Registry (cCR) were launched a few days prior to the COP16 in Mexico City linked to both the UCLG World Summit and a side-event with mayors and parliamentarians organized by ICLEI and Mayor

[4] www.iclei.org/climate-roadmap/home.html
[5] carbon*n* Climate Registry (cCR) *: www.carbonn.org*

Ebrard from Mexico City, by then Chair of the WMCCC (World Mayors Council on Climate Change). The Mexico City Pact united local governments to commit to measurable, reportable and verifiable (MRV) climate targets and report developments on commitments, greenhouse gas inventories and climate actions (mitigation and adaptation). The year after in Durban, South Africa (COP17), ICLEI and South African partners launched the Durban Adaptation Charter (DAC) which has since furthered local governments' commitments to up-scaling local climate change adaptation and resilience.

In 2012 in Bonn, ICLEI and C40, with the World Resources Institute (WRI), launched the Pilot Version 1.0 of the Global Protocol on Community Scale GHG Emissions (GPC), as a GHG accounting and reporting framework for cities and communities. This milestone set the scene for further development on technical support offered to local governments.

Reinforced ambitions – towards a new climate deal in Paris 2015

In 2013, the Nantes Declaration of Mayors and Subnational Leaders on Climate Change[6] was adopted sending a strong and clear signal from the LGMAs to their national-level counterparts. The new aim of this second phase of the LG Climate Roadmap, building on the focus to recognize, engage and empower local governments, was to reinforce local and national government leadership in raising levels of ambition towards a new climate deal in Paris in 2015.

In parallel to ICLEI's advocacy work, ICLEI has offered its numerous programs for Low Carbon Cities[7] as well as a host of support tools to further cities' planning, implementation and assessment of sustainable, low-carbon endeavors. In the field of climate change mitigation this includes GHG inventory tools such as the Harmonized Emissions Analysis Tool plus (HEAT+[8]) and the international reporting platform for local and sub-national climate action, namely the carbonn Climate Registry (cCR).

This platform sets itself apart from fellow city-level registries through its stringent mission to enhance transparency, accountability and credibility of local climate action by capturing cities' commitments towards Measurable, Reportable and Verifiable (MRV), quantifiable climate activities, in order to shine a spotlight on local action at the national and international level. The voluntary reporting program jointly promoted by championing cities and partners of the Local Government Climate Roadmap, has thus far elicited inspiring results.

[6] See the declaration : archive.iclei.org/fileadmin/user_upload/documents/Global/initiatives/2013_Nantes_Summit/WorldMayorsSummit2013_Nantes_EN_Declaration_only.pdf
[7] See the programmes : www.iclei.org/our-activities/our-agendas/low-carbon-city.html
[8] Heat +: www.iclei.org/heat

As of 2014, over 500 cities and subnational authorities worldwide reported to the cCR representing over 12% of the global urban population. In total over 5,000 climate mitigation and adaptation actions have been reported – 1,000 of which are related to climate and energy commitments mitigating the emission of 2.28 gigatonnes of GHGs (GtCO2eq). According to the 2013 Annual Report of the carbonn Climate Registry (cCR), more than half of the reporting cities (54%) have reported reduction ambitions of above 1% per year, exceeding the value of even the most ambitious national governments under the Kyoto Protocol.

ICLEI has numerous global and regional programs to support cities develop their climate action strategies and planning, such as the Municipal Climate Action Plan (PACMUN - *Plan de Acción Climática Municipal*) which is a program led by ICLEI's Mexico, Central America and the Caribbean Secretariat (ICLEI-MECS), supported by the Mexican federal as well as subnational governments, and the British Embassy's Mexico Prosperity Fund.

Current landscape of local government climate advocacy

Today, the significance of sustainable cities as a key determinant of a sustainable future for our planet has become widely accepted. This recognition is largely due to the collective efforts of city networks such as ICLEI, Metropolis, UCLG, C40 Cities Climate Leadership Group (C40), and country networks, to continue showcasing cities' ambitious achievements and fighting for their footing in the international political climate terrain. However, continued efforts are required to ensure that the crucial role local governments and their advocacy networks play in shaping the global climate strategy cannot be overlooked.

The last two decades of climate advocacy history reveals that tackling local climate action globally is a task best accomplished together. It is difficult to imagine, for example, that until 2008 there were only very few local government related organizations registered as Observers to the UNFCCC, whereas today 20 networks of cities and sub-national governments stand with ICLEI in the LGMA[9] to call for improved vertical integration of ambitious climate commitments and action between different levels of government.

Given the rich history of local climate advocacy, it is clear that local governments do not wait for change – they create it.

[9] See the action plan: www.iclei.org/climate-roadmap/advocacy/unfccc/lgma-at-unfccc.html

The Covenant of Mayors Unites European Local Authorities in their Commitment to the Climate and Sustainable Energy

ENERGY CITIES

Early beginnings

Following the adoption in 2008 of the Climate and Energy Package, the European Commission supported the launch of the Covenant of Mayors, a bottom-up movement, which is now endorsed by all European institutions and a large spectrum of stakeholders.

The concept, which is ambitious, is to unite all European cities in committing to a collective goal to achieve at least a 20% reduction of CO_2 emissions by 2020. Nearly 200 cities had already signed the Covenant by late 2008. Paris, Frankfurt, Madrid, Brussels Capital Region as well as the Latvian and Hungarian capitals Riga and Budapest, were among the first to commit. Cities see this direct and unique partnership with the European Commission as a driving force in potentially accelerating their energy transition.

In practice, the initiative was launched in 2009 in EU countries with the establishment of a Covenant of Mayors Office. A consortium of five major local authority networks has been selected to run this office: Energy Cities (who heads), Climate Alliance, CEMR, EUROCITIES and FEDARENE. The Covenant of Mayors Office (CoMO) is in charge of the initiative's general coordination. Its responsibilities include organising workshops and webinars that support stakeholders, managing communication activities, providing links to other European initiatives,

© D.R.

The first Covenant of Mayors took place in 2009 at the European Parliament in Brussels.

providing technical support to various stakeholders involved in the initiative, and organising the key event: the Ceremony of the Covenant of Mayors.
The first Ceremony took place in 2009 in Brussels. It was hosted by the European Parliament, which gave it a prestigious and ceremonial dimension: mayors from 250 European cities came together to affirm their commitment to climate protection and sustainable development. Three other Ceremonies have taken place since, each with a growing success. The next Ceremony will take place on the 15th of October 2015 and is open to all signatories of the Covenant of Mayors.

The stakeholders and their commitments

All local European authorities, regardless of their size, are eligible to become signatories of the Covenant. They must be democratically constituted with/by elected representatives. Smaller local authorities can also join forces as a group of signatories that together undertake to meet all obligations of the Covenant. Local authorities that wish to sign the Covenant must submit the Covenant adhesion form to their municipal council (or equivalent decision-making body) for examination.

By signing the Covenant, local authorities voluntarily commit to reducing at least 20% of their CO_2 emissions by 2020 through a comprehensive set of measures outlined in their Sustainable Energy Action Plan (SEAP) . The SEAP must be submitted to the Covenant of Mayors Office in the year following the signing. The signatories must first make an assessment of their CO_2 emissions. Energy consumption and CO_2 emissions at local level obviously depend on a number of factors: Economical structure, level of economic activity, population, density, characteristics of the

building stock, usage and level of development of the various modes of transport, citizens' attitudes, climate, etc. Some factors can be influenced in the short term (such as citizens' attitudes), while others can only be influenced in the medium to long term (energy performance of the building stock). The Baseline Emissions Inventory (BEI) quantifies the amount of CO_2 (or CO_2 equivalent) emissions due to energy consumption within the territory of the Covenant signatory. It identifies the principal sources of CO2 emissions and their respective reduction potentials. In addition, every two years after the date of submission of the SEAP, each signatory must submit a monitoring report of their action plan.

When a local authority is interested in becoming a signatory but is lacking certain skills or resources it can receive support from other administrations with such skills: Territorial Coordinators and Promoters of the Convention. The Covenant Coordinators are decentralised authorities (regions, provinces or groups of local authorities) or national public bodies such as national energy agencies. They provide strategic direction and technical and financial assistance to municipalities that have signed the Covenant of Mayors. The Promoters (of which Energy Cities is one) are regional, national, and European associations and networks of local authorities that maximise their lobbying action and their communication and networking activities in order to promote the initiative and support the commitments of their signatories.

On the ground...

To date, the Covenant of Mayors has nearly 65,000 signatories, representing over 207 million citizens throughout the EU and beyond. Effectively, countries in the Mediterranean area[1], in Eastern Europe and in Central Asia[2] are eligible under related initiatives launched by the European Commission. More than 4,700 signatories have already submitted their Sustainable Energy Action Plans, with an average 28% CO_2 reduction target by 2020. Asked about the Covenant of Mayors, President of the Urban Community of Lille Métropole, Martine Aubry welcomed the ambitious goal that the local authority has set for 2020: a 30% reduction in CO2 emissions over 1990 levels. "The Climate Plan approved on the 18th of October 2013 by Lille Métropole is testament to the great ambitions for our region's future by putting the energy transition in motion [. . .]. In 2007, we already succeeded in reducing the region's emissions by 21%. In addition, we are undertaking to increase renewable energy five-fold by 2020 through, notably, the development of heat networks."

Significant progress in reducing greenhouse gas emissions and in producing renewables has already been made through the Lille Métropole Action Plan. "In terms of urban planning, the city's "dense" multi-functional aspect, which is less transport-intensive, has paved the way to a more efficient interconnection between living environments and public transport networks, and has led to the

[1] CES-MED (Cleaner Energy-Saving MEDiterranean cities) Initiative: www.ces-med.eu/.
[2] Covenant of Mayors – East Initiative: www.soglasheniemerov.eu/index_ru.html.

Lille has a bike-sharing scheme.

development of groundbreaking projects such as eco-districts," says Martine Aubry. "In terms of waste collection and treatment, the Lille Métropole organic recovery centre produces biogas which is then fed back into the natural gas network and used as fuel for the bus fleet. In the area of transport, we promote carpooling, are improving the subway network, are developing a high- standard bus service and have a bicycle-sharing scheme."

In late 2014, Vila Nova de Gaia was the first local authority to submit a monitoring report of its Sustainable Energy Action Plan. The Portuguese city, which has 300,000 inhabitants, undertakes to achieve a 25% reduction in CO_2 emissions by 2020 (over 2005 levels). "Our main results came from actions related with a rising share of renewable energy production from landfill biogas and solar systems, reduction of CO_2 and energy intensity on the transport sector by the expansion of metro lines and improving energy efficiency in buildings," says Eduardo Vítor Rodrigues, Mayor of Vila Nova de Gaia. However, the Mayor acknowledges the the economic crisis has slowed progress. "The financial crisis has worsened financing conditions for municipalities. On measures promoted by the private sector, where the municipality is more of a facilitator, challenges come from transforming these approaches into something that is economically feasible for the market." The city is, however, well on its way to achieving its goals as it has already reduced emissions by 16%, as outlined in its monitoring report.
In several countries, (Netherlands, Germany, France, Romania, Poland, Italy, Sweden, Austria and Slovakia) cities have formed signatory clubs in order to discuss their practices.

The outlook

The Covenant of Mayors was able to preempt what is today a central aspect of European climate and energy policies: the involvement of local players. The initiative has received international recognition, with articles in highly-respected newspapers such as the *Guardian* and the *Economist*, and has received extensive support from European institutions. In an interview with the European video platform ViEUws in 2014[3], Marie Donnelly, director for energy transition at the European Commission, stated that the Covenant of Mayors was "perhaps of one the best illustrations of subsidiarity and local people power". More recently, Maroš Šefčovič the Vice-President of the European Commission, in charge of Energy Union, expressed pride in regards to the initiative at the World Summit on Climate and Territories, held in Lyon on July 1st and 2nd in the run-up to the United Nations Climate Change Conference (COP21). According to Šefčovič, the Covenant is an excellent example of the crucial role local authorities play in transitioning towards a low-carbon economy: "The Covenant of Mayors initiative represents a massive positive movement… It helps to incorporate cities into the EU policies".

There is, of course, always the need for further support for signatories of the Covenant of Mayors, and there is room for improvement in regards to certain methodologies. Yet the initiative's enormous success and the growing number of local authorities that wish to join are proof that we must continue. Several members of the Commission and the Committee of Regions have already expressed their desire to see the Covenant extended globally. The Commission adopted a new Energy-Climate Package for 2030 last October and has just announced a CO_2 reduction target of 40% by 2030. Following this announcement, it conducted a survey on the future of the Covenant of Mayors[4], open to all stakeholders. Should the initiative be continued after 2020? If so, what should the objectives be? Should it include other commitments, such as those regarding adaptation to climate change?

The survey is open until 23 September 2015 and the results, which are expected to be published in October, will feed into the own-initiative opinion on the Covenant future that the Committee of the Regions is currently preparing and will provide inputs to the European Commission's policy on the initiative.

REFERENCES

- Covenant of Mayors website: www.eumayors.eu.
- Interview with Martine Aubry, President of Lille Métropole, Covenant of Mayors newsletter, February 2014.
- Interview with Eduardo Vítor Rodrigues, Mayor of Vila Nova de Gaia, Covenant of Mayors newsletter, December 2014.
- GILLMAN Steve, "Portuguese City Leads Way In Carbon Reduction", Revolve, http://revolve.media/portuguese-city-leads-way-in-carbon-reduction/.

[3] ww.vieuws.eu/energy/commission-seeks-to-enhance-energy-security-through-its-covenant-of-mayors/.
[4] Further information on the survey: www.energy-cities.eu/Lancement-de-la-plus-grande.

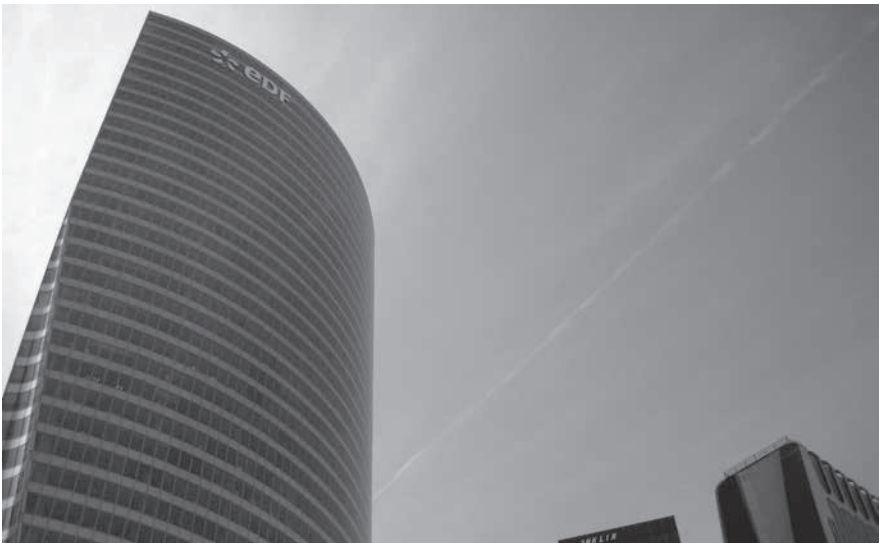
Energy and Democracy in France

RAPHAËL CLAUSTRE

With the new energy transition law, France is facing a whole host of ambitious objectives, some of which represent a radical shift. These include cutting total energy consumption by half between 2012 and 2050 and developing renewable energy so that it represents 32% of our energy mix by 2030. However, by focussing on technical tools as the only means to reach this milestone, the law is neglecting that of utmost importance: the need to define a new regional governance adapted to these objectives.

An archaic system

In 1946, the French energy system that survives today had just been set up: major national companies were created – one for electricity (EDF) and another for gas (GDF, which then became GDF Suez), based on fairly recent local developments in energy infrastructure. The goal was to ensure widespread access to electricity and gas as well as the major undertaking of constructing the grid and overseeing production. The years 1985-2000 did not fundamentally change the highly centralised way in which the energy system was structured, but the government lost interest after electrification was completed, and due to the after-effects of the oil crisis. The power gap thus left open by the political world was quickly filled by the executives of these major national companies as well as by the administration. Changes in the role and status of state-owned energy companies from 1996 onwards, and the way in which the political power partly reclaimed energy issues through the 2005 programme laws identifying energy policy goals and through the 2009 and 2010 "Grenelle" laws (energy transition laws), did little to change the basic principle: energy is a national-level matter. Our energy system is designed so that fossil and electric energy (primarily nuclear) is mass-produced or transformed, and then distributed, via major transmission grids and a poorly-maintained distribution network, to consumers (users and clients) that have little awareness of their responsibilities.



EDF Tower, La Défense, Paris.

Transition: restoring order in governance

The way in which the French energy system is organised is in every respect the polar opposite of anything resembling what we call today the "energy transition". The potential for energy efficiency measures and for investment in renewables is enormous. Renewable energy also has the benefit of being available all over the planet, which is not its weakness but its strength: it is better distributed than any mineral or fossil resource. It will never trigger geo-political conflict. And the fruit of the "energy windfall" can be shared evenly between regions, giving value to a region through its energy potential. However, utilising energy of a dispersed nature requires everyone's involvement: citizens and households as well as companies and local authorities. It is about turning the consumer into a conscious citizen, and turning companies that are unfamiliar with energy issues (aside from electro-intensive industries, which are particularly affected) into responsible and committed economic players, both in how they consume energy and in tapping opportunities for new activities; It is also about turning local authorities into the drivers of this transition, as reflected in the way in which they use energy, in the management of their own assets, and through their policies on issues such as urban planning, transport, housing, citizen information, etc.

Energy transition today requires a radical shift in the way in which we conceive energy. It requires much more than a simple technological change in our production mix; it involves building an energy supply based on our needs, and then, using efficient transformation processes, determining our production. From establishing our needs to production, this energy system should meet the challenges of our time and respect the principles of sustainable development.

In terms of the environment, it involves reducing greenhouse gases and minimising industrial risks, particularly those involved in nuclear energy, ensuring minimal impact on biodiversity, land management, etc. The "social pillar" involves ensuring an acceptable and comfortable level of energy for everyone, helping low-income households to break their dependence on expensive, polluting energies through emergency measures that prevent fuel poverty, and most importantly, ensuring they have to access to highly energy efficient housing and equipment. Lastly, opportunities for economic development should include energy-efficient industrial production and production of renewables, farming and forestry activities, as well as the whole fabric of SMEs in sectors such as construction, services and engineering.

Regions play a pivotal role in citizens taking energy issues into their own hands

We will only be able to adopt appropriate lifestyles by putting energy – the basis of all life and activity – at the centre of our everyday lives. It is thus necessary to work at the level of population catchment areas, which are more or less embodied by inter-communal structure, in order to assess their potential for energy efficiency and electricity production from renewable sources. Authorities should then prioritise the development of this potential, particularly in decisions concerning energy and climate change, urban planning and land management, and also in related areas such as economic development, agriculture, training, transport, and housing policies. It is pivotal that all citizens and players are given adequate information and support in order to ensure that local energy policies are successful, as illustrated by a wealth of examples both in Northern Europe and in France.[1]

Governed by this new logic, each region will endeavour to meet its own needs (and even export energy) by minimising consumption and maximising on local renewable resources in order to become an "energy-positive region".[2] The ensuing changes will thus primarily involve the distribution network: it should become a technical tool used to implement local policies relating to all forms of energy distributed through the network: electricity obviously as well as gas (fossil methane and renewable biomethane) and heat. The network should be equipped to handle renewable production that is either very densely distributed and decentralised, or more significant in terms of capacity in some places. It should also support consumers, households and businesses to manage their own consumption. In addition, it should provide the local authority with all information on consumption profiles so that it can adapt its policies to the region and assess their effectiveness. Lastly, some balancing will be required on the local loop so as to ensure this communicating network is "smart", and allows for storage, reduces unnecessary consumption, etc.

[1] www.transition-energie.fr.
[2] www.tepos.fr.

The transmission grid will, under these conditions, represent primarily an exchange tool between regions, to facilitate trade, solidarity, and an inter-regional balance – all of which fall under the jurisdiction of the state. Although the distribution network is an extremely important tool for local energy policies, and jurisdiction over the public distribution of energy is conferred to local authorities under the "French Energy Code" (*code de l'énergie*), paradoxically this jurisdiction can not be exercised over electricity and gas. Indeed, the mandatory concession system (to ERDF for electricity and GDF Suez for gas) strips local authorities of their legal jurisdiction and prevents politicians from exerting any democratic control over the distribution network, with the exception of those cities that had set up a local public company before the 1946 nationalisation law![3]

Navigating between the Region, The State, and the Union European

The flourishing of initiatives, creations and solutions at local level should be coordinated and harmonised at an appropriate scale: the State cannot be directly involved in between 500 and 2,500 local energy policies. It is thus up to the regional level to ensure these policies are being put into action, and assist in carrying them out, while ensuring they are consistent with national policies. By encouraging initiatives, by promoting and advocating innovative experiences of pioneer local authorities, and by empowering all territorial areas, the Region should advocate, support and monitor regional energy policies. And in order to ensure consistency, renewable energies and energy efficiency should obviously be put at the forefront of its approach, with objectives set out in regional planning such as the Regional Climate-Air-Energy Plans in France. But instead of being technical documents ensuing from national policy, these plans should become a political document developed by regional authorities themselves.

The State should of course set out general guidelines and overall objectives in the context of the European Union, ensuring security of supply, solidarity and cohesiveness between regions.

The State would thus be mistaken to think it can make the energy transition happen from above. It can only provide a conducive environment for it to happen, by supporting developments in this regard, and by ensuring other legislation underway in France (particularly concerning decentralisation) is consistent with the energy transition, in order for these issues to take root in regions. The French energy transition law has been introduced with little regard to the complexities of governance. It has set objectives that France is not organised for. The law has, by and large, left the work of the energy transition in the hands of those that have neither the desire nor the ability to carry it out.

[3] www.service-public-energie.fr.

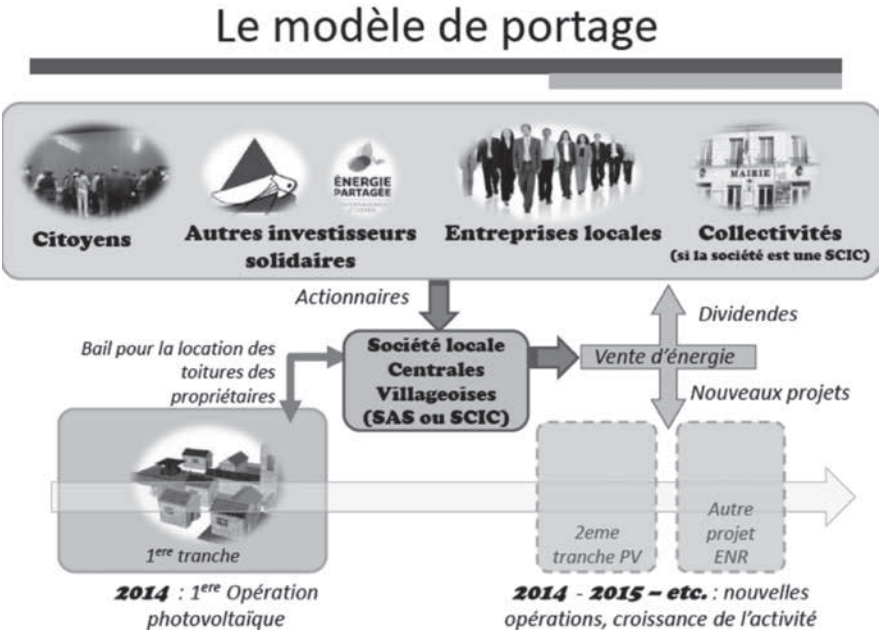
Did you Say People Power? When Citizen–Managed Renewables Drive Societal Transition

MAËLLE GUILLOU AND JUSTINE PEULLEMEULLE

While the climate conferences "should be a governance space in which the future of the coming generations is delineated", others have decided not to wait around for the supranationals to make their great "breakthrough". They are collectively exploring and experimenting with new ways to take their energy future back into their own hands.

This is the story of farmers, teachers, local officials, and accountants in Brittany, Auvergne, and Rhône-Alpes, among other French regions. These people all have one thing in common: they are all involved in at least one and sometimes several renewable energy projects in their region. In France, 'people-powered energy' primarily refers to collective initiatives instigated by inhabitants, communities, and local businesses, who join forces to create and finance renewable energy projects and initiatives that undertake to reduce their energy consumption.

These collective initiatives, which exist throughout France, have been on the rise over the last few years. They are especially important in France where the energy system is still very centralised and heavily based on nuclear energy. This article seeks to highlight the realities of people-powered energy in France, detail its philosophy, and its current challenges. We wish to be as clear as possible so as to inspire you, dear readers (citizens/investors/consumer activists), to take part in a movement that over the long term is set to play a decisive role in the future of energy.



© D.R.

The why and wherefore of citizen energy

Getting warm, charging one's phone, turning on the light are all "basic" reflexes, like eating. Like food, energy is derived from resources that we use in order to meet our own needs, whether these be primary or (increasingly common) secondary.

Just as there are food cooperatives that fill the demand for primarily local, organic produce, there are also energy cooperatives or production companies which are run in much the same way.[1] This involves employing three highly innovative short distribution channels:

Short governance channel: Local energy or people-powered renewable energy involves managing a resource in a cooperative and non-competitive way, and sharing responsibilities between local stakeholders. The energy consumer thus invests and is involved in the governance of a company. The issue here is to ensure decisions relating to the project are handled appropriately from conception to instigation. Local stakeholders (communities, resident collectives, farmer collectives, etc.) can be primarily responsible for the project's governance, or a blocking minority can be formed in situations where the project is a a private company's initiative, commonly called a "developer".

One example of this governance model are the *centrales villageoises* (local businesses seeking to produce their own renewables)[2]; an alternative model

[1] In this article we use the term "production company" to mean a company whose only activity is producing renewable energy.

[2] See the *centrales villageoises* website www.centralesvillaegoises.info. An information resource site that outlines how this approach can be replicated all over France.

in renewable energy production in rural areas. Initiated and developed in the region of Rhône-Alpes, at the initiative of the *Agence Régionale de l'Energie et de l'Environnement* (Regional Agency for Energy and the Environment)[3] and the Rhône-Alpes regional natural parks. The *centrales villageoises* seek to unite citizens, local businesses and councillors in carrying out projects of common interest consistent with the Regional Natural Parks purpose.

The *centrales villageoises* are local energy companies. Their first step was to carry out photovoltaic projects, as a quick way to illustrate that these kinds of companies can be easily created. Companies need to be registered as Simplified Joint-Stock Companies (*Société par actions simplifiée* – SAS) or Cooperative Companies with a Collective Interest (*Société coopérative d'intérêt collectif* – SCIC). By May 2015, seven companies had been created and the concept was beginning to take off in the region of Provence-Alpes-Côte d'Azur.

Short finance channel: People-powered energy companies need to be economically viable. Their particularity lies in the fact that shareholders' equity comes from inhabitants, regional authorities, and those involved in the social and solidarity economy. There are different forms of citizen investment: local stakeholders' investments (inhabitants by way of investors' clubs, as well as local authorities through public investment funds such as DARE funds), citizens' savings through the French financing too*l* Énergie Partagée Investissement (Shared Energy Investment) (this tool will be discussed later in further detail), and lastly, the investment companies of the social and solidarity economy, such as Enercoop[4] and other local businesses.

The Begawatt wind project, which was initiated in 2003, succeeded in raising 2.5 million euros in shareholder equity, an unprecedented amount in the world of renewables. More than 50 investor clubs[5] were formed over the span of the project, consisting of over a thousand people, who together raised some one million euros. Such impressive figures are due to the fact that information was being consistently disseminated to the inhabitants of the Redon and Brittany regions. "Tuperwatt meetings" were held to inform and engage with local citizens. Breton Eilan[6] also invested capital in this venture. And Énergie Partagée Investissement, the French body that finances people-powered energy, also finalised their contribution in shareholder equity. The result was a total investment of 12 million

[3] The Regional Agency for Energy and the Environment seeks to support innovations in energy transition. www.raee.org.

[4] Enercoop is the only distributor that supplies 100% renewable energy in France, and that works like a cooperative. www.enercoop.fr.

[5] Investor clubs for an alternative and local solution in managing solidarity-oriented savings. The CIGALES Club (*Club d'Investisseurs pour une Gestion Alternative et Locale de l'Epargne Solidaire*) is a solidarity venture capital organisation which pools the savings of its members for the purpose of creating and developing small, local collective companies (SARL , SCOP, SCIC SA, association, etc. [French legal entities]). The Club consists of 5-20 people who put a portion of their savings into a combined fund. It meets several times a year to meet the creators, decide on their investments and allocate finances to companies. http://cigales.asso.fr/.

[6] www.eilan-bretagne.fr.

euros, 2.5 million of which went towards creating the company. When it came to implementing the project, banking institutions needed proof of citizen investors' reliability, as they were not used to dealing with more than one responsible party.

Short energy channel: In an ideal world, consumers would also be collective producers: prosumers. They would be able to sell their electricity to suppliers of their choice, without having to deal with competition-related distortions. In reality, most citizen projects sell their electricity to EDF, the French electricity company of which the state has a holding of 84% and whose rates are highly competitive in regards to other suppliers. This obligation to purchase system is to be soon phased out, to be replaced by a market-based system, with a price supplement. This doesn't provide much incentive for citizen projects. Yet, the issue here is empowering residents, communities and all local stakeholders that wish to keep revenue from energy production projects within their own regions.

In the town of Mélesse, in Brittany, the project *Soleil du Grand Ouest* was initiated out of the desire of the organic food cooperative Biocoop and the electricity cooperative Enercoop to jointly develop a local renewable energy project. It involves installing a photovoltaic power plant on the roof of the Biocoop Grand Ouest distribution centre. The power plant will be self-sufficient, i.e., energy will be bought and consumed by the Biocoop distribution centre without going through EDF.

People-powered renewables represent a way of re-injecting wealth back into regions

In France, renewable energy development is primary undertaken by private "offshore" investors: German investment funds, Australian investment funds, and national and international companies. The new French energy transition law provides incentives in regards to financing local stakeholders and encouraging the direct involvement of communities in local companies.

One example is that of Combrailles in the region of Auvergne. Several years ago they initiated a Cooperative Company with a Collective Interest (SCIC) called the Coopérative Combrailles Durables[7] and installed photovoltaic panels on the roofs of schools. There are 11 photovoltaic power plants producing energy, thanks to the participation of more than 200 investor-collaborators. The concept is simple: there is no dividend for local investors but one person = one vote and the profits are reinvested in other REC projects. Economic wealth is thus re-injected into the region. This also gradually boosts social wealth, and reasserts the fact that it is possible to bring together people from a wide range of disciplines (professors, entrepreneurs, communication managers, etc.). It is testament to the collective intelligence that is thus stimulated.

[7] http://combraillesdurables.blogspot.fr.

In the Limousin, farmers from CUMA (*Coopérative d'utilisation de matériel agricole* – Cooperative Use of Agricultural Equipment) (Monts de Rilhac-Lastours) joined forces to erect a huge wind turbine in their fields. The Citoyenne has been operational since June 2014 and produces 3600 Mwh per year, enough to cover the energy needs of 1,440 households. The farmers are taking the extra step and have created a cooperative company which is involved in developing other citizen projects in different sectors throughout France.

At present, there is not a lot of paid jobs in people-powered renewable energy companies. It is effectively heavily reliant on voluntary work. Yet these economic activities contribute to employment, albeit unpaid, and hone the skills of those involved in the projects. They work in conjunction with consultants and developers on making the projects socially and technically innovative, thus ensuring their success.

Renewables thriving in Europe

The people-powered energy movement, although just beginning in France, has been around for many years in a number of other countries in Europe. Certain

ÉNERGIE PARTAGÉE, A FRENCH ENERGY MOVEMENT POWERED BY CITIZEN INVESTMENT

Énergie Partagée was created in 2010 by those involved in the solidarity-based finance sector, namely Banque Ethique, Nef and Crédit Coopératif, renewable energy stakeholders such as Enercoop, Cler, Solira développement, and Hespul, and pioneers in people-powered energy like Eoliennes en Pays de Vilaine (EPV).

Evidently the goal is to support, advise and finance projects in order to encourage people to take renewable energy production back into their own hands and change the way in which we consume. In line with the Negawatt scenario[1], Énergie Partagée undertakes to meet this goal through two organisms: a) an association that acts as facilitator in the regions and provides training, networking links, and support; and the solidarity-based financing body dedicated to the energy transition, Énergie Partagée Investissement, which provides advice and finances people-powered renewable energy projects.

Énergie Partagée Investissement is thus a national tool that supports local projects. The concept is simple: raise funds (by way of citizens and organisations) in order to invest them in local projects. Over four years, this financing tool raised over 8 million euros, which was then invested in some twenty people-powered renewable energy projects. Énergie Partagée Investissement is only in its early days but its future relies on raising the bar even higher. It undertakes to raise 25 million euros by 2020.

[1] The Negawatt scenario is a benchmark in France. Some twenty energy experts and practitioners have independently joined forces to outline a three-pronged scenario: energy sufficiency, energy efficiency and renewables, www.negawatt.org/scenario-negawatt-2011-p46.html.

French projects, like that of Enercoop, were largely inspired by their Belgian and German neighbours. People-powered energy initiatives are, in effect, widespread in certain European countries like Germany where more than 800 projects were created between 2006 and 2015.

In order to both capitalise on this expertise and these good practices and foster the people-powered energy movement, several structures have come together to create the European Federation of Groups and Cooperatives of Citizens for Renewable Energy, REScoop.eu. The Federation was officially created in December 2013, and the French cooperative "Enercoop" is a founding member. Its main goals include:

- Supporting new community energy initiatives throughout Europe;
- Providing financial support for these initiatives and helping overcome financial and banking barriers in order for these projects to be carried out successfully;
- Promoting and representing its REScoop members to regional, national and European institutions.
- Supporting research into renewable energies.

Over half of the people-powered sustainable energy initiatives in Europe (20 member organisations) currently belong to the Federation. Most members are actually national federations of community projects working towards the energy transition at their own scale. Over the last three years, more than 2,400 renewable energy cooperatives were mapped throughout Europe.

Although these initiatives come in different shapes and sizes, they are united in the same goal: putting energy issues back into the hands of citizens. As climate change has been largely caused by human activities, the solution can only come from citizens, companies and communities, and the way in which are structured. The energy transition calls for a fundamental change in the way in which our societies are organised. The major issue is reclaiming decision-making, in regards to governance, financing, and especially the way in which we consume. This is what local communities are experimenting with. Change at this level is not based on developing larger units of production, but obviously on increasing the number of small and medium-size units of production, adapted to a a more reasonable, less energy-consuming lifestyle.

Africa's Renewable Energy - Dynamics and Occurrences

JOHN BWAKALI

Africa is the least energized continent in the world. A satellite image of Africa at night reveals only scattered lights across the continent. This is a stark contrast to other parts of the world that are well lit in similar satellite images. Although this is mostly indicative of electrical lighting, it is symbolic of Africa's state when it comes to overall energy production and usage.

But Africa's potential in renewable energy is world-beating. All the way from Eastern Africa to Western Africa; Southern Africa to Northern Africa and Central Africa to Africa's Small Island States, renewable energy is gathering pace through bold initiatives by both private and public sector players as well as communities themselves.

Africa's renewable energy journey is however greatly hampered by severe capital and skill challenges. Most renewable energy projects of consequence are extremely capital intensive and can therefore not be undertaken in similar fashion to other green ventures like organic farming. This reality has been proven time and again in a number of renewable energy ventures that diverse African communities have undertaken.

Solar Energy

Solar photovoltaics are the most ubiquitous form of renewable energy in most African communities. Unfortunately, poor households have not benefited as much as high income households from solar PV systems because of the high upfront costs. This has been the case in Wasini Island in Kenya's South Coast.

The Island's two thousand dwellers have lived without electricity for decades owing to the logistical challenges of extending the national grid to the island. This forced community members to depend on paraffin-powered lanterns even as their counterparts on the mainland were increasingly connected to the grid.

Built Solar Power Panels Aid Liberian Communities

However, over the last two years, about fifty islanders have installed solar into their homes. They can now access electricity at night and power their electronics as they light up their houses. It is mostly because of such installations that Kenya has an installed solar PV capacity of 3,600kwp. Only South Africa is ahead of it with an installed solar PV capacity of about 11,000kwp.

For the last three decades, hundreds of communities across Africa have engaged in solar energy projects of varying degrees. Apart from actual installation in similar fashion to Wasini's people, other solar projects entail actual assembly of small solar panels that are then used in low-voltage energy activities like phone charging. One of the organizations that undertook such a solar project was Kibera Community Youth Programme (KCYP), a Community Based Organization (CBO) based in Kibera, Kenya's largest slum.

In 2005, KCYP started assembling small solar panels. They became so experienced that they were even part of the team that installed solar panels at Mama Sarah Obama's homestead. The then octogenarian is the US President Barack Obama's grandmother.

The solar panels that they assembled ranged from six, nine and twelve volts and were sold at an average of $5. This project however never fully took off because the low-voltage electricity that these small panels provide is unable to power much needed entrepreneurial activities like welding.

Sasafrica Media, a social enterprise that is based in Wasini Island compared the small panels to giving small aquariums to the island's fishermen and expecting them to make a living from the aquariums. In the same way that fishermen make a living by plugging into the ocean through their fishing nets, communities need to plug into reliable, consistent electricity through either the national grid or local mini-grids. Whether local or national, on-grid solar is a cost and skill intensive

venture that is mostly possible through intense public-private partnerships that essentially consign local communities to beneficiaries as opposed to drivers of such ventures. However, the fact that such on-grid solar is not community driven shouldn't negate its vital importance to communities.

Bio-fuels (jatropha)

Africa's bio-fuel experience has been bitter-sweet. From the early years of the new millennium until now, bio-fuel was hailed as Africa's new energy frontier. BY 2011, bio-fuel crops had been planted in a staggering 3.2 million hectares of land in several African countries. However, many of the farmers who planted bio-fuel crops with homes of reaping handsome financial dividends were immensely disappointed. Equally disheartening was the policy pace, which failed to keep up with the bio-fuel craze and was hence unable to cushion farmers, food crops and entrepreneurs. Kenya was not spared by this bio-fuel upsurge.

Kitui County in Eastern Kenya is predominantly inhabited by the Kamba community, Kenya's fifth largest tribe, comprising of five million people. Located a few kilometres away from Kitui town, is the Green Africa Farm that is owned by Green Africa Foundation. The Kamba community that neighbours this farm is a major stakeholder in the farm.

In the early years on the new millennium, Green Africa Foundation planted jatropha in dozens of acres on the farm, making it a trailblazer in bio-fuels. Row after row of the Green Africa farm was full of the small *jatropha curcas* whose oily seeds are pressed to produce diesel. Also lining sections of the farm's store were specially designed lanterns and cookstoves that could run on bio-fuel.

At its height, as it rode on the jatropha crest, Green Africa Foundation was on the forefront of Kenya's official bio-fuel inroads. But in less than two years, the seemingly imminent bio-fuel boom became a bust that was exemplified by jatropha's fall from glory. Some of the reasons of this fall were global in nature.

Between 2000 and 2006, global biodiesel production multiplied six-fold from one to six billion liters while global fuel ethanol production almost tripled to 40 billion liters. Unfortunately, part of this growth resulted in the destruction of rainforests in Southeast Asia and channeling of food crops like corn towards bio-fuel production. When it was introduced in Kenya, jatropha was touted as a plant that could grow well in semi-arid places where food crops couldn't survive and would consequently not be replacing any food crops. However, other factors related to the economies of scale eventually came into play and severely undermined the jatropha promise.

At its peak, hundreds of smallholder farmers in eastern and coastal Kenya grew jatropha as a 'fuel crop' that could grant them the twin benefit of fuel and money.

But they later realized that the seeds didn't have a ready market since there was no established large scale jatropha processing plant in the entire country. In addition, even those who were able to press their seeds into bio-diesel through the help of organizations like Green Africa Foundation found out that such bio-diesel wasn't always compatible with their stoves and lanterns.

A few thousand miles south of Kenya in Malawi, jatropha was also embraced as a formidable source of renewable energy. Through its Agriculture Sector-wide Approach, Malawi's government recognized 'the promotion of jatropha growing for production of biodiesel to reduce air pollution.' But just like the Kenyan experience, it was never clear whether jatropha was in fact a rural development tool or a commercial bio-fuel crop.

Although there is a jatropha processing plant in Malawi's capital Lilongwe, many smallholders are located hundreds of kilometres away, making transportation of jatropha seeds both logistically challenging and costly. Consequently, farmers from the southern and northern regions where jatropha flourished were often left with stacks of jatropha seeds that they couldn't sell. Meanwhile, the pressing plant at the capital continued operating thanks to regular supplies from farmers whose farms were much closer to it.

Legislatively, jatropha's growth in Malawi was also affected by the lingering confusion about its status – was it a tree or a crop? The answer to this question would determine which government department would be responsible for it and which corresponding policies would then be applied to it.

Indeed, the underwhelming jatropha experiences of rural communities in Kenya and Malawi have proved that bio-fuel plants like jatropha may have great promise but it is a promise that doesn't seem to enhance community livelihoods in short and mid terms.

Primarily bio-fuels are underpinned by a multiplicity of factors that are beyond the control of farmers who plant bio-fuel crops. For instance, jatropha seeds only become energy after processing that is both capital and skill intensive. Even if farmers would somehow form cooperatives and process their seeds into energy, there must be a corresponding market demand. If this demand was in place, bio-fuel crops could end up displacing food crops because of their newly lucrative status. In this regard, African government must treat bio-fuels with a double dose of caution and enact water-tight laws so that Africa doesn't create a myriad of other problems by seeking to solve the energy problem through bio-fuels.

Small Hydro Power

Back in the year 2000, Nottingham Trent University (NTU), the then ITDG Energy Program and local villagers in Kirinyaga teamed up and developed two small hydro power establishments in the two rural areas. Consequently two hundred households ended up with electricity that was generated right at their doorsteps.

This pioneering initiative proved that small hydro power is possible and sustainable but also expensive. Together, the two small hydro projects cost $14,660.

On their own, the two communities in Central Kenya wouldn't have been able to implement these unprecedented projects. This scenario mirrors the on-grid solar predicament, further vindicating the argument that local communities need support that will place them either on the national grids or local renewable energy powered mini-grids.

It is quite telling that sub-Saharan Africa consumes less energy than the State of New York. This is not surprising, considering that 600 million Africans have no access to electricity. Although tragic, this presents the continent with a golden opportunity to leapfrog the 'developed world' in anchoring new energy in renewable energy-powered grids.

The Africa Progress Report 2015 talks of this leap-frog effect, 'African nations do not have to lock into developing high-carbon old technologies; we can expand our power generation and achieve universal access to energy by leapfrogging into new technologies that are transforming energy systems across the world.' Indeed, there are African communities that are now enjoying electricity for the first time ever thanks to renewable sources.

Biogas

More than seventy percent of Africans use food fuel like firewood and charcoal leading to a multitude of health and environmental problems. As regards health, 3.5 million people die annually as a result of household air pollution that is mostly caused by the solid cooking fuels. Coupled with the deforestation that follows in the wake of charcoal production, a case has been consistently made for cleaner, greener cooking fuels and biogas has often rose to the occasion. Biogas is a methane rich gas that is a reliable cooking fuel. It is produced by anaerobic fermentation of organic material. Such material, which includes animal waste, is easily available in many rural African communities. Their wellbeing through reliable clean cooking fuel must always remain the primary focus of biogas. In other words biogas shouldn't eventually be monopolized by large-scale players with keen eyes on the bottom-line.

In Kenya, Takamoto Biogas is helping farmers in rural areas to install biogas through their Pay-As-You-Go scheme.[1] These farmers have reared livestock for millennia but have never used livestock waste as a source of electricity. Takamoto Biogas helps them to tap into these renewable energy resources by setting up the biogas infrastructure into their homes.

The infrastructure includes electricity poles, underground cables, meter box and the transformer. Most of the rural farmers have neither the expertise nor the resources

[1] This is a prepaid card loaded with credits of a given value that allows one to use electricity credits of the purchased value.

to set up such infrastructure. Takamoto takes away this burden from them and just like electricity consumers of the national grid, they pay back every time they purchase electricity credits. To facilitate purchase of the credits, this biogas firm has set up smart metres that transmit critical consumption data back to company headquarters. For close to three years, Takamoto has been setting up biogas for farmers mostly in Central Kenya. Farmers who have benefited from this biogas wave have at least two cows. As an icing on the cake, their biogas units are also equipped with outlets that produce manure that further enriches their crops without degrading the soil like some fertilizers.

Trees also benefit from the biogas. The company estimates that for every 155 families that switch to biogas, at least 1,860 trees are saved. This is because the most common cooking fuel in rural Kenya is either firewood or charcoal, both by-products of trees. So widespread are these two cooking fuels that they consume a minimum of 5.6 million trees daily.[2] In popularizing and establishing biogas, Takamoto is not only providing clean cooking and lighting energy for rural families in Kenya, but also helping to protect the country's much needed trees. This Takamoto approach shows the renewable energy nexus between communities and the private sector. It is a win-win arrangement through which the community is able to access energy from their own raw materials. On their part, Takamoto reaps returns that enable it to continue servicing the biogas infrastructure and providing biogas expertise.

At a broader international level, the Africa Biogas Partnership Programme (ABPP) is spreading the biogas wave in five African countries – Ethiopia, Kenya, Tanzania, Uganda, and Burkina Faso. Although led by two Dutch organisations Hivos and SNV, this initiative supports national programmes in the five countries. Its goal is to provide half a million people with sustainable energy by 2017.

Ethiopia has been a key part of this goal. Since 2009, ABPP has been setting up biogas plants in Ethiopia. In the first phase of the programme between 2009 and 2013, ABPP constructed 8,063 biogas plants in 163 districts across Ethiopia. In the second phase that will conclude in 2017, the programme targets construction of 20,000 plants. Several steps towards realization of this target were taken in 2014 when 1,762 plants were set up. About 70 percent of the rural poor in Africa own cattle, making biogas a particularly relevant energy source for them. The situation is even better in Ethiopia, which has Africa's largest cattle population, currently standing at 54 million. A single cow can produce approximately 0.5 cubic meters of gas per day, which can fuel a single burner stove for an hour. The two hours of cooking that two cows can therefore produce is sufficient for a family of less than ten in any given day.

Although the Africa Biogas Partnership Programme is a macro programme, it is built on micro-communities. It may not be community-funded, but this very

[2] Green Africa Foundation Research.

need for external macro-funding for renewable energy projects like this one shows the sheer energy gap that still exists in Africa and how difficult it is for local communities to fill this gap on their own.

The next biogas frontier in Africa now involves compression of the biogas into cylinders so that it can be purchased by the millions in urban centres who use natural gas for cooking. The market is already there and it is just a question of green technology catching up with this market.

The critical factor is for this green technology to be built on the needs and aspirations of African energy consumers. All too often, technologies and related business ventures lay claim to the "green" title only to fizzle into predominantly profit generating pursuits. If this happened in biogas compression, it would undermine a clean energy by anchoring it in unsustainable and exploitative business practices. The biogas wave is but a manifestation of the renewable energy undercurrents that are sweeping across the continent. The Africa Progress Report 2015 captures this reality succinctly, 'No region has more abundant or less exploited low-carbon energy resources. Harnessed to the right strategies, these resources could resolve two of the most critical development challenges facing Africa: power generation and connectivity. Renewable energy could do for electricity what the mobile phone did for telecommunications: provide millions of households with access to a technology that creates new opportunities.'

Conclusion

These new opportunities are already being created as ripples of renewable energy across Africa become steady waves.

These are low carbon energy sources and as they become increasingly affordable, they should provide low hanging industrial fruits that will enhance the livelihoods of low income Africans. Indeed, the primary beneficiaries of renewable energy expansion in Africa should be the 600 million Africans who still don't have electricity in their homes. This new found energy will potentially provide 600 million concrete opportunities for enhancing their wellbeing.

REFERENCES

- Africa Progress Panel. *Power, People, Planet: Seizing Africa's Energy and Climate Opportunities*. Geneva; Switzerland, 2015.
- WWF Report Summary. *Enabling Renewable Energy in South Africa: Assessing the Renewable Energy Independent Power Producer Procurement Programme. 2014.*
- Ethiopian Embassy, "Why Ethiopia is becoming a leader in the leather industry", www.ethiopianembassy.be/blog/2015/04/18/why-ethiopia-is-becoming-a-leader-in-the-leather-industry/
- International Energy Agency. *Africa Energy Outlook: A focus on energy prospects in sub-Saharan Africa*. Paris; France, 2014.
- International Renewable Energy Agency. *Prospects for the African Power Sector*. Abu Dhabi; United Arab Emirates, 2012.
- EBERHAD Anton, KOLKER Joel, LEIGLAND James. *South Africa's Renewable Energy IPP Procurement Program: Success Factors and Lessons*. 2014.

The "One Less Nuclear Power Plant" Initiative

INTERNATIONAL COUNCIL FOR LOCAL ENVIRONMENTAL INITIATIVES (ICLEI)

Seoul's visionary "One Less Nuclear Power Plant" initiative is an exemplary strategy for cities around the world to save on energy consumption, improve energy self-sufficiency and safety, and to generate renewable energy in order to cut harmful greenhouse gas emissions and mitigate global warming.[1]

Abstract

Seoul's "One Less Nuclear Power Plant" is an ambitious initiative which demonstrates the city's leadership on the issue of climate change mitigation nationally, regionally and globally. Based on 10 wide-ranging key action plans, various actors – political leaders, sustainability experts and citizens – are coming together to save enough energy to effectively switch off one nuclear power plant. The numerous actions that the Seoul Metropolitan Government has taken to reach its ambitious aims include setting higher energy efficiency standards for existing and new buildings as well as promoting eco-mobility throughout the city and producing thousands of jobs in green industries.

Name of Municipality: Seoul Metropolitan Government
Municipal Budget: $23.6 billion (USD)
Population: 10.1 million (Metro: 25.6 mill.)
Land Area: 605.21 km2
Total GDP (Metro): $845.9 million (USD)
GDP per capita (Metro): $34,355 (USD)

Through the One Less Nuclear Power Plant initiative, Seoul has become smarter and greener as well as more modern and self-sufficient. By mid-2014, the City had already successfully completed Phase I of the initiative to reduce energy consumption by

[1] This study was originally published as part of a series by ICLEI – Local Governments for Sustainability. This study case n°154, from August 2013, was revised in july 2015. The ICLEI Case Study series focuses on urban sustainability activities of ICLEI Members and local governments being part of ICLEI projects across the globe, www.iclei.org/casestudies

2 million tons of oil equivalent. The strategy has since been scaled up through the launch of Phase II in August 2014 which aims to reduce centralized energy demand through a combination of further energy efficiency and decentralized energy generation projects.

The end of the Oil Age

Dwindling oil reserves and the continued rise of prices worldwide has been making a new paradigm shift in energy policy even more necessary than ever. Despite these trends, South Korea´s dependence on oil imports reached an all-time of high of 96% in 2012. At the same time, approximately 31% of the country´s greenhouse gases (GHG) were coming from the generation and consumption of nuclear energy. Although nuclear energy is currently cheap and efficient, it also incurs an enormous social, economic and environmental cost if something goes wrong such as in the case of the Fukushima Nuclear Disaster in 2011.[2]

The city context

Before the initiative commenced in 2012, Seoul was consuming more than 15 million tons of oil equivalent (TOE) of energy per year or 10.9% of South Korea's national total. From this energy consumption, 56% came from residential and commercial use. New and renewable energy (NRE) production merely contributed 1.6% of the city's total energy consumption with only 250,000 TOE recorded and its power self-sufficiency rate at a meager 2.95%. Out of the total NRE production, 93.8% came from biogas and waste, and only 2.2% from so-

Initiative " Une centrale nucléaire de moins ". 10 programmes d'action clés

[2] "One Less Nuclear Power Plant, Phase 2", Seoul Metropolitan Government, 2014, p.7

lar photovoltaic and heat energy. Under these production rates, it had become evident to local authorities that Seoul had become too dependent on fossil fuels, with oil and liquefied natural gas accounting for 38.9% and 29.7% of the energy mix respectively.[3] This unsustainable dependency finally resulted in a nationwide rolling blackout on September 15, 2011.[4]

Due to these precarious circumstances, Seoul Metropolitan Government (SMG) has committed to reducing its dependency on nuclear power and finding practical alternatives over the coming years by promoting sustainable and eco-friendly energy sources. As a result, the One Less Nuclear Power Plant initiative directly seeks to address the planetary challenges of global warming, climate change and energy security.

How to save enough energy to switch off one nuclear power plant

Shortly after Mayor Park Won-soon - recently anointed as ICLEI President - took office in late 2011, the City of Seoul carried out a set of steps to engage its residents in shaping the initiative. This included organizing a citizens' commission of 17 reputable figures from civil society, the business and media sectors as well as religious, educational and cultural communities in order to engage and garner the insight of local leaders.

The ambitious strategy has since been demonstrating SMG's leadership in tackling climate change on a national, regional and global level. It has importantly paved the way for Seoul to raise its electricity self-sufficiency rate from 2.8% in 2011, to 8% by 2014, and to 20% by 2020.

Effective results in green energy policy from Phase I (2012-2014)

Based on 10 wide-ranging key action plans with 71 specific projects across 6 policy categories, various actors – political leaders, sustainability experts and city residents – have collaborated to save enough energy to effectually switch off one nuclear power plant.

1 Becoming a sunlight city

By 2014, Seoul built rooftop photovoltaic (PV) plants on more than10,000 buildings and for 300,000 households for a total capacity of 360MW. Seoul also built PV power stations that are able to produce the equivalent of 13.5 MW in 11 idle

[3] Seoul International Energy Advisory Council, International Energy Advisory Council, 2014, www.ieac.info/Seoul-International-Energy-Advisory-Council
[4] "One Less Nuclear Power Plant, Phase 2", Seoul Metropolitan Government, 2014, p.6-7,45

spaces such as public parking lots as well as water and sewage facilities, by attracting private capital. SMG also created resident-led energy independent communities where new and renewable energy is now being produced on site and external energy supply kept to a minimum level. As a result, the city has achieved its aims to create 25 energy independent communities by 2014.[5]

2. Increasing energy self-sufficiency

In order to guarantee that core public facilities remain operational, even if a sudden large-scale blackout occurs, Seoul has constructed hydrofuel cell stations and small scale hydroplants to ensure a permanent power supply. By June 2014, SMG had invested 63.5 billion KRW ($56 million USD) in 3,762 (70MW) solar power stations as well as a total of 46MW fuel cell stations. 38 PV power plants (23MW) have also been installed in municipal facilities including sewer and water treatment centers. In addition, smart meters for households have been distributed and integrated power generation facilities were installed in 42 municipal buildings in 2013.[6]

3. Improving the energy efficiency of existing buildings

From 2011 to 2014, Seoul implemented a Building Retrofit Program (BRP) on over 24,000 buildings including high-energy-consuming buildings, mid-to-large-sized buildings, individual residential houses, municipal welfare facilities, office buildings, and schools. Through the BRP, energy leakage has been prevented and energy efficiency has consequently been greatly improved.

4. Lighting up a smart city

Seoul has replaced lighting devices in public offices, street furniture, subway stations, underground shopping centers, large office buildings, department stores and other multi-use facilities with highly energy-efficient LEDs. In 2013, SMG launched a project to replace all the lights for its 243 subway stations and numerous subway cars with eco-friendly LED lights into two phases, with 420,000 lights replaced by May 2014. On top of this, 1.4 million LED lights were

TRANSITION TO LED WITHOUT COST BURDEN

Seoul signed a tripartite MOU with the Korea LED Association and LG electronics corporation, in order to distribute LED at a price 40% lower than the market price, even including a five-year warranty. The Korea LED Association takes an "invest first and recover costs later" approach — the association installs the LED lightings first and then recovers the invested costs over the span of 3 and a half years thereafter from saved electricity fees. This will allow citizens to opt for LED lights without the burden of greater initial costs.

[5] *Climate and Environment Headquarters*, Seoul Metropolitan Government, 2014, p.35,56

[6] "One Less Nuclear Power Plant" performance report (Korean text), Seoul Metropolitan Government, 2015, p.56

installed in the parking lots of 400 apartment complexes. The total number of lights replaced citywide has already exceeded 8.29 million conventional bulbs.

5. Designing standards for new buildings

In order to reduce the 56% of total energy consumption that was coming from residential and commercial buildings, an energy consumption cap and energy-saving design standards was applied to all new constructions of small-to-mid-sized buildings as well as large buildings from 2013 onwards. Currently, the energy cap is mandatory only for some large buildings such as commercial buildings with floor space over 3,000m² and apartment complexes with over 100 units.

6. Low-energy compact city

Seoul is quickly becoming an eco-friendly city with low GHG emissions by being upgraded into a low-energy-consuming compact city through the development of the "2030 Seoul Master Plan". In doing so, the City has expanded the application of an energy consumption cap for buildings to additionally conceive and evaluate individual site and metropolitan-wide land use plans that support low-carbon urban development.

7. Promoting eco-mobility

Shifting ideas and citizen attitudes about cars can have significant environmental benefits. In the current era of high oil prices, car sharing can help save energy, reduce pollution and save expenses incurred by owning a car. Recent campaigns in Seoul have therefore aimed to shift the paradigm about cars from 'ownership' to 'co-drivership' so that individual motor vehicle use is only limited to when it

2013 UN PUBLIC SERVICE AWARDS FOR SEOUL'S ECO-MILEAGE PROGRAM

The Seoul Metropolitan Government's Eco-mileage program is a component of the "One Less Nuclear Power Plant" initiative that won the Excellence Award of the 2013 United Nations Public Service Awards in the category of fostering participation in public policy decision making through innovative mechanisms.

Eco-mileage is a program to engage citizens in the reduction of GHG emissions. It allows citizens to easily obtain information on their amount of energy usage in water, electricity as well as gas, and gives them incentives including mileage in return for their energy saving. Accumulated mileage can be used to purchase eco-friendly products as well as to get financial support for retrofitting existing buildings.

The membership of Eco-mileage has steadily increased since its introduction in 2009. As of the first half of the year of 2014, 1.68 million citizens had signed up for the program. The amount of energy saved by the participants is 470,000 TOE equivalent to 1,500,000 tons of GHG reduction (Climate & Environment Headquarters SMG, 2014: p.99)

is needed. Between 2011 and 2014, for instance, members in the Eco-Mileage program more than tripled from 500,000 to 1.68 million. Improvements have also been made to the bus network in the city as well as to all 16,600 public bus drivers through hands-on ´green´ driving training sessions.[7]

8. Creating green jobs

The United Nations Environment Program (UNEP) defines green jobs as work in agricultural, manufacturing, research and development, administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Seoul has created 40,000 new green jobs with a long-term point of view in order to develop the capital city into a green city that fulfills its environmental responsibility as a global citizen. SMG is aiming, for example, at creating a "Green Startup Creation Fund" worth 80 billion KRW ($72million USD) by 2016 to support small and medium new enterprises (SMEs), and organize an annual Green Energy Jobs Expo.

9. Energy-saving lifestyle for citizens

In order for residents to take the lead in the energy saving movement, Seoul has been organizing the "Energy Guardian Angels" Program to recruit young students from schools to be leaders of the next generation in energy-saving and volunteer activities. The City has succeeded in its aim to get 30,000 students participating by the end of Phase I in 2014.

In addition, the brand new Seoul Energy Dream Center is the first public building to achieve 100% of energy self-supply and serves as a learning center to students and citizens. From 2012 to 2014, Seoul also introduced waste recycling program that recycled more than 51,000 tons of textile and vinyl waste, and reduced 117,000 tons of food waste.[8]

10. Establishing the Seoul Natural Energy Foundation

Seoul has created a foundation to lead the energy policy shift and implement the projects in a more efficient way. Known as the "Seoul Natural Energy Foundation", it reviews proposed energy policies to make improvements, and reflect feedback arising in the course of implementation. Thus far, the Foundation has developed itself into a center for public information and research on green energy.

Scaling-up sustainable energy in Seoul

Through the One Less Nuclear Power Plant initiative, the city has become smarter and greener as well as more modern and self-sufficient. By mid-2014 Seoul had already successfully completed Phase I of the initiative to reduce energy con-

[7] *Eco-mileage* (Korean text), Seoul Metropolitan Government, 2015, http://ecomileage.seoul.go.kr

[8] "One Less Nuclear Power Plant, Phase 2", Seoul Metropolitan Government, 2014, p.18

sumption by 2 million TOE, yet its energy self-sufficiency ratio remained at the low level of 4.2%. Buildings also still account for 56% of the city´s total energy consumption and 87% of the total electricity consumption whilst motorized vehicles make up for 20% of GHG emissions. Strong measures are evidently needed in these areas, so the initiative has since been scaled up through the launch of Phase II in order to bring the full value of energy to citizens through the institutionalization of eco-friendly energy systems and social structural changes.

Phase II of One Less Nuclear Powerplant

Phase II was launched in August 2014 and seeks to build on the original Phase I program of works to reduce centralized energy demand by 4 million TOE, to reduce GHG emissions by 10 million TOE, that is a 20.5% reduction from 2011 emission levels, and to increase Seoul's electricity self-sufficiency ratio from 4.2% in 2013 to 20% by 2020. In order to achieve these targets, 46% of the electricity will come from renewable energy while 54% from improvements in energy efficiency and conservation of energy. These ambitious goals are in line with the vision of creating a self-reliant city where citizens produce and consume energy efficiently. This exemplary visioning is based on three core values of energy self-reliance, sharing and participation as described in the table below:

Energy Self-reliance	Transition to a responsible energy consumer city through reduced reliance on external power supply Production of safe and sustainable energy sources to avoid blackouts through decentralization Development of a green energy industry through the further creation of jobs
Energy Sharing	Citizens sharing their energy services with under privileged sections of society and future generations through increased fairness and the promotion of 'warm' communities1
Energy Participation	Establishment of open energy governance for energy policy setting and implementation Disclosure of energy information and policies as well as opportunities for education and training

In comparison to Phase I that carried out 71 projects in 6 policy categories, Phase II is being delivered by 88 projects within 23 tasks in 4 categories. Phase II also addresses a number of organizational shortfalls that were experienced in Phase I in regards to the lack of effective management, such as jobs and welfare programs, by establishing energy collaboratives like the "Seoul Energy Corporation" and the community-based "Green Citizen Council" in order to vastly improve policy implementation and performance.[9]

Under the rejuvenated initiative, there are 10 revised priority working areas that will be undertaken in the coming years:

1. A solar-powered city where residents produce energy through 40,000 micro PV power plants
2. Expansion of mandatory use of renewables and decentralized power from

[9] Seoul International Energy Advisory Council, International Energy Advisory Council, 2014, www.ieac.info/Seoul-International-Energy-Advisory-Council

12% to 20%

3. Disclosure of energy consumption by buildings and introduction of tailored energy conservation models through enforcing strict green building design criteria and public design standards alongside a certification system
4. 100% LED replacement for the public sector including security lighting and street lamps as well as the replacement of a total of 29 million lights or 65% of those in the private sector by 2018
5. Introduction of the Driving Mileage System to target 1.18 million cars by 2018
6. Creation of jobs in 6 green industry clusters including 25 self-sufficient villages known as ´Local Energy Hub Centers´ by 2017
7. Seoul leadership in new energy industries through smart grids, BEMS and specialized clusters
8. Improvement of the recycling ratio through community-based recycling practices and 7500 recycling stations
9. Promotion of power conversion and efficiency projects for the energy-impoverished such as LED installation for 120,000 low-income households by 2018
10. Establishment of "Seoul Energy Governance" to build an energy culture overhaul and create jobs at the community level through local hubs, agenda setting and networking[10]

Worldwide replication

The One Less Nuclear Power Plant initiative is the result of various energy conservation campaigns, reformed policies on the production of new and renewable energy, and citywide programs to improve energy efficiency, amongst other energy saving activities. Most importantly, the initiative demonstrates a successful model of how local government has developed a model of energy policies through institutional improvements and project implementation of a unique nature despite the limitations usually encountered in local autonomy. The decisive action shown by the Mayor Park Won-soon with this initiative inspired the 2012 Seoul Declaration of Local Governments on Energy and Climate Mitigation. The Declaration encourages other cities to realize a nuclear-free future with the message that it is not only attainable but crucial in order to guarantee low-risk, low-emission and livable cities worldwide.

The Declaration engages Members and fellow cities throughout the globe to forge a path towards a nuclear-free future through five key steps:

- Reduce the use of fossil and nuclear energy in consumption by 2020 as compared to 2010 levels
- Define and scale-up energy efficiency and climate mitigation targets for 2020 and 2030
- Mobilize financial resources via local, subnational, national and international

[10] "One Less Nuclear Power Plant, Phase 2", Seoul Metropolitan Government, 2014, p.37 (figures updated by Seoul Metropolitan Government, August 2015)

channels together with urban stakeholders
- Report progress to ensure transparency to the Mexico City Pact Secretariat and to the carbonn Climate Registry
- Encourage local governments worldwide to be inspired by others' commitments

The 2012 Seoul Declaration, created in partnership with the ICLEI Global Executive Committee and World Mayors Council on Climate Change followed other ambitious declarations from recent years, including the 2010 Global Cities Covenant on Climate, the Mexico City Pact, the 2012 Belo Horizonte Resolution of World Mayors Council on Climate Change, and is fortified by ICLEI's Low Carbon City Agenda. With the Declaration, Seoul and other signatories show that a safe and sustainable urban energy future is not only achievable – it begins with one less nuclear power plant at the time.

• • •

ICLEI study case n°154, August 2013, by Peter Eckersley (ICLEI World Secretariat) and Susanne Salz (ICLEI East Asia Secretariat). Revision in July 2015 by Kathrine Brekke and Michael Woodbridge (ICLEI World Secretariat) and Taesang Kim (ICLEI East Asia Secretariat).

FURTHER READING

- International Energy Advisory Council, Seoul International Energy Advisory Council (SIEAC), www.ieac.info/Seoul-International-Energy-Advisory-Council
- Seoul Metropolitan Government, "One Less Nuclear Power Plant, Phase 2 – Seoul Sustainable Energy Action Plan", Seoul Metropolitan Government www.taiwanwatch.org.tw/drupal/sites/default/files/epapers/20150212_OLNPP2.pdf
- Seoul Metropolitan Government, "An Outcome Report of One Less Nuclear Power Plant Phase 1" (in Korean), 2014, http://energy.seoul.go.kr/seoul/comm/data.jsp?mode=view&article_no=3277&board_wrapper=%2Fseoul%2Fcomm%2Fdata.jsp&pager.offset=0&board_no=5&default:category_id=4
- World Mayors Council, 2012 Seoul Declaration of Local Governments on Energy and Climate Mitigation, www.worldmayorscouncil.org/fileadmin/Documents/Seoul/2012_SeoulDeclaration_ofLocalGovernments_onEnergyandClimateMitigation.pdf

B. Towards Alternative Agricultural and Food Systems

Soil, not Oil: the Age of Oil, Climate Change and Wars Against the Planet and People

VANDANA SHIVA

Two and a half centuries of the age of Fossil Fuels and Oil have given us slavery, wars, violence, conflicts, non sustainable industrialism, corporate control over agriculture, the economy and politics, desertification and climate change. With coal. England mechanized her textile industry. To supply cotton to the hungry mills, land had to be grabbed from native Americans for cotton plantations. To grow and pick cotton on those plantations, Africans were captured and made slaves. Expansion of Colonisation was the political arm of the of the age of fossil fuels.

This colonization continues today – through wars for oil-grab, through the imposition of a fossil fuel based agriculture in places like Africa. An agriculture that is desertifying soils, creating ecological refugees, and directly contributing to climate change. The people crossing the Mediterranean in boats are either leaving their homes because they lost their livelihoods due to desertification and drought, or they became refugees because of wars still being fought for the control of oil. The Navdanya International Manifesto, Terra Viva:Our Soil, Our Commons, Our Future, shows how new violent conflicts such as Boko Haram in Northern Nigeria and the violence in Syria have their roots in desertification and climate change.

The air pollution that has built up in the atmosphere since the beginning of the fossil fuel age 250 years ago is roughly 400 parts per million (ppm) Carbon Dioxide today. This is the reason for the Green house effect and climate chaos, including temperature rise. To cap the rise of temperature at 2 degrees centigrade we need to reduce

© JUAN ANTONIO CAPÓ ALONSO

the carbon build up in the air to 350 ppm. This demands reducing emissions and phasing out fossil fuels. But it also requires reducing the stocks of excess carbon from the atmosphere, where it does not belong, and putting it back into the soil where it does; and organic, regenerative agriculture offers us the way. In the process it also addresses food insecurity and hunger, it reverses desertification, it creates livelihood security by creating ecological security - and it therefore also creates the path to peace.

We need an energy transition, but even more significantly we need a food and agriculture transition that puts Soil, not Oil, at the centre of our imagination, our societies and our economies. Industrial, globalized agriculture is the single biggest contributor to climate change accounting for 40% Greenhouse Gas emissions-CO2, Nitrous Oxide, and methane. Through regenerative, organic agriculture we can increase the human capacity to adapt, reduce our impact on the climate, and undo the damage caused by Industrial, globalized agriculture. Mitigation and adaption must happen across all aspects of our lives. Air, water, land, biodiversity and energy are intertwined in the problem of climate change and solutions to it.

A climate change of 3 to 5 degree Centigrade increase in temperatures will result in the melting of the polar ice caps and glaciers, and intensification of floods, droughts, and cyclones. Some of these impacts are already being felt. In my home region of Uttarakhand in the Himalaya, 20,000 people were washed away due to intense rain in 2013. In 2015, untimely rain at harvest time destroyed 50% of the crop in Northern India. Climate Change has become a life and death struggle. To avoid catastrophic climate change, 80% of the fossil fuels must be kept underground. Yet the fossil fuel industry continues to drill, frack, and mine recklessly, ignoring the impact on local communities, or on the planet.

© CRAIG SUNTER

False solutions that will make the crisis worse

To extend and maintain the age of oil, fossil fuel companies and others, in an attempt to lock the world into *extractivism,* refuse to heed the call for tackling global warming at source - by allowing 80 per cent of known fossil fuels reserves to remain underground - and rather, these climate change deniers present a false path for action. Among the pseudo solutions to climate change are promotion of non-sustainable energy options such as nuclear energy and industrial biofuels. Unfortunately, for the forces that have given us climate change, the crisis is a business opportunity, to further inequality and non-sustainability by robbing the poor of their last morsel of food and last inch of land.

Land grab for biofuel has taken away land from tribals, farmers and pastoralists across the countries of the south. Industrial biofuels are a clear example of the misplaced "solution", which worsens the food crisis by taking land and food from the people in order to produce "feedstock" for the insatiable appetite of the fossil fuel infrastructure and the limitless consumption it requires. Emissions trading, carbon "offsets" trading - such as Reducing Emissions from Deforestation and forest Degradation (REDD) - and markets trading in pollution are all mechanisms to reward the polluters with more profits and a bigger grab of the resources from the poor.

Other false actions, presented by the climate change deniers that have brought us to this crisis, include carbon capture and storage, 'Climate Smart Agriculture', and genetically modified crops based on seeds pirated from third world peasants. As I have written in *Soil, not Oil,* 40% of the Green House Gas emissions come from an industrialized, globalized model of agriculture. Having contributed to the creation of the crisis, corporations who have profited from industrial agriculture

are attempting to turn the climate crisis into an opportunity to control climate resilient seeds and climate data, while attempting to criminalise Climate Resilient, Organic Agriculture. Monsanto now owns the world's biggest climate data corporation and soil data corporation. Armed with proprietary big data, Monsanto is ready to profit from the crisis, the worse it gets the better it is for Monsanto; mitigating the crisis would not be profitable to climate deniers like Monsanto.

1500 patents on Climate Resilient crops have been taken by corporations like Monsanto. Navdanya/Research Foundation for Science, Technology and Ecology, have published the list in the report "Biopiracy of Climate Resilient Crops: Gene Giants Steal Farmers Innovation". With these very broad patents, corporations like Monsanto can prevent access to climate resilient seeds in the aftermath of climate disasters through patents - which grant an exclusive right to produce, distribute, sell the patented product. Climate resilient traits are not created through genetic engineering, they are pirated from seeds farmers have evolved over generations. For thousands of years farmers, especially women, have evolved and bred seed - freely in partnership with each other and with nature, to further increase the diversity of that which nature has given us and adapt it to the needs of different cultures. Biodiversity and cultural diversity have mutually shaped one another over time. Along coastal areas, farmers have evolved flood tolerant and salt tolerant varieties of rice - such as "*Bhundi*", "*Kalambank*", "*Lunabakada*", "*Sankarchin*", "*Nalidhulia*", "*Ravana*","*Seulapuni*","*Dho sarakhuda*". After the Orissa Supercyclone Navdanya could distribute 2 trucks of salt tolerant rices to farmers because we had conserved them as a commons in our community seed bank run by Kusum Mishra and Dr Ashok Panigrahi in Balasore, Orissa.

Every seed is an embodiment of millennia of nature's evolution and centuries of farmers' breeding. It is the distilled expression of the intelligence of the earth and intelligence of farming communities. Farmers have bred seeds for diversity, resilience, taste, nutrition, health, and adaption to local agro-ecosystems. In times of climate change we need the biodiversity of farmers varieties to adapt and evolve. Climate extremes are being experienced through more frequent and intense cyclones which bring salt water to the land. For resilience to cyclones we need salt tolerant varieties, and we need them in the commons.

Most of the discussion and negotiation on responding to and mitigating climate change around the 21 COPS has been restricted to the commercial, consumptive energy paradigm of a reductionist, mechanistic worldview and consumerist culture. Within this paradigm there are two dominant approaches – the approach of global business, especially the corporations that have promoted, and depended on, the fossil fuel economy; and the approach of those seeking renewable alternatives in an energy intensive consumerist society. The reductionist energy model, that began in the industrial countries two centuries ago and is being spread to countries like India through globalization, is a model that has given us disposable people, hunger, poverty, dissipative energy, cultures of fear and insecurity, and climate chaos.

Soil and organic solutions to climate change

4000 years ago the ancient Vedas of India had guided us
"Upon this handful of soil our survival depends. Care for it, and it will grow our food, our fuel, our shelter and surround us with beauty. Abuse it, and the soil will collapse and die, taking humanity with it."

In living soil lies the prosperity and security of civilization; in the death of soil, the death of civilization. Our future is inseparable from the future of the Earth. It is no accident that the word human has its roots in *humus* - soil in Latin - and Adam, the first human in Abrahamanic traditions, is derived from *Adamus*, soil in Hebrew. We forget that we are Soil.

Food security is Soil Security. Chemical agriculture treats soil as inert and an empty container for chemical fertilisers derived from fossil fuels. The new paradigm recognizes the soil as living, in which billions of soil organisms create soil fertility. Their well being is vital to human well being. Looked at from this point of view, the immediate aim of fertilization is not to increase yields and fertilize plants, but to build up soil fertility. This is exactly what Rudolf Steiner meant when he coined the famous phrase: "Fertilization means nurturing a living soil". We have been maliciously led to believe that soil fertility comes from factories that made explosives and had to, now make synthetic fertilisers.

As Sir Albert Howard points out in the *Agricultural testament*,
"The feature of the manuring of the west is the use of artificial manures. The factories engaged during the Great War in the fixation of nitrogen for the manufacture of explosives had to find other markets, the use of nitrogenous fertilisers in agriculture increased, until today, the majority of farmers and market gardeners base their manorial programme on the cheapest forms of nitrogen(N), phosphrous (P), and potassium(K) on the market. What may be conveniently described as the NPK mentality dominates farming alike, in the experimental stations and in the countryside. Vested interests entrenched in time of national emergency, have gained a stranglehold"

With their roots in war, synthetic fertilisers continue the war against the living soil. *Mycorrhizae* and earthworms do not survive the application of chemical fertilisers. Chemically fertilized soils loose their structure and their water holding capacity. They need more irrigation and are prone to erosion.
About two thirds of the nitrogen fertilizer applied is not taken up by the plant, it contaminates ground water with nitrate pollution, contaminates surface waters, leading to eutrophication (overfertilisation) of rivers and lakes and dead zones in coastal waters. Large parts of nitrogen fertilizer escapes into the air as nitrous oxide which has an atmospheric life of 166 years and is 300 times more damaging to the atmosphere than CO2.

Sir Albert Howard had warned us in The Agricultural Testament, nearly a century ago:

"We must look at our present civilization as a whole and realize once and for all the great principle that the activities of homo-sapiens, which have created the machine age in which we are now living, are based on a very insecure basis-the surplus food made available by the plunder of stores of soil fertility which are not ours but the property of generations to come.

(Soil and Health)

"No one generation has the right to exhaust the soil from which humanity must draw its sustenance"

(Soil and Health)

Ecological agriculture is based on the law of return, of giving back nutrients to the soil, not just taking nutrition out of it. Organic farming is based on returning organic matter to the soil, it is the most effective means to remove excess carbon in the air, where it does not belong, and putting it in the soil, where it belongs. A 1% increase in soil organic matter increases the water holding capacity of soil by 100,000 litres per Ha., a 5% increase results in 800,000 litres per Ha.

Navdanya's research has also shown that organic farming increased carbon absorption in the soil by 55% and carbon content had increased to 2.2 tons per *Ha*. International studies show that an increase of 2 tons per *Ha*. of Soil Organic carbon removes 10 Giga tons of carbon dioxide from the atmosphere, which, alone, can reduce the atmospheric pollution to 350ppm and keep us within the 2 degree centigrade temperature increase.This could be done by 2020 if we we all participate in this solution. This is why we have started *Gardens of Hope* in Navdanya. Small actions everywhere address the mega crisis we face, including the climate crisis, the crisis of unemployment and displacement, the crisis of democracy and the growing sense that we are too small to make a difference .

Strategies that address the rights of the poor to their land and livelihoods are also strategies that reduce our dependence on oil. They are the same strategies that contribute to mitigation of climate change and adaption to climate chaos, the same strategies that rejuvenate our soils and biodiversity, and help us produce more, and better, food. Addressing issues of poverty, equity, and justice on a small and finite planet simultaneously address earth rights, the rights of people and the climate catastrophe. If humanity has to have the possibility of a future, we need to start making a transition out of fossil fuels. We need to move from Oil and start sowing the seeds for the age of Soil – of regeneration and renewal, of peace and democracy. We need to reinvent society, technology, and economy. We need to do it fast and we need to do it creatively. We can.

Climate Change: the Urgent Need for a New Approach to Agrarian Reform

DOUGLAS ESTEVAM

In February 2014, the MST [Landless Workers' Movement] held its Sixth National Congress in Brasilia, with the participation of more than 12,000 delegates and more than 250 international representatives of organisations from 27 countries. The main goal of the Congress was to define a new approach to land reform, the result of nearly two years of dialogue between the entire movement, comprising 350,000 families settled on land and more than 100,000 families living in camps.

This conceptual redefinition of agrarian reform is based on a new relationship to the land, on the crucial importance of a new production model and on a new conception of land. The main aspects of this new vision of agrarian reform were developed over time, over many years, and encompass not only the struggles undertaken by the MST but also the organisational practices developed to address environmental, social and climate repercussions brought about by new methods of agricultural production. According to this new vision, land reform can no longer be considered an issue concerning only farmers and rural areas. The new proposal contests the role that agriculture and agrarian reform have played so far in the development of capitalism. The main objective of land reform should now concern all sectors of society and form part of a wide-reaching project where agrarian reform will meet the many needs of all of humanity.

MST's new vision of land reform encompasses several approaches: a new way of producing and a new relationship to the land; protecting nature's commons; fighting against environmental destruction and health problems; guaranteed access to education, culture and organic seeds; and of course the fundamental

Barão de Melgaço, Mato Grosso, Brasil.

prerequisite: democratised land access. Among the various components of agrarian reform, one of the crucial factors is tackling climate change caused by the current agribusiness model, which was not addressed in previous land reform projects. This is even more important in Brazil, where the majority of the country's greenhouse gas emissions are produced by the agricultural sector.

In light of this new, broader vision of agrarian reform, the benefits, meaning, significance and roles of which concern all of Brazilian society, and even all of humanity and the world, MST has called the new project the People's Agrarian Reform, to highlight the shift away from conventional conceptions of agrarian reform.

It is not just farmers that bear the brunt of the negative impacts of the current agricultural production model: the entire planet is affected. In recent years, the effects of GMOs and synthetic fertilisers on human health have been the subject of public debate. This model, whose detrimental impact on human health is increasingly evident, is also inextricably linked to the negative effects agribusiness has on the environment and the climate. Agribusiness, concentration of land ownership, monoculture, GMOs, chemical inputs, climate change, environmental destruction and the decline in human health are all interconnected components of the same agricultural production model. Any current agrarian reform project should encompass all these issues, not only that of land access. Although the latter is the primary goal, it should also integrate solutions to climate, environmental, social and health issues, among others.

The effects of climate change are already being felt all over the world, including in Brazil. Northeast Brazil has been experiencing drought for four years, with more than 62% of the region's communities affected. In May 2015, of the more than

1,400 municipalities affected, 862 of them were declared in a state of emergency.[1] Consequently, the region's agricultural production has suffered and even the deepest artesian wells have dried up. The southeast has also had little rain, resulting in water rationing measures in larger cities such as São Paulo where the water reservoir levels have been at 14% of their capacity for over a year. Rio de Janeiro and Minas Gerais have also been affected. In the south of Brazil, however, rainfall has significantly increased over recent years. The effects of climate change are very real in people's everyday lives. Hence the pressing need for change.

The "Legal" Amazon: deforestation and agribusiness

As a signatory of the United Nations Framework Convention on Climate Change (UNFCCC), Brazil has committed to establishing a greenhouse gas (GHG) inventory of anthropogenic emissions, whose technical guidelines have been defined by the IPCC. According to reports published by the Brazilian government, agriculture and livestock are responsible for the majority of the country's GHGs. In an initial report by the Brazilian Ministry of Culture and Technology, "land use, land-use change and forestry" (LULUCF) was at the top of the list in 2005, representing 58% of the country's emissions, the main culprit being deforestation. Action undertaken by President Lula's government was effective in substantially reducing deforestation in the Amazon rainforest. However, since 2012, with the escalating economic crisis, deforestation resumed with greater intensity. In 2013 deforestation in the Amazon rose by 28.8%.[2] Although in 2014 this figure dropped, it remained higher than deforestation rates in 2012.[3]

New studies included in the government's report and published in November 2014 indicate a significant change in the constitution of Brazil's emissions. The category of "Land use, land-use change and forestry", which refers mostly to deforestation, dropped to third place, representing 15% of total emissions while the agriculture and livestock sector jumped to first place, increasing by 75% over the time period concerned.[4] In analysing the impact of agribusiness on Brazilian emissions, we should stress the importance of avoiding categorical conceptions

[1] Ministry of Agriculture, Livestock and Supply. , June 2015. We also consulted brochures nº 81, 82, 83 and 85, www.agricultura.gov.br/arq_editor/Informativo%20estiagem%20NE%20n%C2%BA%2084.pdf.
[2] The so-called "Legal" Amazon includes the Brazilian states of Acre, Amapá, Amazonas, Pará, Rondônia, Roraima, Tocantins, Mato Grosso, as well as part of Maranhão. It concerns an area of over 5 million hectares, i.e., about 60% of Brazil's land area.
[3] According to data published by the Ministry of Environment, http://g1.globo.com/natureza/noticia/2014/11/desmatamento-da-amazonia-legal-cai-18-em-um-ano-segundo-governo.html.
[4] References, information and data analysed in this article are from the second edition of "Annual Estimates of Greenhouse Gas Emissions"), published in November 2014 by the Brazilian Ministry of Science, Technology and Innovation. Data was compared with that in the report's first edition, published in 2013 as well as with information from Brazil's Initial Report on the UN Framework Convention on Climate Change, published by the Ministry of Science and Technology in 2004. We also consulted Brazil's Climate Change Action Plan (CCAP), published by the Interministerial Committee on Climate Change, made up of more than 15 ministries. The data in the documents varies depending on the form of measurement/methods applied. We also consulted , published in 2010 by Embrapa (Brazilian Agricultural Research Corporation) and the Ministry of Science and Technology. We prioritised information provided in the 2014 report given the fact that it is more recent.

advocated by research that lead us to think in a segmented way and to isolate certain aspects of a social dynamic that are in fact interrelated. Deforestation in the Amazon is inextricably linked to the growth of agribusiness in the region and to agricultural and livestock production, particularly the production of seeds (mainly soy). Cleared areas are used for agricultural production, natural ecosystems are converted into agribusiness production units, resulting in changes to the organic composition of the soil and the way in which the land is managed: both factors increase the emission of gases retained in the soil. Agribusiness, which goes hand in hand with deforestation, the dominant production model and altered soil quality, has a negative impact on several different categories of emissions.

Studies carried out by the researcher Antonio Donato Nobre and his team at Brazil's National Institute for Amazonian Research, published in 2014 in the report "The Future Climate of Amazonia"[5] detail the effects of deforestation in the Amazon on different regions of Brazil, one example being the droughts affecting the states of São Paulo, Rio de Janeiro and Minas Gerais. Through transpiration, the trees of the Amazon rainforest transfer an enormous amount of water from the ground into the atmosphere, keeping the moving air humid, which in turn forms rain which falls in other regions of Brazil and over the entire continent. The condensation of water vapour by substances released from trees also causes an increase in rainfall. The Amazon rainforest preserves the moisture in the air and and releases flows of humid air that prevent the southern part of South America turning into a desert like other regions at the same latitude. In addition, the Amazon's dynamic system creates atmospheric conditions that prevent extreme weather events such as hurricanes and other disasters. Deforestation, integrally linked to the growth of agribusiness in the region, currently represents a risk that threatens to upset the system's equilibrium, and the effects are being felt all over Brazil.

According to official figures on Brazil's current emissions, the energy sector is second on the list, just after the agricultural sector, also responsible for 37% of total emissions (this sector releases only a few hundreds of thousands of tons less CO2 than agriculture). Reduced water supplies in certain regions due to droughts that ravaged the country over recent years have resulted in a drop in hydroelectric power generation for the third consecutive year. In 2014 hydroelectric power production dropped 5.6%, lowering its contribution to Brazil's electric matrix from 84.5% in 2012 to 65.2% in 2014.[6] Consequently, thermoelectric plants increased production, raising GHG emissions, making the energy sector responsible for a higher proportion of Brazil's emissions: yet another effect of the interconnected nature of various phenomena, caused by, among other factors, the expansion of Brazilian agribusiness into the Amazon region.

[5] A. E. Nobre, relatório de avaliação científica, São José dos Campos - SP, ARA, CCST-INPE, INPA, 2014.
[6] Ministry of Science, Technology and Innovation, , Brasilia, 2014.

Agribusiness and climate change in Brazil

One of the features of the current model of Brazilian agricultural production, which developed between late last century and the beginning of the 21st century, is the relation between big transnational corporations and the financial sector, which control all agricultural production as well as exercise ownership over the land.

The predominant production model is focussed on extensive monoculture, which is extremely harmful to biodiversity, and on the intensive use of GMOS and petroleum-based chemical inputs. The inputs emit GHGs both when being produced and when they are used; not only do they alter the organic composition of the soil, but they also prevent the earth from being able to absorb GHGs from the atmosphere. Furthermore, as production is intended for international markets instead of local ones, transporting these products creates even more pollution. The agricultural products have been turned into "commodities" to be traded on financial markets and globalised futures markets. These are the key features that characterise both Brazilian and international agriculture.

A recent trend in the expansion of monoculture by the Brazilian agribusiness sector has been their focus on just a few products, in particular, meat, soy, sugarcane and corn. Monoculture is spreading into the Amazon region and the centre-west of Brazil, resulting in the destruction of other biome areas such as the "Cerrado", a savanna region in the centre of Brazil. Currently, emissions in the "Land use, land-use change and forestry" category are caused primarily by deforestation of the "Cerrado" and represented 62% of total emissions in 2012.[7] Deforestation, slash-and-burn clearing and agribusiness are interconnected not only in the Amazon rainforest but also in the centre of the country.

According to 2012 data, 55.9% of emissions from agriculture and livestock are due to enteric fermentation, caused primarily by livestock intended for meat production. Studies show an increase in livestock in the states located in the Amazon region: Acre, Rondônia, Mato Grosso, Goiás, Tocantins, Maranhão and Pará. Soil use is the next biggest emitter with 35.9%. Between 1995 and 2005, emissions from the soil sector increased by 23.8%, and by 7.4% in the following period (2005-2012). Although synthetic fertilisers are only third on the list for soil-related emissions, a more detailed analysis illustrates that proportionally, the largest increase in these emissions has been caused by such fertilisers. Emissions due to synthetic fertilisers increased by 94% in the decade between 1995 and 2005, and by 56% in the following period (2005-2012).[8] The largest consumers of nitrogen-based agricultural inputs were the states of São Paulo, Minas Gerais, Paraná and Rio Grande do Sul. In the states of Mato Grosso, the biggest soy producer in Brazil, and Goiás, the use of this type of input has increased significantly, due to the rise

[7] Ministry of Science, Technology and Innovation, Brasilia, 2014.
[8] Ministry of Science, Technology and Innovation, Estimativas anuais de emissões de gases de efeito estufa Brasilia, 2014.

of agribusiness in the central region of Brazil. According to 2005 data, although the southwest consumed 44.4% of fertilisers over the period analysed (1990-2005), it was in the northern and centre-west regions that fertiliser use increased the most, with 1,683% and 477% respectively, the latter consuming 16.9% of fertilisers. The alarming increase in these regions' fertiliser consumption highlights a reproduction of the model of agricultural expansion in the Amazon region.

Synthetic nitrogen fertilisers used in agribusiness monoculture are a major source of nitrous oxide emissions, with dire effects, as this gas is 300 times more potent than CO_2.

Production of nitrogen fertilisers requires large amounts of natural gas, thus releasing more CO2 emissions. Even the process of producing these synthetic fertilisers emits GHGs, adding to all the other environmental impacts including water and soil contamination. Brazil consumes about 6% of the world's nitrogen products: it is the largest consumer of toxic agricultural products in the world. In sugar cane plantations in São Paulo, where the most ethanol is produced in Brazil, production is based on the use of nitrogen fertilisers. Climate change is an every day reality for the inhabitants of the Ribeirão region, one of São Paulo›s largest sugar cane production centres. And sugar cane pre-harvest burning also represents also another major source of emissions.

Agro-ecology as a response to climate change

The MST's proposed "People's Agrarian Reform" is based on agro-ecology as a new production model, not only in terms of the relationship to the land and the environment, but also in terms of sociability. As a production model, agro-ecology represents an alternative to the agribusiness model and its negative impacts on the climate and the environment. Agro-ecology, when part of a more comprehensive approach, like that of the People's Agrarian Reform, is fundamental to a vision that benefits not only the rural world and farmers, but society as a whole.

A significant amount of organic carbon is held within the soil, and can be two to three times greater than that present in the biomass or in the atmosphere. While agribusiness's intensive soil management generates more GHG emissions, agro-ecological methods, on the other hand, not only increase the the quantity of carbon in the soil and plants, but also capture more carbon dioxide from the atmosphere. Monoculture, on the other hand, has a detrimental effect on organic soil composition, resulting in degradation due to erosion, salinisation and nutrient depletion. The report published in 2012 by the UN Special Rapporteur on the right to food, Olivier de Schutter (Human Rights Council) has already cited the benefits of agro-ecology in tackling climate change. International studies have shown that agro-ecological crops are more resilient not only to extreme climate change, as they play a role in attenuating the negative effects of these

phenomena, but also to erosions as agro-ecological soil is naturally wetter.

In addition, organic farming does not use chemical inputs, thus avoiding all the above mentioned problems related to the use of nitrogen products. Increasing the soil's organic matter and biomass on the soil surface also reduces carbon dioxide emissions. According to the IPCC, agriculture plays a major role in mitigating the negative effects of climate change by capturing carbon dioxide stored in organic soil, a factor that agro-ecology could maximise on.

MST's People's Agrarian Reform project also involves protecting forests and reserves and reforestation in cleared areas – with the planting of native trees and fruit trees in order to restore the biodiversity of the biome areas. This approach goes against that of green capitalism, whose priority is industrial reforestation. Thus in the "14 de Agosto" settlement in Rondônia, a state at the frontline of agribusiness's expansion into the Amazon region, agro-ecological culture has been integrated into reforestation experiments in an attempt to restore areas depleted by grazing. In 15 years they have been able to recover part of the original forest, which had been destroyed. The agro-ecological model is used in this settlement for both the cultivation of fruit and vegetables and beekeeping.

In the energy sector, the MST aims to develop alternative sources of renewable energy, created within rural communities and derived from non-food crops and from solar, water and wind power, in such a way that ensures energy sovereignty within ecological limits. In São Paulo, Brazil's monoculture-based ethanol production centre, the Itapeva settlements have experimented with producing a kind of biodiesel on site. The fuel, made from sunflowers, has been used to run the community's tractors.

Our new agrarian reform project also advocates the conservation of water reserves and their protection from contamination due to chemical inputs. The agro-ecological production model is also based on farmers producing non-GMO seeds themselves, without the use of synthetic pesticides. So, since 1997 the peasants of MST in southern Brazil have joined forces with Bionatur, Latin America's biggest producer of agro-ecological seeds, producing 20 tons of over 80 seed varieties per year.

There are a great many ideas cropping up, and they are already being put into practice in the MST settlements throughout Brazil, with farmers playing a central role in their implementation. Today the fight for agrarian reform is intensifying, with a social and environmental dimension that is both long-term and wide-reaching. The Popular Agrarian Reform project aims to meet the needs, expectations and aspirations of all of humanity and play an integral role in preserving our planet.

"To fight climate change, farmers need what they have always needed, and what agroecology can provide: economic security and autonomy"

OLIVIER DE SCHUTTER

For farmers, climate change is a new chapter in an old battle. For decades, and in spite of burgeoning net food production around the world, farmers have struggled for resilience and autonomy. In the midst of variable harvests, unpredictable conditions, evolving technologies and fluctuating prices and incomes, farmers have found themselves increasingly dependent on external support. This has taken diverse forms: the chemical inputs supplied by agribusiness firms in order to manage weeds and pest and to boost soil productivity, or the income support received from governments willing to provide it.

Climate change represents a new chapter in this story. Environmental threats to food production are rising at unprecedented rates, while agriculture is widely recognized as a major driver of climate change. However, the question is still essentially about autonomy. Whether or not the climate challenge can be met in fact comes back to the question of whether farmers can be extricated from harmful dependencies, and whether the conditions can finally be created for farmers to sustain their livelihoods.

Following years of under-investment in agricultural extension and support services at the state level, small-scale farmers around the world are increasingly dependent on agribusiness firms for seeds, fertilizer, equipment, training and infrastructure, and for the market outlets offered by multinational firms and their global supply chains. This dependency has grown alongside the climate crisis, and leaves farmers with little

© PRACHATAI

La Via Campesina members.

room for manoeuvre. High-yielding external inputs may squeeze more productivity out of soils over short timeframes and in favourable conditions, but will not stem the soil degradation, biodiversity loss and greenhouse gas emissions that threaten productivity in the longer term. Farmers may become more dependent still on costly external inputs that are decreasingly effective in tackling the ecological crisis on their land.

What is needed, then, is highly ambitious: solutions that reduce agriculture's environmental footprint and build its resilience to climate change, while challenging socio-economic dependencies, democratizing knowledge, adapting that knowledge to the local level, and empowering farmers. It requires what appears to be an impossible marriage of science, policy and practice in the service of shared goals; an odd hybrid of social movement, agronomic revolution and political transformation.

And yet this improbable fusion is already taking shape. It has a name, agroecology, and a growing body of evidence showing its power to tackle the problems at the intersection of food systems and climate change (see De Schutter 2011). Agroecology has been defined as the 'application of ecological science to the study, design and management of sustainable agroecosystems' (Altieri 1995 ; Gliessman 2007). Agroecology is not just about reducing the climate impacts of farming. Rather, the goal is to re-integrate modern agriculture with the ecosystems it relies on – but too often drives into disrepair. Agroecology seeks to enhance agricultural systems by mimicking or augmenting natural processes, thus enhancing beneficial biological interactions and synergies among the components of agrobiodiversity (Altieri 2002). This process involves delinking food production from the reliance on fossil energy (oil and gas). It contributes to mitigating climate change by avoiding carbon dioxide or other greenhouse gas emissions from farms by reducing direct and indirect energy use, and by increasing carbon sinks in soil organic matter. Indeed, as much as 89% of the 'mitigation potential' from agriculture identified by the IPCC can come from carbon sequestration in soils (Hoffmann 2010: 11; see generally on the mitigation potential of agriculture FAO 2009).

Crucially, there is no trade-off between the environmental benefits of agroecology, and the livelihoods of farmers. Self-sustaining forms of rural development can in fact be set in motion. The case of Africa is particularly illustrative. Many African soils are nutrient-poor and heavily degraded, and they need replenishment. Supplying these nutrients to the soil can be done not only by applying mineral fertilizers, but also by applying livestock manure or by growing green manures. Farmers can also establish what has been called 'a fertilizer factory in the fields' by planting trees that take nitrogen out of the air and 'fix' it in their leaves, which are subsequently incorporated into the soil (World Agroforestry Centre 2009: 10). The use of such nitrogen-fixing trees avoids dependence on synthetic fertilizers, the price of which has been increasingly high and volatile over the past few years, and shall remain so as a result of peak oil. This means that whatever financial assets the household has can be used on other essentials, such as education or medicine, while dependency on external inputs, and thus on subsidies or local moneylenders, is reduced. These approaches are the key to bringing resilience to food production and livelihoods where these improvements are needed most.

Nor does there have to be a trade-off with net food production on the global level. Agroecological techniques, in their ability to harness natural synergies in ecosystems, have shown the potential to significantly improve yields. In what may be the most systematic study of the potential of such techniques to date, researchers found that sustainable agriculture projects in 57 developing countries delivered an average crop increase of 79 percent (Jules Pretty et al. 2006),[1] figures that were subsequently revised up by UNCTAD and UNEP to an 116 percent increase for all African projects and 128 percent increase for the projects in East Africa (UNCTAD and UNEP 2008: 16).

Like all innovative approaches, agroecology requires support in order to reach farmers on a significant scale. When it comes to food and climate challenges, resources are not lacking. Over the last few years, agri-food companies have seen an increase in direct investment as a means to lower costs and ensure the long-term viability of supplies (Reardon and Berdégué 2002; Reardon et al. 2007; Reardon et al. 2009): FDI in agriculture went from an average of US$ 600 million annually in the 1990s to an average of US$ 3 billion in 2005-2007 (UNCTAD 2009); it rose further to an average of US$6.3 billion in the 2008-2010 period, with most of this investment flowing into developing countries (UNCTAD 2012). The global food price crisis of 2007-2008 also pushed governments into action. In July 2009, the G8 Summit in L'Aquila produced a Food Security Initiative, promising to mobilize US$22 billion to strengthen global food production and security; and the Global Agriculture and Food Security Program (GAFSP) was established as a multilateral financing mechanism to help implement these pledges. Other initiatives at global and regional levels are underway, such as NEPAD's Comprehensive Africa Agriculture Development Program (CAADP) in Africa. Governments are paying greater attention to agriculture than in the past.

[1] The 79 percent figure is for the 360 reliable yield comparisons from 198 projects. There was a wide spread in results, with 25% of projects reporting a 100% increase or more.

However, this 'reinvestment in agriculture' provides no guarantee that agroecology will get the support and visibility it requires in order to flourish. As a knowledge-intensive process that aims to reduce dependency on external inputs, the transition to agroecology offers little profit incentive for companies. Nor does it offer easy entry points for agricultural development finance in its traditional forms.

It is therefore essential for governments to consider doing what current market incentives and support frameworks do not – namely to put the conditions in place for a widespread transition to agroecology. From a perspective of mitigating and adapting to climate change, agroecology is an essential part of any toolkit. But when the advantages in terms of empowerment, livelihood resilience and long-term productivity are taken into account, it is hard to understand why agroecology is not the cornerstone of all efforts to answer the food and climate challenges. The win-win-win offered by agroecology -- for farmers' livelihoods, for improved nutritional outcomes, and for the environment -- cannot be ignored, and the burden of proof is now on governments and other stakeholders to explain why they are not shifting support and investment in this direction as quickly as possible.

REFERENCES

- ALTIERI, M.A., Agroecology: The Science of Sustainable Agriculture, Westview Press, Boulder, Colorado, 2nd ed. 1995
- ALTIERI, M.A., "Agroecology: the science of natural resource management for poor farmers in marginal environments", Agriculture, Ecosystems and Environment, vol. 93 (2002), pp. 1-24
- ALTIERI, M.A. and NICHOLLS C., Biodiversity and pest management in agroecosystems, CRC Press, 2nd ed. 2004.
- DE SCHUTTER, O. "Agroecology and the Right to Food". Report of the Special Rapporteur on the right to food presented at the 16th Session of the United Nations Human Rights Council, UN doc. A/HRC/16/49, March 2011.
- FAO (United Nations Organisation for Food and Agriculture), Food security and agricultural mitigation in developing countries: options for capturing synergies, FAO, Rome, 2009
- GLIESSMAN, S. Agroecology: the ecology of sustainable food systems, CRC Press, Boca Raton, Florida, 2007.
- HOFFMANN, U., Assuring Food Security in Developing Countries under the Challenges of Climate Change: Key Trade and Development Issues of a Profound Transformation of Agriculture, UNCTAD, Discussion Paper No. 201, November 2010.
- PRETTY, Jules, and al., "Resource-conserving agriculture increases yields in developing countries", Environmental Science and Technology, 40(4), 1114–1119, 2006.
- REARDON, Tim & J.A. BERDEGUÉ, The rapid rise of supermarkets in Latin America. Challenges and opportunities for development, 20 Dev. Pol. Rev. 317-334, 2002.
- REARDON, Tim et al., Supermarkets and horticultural development in Mexico : Synthesis of findings and recommendations to USAID and GOM, Report submitted by MSU to USAID/Mexico and USDA/Washington, August 2007.
- REARDON, Tim et al., Agrifood Industry Transformation and Small Farmers in Developing Countries, 37 World Dev., 1717-1727, 2009.
- UNCTAD (United Nations Conference on Trade and Development), World Investment Report 2009. Transnational Corporations, Agricultural Production and Development, 2009.
- UNCTAD (United Nations Conference on Trade and Development), FDI data on agriculture, Division on Investment and Enterprise, 2012.
- UNCTAD (United Nations Conference on Trade and Development) and UNEP (United Nations Environmental Programme), Organic Agriculture and Food Security in Africa, UNEP-UNCTAD Capacity Building Task Force on Trade, Environment and Development (UNCTAD/DITC/TED/2007/15), United Nations, New York and Geneva, 2008
- World Agroforestry Centre, Creating an Evergreen Agriculture in Africa for food security and environmental resilience, Nairobi, 2009

Vernand, the Experience of a Farm Conceived through its Landscape: Moving Towards an Agricultural, Environmental and Urban Transition

RÉMI JANIN

October 2005. I find several photographs in the drawer of an old wardrobe. On the first one there is a man standing. He his putting his hat on, pulling the brim down with two hands. He is laughing. It is the harvest. Behind him, several people are bent over the land, working. Further behind them is an open field of mostly farmed land, numerous plots scattered over the hill. It is the 1940s and the countryside is still heavily populated. Many of these people are farmers. This is a rural community as exists everywhere else in France, a world of farming.

Sixty-five years later, I try to find the same place on the farm, the same point of view. The crops that used to exist have become a grazing field. The field is empty, the hill opposite full of enormous plots and the ridges that can not be mechanically harvested have become overgrown with trees. The countryside is obviously no longer the same, like everywhere in France. Here, mixed farming has given way to cattle farming, which has changed the landscape. And the most noticeable difference is that there are now few farmers; of the hamlet's eight farms, only two remain. In the weekends, people go running, horse-riding or biking in the countryside. The old buildings have been taken over by people working in Lyon, the stone walls have been sealed and the shutters painted in provencal colours. It is now an urban countryside in an urban world.

Formulating a landscape project, taking a spatial approach to the farm in order to make it more productive and sustainable, drawing on the region's qualities

My parents arrived on this farm from the northern part of the Loire in the early 1980s, taking it over from some distant cousins that were about to retire. It then consisted of about twenty hectares. Now there are almost one hundred. Under their management, the farm produced primarily beef and lamb. In the early nineties, following the lamb crisis, they decided to switch to organic farming and to sell their produce directly. A meat-cutting room was set up on the site and the farm has since employed three people: my mother – the main farmer, a full-time farming assistant and a part-time butcher. The meat is sold at a market once a week in Roanne, the closest town, and the rest is sold to individuals in the surrounding urban areas in 5- or 10-kilo boxes. The meat is thus sold within a maximum 60 kilometre radius. Selling at the market and ensuring a client-base that purchases boxes of 5 or 10 kilos keeps transport to a minimum. The farming system is designed to ensure maximum autonomy. Hay is produced on the farm, as are five hectares of cereals, providing straw for the sheep throughout the winter in the barn and additional food for the animals.

In 2005 my brother and I, students in architecture and landscaping respectively, decided to carry out joint research on the farm. This was not a premeditated desire, but we finally came back to farming, aware of the way in which it had become progressively marginalised in an increasingly urban society. As we set out on this project, we wondered what would be the best way, as an architect and landscape designer, to approach the site and maximise its potential. We began by setting up a photographic observation tower from which the entire farm could be captured. This highlighted for us that farming is a constructed landscape, mobile and in constant movement. The open farming space is constantly changing, depending on the moment in the farming cycle. The manually-harvested pastureland, which is more of an enclosed space, is constructed completely differently and varies depending on whether herds are present or not, their size, the paths created, and the texture of the resulting pastures. The buildings are also subject to seasonal changes; empty in the summer, used in the winter and at certain times between seasons. Farming thus goes hand in hand with a living, breathing landscape, and this represents one of its main qualities.

Then, through a multifaceted spatial approach, we began to lay the foundations of the project, focussing on three main points.

First of all, any farming project is by nature a landscape project, whether intended or not. Instead of farming practices shaping a landscape, a landscape can instead shape a farming project, and play a part in improving its agronomical, energy and production potential, depending on the context. For us, the spatial approach should therefore be a means of agricultural thinking integrated into the project, which considers the project in its environment and how it operates in its day-to-day workings. The landscape project was thus a way for us to make an agro-ecology project more efficient and productive through spatial thinking and by understanding the particularity of each region. It was important that the project not be cut off from its environment.

We then observed that organic farming, in which this farm has been involved for over twenty years, is often associated with traditional, even backward, agricultural methods. However, it seems to us that this type of farming is completely new and could constitute a solution to the current and future urban, environmental and energy challenges. For us, it should be combined with new forms of contemporary, productive and open landscapes.

Lastly, we feel that farming should be a fully dynamic activity, the driving force of a shared countryside, which is now used by people that are increasingly removed from farming and who live in and occupy this same nurturing space. In an increasingly urbanised context, farming should not be something that takes place outside of this radical, unprecedented shift, but should instead be actively and imaginatively part of it.

Progressively changing this space: developing a shared agronomical, environmental and economic project.

After carrying out this research, we began by changing the farm to fit in with this vision. In twenty years, the agricultural system had evolved. The cows were previously tethered during the winter and the hay was stored in bulk in the barn's hayloft. In the early nineties, the decision was to keep the animals outside as the number of cattle was increasing. Thus cattle herds remained outside throughout the year, boosting their natural resistance. This system also avoided constructing new buildings. Hay was made into round bales, which are easier to transport into the field in winter to feed the herds.

This development, however, meant the existent barn was neglected, as the animals were no longer being kept inside and the hayloft was no longer suitable for storing round hay bales. We therefore decided to take out the hayloft, creating a bigger, open space, more suitable for storing round hay bales, and which can also be used for other purposes. The barn is thus full from July onwards and gradually empties out over the winter. During the spring, when it is not in use, we use it for concerts, meals or movies, among other things. This way of

using an agricultural building, diversifying its use within the farm, instead of creating a juxtaposition, provides a sense of openness; a single space can serve a variety of purposes.

Our analysis also illustrated a lot of time and energy was being spent moving the fodder around, which was not actually necessary. This is produced in the spring in the field where the cows spend the winter and where the hay is then given to them. It therefore seemed wiser to store they hay in the same place it is produced and consumed by the herds, significantly reducing tractor use.

Through this landscape analysis, we were also able to list everything that was not being used on the farm. There were many agronomically ambiguous areas, so instead of trying to find a new site for the agricultural project, the aim was to work on developing already available areas. For instance, we partially cleared some of the overgrown woody areas in order to transform them into wooded fields. This allowed grass to grow over the area and provided natural shelter for the cows present in the field throughout the year – both shade in the summer and protection from the cold in the winter. The area also created a new type of landscape on the farm and contributed to a more concentrated use of space.

Similarly, the fields at the far end of the valley were too big. Animals abandoned the areas they were less attracted to, causing it to lie fallow and these areas gradually became inaccessible. We divided the area into several smaller fields, rotating the herds more frequently, which limited parasitism due to the animals spending less time in one area and made it easier to manage the pasturelands. These smaller fields provide a varied landscape for the herds, with shady wooded areas, open, wetter areas, and dry areas. We are also planning on planting fruit trees and nectar plants in the existent pastureland and wooded areas, integrating these new plantations into the life of the farm (considering how they are related visually, the space created, and the possibility of opening up the space to other people in the perspective of a shared countryside).

We also changed the area where the crops were grown. This was spread out over ten hectares with a three year crop rotation system: three years as crops, three years as temporary fields. The area was divided into two big five-acre plots, alternating every three years, causing significant erosion problems due to the slope. We wished to address this issue while maintaining a space that was still generally open, in keeping with the landscape diversity of the farm (in contrast to the far valley which consisted of a totally different landscape and biodiversity). We then divided the slope into narrow beds, which by alternating between grassland and crops, made it easier to manage erosion. This landscape of narrow crops creates a strong visual effect and its design reinforces its visual vivacity, its spatial richness and its associated biodiversity.

We kept a grassy path where two ploughed beds intersect, which serves as new path for working the land and confines farming vehicles to a single area, thus limiting their use. We also connected the path to an adjacent hiking track, which opens up this space to being used and claimed in different ways, and gives it an important dimension of openness and shared space.

We also wanted to limit the use of machines in our farming practices. We have been experimenting with no-till farming for several years, and have changed the grains being sown, combining five varieties (rye, triticale, oats, barley and peas). And the only soil-enriching agent is manure brought out of the sheep barn and composted for a year. In addition, the legumes sown in the temporary fields are a natural way to stabilise the nitrogen in the air and to enrich the soil before it's used for crops. No other fertiliser is used, significantly reducing fossil resources. Individual trees are also planted to provide perches for birds of prey, particularly rodent predators. They punctuate this space and accentuate its design.

As this is a highly economical project with limited means, and as we wish to use resources as efficiently and prudently as possible, we make significant use of reused and recycled materials. For instance, we used some old wooden planks to build a platform open to the public on an old silted pond. We used concrete blocks and pallets to make paths through the fields, for both our use, in order to reach the herds on foot, and for the use of others (when the fields are open). The ponds, which are now protected from the animals, are home to a greater biodiversity and the drinking water is of a better quality. Using simple concrete pipes and salvaged bathtubs, our style and chosen materials are humble, modelled on our vision of the farm and reflecting a rural landscape that is both ordinary and contemporary. Frugality and economy is thus a theme in our constructions, reflecting our desire to limit resources as much as possible.

Lastly, as well as physically changing the landscape, it also seemed important to work with others to bring in a cultural dimension. So in 2008 the association "Polyculture" was created, bringing together both the farm's clients and the region's residents. The association's main goal is to hold a contemporary art display every two years at the end of May. Between 10 and 20 artists, landscape designers and architects are invited to the farm, to bring a fresh perspective to the farming space. They are asked to think about the space creatively and of ways that may inspire people to see it and invest in it differently. The aim, then, is to collectively contribute and imagine new ways in which farming could be represented, inspiring people to see it in a new light. It is also to work on a different collective project centred on the farm which contributes to it becoming a shared space. The farm thus becomes a productive space that, through a spatial approach, is gradually associated with openness. It reflects a modern, increasingly urbanised countryside, which serves to inspire new kinds of landscape and social ties.

The landscape project as a way to approach the urban, environmental and energy transition

The spatial approach to farming has thus been a way for us to think through a comprehensive project via the landscape, both in terms of the agronomical, environmental and energy transition, and in terms of active participation in the life of the region, through a dimension of openness and sharing, by developing the local economy, and by fostering the cultural and social aspect.

Faced with our society's current challenges, as well as those ahead of us, it seems pivotal that farming should remain the driving force behind a new project such as this one. The advent of a highly urbanised society, has, for many decades, completely transformed farming, our relationship to the world and our way of living. The more urbanised a society is, the more it requires agriculture, due to the simple fact that people need to eat. Yet agricultural and urban projects are conceived as two separate approaches, whereas they are, in fact, intrinsically connected. On the one hand, farming still relies on tools that date back fifty years and which seem totally outdated. On the other, cities and towns are being built in a way that completely disregards farming, sprawled out over fertile land, jeopardising our future ability to provide for our own needs and to grow food locally. These two visions blindly rely on a future based on carbon.

Faced with this unprecedented urban, energy and environmental revolution, farming should become a conscious, vibrant and essential component in the building of a town or city, in the broadest sense, and should be reinvented. New ways of thinking and conceptualising that are able to meet these challenges need to be developed, drawing on, in particular, the means to develop a long-term project that is both agricultural and urban, sustaining and sustainable.

In this respect, a spatial, landscape-focussed approach, which serves to guide, formulate and create a collective project, seems to represent one way of making the necessary transition. It is a way of exploring and imagining an agricultural project in a given region in this context of change. It also represents a way to take a broader approach to space, and to consider the many ways in which it can be used, occupied and shared in a living world that is revealing its limits.

03

CONVERGENCES AND REGULATIONS FOR CLIMATE JUSTICE

How can we develop these innovative alternatives, many of which are local and small-scale, into something more wide-reaching and long-term? How can we make them the building blocks of a new system?

This is where the question of alliances is key, as we can not overlook the importance of economic, financial and legal regulatory frameworks, nor the financial and especially technological backing of international institutions, businesses and, of course, public authorities. There's no question that mass mobilisation, the staunch commitment of citizens and the need to connect up different actions and movements are also determining factors.

As climate change does not affect everyone in the same way, it is primarily a matter of justice, i.e., of equality and access to rights for everyone, including socio-economically vulnerable communities. It is these communities that are hit hardest by climate change, and yet it is these same communities that are the first to initiate sustainable alternatives.

The climate is a crucial issue for the future of our planet and our societies. We can not address the urgency of the climate issue without also addressing social justice, and in this respect the climate crisis represents an opportunity – an opportunity to build, by way of new alliances, low-carbon societies founded on climate justice.

A. Reflections for the Convergence of Citizen Climate Mobilisations

Climate Change: Evaluation and Perspectives from COP20

ANTONIO ZAMBRANO ALLENDE

We must cease to understand the phenomena of Climate Change as one consisting of the emission and suspension of high concentrations of greenhouse gases in the atmosphere, and begin to approach it for what it really is: a struggle for our territories and the need to attack the root cause of the problem, the capitalist system in its current phase of expansion over nature. This is the premise under which many of the social movements for our planet's climate are organising, during the COP20 we were one of those movements, and today we are networking struggles and alternatives in order to overcome the difficult context we are placed in by the negotiations in the run up to COP21, through mass actions and local actions that think global.

Mega diverse country, mega fragile host

The evidence seems overwhelming, according to the UN Intergovernmental Panel on Climate Change - IPCC, we already have a 95% certainty that the phenomena of climate change is caused by humanity and that we have reached this point by violating Nature's limits to an almost irreversible extent.

Furthermore, by now, we also know with the same certainty that the global debate on the issue is not being defined by science. In Peru, the country where the twentieth United Nations Conference of Parties on this phenomena was held in December of 2014[1], we are well aware of this. For more than a decade, official and independent documents inform us that our country is among the top ten countries that will be most strongly impacted by extreme weather phenomena and changes in the atmosphere in the coming decades, which could entail annual losses of up to 15.4% of our Gross Domestic Product by the end of the century[2], with the probability that the same will happen across the entire region of Latin America.

[1] www.cop20.pe

[2] Economic Commission for Latin America and the Caribbean (CEPAL), "La economa del Cambio Climático en el Perú", Lima, 2014.

In our case, it seems that the fact that we have 84 of the 104 possible micro climates that exist on the planet in our territory and the enormous biodiversity represented by our scarcely more than 1,200,000 km² of territory, is not a fortune, but rather a source of new concerns, as our climates are to be found in small and marvellous geographical areas that are highly exposed to human intervention and variation in response to external agents.

The Social Process

These elements, together with the fact that at COP20 the draft of the new global agreement on the climate should have been approved, set the challenges that we had to overcome in order to organise our citizens and give the debates within civil society enough force to be heard by the meeting of States. From the beginning, in June 2013, the Citizen's Movement against Climate Change, which had existed for less than 5 years, understood that the force of its members would not be sufficient and that it was necessary to begin a process of mass and unitary mobilisation, that aimed to build a common discourse from the grassroots in the face of negotiations that do not represent the people.

In a context in which the social fabric of the country is still recovering from the Alberto Fujimori dictatorship and deep social fragmentation, we called on the social and grassroots organisations of the country to form a front, where around 90 organisations, including environmental NGOs, trades unions, peasant farmer's organisations, indigenous peoples of the Amazon, churches, social movements and a large number of grassroots organisations fighting to defend their territories joined together. This front called itself the COP20 Peru Group, and it began the intense work of building a debate around the negotiations for and by the people, overcoming many difficulties through a process of building unity through action. Of course, they were not exempt from contradictions and historic quarrels, which caused setbacks, but at the same time this lead to the creation of the 8 main thematic axes for discussion that gave life to the debates. These were:

1. Civilizing Change and the Development Model
2. Global Warming and Climate Change
3. Energy
4. Food Sovereignty
5. Sustainable Management of the Territory
6. Finance, the transfer of technology and learning-exchange
7. Women and Climate Change
8. Climate Change and the world of work

Around these axes, two elements posed the great challenge of the historic moment: on the one hand, the need to advance a real agreement that commits the States and nations of the world to fair, ambitious and binding measures to stop the climate crisis the planet is experiencing, and on the other, the categorical

imperative of the organizations to raise the voices of their specific struggles that go beyond isolated issues to a wider citizen's debate.

The years in the run up to the debate set the agenda and made the first challenge clear. It is fundamental that we discourage the extraction of fossil fuels in the short term, eliminating the subsidies that are applied by an enormous number of countries and promote a change of energy matrices towards sustainability and the use of non-conventional clean energy sources, such as sun, wind or geothermal heat, which don't cut the flow of the rivers as is the case with hydroelectric dams, which produce a massive amount of methane in the process[3]. Furthermore, it is important to reconceptualise "clean" so that these new ways of providing energy to society respect its ways of living, its territories and its relationship with nature and that they are not appropriated by capital as though they were commodities. This meant debating the meaning of the Clean Development Mechanisms CDMs and the mechanisms for Reducing Emissions from Deforestation and Forest Degradation– REDD+ as part of the so-called "green economy" denouncing them as false "market solutions".

Another element that became self evident: the social movement in defence of the climate must take to the streets, express itself and challenge the cities and their people to demonstrate with so much force that it becomes impossible to look the other way. This is why the initiative emerged from the heart of the COP20 Peru Group to organise the People's Summit[4]. A space for social movements, unions and indigenous peoples to coordinate and stimulate the taking of public space, a space for stalls and convergence and debate under the title the People's Summit against Climate Change, which led to the World March in defence of Mother Earth. It is important to mention here that while in the beginning the indigenous people's movements, trades unions and environmentalist movement proposed having their own, differentiated spaces, we were able to converge in a unitary march where we could share symbols, expressions and narratives. The fruits of this process can be seen in the logo and the messages that were transmitted to the press which pointed directly to the system as the main cause of the problem in order to be able to open specific debates within the different axes and the specific platforms of each organisation and movement.

© D.R.

Arrival of the march for the defense of Mother Earth, Lima, December 10th 2014.

[3] According to the IPCC, methane gas is around 20 times more effective as a greenhouse gas than carbon dioxide. Moreover, recent studies show that big dams are responsible for around 4% of global emissions, like business aviation.

[4] www.cumbrepuebloscop20.org

The Mobilisations

2014 was year of mobilisation and, while thousands of actions were organised in the streets around the world, it is worth highlighting a few. Just three months before the COP20 from the early hours of the morning of Sunday 21st September[5], half a million people flooded the streets of New York during the Climate Summit called by Ban Ki Moon[6] in what was officially called a "catalyst action", making it the largest march for the climate to date and the perfect prelude to the summit in Lima.

On the other hand, in the global South, we marked the date with a clear message. On the 10th of December, international human rights day, the peoples called on humanity in all its diversity to converge on the streets of Lima, with people from all of the 5 continents,from every corner of Latin America and all the regions of Peru to be together under a single slogan, as a unified multiplicity of voices crying out that we will "Change the system not the climate", making a clear reference to the need to go beyond the blinkered view of capital and take measures that transcend the financial markets and the privatisation of nature.

The possible the desirable and the necessary

Nevertheless, as often happens, the expectations were far greater than the reality and the Lima Call to Climate Action[7] was fragmented damaging the possibility of reaching agreements. The Presidency of the COP, represented by the State of Peru, preferred to save the meetings by allowing each State to individually determine its commitments to emissions reduction, postponing agreements that have very little time left to be resolved before the coming COP21.

There is some hope that the Intended Nationally Determined Contributions or INDCs will be ambitious enough not to raise the average planetary temperature above the level of 2 °C as if not it will threaten the existence of many lifeforms across the globe to a far greater extent than we have already seen in recent decades.

Despite these aspects of the official politics, the legacy from Peru is important. The social movement for the climate that is gestating in the heat of these struggles is growing with the conviction that it is necessary to build a global network with its own personality and mechanisms that breaks from continuously following the UN Conferences. We cannot deny the importance of States nor of any element in this reality, but we need to rely on our own ways, dynamic, discourses, language, narratives and alternatives, if we are to defeat the monstrous capitalism that governs from within State structures.

[5] www.peoplesclimate.org
[6] www.un.org/climatechange/summit/es/
[7] COP 20 UNFCCC report, Lima, December 2014.

We know that the possibilities go far beyond the vision of today's States, that what would be desirable is our own construction, built without permissions and to the rhythm the pulse of the peoples, and that what is necessary is to continue mobilising, because we know that it is only through organisation that we will be able to escape from the crisis we are facing.

Where we are heading

It would be too audacious and pretentious to presume that all movements share our reading of the planetary reality we are experiencing. Nevertheless, we share our ideas and we are hearing the same alarms ringing from our different perspectives, announcing a common future marked by a planet with serious problems supporting the life to be found on it.

Many months have now passed since the development of the COP20 in Lima and the fervour of actions has returned to the local sphere, with a scattered network of activities coordinated by the movements, who are all looking to the clear point of convergence in Paris later this year.

Both the creation of the Coalition Climat 21, made up of more than a hundred French organisations – which is mobilising with organisations from Europe and around the World – and the spaces that will be created during the struggle, they are structuring their strategies and they are promising that between the 29th November and the 12th December they will shake French capital to it's foundations.

As a Peruvian organisation, the MOCICC has always been aware of these events and of the need for global networking, which is precisely why we understand our work to be clearly in the territory, the historical construction of our societies and their forms of popular power against the limitations of State representation.

Today our efforts are focussed on connecting this grassroots work in schools and public places, with young people in the neighbourhoods and in dialogue between the different movements, to understand the flow from the local to the global. This is the enormous challenge of our day to day work.

Our shared home was never so small, so interconnected, nor so filled with imminent danger. Local alternatives emerge on all sides, massively diverse, yet sharing winks of complicity, from agroecology, organised family agriculture, peasant farming communities with ancestral knowledge, Amazonian communities, new ways of understanding sustainable cities, political spaces for discussing the climate and organisations that are mobilising online, building processes for environmental education and awareness raising among citizens, all sharing the different convergence spaces and coming together, little by little from their different disputed territories. One way or another, 2016 will be a very different year.

Creating a Climate of Determination: Blockading, Divestment and Alternatives

MAXIME COMBES AND NICOLAS HAERINGER

Just two months before the opening of COP21 and the Paris agreement already looks set to fall far short of what is needed. The commitments (voluntary and non-binding) made by the majority of Parties to the United Nations Framework Convention on Climate Change will take the world towards a global warming of about 3°C by the end of the century. If these commitments are not made more ambitious (and if they're not translated into concrete public policies), countries will sign an agreement that will result in climate chaos.

Yet Paris represents one of the last opportunities to keep global warming below 2°C, which is already higher than what is considered safe (around 1.5°C). The UN negotiation process, which was initiated in 1992 with the purpose of setting up a global plan to reduce greenhouse gas (GHG) emissions, has failed even to slow them down: emissions have increased by 60% over the last 20 years. Yet another reason to feel pessimistic about the mediocre commitments likely to be churned out at the Paris Summit.

The current atmosphere thus contrasts sharply with that of the run-up to COP15 in Copenhagen (2009). Some 190 Heads of State and Prime Ministers met in the Danish capital, planning on concluding a long round of negotiations with an "historic agreement", the goal of which was to do nothing less than solve the problem of global warming. Big corporations pledged to open the way to "green growth", supposed to reconcile growth with environmental protection. Civil society was no exception: 17 million people signed a petition orchestrated by major environmental NGOs urging Heads of State to "save the planet". Alas,

COP15 ended in scenes of chaos, without an agreement – thus opening up another round of negotiations, this time to be settled in Paris.

On the institutional side of things, although the enthusiastic days are clearly over, it remains unclear whether this will be give way to clarity and determination or rather passivity and resignation. It all depends on the capacity of civil society movements and organisations to fuel a mass movement for climate justice that can really influence the course of things. From this perspective, there is clearly a growing climate of determination, as illustrated by Coalition Climate 21's (which coordinates citizen movements and action campaigns – www.coalitionclimat21.org/) capacity to translate diversity into decisive tactics and actions (which will culminate in a day of demonstrations and mass action on 12 December 2015).

In order to bolster the climate justice movement, it is imperative that we make headway through a three-pronged approach of resistance, non-cooperation and alternatives.

Resisting climate destruction: blockadia & fossil freeze

It's time to take action: this was already the drumbeat driving the action campaigns of the networks Climate Justice Now! and Climate Justice Action in Copenhagen. Six years later, however, there is a new slant on its meaning. It's no longer about demanding governments to take action but rather about making up for their inaction. This approach has nothing to do with activists wanting to fight it out. It is the logical conclusion to the escalating warnings of climate scientists. German physicist Hans Joachim Schellnhuber has called for an "induced implosion" of the fossil fuel industry and the economic system based on the unlimited exploitation of fossil fuels.[1] In other words, it is not enough to fight for commitments or pledges (which, as we know, only commit those willing to believe in them) to cut GHG emissions. Researchers Christophe McGlade and Paul Ekins have suggested a form of international moratorium on any new exploration and exploitation of fossil fuels.[2]

This is not the first time this idea has been evoked. In the 1990s, organisations fighting against the impacts of fossil fuels such as Acción Ecológica (Ecuador) and the international network Oilwatch, had suggested a similar international moratorium, which was dismissed by governments involved in negotiating the Kyoto Protocol and which had less support from other NGOS than expected,

[1] CARRINGTON Damian, "Fossil fuel industry must 'implode' to avoid climate disaster, says top scientist", *The Guardian,* 10 July 2015, www.theguardian.com/environment/2015/jul/10/fossil-fuel-industry-must-implode-to- avoid-climate-disaster-says-top-scientist ?CMP=share_btn_tw.
[2] Conventional natural resources are those that can be accessed via traditional methods. Unconventional resources are all those that are more difficult to access.

as they were (too) focussed on the level of greenhouse gas emissions.[3] This proposal for a moratorium has the great advantage of getting to the root of the problem, i.e., at the level of fossil fuel production; this is what is causing carbon stored in the lithosphere to be released into the open air, thus disturbing the workings of the planet.

Suggesting that fossil fuel reserves be classified as off-limits is a direct slam against the current standstill in negotiations and policies on climate change. In the twenty years of UN negotiations on climate change, never once has it been suggested that all or part of fuel reserves should be left in the ground.[4] No government, multinational corporation or other international institution has suggested restricting the production of coal, gas and oil. As remarked by McGlade and Ekins, "policy makers must realise that their instincts to completely use the fossil fuels within their countries are wholly incompatible with their commitments to the 2°C goal".[5] Heads of State are acting as though it were possible to reduce greenhouse gas emissions without reducing what creates them, which is ridiculous.

Blockading infrastructure, particularly that of fossil fuels, all over the world is one of the key tactics to building a climate justice movement. Some blockades are temporary (climate action camps in Ende Gelaende in August 2015, the Pacific Climate Warriors' blockading coal terminals on the Queensland coast in Australia) and are part of the process of instigating ongoing action; others have led to major victories (the veto on Keystone XL pipeline project, Shell's recent announcement that it would abandon exploratory drilling in Alaska, after its operations were disrupted by protestors blocking an oil rig at a Seattle port in the US).

Determination is what drives all these actions. There is no time to waste waiting for governments to stop twiddling their fingers and take action. Faced with the reality of global warming, we need to protect ourselves and stop the machine that is heating up the planet in order to open up possibilities for transition.

Non-cooperation: pulling finances & divestment

Right now, governments are doing the exact opposite of what they should be doing: they keep granting permits for the exploration and exploitation of fossil fuels, including in France,[6] and continue to extend the extraction frontier to new regions, under the pressure of fossil fuel lobbies and their interests.

[3] This idea is developed in more detail in Chapter 9 of Maxime Combes' book, *Sortons de l'âge des fossiles ! Manifeste pour la transition*, Seuil, Anthropocène, October 2015.
[4] Cited by Georges Monbiot in George Marshall, *Don't Even Think About It*, New York, Bloomsbury, 2014. In his work, George Marshall discovered that there has not been a single proposal, debate or position paper on limiting fossil fuel production put forward during international climate negotiations.
[5] MCGLADE Christophe and EKINS Paul, op. cit.
[6] "Le gouvernement français accorde de nouveaux permis d'exploration pétrolière", www.bastamag.net/Le-gouvernement-francais-accorde-de-nouveaux-permis-d-exploration-petroliere.

The stakes are high: Fossil reserves (i.e., the deposits currently being mined or soon to be) represent a potential profit of over 7000 billion dollars. And the value of all fossil resources (i.e. with the addition of all identified deposits) amount to 27 trillion dollars. The sector's players thus spend hundreds of millions of euros a year on demolishing any ambitious climate legislation or regulation, and that is when they not directly financing the "merchants of doubt"[7] – these pseudo-scientists who, after working for the tobacco industry, have moved camp and are now pulling strings for gas and oil companies.

We are dealing with what Bill McKibben calls a "rogue" industry, whose direct responsibility is well-documented. The work of Richard Heede has thus demonstrated that since the industrial revolution only 90 companies are responsible for two thirds of GHG emissions. According to the Carbon Tracker Initiative, the key to the climate bomb is in the hands of the 200 biggest players in the industry... and yet each year the sector receives more than 700 million dollars in direct public subsidies. If we add direct and indirect subsidies to all the other hidden costs that are not paid by the consumer (particularly in regards to the health effects of pollution), the IMF has shown that fossil fuels are subsidised by 10 million dollars... a minute. Again according to the IMF, ending subsidies to the fossil industry would amount to saving 3.85% of the global GDP – and we only need to invest the equivalent of 2% in transitioning to renewables to keep warming below the 2°C limit.[8] Or in the words of Christiana Figueres, Executive Secretary of the UN Framework Convention on Climate Change, a "fossil fuel subsidy reform alone would deliver far more funds than is required for the global energy transformation we need to keep the world below a 2C temperature rise".

Divestment, ending subsidies and reinvesting them in the transition, is thus the second key tactic to building a climate justice movement. At present, for every euro that is invested in renewables, four are invested in fossil fuels. Divestment campaigns such as those targeting banks that support fossil fuel projects therefore represent both a refusal and an assertion: the refusal that money be used to support a climate-destroying industry; and the assertion that these funds need to be channelled into transitioning towards 100% renewable energy. This approach is all the more important as it encompasses a solution to the reoccurring dilemma in climate action: how can we take action on an individual scale while also influence the overall structure of the system? The divestment campaigns targeting banks are a way to reconcile a change in behaviour (changing banks or shifting one's investments involves acknowledging one's part in the problem) with constructing a powerful dynamic that forces governments, regional authorities and the private sector to do more for the climate than just greenwash their speeches.

[7] ORESKES Naomi and Erik M. CONWAY, *The Merchants of Doubt,* Bloomsbury, 2010.
[8] According to the report by Nicholas Stern on the climate change economy – http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview_report_complete.pdf.

Build and foster alternatives – shifting towards a translocal movement

These first two tactics are crucial. They address the urgency factor and offer a solution to the vast temporal distortion that needs to be resolved (we only have a 5-10 year window to get the transition on the right track without upsetting the climatic balance on a geological time scale, yet it generally takes over ten years for ambitious public policies to be implemented). They also link blockading/refusal to the creation of something new (i.e., via reinvestment).

The danger, however, is to remain overwhelmed by the magnitude of the problem, the size of which, as John Jordan remarks, feels like "the sky, land and sea combined". Yet the multitude of approaches and actions out there show that we don't have to give up. In France, the Alternatiba initiative is succeeding in creating something entirely new: a mass movement entirely focussed on concrete, local alternatives (over the summer, hundreds of thousands of people took part in the Alternatiba tour and/or in its associated Festival of Alternatives). The alter-globalisation movement has also had a hand in highlighting approaches inspired by "epistomologies of the South"[9] – particularly the concept of "good living" or sumak kawsay. One could have hoped, then, that this body of knowledge, the vision of the relationship between humans and non-humans, and the criticism of development that goes with it[10] would complement the abundance of exchanges and initiatives around degrowth, simple living and the transition.

Unfortunately, with the significant exception of the "post-growth" conferences initiated in Germany, most of this work remains to be done. The fact that social forums are visibly running out of steam has not helped in the regard. However, it is crucial that we pick up the torch and anchor these discussions in citizen initiatives that promote and foster alternatives like that of Alternatiba.

The challenge is two-fold. To date, the abundance, richness and scope of alternatives has not crystallised into a narrative that does justice to their transformative power. They are not sufficiently popularised, nor do they seem particularly robust when it comes to progressing towards building a new system – i.e., they seem unlikely to result in something that could replace a UN text or represent a global climate policy, or even overhaul the current system.

However, and this is the second issue, it seems increasingly evident that social struggles are shifting towards an ecological approach that is centred on the local level.[11] They combine an ecological language and engage in resistance and alternatives that are typically local. The local context here does not represent

[9] According to the expression of the Portuguese sociologist Boaventura de Sousa Santos.
[10] LANG Miriam and MOKRANI Dunia (eds.), *Au-delà du développement, critiques et alternatives latino-américaines, éditions Amsterdam, 2014.*
[11] SVAMPA Maristella, *Consenso de los Commodities, Giro Ecoterritorial y Pensamiento crítico en América Latina*, http://maristellasvampa.net/archivos/ensayo59.pdf.

insignificance: a remote region that needs to be saved from the havoc wreaked by productivism, industrialisation and neoliberal globalisation. It represents instead an empowering space from which to build translocal solidarity-based links between different groups that share a common enemy (those attempting to expand the extractivist frontier), and whose overall objectives are the same: to tackle climate change and foster local solidarity-driven relationships based on a common social and ecological vision.

The actions of resistance, demonstration and alternatives – i.e. the facets that make up a movement – are extremely regionalised and represent a break away from the alter-globalisation movement, which was driven by the opposite line of attack – a transnational, delocalised approach. This shift towards the "translocal" seems to be a central feature of the climate justice movement. It is about re-localising both out political and social action, and our imagination. Up until now the movement for climate justice primarily translated into Counter-Summits – it followed the successive COPs and it was the COPs that largely determined its agenda. One of the many challenges of actions and demonstrations carried out in Paris will be to influence international, national and local policies by disengaging from UN processes and taking concrete action at a local level; to set them apart from the COP, and by doing so, relativising the role of COPs in resolving the climate crisis.

Grassroots Strategies for Mitigating Climate Change

WINONA LADUKE

Activist, author and two-time vice presidential candidate Winona LaDuke lives and works on the White Earth reservation in northern Minnesota. She is program director of Honor the Earth, a Native-led organization that addresses primary needs of the Native environmental movement, as well as founder of the White Earth Land Recovery Project. In 2007, LaDuke was inducted into the National Women's Hall of Fame and was nominated by Time magazine as one of America's fifty most promising leaders under forty years of age in 1994. A graduate of Harvard and Antioch Universities, she is a current advisory board member for the Trust for Public Lands Native Lands Program.

On October 22nd 2014, Winona LaDuke delivered the keynote address for Campus Sustainability Day[1] to approximately 1,000 people at Portland State University's Stott Center. This article is the transcription of her talk entitled "Grassroots Strategies for Mitigating Climate Change"[2].

The Triple-Crown of pipelines rides: riding against the current of the oil First I wanted to share [a video] with you that shows what we're up against. (…) It's called "The Triple-Crown of pipelines rides"[3]. I kept having this dream about riding our horses against the current of the oil. So I went out to see the Lakotas, the White Plume family and I said: "You know that Keystone pipeline, I think you should ride against the current of that oil. That's what I dream, we're riding against the current". And they all looked at me in that knowing way; so I said "We'll think about that. We'll have some ceremonies, we'll think, you know". So I waited, I was waiting for them to come back with

[1] www.pdx.edu/sustainability/news/psu-marks-campus-sustainability-day-2014-slew-events
[2] It can be viewed here: https://www.youtube.com/watch?v=LHPlL1tzB5Y. The entire retranscription is available online here: www.cedidelp.org
[3] https://www.youtube.com/watch?v=1v6_1DLth9U

© TOMAS ALEJO

Casey Camp-Horinek (Ponca - Indigenous Environmental Network) and Winona Laduke (Anishnabe - Honor the Earth). Reject-Protect - Cowboys & Indians Alliance, Washington DC, April 2014.

their decision. (…) And then one day I had that burden of dreams, in the middle of the night. I was like "What are you thinking? You got a going pipeline!" So in the meantime I went to buy a horse-trailer and my kids were like: "What are you doing? You don't even have a truck to haul a horse-trailer!". But on Craig's list you can find anything! (…) And so we went out and we got prepared to ride that first one, that Alberta Clipper proposal. (...) And then the Lakotas called me up and they said: "We're ready to ride!" and that's how we got the Triple-Crown. We rode all three of them. And so far I just have to say that the Enbridge corporation has not done too well in getting their pipelines into Minnesota.

Moving beyond Empire

This month [October] in our language is called Binaakwe-giizis, the Leaves-falling moon. The moon that follows is Gashkadino-Giizis, which is the Freezing-over moon. Manidoo-Giizisoons, which is the Little-spirit moon. Gichimanidoo-giizis, which is the Great-spirit moon. Then you have a moon that is known as Namebini-giizis, which is known as the Sucker moon. Sucker is a kind of fish in our territory. And then you have Onaabani-giizis, the moon that is known as the Hard-crusted-snow moon, around March in my territory. That's when it snows and it thaws and it freezes again. Also known as the Moon-you-do-not-want-to-do-a-faceplant-in-the-snow... And then we have Iskigamizige-giizis, which is the Maple-syruping moon. The moon that follows is Zaagibagaa-giizis,

Flower moon. Odemiini-giizis, Strawberry Moon. Miin-giizis, Blueberry Moon. Manoominike-giizis, that's our Wild-rice making moon, what you see on our lakes on our territory. And then we have Waatebagaa-giizis, that's the one we just finished here, and that's when the leaves change color.

So I thought you might like to hear some Anishnabe moons in our language, and I also wanted you to listen to that because that's a sense of time that is named after our land. I want to make sure you noticed that none of those moons is named after a Roman emperor. Not a single one. There's no Julius Caesar anywhere. [It] is possible to have an entire worldview that has nothing to do with Empire, and you'll be okay. And so to me, that is part of what it is time to think about. It's about moving beyond empire. Because Empire is about conquest. Empire is about subjugation. Empire is about having a predator economy that takes everything and leaves nothing. Empire is not sustainable. We have to transition from that thinking, that worldview – and we all went to these schools, we had it shoved down our throats, we all drank the cool-aid from the dominant paradigm. [But] you can liberate yourself from that thinking. (…)

In our teachings as Anishnabe peoples, we're at this moment where you've got a choice between two paths, (…) [it's] the time of the seven fires. One path they said was well-worn but was scorched. The second path was not well-worn and was green. It was our choice upon which path to embark. That's what the prophets told our people, maybe two thousands years ago. And that's the time we're in. And what they said was Anishnabe but I'm pretty sure that's where we all are. We're living this time we've got to make a choice. Or as we say in our work at home: love water, not oil. Because you've got the choice between the two and one of them you could live without, but one of them you cannot. (…)

Cyclical vs linear economy

[Our way of life] is a cyclical system, a land-based economy. The time, the moons, the seasons, the way you live your life are cyclical. The economy in the United States is not cyclical, it is a linear economy. It is predicated largely on the continuous extraction of resources, the adding of labor to them and a bunch of money and the making of stuff. And then that stuff ends up as garbage every year, as waste. And then they have (…) the fracking industry creating a lot of waste water that they're removing entirely from the hydrological cycle. That's an example of a linear economy, there is nothing that is going to return and make good. That is something that is linear and that is an unsustainable system. (…) In 1865 alone, the Keweenaw Bay village on Lake Superior sold 453 252 pounds of maple sugar. This is a whole land-based economy. You can harvest your maple syrup every year or you can cut your trees. Two differences in how you live your life. (…)

A graceful transition from the fossil fuel era

Now I'm going to bum you out for just a little bit here and then we'll move to the happy part, okay? This is the climate change part, which unless you've been watching too much Fox News you know that this is what's going on in your temperature. Global temperatures are rising, and we did have the polar vortex in Minnesota this last year, I'm very aware of that, it's a little bit of an anomaly, but we're talking about climate chaos, not just a constant and a predicable rise, we're talking about crazy stuff happening all the time. (…) And by 2020, about five years from now, we will be spending 20% of world GDP on climate change related disasters. Now I'm not sure who's paying for that. I'm not sure who's taking care of this or how it's working out. Because we have (…) an economy that is not doing well and so that 20% on any worldwide or any local scale, it's going to be very difficult for us to deal with. (...)

Second issue I'm going to bum you out by talking about – I'm kind of trying to whip through this section really fast so that I don't need too much counseling – is the issue of fossil fuels. So I, myself, am entirely a child of the fossil fuel era. So are all of you. I spent my all life in it. It's kind of fun, right? We drove all over, we drove a lot. And we have a very inefficient fossil fuel economy. In my life, we've consumed half the world's fossil fuels. My grand-kids are like "Really?". Yes, sorry about that. (…) My point is that I recognize that. What I want is what you should all demand too, is a graceful transition from the fossil fuel era. I just don't want to crash my way out, which is basically what they are proposing. No, I want a graceful and elegant transition. (…)

It is essential to confront our addiction

Tar Sands is what a ungraceful transition looks like when you consume a certain amount and are addicts, which is what we are. We have a highly addicted society. We're addicted to electricity, to energy at a level which is unheard of in our history. I am right with you, I hate that my cell phone is not charged, I have to be hooked up. If there's not gas, I'm bummed out. This is where we became people that require a high level of electricity that we feel we are entitled to. (…) Addicts are a drag, they behave poorly. They rationalize, they lie to you, they steal from you, they act like jerks... but my point is that this is what we do. Because we are addicted. We let things happen because we feel like someone's going to feed our habit. So the Tar Sands is bad stuff. It's called extreme extraction, extreme energy, it's extreme behavior: destroying an area the size of Florida, build some pipelines so you can feed some guys' vehicles somewhere down here. Or blowing off the top of 5 sacred mountains so that you can ship coal to India just because you can. Or drilling 20 000 feet under the ocean, so that you can extract oil from places where really you should not be. Or fracking, which is breaking up and fracturing bedrock of Mother Earth to get out oil and gas. That's extreme behavior of addicts. It is essential to confront our addiction. (...)

Growing climate change adapted, resilient food

Here's the happy part. (…) My father used to say to me: "Winona, you're a really smart young woman, but I don't want to hear your philosophy if you can't grow corn". And he was right. It's great to be smart but if you cannot feed yourself, then what have you done? And that is the challenge that a lot of people face now. We've become really smart people that don't do anything. We live in an economy that is the equivalent of about a hundred slaves for a household. Our heat, our food, our clothing, is brought to us by someone else. That is how we are living. And that's not sustainable. Most of those agreements were not fair trade agreements. Nothing is fair about what is going on in our opulence of our fossil fuels' lifestyle.

And so it took me about 15 years before I became smart enough to grow corn. I grow two corn varieties but one is known as Bear Island Flint. I received the seeds from a seed bank in Iowa, we have fields of this crop now and I've never had a crop failure. It is multicolor flint corn that is twice the protein and half the calories of sweet corn, it grows well in our soil. When I first grew it I thought I had failed because it was so short, but it turns out it does not need to be tall corn to be great corn. And in the case of our region, it turns out that that corn is frost resistant, it's drought resistant and when the big winds came through, they blew over Monsanto's fields but my fields stood. In a time of climate change, you might want to grow something that's going to hang out, not something that needs a lot of help. (…) I'm interested in growing climate change adapted, resilient corn varieties that are going to feed my people.

Corn stories and redemption

[That story came from] Deb Echo-Hawk. (…) The Pawnees lived in the Northern Missouri River, the place that is now known as the Fort Berthold reservation, the Northern agricultural empire on the Missouri River, kind of like the Nile Delta of North America. Those people grew a really wide variety of vegetables and foods. In their story they descended from the sky, what I was told is that the men came down in a buffalo robe and the women in a corn husk. And I say that because it shows that food is not just something you get at the store. It is a part of who we are as peoples. So they grew those varieties and they lived well and at a certain point they decided that they were going to leave and they moved South and became the Pawnees. And when they lived down there in Nebraska, they lived well, the way it was told to me is that they did pretty good and then the settlers came and they still did pretty good with the settlers. They would trade and what Deb Echo-Hawk told me is that they were kind of like AAA: if your horse was lame, you'd go see the Pawnees. If you needed something fixed, they'd go back and forth. [So] people can have good relationships with settlers who come in, it is the nature of how the relationship is formed that matters. And then the Federal government came and forced them to move

© D.R.

to Oklahoma. They lost their people, they lost their land, they lost the place of their ancestors, and then they also lost a lot of their foods because they would not grow in Oklahoma. They kept loosing their seeds and one day, a woman called Ronnie O'Brien from the Archway museum in Nebraska called down to the Pawnee tribal council and said: "I am in your homeland and I would like to grow some traditional seeds for the Pawnees". They had very few seeds left but Deb Echo-Hawk talked to the Elders committee and they deliberated long and hard and they said: "We're going to send some of those seeds back to our homeland". And so the descendants of the settlers in the Pawnee homeland grew the seeds of the Pawnees in their old territory and what Deb told me is that the seeds remembered the land they came from. And so the seeds flourished. (...) I tell you that story for a couple of reasons: one is because it is a story of corn, and corn is one of the greatest foods in the world. Corn did not exist in nature, it only exists because of humans. It comes from teosintes and it was adapted with the determination and love of humans, and that's how corn came to be in all its glory and varieties. So we are not bad, we can do great things if we do them well. And the second reason I tell this story is because I like to think of it as a story of redemption. That you can go and help fix things many generations later. And I think it is always possible. (…)

If you want the solution, you relocalize your food economy and you relocalize your energy economy. You control the seeds, and you plant good foods. (…)

"When History comes knocking, you answer the door"

I was reading the article [Naomi Klein] wrote in The Nation and she said: "When History comes knocking, you answer the door"[4]. You have the opportunity to make History now, we have the opportunity to change the course of stupidity. And much of it is predicated in us getting control of ourselves, of where our food comes from and where our energy comes from. (…) You can put wind turbines in the places that you want them if you own them. (…) And in that process of transitioning, you are able to transform your economy.

People say you cannot actually transition to renewable energy because you can't meet present demand for electricity or energy with renewables. They repeat it over and over and over. (…) But you do not want to meet present demand. Because between point of origin and point of consumption, 57% of power in this country is wasted. Inefficient production, inefficient systems, inefficient transmission, centralized energy, aging power plants, and bad planning and bad technology. So there is no reason that we would want to meet present demand. Why would you keep throwing resources down this endless vacuum of hemorrhage? Instead what you would want to do is you would want to get efficient, and get local. (…)Courageous-thinking people and countries are divesting. (...) And this is what you do: reinvestment. You take your money out of fossil fuels and you put it in cool stuff. You don't do stuff like Keystone pipelines, but you do stuff like tribal wind. (…) And you transition your archaic economy into a renewable economy, and you power with wind those communities and a lot of others. (…)

Walk out of your teepee into a Tesla...

In April [2014], on Earth's day, we joined the Cowboys & Indians Alliance and we rode our horses. (…) I was hanging out in my teepee, on the Washington Mall, and so this guy comes in, sticks his head in my teepee and says: "Miss LaDuke, would you like to go for a ride in my car?". (…) I have two 14-year-old sons and they were like "Mum? No!" And the guy says: "I have a Tesla". So I said: "Oh yeah, I wanna go for a ride in your car!". And the guy's Tesla was charged at his house out of his solar panel. So this is the line you want to remember: I walked out of my teepee into a Tesla! That's what you want. (…) You don't want third-rate technology, you don't want some lazy stuff, you don't want some leftovers, or bad ideas, like transition with natural gas that comes from fracking...! That's not what we're doing. I don't necessarily want [a Tesla] but I'm just saying, some people have vision, some people do not. And you need to act with vision and courage. (…) *Miigwech!*

• • •

Transcription and adaptation by Sophie Gergaud, PhD (Cedidelp)

[4] www.thenation.com/article/climate-change-peoples-shock/

It Takes Roots to Weather the Storm

GRASSROOTS GLOBAL JUSTICE ALLIANCE

"We're here because there were two tornadoes in Brooklyn. We're here because [Superstorm] Sandy came and made an unwelcome visit. We're here because it is our communities that are the reluctant hosts to all of the environmental pollution and infrastructure.....
We are the solutions, we are the roots that will weather the storm."
-Elizabeth Yeampierre, UPROSE, Brooklyn New York

Ten years ago Hurricanes Katrina and Rita pounded the Gulf Coast of the United States and the levees protecting New Orleans failed, flooding around 80 percent of the city. The whole world watched as the Black and working class residents of the Lower Ninth Ward and surrounding neighborhoods climbed onto their roofs and crammed into the Superdome, crying out for urgent medical and emergency support from the Federal Emergency Management Agency (FEMA) that seemed to never arrive. Katrina laid bare the deep history of environmental racism in the US; within the racial justice movements, it catalyzed an awareness of the impacts of climate change on communities of color and poor communities around the world. Today, having also endured the British Petroleum (BP) oil rig disaster of 2010, Black and immigrant communities in Texas, Mississippi, Louisiana and all along the Gulf Coast continue to wage a powerful campaign for restoration of the wetlands, reconstruction of affordable housing, and support for displaced residents across the region.

For over 21 years, as the catastrophic effects of climate change have intensified, global leaders have been promising a new climate agreement through the United Nations Framework Convention on Climate Change (UNFCCC) Conference Of Parties (COP) meetings. Weeks before the COP20 in Lima, Peru in December 2014, any small hopes that these talks would deliver an outcome that would slow the mounting crisis were dashed with the announcement of the

US-China climate deal. The "Pledge and Review" model that the COP21 is based on allows developed nations like the US and China who are leading emitters of Greenhouse Gas (GHG) to determine their emission cuts through these side bilateral agreements rather than through larger global agreement.. This agreement laid weak foundations for any new climate regime, and set the stage for a unilateral, non-transparent and non-enforceable plan for cutting Greenhouse Gas (GHG) emissions.

In the COP21 in Paris this December—as in previous conferences— the interests of the frontline communities who bear the brunt of the climate and economic crisis will clash with those of the very corporations who have been driving the crises and are now the official sponsors of the UNFCCC negotiations. As much as 20 percent of the COP21 conference is being paid for through corporate sponsorship, including a number of energy companies, and financial institutions heavily invested in the fossil fuel industry[1]. The true authorities on the question of global ecological survival are not the heads of state who will be barricading themselves inside an airport in Le Bourget outside of Paris. The voices of urgency, clarity, and genuine action in Paris—whether inside the talks or filling the streets outside—will be those from the frontlines: the Gulf Coast residents, the First Nation peoples living along the Tar Sands and the small island nations of Tuvalu and Maldives, all those who know first hand the scale of the crisis we are facing and what we must do to stop the burning of the planet.

The People's Climate March on September 21, 2014 was a major historic event. It was historic because of the unprecedented numbers—400,000 people turned out, making it the largest climate march in history. It was historic because the participants and leaders at the front of the march were made up of primarily people of color on the frontlines of the climate and economic crises. Communities impacted by Hurricane Sandy, youth of color doing environmental justice work in New York city, and indigenous peoples led a broad march from many sectors including faith communities, labor, students, and more. It was historic because of the unprecedented show of unity between frontline communities and more mainstream climate policy organizations (known as Big Greens) that resulted from principled engagement, struggle and leadership from environmental justice communities. Frontline communities and Big Greens came together to collaborate in the planning of the march, and laid the groundwork for ongoing relationships and a broader united movement for climate justice.
Within the US climate movement, the march began to shift the dialog between the racial and environmental justice movements and Big Greens. When deciding who would speak at the opening press conference and who would lead the march, leaders from grassroots organizations in the Climate Justice Alliance argued that the leading voices on climate are not celebrities like Sting or Leonardo DiCaprio,

[1] "Meet corporate villains sponsoring COP21 climate talks": www.commondreams.org/news/2015/05/27/meet-corporate-villains-sponsoring-cop21-climate-talks

© RAE BREAUX

Banner of the march, NY, September 21st 2014.

but instead are the people who experience the destruction and devastation of climate change first and worst—the working class communities and communities of color on the front lines. In the end, the voices of frontline communities commanded the world's attention at the People's Climate March. These communities are best positioned to pressure governments for more meaningful action and to plan for how vulnerable communities can best survive climate change. They are the people whose lives are impacted daily by oil spills and faulty levees in the Gulf Coast, by oil refinery pollution in Richmond CA, by the dirty air from the waste incinerator in Detroit, and the destruction of land, air and water by tar sands extraction in Athabasca and across Canada.

The leadership of frontline communities is critical not only because they are the most impacted by the devastating impacts of climate change, but because across the US and around the world grassroots movements are at the forefront of the climate justice movement and the most courageous in rejecting half-measures and demanding real, enforceable and immediate action. From the popular movements in Bolivia that defeated the privatization of water and advanced the Cochabamba Accords declaring the rights of Mother Earth at the COP16 in Cancun, to the grassroots movements that secured El Salvador's historic mining ban to defend their nations' water rights, to the Peruvian communities that halted a multinational gold and copper mine, public pressure and direct action by frontline communities has been the most successful strategy to confront the extractive industries. Across North America, indigenous communities are standing down the XL pipeline, and advancing the critical fight against tar sands extraction.
Within the UNFCCC negotiations themselves, the most direct pressure on the

G7 nations has come from the poorest nations facing the greatest climate impacts. Naderev "Yeb" Saño, the negotiator representing the Philippines, caught the world's attention when he went on hunger strike through the COP19 talks in Warsaw, which followed Typhoons Haiyan and Bopha. "What my country is going through as a result of this extreme climate event is madness. The climate crisis is madness. Mr. President, we can stop this madness right here in Warsaw," Saño declared.

Taking on the Ecological Debt of the US and the Global North

"A true 'ecological debt' exists, particularly between the global north and south… In different ways, developing countries, where the most important reserves of the biosphere are found, continue to fuel the development of richer countries at the cost of their own present and future."

Pope Francis, 2015 Encyclical on Climate

In his long-anticipated encyclical on climate change, Pope Francis asserts that the fundamental moral and political crisis that drives climate change is the global polarization of wealth. With 5 percent of the world's population, the US continues to produce 25 percent of the world's greenhouse gases. The wealthiest nations of the world have built their global economic power through centuries of colonialism and the extraction of natural resources from throughout the Global South. Global demands for binding emissions reductions, accompanied by global funding from the wealthiest nations to the developing countries for adaptation to and mitigation of climate impacts, are referred to as "climate debt." As Dr. Saleemul Huq of the International Center for Climate Change and Development in Bangladesh explains about the US pledge climate funding, "This is nothing to do with altruism. This is to do with reparations from polluters. The United States has risen as an economic power based on emissions over the last 150 years that have caused the damage that we are now seeing. They recognize that, and they have taken on the obligation to help the poorer victims of the impacts of climate change that is caused by human-induced pollution. This is a pollution treaty, and it's about polluters and victims of pollution."

As grassroots movements inside the United States, we recognize that it is our own government that has been a key agent of global capitalism, which continues to ravage the natural resources of the Global South. From failing to sign the Kyoto Accords in 1992, to undermining efforts for binding agreements in Copenhagen and Cancun, the US has been playing a contradictory dual role. It moves forward a minimal level of climate action at a global level, while at the same time maintaining tight control over the actual substance of the agreement in a way that ensures that the interests of corporate polluters are minimally impacted. Continuing to burn fossil fuels at the current rate, we could hit two degrees of warming before midcentury. Scarier still, we could hit three to five degrees of

warming by 2100. By not committing the United States to new standards and by insisting on voluntary rather than mandatory emissions cuts, the Obama Administration continues a legacy of self-congratulatory marginal action that clearly falls radically short of the course that an overwhelming majority of climate scientists have urged world leaders to take in order to avoid global catastrophe.

We're seeing a preview of the Paris agreement in the United States with President Obama's Clean Power Plan, which has no clear commitments to reducing emissions and allows too much flexibility for how states will implement the plan. Obama's Clean Power Plan includes fracking and nuclear power as options, and we know the devastating impacts these have in our local communities and worldwide. This is what the U.S. government is bringing to the international climate negotiations: new forms of advancing capitalism by painting it green. As Kandi Mossett from the Indigenous Environmental Network says: "We need more than some pep rally pushing carbon trading, carbon markets, false solutions to climate change. That's not going to help anybody, even them and their families, when it comes to climate change. We need stronger action. The frontline community members, the grassroots folks, we have the answer to climate change, we have the tools, we just need to be given the power to make change occur."

There is a promising, growing unity of social movements at the global scale led by the people most impacted by climate change, who are pressuring governments for more meaningful action, and planning for how vulnerable communities can best survive the already existing impacts from climate change. Through shared organizing, a number of strategic coalitions have grown to support long-term climate justice movement building. Climate Space, which began as a venue at the World Social Forum 2013 in Tunisia to discuss the causes of and alternatives to climate change, has now developed into an ongoing global people's climate process through a network of 30 international organizations like ATTAC France, ETC Group, Focus on the Global South, Global Forest Coalition, Grassroots Global Justice Alliance, Indigenous Environmental Network, La Vía Campesina, Polaris Institute, World March of Women, and others. In France, civil society associations, networks and social movements convened the Coalition Climat 21 (CC21) which consists of more than 100 organizations in France with European and international participation. The Mobilization Support Team of the People's Climate Movement includes 350.org, ALIGN, Avaaz, Blue-Green Alliance, Climate Justice Alliance, Grassroots Global Justice Alliance, NYC Environmental Justice Alliance, Oil Change International, SEIU local 32BJ, Sierra Club, and Uprose.
These are the forces that are building momentum and escalating actions so that by the time we get to Paris, there will be consistent pressure from a worldwide movement calling for serious action by governments and radical emission cuts. The central slogan that has united our social movements leading up to the COP21 mobilizations has been *"System Change, Not Climate Change"* which reflects the growing understanding that even the Pope points to: climate catastrophe

doesn't result from a few policies, but grows out of the larger economic system that drives over-consumption in the wealthy nations, and under-develops the Global South. Any truly effective environmental justice strategy must go beyond tackling the question of pollution and emission. We must tackle the fundamental nature of the extractive economy as a whole.

In our growing movements, we are building on the foundation of campaigns directly challenging some of the worst impacts of the extractive economy in front-line communities---including mountaintop removal, oil refineries, and toxic waste incinerators---and beginning to develop alternative economic models based on a strategy of *Just Transition*[2] toward renewable energy, cooperative economies, and community control. We are mobilizing the It Takes Roots to Weather the Storm delegation of more than 75 grassroots leaders from Indigenous, Black, Latino, Asian, Pacific Islander and white working class climate impacted communities in the US to join global movements in taking the streets of Paris.

We are taking action to hold world leaders and corporations accountable at the COP and when we return home to our communities. We are standing with the Black and Indigenous communities in New Orleans in their ongoing fight for reparations and the right to return. And we are standing with frontline communities across the globe in the demands for mandatory emission cuts at the source, to leave fossil fuels in the ground, to reject false solutions and carbon markets, to respect human rights and the rights of indigenous peoples, and to support community rooted solutions. Together we are building our power to not only weather the storm, but to change the course of history.

[2] The political concept of "Just Transition" was first developed by Tony Mazzocchi of the Oil Chemical Atomic Workers International Union (OCAW) in the 1960s as a strategy for frontline workers and fenceline communities to jointly address the devastating impact of environmental contamination and explore ideas and approaches for transitioning to a more environmentally sustainable and healthy means of production. More recently there has been a resurgence in climate justice campaigns oriented toward a Just Transition to the Next Economy.

Transformation by Design or by Disaster? A proposal

HARALD WELZER

It is not necessary to list all the ecological and climatological threats here that will inevitably lead to a radicalized global injustice and to a failed globalization. It is for sure: growth economy will not make it through the 21st century, simply because it consumes it's preconditions. That means: In the context of their unsustainable metabolism with non-human nature our societies will change in any case; the only question is whether by design or by disaster. In case of a "transformation by design" one cannot avoid to consider social issues.

An unsustainable model: a high development index based on a high carbon footprint

Despite the massive overuse of ecosystems and natural resources, large parts of the world population continue to suffer deprivation. In the opinion of the development economist Kate Raworth[1] the reason for this is *not* the number of the world´s population, i.e. that too many people live on the earth, as neo-Malthusian argumentation patterns imply. The decisive factors are mainly the resource-intensive modes of production and consumption in the early-industrialized developed countries. Thus, Raworth states:

- Only 11 percent of the global population are responsible for about 50 percent of carbon dioxide emissions, while 50 percent of people emit only 11 percent[2]
- About 16 percent of the population consume 57 percent of the world´s electricity [3]
- The European Union – about 7 percent of the world's population – is responsible for the consumption of about 33 percent of a sustainable nitrogen budget, and

[1] RAWORTH, Kate (2012). "A Safe and Just Space for Humanity." Oxfam Discussion Paper. Internet: www.oxfam.org/sites/www.oxfam.org/files/dp-a-safe-and-just-space-for-humanity-130212-en.pdf (abgerufen am 19.09.2014).
[2] Ibid.: 20
[3] Ibid.

this mainly for the production of animal feed[4].

"The wealthy few stress the planet", it says in Raworth[5]. Following Ulrich Brand and Markus Wissen one can speak of an "imperial way of life" in this context[6], because it presupposes an in principle unlimited access to resources, space, labour capacity and sinks elsewhere, which is secured politically, legally and in part even violently[7]. In other words, this way of life is based on exclusivity: it presupposes that not all people have equal access to the resources and sinks of the earth. The economically extremely successful system, which emerged in the early industrialized countries during the past 250 years, was based from the outset on the fact that the resources and fuel needed for the incessant production of surplus value and growth was imported from the outside, i.e. mainly from the (former) colonies. However, a globalized world has no outside anymore. Now, with the rise of emerging economies such as Brazil, China and India and the increasing industrialization of the "global South", the production and consumption patterns that are simply not generalizable from an ecological perspective, spread over the entire globe. The result is, as Albrecht Koschorke[8] has noticed, that the exploitation is increasingly shifted from space to time: The collapse of the system is postponed through overexploitation of the future opportunities of coming generations. Therefore, it is not only in the financial and economic crisis that problems are overcome by debt-making. Also with regard to energy supply, to the oceans and the climate today's generation takes on loans that have to be paid by their children and grandchildren – if they can.

The historian Dipesh Chakrabarty has noted that the *Great Acceleration* in consumption levels and resource consumption, which seems so menacing from the perspective of environmental sustainability, has been and still is a phase of emancipation and expansion of individual action potential for the societies that went and still go through this process: "The mansion of modern freedoms stands on the ever-expanding base of fossil fuel use. Most of our freedoms so far have been energy-intensive"[9]. In other words, historically the economic and social model, which now reaches its limits, was *not only materially* uniquely successful: It brought the members of early industrialized societies democracy, rule of law and the protection from physical violence as well as prosperity, health, education and social welfare on an unprecedented level. The economic and social model of Capitalism, which spreads over the whole planet in the course of its globalization, has led not only to a historically quite incomparable general level of prosperity but also to non-material standards of civilization, which modern societies consider as imper-

[4] Ibid.

[5] Ibid .: 19

[6] Brand, Ulrich & Wissen, Markus (2011). "Sozial-ökologische Transformation und imperiale Lebensweise. Zu Krise und Kontinuität kapitalistischer Naturverhältnisse." In: Alex Demirovic, Julia Dück, Florian Becker & Pauline Bader (Eds.): Vielfachkrise im finanzdominierten Kapitalismus. Hamburg, pp. 78-93

[7] Ibid.: 83

[8] KOSCHORKE, Albrecht (2012). *Wahrheit und Erfindung. Grundzüge einer Allgemeinen Erzähltheorie.* Frankfurt am Main: S. Fischer.

[9] CHAKRABARTY, Dipesh (2009). "The climate of history: Four theses." In: Eurozine. Internet: www.eurozine.com/pdf/2009-10-30-chakrabarty-en.pdf (accessed12.09.2014).

ative today: freedom, democracy, rule of law, education, health- and social care. So if one puts the question of necessary transformations in economy and society because of all evident climatological and ecological problems, it is about nothing less than the question of whether the standard of civilization, which the people have achieved in the early industrialized societies, can be preserved or not.

This question is not trivial, but concerns very basic living conditions. One only has to compare the life of a "typical teenager" at the beginning of the industrial modernity with his/her life today and will realize not only incredible increase in possession of items and products, but also regarding personal opportunities. The typical teenagers of the late 19th century did not attend school but went to the factory to work 10-12 hours poorly paid, and his/her average life expectancy was not 80 but 45 years[10]. This example illustrates like a spotlight that the last 100 years did not only mean an increase of material, but rather of civilizational standards for people.

Therefore, the challenge for *Transformation* is to trace a mode of socialization, which allows for the retaining and even further development of these same civilizational standards, and at the same time for radically reduced consumption of natural resources.

Politically, this translates into the question of whether one proactively uses the possibilities for economic and social transformation, which are given under the present conditions, or whether one passively consigns to a process, in which the possibilities for action are narrowing under increasing stress, in which the primacy of the economy still further strengthened and which finally can lead to a de-civilization, which gives more rights and survival chances to the stronger than to the weaker.

The resulting paradox can be formulated as follows: If the standard of civilization reached in the course of the capitalist growth economy is to be preserved, then just this economy has to be overcome. Politically, this means nothing less than that the civilization model of expansive Modernity stands for debate. The dual nature of the growth economy becomes clearly visible if we look at the example of the improvement of the living standards of the residents of the emerging countries, with the rapid development of middle classes, of consumer cultures, of increased prosperity, of greater mobility, better education and health care. For, indeed, both happens at the same time: the increase in the average standard of living and the rate of destruction of natural resources.

The lost years in ecological terms are years of economic miracle for the rising population in Brazil, China, Vietnam, psychologically and economically, comparable to the Western European post-WW2 period. What can currently be seen in the emerging markets, corresponds exactly to that "elevator effect", which has ensured social peace

[10] UCHATIUS, Wolfgang (2013). "Jan Müller hat genug." In: *Die Zeit*. Nr. 10/2013. Internet: www.zeit.de/2013/10/DOS-Konsum/komplettansicht (abgerufen am 14.09.2014).

in the European post-war period and has marked the era of "democratic capitalism"[11]. Although the social inequalities remained, and even deepened again in the past 20 years[12], regarding the standard of living these years meant an elevator to the top for all. This is the undoubted merit of the principle of the economy of growth. In historical comparison, no system has improved social conditions so rapidly, and thus, for the first time, provided a sense of opportunity and freedom for many people.

Therefore *Transformation* cannot be about a "regime change", an intentional change of society *in toto*, but rather about the transformation, shrinkage or elimination of non-sustainable sectors of the society just with the aim to preserve others. So far, there is neither a theoretical model nor an empirical example of a modern society that realizes the civilizational characteristics of freedom, democracy, the rule of law, social care, education and health care under conditions of greatly reduced ecological impact compared to today. The figure below maps countries of different geopolitical regions according to their "Human Development Index" (horizontal axis), which covers income, life expectancy and education, and their "Ecological Footprint"" (vertical axis), measured in global hectares per capita.

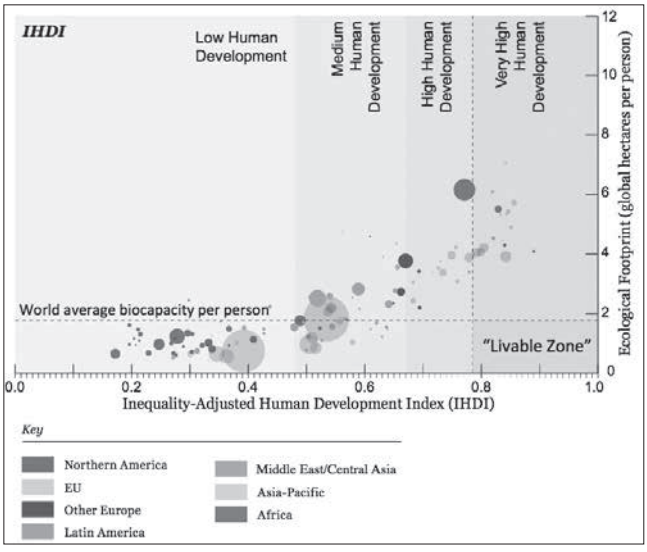
The figure shows that countries that have a very high level of human development according to the "Human Development Index" at the same time have an Ecological Footprint far beyond a sustainable level. Conversely, the human development is currently on a very low level in those countries, whose environmental impact per capita does not exceed ecological limits. And not a single country can be found in that sector of the graph, which is characterized by a very high human development standard *and* a sustainable ecological stress level. That is exactly the point, however, if we envision a sustainable modern society.

Building new and resilient societies through „Transformation Design"

How do modern societies, i.e. their citizens, solve problems? The answer is: first, collaboratively by means of division of labour, and secondly, by using already existing solution patterns and infrastructures. Modern infrastructures have always provided ready-made solutions for tasks of conventional type. In this sense the entire universe of consumption- and mobility offers is an always available archive of answers to questions of various kinds – what to eat, how to dress, how to move, what to watch. In this continuous availability of preset answers, questions that one may have still had, eventually, move completely into the background. One is, in other words, chronically caught in a universe of answers without even knowing or remembering what the corresponding question has been. That is the function of conventional design: to permanently provide new answers to questions

[11] STREECK, Wolfgang (2013). *Gekaufte Zeit: Die vertagte Krise des demokratischen Kapitalismus.* Frankfurt am Main.

[12] Eurostat (2013). "Gini coefficient of equivalised disposable income (source: SILC)." Internet: http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&pcode=tessi190&language=en (abgerufen am 03.09.2014).



The Ecological Footprint 2008 in comparison with the Human Development Index for different countries (the colour of the circles indicates the geographical region, their size the population numbers). Source: WWF 2012

that do not need to be formulated any more[13].

Transformation Design, in contrast, assumes that the question is the decisive key: What is the goal I want to achieve, what are the necessary resources? Potential answers include that even the target itself is put into question: Do I have to actually travel 500 km for this two-hour event? Does the grass in my garden need to be as short as the green in Wimbledon or the golf course? Thus *Transformation Design* does not start with the solution, but with defining the question that arises in practice. So the answer to the question of the best design solution for a square could be: it is left as it is. Or the answer to the question regarding the best travel connection: stay at home. *Transformation Design* is initially nothing more than the application of moral imagination and moral intelligence[14] and does not necessarily have to be translated into a form of production and product. Its result may consist in action or in inaction. In any case the result will be preceded by social and individual considerations of possible questions and answers. In conventional design, the sequence is reversed: the result is definitely a product, the remaining question is merely how I shape it. In this sense, conventional design is morally and socially homeless, which is why it does not problematize that it is generally associated with an increase in effort. In contrast, *Transformation Design* aims for the least possible effort. This can also be at zero.

Since societies of our type will change inevitable under these conditions, *Transformation Design* considers itself a resilience generator – as a means of restoring and maintaining resilience. For cultures of external supply tend to increasingly transferring decisions on technical processes: Track keeping assistant, collision radar and rain sensor of today's automobiles are an expression of such transfer; they relieve pressure of decision making, but also of responsibility. Cultures of external supply depend on functioning infrastructures under all conditions; if

[13] JONAS, Wolfgang (1993) "Design as problem-solving? Or: Here is the solution – what was the problem?" In: *Design Studies* Vol 14 No 2, April 1993.
[14] WELZER, Harald (2013). *Selbst Denken. Eine Anleitung zum Widerstand.* Frankfurt am Main.

parts thereof fail – as a result of technical accidents, earthquakes, extreme weather events, acts of violence – these cultures will very quickly reach the limits of their coping capacities. Not only are they more vulnerable than cultures with lower external supply and higher self-sufficiency, their members are also less resilient, i.e., they have lower skills in restoring ruined structures, food sourcing, security, etc.

Hurricane *Sandy* of Winter 2012 has shown that even a prolonged power failure in the skyscraper structure of New York´s neighbourhoods leads to significant impairments: Going up to the 30th floor, suddenly appears as a surprising and laborious task – for older people a daylong failure of cooling or heating equipment and elevators can quickly develop into a life-threatening situation. Contemporary societies have become even more vulnerable due to the enormous expansion of interdependence chains. Such transport- and energy infrastructures are considered "critical infrastructures", as many other social functions depend on them. A disturbance at one point of this network of dependence then vibrates through the entire system[15].

Cultures of external supply realize the satisfaction of all kinds of needs through consumption offers, and therefore they tend to permanently expand the amount of offered and purchased items by incessantly creating new needs. This not only increases the material and energy consumption as well as the mountains of garbage, but also reduces resilience – the products gain power over their users, as is perfectly shown by all the gadgets and apps of the digital world. An expansive culture of our types reduces the autonomy and therefore the political power of its members, while a reductive culture enhances individual autonomy and strengthens social intelligence. The plea for a reductive type of modernity is political at heart, because it requires the material de-privilegation of the ones who have to much. Modernization of modern societies was always realised by social movements: the worker's movement reducing the power of Manchester capitalists, the Civil Rights-Movement de-privileging the white majority, the Feminist movement, de-privileging the males. Sustainable design is about de-privileging the imperial lifestyles of the inhabitants of hyper-consumerist societies. That means: less material, more autonomy. Less dependency, more self efficacy. Less passivity, more action. *Transformation Design* thus acquires a civilizing mission, quite in the sense of classical Enlightenment: it serves for allowing human maturity. One could also say that it is emancipatory design.

• • •

This essay is an revised excerpt of a text I wrote together with Bernd Sommer to appear under the title Transformation Design – a social-ecological perspective in an edited volume by Wolfgang Jonas at Birkhäuser.

[15] SCHAD, Miriam; SOMMER, Bernd & WESSELS, Sebastian (2013). "Auswirkungen des Klimawandels auf die Gesellschaft." In: Friedrich-Wilhelm Gerstengarbe & Harald Welzer (Eds.). *Zwei Grad mehr in Deutschland. Wie der Klimawandel unseren Alltag verändern wird. Das Szenario 2040.* Frankfurt am Main, pp. 131-188.

B. Political, Financial and Legal Actions to Transform the System

A Just Transition: a Union Proposal to Ensure no One is Left Behind in a Zero Carbon Future

INTERNATIONAL TRADE UNION CONFEDERATION (ITUC)

While discussions on climate change have for long been focused on targets for emission reductions and their actual inadequacy when compared with sustainable trajectories, unions deployed efforts to complement those debates with a climate mobilisation focused on the "how": how can we ensure that climate policies have broad social support? How can we win the hearts and minds of working people to a struggle that still seems too far from their daily concerns? How can we connect current challenges of unemployment and precarious work to the need to build a climate-sound society?

If we are honest about the scale and urgency of the transformation we need, it should not be surprising to see trade unions highlighting the need for transforming the production system and the jobs it provides, for organising workers in new decent jobs in more sustainable sectors or fighting for the Just Transition measures that will ensure we leave no one behind. Despite this evidence, many in the climate debates still think that addressing the social aspect of the transition will bring too many delays to climate action. We could not agree less.

Climate action will drive job creation

global figures show already that renewable energies have become key employers. Around 7.7 Million workers are already in the sector, with millions more on energy and building efficiency works, public transit or organic agriculture, just to mention a few. If these sectors still face the need of improving working

© ALAIN BACHELIER

Maintenance of a wind turbine in the wind park of Villeneuve-le-Roi, France.

conditions, meet decent work challenges and secure union presence at the shop floor, they are indeed critical in building confidence in the social qualities of a new, zero carbon society.

The figures also show the potential for growing jobs across the economy in support of ambitious climate action: A 2010 study by the Millennium Institute for the ITUC showed that if just 12 countries invested 2% of GDP each year for five years in major sectors this could generate around 48 million jobs.

The International Labour Organisation (ILO) has found that most studies show a positive net employment effect of policies facilitating a climate transition. Net gains are up to 60 million jobs, combining economic prosperity with environmental improvement.

There are also investment trends which could realise decent work opportunities and climate protection, provided they are democratically designed and bringing the zero emission imperative on board. Investments in infrastructure for example, are predicted to be between US $50 trillion and US $90 trillion by 2030. If these were going to sustainable choices in the transport, energy, water and the built environment sectors, this could imply millions of new, clean jobs and better standards of living for working families.

Outside of the cities, agriculture and forestry hold the key to feeding the world's people and sustaining the natural environment. Restoring just 12% of the world's degraded agricultural land could feed 200 million in this time period, and this also means livelihood and job opportunities for these communities.

Keeping a narrow climate focus will not make it simpler

Despite this potential, the context in which trade unions organise, mobilise and try to build an alternative for working families is far from being bright. 201 million people were unemployed in 2014 around the world (so officially registered as actively looking for a job) and trends indicate that global unemployment will grow by 8 million in the next four years[1]. The number of workers in vulnerable employment has increased by 27 million since 2012, and currently stands at 1.44 billion worldwide. When added to the growing figures on inequality, the picture for our humanity is rather bleak.

So attempts to cut the climate transition from other social and economic challenges we face will only lead to more delays in the more transformative route we need to take together as humanity. There is therefore a need to engage straight in the transformation of all our economic sectors and industries, so that the transition embraces workers that are today trapped in poverty wages and precarious jobs as much as those which could enjoy today relatively better working conditions, but in sectors we know are polluting our environment for the benefit of a few.

This is what the union movement means when we coined the concept of a Just Transition: A strategy that would ensure workers would be fully part of a democratic transformation process, where opportunities emerge, but also those facing difficulties to integrate a zero carbon world are supported, accompanied and empowered.

ITUC General Secretary Sharan Burrow said it very clearly:
As unions, we want a clear vision of future industrial and energy options and the impact on workers. It is our job to fight for a transition that is just. In sectors where job losses are unavoidable, social partners (unions and employers) need to develop binding transition strategies well in advance that offer new opportunities to employees and actively shape structural change.

Unions represent workers employed in the energy and fossil fuel sectors and in other areas that will be affected. And while companies make the necessary changes to compete in the green economy, we must recognise the fears of people who believe they will lose their jobs. These workers are the backbone of many communities and they must be guaranteed a future. Redeployment, the chance to further develop their skills and make a contribution in new sectors and secured pensions must be an integrated package of guarantees.

The challenge for unions is to be part of the dialogue that drives investment, shapes industries for sustainability and ensures decent work. Social dialogue, consultation, collective bargaining - workers have a right to be involved in the design of their future.

[1] www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_337069.pdf

Just Transition strategies are aimed at maximising the benefits of climate action while minimising hardships for workers and their communities. Needs will vary in different countries, though some policies must be applied everywhere. These include:

1. Sound investments in low-emission and job-rich sectors and technologies. These investments must be undertaken through due consultation with all those affected, respecting human and labour rights, and Decent Work principles.
2. Social dialogue and democratic consultation of social partners (trade unions and employers) and other stakeholders (i.e. communities).
3. Research and early assessment of the social and employment impacts of climate policies.
4. Training and skills development, which are key to support the deployment of new technologies and foster industrial change.
5. Social protection, along with active labour markets policies, and sufficient provisions for protecting pensions and income.
6. Local economic diversification plans that support decent work and provide community stability in the transition.

Behind this idea, is the belief that communities must not be left on their own to manage the impacts of the transition as this will not lead to a fair distribution of costs and benefits.

Workers in the fossil fuel or in the energy intensive industries have contributed to our communities' prosperity; they have fought hard for many rights, far beyond their immediate interests, and deserve our respect. They are not victims, nor those responsible for the energy choices that have been made to date. And we are convinced they do have a role to play, engaging in the dialogue about how we build a different economy.

Ensuring a just transition for them, for their families and communities is the best way to show that the alternative society we aim at as a movement is fundamentally different from the one in which we are, because it translates into action fundamental concepts of solidarity, fairness and prosperity.

A workers right to know

At the heart of a union strategy on climate is the issue of economic transformation. But how do we empower workers in this debate, which seems so far from their daily concerns?

Beyond macroeconomic and sectoral policies as those listed under the Just Transition framework, another key is workers' right to know. Until know, we have seen companies willing to protect their interests by claiming their attachment to job protection. We know this ill-intentioned tactic aims at convincing workers that the only way forward is to rally behind their employers, even when these are making the wrong choices.

Unions are convinced that workers have a role to play in shifting their companies' policies. Workers have a right to know how their companies will achieve decarbonisation. How are they integrating the 2°C imperative in their business plans? How much of their benefits are directed to research, innovation and workers' re-skilling? Workers have to claim for their right to information, transparency and involvement.

This pressure from below, which can be supported by community alliances, is critical for shifting the burden from workers in carbon intensive sectors to those who are truly responsible of the problem we face.

We are probably the last generation with the capacity to prevent catastrophic climate change, and probably the one with more information about how to reduce inequalities and build a fairer society.

The task ahead for the union movement is daunting. We have a short window of opportunity to succeed the first attempt to plan democratically a transition towards a society that respects every inhabitant of the planet, as well as future generations. Unions have been an active part of every single movement towards human dignity in history. The struggle to prevent climate change will not be an exception.

• • •

The content of this article is based on ITUC's Climate Frontlines briefs, which can be accessed here : http://www.ituc-csi.org/ituc-frontlines-briefing-climate and http://www.ituc-csi.org/ituc-frontlines-briefing-climate-16132

Climate Change and Transitions Towards Living Well in South America

GERARDO HONTY AND EDUARDO GUDYNAS

The evidence of changes in the global climate is overwhelming, and the need for a radical change in energy sources is evident. These positions are in constant confrontation with conventional ideas about development, behind which lie the aspirations to lifestyles based on the models of technology, comfort and consumption of the industrialised countries. If we are to take the necessary measures to stop climate change, a good part of the fossil energy sources cannot be used, as even the International Energy Agency now recognises (IEA, 2012) and renewable energy sources are not sufficient to cover expected energy demands if we follow the current tendencies (Honty, 2014).

This all points to the need for a substantial change in how energy is handled, and with it our ideas of development. This is inevitable, as conventional ideas about development are very closely linked to energy use. These alternatives to conventional ideas about development are being intensely debated right now in South America. It is from this perspective that the Andean countries are highlighting proposals presented as Good Living (or Living Well). The original form they took was a pluralist set of positions that, on the one hand, presented radical criticisms of conventional development, and, on the other, proposed alternatives committed to people's quality of life and a broad-reaching sense of community that includes the environment and the protection of Nature, recognising that Nature also has rights. It is a position that expresses other wisdoms and sensibilities in the relationship between human beings and our environment.

This article explores some of the central ideas being discussed in a process of energy transitions towards Good Living for the Andean regions and the neigh-

bouring Amazonian areas. It is an exercise in proposing post-carbon societies based on sensibilities that seek to get out of the trap of conventional ideas of development, and a number of different organisations and social movements are taking part.

The concept of transitions

Living Well seeks alternatives to the ideas of development in all of its forms. It is a complex and difficult commitment, as the myth of development is deeply rooted in our social imagination. This is one of the reasons why we recognise that this change will be gradual and why it is presented as a series of **transitions**. This position can also be explained by the very characteristics of Living Well, in that it is an alternative that should be adapted to each social, historical and environmental context, and must therefore be built democratically and without impositions.

From within this framework, the transitions towards alternatives to development are defined as a set of policies, strategies and actions that approach the impacts and problems of the current conventional development, with a view to seeking a way out of this condition by adopting alternatives that go beyond development. The aims can be summarised in the slogan: zero poverty and zero extinctions, with both aims at the same level in the hierarchy.

This article will present the transitions for the Andean-Amazonian regions of Colombia, Bolivia, Ecuador and Peru, and the Western Amazonian areas of Brazil. It considers the problem of climate change in all its facets, from the addiction to hydrocarbons to deforestation, understanding these as parts of conventional styles of development. Based on that understanding, alternatives are proposed that enable these problems to be reversed, wiping out the factors that cause them and the political and cultural conditions that make them acceptable.

On the one hand the aim is that these countries reduce or eliminate their participation in global emissions. This means eliminating or drastically reducing the enormous volume of energy or resources extracted from these countries, such as hydrocarbons, that are exported to other continents where they will be used or burnt. It also means reducing the emissions produced by each country, with special attention to those caused by deforestation, agriculture and other changes in the use of the soil. It is common that Latin American governments are insistent about greenhouse gas emissions coming from the energy or transport sectors, such as the gases released by factories or vehicles, forgetting that one of the principal sources of these gases is in rural areas. The transition to a post-carbon condition will therefore require substantial reforms in agricultural and land-use strategies.

Policies for transition

In the transition process, energy policies need to be approached in different areas and sectors, on both the supply and demand sides. In the transitions, the ecological limits of the planet Earth are the unequivocal framework for the development of life, the economy, and human societies. Energy use is currently surpassing those limits, and the main aim of energy policies for the transition therefore seeks to reduce energy consumption on the demand side and convert to sustainable renewables on the supply side. This requires a series of policy decisions, applying some novel measures and going deeper into others that are already being implemented. As an example we offer some of the measures being taken in the energy sector and in land use, and the changes that need to be effected across the continent. These measures are outlines and commented upon here separately, however, it should be remembered that they form part of an organic and interdependent whole that includes other components that exceed the scope of this article (Gudynas, 2011)

1) Policies for energy supply

The transitions focussed on primary energy supply aim to reduce consumption and move away from non-renewable to renewable sources.

Moratorium on new oil fields. The suspension of new explorations and the exploitation of hydrocarbons in confirmed or possible deposits, in the Andean and Amazonian regions, and on the Pacific Coast. The proven reserves of fossil resources contain more carbon than can be emitted if we are to avoid dangerous climate change. There is therefore no sense in increasing the size of these reserves as, according to the International Energy Agency, only a third of them can be used if temperature increases are to be contained below 2° C (IEA, 2012).

Social and environmental regulatory framework. The measures outlined above are contained within a regulatory framework that is both social and environmental, and which must be applied effectively and rigorously to all undertakings to obtain energy resources or that affect land use. Three possible situations are contemplated: undertakings that will be prohibited due to their high social and environmental impact; those that can be reformed in order to reduce these impacts to acceptable levels, and those that are within the environment's capacities for buffering and recovery. For example, oil fields should be assessed, and certainly some should be shut down because of the grave impacts they have, and others may perhaps be reformed according to ecological conditions in order to continue operating. In the same way, measures such as permitting

oil exploration in protected areas, as the Evo Morales government (Bolivia) has just done, are unacceptable from the point of view of the transitions.

Redirecting the use and trade in hydrocarbons. As a consequence of the measures outlined above, the availability of hydrocarbons will be reduced to those produced by the sites that continue to operate. The final destiny of those hydrocarbons may be very different from what it is now, as it is massively exported to global markets. In the transitions, priority will be given to attending to national needs, in the first instance, and then to the regional needs of South America.

Price correction and a review of perverse subsidies. The price of crude oil or natural gas must be reviewed, as it contains enormous distortions. These prices must be corrected in order to internalise the environmental and social costs of the extraction and transport of fossil fuels. The many and perverse subsidies given to the extraction and consumption of hydrocarbons, which amount to more than US$ 500 billion per year (IEA, 2013), must be dismantled. Measures such as the tax exonerations offered by the Evo Morales government (Bolivia) to the oil companies are simply not possible under the transitions. This correction of hydrocarbon prices will lead to a reorientation of investments on the energy supply side towards renewable sources

Tax reform and State spending. Important changes are necessary in the taxation, tariffs and other tithes applied to extraction activities. Among the examples referring to climate change and energy we would highlight the need to review the taxation of energy, increase taxes on sumptuary energy consumption, and taxing excess corporate income where appropriate, etc.

Environmental and territorial control and management. The transition measures are articulated with other measures that seek to ensure that the appropriation of natural resources takes place within the biocapacity of each country and region. Among the most common instruments are requirements for environmental quality, environmental impact assessments, or territorial planning and land demarcation.

2) Policies for energy demand

At the same time, these transition measures also contemplate substantial changes in the demand for hydrocarbons. This is vital for reducing our greenhouse gas emissions, and for dealing with cuts in the availability of energy resources, and the challenges of getting out of oil. The measures we propose are focussed primarily on transport and industry which create the greatest demand for energy in the region.

Changes in Transport. Investing in more efficient and more effective public transport systems and policies, results in savings in currency (in the case of countries

that import oil or derivatives) and infrastructure, reduced local contamination, traffic decongestion and, above all, improved mobility for the sectors of the population with least resources. Territorial planning will enable a reduction in road transport and encourage rail and river transport. Furthermore, in the major cities a moratorium on auto mobiles is proposed, with the exception of taxis, rental cars and other service vehicles (such as ambulances or police patrols).

Changes to industry. It is fundamental that standards of obsolescence be established for the different goods produced, and planned obsolescence should be prevented. This is because a short useful life of industrial products is a determining element of society's demand for energy and materials.

Although various systems exist for "labelling" products such as lamps, electric and gas appliances, etc., these are merely indicative, and do not impose restrictions. That is to say, they indicate efficiency to the consumer, but they do not impede or "punish" the production and consumption of inefficient goods. The transitions therefore impose efficiency norms, including promotion and punishment mechanisms and even establishing minimum energy efficiency standards for the production and commercialisation of certain goods.

The transitions support the use of *recycled and renewable materials*. These are measures that currently permit savings of around 10.7 million barrels of oil per year. Recycling materials such as aluminium, for example, requires only 5% of the energy consumed in its primary production (UNEP, 2011). In this case, measures are applied to promote, punish or limit products according to their use of renewable or non-renewable resources for their production.

The recycling of waste and closed systems will be promoted and given privileges, as a way of reducing the demand for materials and energy in their production.

In this case, it is also necessary to *internalise the externalities* in the price of manufactured goods. We should remember that the industrial sector is responsible for 17% of health problems related to air pollution, with costs associated with damage caused by air pollution equivalent to 1-5% of global GDP (UNEP, 2011). It is only if these costs are internalised into the prices that the various measures outlined above will be economically possible.

Changes in housing. The architectural design of a building determines the energy it uses throughout its useful life. Thermal efficiency, lighting, sanitation systems, height, sunlight, etc. all have an impact on the daily energy bill for their users. The transitions are therefore based on the regulation of the construction, structure and function of these buildings, in order to ensure the best possible energy savings. This sector is also a major source of demand at a global scale, and its regulation may therefore have a positive impact in reducing in the extraction of

natural resources. In the residential sector, regulatory and financial instruments will also be applied, some of which are already mentioned above, and others that will, for example, favour giving credit to energy efficient homes.

3) Policies in the Farming and Livestock sector

One of the substantive contributions to greenhouse gases coming from the Andean and Amazonian regions comes from land use. The transitions must therefore attack this problem with determination.

Stopping deforestation. The surface area of natural forests should be frozen everywhere in the region, both in the Amazon, and in the other Andean environments. This can be achieved combining adequate monitoring and controls, land demarcation and zoning, regulation of the productive and commercial chains that affect forests (particularly, timber and livestock farming), and where possible, the use of silvopastoral practices (integrating pasture with trees).

The reconversion of farming. The farming and livestock sector has become increasingly dependent on products that use oil and natural gas, such as fertilizers and pesticides, but also irrigation systems and machines. This means it is necessary to reconvert in order to reduce dependence on fossil fuels, towards agro-ecology or organic agriculture, reducing the chain of events that leads to the arrival of new livestock farmers in the forests, and reorientates production and consumption towards local demands, as a way of reducing transport requirements.

4) International Policies

Autonomy in the face of globalisation. Many of the transitional measures imply recovering autonomy in the face of international markets. That includes reorientating hydrocarbons or food production to national and regional needs. In this way, the transitions propose a selective disengagement from global processes, placing emphasis on trade between neighbouring countries. This supposes a radical change compared to the current integration which is geared toward the export of energy resources and raw materials to global markets.

Autonomous Regionalism. The transitional measures indicated above make it clear that there must be a deeper and more genuine integration between the countries of the Andean-Amazonian region. These should, for example, coordinate the internalisation of the social and environmental costs into the price of raw materials in order to avoid unfair competition between the countries, complementing their food production and sharing their energy resources. This requires common policies between these countries on energy and farming, and a new design for the articulation of infrastructure. This is a radical change in respect of the current integration that emphasises the export of raw materials to international markets. The transitions seek links that are autonomous of these global impositions.

Open alternatives

By way of a final reflection it is a good moment to insist that we have a growing number of alternatives at our disposal that are adjusted to a decarbonisation with both improved protection for biodiversity and a decent quality of life. The most promising of these alternatives require seeking political and economic planning that goes beyond any version of contemporary development. Faced with these options, rather than minimizing and hiding these alternatives, they should be highlighted, applied and strengthened, in order to adequately face the planetary ecological crisis that threatens us.

REFERENCES

- GUDYNAS, E. "Caminos para las transiciones post-extractivistas", In: *Transiciones, post-extractivismos y alternativas al extractivismo en Perú*, RedGE and CLAES, Lima, 2011.
- HONTY, G. 2014, *Limites de las energías renovables. En:* Ecuador Debate N° 92. Quito, 2014.
- International Energy Agency. World Energy Outlook 2012. OCDE/IEA, Paris.
- International Energy Agency. *World Energy Outlook 2013.* OCDE/IEA, Paris.
- United Nations Environment Programme. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication.* UNEP, Nairobi, 2011.

Flash-Forward to 2050: the End of the Energy Transition

ASSOCIATION NÉGAWATT

The energy transition is not simply a marginal development in our energy system, nor is it a tweak on the model that has led our societies and our environment into the deadlock it is currently in. Neither, however is it a return to the time of matches and candles, as is sometimes exaggeratedly evoked... It is is fact quite the opposite!

The energy transition is about rethinking modernity; it is about everyone reviewing one's own needs and assessing how meaningful these needs are, while also acknowledging the finiteness of the world. This does not mean that one can't have a fulfilling life, packed with the joys (both big and small) that make life worth living. But it goes without saying that we need to review our current lifestyle, as we now know with certainty that if we don't change anything, the selfishness and blindness that dictates our current way of life will prevent our descendants from being able to have even just a "normal" life.

Indeed, how will these descendants, some of whom are already among us, live in 2050 in a society that has completed the energy transition? And how will have this been achieved?

Decision-making processes will adhere to three foundational principles: only genuine sustainable development solutions should be pursued, négaWatt's three-pronged approach of "energy sufficiency, energy efficiency and renewables" should be respected, and techniques that are still immature should be avoided, at least in the medium term.

Without trying to predict or forecast the future, because, as Pierre Dac remarks, "Predictions are difficult, particularly when they concern the future", let us at-

tempt to draw a rough sketch of how society might look in 2050, through the lens of a successful energy transition.

Redesigned town planning, renovated buildings

In 2050 the way in which we use space has changed dramatically through a triple movement of rural regeneration, reconfiguration of cities and densification of suburban areas. This has resulted in a more balanced redistribution of both the population and activities across regions.

In cities, resistance to compartmentalised areas (housing, employment, shops, leisure activities) has enabled a return to village-style town planning where everything is in walking distance and the use of cars is no longer a necessity. The constant noise of internal combustion engines is nothing but a distant memory, and vehicles are only permitted provided their speed is compatible with other users of public space. Public lighting is only activated when really necessary, and city dwellers can finally see the stars at night.

Almost all old buildings have been renovated and insulated. They have become more comfortable and significantly more energy-efficient. Many of them are connected to a local network supplying heat from wood or renewable gas, reducing their environmental impact. This vast energy rehabilitation program has been a forty-year process, and has created hundreds of thousands of jobs in construction and industry.

Collective housing buildings and newly constructed offices do not exceed five or six floors. They form clusters of houses where greenery has pride of place, providing shade in summer and warmth throughout the year. Roofs are systematically equipped with solar panels, maximising on the free heat of the Sun as well as that emanating from residents, equipment, exhaust air and waste water, thus limiting heating needs to a temperature that is consistently comfortable without being excessive: negawatts are no longer thrown out the window or with the bathwater!

There is more electric equipment in both housing and offices than there is today, and it provides more services, but it is significantly more energy efficient. Through advanced automation and sophisticated standby systems, they consume energy only when really used. Electricity is reserved for “noble uses”. It is not wasted on, for instance, Joule-type electric heating nor extravagant uses such as advertising screens.

Overall, the energy consumption of the residential and service sector in 2050 has decreased for all purposes,by more than half compared to 2010. It has resulted in a superior level of comfort and is used for a multitude of purposes.

Quality over quantity in the transport, industrial and agricultural sectors

Developments in town planning, land management and working methods have played a significant role in reducing the need to travel for both personal and professional purposes. Everybody has access to the shops and services needed for their everyday lives, located within just a few metres of their homes. The development of telecommuting in a number of collective office spaces – the new form of commercial real estate – makes it possible to pool efficient office equipment and keep fatigue in check, as well as economise time and minimise energy waste. This new way of occupying administrative or creative positions does not exclude the existence of "old-fashioned" meetings, but openness and sociability has replaced stress and tedium.

Varied infrastructure and improved coordination between information systems and ticketing has made transport a smoother, effortless experience, providing personalised solutions adapted to each situation. Comfortable, efficient and inexpensive public transport evidently plays a central role in moving about within cities as well as between them, in addition to a wide range of alternative transport solutions: safe and well-connected bike lines suitable for both regular and electric bikes, light micro-cars designed for zipping about the city, car-sharing and car-pooling, collective taxis and on-demand mini-buses adapted to the needs of all ages.
The production of capital goods, primarily reorientated towards the use of renewable raw materials, has definitively converted to industrial ecology, prioritising circular raw material and energy flows, both upstream, in design and manufacturing, and downstream, with the systematisation of a deposit, repair recovery and recycling system: "the age of light things"[1] has finally arrived...

Agriculture has also shifted towards a more balanced production cycle in every respect: in terms of the environment and the landscape, with a radical reduction in chemical use, the introduction of agroforestry and the widespread use of ecologically-respectful cultivation methods. Food has also undergone a radical transformation: factory farms have disappeared, replaced by smaller scale production processes, which produce meat and dairy products of a much higher quality, and there is increased consumption of cereals, pulses and seasonal fruit and vegetables. There has also been a social shift, with the development of rural-based jobs through diversified opportunities, such as producing materials and biomass recovery.

Between 2010 and 2050, total energy consumption has been reduced by half for heat, by two thirds for transport and by a third for specific electricity purposes.

[1] In the book *Il y aura l'âge des choses légères...*, the designer Thierry Kazazian states the need to return to "lightness" in the design of all our consumption goods: simple, multi-purpose, multi-functional objects which can be adapted according to their purpose, and whose components are entirely recyclable (Victoires éditions, Paris, 2003).

Despite the fact that the French population has increased by more than 9 million, it takes 3 times less primary energy to meet all their needs, thanks to the constant improvement of energy chains.

Moving towards 100% renewable energy

The energy used to meet these needs is of a radically different nature, as 90% of it is now provisioned from renewable sources. Like the renovation of buildings and the diversification of agriculture, these new energies have created tens of thousands of locally-based skilled jobs, where the gifts of the Sun, wind and biomass are just waiting to be put to good use.

The phase-out of nuclear power was not the economic cataclysm predicted by certain Cassandras. The need to manage the legacy of old plants through decommissioning and waste management has maintained a great number of highly skilled jobs in the sector, and the growing number of end-of-life reactors worldwide has been a way to export know-how of the French nuclear industry. The conversion of the latter was a much smoother and less traumatic process than that of the coal and steel industries, which took place between 1960-1980 and left tens of thousands of workers without a job, often overnight, and led to the decline of entire regions.
Throughout these years, fossil fuel imports were gradually reduced until finally confined to a limited amount of fossil natural gas, oil for specific fuels and petrochemicals, and coal for the steel industry. This reduction generated significant savings, which were then re-injected into the national economy to partially fund the energy transition. Consumption of natural gas was relatively stable until 2035, and a secure electricity supply was ensured through the rise of energy efficiency programmes, shutting down nuclear reactors and the progressive development of renewable energy. Consumption then dramatically dropped as renewable gas replaced fossil fuels in pipes and tanks.

Gas (increasingly obtained from renewable sources) is used for an increasing proportion of energy needs due to its numerous qualities such as its flexibility and the fact that it is easy to store: it covers one third of heating requirements and two thirds of transport requirements.

The flourishing rise of renewable energy is due not only to enormous progress made in the management and coordination of different energy networks, which are now “intelligent”. These include of course the electric network as well as the gas network and a number of heating networks that have been developed by local players. Local authorities, the historic owners of these public networks, finally recognising the importance of the challenges at hand and realising that they held one of the key solutions to the energy and climate crisis in their hands, decided to fully assume their legally assigned role as “drivers of the energy transition”.

Residents and businesses of these regions found a way to work together on local projects, creating value and providing a number of local jobs.

Contrary to the inaccurate notion of some, abandoning nuclear energy has not resulted in an increase in greenhouse gas emissions. These instead began to drop with the introduction of the first steps of the transition, with emissions halved by 2030, followed by a dramatic drop, resulting in 16 times less emissions in 2050 than in 2010. This almost total "decarbonisation"of the energy sector is necessary, as there is no way to avoid the vast majority of methane and nitrous oxide emissions from agricultural sources: in this sector emissions have only halved in 2050.

Lastly, France's autonomy and independence is significantly more robust as it is virtually entirely free of its dependence on economic and political agents for its energy supply: the transition thus constitutes a true long-term "energy-insurance" for all households, businesses and communities, as both their daily lives and their future are no longer subjected to speculative and geopolitical tensions over energy.

The energy transition is neither a simple evolution nor an abrupt revolution

As we reach the end of this quick trip to 2050 and the trajectory explored by négaWatt, we still need to ask ourselves questions relating to the pace at which the transition should be played out and the urgent need to take action.
If the changes sketched out were to occur suddenly, they would seem extreme and out of reach. But this is not the case: they are spread out over forty years – nearly two generations. And what separates our lifestyles today from this vision of 2050 is probably less significant than what separates our lifestyles from what they were forty years ago, i.e., in the 1970s, just before the first oil crisis.

But the energy transition is naturally a long-term process. It is precisely for this reason that decisions on the future are of utmost urgency – in order to anticipate the inevitable, challenging inertia that must be overcome, so that we don't have to resort to rashness. It is important that this movement is set to the right pace.

We need to approach the energy transition with confidence and commit to it fearlessly. There are solutions that can free us of our two-pronged dependence on fossil fuels and nuclear energy. And they are within our reach, provided that we open our eyes and recognise them as such.

These solutions come in the form of a wealth of choices and techniques that are already being implemented to one extent or another across all sectors. They form a landscape that is similar to an impressionist painting: up close, we only see spots of colour that seem to simply sit next to one another. Yet if we take a step back, we realise that these spots are harmoniously assembled to "make a

system" and relate to one another. If we take another step back, and introduce time as a third dimension, we see a much clearer image of our energy future that is in the process of taking shape before our eyes. We then realise that another energy landscape is not only of utmost necessity; it also makes the future a very appealing place to live.

• • •

Excerpt (in large part) taken from *Manifeste négaWatt - Réussir la transition énergétique* (Actes Sud, January 2012)

Six Proposals to Ensure Governments and Transnational Corporations Fulfil Their Climate Responsibilities

LUCA D'AMBROSIO

Although the possibility of a total collapse in our civilisation can not be ruled out,[1] neither the way in which negotiations are being carried out, nor the unambitious approach taken by those responsible for global climate governance seem up to the urgency of climate change. How can we explain what Stefan Aikut and Amy Dahan call a "reality gap"?[2]

Some of the reasons certainly lie in the UN climate governance system. The principle of common but differentiated responsibilities (CBDR), which represented a way for developed countries and developing countries to reach a "compromise" during the signing of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and the 1997 Kyoto Protocol, has now become an "alibi"; both for emerging nations, which refuse to reinterpret, rewrite or renegotiate the principle of CBDR, and for developed countries, which would like to have the history of industrialisation start in the 1990s. The outcome is that for the post-2020 period, governments are to be the ones that decide on their "contribution" to reducing greenhouse gases (GHG), taking specific *national* requirements into account, but not those of the *international* community.

But the distribution of climate-related responsibilities does not only fall on the

[1] See the conclusions of the IPCC 5th Assessment Report presented in November 2014. See also P. Servigne and R. Stevens, Comme tout peut s'effondrer, Seuil, 2015.
[2] AYKUT S. et DAHAN A., Gouverner le climat ? 20 ans de négociations internationales, Presse de SciencePo, 2015.

© KNOWTEX

Demonstration at Sciences Po, France, in parallel of the Copenhague conference, 2011.

shoulders of governments. It also concerns transnational corporations (TNC), new players on the international scene. Unhindered by national legislation and structured around their own autonomous, normative organisation, TNCs can either challenge or flout national-level decisions regarding the climate once they have been adopted. In addition, their "initiatives" influence government decisions, which explains their presence on the international arena of climate governance.[3]

The gap between the reality of climate change and the regulation of GHG emissions is thus rooted in issues that are significantly more complex and wide-ranging. Our analysis would be incomplete if it didn't consider the existent gap between the dream (both myth and utopia) of a central system for regulating a commons, such as the climate, and the reality of economic and financial globalisation. From the first free trade agreement to the bilateral free-trade agreements currently being negotiated, the successes of market deregulation seem to mirror, in a perverse way, the failure of international regulatory bodies to address climate change.[4]

From this perspective, the COP21 in Paris only marks the beginning of a long road, which should lead us to rethink an economic model founded on humans dominating nature and on humans dominating other humans. Until this issue is finally taken seriously by society and its representatives, the question is whether the law can represent a means to restrain the key players of this globalised order – governments and TNCs – both by addressing the issue of climate change and by dealing with the

[3] KLEIN Naomi, This Changes Everything. Capitalisme et changement climatique, Actes Sud, 2015.
[4] AYKUT S. and DAHAN A, op. cit.

consequences of to their action or inaction. The proposals below suggest ways to ensure both governments (I) and TNCs (II) assume their climate responsibilities.

I. Making governments responsible

The principle of common but differentiated responsibilities (CBDR) is one of the key notions in formulating a successful agreement in Paris: it is clear that it would be neither fair, acceptable or sustainable to apply the same objectives to all countries of the world without considering their history and their current situation. On the other hand, there would be little point in setting commitments that are not binding on all countries. There is thus a need to enforce the principle of CBDR for the post-Kyoto period by establishing explicit common goals, comparable contributions and differentiation criteria.

1. Common goals should aim to both reduce GHG emissions and assist societies in adapting to climate change. At the COP20 Conference held in Lima, developed countries which emphasised the first goal, made significant concessions in regards to this point: it was decided that the Paris agreement would take a "balanced approach" in regards to adaptation and mitigation.[5] The decision also requires developed countries to provide and mobilise enhanced financial support for "ambitious adaptation actions". But the future Paris agreement should go even further and consider mitigation and adaptation as common "global goals" under the overall responsibility of all State parties.[6]

2. In order to evaluate the efforts of each country in achieving common goals, it is nonetheless necessary that national contributions be subjected to a common method. In December 2012, the Warsaw Conference (COP19) requested the Lima Conference (COP20) to specify information to be provided by countries in regards to their respective contributions. This represented a crucial issue: by introducing a clearly defined framework for countries, some degree of international coordination can be integrated into a national process. In addition, the more information is controlled, the easier it will be to compare, and potentially evaluate and aggregate national contributions with regard to the 2 °C objective. But the draft addendum, under negotiation over several months, was dropped in Lima in favour of an extremely vague text that lists a few principles, which serve only as a guide.[7] In order to be able to compare and evaluate national commitments, we need to return to a system that defines the scope and methodological approaches in calculating emissions, which should be adopted by each country in its contribution.

[5] Decision 1/CP.20 (2015), § 2.

[6] See Scenario note on the tenth part of the second session of the Ad Hoc Working Group on the Durban Platform for Enhanced Action, 24 July 2015, Article E – Option n° 1.

[7] Decision 1/CP.20 (2015), § 14. See S. Maljean-Dubois, "Après la Conférence de Lima, quelles perspectives pour la Conférence de Paris sur le climat", Environnement et Développement Durable, January 2015.

3. It will be impossible to evaluate national contributions without developing differentiation criteria. Dividing the world between industrialised and non-industrialised countries, as envisaged by the Kyoto Protocol, is no longer an accurate reflection of reality: emerging economies (BRICS) are catching up with industrialised countries in terms of wealth produced, while this still remains very low in developing countries where the bulk of the population surge is located. At the same time, this situation remains extremely changeable. The Paris agreement should thus be "flexible" enough to incorporate such complexities while remaining "solid" enough to accommodate situational developments. To this end, governments should identify differentiation criteria that considers a country's context both in time – due to the ecological debt certain current generations have inherited from previous generations; and in space – i.e., allowing certain current generations the right to development without compromising the existence of future generations.

II. Making TNCs responsible

However, it is not enough to ensure governments are fulfilling their responsibilities, as it is often TNCs that are the most powerful players on the international arena when it comes to the climate. While representing the forces behind global climate governance, they also escape the clutches of international law. In order to bridge the gap between the power of TNCs and their climate responsibilities, there needs to be a recognised obligation to implement GHG reduction targets, with an independent body set up that ensures the efficacy of these measures and penalises any failure to comply. In other words, GHG reduction targets should be both "binding" and "justiciable".

In order to achieve this, monitoring and control of entrepreneurial self-regulatory initiatives needs to be ensured. TNCs may have gradually come on board and contributed towards reducing GHG emissions, but only on a voluntary basis.8 These initiatives certainly deserve attention, provided that TNCs are actually challenged to comply with these self-defined standards. In this regard, it could be useful to draw on the "OECD guidelines for multinational enterprises", as an approach to climate issues. These consist of recommendations made to TNCs, backed by a unique implementation mechanism ("National Contact Points"), which enables NGOs, unions and civil society to take on a whistleblowing role. They can, via the National Contact Points, effectively report failure of a company from an adhering country to comply with the guidelines, either directly or through one of its subsidiaries located anywhere in the world.

5. The experience of the Guidelines has illustrated that the consequences on those companies that fail to comply are minimal: hence the need to combine

[8] MALJEAN-DUBOIS S. and ROGER A. (eds.), L'implication des entreprises dans les politiques climatiques. Entre corégulation et autorégulation, La Documentation française, 2011.

self-regulation measures with actual regulations that ensure greenhouse gas reduction targets are adhered to. Such regulations should combine financial levers with binding legal provisions. This is how the Obama administration has recourse to a regulatory means to reduce GHG emissions from US power stations by 32% by 2030.[9] But such regulations could remain ineffective if economic players are not also held accountable for the detrimental effects of their inaction. It is thus urgent to introduce mechanisms that allow ascribing legal responsibility for GHG emissions which are inherently diffuse, cumulative and transnational. Some such mechanisms already exist. In civil law, the notion of market share liability could be useful: this notion, which has already been used by an American judge in the area of health-related damages, could serve to enforce the accountability of offending companies commensurate with their contribution to global warming. In criminal law, introducing the offence of "ecocide" could dramatically change the legal landscape: under a draft Convention recently proposed by by a group of researchers, this incrimination would effectively punish "acts that cause extensive, severe and lasting damage to the air or atmosphere" or "that dispossess people of their lands, territories or resources over the long-term".[10]

6. Regulating GHG emissions nevertheless remains dependant on the will of governments. What is the best way to penalise their inaction? In the absence of a tribunal dedicated to international climate law, human rights law could be of relevance. It is now evident that climate change has consequences, whether they be direct or indirect, on the full enjoyment of human rights.[11] On the other hand, under "environmental" jurisprudence developed by regional human rights courts, governments have a positive obligation to protect individuals from violations carried out not only by public players, but also private players, (thus the pertinence of this proposal): consequently, the so-called "horizontal" effect of human rights could play an indirect role in enforcing the responsibility of TNCs in regards to the climate. It is clear that international courts are treading carefully in this area, as illustrated by the rejection of the Inter-American Commission of a legal petition filed against the United States by the Inuit peoples.[12] But national courts could take over this role: the Federal High Court of Nigeria ordered that Shell stop the gas flaring associated with oil production, recognising that the CO2 emissions which result from this practice violate local populations' right to life.[13]

Legal resources are available. The COP21 in Paris is an opportunity for govern-

[9] See Clean Power Plan Final Rule, 3 August 2015.
[10] See L. Neyret (ed.), Des écocrimes à l'écocide. Le droit pénal au secours de l'environnement, Bruylant, 2015.
[11] Report of the UN High Commissioner for Human Rights, A/HRC/10/61, 15 January 2009.
[12] In 2013, the Commission was again approached by the Arctic Athabaskan Council, which filed a petition, this time against Canada.
[13] In June 2015, a court in The Hague ordered the Netherlands to cut emissions in order to avert a serious violation of its citizens' right to life and to a private and family life. Le Monde, 24 June 2015.

ments and TNCs to implement them, and set an example of assuming non-negotiable responsibility, given the fact that the lives of vulnerable populations are at stake in our "common home".[14]

• • •

This article presents a concise overview of the first of 12 proposals formulated by a team of legal experts at the Collège de France and coordinated by M. Delmas-Marty et Alain Supiot. These proposals were the subject of a public debate at the Symposium "Taking Responsibility Seriously", held at the Collège de France on 11 and 12 June 2015. The six proposals presented here are the result of a joint effort: proposals 1-3 were formulated by M. Delmas-Marty and proposals 4-6 were formulated by Luca d'Ambrosio. For a more detailed version of these proposals, see M. Delmas-Marty and A. Supiot (eds.), Prendre la responsabilité au sérieux, Presses universitaires de France, forthcoming, 2015.

[14] Pope Francis, Laudato Si', Encyclical, 2015.

Transforming the Global Economy, One Portfolio at a Time - Divesting from the Past & Investing in the Future

ELLEN DORSEY AND CLARA VONDRICH

"If governments cannot agree on an international regime of carbon limits, alarmed and determined individuals must take the initiative." Eugene Robinson, Washington Post columnist.[1]
"The beauty of divestment is that everyone has something to divest, or is part of an institution – whether it's a church, alma mater, city or pension fund – that can do so," Chloe Maxmin, founder of Divest Harvard.

The science is clear: Human emissions of carbon dioxide from burning coal, oil and gas are warming the planet at an alarming rate. On our current trajectory, the upper-limit of 2 degrees Celsius temperature change – which global governments have set as the unbreachable threshold– could be crossed as early as 2036.[2] We have already locked in significant climate changes that will continue to rain hardships on society, particularly the most vulnerable – in the form of violent storms, droughts, sea level rise, heat waves and other temperature extremes.

At the same time, a revolution in clean energy is upon us, with carbon-free energy in the form of sun, wind and water finally competing with fossil fuels on

[1] "A Climate Summit with a Worthy Purpose," September 22, 2014, The Washington Post, www.washingtonpost.com/opinions/eugene-robinson-a-climate-summit-with-a-purpose/2014/09/22/85795a40-428e-11e4-b437-1a7368204804_story.html.
[2] "Earth Will Cross the Climate Danger Threshold by 2036," March 18, 2014, Scientific American, www.scientificamerican.com/article/earth-will-cross-the-climate-danger-threshold-by-2036/.

price. Last year, renewable energy in the power sector increased by 12%, and the world generated a full 6% of its electricity from clean alternatives – an all-time high, as the value of coal and oil plummeted.[3] The technology to substitute all forms of fossil fuels is not yet complete, but it is within striking distance. Still, governments continue to pour subsidies into fossil fuels and fail to create necessary policy reforms to allow for renewables to compete. Despite the potential, the pace of the transformation pales in comparison to the timetables mandated by the science.

Something powerful stands in the way of the energy transition. Dirty energy brought great progress and generated tremendous wealth and power. And it is that very power that is being used to stymy global, national and local efforts to tame climate impacts and pave the way for an alternative energy system that is safer, effective and just. The fossil industry has funded denial of climate science, invested countless millions in lobbying against regulations, while courting the favors of the world's governments. A political and economic juggernaut resists the logic of the science, ignores the cries of the most impacted, and denies the economic and social opportunities presented by reengineering the energy base of our economy.

Deep social, economic and political transformation is required, yet this kind of change will not come from 'leaders' whose political interests are far too intertwined with the industries driving the problem. It requires advocacy from below, individuals working collectively, organizing to push on the levers of power. In the face of international foot-dragging on the clean energy transition, a fast spreading people's movement to preserve a habitable planet is well under way. The global movement calling for divestment from fossil fuels – and investment in a new energy economy – is exploding across universities, foundations, municipalities, pension funds, religious groups, and even businesses.[4]

A MOVEMENT EXPLODES

Five years ago, hopes for a solution to climate change were at a 20-year low, the economic and political challenges too daunting. The UN climate conference held in Copenhagen in 2009 had ended without a meaningful agreement and efforts to pass a comprehensive climate bill collapsed in the US Senate in 2010. The combination of setbacks left a demoralized climate advocacy community adrift in its wake.

Philanthropy poured tens of millions of dollars into promoting settled science, and millions more into communicating that science. Additional millions were spent to pass comprehensive policy in the US and other key countries. And youth activists were encouraged to lobby for public policy *du jour* over campus-based

[3] "Renewables fastest growing form of energy in 2014: BP," June 10, 2015, Reuters, www.reuters.com/article/2015/06/10/us-bp-energy-stats-idUSKBN0OQ1QK20150610

[4] See, e.g., 350.org http://gofossilfree.org/ and Divest-Invest, http://divestinvest.org/.

action. Each step of the way, philanthropic and NGO resources were dwarfed by the fossil fuel sector pouring more into climate denial and lobbying.

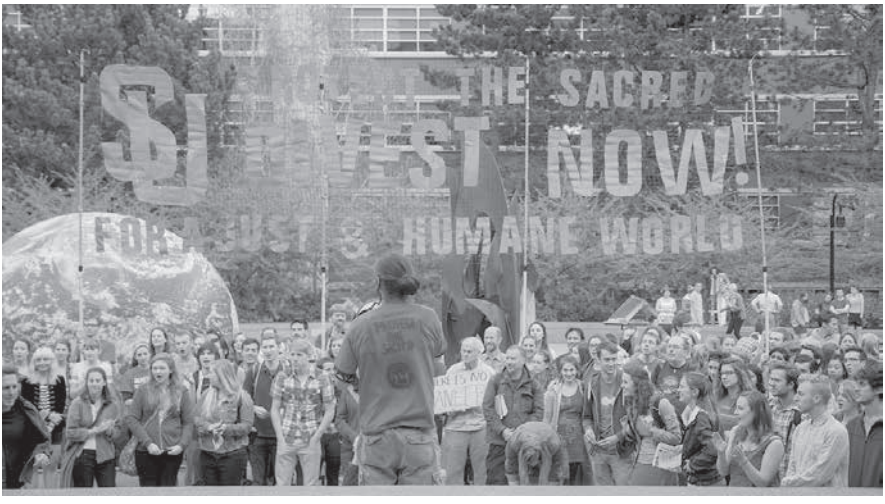
Climate advocacy needed a new way forward, beyond policy debates and back-room negotiations by politicians and corporations. It had to be much more inclusive, democratic and, crucially, it had to harness the power, initiative and imagination of the people.[5] It was at that moment of profound reassessment that the divestment movement was born.

Taking a play from the Anti-Apartheid movement, students began to call for universities to divest from fossil fuels. During the Apartheid era in South Africa, when governments refused to impose economic sanctions on the regime for its human rights abuses, faith leaders and students shifted the target to the companies that were directly invested in the country. Those companies had lobbied successfully against government sanctions, but activists found a new vulnerability. They began calling on institutional investors – particularly universities – to divest their assets from companies doing business with the Apartheid regime. Archbishop Desmond Tutu credits this divestment campaign as one of the key tactics that brought down Apartheid and ushered in a new day for South Africans. Students looking for a way to break the impasse on climate change, saw a parallel with today's influence of the fossil fuel industry. What if they established a new social norm that it was not permissible to profit from an industry wrecking the planet? What if they made fossil fuels toxic in the public eye and, in turn, weakened the industry's grip over government?

In 2011, the first divestment campaigns began on college campuses. Students demanded that their college endowments divest from energy sources driving climate change: A handful targeted coal, some focused on all fossil fuels. While their call was primarily based on the moral argument that institutions of higher learning should not be supporting or profiting from industries that undercut the climate, the economic logic was also powerful. Coal had been in a state of steady decline over the past half decade. By the end of the year, there were several dozen active coal divestment campaigns across the country.

These vigorous initial campaigns were given an enormous lift when Bill McKibben published the historic "Global Warming's Terrifying New Math" in Rolling Stone calling for full fossil fuel divestment on college campuses, linking an ethical call to action with the financial risks of stranded assets laid out by the Carbon Tracker Initiative.[6] Mapping the world's coal, oil and gas reserves against the global carbon budget we cannot surpass and stay on a 2 degrees Celsius track,

[5] See, *e.g.*, "Naming the Problem: What It Will Take to Counter Extremism and Engage Americans in the Fight against Global Warming," January 2013, Theda Skocpol, Harvard University, www.scholarsstrategynetwork.org/sites/default/files/skocpol_captrade_report_january_2013_0.pdf.
[6] "Global Warming's Terrifying New Math," July 19, 2012, Rolling Stone, www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719.



© BACKBONE CAMPAIGN

Seattle University, DIvestment Students.

Carbon Tracker's analysis exposed the risks that fossil fuel asset values are inflated. They concluded that roughly 80% of the known reserves must remain in the ground if we are to preserve a hospitable – and even habitable – planet. These massive reserves of coal, oil and gas were effectively what the finance lexicon calls "stranded assets"[7]: Their full economic potential could not be realized. Either they would be stranded – or we would. It followed that institutional investors had hidden climate risks in their portfolios.

An enormously successful U.S. tour, "Do the Math," followed, calling on student groups around the country to organize and demand change from their college administrators.[8] Since that time the movement has truly exploded, moving from dozens of schools to hundreds overnight, and from the U.S. to Europe, Australia and beyond. And it spread to other sectors, as community-based activists called on faith groups, cities, pensions funds, and retirement accounts to divest.

Divestment as a tactic provided an on-ramp for activism that engaged individuals frustrated by the public failure to enact meaningful policy. They could use their leverage over institutional power to target the industry that was blocking progress. The theory of change behind divestment was compelling and motivated action. First, the ethical call for divestment revokes the fossil fuel industry's social license to operate and cracks open a debate on its precarious and volatile business model. Second, by calling for both divest and invest, institutional investors shift capital flows away from the problem and accelerate the transition to a future fueled by sun, wind and water. Third, and most significantly, by activating campuses, congregations, and community leaders, a broader-based

[7] "Unburnable Carbon – Are the world's financial markets carrying a carbon bubble?" 2011, Carbon Tracker Initiative, www.carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-Full-rev2-1.pdf.
[8] Do the Math Tour: http://math.350.org/.

constituency for action on climate action is being built, to embolden politicians and global governments to act with increased ambition for real policy solutions. People power challenges the influence of the most powerful industry on earth by targeting its investors and significantly weakening its hold over governments, all while showing the way to a future based on safe and clean alternatives.

But could it work? The ethical case was simple: non-profit institutions like universities, foundations, faith groups and hospitals should not profit from businesses demonstrably and irrevocably harming the public good. Trustees were suddenly on the defensive, called on to respond to ethical concerns.

Financial arguments bolstered the ethical. Fossil investments were volatile in the short term and potentially very risky in the long term. The argument for financial risks strengthened as coal values plummeted, followed by volatility in oil prices. Portfolio managers were presented with compelling evidence of a carbon bubble that will burst when markets internalize climate risk. Increasingly the finance sector took notice and began debating stranded asset risks, first at the Davos World Economic Forum, and then in the halls of the Bank of England. Risk concerns moved quickly into the mainstream, driving some financial agencies to warn that prudent investors should apply a climate filter to their investment portfolios immediately. As a recent report by Mercer states, "climate change ... will inevitably have an impact on investment returns."[9]

As financial concerns began to align with ethical considerations, divestment commitments started racking up. First a few universities took action, followed by faith groups. Municipalities, cities and states began to pass legislation calling for divestment. Hospital endowments began to look at climate's health risks and their own fossil fuel investments. Foundations stepped up in a significant way, currently comprising more divestment commitments than any other sector, fearing that their investments were driving the problems they asked their grantees to solve. Additionally, many of the same institutions began to seek out investment products in renewable energy, energy efficiency, clean tech and energy access, to capitalize and capitalize upon the energy transition.

The movement's progress was first chronicled in a report released in September 2014, as 400,000 people marched in New York demanding action in advance of a UN meeting on climate change. The report documented that, in just under three years, more than 800 endowments and individuals – managing assets totaling over $50 billion – had made divestment commitments.[10] Alongside the release of the report, several iconic commitments were announced, including the World

[9] "Investing in a Time of Climate Change," May 2015, Mercer, www.mercer.com/content/dam/mercer/attachments/global/investments/mercer-climate-change-report-2015.pdf.
[10] "Measuring the Global Fossil Fuel Divestment Movement," September 2014, Arabella Advisors, www.arabellaadvisors.com/wp-content/uploads/2014/09/Measuring-the-Global-Divestment-Movement.pdf.

Council of Churches, a prominent Catholic University and over 50 foundations. However, one historic announcement garnered the front page of global news outlets: The Rockefeller Brothers Fund, heir to the Standard Oil Fortune, was divesting from fossil fuels and investing in the clean energy economy. Executive Director Stephen Heintz was quoted as saying that John D. Rockefeller himself would have agreed with the move. "We are quite convinced that if he were alive today, as an astute businessman looking to the future, he would be moving out of fossil fuels and investing in clean, renewable energy," Heintz said.[11]

Since that time, the largest pension fund in Norway, Axa Insurance, dozens of new universities, hospitals, and faith groups, have committed to divest. As of June 2015, 100 foundations and over 2,000 individual investors had taken the Divest-Invest pledge. These entities collectively hold over $1 trillion in assets under management – and the numbers continue to rise. Endorsed by institutions such as HSBC and the World Bank, and by individuals as diverse as Ban Ki Moon, Prince Charles, and Archbishop Tutu, divestment began to move into the mainstream and commitments now appear across the world on an almost weekly basis. And under scrutiny and pressure, iconic investors and foundations not yet willing to commit to divest from fossil fuels have begun to make very public commitments to invest in renewable energy and other clean tech investment technologies. In June of 2015, Bill Gates, subject to a global pressure campaign led by the Guardian newspaper,[12] pledged to invest $2 billion in "breakthrough" clean technologies in an interview with the Financial Times.[13]

And as it inevitably does, the market has responded. New fossil free investment products are appearing rapidly, bolstered by research that shows that fossil free portfolios are yielding positive, competitive and even superior returns. Indeed, just last month, an analysis showed that fossil-free stock portfolios have out-performed standard portfolios every year for the past five years.[14] Many of the 100 foundations that have committed to 'Divest-Invest', are tracking the impact on their portfolios with case studies and publicly available data. The results, including that of the foundation this author manages, have been very positive. In this way, the movement is helping to capitalize the clean energy transition and to accelerate the paradigm shift to a new economy that respects planetary limits as well as the human potential to prosper and thrive.

[11] "Heirs to Rockefeller Oil Fortune Divest from Fossil Fuels over Climate Change," September 22, 2014, The Guardian, www.theguardian.com/environment/2014/sep/22/rockefeller-heirs-divest-fossil-fuels-climate-change.
[12] "Keep it in the Ground," The Guardian, www.theguardian.com/environment/ng-interactive/2015/mar/16/keep-it-in-the-ground-guardian-climate-change-campaign
[13] Gates to Double Investment in Renewable Energy Projects, June 25, 2015, Financial Times, www.ft.com/cms/s/0/4f66ff5c-1a47-11e5-a130-2e7db721f996.html#axzz3eVfvbPYj
[14] "Fossil Fuel-free Funds Outperformed Conventional Ones, Analysis Shows," April 10, 2015, The Guardian, www.theguardian.com/environment/2015/apr/10/fossil-fuel-free-funds-out-performed-conventional-ones-analysis-shows

Impact

Few predicted that a movement begun five years ago by a group of youth activist leaders, armed with powerful ethical and financial arguments, would become one of the true game changers for environmental and social change in recent history.[15] Divestment alone will not solve the climate problem. Nor will investments in climate solutions by a few thousand investors be sufficient to scale renewables and decarbonize the economy. Its proponents do not make that claim. It is a historic and massively complex endeavor to end the fossil fuel era, transform the energy base of the global economy, and provide access to safe and clean energy for the world's majority.

However, the movement is having several significant impacts that make this transition more viable. There are at least four. First, divest-invest has changed the fundamental debate about fossil fuels, shifting the burden on industry to explain how it is managing climate risks. The movement has exposed weaknesses in the business model of the fossil fuel sector, as well as problems with how its value is measured – exposing real risks to investors. Additionally the curtain is being pulled back on the hundreds of billions still being spent by the industry in search of new sources of fossil energy, both more extreme and more costly, adding to reserves that can never be burned.[16] Bank lending to the companies is also being challenged. Taken together, the scrutiny is heightening calls for the carbon majors to tender plans to keep their business models below 2 degrees Celsius, whether through managed decline or a fundamental transformation of their business models, something that was unimaginable a few years back.

Secondly, as scrutiny on the reserves and concern over risks to investors grows, pressure is increasing on governments to end subsidies to the industry they must regulate. Increasingly, too, government officials are being called to defend the practice of taking campaign donations from fossil fuel companies. As the public increasingly comes to view fossil fuels as toxic, the flow of money between government and the industry will slow.

Third, the call to invest in climate solutions is creating a renewed interest in the renewables sector and stimulating demand for new 'clean' investment products. New campaigns have been launched calling on faith groups and foundations to invest in safe and clean energy access for the world's majority, to address energy poverty, environmental justice and climate impacts together. Pope Francis' historic 2015 Encyclical on the environment, Laudato Si, puts our challenge in stark relief, and calls for reformation of political and social compacts such that they value the

[15] "Stranded assets and the fossil fuel divestment campaign: what does divestment mean for the valuation of fossil fuel assets?" October 2013, Smith School of Enterprise and the Environment at the University of Oxford, www.smithschool.ox.ac.uk/research-programmes/stranded-assets/SAP-divestment-report-final.pdf.

[16] "Unburnable Carbon 2013: Wasted capital and stranded assets," 2013, Carbon Tracker Initiative: http://carbontracker.live.kiln.it/Unburnable-Carbon-2-Web-Version.pdf

rights of the poor and less fortunate. The new compact does not prioritize market growth for its own stake but, rather, seeks to harmonize human needs within planetary limits. The near-terminal stage of the climate crisis requires nothing short of a fundamental shift in the global economy – breaking with the dinosaur industries of the past and seeding a present and future powered by sun, wind and water. Everything must change: From the way we grow food and provide water, to the way we transport ourselves and build cities and infrastructure.

Fourth, the movement is engaging sectors that have largely been on the sidelines in climate advocacy in previous decades – faith, healthcare, and finance. It is building a new, expanded and more diverse constituency for climate action than has existed to date. This is a savvy and connected constituency, fluent in not only the science and impacts of climate change, but also in energy and finance markets. The movement is also developing a cadre of new leaders that will carry their skills and commitment forward. And these leaders will be stronger and more determined than ever to hold governments' feet to the fire on any agreements hammered out at the international level – because this fight is theirs.

Will this movement strengthen the resolve of government leaders to take action in the coming global negotiations in Paris, the COP21? It is very likely that any agreement will be inadequate, watered down in national implementation and fraught with battles between those who stand to lose financial gain and the climate defenders pushing for rigorous action. However, if the climate negotiations produce a strong agreement, it will be because of the outcries of civil society. If it fails to do so, the strong and mobilized global constituency building power now will demand action in 2016 and beyond. The people are prepared to fight, and keep on fighting.

Some of the divest-invest movement's impacts cannot yet be known. But one thing is certain: The movement calling for divestment from fossil fuels – and investment in climate solutions – has given a sense of efficacy to a broken environmental movement and has shifted the target to the right actor, the industry itself. Each of us can take up the call to action – whether through our pension funds, the endowments of our alma mater's, our congregation or foundation's assets. The only barrier is our imagination.

Are Small Gestures Just a Big Scam?

MIRKO LOCATELLI

Whether it be the hummingbird trying to put out a raging forest fire or the flutter of butterfly wings that supposedly causes a hurricane on the other side of the world, the sustainable development imagination is positively crawling with bugs. Although such ideas may be endearing, they are also potentially dangerous: can we really hope to overcome our current ecological and social crises through an accumulation of small, virtuous gestures? Should we not, instead, rebuke this discourse that reduces the complexity of the issues to that of an individual sphere, denying any political dimension of collective action, and recognise it as yet another deception that perpetuates a system of unsustainable production?

It's a tough time for oracles. The former bridges between the divine and humanity have now been replaced by computers and search engines. Yet, in the true spirit of the times, the city of Fribourg (Switzerland) hosted the L'Oracle du Papillon in 2014, a huge interactive, "sustainable" exhibition devoted to the butterfly effect. Assisted by a vast array of screens, it bombarded its nearly 100,000 visitors (many of which were French-speaking Swiss students) with a wealth of figures and data on the global ecological crisis. The apparent aim was to raise the public's awareness of the power of "small everyday gestures", which, multiplied by 7 billion, could reduce CO2 emissions and avert climate change "in an enjoyable way, without a guilt-trip or doing your head in"[1], as the creators Gilles Bersier and Pascal Edelmann of the foundation "Petite cause, grands effets" see it. What's the point of rethinking our way of life when it's enough to turn out the light when you leave a room, switch your dishwasher to "eco" and opt for the latest model in "green" cars? Inspired by the butterfly effect theory – that the flutter of butterfly wings can cause a hurricane on the other side of the world – the two organisers extol the principle that small virtuous

[1] *La Liberté*, 8 March 2014.

Recycling, Brussels.

gestures add up, one of the mantras of sustainable development... and neo-liberal theories according to which society simply does not exist.

The exhibition, which cost one million Swiss francs and received a portion of public funding, reaches its climax as we arrive at its end: the Solution Center, "a larger-than-life display window exhibiting sustainable technologies, products,and services in the areas of housing, energy, consumption and transport." Visitors are summoned to "become agents of change" and receive a tablet that interacts with one of the many terminals proposing measures to save the planet. So, if you feel it is important to check that your car tyres are always properly inflated, you can scan the QR code available at the Michelin®-sponsored terminal and your tablet will tell you the amount of CO2 that you have saved – a simple and effective measure along with 39 others made possible through the kind support of a handful of private sponsors. This is what the organisers call "the power of one", our only hope for a better future. "Or," remarked Pascal Edelmann during an unforgettable guided visit, "we can follow North Korea's example, a country with an enviable carbon footprint: 'It is I who command and you will do what I say' ". No one seems to be aware that between the illusion of the all-powerful individual and the disillusion of lethal dictatorship there exists a middle ground: that of venturing into the realm of political action.

What about considering collective responsibilities such as those of businesses and governments? Too ideological![2] Or differentiating between Mr. Bersier, the

[2] . . . not to mention suicidal: where would one get the funding for such an exhibition?!

Chinese textile worker and the Eritrean refugee? Too much of a guilt trip! Or suggesting that perhaps our lifestyle is not generalisable and that we need to change it? Too preachy! The exhibition's guidelines are clear: there will be no doing your head in! What really matters is that the visitor can feel that he/she is taking part – even if it means discovering later that they are the protagonist of a farce that simplifies social interactions to a ludicrous degree, and reduces the question of responsibility and accountability to something that is "within everybody's reach". Technology will take care of the rest and as long as they've got a clear conscience, the butterflies can keep fluttering their little wings.

Depoliticise and rule

Whether they be butterflies or sweet hummingbirds, the Fribourg exhibition is symbolic of a particularly pernicious approach to ecology, of which, unsurprisingly the mainstream media is a big fan – and not just within Europe. The glorification of "small steps" and "eco-friendliness" is at best a form of acute naivety and at worst, an atomised vision of society, which far from calling the current logic into question, is making itself at home in it. Harald Welzer succinctly denounces this approach in the Climate Wars: "Not only is there is a grotesque lack of proportion between such approaches and the scale of the problem we face, but by individualising the responsibilities and obligations related to climate change, they are drastically reducing their complexity. The easily introduced misconception that social change begins with small changes becomes an ideology when it exempts corporate and political players from their obligations and it becomes an irresponsible misconception when it claims that we can address problems [...] by taking individual precautions to problems that are due to the principle of economic growth through the exploitation of resources".[3]

If these odes to individual responsibility have been so successful, it's because they exist in a largely depoliticised context. The current political ecology – or what remains of it – which used to be driven by a drumbeat that was authentically radical and strove to change society's at its roots – has borne the brunt of at least two centuries of so-called "sustainable" policies. Without attempting to compress the history of the concept into a few lines[4], let us simply point out that with the emergence of the pipe dream of sustainable development and its enthusiastic adoption by all institutions, the majority of ecological discourse has been gradually drained of any subversive content whatsoever. Nobody is surprised today at the existence of a political party called the "Liberal Greens" (*Verts'libéraux*) – not even the "regular" greens which, in line with the "pragmatism" of the new generation of elected authorities, regularly join forces with their cousins, free of any impression that they might be committing a crime

[3] Harald Welzer, *Climate Wars: What People Will Be Killed For in the 21st Century*, Gallimard, 2012.
[4] This has been aptly covered in more detail by others: cf. in particular Romain Felli, *Les deux âmes de l'écologie,* L'Harmattan, 2008.

against... nature. The trend is rather to praise these noble ecological pacts, these good souls that appeal to humanity to overcome its differences, and embrace the collective sense of belonging in order to "save the planet" before it's too late.

Worthy heir to Nicolas Hulot, Bertrand Piccard and his hi-tech toy Solar Impulse could not be a better incarnation of this sacred union. A true national hero, the flying Swiss, only appears to be the paladin of developments in renewable energy and the enormous potential of solar energy. The real reason for his incredible media success is the skill with which he sells the illusion, to dazzled spectators, that we can indefinitely continue to live as we do today, through technological innovations that will always come to our rescue. What he suggests in the air is in fact a giant advertisement for both rejecting limits and any form of social divide. Whether one be a CEO or a cleaner, rich or poor, whether one lives in the North or the South, we are all apparently in the same boat, sharing the same responsibilities and the same consumerist aspirations. Yet as he showed us with several sinking demonstrations, a boat can never take water at both the prow and the stern: hundreds of thousands of people are already drowning, both figuratively and literally, and our current lifestyles are to blame.

Shifting towards ecological class consciousness?

In terms of the need to analyse any domination through an international lens, as well as factoring in differences in race, socio-economic status and gender, Razmig Keucheyan[5] suggests adding a fourth factor: nature. Existent ecological inequalities, both in terms of unequal access to resources (water, land, energy, clean air, etc.) and in terms of exposure to risks and pollution (soil erosion, epidemics, GMO dissemination, etc.) are proof enough (it would be hard to contest) that it is high time we stopped viewing nature as something separate from social relations. In both the Global North and the Global South, in both our materially affluent countries and in those countries that our economic system has reduced to misery, one of the first steps to take is perhaps to deconstruct this compliant conformist discourse, which depoliticises ecological issues and obscures the existence of divergent interests.

Yet how are we to achieve such a feat in an era where even our own exploited classes are, on a global scale, actively exploiting other workers? If we want to attain *"ecological class consciousness"*, Paul Ariès suggests contemplating the lifestyles of "those with little means", the working class cultures whose life skills were for a long time (are they still?) inversely proportional to their low purchasing power.[6] Or, as the iconoclastic thesis of Majid Rahnema suggests, considering that poverty has long been the true wealth. The author (who passed away in April 2015) of Quand la misère chasse la pauvreté viewed this form of poverty

[5] KEUCHEYAN Razmig, *La nature est un champ de bataille*, Zones, 2014.
[6] ARIÈS Paul, Écologie et classe populaires, Utopia, 2015.

where living together was based on simplicity, solidarity, frugality, sharing and a sense of fairness, as being something akin to "friendliness". Yet, in the name of development, it is precisely these "other" lifestyles that the West is attempting to eradicate, and with them "these mechanisms designed, on the one hand, to restrain desire and greed, and on the other, to maintain a positive tension between individual desires and what can be collectively produced within reasonable limits. This tension," Rahnema says, going on to describe restrained societies, "has enabled them to develop their production capacity within reasonable limits without creating any gap between needs and resources".[7]

Re-establishing our sense of limits thus seems to be the way forward if we wish to save what remains of our humanity in a world obsessed by economic growth. There is no reason why this can't begin with consistency between one's own values and one's everyday habits, as long as one is not satisfied with merely an individual level of commitment: these small steps, as commendable as they may be, are not enough to change our course. It is only by reinvesting in the politically-defined "us" – the antithesis of nationalist delusions and the "let's all get together and save the world" prattle – that it might be possible to overcome the ecological crisis and achieve social justice. In the hope that one day the words of the poet Hölderlin will prove true: Where danger is, grows the saving power also".

[7] RAHNEMA Majid, *Quand la misère chasse la pauvreté,* Actes Sud, 2003, p. 247.

PRESENTATION OF THE AUTHORS

Association négaWatt : works in favour of an energy policy based on sobriety and energy efficiency, as well as the use of renewable energies.

Catherine Aubertin : economist at the Institut de recherche pour le développement (IRD, Institute of Research for Development), France.

John Bwakali : is the leader of Sasafrica, a social enterprise that enhances sustainability in Eastern Africa through creative writing and other forms of strategic communications.

Sophie Chapelle : journalist at Basta !, an independent media focusing on economic, social and environmental issues.

Raphaël Claustre : executive director of the CLER, Network for the energy transition, an organisation for the protection of the environment created in 1984. It gathers 250 local actors around renewable energies, their management, local development through them, the appropriation of these issues at the local level, as well as the struggle against energy poverty.

Maxime Combes : economist and member of Attac France and of Aitec. Author of *Sortons de l'âge des fossiles ! Manifeste pour la transition* (Seuil, Anthropocène, October 2015). Co-coordinator of *Crime Climatique Stop ! L'appel de la société civile* (Seuil, Anthropocène, August 2015).

International Trade Union Confederation : organisation for the defence of workers' rights and interests, through international cooperation between trade unions, global campaigning and advocacy within the major global institutions.

Luca d'Ambrosio : research Fellow at the Collège de France (Chair "social state and globalisation: legal analysis of solidarities").

Amy Dahan : sciences historian at the Centre national de la recherche scientifique (CNRS, National Center of Scientific Research), France.

Michel Damian : economist at Grenoble University, France.

Ellen Dorsey : Wallace Global Fund director and Board member of the EDGE Funders Alliance.

José de Echave : co-founder of CooperAcción, director of the Peruvian Newsletter on Mining Activities, and coordinator of the Peruvian Observatory of Mining Conflicts.

Energy Cities : European association of local authorities in energy transition. Representing over 1,000 cities across Europe and beyond, the Energy Cities network aims at accelerating the energy transition by strengthening its members' capacity for action.

Douglas Estevam : graduated in agriculture economic policy from Escola Florestan Fernandes (ENFF). João Pedro Stedile's research assistant for the collection *A questão Agrária no Brasil*, in 8 volumes. Member of the Landless Workers' Movement (MST).

ETC Group : works to address socioeconomic and ecological issues surrounding new technologies that could have an impact on the world's poorest and most vulnerable people.

Mark Fodor : executive director of the CEE Bankwatch Network since 2008.

Grassroots Global Justice Alliance : US national alliance of grassroots organizations building a popular movement for peace, democracy and a sustainable world.

Eduardo Gudynas : executive director of the Latin American Center of Social Ecology (CLAES, for its Spanish initials) / Development, Economy, Ecology, Equality in Latin America (D3E).

Maëlle Guillou : in charge of the European projects for Enercoop and the European federation REScoop.

Nicolas Haeringer : campaigner at 350.org, author of *Zéro fossile : désinvestir du charbon, du gaz et du pétrole pour sauver le climat* (Les Petits matins, November 2015). Co-coordinator of *Crime Climatique Stop ! L'appel de la société civile* (Seuil, Anthropocène, August 2015).

International Council for Local Environment Initiative : known as Local Governments for Sustainability. is the world's leading network of about 1,000 cities, towns and metropolises committed to building a sustainable future. By helping members to make their cities sustainable, low-carbon, resilient, biodiverse, resource-efficient, healthy and happy, with a green economy and smart infrastructure, ICLEI impacts over 20% of the global population.

Rémi Janin : landscape designer, farmer and co-founder of the agency "FABRIQUES Architectures Paysages". He is also a teacher at the Clermont-Ferrand school of architecture and is a member of the collective "Paysages de l'Après Pétrole" ("Post-oil landscapes").

Wojtek Kalinowski : co-director of the Institut Veblen for economic reforms. Graduated in sociology and history, former journalist at *Alternatives Economiques* and chief editor of *La Vie des Idées*.

Nicolas Krausz : programme officer at the FPH (social and ecological transition écologique, commons, world governance) and co-chair of the EDGE Funders Alliance.

Peter Lipman : chair of Transition Network.

Mirko Locatelli : Journalist at Moins !, Swiss (French-speaking) political ecology journal.

Yann Louvel : climate and energy campaigns coordinator for BankTrack since September 2010. Before that he worked as private finance campaigner for Friends of the Earth France for 3 years. He also worked as the Quebec regional coordinator for the sustainable campuses project for the Sierra Youth Coalition.

Olivier Petitjean : journalist at Basta! and the Multinationals Observatory, an investigation website on major French companies that he co-founded.

Justine Peullemeulle : in charge of the Énergie Partagée (Shared Energy) network.

Vandana Shiva : author, activist, pioneer, and scientific advisor, Founder of Navdanya, India Board member - International Forum on Globalization, World Future Council.

Pascoe Sabido : researcher and campaigner at Corporate Europe Observatory for almost three years, working on exposing the excessive influence of big business over EU and UN policies, with a particular focus on climate.

Olivier De Schutter : co-Chair of the International Panel of Experts on Sustainable Food Systems (IPES-Food), a member of the UN Committee on Economic, Social and Cultural Rights, and former UN Special Rapporteur on the right to food (2008-2014).

Vladimir Slyviak : co-founder of Ecodefense, leading anti-nuclear group in Russia experiencing heavy repression. Government declared Ecodefense a "foreign agent" in 2014, after group achieved major success in the campaign aimed to halt the nuclear power plant near Kaliningrad. Author of *From Hiroshima to Fukushima,* 2012.

Xavier Sol : director of the Counter Balance coalition since 2013.

Barbara Unmüßig : president of the Heinrich Böll Foundation, a position she has held since 2002. She is responsible for the international work of the foundation with thirty offices abroad.

Clara Vondrich : director of Divest-Invest Philanthropy.

Harald Welzer : sociologist, teaches at University of St. Gallen (CH) and is Head of the Foundation FUTURZWEI at Berlin, Germany.

Julien Woessner : programme officer at the FPH, in charge of urban territories, citizens networks, land governance and urban food systems.

Antonio Zambrano : political scientist, activist and coordinator of the Citizen's Movement Against Climate Change (MOCICC by its Spanish initials), a Peruvian organisation that seeks to articulate the territorial struggles affected by climate change.

FILMOGRAPHY

THE DANGERS OF GLOBAL WARMING

Isle de Jean Charles, by Emmanuel Vaughan-Lee, 2014 / USA / 9'
Screened at the 2015 International Environmental Film Festival.
Residents living in the Isle de Jean Charles, a tiny island deep in the bayous of Southern Louisiana, are threatened by rising seas, coastal erosion and storms.

Tide of change, by Amie Batalibasi, 2010 / Australia / 11'
Global warming and rising sea levels threaten the Solomon Islands and their people. What is the answer?
Thule Tuvalu, by Matthias Von Gunten, 2014 / Switzerland / 96'
Two places, poles apart: Thule, Greenland, where the ice is melting at at alarming rate, and Tuvalu, the remote Polynesian island-state faced with the resultant rising sea levels. The people of these two corners of the world are forced to rethink their traditional way of life. Calibrated cross-cutting highlights their common fate.

Sylt à perte de vue, by Samuel Bester, 2008 / France / 52'
The island of Sylt, in Northern Germany is in danger. Each year, storms from the North Sea destroy more and more of this stark, treasured landscape. Everything is being done to restrain the ravaging forces of climate change and to preserve an environment that has over time become less and less natural and increasingly inaccessible . . .
Afrique, avis de tempête. Le coût humain du changement climatique, IRIN, 2009 / France
Eight short films about the human cost of climate change in Africa.

Climato-sceptiques, la guerre du climat, by Franck Guérin and Laure Noualhat, 2014 / France / 52'
This film probes deep into the world of climate skeptic lobbying. What techniques are being used to influence public opinion? How does the media manage to turn what is scientifically false into something valid and accepted?

A Siege of Salt and Sand, by Samuel McNeil and Radhouane Addala, 2014 / Tunisia / 43'

On a shoestring budget, the young journalist Radhouane Addala and his partner Sam McNeil manage to shoot a film about climate change in Tunisia.
L'eau ne tombe pas du ciel, by Henry Tidy, Julia Bourgon, Léo Bigiaoui and Cosma Tambaktis, 2014, France / 52'
A documentary about the consequences of global warming in the Middle East, a source of conflict in this troubled region.

A Burning Question: Propaganda & The Denial Of Climate Change, de Paula Kehoe, 2012 / Ireland / 53'
Climate change has been hailed as "the biggest challenge to mankind in human history" and has also been called "the biggest swindle". Today many people are confused as to what climate change is and what consequences lie ahead for Ireland in the near and distant future. In this documentary Paula Kehoe takes us on a journey exploring the gap between public perceptions of climate change, what the scientists are trying to tell us and what role the media are playing.

Shift | Beyond the Numbers of the Climate Crisis, de Sam Fulbright, 2013 / USA / 57'
A film by brother/sister duo, Sam and Kate Fulbright to take a closer look at what climate change really means in the United States, and dive beyond the daunting numbers and graphs to meet the people and communities effected by the problem of climate change.
CO 2 - Humains 0 #DATAGUEULE 2, 2014 / France / 2'46
https://www.youtube.com/watch?v=30nsePK6U-

TI&feature=youtu.be
The basics on climate skepticism of industrial lobby groups in under 3 minutes.
Énergies fossiles : mortelles subventions #DATAGUEULE 44, 2015 / France / 4'17
https://www.youtube.com/watch?v=aUmJ35k-Mq1Q
4 minutes on the public and private financing of fossil fuels, the need to divest from the sector, and invest in clean, renewable energy instead.

FALSE SOLUTIONS

The Carbon Crooks, by Tom Heinemann, 2013 / Denmark / 58'
The EU's first carbon trading scheme was created in 2005. The idea was to reduce CO2 emissions and thus curb global warming through the trading of pollution rights. But it proved to be riddled with fraud and massive corruption, of which Denmark has become the epicentre.

Climate of Hope: Climate change, nuclear power and the energy revolution, by Scott Ludlam and José Garcia, 2007 / Australia / 27'
The majority of scientists and policy makers now recognise climate change as a major ecological issue. But the nuclear industry is attempting to sell nuclear as the answer to the climate crisis, even if it means taking serious liberties with the facts. This documentary is an exemplary counterattack to the double-dealing rhetoric of Areva, EDF and company.

The Age of Stupid, de Franny Armstrong, 2009 / UK / 92'
The Age of Stupid stars Oscar-nominated Pete Postlethwaite (In The Name of the Father, The Usual Suspects, Brassed Off) as a man living in the devastated future world of 2055, looking back at old footage from our time and asking: why didn't we stop climate change when we had the chance? Call to action: the horizon for change

CALL TO ACTION: THE HORIZON FOR CHANGE

Réveille-toi, révolte-toi : il est beaucoup, beaucoup plus tard que tu le penses, by Léo Murray, 2008 / France / 12'This animated short film explores one of the greatest challenges in human history: to stop unbridled climate change. This highly educational film is a true inspiration to take action.

Carbon Nation, de Peter Byck, 2010 / USA / 86'
Carbon Nation is an optimistic, solutions-based, non-partisan documentary that illustrates why it's incredibly smart to be a part of the new, low-carbon economy: it's good business, it emboldens national and energy security, and it improves health and the environment. Through a cast of engaging and endearing characters from across the country, in towns big and small, Carbon Nation introduces us to the new wave of American ingenuity. Carbon Nation is a film that celebrates solutions and inspires action.

Climate Change in Atlantic Canada, Multi-Media Project, de Ian Mauro, 2013 / Canada.
Across Atlantic Canada, coastlines and communities are being adversely affected by climate change, and as temperature, sea level and storm surge increase, mitigation and adaptation initiatives are being planned and implemented to navigate the impending storm. Dr. Ian Mauro and his multi-media research team used video to document this remarkable story of climate change in Atlantic Canada and conducted over 100 semi-structured interviews with stakeholders across the region, including: researchers, local and traditional knowledge holders, government officials and industry.

Listening for the Rain, de Fileteo Martinez, 2012 / USA / 88'
Listening for the Rain starts a pluricultural conversation in which some Indigenous people who live in the central United States of America discuss their observations and understandings of, as well as responses to, climate change and variability. A team of Native and non-Native researchers and media artists worked together to document these stories. Not only does Listening for the Rain illustrate some of the environmental transformations distinguishing diverse Tribal landscapes, but the video also suggests some of the proactive solutions and ideas for addressing these issues that are currently being undertaken in Indian Country.

This Changes Everything, by Avi Lewis, 2015 / USA / 90'
What if confronting the climate crisis is the best chance we'll ever get to build a better world? Filmed in nine countries and five continents over four years, this film is based on Naomi Klein's eponymous best-seller, and reimagines the vast challenge of climate change. The film presents seven portraits of communities on the front lines, from Montana's Powder River Basin to the Alberta Tar Sands, from the coast of South India to Beijing and beyond. *This Changes Everything* illustrates Naomi Klein's most controversial and exciting idea: that we can seize the existential crisis of climate change to transform our failed economic system into something radically better.

People of a Feather, by Joël Heath, 2011 / Canada / 90'
People of a Feather takes you through time into the world of the Inuit on the Belcher Islands in Canada's Hudson Bay. Connecting past, present and future is a unique relationship with the eider duck. Demonstrating how the technology of a simple feather ensures

the survival of community, the film is a call to action to implement new energy solutions that work with the seasons of our water cycle.

Together We Can Cool the Planet! Grain and la Via Campesina, 15'40

http://tv.viacampesina.org/Together-we-can-cool-the-planet-801?lang=en
This video exposes the relation between the agribusiness system and climate change. Farmers from all over the world offer solutions to the climate crisis that we can employ together.

This filmography was compiled by Cedidelp and selected from the *Autour du 1er mai* association's *Cinéma et société* collection, the *"L'Homme face au climat"* films featured in "Documentary Month", and the "Climate Change" collection in the "Films for Action" library (films can be viewed online).

Coalition Climat 21

Take action for climate justice, because if we do nothing, nobody will do it for us.
L'arbre, 31': https://www.youtube.com/watch?v=tRk7hLj8MAs (in French)
La mobilisation, 1'04 : https://www.youtube.com/watch?v=muzzj0kArSs (in French)

Actions/Demonstrations:
- Let's take to the streets on 28 and 29 November 2015 for the Global Climate March
- Let's take part in the People's Climate Summit in Montreuil on 5 and 6 December
- Let's talk at the Climate Action Zone at CENTQUATRE-PARIS on 7-11 November
- On 12 December at 12.12 pm: let's take part in a mass rally for the climate, driven by people-powered action that is only just beginning.

You can also view many of these films and others on the climate issue in the CEDIDELP media centre: **www.cedidelp.org**

LAST ISSUES OF THE PASSERELLE COLLECTION

N°12/2015 : *La Prochaine Révolution en Afrique du Nord : la lutte pour la justice climatique,* (Co-edition with Platform London and Environmental Justice North Africa, available in French and Arabic)

N°11/2014 : *For Free Information and Open Internet: Independent journalists, Community Media and Hacktivists Take Action* (Available in English, French and Spanish)

N°10/2014 : *Take Back the Land! The Social Function of Land and Housing, Resistance and Alternatives,* (Co-edition with Aitec, available in English, French and Spanish)

N°9/2013 : *Paysages de l'après-pétrole ?,* (Co–edition with La Compagnie du Paysage)

N°8/2012 : *L'efficacité énergétique à travers le monde, sur le chemin de la transition,* (Co–edition with Global Chance)

N°7/2012 : *Housing in Europe: Time to Evict the Crisis!,* (Co-edition with Aitec, available in English and French)

N°6/2012 : *Commons, a model for managering natural resources,* (Updated version, available in English and Portugese)

N°5/2011 : *Le pouvoir des entreprises Transnationales*

Ritimo
21 ter, rue voltaire – 75011 Paris
Tel : +33 (0)1 44 64 74 16
www.ritimo.org
www.coredem.info
www.plateforme-echange.org

November 2015

Realisation and Coordination
Viviana Varin (Ritimo - France) and Julien Woessner (FPH - Switzerland)

Editorial Board
José de Echave (Cooperacción - Peru), Sophie Gergaud (Cedidelp - France), Nicolas Haeringer (ATTAC and 350.org - France), Nicolas Krausz (FPH - Switzerland), Julien Woessner (FPH - Switzerland), and the Ritimo team : Erika Campelo, Danielle Moreau, Bernard Salamand, Nathalie Samuel, Odile Schmitt, Viviana Varin and Pauline Wetzel.

Translation Coordinator
Viviana Varin

Translators
Susanna Gendall
Kate Wilson

Design and Layout
Guillaume Seyral

Printed by
Corlet - 01 49 26 03 95

(...) The common thread in these local initiatives is that they are moving at a faster rate and going further than the current inter-state processes. The majority of them are aware that the changes required are of a systemic nature. This is exemplified in the slogan that captures the drumbeat of a number of movements: "Change the system, not the climate!" Because, beyond the climate issue, at play is the underlying need to transition to another economic system that is more respectful of social and environmental balances. Faced with the current deadlock on inter-state negotiations and the need to involve a whole array of actors in this race against time, it is crucial that we foster all incentives towards a cohesive fabric, building on common visions of the issues and objectives in order to build fair, sustainable societies.

The simple aim of this issue of Passerelle is to play a role in fostering these connections by giving a voice to the rich diversity of local authorities networks and representatives of civil society. It seeks to build passerelles (bridges) between these worlds that, although sometimes unaware of one another's existence, are all, in their own way, resolutely working to accelerate the transition towards post-carbon societies.

Published in three languages and downloadable at www.coredem.info, this thirteenth issue of the Passerelle Collection will be presented at various debates around COP21, held in Paris from November 30th to December 12th 2015. Above and beyond this event, we hope it will inspire different actors to come together over the long term and concretise the systemic changes needed to build human societies that are founded on living well together while respecting the planet's natural limits.

Ritimo

The organisation Ritimo is in charge of the Coredem and of publishing the Passerelle Collection. Ritimo is a network for information and documentation on international solidarity and sustainable development. In 90 locations throughout France, Ritimo opens public information centres on global issues, organises civil society campaigns and develops awareness-raising and training sessions. Ritimo is actively involved in the production and dissemination of plural and critical information, by means of its website: **www.ritimo.org**

The Passerelle Collection is published
by Ritimo with the support
of the Charles Léopold Mayer Foundation
for the Progress of Humankind
in the framework
of the Coredem initiative.

Precio: 10 euros ISBN: 978-2-914180-64-1