

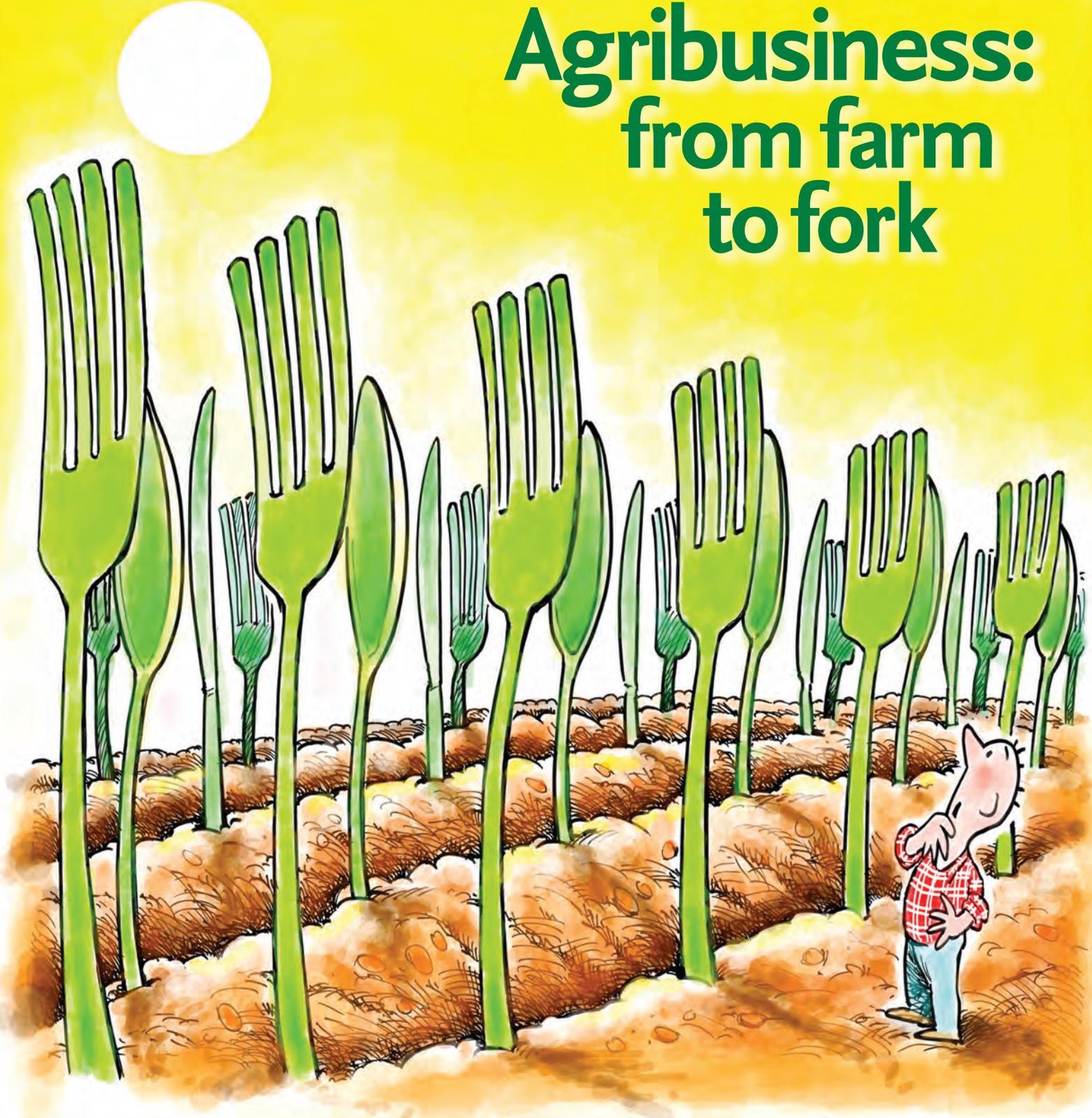
Making It

Industry for Development

2nd quarter 2011

- Alternatives to coca
- Nestlé: creating shared value
- Energy efficiency
- Vandana Shiva
- Ethiopia

Agribusiness: from farm to fork





Number 1, December 2009

- Rwanda means business: interview with President Paul Kagame
- How I became an environmentalist: A small-town story with global implications by Phaedra Ellis-Lamkins, Green For All
- We must let nature inspire us – Gunter Pauli presents an alternative business model that is environmentally-friendly and sustainable
- Old computers – new business. Microsoft on sustainable solutions for tackling e-waster
- Green industry in Asia: Conference participants interviewed
- Hot Topic: Is it possible to have prosperity without growth? Is 'green growth' really possible?
- Policy Brief: Greening industrial policy; Disclosing carbon emissions



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- The International Energy Agency's Nobuo Tanaka looks at energy transitions for industry
- Energy for all – Kandeh Yumkella and Leena Srivastava on what needs to be done to improve energy access
- Women entrepreneurs transforming Bangladesh
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Number 4, November 2010

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Number 5, February 2011

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- A path to mutual prosperity – Xiao Ye on trade between sub-Saharan Africa and China
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- Timor-Leste, from aid dependence to resource revenue – interview with President José Ramos-Horta
- Colin McCarthy questions the approach to regional integration in Africa
- Hot Topic: Representatives of the shipping and aviation industries on stemming rising CO2 levels
- Policy Brief: Private standards; A new approach to export-led growth, EU industrial policy

A quarterly magazine. Stimulating, critical and constructive. A forum for discussion and exchange about the intersection of industry and development.

Editorial

This issue of *Making It: Industry for Development* looks at some aspects of the broad concept of agribusiness, often defined as the whole range of business activities that are performed from farm to fork, but also including the processing of raw materials for the production of many non-food items, such as textiles, paper and biofuel. Agribusiness covers the supply of agricultural inputs, the production and processing of agricultural products, and their distribution to the consumer. It is big business, like agribusiness giants, Cargill, Archer Daniels Midland (ADM), and Bunge, but it is also small business, like the Indian worker drying rice with the aid of his moped in the picture below.

As Kanayo Nwanze points out, agribusiness is the key to resolving two of the great challenges of our time: reducing the poverty of the world's small farmers and feeding the world's growing population. Agribusiness is the crucial space between the world's 500 million small farms, and the world's seven billion hungry people. Patrick Kormawa expounds on exactly this in the context of sub-Saharan Africa, outlining a new strategic framework for agribusiness development that can stimulate growth and reduce poverty across the continent.

But can agribusiness, as it has developed in recent decades, continue in a world increasingly concerned about carbon emissions, water scarcity and the threat to biodiversity? Elsewhere in this issue, Egypt's Helmy Abouleish and India's Vandana Shiva stress the merits of organic agricultural inputs; Paul Bulcke, CEO of the world's largest food and drink company, explains how Nestlé is taking action all along the length of its supply chain; Guillermo Garcia reveals how value-added agro-products can be a viable alternative to coca in Colombia; and Johanna Sorrell wonders if surging palm oil production can be sustainable.



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GLOBAL FORUM

The Global Forum section of *Making It* is a space for interaction and discussion, and we welcome reactions and responses from readers about any of the issues raised in the magazine. Letters for publication in *Making It* should be marked 'For publication', and sent either by email to: editor@makingitmagazine.net or by post to: The Editor, *Making It*, Room D2138, UNIDO, PO Box 300, 1400 Wien, Austria. (Letters/emails may be edited for reasons of space).

LETTERS

Whose prosperity?

In issue 5, Lucy Muchoki says that agribusiness in Africa is threatened by "competition from foreign markets which are usually highly protected and subsidized". She also says African agribusiness has to "compete in low price, commodity markets with producers from other countries that have increasingly got a significant low cost advantage over our producers".

This situation is the direct result of the international trade framework that Peter Sutherland is so desperate to preserve. For Sutherland, "prosperity arises from our mutual economic dependence". Whose prosperity?

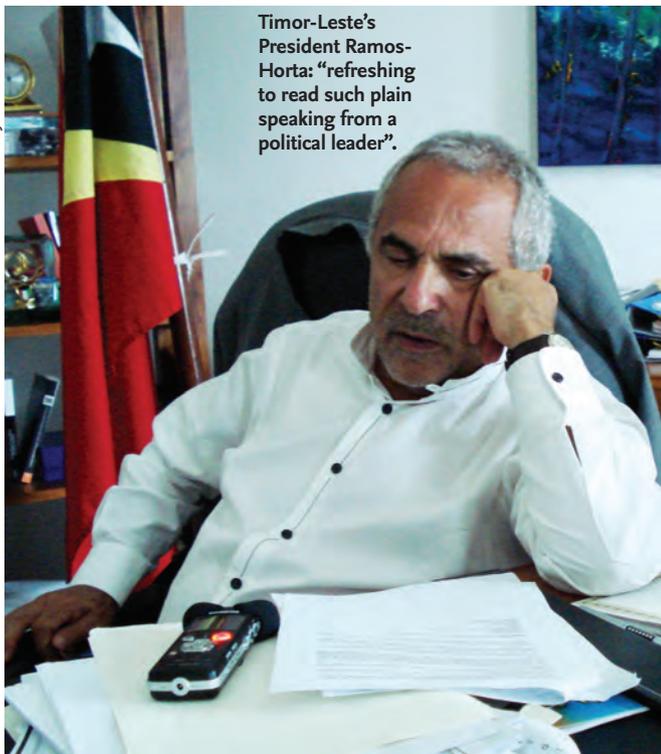
● **Janice Jones, Banjul, The Gambia**

Timor-Leste

The interview with President Ramos-Horta is really good. It was unusual and refreshing to read such plain speaking from a political leader. I wish him and Timor-Leste all the best, and hope that the country can continue to act as a good example of how to use oil and gas revenues for the benefit of all the people.

● **Jane Godwin, received by email**

Photo: José H. Meirelles



Timor-Leste's President Ramos-Horta: "refreshing to read such plain speaking from a political leader".

No sweat

I liked the short piece, Garment assembly? No sweat! (*Making It*, issue 5) about the Alta Gracia factory in the Dominican Republic where workers are allowed to unionize and get paid a living wage. I was particularly struck by the last bit of the article which reports that other businesses in the village are doing well because the Alta Gracia factory workers are earning enough money to have some left over after paying for basic necessities. They spend – other businesses profit.

That the payment of decent wages would have a beneficial knock-on effect on the wider

economy would seem obvious, but the idea has apparently never registered with the 'experts' at the World Bank and IMF who continue to press countries like Haiti to keep wages as low as possible in order to attract foreign exploitation... sorry, I mean foreign investment.

● **Jean-Baptiste Jean, Montreal, Canada**

The right balance

I continue to enjoy reading the articles in *Making It* magazine, as well as those which seem to appear exclusively on the website. I appreciate the balance of research and reports presented in these articles, and

the high-level authors you've selected, which makes the information accessible to somebody like me. I think what you are doing by publishing such a range of views on one topic, really lets the reader decide. I look forward to this next issue on agribusiness, and especially to read about how the industry affects people and their livelihoods.

● **Emile Potolsky, received by email**

Cheaper, faster, safer

I am shocked to read about the British 'greens' who, despite the disaster in Japan, still say that nuclear power is the only alternative to fossil fuels (*Making It* magazine website). They should heed the words of Amory Lovins, the veteran environmentalist and energy analyst, who wrote, "Nuclear plants are so slow and costly to build that they reduce and retard climate protection. Here's how. Each dollar spent on a new reactor buys about 2-10 times less carbon savings, 20-40 times slower, than spending that dollar on the cheaper, faster, safer solutions that make nuclear power unnecessary and uneconomic: efficient use of electricity, making heat and power together in factories or buildings (cogeneration), and renewable energy."

● **Şemseddin Sami, website comment**



For further discussion of the issues raised in *Making It*, please visit the magazine website at www.makingitmagazine.net and the social networking Facebook site. Readers are encouraged to surf on over to these sites to join in the online discussion and debate about industry for development.



An ill wind

I recently came across issue 2 of your magazine (“Wind of change”) and found it to be an excellent addition to the discussion about how, as you put it, “to facilitate productive activities by powering tools, machinery and manufacturing processes in ways that will cause less – ideally no – damage to our environment”.

The terrible earthquake and tsunami that shook Japan in March was an awesome testimony to the overwhelming force of nature. The causes of earthquakes have nothing to do with human intervention – but we know that global warming increases the frequency of extreme weather and therefore the likelihood that we will suffer more catastrophes like we have had recently in Haiti, Chile, New Zealand, and now Japan.

It seems to me that the nuclear meltdowns that the tsunami caused at Fukushima power station in Japan show that we have to rethink our ever-increasing reliance on nuclear power in order to reduce CO₂ emissions. These are potential “winds of change” that make me shiver. So, it was welcome news to hear the Japanese President, Naoto Kan, announce his country is to abandon plans to expand the nuclear power industry. He said, “...it is necessary to move in the direction of promoting natural energy and renewable

Photo: Stinne Vallo Ertmann



energy such as wind, solar and biomass”.

● **Steven Sedgley, Nottingham, UK**

Making do

I am excited to announce the release of my free book, *Making Do: Innovation in Kenya's Informal Economy*, which attempts to deepen our understanding of the systems of innovation surrounding small-scale engineer-entrepreneurs in Africa. Through this understanding, we can better collaborate for industrialization in the global South and improve

our own work here in the North – a message I believe resonates well with the *Making It* and UNIDO communities.

This is the first book written on indigenous innovation in Africa in more than 15 years, and I hope to reach as wide an audience as possible in order to provoke discussion and motivate action among the design, business, and development communities. Therefore, *Making Do* has been made available online for free: <http://analoguedigital.com/makingdo>

● **Steve Daniels, New York, USA**

Online

I have long enjoyed reading *Making It*, getting informed about the latest industrial development issues. I recently noticed that the magazine is also available in digital form over its website. In view of the efforts to reduce paper usage for a better environment, I would like to contribute by switching to reading the magazine online rather than in print. Therefore, I would like to ask for my printed version subscription to be cancelled.

● **Dr. Antonis Gitsas, Vienna, Austria**

Water

Water is a very salient issue, and I am surprised not to have seen it mentioned in any issues of *Making It*. Where does this finite resource fit into sustainable industrial development? According to the World Health Organization, the problem is getting worse as cities and populations grow, and as the need for water increases in agriculture and industry.

To continue to use this resource and many others unbridled, in the name of economic growth, is to bite the hand that feeds us. I believe that *Making It* could define an apt debate surrounding both the issue of resource usage and abuse, as well as about alternatives to a system which propels these actions.

● **Peter Lund, received by email**

Lina Abou-Habib asks if revolutions in the Middle East and North Africa can be a vehicle for the economic empowerment of women or whether patriarchy will prevail.

An Arab Spring for women?

Over the past few months, watching popular revolutions unfold in the Middle East and North Africa (MENA) region has been both an exhilarating and a surreal experience. Indeed, as days and weeks passed, many of my guesses and predictions proved to be wrong. In the case of Tunisia, I was positively convinced that the uprising would not lead to any radical change and that, short of other viable alternatives, Ben Ali and his cronies would maintain power. Wrong... Ditto for Egypt. Who would have thought that the all-powerful oligarch and his family would leave power? Indeed, the turn of events was both exhilarating and surreal.

However, what was even more startling was what a feminist friend from Egypt described to me as “radical and profound social changes”. She, along with many others, maintained that “women are omnipresent”, and “there are absolutely no

incidents of sexual harassment in Tahrir Square”. The international media captured and hailed the visible participation of women from all walks of life in the Egyptian revolution. For a moment in history it seems, society transcended gender-based violence, prejudice, and discrimination against women. For a moment in history, many women in Egypt experienced equality, collegial leadership, and all-out public and political participation. During that moment, their voices and action mattered.

Some women’s organizations sought to capture that moment. In the not so long ago past, women who had taken part in liberation movements against colonial forces were quickly forgotten, and sent back to their places, at home... Another feminist colleague told me that they were constantly and consistently “taking pictures, collecting testimonials, and

documenting in great detail what women did to make this revolution a reality...lest we forget”. But forget, we did.

Political activity that followed the dethronement of the dictator appeared to be almost entirely male-led. On International Women’s Day, March 8, hundreds of women gathered in Tahrir Square to ask for a greater role in building their new country. They were attacked by angry men who shouted at them to go back home. Notwithstanding who the perpetrators were, and why they committed such hateful acts, it was a sad reminder that gender equality and women’s rights remain at risk. Notwithstanding the various analyses of how and why this happened, many of us have chosen to interpret it as a violent reminder that women should not and may not occupy the public sphere.

If women’s mere presence in the public sphere is not accepted or tolerated by some, and not protected and upheld by many others who have fought for revolution, change and transformation, then what lies ahead for women in the post-revolution era?

Women’s participation in the MENA region has always been abysmally low, especially at the level of political life, as well as in terms of their presence in the formal economic sector. Patriarchal social



LINA ABOU-HABIB is the founder and director of the Collective for Research and Training on Development-Action (CRTDA), based in Beirut and working in the Arab region, and is a member of the editorial board of the journal, *Gender and Development*.

institutions, and the values, practices, and even the legal framework they reproduce, have been quite effective and powerful in ensuring that women remain in a position of dependence and subordination. Religious family courts, despite the various reforms and pseudo-reforms they have gone through over the past decade or two, still fall short of acknowledging and codifying the concept of equality. The household has invariably been kept as a sacrosanct, untouchable institution which, in most cases, and in most places, means any form of discrimination against women and violation of women's human rights may take place with almost total impunity. Market institutions in the MENA region are far from being egalitarian or equally accessible to women and men. Unequal pay, discrimination at the workplace, glass ceilings, sexual harassment, penalization of women's reproductive and care roles, and the age-old undermining of women's leadership, have all contributed to the exclusion of women from the economy.

In Egypt, for instance, women are mostly to be seen in the agricultural sector, which is largely unregulated and is where women's work is often confused, unconsciously, as well as consciously, with their non-negotiable and hardly recognized household work. In the more prosperous and better paid service, industry, and business sectors, women's participation is less than 13%, and these women are least likely to be found in the higher echelons of management. Women's participation in the unregulated and often exploitative informal sector reaches up to 46% in Egypt, thus increasing the invisibility of women. Though often enjoying a better reputation for gender equality, Tunisia does not fare much better: women make up 55% of the labour force in agriculture, but less than 22% in the service sector!

If exclusion and discrimination against women in the MENA region, as in many



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others, is a well-established and institutionalized phenomenon which is practiced in the household, as well as in larger social institutions, including state institutions, then what change for women are revolutions bringing?

Perhaps the most important question that comes to mind is whether the new winds of change that continue to sweep the MENA region carry a sincere agenda, a desire, and commitment to gender equality. In other words, are the revolutions questioning and challenging the so-called sanctity of the private sphere? Do they recognize women as full citizens, no matter where they are located, whether at the home, in the workforce, or in the public sphere? Will inequality continue to be protected by impunity, or will it be challenged, and if so, how? Will inclusive citizenship be internalized, owned, and practiced? Will diversity be respected and upheld? Will sexual rights and women's

bodily agency become a reality?

In short, how, and on which basis, will the new emerging states rebuild social institutions that are not patriarchal? How will these social institutions in the MENA region be held accountable for ensuring gender equality, especially since the mere concept of state accountability to women and men citizens is in itself a novelty?

At this point in time, five months after the start of the 'Jasmine Revolution' in Tunisia, and its knock-on effect throughout the region, it is impossible to gaze through a crystal ball and predict whether this will bring more or less opportunities, jobs, freedom, and emancipation for women and girls. However, one can safely say that without asking these uncomfortable questions, and without a sincere willingness to challenge and change patriarchal institutions and holding them accountable, gender equality will remain a far-fetched goal for women in the MENA region. ■

HOT TOPIC

Does energy efficiency lead to increased energy consumption?

In February 2011, the Breakthrough Institute published a comprehensive review of the literature and evidence for rebound effects which concluded that a large amount of the energy savings from below-cost energy efficiency are eroded by demand rebound effects. In some cases, the rebound exceeds the savings, resulting in increased energy consumption from efficiency, known as backfire.

Rethinking rebound and efficiency

JESSE JENKINS and HARRY SAUNDERS outline the importance of the rebound effect. In response, MARIANNE MOSCOSO-OSTERKORN, Director General of the Renewable Energy and Energy Efficiency Partnership (REEEP), argues that energy efficiency yields considerable economic and energy security benefits, and that measures to improve it are always justified.

JESSE JENKINS is Director of Energy and Climate Policy at the Breakthrough Institute, and lead author, along with Ted Nordhaus and Michael Shellenberger, of *Energy Emergence: Rebound and Backfire as Emergent Phenomena*. HARRY SAUNDERS is Managing Director of Decisions Processes Incorporated, a corporate management and decisions consultancy, and a Senior Fellow at the Breakthrough Institute.

Energy efficiency is widely viewed as an inexpensive way to reduce energy consumption and drive reductions in global emissions of greenhouse gases.

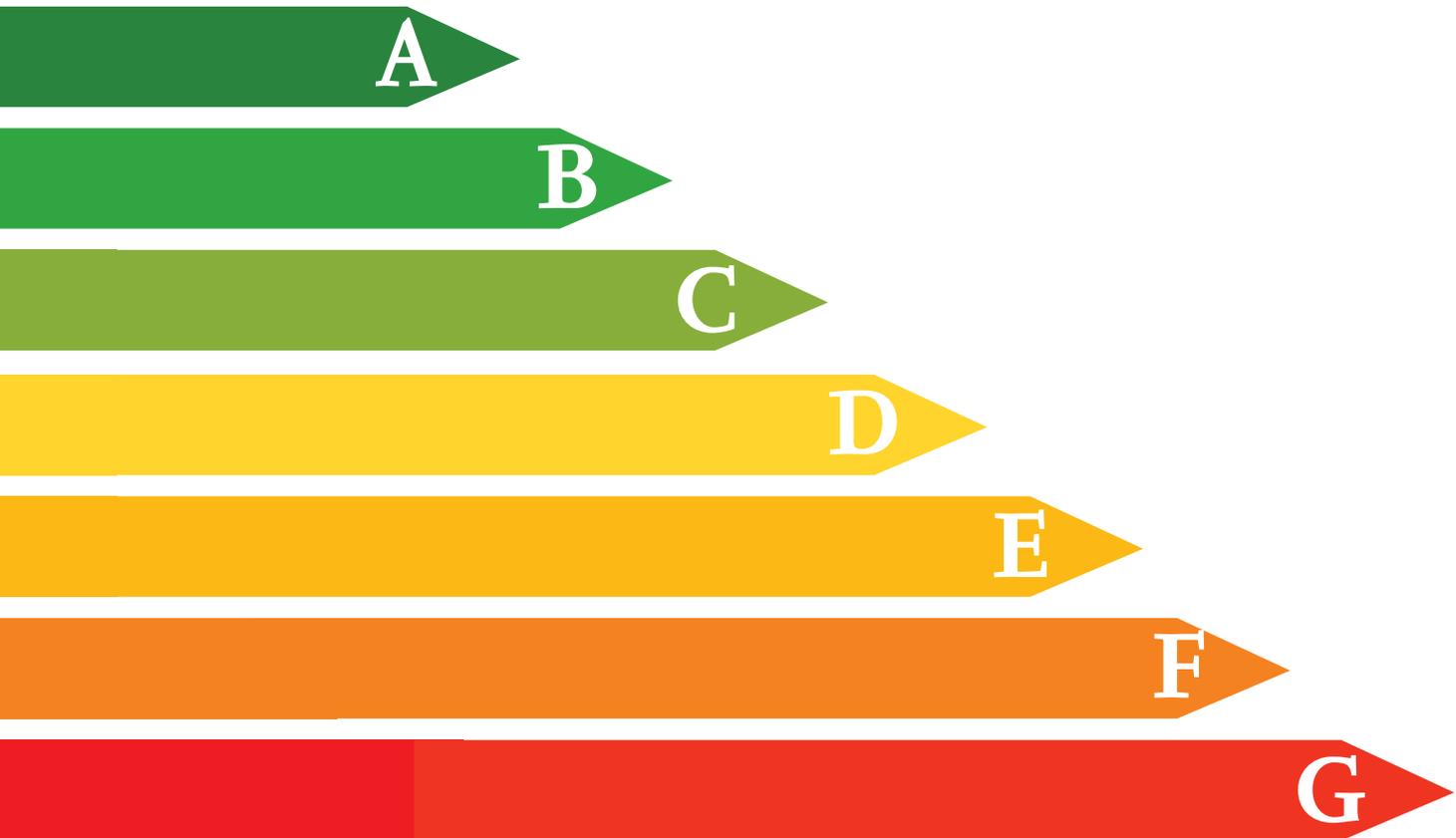
More efficient



Less efficient

Efficiency policies feature prominently in the toolkits of many national governments, international development agencies, and NGOs, and both the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC) estimate that energy efficiency measures will do the heaviest lifting as the world seeks the emissions reductions needed to stabilize the global climate. This focus on efficiency is particularly prominent in the world's emerging economies, where getting more out of less energy is seen as a key path to both sustainable growth and reduced climate risk.

Energy efficiency rating labels are now found in many new buildings and on household appliances and electronics.



Yet recent research, including new reports authored by each of us, highlights a powerful but largely overlooked economic phenomenon that requires a global rethink of energy efficiency and its role in climate mitigation and sustainable development strategies: the rebound effect.

Truly cost-effective energy efficiency measures lower the effective price of the services derived from fuel consumption – heating, cooling, transportation, industrial processes, etc. – leading consumers and industry alike to demand more of these services. There are other indirect and economy-wide effects as well, as consumers re-spend money saved through

efficiency on other energy-consuming goods and services, industrial sectors adjust to changes in the relative prices of final and intermediate goods, and greater energy productivity causes the economy as a whole to grow. Collectively, these economic mechanisms drive a rebound in demand for energy services that can erode much – and in some cases all – of the expected reductions in total energy use, along with much-hoped-for reductions in greenhouse gas emissions.

Furthermore, rebound effects are often most pronounced in the productive sectors of the economy, including industry and agriculture, as well as throughout the world's emerging economies.

Anything but linear and direct

These rebound effects run counter to a core assumption of conventional energy and climate forecasting and analysis: the idea that efficiency improvements lead to a linear, direct, and one-for-one reduction in overall energy use.

Estimates of the energy use and emissions reductions possible through efficiency are typically derived from 'bottom-up' engineering models and calculations of the cost effective efficiency opportunities available in each economic sector. Analysts then sum up the available efficiency measures in each sector to determine the gains possible for the economy as a whole, and subtract these ►

HOT TOPIC

► efficiency gains from business-as-usual forecasts of energy use accordingly. This basic method is at the heart of widely cited climate and efficiency strategies authored by McKinsey and Company, the IEA, and the IPCC.

Crucially, these studies assume no feedbacks between improvements in energy efficiency and either economic activity or demand for energy services. Thus, a given percent gain in efficiency is assumed to lead simply and directly to an equivalent and equal percent reduction in total energy use. In reality, however, the economy is anything but direct, linear, and simple, especially when responding to changes in the relative price of goods and services.

When a good or service, or input, to production gets cheaper, consumers and firms use more of it, find new cost-effective uses for it, and on top of this re-invest any savings in other productive activities. Meanwhile, any net improvement in energy productivity contributes to economic growth.

No paradox

Often labeled “Jevons’ Paradox,” after the British economist who first noted the mechanism in an 1865 treatise, rebound effects actually operate through well-understood economic principles of demand elasticity, substitution, and the contribution of productivity to economic growth.

Economists would never assume, for example, that a ten percent improvement in labour productivity – also known as a “labour efficiency” improvement – would reduce overall demand for labour in the economy by 10%.

At the scope of the individual factory or assembly line, improving labour productivity may mean the plant can get by with fewer

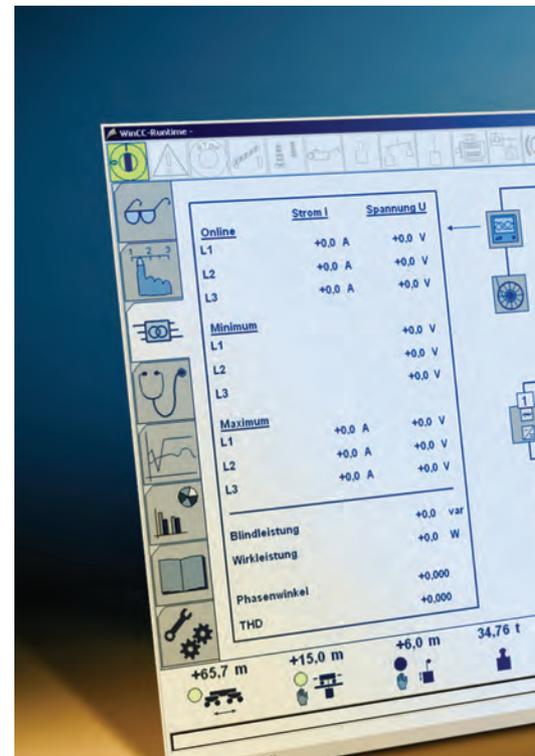
labourers on the shop floor. Yet here again, higher labour productivity lowers product costs, increases demand for those products, and opens up new markets that were not previously profitable. It frees up money to re-invest in other areas of production, and it creates new jobs in other areas of business. All of these dynamics cause a rebound in labour demand.

At the macroeconomic level, it is widely understood that improving labour productivity drives economic growth, creates new profitable ways to utilize labour, and generally increases overall employment, rather than decreases it. And despite the simplified assumptions common to energy forecasting and analysis, the reality is that energy isn’t different from labour, or materials, or capital.

Rebound likely to be largest where least studied

Dozens of academic studies have examined the empirical evidence, conducted modelling inquiries, and otherwise tested the scale of rebound effects. Rebound effects differ in scale, depending on the type of energy efficiency improvement and the sector of the economy in question. As it turns out, rebounds are generally smallest in exactly the situations that have received the most research to date: for improvements in the efficiency of end-use consumer energy services in wealthy, developed economies. This includes efficiency improvements in personal transportation, home heating and cooling, and appliances. Here, relatively wealthy consumers already fully enjoy most energy services, or come close to it. A consumer may gain little utility, for example, from heating his or her home above a comfortable room temperature, even if the efficiency of home heating improves.

The direct increase in demand for these end-use energy services due to the decrease in their apparent price is therefore



relatively modest, and commonly erodes 10-30% of the initial energy savings or less.

Additional indirect and macroeconomic effects may mean total energy demand rebound can erode roughly one quarter to one third of the expected energy savings arising from end-use efficiency measures in developed economies.

However, the consumption of end-use services in the world’s wealthy nations is far from indicative of broader trends across the global economy. In fact, the largest rebound effects are typically found elsewhere: in the productive sectors of the economy that consume the bulk of energy in any nation, and in the world’s emerging economies, home to the vast majority of future energy demand growth.

Emerging economies

In contrast to conditions in wealthy nations, demand for energy services is *far* from

Energy efficiency can reduce the costs of operating container terminals. Siemens Drive Technologies have improved control functions for the operation of rubber-tired gantry cranes, with a resultant 70% reduction in fuel consumption.



Image: Siemens

sectors (e.g. industry, commerce, and agriculture) is also warranted, given the fact that roughly two-thirds of global energy is consumed in the production and transportation of goods and services, and the refining, processing, and delivery of energy to end-uses.

However, the literature to date indicates that direct rebound effects are much larger in the productive sectors than in end-uses – on the order of 20-70% for these sectors, at least within a United States context – with additional rebound due to indirect and macroeconomic effects.

Rebound effects in productive sectors depend principally on the ability of firms to rearrange their factors of production (labour, capital and equipment, and various materials) to better take advantage of now-cheaper energy services (a process known in economics as input or factor substitution). If, over the long-term, it is relatively easy for firms to substitute increasingly efficient energy services for other production factors, direct rebound effects can be substantial. This is especially true for decisions related to the construction of new productive capacity – and so we should again expect more pronounced rebound in the fast-growing productive sectors of emerging economies.

Additional mechanisms add to the scale of rebound, as consumers demand more of now-cheaper products and economic productivity overall improves.

Where does this leave us?

Conventional climate mitigation strategies count on energy efficiency to do a great deal of work. For example, the IEA in a global climate stabilization scenario published by the agency in December 2009, estimates that efficiency measures could account for roughly half of the emissions reductions needed. Yet, from a

saturated throughout the developing world. After all, roughly one-third of the global population still lacks sufficient access to even basic modern energy services.

In the world's emerging economies, the cost and availability of energy services is often a key constraint on their enjoyment. Demand is thus far more elastic (responsive to changes in price), and rebound effects much larger than in the developed economies. That in turn means rebound effects are much larger.

Very few studies have carefully examined rebound dynamics in developing economies, but those that have find direct rebound effects alone to be on the order of 40-80% for end-use consumer energy services, such as lighting and cooking fuel – more than twice as large as the equivalent rebounds found in wealthier nations.

As a wide body of development literature recognizes, expanding access to modern energy services is also a principal driver of development outcomes. Whether such services are provided by burning more fuels, burning them more efficiently, or both (the most likely scenario), the outcome is the same: greater economic activity and expanding welfare, which in turn demands more energy.

Energy analysts must therefore be very careful in generalizing experiences or intuitions about rebound effects in rich, developed nations to the larger bulk of the global population living in developing economies. The shadow of Jevons' Paradox still looms large over much of the developing world.

Productive sectors

Far more study of rebound effects for efficiency improvements in producing

HOT TOPIC

► climate or global resource conservation perspective, rebound effects mean that for every two steps forward taken through greater efficiency, rebounds take us one (or more) steps backwards. This is particularly true throughout the developing world, and in the productive sectors of the global economy.

A clear understanding of rebound effects therefore demands a fundamental re-assessment of energy efficiency's role in global climate mitigation efforts.

A continued failure to accurately and rigorously account for rebound effects risks an over-reliance on the ability of efficiency to deliver lasting reductions in energy use and greenhouse gas emissions. Without a greater emphasis on the other key climate mitigation lever at our disposal – the de-carbonization of global energy supplies through the deployment and improvement of low-carbon energy sources – the global community will fall dangerously short of climate mitigation goals.

At the same time, however, we can re-affirm the role of energy efficiency efforts in expanding human welfare and fuelling global economic development. Unlocking the full potential of efficiency may very well mean the difference between a richer, more efficient world, and a poorer, less efficient world. The former is clearly the desirable case – even if the world uses more or less the same amount of energy in either scenario.

The pursuit of any and all cost-effective efficiency opportunities should thus continue as a key component of an efficient course for global development, even as we reconsider the degree to which these measures can contribute to climate mitigation efforts. ■

The many benefits of energy efficiency

MARIANNE MOSCOSO-OSTERKORN is the Director General of the Renewable Energy and Energy Efficiency Partnership (REEEP), a global partnership that works to reduce the barriers limiting the uptake of renewable energy and energy efficiency technologies, with a primary focus on emerging markets and developing countries.

The Breakthrough Institute report, *Energy Emergence: Rebound and Backfire as Emergent Phenomena*, highlights the challenges and complexities of measuring the overall effectiveness of energy efficiency measures. The results are complex, and are affected by the interaction of many different factors, including economic growth, energy use, technology, behaviour, and rebound effects. Unfortunately, the assumptions used are not fully verifiable, and the different models show wide variations in their results, all of which devalues the conclusions offered.

The overall effects of energy efficiency can indeed be disputed by employing the many theoretical and modelling methods available to measure the direct and indirect rebound effects. But this whole argument misses the point that energy efficiency has many benefits, other than climate change mitigation, which need to be considered. Energy efficiency leads to increased productivity and economic output, reduced demand, reduced energy bills and last, but by no means least, an enhanced security of energy supply.

If one does keep purely to the climate

argument, a more interesting question would be to ask: how much more serious would today's climate change situation be if energy efficiency *had not* been implemented in the past? According to the International Energy Agency, substantial energy savings have already taken place steadily over the last 20 years, and it argues that without these energy efficiency measures, today the world's energy demand would be 50% higher than it actually is. This effect must be taken into account when discussing and evaluating the climate impact of current energy efficiency measures.

California decouples

Examples like California prove that jurisdictions that strongly promote energy efficiency can achieve an energy trend that contrasts sharply with their immediate neighbours. Today, we can observe that the amount of energy consumed by the average Californian is just 60% of the US per capita average – dramatic proof that energy efficiency has effectively decoupled growth in energy consumption from economic growth in the most populous American state. And this trend is no flash in the pan – it has continued for more than four decades now. The California example shows that regardless of all the rebound arguments, energy really was saved. Costly new power plants have not had to be built, and the whole economy has benefited.

The California experience also shows that energy efficiency programmes have educational effects that result in sustained

REEEP energy efficiency project in a Pacific Island country.



Photo: SPC Applied Geoscience and Technology Division (SOPAC)

behavioural changes over time – a phenomenon that can also be observed in several European and Asian countries. This might be dismissed by some as a phenomenon that emerges primarily in saturated markets where people’s energy needs are already satisfied, but no studies exist which can provide reliable data to back up this argument.

Part of a package

What real experience does show is that energy efficiency measures appear to be most effective if they are implemented as a package of activities that include new technology, incentive systems, and education, as well as capacity-building and public promotion. These kinds of integrated programmes have yielded significant energy reduction. The holistic energy efficiency programme in Japan after the first energy crisis in the 1970s is another prime example. Much like California, modern-day Japan has achieved an almost complete decoupling of energy consumption and GDP growth.

Significant effects of comprehensive efficiency programmes, targeting both end-consumer and industry, are also reported in mid-income and developing countries such as Thailand and the Philippines. Thailand initiated a voluntary energy efficiency programme for appliances in 1994, which has since become a well-functioning mandatory system covering more than 50 appliances, lighting, and equipment. According to the *Asia-Pacific Economic Cooperation’s* peer review on energy efficiency, as of September 2009, the Thai standards and labelling programme has contributed 10,175 gigawatt hours of energy savings, 1,725MW of peak demand capacity savings, and 6.6 million tons of CO₂ reduction. In the Philippines, mandatory standards and labels for air-conditioners saved 6MW of capacity during the programme’s first year.

Yet another example is the National Compact Fluorescent Exchange Programme in Ghana, which was launched in 2007, reducing peak load demand for the over-stretched national electricity systems and lowering the electricity bill of mostly low-income consumers. With the exchange of six million light bulbs in Ghana’s households, peak load savings of 124MW per annum, and CO₂ savings of 112,320 tons, were achieved. This resulted in overall energy cost savings of US\$33m.

Energy savings

These examples from lower-income countries underline that end-consumer energy efficiency clearly impacts net savings for overall national electricity systems in developing countries – especially through reducing peak load demand. It seems that these savings are not “sucked away” through increased consumption, especially at this point of time. Indeed, even if some of these savings would be consumed during a different time of day, the positive benefits for a

national energy system and CO₂ reduction would not be diminished. The achieved savings would help to reduce costly provisions of mostly fossil fuel-based peak load systems.

Technology alone is not the solution, and yes, the possible rebound effects of energy efficiency measures should indeed be considered by policymakers in realistically estimating the impact of energy efficiency measures on CO₂ reduction. But this environmental effect – the extent of which is very much open to debate – is a one-dimensional counter-argument. Real-life experience clearly shows that energy efficiency yields considerable economic and energy security benefits, and therefore measures to improve it are always justified. Of course other measures, such as decarbonization of the global energy supply, should also be implemented to tackle climate change, but energy efficiency programmes increase the energy consciousness of people, and are thus an important first step to save the planet. ■

trends



■ The global economy has slowed in recent months, but the Economist Intelligence Unit broadly expects the recovery from the Great Recession of 2008-09 to keep going. An array of factors – including high commodity prices, unrest in the Middle East and North Africa, global supply-chain disruptions due to the disaster in Japan, and tighter monetary policy in many countries – are causing concern. But the underlying foundations for a sustainable recovery still look like they are in place.

Global GDP is estimated to

grow by 4.3% in 2011. This is quite a bit slower than last year, when the rebuilding of inventories and the extraordinary stimulus measures unleashed by policymakers in many countries helped to generate growth of almost 5%. The cyclical boost from those measures is now essentially over, so the onus is on the global economy to grow without support.

On balance, prospects are quite good. Emerging markets are still generally doing well, even though many are struggling to tame inflation. Most important,

developed countries are better positioned to sustain modest growth. For example, as signals of economic health in the US, the fact that more jobs are being created and that consumers are still spending (despite high oil prices) probably outweighs disappointing first-quarter GDP. Recent growth in the euro zone has also been surprisingly robust, driven in part by the success of the German economy, the region's powerhouse.

None of this to downplay the risks to global growth that remain. Notwithstanding the

recent market correction, high oil prices are still a source of concern. If prices remain very high or rise further, that will act as a brake on economic growth. Inflationary pressures generally are causing anxiety. The debt crisis in the euro area is also far from resolved. Developments there could destabilize financial markets, undermining the broader recovery. Industrial production in Japan has collapsed as a result of the March 11th tsunami, and this is having an adverse impact on global supply chains. Meanwhile, among emerging markets, China's efforts to cool its economy are creating particular uncertainty. Will its policies work, and if so is that a good

BUSINESS MATTERS

A revolution in electricity

A small but fast-growing company based in Bihar, the poorest state in India, has perfected and commercialized a system to turn rice husks into electricity, providing remote villages with a clean, reliable power supply.

The company, Husk Power Systems, has created a process that takes a common waste product, rice husks, heats it until it breaks down into gas, and then uses the gas to power an engine to generate electricity. The first gasification plant was set up in 2007, and now Husk Power has 65 plants supplying electricity to around 180,000 people who previously depended on kerosene as a light source.

Each plant can power 400-500 households for 7-8 hours per day at a cost of just 80 rupees – roughly US\$1.75- per household per month.

In rural Bihar, pretty much everything that can be used will be used, but rice husks are a big



exception. When rice is milled, the outside kernel, or husk, is discarded, and because the husk contains a lot of silica, it doesn't burn well and can't be used for cooking. It has been estimated

that the state of Bihar produces 1.8 billion kilograms of rice husk per year. Most of it ends up rotting in landfills and emitting methane, a greenhouse gas.

Husk Power Systems is aiming

to expand its reach, and plans to have over 2,000 plants in operation by the end of 2014. According to India's Ministry of New and Renewable Energy, the country has 100,000 villages that

thing? A slowdown in China would significantly affect many other countries. The upheavals of the “Arab spring” also continue to make themselves felt, presenting economic and geopolitical risks on several fronts. (Economist Intelligence Unit)

■ Rising wealth, changing diets, and increased food consumption across the developing world – along with a growing global population – are fuelling a steady rise in demand for agricultural commodities such as sugar, soybeans, and meat. Consequently, the prospects for growers, ranchers, processors, and other agribusinesses are blossoming – and perhaps nowhere more so than in Brazil

and to a certain extent in Argentina.

The opportunities are considerable. Historically fragmented businesses such as livestock and sugar, for instance, are beginning to consolidate, offering companies the benefits of increased scale. New sources of financing are allowing players to overcome historically underdeveloped capital markets. Increased demand for affordable and clean energy is creating non-traditional opportunities, such as the production and export of biofuels.

In Argentina and Brazil favourable weather and soil create an ideal environment for crops and livestock. Brazil’s endowment of arable land, for example, is a

whopping 4,100,000 square kilometres – roughly the size of the European Union before the addition of Bulgaria and Romania – only 17% of it now in use. Indeed, Brazil could more than double its current utilization level without harming the country’s Amazon rainforest. China, India, and the United States all have less farmland and much higher utilization rates. Argentina, for its part, has 1,700,000 square kilometres of available farmland, and its pampas boasts 760,000 square kilometres of the world’s most fertile farmland and pastures.

Such natural blessings, coupled with low labour costs, help explain how Brazil has become the world’s largest producer of frozen orange

juice, sugarcane, poultry, beef, and coffee, and the second-largest producer of soybeans. Argentina leads the world in soy oils and flours, and is a significant player in soybeans and beef. In 2005 Brazil and Argentina were the world’s 6th- and 13th-largest agricultural producers, respectively, by export value.

The impact of agribusiness on the economies of Brazil and Argentina is profound. In 2006, agribusiness represented 36% of Brazil’s exports and 52% of Argentina’s (worth US\$49 billion and US\$24 billion, respectively). Moreover, in both countries agribusiness and related activities generate roughly one-third of GDP. (McKinsey Quarterly)



are not connected to the national grid. Twenty thousand of those villages are so remote, the ministry says, that they cannot be reached by extending the grid.

Indonesia is top for entrepreneurs

Indonesia is the best place for entrepreneurs to start a business, a BBC survey has suggested. The USA, Canada, India and Australia are seen as among the next best countries at supporting new businesses.

The results come from a survey of more than 24,000 people across 24 countries. They were asked whether innovation was highly valued in their country; whether it was hard for people like them to start a business; whether people who do were highly valued; and whether people with good ideas could usually put them into practice. Taking all the answers together as a single index, Indonesia came out as the most favourable place for entrepreneurs.

All the developed economies surveyed were above the average score, with the exception of Italy, which was far below. But there were also plenty of developing economies that came out as pro-entrepreneur – India, China, and Nigeria were also perceived by their own people as relatively favourable

places for new businesses.

In terms of regions, the four countries of East Asia and the Pacific surveyed all received high scores. All the three countries in sub-Saharan Africa also scored above average. In Latin America, Mexico and Peru scored relatively highly, but Brazil and Colombia were well below average.

The poll does not provide

evidence on why people took the views they did, and in some respects the results are consistent with widely-held perceptions of the country concerned.

For example, the USA has a particularly pro-private sector culture and a smaller state sector than many western European countries. It is seen as a good place for entrepreneurs. Russia, which received a low score in this poll, is seen internationally as a place where the state is too prone to intervene in economic life.

But there are some surprises. Labour laws in France are relatively tough, yet in this poll the country was seen as a good place for a new business. Nigeria’s problem with corruption did not stop it doing better than most countries in this survey.

The poll was undertaken for the BBC World Service by the international survey firm Globescan together with the Programme on International Policy Attitudes at the University of Maryland.

Top 10 ‘most entrepreneur-friendly nations’

- 1 Indonesia
- 2 USA
- 3 Canada
- 4 India
- 5 Australia
- 6 Nigeria
- 7 China
- 8 Kenya
- 9 Mexico
- 10 The Philippines

BBC World Service poll results published on 25 May, 2011

Patrick Kormawa argues that a shift to an agribusiness development growth trajectory is crucial for poverty reduction

Agribusiness: AFRICA'S WAY OUT OF POVERTY

It is estimated that Africa's population reached 1.4 billion in 2010, with resultant consequences for food security, growing urbanization, and youth employment. African countries urgently need to refocus their agricultural and economic growth strategies. The continent's agriculture is substantially under-capitalized, with extremely low levels of mechanization and value addition. Africa's average of 13 tractors for each one hundred square kilometres of arable land compares unfavourably both with the global average (200/100km² of arable land) and with the average for other developing regions, such as South Asia (129/100km² of arable land). The same applies to irrigation: sub-Saharan Africa (SSA) has only 4% of arable and permanent cropland under irrigation, compared with 39% in South Asia and 11% in Latin America and the Caribbean.

African agribusiness's present share of total GDP is very low. Data from the World Bank shows that the value of agribusiness production in Thailand matches that of the entire SSA region, while that of Brazil is nearly four times the African total. Crucially too, in all but two African countries (South Africa and Zimbabwe), agriculture's share of GDP exceeds that of agribusiness by 10 percentage points, high-

lighting the region's failure to add value to farm production. This relative inability to produce and process agro-industrial commodities limits the scope for industrialization, and means that these countries are failing to benefit from opportunities to add value and create jobs. While high-income countries add about US\$180 of value by processing one tonne of agricultural products, African countries generate only US\$40. Moreover, while 98% of agricultural production in high-income countries undergoes industrial processing, in African countries less than 30% is processed. Rural areas in African countries have limited agro-processing activity and capacity. As such, SSA countries in particular experience large post-harvest losses, especially for perishable commodities such as fruit and vegetables, with post-harvest losses averaging 35-50% of total attainable production. For grains, such losses vary from 15-25%.

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Although high value and non-traditional agro-industrial production for export provides dynamic and growing market opportunities for some African countries, the most important demand driver in SSA is, and will remain, the domestic and regional market. Looking at the demographics and changing consumption habits for food and non-food agricultural products, domestic markets and intra-African trade will remain important, representing more than three-quarters of total market value at a continental level, with domestic markets alone constituting 80% of total market value in regions such as East Africa.

Agribusiness is labour-intensive, creating jobs in value-adding, agro-processing activities, particularly for those who will inevitably leave the land as economic development proceeds. In order to reap the benefits of job creation, it is important that policymakers and development partners target interventions along the entire agribusiness value chain, and not just agriculture on a stand-alone basis. Agricultural strategies cannot be framed – as in the past – in terms of a production-led strategy. It is demand, in part linked to value chain development, which must perform the pivotal role, and provide the driving force for investments. ➤



➤ An agribusiness-led development strategy, with stronger productivity growth throughout the entire agribusiness value chain system, offers the best opportunity for rapid and broad-based economic growth and poverty reduction in SSA. Indeed, the expansion of employment through downstream agro-industrial processing value chains may be one of the few local paths out of poverty for small farmers.

For this to have broad-based impact, there must be a structural transformation involving a shift in the economy from subsistence-oriented household production and household-based agro-industry towards a modern integrated economy, based on specialization and exchange, often relying on economies of scale. The off-farm elements of the agribusiness and food retailing system expand relative to farm-level production, both in terms of value added and employment. Such a shift is critical for poverty reduction, as between one and two-thirds of smallholder farmers appear to lack the resources to “farm their way out of poverty”, and will therefore eventually need to move to more remunerative employment in emerging sectors outside farming, such as agribusiness, industry and services.

A new agribusiness policy space

A new UNIDO study, *Agribusiness for Africa's Prosperity*, warns of the dangers of “recycling failed ideas”. One of these is the belief that Africa must have a Green Revolution along the lines of those in Asia and Latin America. This is akin to stating that Africa will enjoy an industrial revolution as occurred in East Asia. It is important to note that the world has moved on since those events took place. It should also be recognized that because technology and markets have changed, there can be no guarantee that earlier agricultural development growth models can be successfully replicated in Africa today, or in the future. Thus, a new agricultural development policy approach is needed, the essence of which is to shift from past failures of production-led growth to an agribusiness development growth trajectory, taking into consideration the economic and social development needs of Africa. The UNIDO study proposes that a new strategic framework for agribusiness development be built around seven pillars, as follows.



Enhancing agricultural supply for value addition: If agriculture is to provide a development path out of poverty, it is crucial that African countries fully integrate into global agribusiness. It is important to learn from the policy experience of emerging economies, where agribusiness development resulted from deliberate but targeted public policies and strategies, and from institutional support and development. Factors contributing to market failures must be well understood and speedily addressed by key stakeholders such as national and local policymakers, as well as development partners. African countries must also de-emphasize low input agriculture as a panacea for ending hunger in the

21st century. The era of low food prices is over. African countries must embrace new farming approaches, like the “sustainable intensification” proposed in *Foresight. The Future of Food and Farming* (2011). This will require enlisting all modern technologies and agro-industrial inputs, mechanization, and genetically modified crops and livestock, in order to increase productivity.

Upgrading value chains: Upgrading the competitiveness of farms and firms, irrespective of size, will be crucial. African countries need to invest in competitive value chains, taking into consideration local, regional and international market demands and requirements. Value chain participant councils could



play a crucial role in coordinating the functions and activities of producers and other key stakeholders. This would require the promotion and development of efficient agri-input value chains, mechanization, processing, and of related ago-industries.

Exploiting local, regional, and international demand: Many African countries have yet to gain greater access to dynamic global agribusiness markets due to lack of competitiveness and inability to adjust supply to changing market opportunities. In this regard, Aid for Trade can play a crucial role in building capacity to trade, overcoming supply-side rigidities to market opportunities and strengthening standards and compliance systems. It is also

crucial to promote agribusiness cooperation by reducing intra-African tariff and non-tariff barriers, negotiating the reduction in such barriers with the South and the North. A fresh approach will be required in order to foster agro-industrial cooperation within the South in the field of value chain participation, technology transfer and foreign direct investment, as well as to align “Africa’s commodity processing priority” with the resource needs of major trading partners such as China.

Strengthening technological efforts and capabilities for agribusiness: There is an urgent need to strengthen Science, Technology and Innovation (STI) policies, with an emphasis on improving the coordination mechanism for

learning and innovation, promoting national and regional innovation systems, strengthening human resource development, and generally improving STI infrastructure. It is essential to enhance the link between knowledge created by universities, exploited by laboratories, and commercialized by private enterprise.

Promoting effective and innovative financing: Traditional financing mechanisms comprising domestic resource mobilization, sovereign wealth funds, funding from diasporas and development finance institutions, leasing, and collateralization, must be explored with renewed vigour. Some of the more innovative financing tools, such as risk mitigation for bank lending through insurance schemes, finance through large lead firms in value chains, equity, venture and hybrid capital, have proven to be workable and should be explored. Here it is important that the enabling conditions for local resource mobilization and utilization are created to permit the “crowding in” of private investment in agribusiness.

Creating a favourable business environment: The creation of an overall enabling environment for developing and promoting private agri-enterprises requires a favourable business environment – macroeconomic stability; favourable exchange rates; efficient financial systems and institutions; political and social stability; good governance; transparent land tenure arrangements; a climate for business; etc..

Improving infrastructure and energy access: It is essential that agribusiness expansion be promoted in areas where the required infrastructure and energy services are available and which are linked to transport and highway corridors. In this regard, public-private partnerships will be particularly necessary. A focus on clean, renewable, efficient, low-carbon, and sustainable, energy services, as well as a reduction in greenhouse gas emissions, will be important parts of the strategy. The promotion of information and communication technologies is also a precondition for participation in value chains. Finally, the Clean Development Mechanism, which promotes projects that reduce greenhouse gas emissions in developing countries, could be a future driver of technology diffusion processes in Africa and assist with the creation of green jobs and investment opportunities. ■

SWITCHING FROM COCA

Guillermo García explains how agribusiness can help Colombia's peasant farmers ditch coca cultivation and pursue legal and more secure opportunities.

Around 100,000 peasant farmers in Colombia cultivate the coca plant. Colombia's coca leaves are the raw material for half of all the cocaine consumed globally each year. The drug has an annual global market value of US\$88bn. These figures would suggest that cultivating the coca plant is a lucrative activity, one that a Colombian peasant farmer would be reluctant to give up. Nothing could be further from the truth.

Information obtained from field studies indicates that the average annual net income of a peasant farmer family that sells coca leaf is just US\$2,100. If that family buys the chemical inputs and hires the additional labour necessary to transform the coca leaf into coca paste, the basis of cocaine, then annual incomes can double. Even so, it is clear that far from providing peasant farmers with a healthy profit, the production of the illicit crop does little more than allow for a subsistence existence. It is the middlemen and traffickers who make the big money.

Coca leaf cultivation is also a precarious livelihood in Colombia because illegal, armed groups (guerrillas and paramilitaries) fight to control the illicit cocaine trade. These groups have a monopoly over the purchase and sale of coca paste, and extort "taxes" from the traffickers, laboratories and runways from where cocaine is transported. They also guarantee territorial control of the coca production and promote illicit crops in their areas of influence. In addition, farmers are continuously confronted with the threat of the eradication of their illicit crops by the government.

Given suitable alternatives, the necessary infrastructure and access to marketing opportunities, most families would gladly switch to other sources of income, and this forms the backdrop to the alternative development programmes carried out by the United Nations Office on Drugs and Crime (UNODC) in Colombia and other countries that produce illicit crops.

In Colombia, the government, UNODC, other international partners, and the local private sector, support



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In one UNODC alternative development project, in the department of Putumayo in the Amazon region, 256 families grow 365 hectares of peach palm trees from which hearts of palm are harvested. The heart of palm is the most tender and delicate part of the palm tree; with a fine flavour and a soft texture. It is a natural organic food, with no artificial additives, and helps digestion thanks to its high natural fibre content.

France and Spain are the biggest consumers of hearts of palm in the world, but there is an increasing demand for this product internationally. 'Hearts of palm from Putumayo' is the leading brand in the Colombian market, and the product is exported to France, Japan and Canada.

farmers' associations that give up the cultivation of the coca plant, and instead engage in producing alternative products, including beans, cacao, heart of palm, coffee, honey, coconuts, dairy products, and gourmet sauces.

Providing farmers with legal and profitable alternatives and improving the living conditions in rural areas, villages and urban centres in regions affected by illicit cultivation has proved to be a most effective socio-economic intervention.

Alternative development is not just replacing one crop with another, but consists of building alternative livelihoods with the participation of farmers in conditions of legality and security. In some cases, the income from alternative products is not high enough to compete with that from coca cultivation, but alternative development reduces the levels of violence and enhances access to markets, thus improving farmers' economic security.

Crucial aspects of Colombia's successful alternative development interventions are initiatives to boost investment in agricultural activities and products which create income for the farmers, and to provide assistance with the development of agro-industry and marketing in order to generate added value by transforming crops into new and competitive products.

In one programme, financed by the Inter-American Development Bank, UNODC assists commercially viable farm enterprises in placing their products in established national and export markets. Support is provided in areas such as modern business management and practices, product quality, packaging, marketing, and distribution. Assistance is also provided to gain access to specialty or niche markets worldwide, such as environmentally friendly and fair-trade markets.

UNODC has managed to sign marketing agreements with the nationwide supermarket chains, Carrefour and Casino, to sell six products from five alternative development organizations. These are hearts of palm, black pepper, bee honey, coffee, chocolate bars and beans. ■



'Hommage à Warhol'
by Lauren Brassaw



Feeding a crowded world

Food tastes and agricultural markets are changing. In recent years, there has been a rapid growth in the reach of supermarkets, locally and globally, and the development of consolidated value chains for agricultural products. **Kanayo Nwanze** argues that smallholder farmers must have opportunities to be entrepreneurs, rather than bystanders, in the new and potentially profitable marketplaces that are evolving. >>>



KANAYO F. NWANZE began his term as the International Fund for Agricultural Development's fifth president on 1 April 2009. IFAD works with poor rural people to enable them to grow and sell more food, increase their incomes and determine the direction of their own lives. Since 1978, IFAD has invested over US\$12.5bn in grants and low-interest loans to developing countries, empowering more than 370 million people to break out of poverty. IFAD is an international financial institution and a specialized United Nations agency, based in Rome. A Nigerian national, Nwanze has a strong record as an advocate and leader of change. He has over 30 years of experience, across three continents, in poverty reduction through agriculture, rural development, and research.

Today, more than 900 million people are struggling with chronic hunger and are mired in poverty. When looking to the future, the matter becomes even more pressing. By 2050, more than nine billion people will inhabit this planet. To nourish a hungry and crowded world, food production will need to increase by 70%.

Feeding the world's hungry and poorest people is the challenge of our time, but with enough creativity and hard work, it is a challenge that we can meet. The solution lies with the people who farm the world's 500 million small farms. These farms are the backbone of agricultural development and the key to feeding the future. Tapping the potential of these smallholders, many of whom live in poverty, will require a fundamental shift in the way we approach agricultural development, both globally and locally.

Earlier this year, the International Fund for Agricultural Development (IFAD) released the *Rural Poverty Report 2011*, a comprehensive assessment of the challenges and solutions to eradicating poverty in the developing world. The report reflects the current environment for smallholders – ripe with possibilities but entwined with emerging threats. The stories of those smallholders who have successfully availed themselves of technologies and new opportunities stand in stark contrast with the desperate conditions faced by millions of others.

There is a risk that the emergence of modern value chains and supermarkets in the developing world will widen this gulf. It is true that the introduction of new technologies and sophisticated market systems, alongside growing urbanization, holds the promise of meeting growing demand for agricultural products while lifting millions from the depths of poverty. But if these market forces are handled incorrectly, they could leave smallholders without sufficient resources to resist becoming marginalized.

To foster a thriving agricultural sector that is inclusive of smallholders and supportive of a modern, diversified economy demands nothing short of an agro-industrial revolution. This revolution, at its core, must facilitate the development of strong links between markets and smallholders; in doing so, it will bring us closer to meeting the first Millennium Development Goal of halving global poverty and hunger by 2015. This 'people-oriented' strategy benefits producers and customers alike. By encouraging a marketplace that is both modern and inclusive, and by helping poor smallholder farmers enter those markets, we can improve the lives of millions living in poverty today – and feed the world's population of tomorrow.

By 2050,
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Assessing the current landscape

For far too many smallholder farmers, every day is a struggle to keep their heads above water; subsisting rather than profiting from their crops. Despite providing as much as 80% of the food locally consumed in Asia and sub-Saharan Africa, many of these farmers live inches away from crisis, fighting not to get ahead, but merely to survive. Without modern tools and techniques, yields are frequently too low to generate surpluses. Land and water are increasingly scarce and precious commodities. And commerce is further hindered by poor or non-existent infrastructure, and few buyers for small farmers' produce – particularly in the more remote areas.

At IFAD, we are trying to find solutions to these challenges by asking ourselves two key questions: first, can a farmer who lives on the edge of destitution be expected to take on additional risk by investing in higher-yield crops? Second, is there a way for the smallholder to enter the marketplace without facing marginalization?

The answer to both questions can be yes, and we have seen the success stories to prove it. One of them is Ahmad Abdelmunem Al-Far, who lives in Cairo and has become a successful entrepreneur. After joining an IFAD-supported project where he was granted a portion of newly reclaimed desert, access to a credit fund, systems for sewage and refuse disposal, and drip irrigation, Ahmad has built a thriving business. He now produces crops such as fava beans, onions, oranges, green peppers, and potatoes, and has joined 36,000 other participating farmers in the marketplace. These projects are successful because they recognize smallholders for what they are: potential entrepreneurs. By shifting our mindset to view smallholder farms as businesses seeking a profit, rather than a handout, we see remarkable progress.

IFAD supports projects like these in rural communities across the world, and in each region we see success stories like Ahmad's. With help from our partners, we are able to fund projects to develop local infrastructure, including last-mile roads, irrigation and water control systems; we are helping to reduce post-harvest losses, and we are assisting farmers in improving the quality of their produce.

Embracing the future

These improvements are critical, given the growth in the size and scope of supermarkets and the modern consolidated value chains that they have catalyzed in recent years. These supermarkets seek to provide high quality produce to their customers, and they impose ever more rigorous standards on their suppliers. They usually prefer to source from a few large suppliers, making it difficult for smallholder farmers to get a foothold in these new markets.

The transition from traditional to modern farming is often extremely difficult. To be successful, smallholders usually need support to run their farms as commercially-oriented businesses geared towards exploiting market opportunities. The *Rural Poverty Report 2011* finds that smallholders usually require new skills and knowledge to increase their productivity and respond to market requirements in terms of quality and phytosanitary standards. They also need access to real-time market information to tell them what the market is looking for. While smallholders are vulnerable when operating alone, when they join forces to create rural producers' organizations they can be highly effective. By forming these organizations, smallholders can bulk their demand for inputs and their marketed supply, and they gain greater leverage when negotiating with buyers, helping to ensure that they are given a fair deal for their produce. Navigating the modern marketplace becomes less daunting when there

is greater security. Formal contracts can strengthen the trust smallholders place in the market. And as urban customers increase their demand for processed products, new employment opportunities are created for rural workers and smallholders alike.

There must also be a focus on access to credit, which remains a key element in the ability of the smallholder farmer to participate in, and capitalize on, new market forces. Many banks are now working in rural communities to help farmers manage the risks of marketplace entry, and agro-processors are also providing production credit to their suppliers. There have been dramatic results from increased lending, and, from now on, smallholders need expanded access to longer-term funding to enhance their confidence when entering the marketplace.

Partnerships

Full-scale agricultural development in rural communities will hinge on the assistance of numerous actors: policymakers and public services, civil society organizations, non-governmental organizations and donors all play a crucial role in helping smallholders to engage more effectively in modern value chains. We know that governments have the capacity to expand smallholders' options when selling their products to local and global markets, and they can also increase public spending in agriculture. Private-sector investments can improve smallholders' access to markets and assist in implementing policies that include, rather than exclude their products. Donors are able to encourage farmers to organize, as well as work towards obtaining fair deals in value chains. Finally, governments, donors, and the private sector, may all help make smallholder farming viable for women and young people.

Today, many smallholders have unprecedented opportunities for economic and agricultural success. With training, organization and infrastructure, millions of poor people can escape the clutches of poverty. Rural women, men, and young people, may finally see the reality of profitable farming, and with that, the chance for better homes, education, and health for their families. As smallholders continue to enter modern markets, experience tells us that a flourishing rural economy will not be far behind.

Thriving rural communities

Agricultural growth is the driver of economic growth. This has been true across the centuries, and throughout the world, from 18th century England to 19th century Japan, and to 20th century China. With new agricultural development comes a vibrant rural life – both on and off the farm. ►

“To feed a hungry world, we need these young women and men to become modern smallholders, earning profits in the marketplace, but they also must have options for employment in rural non-farm work”

► Sixty per cent of the world’s rural population falls between the ages of 15 and 24, and many of these young people will eventually be faced with a choice: stay in their rural regions to work, or seek employment in cities.

To feed a hungry world, we need these young women and men to remain in rural communities and become contributing members to the rural economy. We need them to become modern smallholders, earning profits in the marketplace, but they also must have options for employment in rural non-farm work. Each dollar invested in agriculture generates between 30 to 80 cents in second-round income in the economy. This shows that profitable farming is critical not just for its own sake, but for its impact on the larger economic environment. Creating local demand for goods and services leads to non-farm employment and small-scale manufacturing, which in turn spurs agricultural growth.

Towards a prosperous future

We need only look to rural farmers in Ghana, the United Republic of Tanzania, and Viet Nam, to understand just how smallholders can lead agricultural and economic growth in the developing world. Indeed, GDP growth generated by agriculture is at least twice as effective in reducing poverty as growth in other sectors. Through sustained investment in the value chain, we can build on these successes and ensure that agriculture becomes an even more effective method for reducing poverty in rural communities.

The coming decades will bring real and fundamental changes to the way smallholders live and operate their farms. The risks are apparent, but the possibilities are abundant. The climate change challenge is real and we must ensure that our efforts are environmentally sustainable. But with smart incentives, creative thinking, and strategic support, many smallholders will not only be able to survive, but prosper. Agricultural growth through modern markets holds the potential for a life of greater financial security, stronger education, and better health care. In short, the marketplace may become the means to a better life.

Development will need to come from within the countries themselves, if we are to see the large-scale change that is needed to meet the Millennium Development Goals and to feed future generations. When developing nations make rural agricultural growth a priority, we can help sustain and support their efforts. There is no single magic policy that will work for all regions, but with a smart, locally-focused approach, millions can rise from the depths of poverty and achieve prosperity. IFAD remains committed to achieving this future. Smallholders will lead the way, and we will continue to lend a hand. ■



Near Arusha, United Republic of Tanzania. Workers between the greenhouses at a company that produces, grows and develops seeds for export to European vegetable growers and farmers.



Photo: Sven Torfim/Panos



Maggi products on a supermarket shelf. Photo: Nestlé

‘Creating Shared Value’ for society and shareholders

Nestlé CEO **Paul Bulcke** recognizes that the company’s success depends on creating value for everyone it touches – from the farmers who supply its products, to its employees, to its consumers, and to the communities where it operates.

There has always existed a deep interdependence and interconnectivity between economic activity and societal advancement. In recent times, however, there has been a worrying tendency for business to be seen as an unwelcome necessity rather than an indispensable partner. I believe the time has come to get the right perspective back on the relationship between business and society.

Fortunately, in recent years, a new definition of the role of business in society has emerged,

with a clear focus on long-term thinking and aligning the interests of shareholders and societies for mutual impact, or, to put it another way, Creating Shared Value (CSV). This is not a new approach or a new reality. It is what economic reality always should have been. CSV is simply a new way of framing the fundamental role of economic activity in society – to create mutual value.

First articulated by prominent thinkers like Harvard’s Michael Porter, the concept of CSV

had significant resonance for Nestlé as it closely echoes the way we have been going about “doing business” for decades. Its adoption has further clarified our existing approach and, together with our strong compliance and sustainable business practices, it will ensure that we continue to succeed over time, along with the societies we serve.

One thing that being in business for more than a century has taught us is the impact of focus. So, given the nature of our activities,

and our ambition to be the world's leading nutrition, health and wellness company, we have identified nutrition, water, and rural development as areas of focus for our CSV efforts. We identified these because they are intrinsically linked to our supply chain, and are where we can deliver the greatest impact.

Nutritional value

In the developed, as in the developing, world, this focus has delivered benefits for society, while enhancing our own competitiveness. Investments in improving the nutritional value of our products, in the long-term viability and living standards of rural communities, and in reducing our environmental impact, for example, are all improving the desirability of our products, while at the same time protecting the environment and having profound long-term benefits for society.

One of the best examples of this is our 'popularly positioned products strategy'. These highly accessible food products, sold mainly in lower-income regions, have enabled us to reach out to billions of consumers worldwide. By working with local governments to understand the needs of people in specific areas, and fortifying these products with essential micronutrients, we aim to help improve public health, as well as the popularity of our products.

To illustrate how broad-ranging this impact is, in 2010, we sold 90 billion servings of our fortified Maggi products, and used our scientific know-how to fortify our milk products with vitamin A, iron or zinc, depending on the needs of local populations, in 80 countries.

These products bring direct employment opportunities to impoverished regions, both in terms of our local production facilities, and our unique distribution methods that have so far created more than 6,000 micro-entrepreneurs, most of them women, in some of the poorest areas of Brazil, Thailand, and the Philippines.

Water usage

Our work with regard to water is also having a global impact. We have reduced our own water consumption and waste-water generation by two-thirds over the past decade, realizing substantial cost savings in the process. And we assist our suppliers in improving their water usage. With agriculture being one of the largest users of fresh water, helping farmers to adopt better water management will have a lasting and far-reaching influence. We invest in their communities and have provided clean

“We have identified nutrition, water, and rural development as areas of focus for our CSV efforts... they are intrinsically linked to our supply chain, and are where we can deliver the greatest impact.”

drinking water wells for schools in more than 100 Indian and West African villages. The sum of our work is healthier, more productive communities that are able to supply the quality raw materials we need.

The global availability of water is not just critical to our own operations; it is critical to life. We take this seriously and use our position to prompt action beyond our own business, for example, by educating children around the world in good water stewardship, and by championing integrated solutions to the world's water crisis through active participation in groups, such as the World Economic Forum Water Resources Group, and the UN Global Compact's CEO Water Mandate.

Rural development

Our third area of focus is rural development. With 70% of global poverty concentrated in rural areas, investment in these areas is crucial, particularly in building agricultural capacity. With 443 factories located all over the world, mostly in rural areas and more than half in developing countries, and as a major purchaser of agricultural produce globally, we represent an important source of this investment.

As early as the 1920s, we built factories in rural areas of Brazil and South Africa, and saw how these can be sources of development. By bringing new possibilities and facilitating infrastructure, such as roads and water treatment systems, we can cause lasting improvements to rural communities and give people fresh hope and ambition, with profound benefits for the future.

Agriculture has the potential to be a key driver of rural development. By engaging with farming communities and providing technical and financial assistance, we have helped

them to secure a better future for themselves. Today, we deal directly with nearly 600,000 farmers worldwide, affecting the lives of millions more.

Investing in productivity

As the world's largest processor of milk, we source nearly 12 million tonnes of milk, from around 30 milk districts worldwide, where we invest in helping farmers become more productive by providing free advice, vaccines, and access to financial support. Besides our milk districts, our most significant commitments to increasing farmer productivity and profitability have been 'The Cocoa Plan' and 'The Nescafé Plan'. Together, they will see us invest US\$700m in key rural development initiatives between now and 2020, including investments in research and development, tackling issues such as child labour and HIV, social projects, and in ensuring that Nestlé products have a zero deforestation footprint.

We know we do not have all the answers concerning the best ways to create shared value, so we invite new ideas from external stakeholders. The Nestlé CSV Advisory Board, a body comprising global experts in nutrition, water and rural development, has already given us invaluable perspectives into what we can do better. Based on its recommendations, this year we will be looking to further stimulate broad-based investment in rural development, and continue to raise serious concerns about issues, such as the deforestation effects of biofuels.

Creating Shared Value can also be used by the global community to prompt action on pressing issues, such as the need to double food production by 2050. We believe such concerns are best tackled through collaborative action, with governments, business, and civil society, working together, using the strengths of each partner for the advancement of all parties. Only then will it be possible to harness agriculture's ability to drive food security, environmental sustainability, and worldwide economic growth.

To conclude, there are two basic principles that we have seen as the drivers of CSV:

- the understanding that no company can be successful over time if its sole focus is on shareholders – it must also have a positive impact on society, and,
- the idea that free and open societies can only be successful in the long-term if there is a thriving economy with prosperous companies, which also recognize their mutual interdependence with the communities where they operate. ■

FARMING FOR

‘In 2050, mankind will have to produce



For **Helmy Abouleish**, managing director of Egypt’s SEKEM Group, biodynamic agriculture is not only the way to address major challenges such as climate change and food security, but is also the only way to achieve long-term competitiveness.

The world is facing multiple crises – economic, social and environmental. Developing countries are particularly affected as they struggle with weak and unequal economies, and find themselves located in regions that are the most susceptible to climate change. Both socially and environmentally, the agricultural sector plays a major role in the economies of developing countries: socially, because it is the sector that provides the majority of jobs, and because it tries to ensure food security – a crucial issue in the context of rising food prices and recent food riots; and environmentally, because it uses up to three-quarters of the world’s fresh water resources, and because established farming systems can cause soil erosion, pollution, and desertification. It is absolutely essential and urgent that the world turns away from standard agricultural practices and adopts more sustainable farming systems. But can such farming systems produce enough to feed the world at an affordable price?

The SEKEM agricultural model

SEKEM – a holistic, sustainable development initiative based on biodynamic agriculture – aims to do so. Biodynamic agriculture is a specific form of organic agriculture which, as defined by the Demeter ecological association, views the farm as “a self-contained, self-sustaining ecosystem responsible for creating and maintaining its individual health and vitality without any external or unnatural additions. [...] Soil, plants, animals and humans together create this image of a holistic living organism.”

SEKEM applies biodynamic agricultural methods, including the extensive use of compost, to turn desert lands into living and healthy soil. The use of resilient crops and natural predators negate the need for external inputs, such as chemical fertilizers and pesticides. Biodynamic agriculture means closed nutrient cycles, in which SEKEM rears livestock to produce its own compost, grows cereals to feed the livestock, and uses crop rotation to enhance soil fertility. The surplus is sold in supermarkets and organic shops, both nationally and internationally.

The cost factor

One crucial question posed when thinking of changing from the standard agricultural practice is: Will we face higher costs? The SEKEM model of organic, resource-efficient, and soil-protecting, sustainable agriculture requires 10-30% more manual labour on average than conventional agricultural production. Employing more workers usually leads to overall higher expenses. Also, organic products on supermarket shelves always cost more than the conventional alternative.

The logical conclusion must be that organic production is more expensive than business-as-usual production. But is that indeed the case?

The answer is no. Such a narrow economic view fails to take into account fiscal and socio-economic externalities which are not internalized in the market prize of organic products. To take Egypt as an example, there are energy and water subsidies which pro-

mote resource-intensive practices. Resource-efficient practices, such as biodynamic agriculture, do not benefit as much (if at all) from these subsidies, and are put at a disadvantage, with resultant market distortions.

The indirect cost-saving effects of more sustainable farming systems are also missing from this calculation. Healthy soils with a high content of solid organic matter increase the water holding capacity, decrease water consumption, and inhibit erosion. Compared to business-as-usual agricultural production, biodynamic agriculture’s increased energy efficiency, lower greenhouse gas emissions, and increased soil carbon sequestration, make it a superb tool to mitigate climate change. Resilient crops, crop rotation, and diversification methods such as agro-forestry, mean that the risk of crop failure is minimized. Intercropping and the absence of chemical inputs increase biodiversity. Moreover, lower expenditure on external inputs makes financial resources available to cover the costs of higher employment, thus promoting rural livelihoods. Biodynamic agricultural methods are also healthier as they don’t expose farmers, animals, soil, air, or surface water to hazardous chemicals.

To quantify the cost-saving effects of sustainable farming systems and their potential to mitigate and adapt to climate change is somewhat difficult. However, it is not only common sense, but also the opinion of the scientific community and of economic analysts, that there will be a tremendously positive economic impact. Furthermore, there is

THE FUTURE

enough food for nine billion people.'

another important factor to be taken into account, and that is the savings to be made on the cost of national healthcare systems when chemical pesticides and fertilizers are replaced by natural predators and compost. The health of farmers significantly improves, and the population can enjoy a wide variety of foodstuffs that do not contain any chemical residues.

Considering all the cost aspects, from labour to machinery and from subsidies to environmental and health costs, sustainable agriculture is today already cheaper. As energy prices rise, as water becomes scarcer, and as climate change becomes more severe, only sustainable farming systems will be viable and affordable.

Feeding the world

In 2050, mankind will have to produce enough food for nine billion people. The availability of, the access to, and the affordability of, sufficient nutrients are the defining criteria of food security that have to be taken into consideration when choosing the farming system of tomorrow.

● **Availability:** Contradicting the long-established belief that external inputs such as chemical fertilizers are necessary in order to substantially increase food production, an increasing number of scientists, policy panels, and experts, such as Olivier de Schutter, the United Nations' Special Rapporteur on the Right to Food, are now claiming that resource-conserving, low external input techniques have a proven potential to significantly

improve yields. In traditional farming systems in developing countries, and in regions where soils are degraded, yields can be increased up to 200%.

● **Access and affordability:** The rural areas where the greatest yield increases could be achieved through eco-intensification methods, such as agro-forestry, are often the same regions where poverty and hunger are widespread. Increased yields would therefore directly tackle access to food, and nourish the farming population. As sustainable farming systems are more labour intensive, a substantial amount of jobs would be created which, in turn, would enable many more people to buy foodstuffs for their families.

The future

Today's prevailing agricultural paradigms need to be transformed. In the developed world, industrial agriculture achieved high productivity levels, primarily through the extensive use of chemical fertilizers, pesticides and herbicides, of water, and of transportation fuels. Traditional agriculture, mostly in developing countries, often results in deforestation and the excessive extraction of soil nutrients. Sustainable modes of agricultural production represent the only solution that can provide sufficient quantities of affordable and nutritious food for our growing global population.

In these times of change, as we have recently experienced in Egypt, the window is open for renewed and intensified efforts to promote sustainable solutions to the great challenges that we face. ■



The core businesses of the SEKEM Group are land reclamation, organic farming, food, phyto-pharmaceutical, and textile production. SEKEM was founded by Dr. Ibrahim Abouleish in 1977, and today is the leading organic farming and food processing company in Egypt, employing around 1,500 people. The herbs, fruits, and vegetables cultivated on the company's farms are processed to create high-quality food and medicines, which are sold on the national and international market. The SEKEM companies include the largest packer of organic tea and the leading producer of herbs in the Middle East. SEKEM is well-known for its corporate social responsibility efforts in the communities where it has operations, and is internationally recognized for its sustainable development role.



COUNTRY FEATURE Ethiopia

Peter Gill was one of the first journalists to report on the Ethiopian famine in the mid-1980s. Twenty five years later, he sees the country implementing pro-poor economic policies, and senses real grounds for optimism.

What happens in Ethiopia has always mattered in the world. For a start, this is where human history actually began. Ethiopia then became one of the great powers of the ancient world, and was Christian before most of Europe. It saw conflict between Christianity and Islam, but today these two communities live largely amicably together. Alone in Africa it resisted European colonialism, and retains its spirit of independence. Then, in the modern world, it became a byword for poverty and wretchedness.

The great famine of 1984-5, where hundreds of thousands died, disfigured Ethiopia's reputation and launched the modern era of aid. A quarter of a century later, the country remains critically dependent on outside help, and is still stuck with those old images, but the government that has been in power for the past 20 years has kept its sights steadily on the economic transformation needed to consign death by hunger to history.

A generation ago, it was the town of Korem, in northern Ethiopia, which had the largest famine camp, and thus drew in the television teams. There is now a primary school and a brand new hospital on the site of the old camp. When I visited, local administrators were preparing for a special symposium on the famine, promoted with posters saying, 'No More Deaths from Hunger' and 'Never Again, End Hunger.'

Throughout the north, Ethiopia's heartland and political power base, the development effort is impressive. After decades of environmental degradation, the hills are at last getting greener again. Water conservation and irrigation projects proliferate, in a land still dependent on the rains. Behind it all is a government which honours its past revolutionary links with the peasantry, and sees development as a social campaign, as much as economic management.

With conscious deliberation, Ethiopia has avoided a popular helter-skelter rush to the cities by concentrating investment in the countryside. Land continues to be state-owned, and cannot be bought and sold. Even a marginal existence on a small rural plot may be preferable to destitution in a city slum. The pace of urbanization is picking up, but it is the pull of job prospects in the town, often for a younger, better-educated generation, and not the push of penury on the land which is driving it. The aim is to bring about social evolution, not a crisis of dislocation.

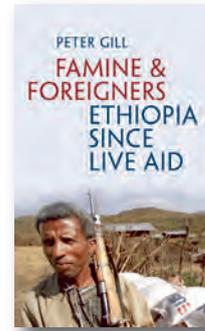
Away from the social sector and relief projects of Western aid, there is a more important development effort under way. It is financed by soft international loans, and executed by the Ethiopians themselves – and by the Chinese who are fast becoming the most important external players in Africa's long looked-for renaissance. This is an

infrastructure revolution, comprising not just roads, but telecommunications as well. In remote corners of Ethiopia, I have witnessed teams of Chinese engineers from these sectors advancing in lock-step across the highlands.

The man who presides over this is one of the most outstanding Africans of his generation. The résumé of Prime Minister Meles Zenawi tells a larger political story about the end of the 20th century and the beginning of this one. He was a Marxist medical student who broke off his studies to join, eventually to lead, a guerrilla struggle. When he assumed power in 1991, he faced a ruined country that had to make its way in a capitalist world. He has consistently impressed both world leaders and Nobel prize-winning economists with his analysis of Ethiopia's needs and the dexterity of his policy implementation.

Meles Zenawi is no liberal democrat, but does nevertheless aim to plant lasting popular institutions in Ethiopia. For these to take root, he believes a measure of prosperity is essential. So, there must first be a period of state-directed economic growth and state-directed political institutions. Such a political philosophy sits uneasily with the West, but those who believe that a square meal is also a human right should pay careful attention to his plans for Ethiopia. ■

Ethiopia: Defining



Peter Gill, a journalist and documentary film-maker specialising in development issues, is the author of *Famine and Foreigners: Ethiopia since Live Aid*, recently published by Oxford University Press.



Photo: Eric Lafforgue

its own path

A school in southern Ethiopia. An outline of the country's borders has been drawn on the wall.

In the following extracts from recent interviews and speeches, Prime Minister **Meles Zenawi** provides some details about his vision for sustainable development in Ethiopia.



UN Photo/John McIlwaine

Building a developmental state

In late 2010, the government of Ethiopia unveiled an ambitious five-year Growth and Transformation Plan (GTP) which aims to double agricultural production and to sustain the double-digit GDP growth registered on average over the past five years. At the launch of the plan, Meles Zenawi told reporters, “In the future, we will feed ourselves...I think it's quite achievable over the next five years.” In March 2011, he gave the following update on the implementation of the GTP:

“There are two key bottlenecks to the implementation of the GTP. The first one being finance, and the second one being implementation capacity. In terms of finance, we have been doing quite a lot to see what we can do to identify the gaps and find sources to fill the gaps. In terms of the five-year budget, we are pretty well covered. This assumes that the loans and grants that we get from abroad will be maintained at the current level...

In terms of implementation capacity, we

have started well with building up the capacity, both in terms of the ministries and public enterprises, and support for the private sector. Particularly in the public enterprise sector, we have done quite well in establishing the Basic Metals and Engineering Corporation, and beefing up its capacity. It has now reached a stage where it can accept contracts to build factories locally, such as sugar factories, and manufacture adequate amounts of spare parts for manufacturing, the automomo-



COUNTRY FEATURE Ethiopia

tive sector, and so forth. So, quite a lot of import substitution work is being done already by the Corporation.

We are looking at radically improving the competitive nature of the construction sector. We hope to assist in the establishment of hundreds of local construction companies. We have prepared the finances to support them, and have procured the earth-moving machinery for these companies. We are going to have to build quite a few industrial towns. For example, in the southern Oromia region, we hope to develop about 150,000 hectares of sugar estates, with about six sizeable sugar factories, and that will mean about six small towns. We will be building four or five additional sugar estates, and about seven fertilizer factories in the western Oromia region, and that will mean a sizeable town needs to be built there.”

At the *Hydropower for Sustainable Development 2011* conference that took place in the Ethiopian capital, Addis Ababa, at the end of March, Meles Zenawi outlined his government’s plans to power the country’s sustainable development.

“Our government has decided to exploit Ethiopia’s abundant resources to generate electricity from renewable sources, not only to relieve the acute shortage of electric power that we currently face in our country, but also to export power to neighbouring countries which are less endowed in renewable sources of energy. Indeed, Ethiopia has developed plans to achieve zero net emissions of carbon by 2025, an ambitious and noble target set by only a handful of countries in the world, partly because it is aware of its potential.

Our plan for 2025 is based on three pillars. The first pillar is to generate virtually all of our electricity from clean and renewable sources, centred on hydropower, but one that also includes wind, geo-thermal, and biogas from sugar plantations as important supplementary sources of power. The second pillar of our plan is to maximize the use of electricity and bio-fuels for transport and other

“In the future, we will feed ourselves...I think it's quite achievable over the next five years.”

energy needs. The third and final pillar is to carry out a massive re-forestation programme of degraded land to, among other things, serve as a huge carbon sink. In this regard, we plan to re-forest over 15 million hectares of degraded land in the coming years. In other words, our ambitious plans to build up to 8000MW of additional capacity from hydropower in the next five years will not only contribute to filling the infrastructure gap in our region that everybody agrees needs to be removed expeditiously, but will do so in a manner that will help reduce our carbon emission to zero and help neighbouring countries to reduce their emissions significantly.”

Addressing the African Union’s conference of ministers of economy and finance in late March, Prime Minister Meles Zenawi advised African countries to strengthen the role of the state and to invest heavily in infrastructure.

“The debate on a new development paradigm, centred on the concept of a ‘developmental state’, is welcome and long overdue. The neo-liberal paradigm of growth has failed to bring prosperity to Africa. Their three decades’ long campaign against state activities has not resulted in sustained growth and economic transformation. It has failed to do so because, among other things, its restless campaign to enfeeble the African state and its role in the economy has not succeeded in overcoming the environment of unproductive and pervasive rent-seeking. If anything, such rent-seeking activities have become worse and more entrenched in the era of neo-liberal dominance. This suggests that the neo-liberal paradigm has got it wrong both in terms of understanding the source of the underlying problem and the solution it prescribes.”

“One of the biggest threats to the continued growth of our economies is a massive gap in infrastructure development in our countries. While the private sector has to play a significant role in overcoming the gap, the state has to play the leading and vital role in this sector. Three decades of waiting for the private sector to address our infrastructure gap has only served to widen that gap. We cannot afford to wait any longer. We should embark on a massive programme of both public and private investment in infrastructure, if we are to have any chance of sustaining the limited growth we have achieved in the recent past. The recent G20 decision to mobilize some of the excess savings in the world for infrastructure investment in Africa becomes a decision of vital significance to us. We need to engage the G20 actively to ensure that adequate resources are mobilized for investment in infrastructure in Africa, and that the lion’s share of those resources is directed towards public investment in infrastructure. We have to begin to act differently now.” ■

Can palm oil be sustainable?

About 50 million tons of palm oil are produced every year – and that number is certain to only rise. Demand has been driven by yield, which in the case of palm oil, is close to six times more per hectare than canola oil. Given these exceptional yields, farmers have been planting oil palms at a rapid clip, raising concerns over its environmental and cultural impacts. As a result, various advocacy groups have blamed the increase in palm oil production for creating detrimental agricultural practices, destroying vulnerable rain forests and peat lands, and having negative consequences for native cultures. Today, around 8% of palm oil is produced to “sustainable” standards that attempt to mitigate the damage of mass palm oil production through less invasive production methods. However, sustainable palm oil production may prove more costly and less efficient than business-as-usual production.

The ubiquity of palm oil

In the past thirty years, palm oil has seen exponential growth in production. It is expected that annual palm oil consumption will increase from its current levels of 38 million tons to 63 million tons by 2015, and continue to 77 million tons by 2020. Indonesia is the world's largest producer of palm oil, but a growing number of countries are becoming viable competitors on the global palm oil market, including Malaysia, Colombia, Brazil, Nigeria, Liberia, Thailand, and Uganda.

This growth is driven not only by palm oil's cost-effectiveness, but also its multiple applications in the development and production of a variety of fats and foods, such as baked goods, condensed and powdered milk, French fries, concentrated foods, and supplements in animal food. Palm oil also reaches into non-edibles such as soaps, detergents, candles, cosmetics, glue, printing inks, lubricants for machinery, and biofuels.

Because it is used in such a variety of products, industries that are heavily dependent on palm oil would be hard pressed to find a suitable, similarly high yield and cost-effective alternative.

Johanna Sorrell writes about the environment and sustainability for the [2degreesnetwork](#).

Johanna Sorrell asks if large-scale sustainable production of palm oil is a viable option for the palm oil industry.

All purpose or all problem oil?

With the rapid growth of the palm oil industry has come the degradation of large tracts of fragile lands. In order to produce oil palms at scale, many plantations have employed destructive slash-and-burn techniques turning forests into neat rows of oil palms, replacing the dynamic ecosystems of the rainforest with a monoculture crop. Damage to ecosystems includes:

- the destruction of tropical rain forests to make way for new oil palm production;
- the discharge of palm oil mill effluent which kills aquatic wildlife;
- the displacement of indigenous people and subsistence farmers.
- the loss of habitat and subsequent loss of wildlife, with an especially detrimental impact on global orangutan populations;
- the burning and draining of large tracts of peat lands, which are important absorbers of CO₂;

Certain corporations, both producers and purchasers, have been targeted by advocacy organizations for their involvement, either direct or indirect, in these practices. Social marketing campaigns have proven very effective in initiating modification of corporate purchase and sourcing behaviours, a prime example being Greenpeace's viral Kit Kat video asking Nestlé to stop buying palm oil from destroyed rainforest lands. As a result of the campaign, Nestlé immediately stopped buying palm oil from Sinar Mas (Indonesia's largest palm oil and pulp company, and a planter that Greenpeace claims openly destroys rainforest to expand palm plantations). Nestlé also linked up with The Forest Trust (a charity that looks to halt illegal logging by tracing consumer products to their source), which will help Nestlé form guidelines for more sustainable palm oil purchase. Nestlé is currently purchasing 18% of its palm oil from “green” sources, is expected to hit 50% by the end of 2011, and plans to source all of its palm oil needs from environmentally friendly sources by 2015.

Is sustainability an option?

Although the environmental and social impacts of palm oil production have been heavily criticized by a number of stakeholders, predictions of doom and gloom may yet be avoided with the implementation of sustainability practices that are currently underway through concerted efforts of both the for-profit and non-profit sectors.

Creating access to information is a key component of change for many organizations attempting to influence a shift in corporate behaviour. For example, in 2009, the WWF produced the Oil Buyers Scorecard, essentially exposing many large-scale palm oil buyers who have claimed eco-conscious purchase methods, yet failed to meet their own standards.

Many large corporations have begun shifting their production and purchasing of palm oil to address advocacy group and consumer concerns. For example, as part of Avon's Hello Green Tomorrow initiative, the company announced Palm Oil Promise – a company-wide global commitment to sustainable palm oil, which commits them to 100% sustainably certified palm oil purchases. Other sustainability-driven options have surfaced over the past few years, and large-scale industry stakeholders are beginning to implement standards set out by these organizations. The leading group – The Roundtable on Sustainable Palm (RSPO) – has collaboratively worked towards creating a set of global standards to guide the palm oil industry toward sustainability. Currently, the RSPO has over 400 members, including NGOs, investors, palm oil producers, and major corporations, including Unilever Global, Cognis, and IOI.

Although the RSPO is the largest organization helping to steward the palm oil industry closer to sustainability, it is also an organization based in large part on voluntary standards. Unsurprisingly, numerous activist organizations have accused the RSPO of ‘green tagging’, and have identified what they see as major loopholes in the principles and criteria set out in the standards created by the RSPO. For example;

- Friends of the Earth has accused the RSPO of being a “limited tool of technicality, which is not able to adequately address the horrendous



A worker sprays paraquat weed killer at an oil palm plantation on the outskirts of Kuala Lumpur. Paraquat is banned in the European Union, yet millions of field labourers across Asia use the chemical to kill weeds and some face serious health risks as a result.

impacts of oil palm cultivation on forests, land and communities”;

- Greenpeace is both a supporter and critic of the RSPO, but has noted the continued deforestation by companies which are members of the RSPO;

- The Rainforest Action Network also supports certain efforts of the RSPO, yet has expressed intense dissatisfaction with some of the RSPO’s processes.

While creating and talking about standards is one thing, implementing them is another story altogether. To address this, GreenPalm, a certificate trading programme designed to help ensure the sustainable production of palm oil, has been initiated. GreenPalm serves as a form of ‘middle man’, helping purchasers of palm oil to buy certification credits to ‘offset’ their purchases, mainly due to the fact that purchasing directly from a segregated supply of sustainably produced palm oil is often extremely difficult. Each credit purchased represents a premium paid to sustainable producers for a ton of palm oil, helping to ensure and reinforce the sustainability of the supply chain.

Although these systems are far from perfect, they are evolving tools to help steward palm oil toward more sustainable production, and will hopefully continue to evolve real and attainable sustainable standards from plantation to purchase.

Where do we go from here?

Higher demand and greater consumption, coupled with a lack of available agricultural land due to competition with other crops and with stakeholder contention, will make palm oil production more challenging in the future. With no near-term end in sight for the growing demand for palm oil, it remains to be seen whether the palm oil industry will be able to maintain current production levels should sustainability measures be applied across the board, raising concerns for heavily invested industry players. Consumer and industry education, as well as embracing opportunities for engagement on all levels, will play a major role as production inevitably continues – sustainably or otherwise.

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Photo: Zainal Abid Halim/Reuters

VANDANA SHIVA



“Biodiverse systems can produce two to five times more food per acre than the industrial monocultures”

Navdanya is a movement that I started in 1987, and here at the Navdanya farm (Uttaranchal, north India), the first thing that we do is to save seeds. We have saved more than 1,500 varieties. It is also a place where farmers come to get seeds. In addition, it is an organic farm, and I am happy because when we started it was a eucalyptus ‘desert’, and because we

have practiced organic farming now the soils are alive, the pollinators have come back, and the butterflies are busy. It has become a biodiversity sanctuary. The third thing that we do is knowledge generation, both in terms of training and research.

Our research shows that ecological, biodiverse systems can produce two to five times more food per acre than the industrial monocultures. The lie of industrial farming and the lie of genetic engineering have been put to rest by the practices of this farm. From the seed we learn renewal, generosity, multiplicity and diversity.

“We have to save seeds”

There is a global emergency because seeds have been appropriated and colonized. Corporations have declared that seeds are their intellectual property, and the only way that they can get the intellectual property is by modifying and mutilating by genetic engineering. So we have a double hazard – the hazard of genetic engineering and the hazard of seed patenting.

We have seen what this combination does in the area of cotton. India is the land of cotton. We used to grow 1,500 varieties. This is the land where Gandhi spun freedom through cotton.... The seed is today’s spinning wheel, but today the seed is under threat, because all the cotton we can spin now is genetically engineered Bt cotton, under the control of one company, Monsanto. That’s why, if we don’t save seeds, all the diversity will be gone forever, and with it the memory that is in the seed – the ecological memory

and the cultural memory. And with it will go the livelihood of farmers. The takeover of Bt cotton has pushed farmers into such deep debt that they are now committing suicide. We have had 250,000 suicides in the last decade in India. We can’t see that happen with the growers of corn, of tomatoes, of onions, of rice. We have only had experience with one crop – cotton – and we have seen what it does. It devastates Nature. It devastates farmers. It devastates agriculture. We have to defend life. That’s why we have to save seeds. We have to defend our freedom. That’s why we have to save seeds.

Working with Nature

Ecological farming, organic farming is working with Nature and that means that first of all you protect Nature. You are not at war with Nature because industrial agriculture has come out of war and it perpetuates a war against Nature and the Earth.

Secondly, it is farmer-friendly. An agriculture based on war sells war-chemicals to farmers, and sells genetically modified, patented seeds to farmers. Those farmers get into debt and either they leave the land and become refugees or migrants, or they end their lives. An agriculture that is ecological works with internal inputs that the farm provides, that the Earth provides. The soil fertility comes from the crops that the Earth provides, and the pest control comes from the diversity that the Earth gave. You don’t need to buy anything in the market. The Earth is generously saying, “Take everything from me”

Thirdly, it is beneficial for the person eating because when you produce food in Nature’s way, you produce healthy food, delicious food, diverse food, nutritious food....

“We have to defend our freedom. That’s why we have to save seeds”

“You don’t need to buy anything in the market. The Earth is generously saying, “Take everything from me”

VANDANA SHIVA is a philosopher, scientist, environmental activist, and eco-feminist. She is the founder of Navdanya, an Indian-based non-governmental organization which promotes biodiversity conservation, organic farming, the rights of farmers, and the process of seed saving. In 1993, she was awarded the Global 500 Roll of Honour by the UN Environment Programme (UNEP) for outstanding environmental work. She is the author of many books, the most recent of which, *Staying Alive: Women, Ecology and Development*, was published in 2010.

'STAYING ALIVE'

Genetic engineering

Let's look at the science of genetically modified crops. Genetic engineering only relocates a single gene with a single property. The only genes that have a single property are toxic genes for producing toxins. Everything else that has a positive property – yield, resilience to drought and to floods – or that relates to issues of colour, flavour, and taste – they are multiple genes. You can't relocate multiple genes through genetic engineering. It is a highly crude tool. It is like with a gun, all you can do is shoot. With a 'gene gun', all you can do is shoot one gene with one trait. Life is too complex. You cannot shoot life's complex, self-organizing capacity. You can love it, maintain it, be aware of it, but you cannot shoot it. It is a primitive and crude technology.

"In India, they said genetically engineered cotton would provide 1,500kg per acre... it is only 500kg per acre. Our varieties exceed this!"

acre. But the company, after lying to farmers, pushing them to suicide, had to admit that it is only 500kg per acre. Our varieties exceed this! We have just distributed traditional cotton varieties to farmers in the 'suicide belt', and they have a higher performance. They don't grow in a monoculture.

The only two applications that have been spread in the world – because of the crudeness of the technology – are for herbicide-resilient crops and Bt toxin crops. One has a toxic gene for tolerating high doses of the company's own herbicides, and the other has a toxic gene to produce a pesticide inside the plant. One was supposed to control weeds, the other to control pests. One has given us 'super-weeds' – so serious is the damage that millions of acres in the United States are now devastated, and Monsanto is bribing farmers to go and buy more lethal herbicides to spray on the super-resis-

The promise that genetic engineering would produce more food – which was a lie technically from the beginning – has now been exposed. In India, they said that the cotton that had been genetically engineered would provide 1,500kg per

tant 'Roundup weeds'. As for the other, the Bt toxin, in India, the bollworm is resistant, and Monsanto is now selling *Bollguard II*. New pests have emerged everywhere, and farmers are spending more on pesticides.

Genetically modified crops, which were brought in as an alternative to chemicals, have increased the use of chemicals, which is 'wonderful' for the industry because the bio-tech industry is the agro-chemical industry. People need to recognize this to know that it is not an alternative. The alternative is ecological farming.

Feeding the cities

The first thing to say about these projections about the growth in the world's urban population is that they are very patriarchal. They come out a hugely manipulative, controlling, patriarchal mind. They come out of the World Bank saying, "Let's push the farmers out of the countryside", saying that there are "too many farmers". There are never too many farmers! A two acre farmer is not taking anything away from anybody. The person grabbing the land is the problem. The ecological footprint is the footprint of industry, of globalization.

We actually need more people on the land, and I am working for a vision where we won't have 70% of the world's population living in cities. But, whatever the numbers, every city should have its own 'foodshed'. Food should become part of town planning. Not only should cities, according to their size, have surrounding areas that provide food according to the culture, according to the climate, according to seasonality, so that every city is supplied by localized food systems, but also, inside every city, there must be urban gardens.

"Every city should have its own 'foodshed'"

● Interview by Bhavani Prakash, an environmental activist based in Singapore and founder of www.ecowalkthetalk.com – an environmental website with an Asia focus.

"Genetically modified crops, brought in as an alternative to chemicals, have increased the use of chemicals"

Food crises: architects needed

By **OLIVIER DE SCHUTTER**, United Nations Special Rapporteur on the Right to Food

World Bank President Robert Zoellick recently listed measures that the G20 should adopt to prepare us to confront food crises, now and in the future. Although welcome, these measures tackle only the symptoms of the global food system's weaknesses, leaving the root causes of crises untouched. They may mitigate the consequences of peak prices, but they are inadequate for avoiding the recurrence of shocks. This can be accomplished if the G20 acts on eight priorities.

The G20 should support countries' ability to feed themselves. Since the early 1990s, many poor countries' food bills have soared five- or six-fold, owing not only to population growth, but also to their focus on export-led agriculture. A lack of investment in agriculture that feeds local communities makes these countries vulnerable to international price shocks, as well as to exchange-rate volatility. Mozambique, for example, imports 60% of its wheat consumption, and Egypt imports 50% of its food supplies. Rising prices directly affect these countries' ability to feed themselves at an acceptable cost. This trend must be reversed by allowing developing countries to support their farmers and, where domestic supply is sufficient, protect them from dumping by foreign producers.

Food reserves should be established, not only for humanitarian supplies in disaster-prone, infrastructure-poor areas, but also as a means to support stable revenues for

agricultural producers and ensure affordable food for the poor. If managed in ways that are transparent and participatory, and if countries combine their efforts regionally, food reserves can be an effective way to boost sellers' market power and counteract speculation by traders, thereby limiting price volatility.

Financial speculation should be limited. While not a cause of price volatility, speculation on derivatives of essential food commodities significantly worsens it. Such speculation was enabled by massive deregulation of commodities-derivative markets that began in 2000 – and that now

must be reversed. The major economies should ensure that such derivatives are restricted as far as possible to qualified and knowledgeable investors who trade on the basis of expectations regarding market fundamentals, rather than mainly or only for short-term speculative gain.

Many cash-strapped developing countries fear that social safety nets, once put in place, may become fiscally unsustainable, owing to a sudden loss of export revenue, poor harvests, or sharp increases in prices for food imports. The international community can help overcome this reticence by establishing a global reinsurance mechanism. If premiums were paid in part by the country seeking insurance and matched by donor contributions, countries would have a powerful incentive to implement robust social-protection programmes.

Farmers' organizations need support. One major reason why the majority of the hungry are among those who depend on small-scale farming is that they are insufficiently organized. By forming cooperatives, they can move up the value chain into the processing, packaging, and marketing of their produce. They can improve their bargaining position, both for input purchases and for the sale of their crops. And they can become an important political constituency, so that decisions made about them are not made without them.

We must protect access to land. Each year an area greater than France's farmland is ceded to foreign investors or governments. This land grab, which is occurring mostly

“By forming cooperatives, small-scale farmers can move up the value chain into the processing, packaging, and marketing of their produce. They can improve their bargaining position, both for input purchases and for the sale of their crops.”

in sub-Saharan Africa, constitutes a major threat to the future food security of the populations concerned. Whatever gains in agricultural production result from these investments will benefit foreign markets, not local communities. The G-20 could call for a moratorium on these large-scale investments until an agreement on appropriate ground rules is reached.

The transition to sustainable agriculture must be completed. Weather-related events are a major cause of price volatility on agricultural markets. In the future, climate change can be expected to cause more supply shocks. And agriculture is also a major culprit in climate change, responsible for 33% of all greenhouse gas emissions if deforestation for cultivation and pastures is included in the tally. We need agricultural systems that are more resilient to climate change, and that can contribute to mitigating it. Agro-ecology points to solutions, but strong support from governments is needed to scale up existing best practices.

Finally, we need to defend the human right to food. People are hungry not because too little food is being produced, but because their rights are violated with impunity. Victims of hunger must be allowed to access remedies when their authorities fail to take effective measures against food insecurity. Governments must guarantee a living wage, adequate health care, and safe conditions for the world's 450 million agricultural workers by enforcing the conventions on labour rights in rural areas, subject to independent monitoring.

Hunger is a political question, not just a technical problem. We need markets, of course, but we also need a vision for the future that goes beyond short-term fixes. The global food system will always need firefighters. But what we need more urgently are architects to design a more fire-resistant system. ■



Photo: Marian Steinbach

Packaging: key to more food and economic development

By **KENNETH MARSH**, president of Kenneth S. Marsh & Associates, Ltd., consultants to the food, pharmaceutical and packaging industries.

All member nations of the United Nations have pledged to reduce world hunger by 50% by the year 2015 as part of the Millennium Development Goals (MDG). Most efforts to reduce hunger centre on agricultural production – producing more food. This is very important but does not take into account the 20-60% of annual

worldwide food production that is lost between harvest and end-user in the food chain. These post-harvest food losses are enormous, and present an opportunity and need for improved packaging.

Food is lost to over-ripening, poor storage at farm and distribution levels, during transport from farm to market, from crushing, bruising, oxidation, water transfer, and attack by rodents, birds, insects, and microorganisms. Cultural factors and legal requirements also play ➤

➤ a major role in post-harvest food losses. Perfectly good food is thrown away everyday because of legal requirements in public food services.

Food losses occur in every country. Sophisticated multinational companies may claim to have no losses. In fact, they have significant losses that are not even acknowledged in their accounting books. For example, a standard shrinkage allowance in shipping enables companies to price goods to compensate for anticipated losses. Losses not exceeding one quarter to one half a percent shrinkage allowance per transfer are considered a zero loss. This may seem inconsequential, but it does add up. For example, with an allowance of one half a percent per transfer, eight transfers made for one shipment allows for 4% loss without any acknowledgement. For one million bushels of corn, this would amount to 40,000 bushels that “evaporate” from accounting records. With corn currently costing about US\$5 per bushel in the United States, this would amount to US\$200,000 of lost revenue. But no one would know how much grain was actually lost because, in official accounting records, the loss would be recorded as zero.

In general, packaging materials and machinery are available in both developed and developing countries. However, developing countries tend to experience higher levels of post-harvest food losses, and they tend to underestimate the potential of packaging to reduce these losses. A study conducted in Sri Lanka, for example, demonstrated that collapsible plastic crates could reduce crushing/bruising damage of fresh produce by 20%, yet produce is often transported in jute bags because they are much cheaper. Packaging is viewed as an expense, rather than an opportunity.

Packaging also offers opportunities for promoting international trade. It is the packaging “presentation” that sells a product for the first time. Very high-quality products that are well known in their country of origin often fail on export because packaging was chosen for its minimal cost to protect the product, and lacked adequate presentation value to a new market that was unfamiliar with the product. Such scenarios are evident in both developed and developing countries.

Food products recovered from improved packaging can be used to reduce hunger, and can also be used as inputs for value added products. An official with the UN Food and Agricultural Organization (FAO) developed a programme of economic development through village-level food processing. The concept was to produce value-added packaged food products from recovered food with limited shelf life. Ripe bananas, for example, last days, but packaged fried banana chips last for months and therefore command higher prices. The village food processing programme has already led to economic development in four countries in South East Asia - yielding more food, as well as enhanced economic security that helps purchase more food. None of this would be possible without packaging.

It is now time for packaging and post-harvest technologies to be recognized as joint contributors to reducing hunger - equal to the more traditional efforts to boost agricultural production. ■
A version of this article originally appeared in the World Packaging Organization’s newsletter, December 2010. It is reprinted with permission of the author and of the World Packaging Organization.

Biofuels: ethics and policy

By **DR ALENA BUYX**, Assisant Director of the Nuffield Council on Bioethics which recently published the report, *Biofuels: ethical issues*.

The development of biofuels has been driven by three key global challenges: maintenance of energy security, economic development, and mitigation of climate change. The apparent potential of biofuels to address all three of these challenges has made them an attractive option to policymakers, and a range of policy mechanisms that encourage the development and uptake of biofuels are in place. For example, the European Union’s 2009 Renewable Energy Directive effectively established that biofuels should account for 10% of transport fuel by 2020 – a target that Europe seems to be on track to meet.

However, current methods of biofuels production have been widely criticized for their effects on the environment, on food security and prices, and on the human rights of workers and communities. For example, the conversion of forests to palm oil plantations in Malaysia has raised concerns over detrimental impacts on biodiversity in the region and land grabs by palm oil producers may be forcing out indigenous communities.

A key challenge, therefore, is to ensure that policy decisions around biofuels are

made in the full awareness of the ethical implications. Drawing on moral values such as human rights, solidarity, sustainability, stewardship and justice, the Nuffield Council on Bioethics has set out five ethical principles that policymakers should use to evaluate biofuel technologies and guide policy development.

- 1) Biofuels development should not be at the expense of people's essential rights (including access to sufficient food and water, health rights, work rights and land entitlements).
- 2) Biofuels should be environmentally sustainable.
- 3) Biofuels should contribute to a net reduction of total greenhouse gas emissions and not exacerbate global climate change.
- 4) Biofuels should develop in accordance with trade principles that are fair and recognize the rights of people to just reward (including labour rights and intellectual property rights).
- 5) Costs and benefits of biofuels should be distributed in an equitable way.

To implement these principles, the Council proposes that European and national biofuels targets should be replaced with a more sophisticated target-based strategy that considers the wider consequences of biofuels production. The strategy should incorporate a comprehensive ethical standard for all biofuels developed in and imported into the European Union, enforced through a certification scheme. Ideally, the principles should also be embedded into wider international policies on, for example, climate change mitigation, environmental sustainability, land use, and human rights.

There is a sixth ethical principle in the Council's report:

- 6) If the first five principles are respected and if biofuels can play a crucial role in



Photo: iStock

mitigating dangerous climate change then, depending on certain key considerations, there is a duty to develop such biofuels.

The development of new biofuels is a rapidly growing field of research, focusing on the use of biomass feedstocks that can be produced without harm to the environment; that are in minimal competition with food production; that need minimal input of resources such as land and water; that can be processed efficiently to yield high-quality liquid biofuels; and that are deliverable in sufficient quantities.

Two of the main approaches in development are biofuels made from the non-edible parts of crops (known as lignocellulosic biofuels), and biofuels made from algae. However, commercial scale production is many years away for most new types of biofuels. This is due, in part, to the large discrepancy between the powerful targets and related penalties that

are in place for currently used biofuels, and the very few incentives for developing new biofuels. Governments should therefore do more to support this research, for example by encouraging research funders to develop and implement policies that directly incentivize research and development of new and emerging biofuels technologies that will need less land and other resources, avoid social and environmental harms in production, and will deliver significant greenhouse gas emissions savings. ■

Biofuels: ethical issues can be read online at: www.nuffieldbioethics.org/biofuels

The ‘new bottom billion’

The next issue will look at the challenges of governance in the era of globalization. Setting the scene for this subject, the Institute of Development Studies’ **ANDY SUMNER** outlines some of the policy implications resulting from the revelation that most of the world’s poor live in middle-income countries.

Popular understandings of global poverty are based on the false premise that poor people all live in poor countries. In fact, there’s a new bottom billion – 960 million poor people, or 72% of the world’s poor – and they live not in poor countries but in middle-income countries (MICs). Only a quarter of the world’s poor live in the remaining low-income countries (LICs), which are largely in sub-Saharan Africa. This is a dramatic change from just two decades ago when 93% of poor people lived in low-income countries.

The poor haven’t moved, of course. The

countries in which many of the world’s poor live have got richer, in per capita terms, and have been reclassified. With growth, countries transitioning from low- to middle-income status under World Bank classifications have led to this new bottom billion. China and India together account for about half of the world’s poor. However, the story isn’t just that India and China have been upgraded to MIC status. If those two countries are removed, the proportion of the world’s poor in MICs has still tripled – this is a range of other countries like Nigeria, Pakistan, Indonesia, but also some surprising ones such as Sudan, Angola, and Cameroon.

How did we work this out? We took the poverty and population data in the World Bank’s World Development Indicators from 1988–1990 and 2007–2008 and estimated the number of millions of poor people for every country that had data.

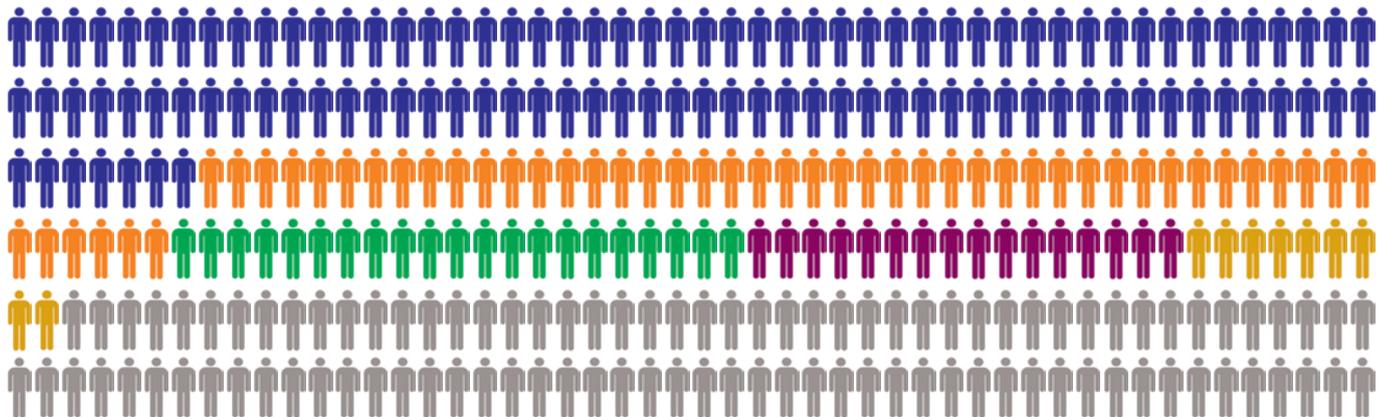
These estimates of actual millions of poor people are hidden in poverty percentages often used for MDG assessments. As the World Bank noted in the last systematic estimation by Chen and Ravallion (2008), there were actually more poor Africans and Indians than there were in 1990, even though, as a percentage of the population, poverty has fallen. Why have we only just ‘discovered’ this? Data are usually 2–4 years old, and many of these countries have graduated in the last five years or so.

A new focus on relative poverty should shape the aid agenda

Development policy needs to be about poor people, not just poor countries. We need to ask what function aid has in an LIC or MIC. We need a clear, new commitment to reduce relative poverty and thus inequality, and in doing so develop a broader range of catalytic aid instruments. These would seek to build emancipation from aid, want, and insecurity by a new focus on relative poverty, and supporting the expansion of the tax-paying middle classes. This would help to build the domestic tax system, and improve governance and accountability.

The world’s poorest (1.275 billion people who earn less than US\$1.25 a day)

Two-thirds of them live in five populous middle-income countries: **India**, **China**, **Nigeria**, **Indonesia** and **Pakistan**



India (456m) China (208m) Nigeria (88.6m) Indonesia (66m) Pakistan (35m)

Tailor aid to LICs and MICs so that poverty is targeted wherever it occurs

Poverty may be increasingly turning from an international to a national distribution problem, potentially making governance and domestic taxation and redistribution policies more important than Official Development Assistance (ODA). But this does not mean we should stop giving aid to 'poor countries'. Instead, donors need to differentiate more; the impact of the post-financial crisis on public revenues and spending means that LICs around the world need aid resources more than ever before. Although some MICs can support their own poor people, others cannot. Some are only just past the threshold, and withdrawing aid suddenly might mean they slip back to LICs. Even when domestic resources appear more substantial, political will may be ambivalent. So, in MICs, the donor strategy should include a broader range of aid instruments beyond resources – for example, focusing on issues such as trade, migration and climate change.

A mechanism to share financial responsibility between richer and poorer countries

The donor community will have to choose how to respond to the 'new bottom billion'. Increasingly, poverty reduction strategies and the global effort to reach the Millennium Development Goal (MDG) targets will be as much about tackling inequality in MICs as it will be about an absolute lack of resources in the poorest countries. We need an approach which looks to poor people, wherever they live, and focuses on new partnerships between governments based on shared responsibility and accountability to the poor (such as the Responsibility to

Protect, known as R2P in humanitarian situations) rather than a straightforward donor and recipient view of the world. This could work as a commitment to provide a minimum level of income, healthcare, and education for citizens, with the financial responsibility shared between rich and poor countries on a sliding scale, depending on the wealth of the country where groups of poor people are living. However, the new MICs may well not want traditional development assistance. This would mean that donors would have to accept a move away from traditional aid to broad support for instruments that only indirectly benefit the poor in MICs.

Conclusion

According to the World Bank, there will be almost one billion poor people in 2015, even if the MDGs are met. Most of those remaining poor people will be in MICs and will be the very poorest or the 'hardest to reach' of all, as UNICEF has noted. As debates start about a post-MDG framework with a view to the September 2013 UN high-level summit, new approaches will be needed. Any new global agreement needs to pay attention to the changing nature of global poverty, as well as to 'difficult' issues such as climate change and adaptation, demography, and urbanization. In the run-up to 2015, the 'new bottom billion' raises a very different set of challenges for policymakers from those they faced during the run-up to 2000 and the adoption of the Millennium Declaration. ■

FURTHER READING

Berners-Lee, Mike – How Bad Are Bananas? The carbon footprint of everything
 Cribb, Julian – The Coming Famine: The Global Food Crisis and What We Can Do to Avoid It
 George, Susan – Whose Crisis? Whose Future?
 Humes, Edward – Force of Nature: The Unlikely Story of Wal-Mart's Green Revolution
 Jackson, Tim – Prosperity without Growth: Economics for a Finite Planet
 Lawrence, Geoffrey, Lyons, Kristen and Wallington, Tabatha (eds) – Food Security, Nutrition and Sustainability
 Lovins, Hunter and Cohen, Boyd – Climate Capitalism
 Nadal, Alejandro – Rethinking Macroeconomics for Sustainability
 Rosillo-Calle, Frank, and Johnson, Francis (eds) – Food versus Fuel. An Informed Introduction to Biofuels
 Smith, Rick and Lourie, Bruce – Slow Death by Rubber Duck: The Secret Danger of Everyday Things
 Szirmai, Adam, Naudé, Wim and Goedhuys, Micheline (eds) – Entrepreneurship, Innovation, and Economic Development
 Yumkella, Kandeh, Kormawa, Patrick, Roepstorff, Torben and Hawkins, Anthony (eds) – Agribusiness for Africa's Prosperity

FURTHER SURFING

www.barefootcollege.org – The Barefoot College is a non-government organization providing basic services and solutions to problems in rural communities, with the objective of making them self-sufficient and sustainable.
www.berggruen.org – The Nicolas Berggruen Institute is an independent think tank and consultancy engaged in the comparative study and design of systems of governance suited to the new and complex challenges of the 21st century.
www.globalpolicyjournal.com – Global Policy is an innovative and interdisciplinary journal.
www.grist.org – Grist – environmental news and commentary with a wry twist.
www.ifad.org – The International Fund for Agricultural Development (IFAD), a specialized agency of the United Nations, is dedicated to eradicating rural poverty in developing countries.
www.nestle.com/CSV – Creating Shared Value is Nestlé's way of doing business based on sustainability.
www.oaklandinstitute.org – The Oakland Institute is a policy think tank whose mission is to increase public participation and promote fair debate on critical social, economic and environmental issues in both national and international forums.
www.thebreakthrough.org – The Breakthrough Institute is a paradigm-shifting think tank committed to modernizing liberal thought for the 21st century.
www.triplepundit.com – Triple Pundit is a new-media company for the business community that cultivates awareness and understanding of the triple bottom line.
www.wiennaenergyforum.org – The Vienna Energy Forum – 21-23 June 2011 – will facilitate an international dialogue on providing universal energy access and on the multiple benefits of increasing energy efficiency.

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