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http://casi.ssc.upenn.edu/iit/pandebhandari

Sustainable Materials: An Introduction

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Biodiversity Expert Vandana Shiva calls for Organic Farming as Standard for Agriculture

Posted on September 5, 2011 by Isabelle Anne Abraham

“Agricultural sustainability is the single most important factor to influence climate change.” With that statement, UN Conference on Trade and Development (UNCTAD) section head Dr. Ulrich Hoffmann set the tone for a workshop discussion on the current approach to agriculture and its threat to the planet.

“The current agricultural model is not about creating food, but commodities,” explained physicist Dr. Vandana Shiva. Shiva is a world renowned expert on biodiversity and founder of Navdanya in India, a movement to protect the diversity and integrity of living resources such as seeds. She pointed out that food, and futures on food, are traded on the commodity markets just as – via stock options in multinationals – the rights to seeds. By patenting seeds, she said, corporations are forcing farmers into buying an expensive product that the earth would normally provide for free. She stated that this drives people into poverty and destroys communities.

Panelist Dr. Hans R. Herren, scientist and founder of the Swiss Biovision Foundation for ecological development in Africa, called for a fundamental shift that needs to happen now. “The speed of change means we have to start to do things today,” he warned. “Business as usual is not an option.”

Herren and Shiva pointed out that corporations and science working in the interest of corporations have over decades fed the public lies about the benefits of industrial agriculture and genetically modified foods (GMF). In fact, chemical farming deprives the earth of its natural resources, and creates other problems such as climate change, food insecurity, growing inequity, the destruction of indigenous farming and agriculture, and migration.

According to the experts, the solution lies in organic farming. “When we grow organic, we do not just grow healthy food,” Shiva said. “We grow communities who care for the earth and its people.”

Organic agriculture can also serve as an effective tool in controlling global warming. “The fertility of the soil and the quality of the land are directly linked to the changing climate,” UNCTAD’s Ulrich Hoffmann added.

The workshop concluded in the hopes that organic farming will become a part of the policy framework that will be passed at the Rio+20 Conference on Environment and Development next year.

http://www.ngo-un-conference-blog.org/?p=1234

Tackling the burgeoning agrarian crisis in India

September 10, 2011 04:27 PM |

Ramesh S Arunachalam

Farmer suicides are a tragic indication of the seriousness of the widespread indebtedness caused by imperfections in the agricultural sector that must be corrected urgently. Good recommendations and well-meaning schemes are available on paper. But making them work for a large majority of the poor and marginal farmers is critical.

"On average, one farmer commits suicide every 30 minutes in India," says Smita Narula, faculty director, Center for Human Rights and Global Justice (CHRGJ). "It's simply unacceptable to ignore a tragedy of such epic proportions and go on with business as usual. The … limited interventions have failed to adequately assess or address this deepening crisis. …Over the past two decades, economic reforms-which included the removal of agricultural subsidies and the opening of Indian agriculture to increasingly volatile global market-have increased costs, while reducing yields and profits for many farmers, creating widespread financial distress. As a result, smallholder farmers are often trapped in a cycle of insurmountable debt, leading many to take their lives. And according to a report by CHRGJ, which looks critically at India's farmer suicide epidemic, an estimated 250,000 farmers have committed suicide since 1995"i. Without question, India continues to be in the midst of an agrarian crisis, of huge proportions.

And every time the agrarian crisis rears its head, we cite a new programme as a potential solution, and the latest is the National Rural Livelihood Mission (NRLM). One seems to have lost track of the number of programmes for solving various such problems, but the time is now ripe to ask the question, "How to make these programmes really effective in terms of actual problem solving on the ground, with regard to agricultural and rural livelihoods?" Let's look at specific actions to begin with, that can perhaps make these so-called 'high-powered programmes' more effective, by ensuring that they (1) tackle the root causes of problems, rather than the symptoms; (2) recommend actions/solutions that can work on the ground, with a clear plan for implementation along with a time frame and accountability.

As noted earlier, the burning issue in rural livelihoods, especially over the past few years, has been suicides by farmers in various parts of the country. While theories abound with regard to reasons, several basic aspects need attention. India is one of the few countries that has consistently and continues to ignore agriculture and farmers, despite them forming a significant majority. There are very few products in India, a unit of which can perhaps be bought for less than a rupee (especially from farmers) and this clearly shows that we, as a country, have only paid lip service to farmers, whether it be the quality of agricultural credit support, market support, minimum price support, insurance, watershed linkages and the like.

While several schemes exist for small/marginal/poor farmers, they are there only on paper and, often times, are misused by better-off farmers/others. Drip/sprinkler irrigation

schemes are a case in point. While the number of farmers supposedly benefited by such schemes that have a significant subsidy component is increasing year after year, an analysis of whether these are used on the ground will reveal that very few poor/small/marginal farmers are actually using them.

The reality is that many of them sell these off for survival, while others report that the material supplied is itself poor quality and does not work. And contractors argue that when they have to give special sums to various stakeholders (local officials) to get the contracts in the first place, they can only make sub-standard products. The net result is that these schemes really add very little value on the ground to the work of farmers, and are better scrapped as the prime beneficiaries are either rich contractors and/or hierarchy of officials, often with local level political patronage.

Walk into the Ottanchattiram vegetable market in Tamil Nadu (one of the largest vegetable markets in India, or for that matter even Asia), and you will see the tragic scenes of farmers dumping and trashing their produce rather than sell at rock-bottom prices foisted on them by a cartel of exploitative middlemen. (Sometimes it is as low as 50 paise for a basket of tomatoes of 12kg-15kg.) One is not sure whether anything else can be bought so cheaply. I have been seeing this regularly with my own eyes for several seasons.

Go to Chintappali (Paderu ITDA), in Visakhapatnam district in Andhra Pradesh, and you will see tribals selling organic rajma (grown from podu, or slash and burn cultivation) for Rs2-Rs3 a kg to the saukar or even at the GCC (Girijan Cooperative Corporation) stall at the shandy, whereas we buy the same at even as high as Rs50-Rs55 a kg in the metros. And please do remember that this is organic rajma and for that we would have to pay as much as Rs60-Rs65 a kg. That the tribals prefer to sell to the saukar for Rs2-Rs3 a kg is a different story as the GCC and similar government market enabling mechanisms grade products and pay only for the supposedly high-grade rajma/agriculture produce-farmers argue that they would rather sell to the saukar who gives them an advance than the GCC which pays them very little and often too late.

Talk to onion farmers and they will tell you what the middlemen at the mandis say. 'Truck or shiploads of onions have come in today and so, our price has to be lower than expected'. Likewise for rice, the traders argue, 'the government has removed the restrictions for movement between districts and so the prices have fallen'. Similarly, sugarcane farmers will relate their woes.ii They will tell you about the poor quality sets that have hardly 30% germination; lack of timely inputs like fertiliser despite a bank loan for which the interest clock is ticking away; inadequacy of cutting labour on time, as a result of which the sugarcane over-matures and has less weight, on the basis of which farmers are compensated; complacency on the part of sugar mills, whose corrupt cane assistants (referred to with dignity as 'cane supervisors' in villages by farmers) bypass farmers and issue cutting orders for those who have obliged them; the irresponsible behaviour of sugar mills, whose lorry contractors demand a special bata (some times as high as Rs500-Rs1000

per load) for every load lifted, and refuse to upload 'cut cane' of those farmers who do not oblige them with bata-the net impact is that 'cut cane' looses weight by the hour, drying in the hot sun, thereby depriving farmers of a good return; and, last but not the least, the irregular and untimely payment schedule of sugar mills, which not only enhances the interest burden of the farmers, as the principal can be repaid only with the proceeds obtained from sugar mills.

Likewise, a trip to villages like Bodlanka in Rampachoodavaram ITDA, in the East Godavari district in Andhra Pradesh, exposes how the poor neither have access to financial services nor fair market mechanisms. Nonetheless, they still borrow at very high effective rates of interest (some as high as 100%-200%, when one takes into account various conditions) and sell their produce at captive and unduly exploitative prices-in some ways, the exact opposite of economic arbitrage, where you buy low and sell high. That the poor women cannot even pay back the saukar because of the low and captive price for their produce is a fact, as is their continued bondage.

Add to the above issues the fact that a very significant proportion of farmers are dependent on rain-fed agriculture, and you will understand that farmers have really no options and are often caught in a hopeless, no-win situation, their plight deteriorating day after day.

While the list of problems in the agriculture sector can go on endlessly, the key point to note is that they are exacerbated by the fact that, as a country, we have shown the least regard to strengthen a 'critical occupation' that is pursued by a vast majority of the people (over 600 million people are employed in agriculture in some sense) many of them poor. An occupation, without which, most of us will simply starve and cannot survive.

Thus, farmer indebtedness arises primarily because of long-existing imperfections in the market for agriculture and related aspects mentioned above. Lack of access to timely credit for farmers is certainly a problem and commercial and other banks are still viewed as distant by many farmers. The transaction cost of borrowing from these banks is still enormous for farmers and the livelihood loss is extremely high, especially for those dependent on rain-fed agriculture. Most MFIs do not work with farmers and yet, they are supposed to espouse the cause of financial inclusion. And where farmers are financially included like in sectors such as sugarcane, the financial services are inappropriate and more often than not, it leads to their ultimate exclusion. Furthermore, the issue of credit at the post-harvest stage that is critical for farmers is still lacking and this is another area where a strong intervention can help.

Thus, undeniably, a majority of the small and marginal farmers who are engaged in agriculture/allied activities, are enmeshed in a multi-pronged web of imperfect markets, exploitative middlemen, lack of access to a range of appropriate (vulnerability reducing) financial services apart from other enabling infrastructure such as warehouses.

In fact, in holistic terms, the establishment of warehouses nationally and availability of warehouse receipt financing can go a long way in alleviating the plight and indebtedness of farmers. This would give them the much-needed staying power, in the wake of exploitative mandis and middlemen, who usurp the profits taking advantage of the perishability of agricultural produce, even while farmers consistently have a negative return. Even here, replacing middlemen is perhaps not the solution-creating competition for them and attempting to bring in alternative channels that address existing imperfections, is perhaps one solution, as is the establishment of warehouses and availability of warehouse receipt financing on a large scale.

Finally, while well-meaning schemes and good recommendations are available on paper, making them work for a large majority of the poor/small/marginal farmers is very critical. This would require a thorough and honest analysis to understand which of these work on the ground, to what extent and why and what else can be done to make them more effective to reach the intended target group. A good starting point would be for the so-called 'high-power' programmes like NRLM to become grassroots oriented and hold national/state public hearings, conducted in cooperation with Civil Society institutions, in several places across the country where small and marginal farmers can come and relate their problem/issues. Practical solutions to tackling large-scale farmer indebtedness and suicides are possible only if these programmes go to the grassroots and are more 'small farmer-led' in their orientation. Otherwise, they will become one more centralised programme with great sounding reports, waiting to bite the dust.

http://www.moneylife.in/article/tackling-the-burgeoning-agrarian-crisis-in-india/19638.html

You can't buy a better agriculture

With the Earth's cropland quickly eroding, a shift to perennials is needed for a sustainable food supply

The foundation of humanity’s food supply is crumbling. The United Nations now estimates that more than 20 per cent of the Earth’s cultivated soils have been significantly degraded, while in the United States, 28 per cent of cropland is eroding at an unsustainable rate. Research shows that of all human activities, agriculture is the biggest threat to biodiversity and ecosystems.

Solving agriculture’s many problems is not impossible, but the issues involved are complex and the necessary transformations radical. To discuss them is to risk frightening or confusing people. On the other hand, everyone likes good food. So campaigns for more ecologically sound farming practices, especially in the wealthier nations, too often seem to suggest to consumers that with enough effort, we can simply eat our way to a sustainable future.

For example, Organic Valley, the United States' largest organic-farming cooperative, suggests that "personal food choices affect the health of our bodies and our planet, and drive their future". Likewise, the British Soil Association says that "the buying decisions we make every day are a simple but powerful form of direct action", and Naturalnews.com stresses that "by changing what you buy, you change what farmers will grow and how they will grow it".

But to trust that our personal food-shopping decisions or gardening prowess can push the global food system towards sustainability - to vote three times a day with our forks, as writer Michael Pollan has urged - is to assume that the global agricultural economy operates by the same neighbourly rules that prevail down at the local farmers' market.

It doesn't. Eating well-produced food will improve our own health, but not necessarily the health of the Earth's soils. On the 1.5 billion hectares of cropland around the globe where our staple foods are grown, the profits of agribusiness and the corporate food industry always get fed first.

Those profits depend primarily on a flood of cheap grain, produce, meat, and milk made possible by the exploitation of soil and human labour. And in the past few decades, a variety of industries - heavy equipment, chemicals, food processing, packaging, transport, advertising, restaurant chains, and others - have grown as appendages on agriculture. In the United States, the dollar outputs of those food-related industries are expanding at two to four times the rate of farming's output. That is creating even more powerful constituencies for policies and practices that turn soil into profit.

Working at it as hard as we can, all of us together cannot chew and swallow enough food to change those corporate priorities. The transformation has to be achieved in practice out on the land, not by depending on the same kinds of supply and demand curves that got us into this mess. After two decades of favourable publicity, growing customer enthusiasm, and rapid market expansion, certified organic food still accounts for only 0.7 per cent of US cropland and 0.5 per cent of range and pasture land.

Every country has its own domestic and global obstacles to overcome. To roll back the damage being done to the United States' agricultural landscapes, for example, would require passage of bold legislation that challenges entrenched economic interests head on; consequently, the task is often viewed as impossible, but that makes it no less urgent.

Immediately necessary actions include abolishing commodity subsides; paying farmers serious money to conserve land and water; banning toxic chemicals, factory farming of livestock, and industrial mega-dairies; and putting a halt to the cultivation of hundreds of thousands of square kilometres of maize, soybean, and sorghum crops for supplying the livestock, sweetener, and biofuel industries. In addition, we must stop exporting cheap wheat and other grains that wreck local markets for family farmers in other countries, and

we must stop importing products that distort economies and ruin landscapes around the world.

To do all of that is an ambitious undertaking, to say the least. But those changes are just the beginning of what is needed.

Working with nature

We can correct those problems that are created by industrial forces over the past century, but that won't fix another, much more fundamental problem that has been plaguing farmers now for a hundred centuries: the dependence of agriculture on annual plants, typically in monoculture.

Before humans invented agriculture, 95 per cent of the Earth's ice-free surface was covered by diverse mixtures of perennial plants: forests, prairies, wetlands, et cetera. Today, nearly 40 per cent of that land is devoted to agriculture, most of it sown to uniform stands of annual crops that die each season after harvest and must be re-sown.

That "clearcutting" at the soil surface and regular die-out of the roots below makes it impossible for healthy, durable, resilient ecosystems to become established either above or below the surface. Soil erosion, water contamination, and biodiversity loss are the inevitable result.

Landscapes can be compelled to produce harvests of annual monocultures for years or decades, sometimes centuries, but it requires hauling in nutrients, churning the soil, killing weeds, battling pests, and in many places irrigating. And even those heroic efforts cannot sustain soils in the long term.

Since early cultivators first domesticated wheat and barley in the Middle East ten thousand years ago, farmers everywhere have struggled and often failed to compensate for the built-in vulnerabilities of annual crops and monocultures. And as things stand, with 7 billion human beings needing to eat every day and global per-capita food production continuing to decline, we have no choice but to do the best we can in the short term with a combination of conventional and more sustainable agricultural systems incorporating annual crop plants.

As we are keeping our fingers in the dike, so to speak, we also need to begin developing the methods of a new, more resilient agriculture by using the highly integrated diversity of natural ecosystems as a model. But that model and those methods can't be brought to the farm as long as we are dependent on annual crops and clearcutting. First, we will have to develop perennial grain crops through breeding.

The annual grain crops that perennials will replace now occupy three-fourths of the world's cropland. Consumer campaigns promoting more eco-friendly food tend to feature fresh produce, sometimes exclusively. That makes sense in a way. Corporate production of fruits and vegetables is especially hard on human workers, ecosystems, and the atmosphere. But

those foods account for less than seven per cent of US cropland and a similar share worldwide. Even if we all ate as much of those foods as we should, the bulk of agricultural soils would still be covered, as they are today, by crops of cereals, grain legumes, and oilseeds, not carrots or cucumbers. To save those soils in the long term, we will need perennial counterparts to those staple crops.

In the past few years, plant breeders, geneticists, ecologists, and agronomists in the United States, Canada, China, Nepal, and Australia have begun developing perennial versions of wheat, rice, sorghum, sunflower, and other major grain crops, along with ecologically sound, multispecies cropping systems in which to grow them. The goal is to replace annual grain monocultures worldwide with polycultures of perennial grains and other perennial species. That will require, as a first step, a rapid expansion of such breeding efforts.

The transformation of agriculture, therefore, will require two parallel efforts, one aimed at putting a halt to the ravages of industrial farming and the other at developing the perennial farm ecosystems of the future. Eating better food is not the way to ensure that those efforts succeed, but it will be the result.

http://english.aljazeera.net/indepth/opinion/2011/08/201183012193494374 9.html

Protecting wild species may require growing more food on less land

In parts of the world still rich in biodiversity, separating natural habitats from high-yielding farmland could be a more effective way to conserve wild species than trying to grow crops and conserve nature on the same land, according to a new study published today (2 September 2011) in the journal Science.

The study, by researchers at the University of Cambridge and the Royal Society for the Protection of Birds, collected information on more than 600 species in southwest Ghana and northern India, two parts of the world where demand for agricultural land is putting ever more pressure on wild species. The researchers measured crop production as well as the abundances of birds and trees in forests and in various types of farmland.

"Farmland with some retained natural vegetation had more species of birds and trees than high-yielding monocultures of oil palm, rice or wheat but produced far less food energy and profit per hectare," said lead author Dr Ben Phalan from the University of Cambridge. "As well as requiring more land to produce the same amount of food, the 'wildlife-friendly' farmlands were not as wildlife-friendly as they first appeared. Compared with forest, they failed to provide good habitat for the majority of bird and tree species in either region."

The researchers discovered that, under current and future scenarios of food demand, most species would have larger total populations if farming was restricted to the smallest area feasible, while protecting as much natural forest as possible. This was true not just for rare species but for common species as well.

This strategy, called 'land sparing', uses higher yields on existing farmland to spare land for nature (in contrast with 'land sharing', which aims to conserve wild species and grow crops on the same land). Because high-yield farming produced more food from less land, it could be used as part of a strategy to protect larger tracts of natural habitats such as forest.

"It would be nice to think that we could conserve species and produce lots of food, all on the same land," said study author, Dr Malvika Onial from the University of Cambridge. "But our data from Ghana and India show that's not the best option for most species. To produce a given amount of food, it would be better for biodiversity to farm as productively as possible, if that allows more natural habitat to be protected or restored."

"It is critical to note that increasing crop yields would not work in isolation," said study author Professor Andrew Balmford from the University of Cambridge. "Such increases need to be combined with active measures such as national parks and community reserves to protect natural habitats from conversion to farmland. Conservation policy-makers should explore new ways to link protection of natural habitats with efforts to increase food yield per unit area in sustainable ways. Food retailers could perhaps make these linkages a feature of environmentally-friendly food products."

The researchers cautioned, however, that although their findings in Ghana and India are remarkably consistent, they may not hold true everywhere. It is possible that land sparing will be a better strategy in some places and land sharing in others. They advise that further studies in representative parts of the world are needed to determine whether there is a more general pattern.

"Our study does not give uncritical support to large-scale agribusiness over small-scale farming systems," said study author Professor Rhys Green from the Royal Society for the Protection of Birds and the University of Cambridge. "High-yielding organic farming and other systems such as agroforestry can be a useful component of a land sparing strategy and may offer the additional advantage of fewer adverse effects of farming from fertilisers and pesticides. But whatever the farming system, protection of natural habitats will continue to be essential for the conservation of many species."

http://7thspace.com/headlines/393154/protecting_wild_species_may_require_growing_more_food_on_less_land.html

Old-growth forests won't save planet

Martin Moroni and Ian Ferguson

September 5, 2011

Managing regrowth may help us turn green, write Martin Moroni and Ian Ferguson.

IN AUSTRALIA, too often we're told the solution to all environmental problems is locking all native forests in unmanaged reserves, where they'll be immortal, grow forever and continuously suck large amounts of greenhouse gases from the atmosphere.

We're led to believe all forested landscapes can become old growth, and that forest management destroys forests. This is simplistic, flawed and represents missed opportunities for the environment, society and the economy.

Most of Australia's forests aren't full of enormous old trees and most of our old-growth is already in reserves. Just 6 per cent of Australia's forests are managed for wood production.

Managed forests maintain biodiversity, water quantity and quality and produce a variety of other goods and services, including carbon sequestration, employment, income and other opportunities to society.

Sure, photosynthesis takes carbon from carbon dioxide, an atmospheric gas, to form wood. Dry wood is half carbon by weight and each tonne of carbon absorbed from the atmosphere into wood came from about four tonnes of carbon dioxide.

So wood products store carbon in them and trees can absorb some carbon dioxide from the burning of fossil fuels. But trees can't absorb all the carbon released from the burning of fossil fuels. To do so would require us to produce enough wood to form a 30-cubic-kilometre block of wood almost four times the height of Mount Everest, from forests each year. This is impossible. We must focus on reducing the burning of fossil fuels.

Growing forests absorb carbon dioxide from the atmosphere, but as they die they emit it. Wildfires frequently burn our forests releasing huge amounts of carbon dioxide back to the atmosphere and preventing many forests from becoming old-growth.

Since 2003, 3.5 million hectares have burnt in Victoria. Many of our prime forests require high-intensity wildfires to regenerate - they cannot remain as old-growth indefinitely. Valuable as it may be, storing carbon in forests doesn't change our use of fossil fuels.

Cutting trees down is the only way forests can reduce our use of fossil fuels. This is done by using wood instead of fossil fuels for heat or electricity and, most effectively, using wood instead of products associated with large emissions.

For example, the use of metal, concrete and plastic in construction produces more greenhouse gasses than when wood is used in their place.

Ideally, we should substitute fossil fuels and emission-intensive materials with renewable alternatives like wood.

Globally, wood products store an additional 150 million tonnes of carbon annually and landfill another 44 million tonnes, equivalent to removing 700 million tonnes of carbon dioxide from the atmosphere.

Wood use in residential house construction instead of non-wood alternatives prevented 483 million tonnes of carbon dioxide from being emitted in 2007. By 2030 the global use of forest bio-energy will prevent 1000 million tonnes of fossil fuel carbon emissions annually.

These initiatives lack support in Australia where we are missing easy, proven opportunities to reduce greenhouse gas emissions with forests, unlike their rapid uptake in Europe and North America.

Wood products are traded on the global market. Australia has an annual $2 billion deficit in wood products, annually importing 600,000 to 900,000 cubic metres of sawn wood extracted from thousands of hectares of international forests each year, much of which are managed to lesser standards than Australia's forests.

Withdrawal of more Australian native forests from management can be expected to increase greenhouse gas emissions from more intensive harvesting elsewhere, and from increased transportation of imports. That is not a green outcome. Sustainable management of Australia's native regrowth forests is.

Dr Martin Moroni is senior research scientist, forest carbon, at Forestry Tasmania, and Ian Ferguson is professor emeritus of forest science, University of Melbourne.

http://www.smh.com.au/business/oldgrowth-forests-wont-save-planet-20110904-1js5i.html

$40bn a year could halve deforestation worldwide

Monday, 05 September 2011 21:19

Will Nichols

Investing just 0.034 per cent of global GDP could transform the world's forestry sector, halving deforestation rates, slashing carbon emissions and creating up to five million new jobs by the middle of the century. That is the conclusion of a major new report from the UN Environment Programme (UNEP), which argues that investing an average of $40bn a year in forest protection would allow forests to absorb 28 per cent more carbon from the atmosphere than they do now.

The report says extra finance can be raised from the public and private sectors using mechanisms that pay landowners for maintaining ecosystems such as Reducing Emissions from Deforestation and Forest Degradation and Payment for Ecosystem Services.

The report says that starting with $15 billion of investment in 2011 and increasing to about $57 billion by 2050 could cut in half the speed at which the planet's forest are being felled over the next 20 years. The investment would also encourage a 140 per cent rise in the number of new trees being planted and swell employment in the forest sector from 25 million currently to 30 million by the middle of the century.

Annual net forest loss since 1990 has fallen from about eight million hectares – around four times the size of Wales – to about five million hectares, the report says, noting that international efforts mean that in some regions of Asia, the Caribbean and Europe the amount of forested area has actually increased over those 20 years.

The Republic of Congo has announced plans to plant one million hectares of trees by 2020 to restore degraded forest and provide wood for paper and fuel. Participants in a recent Three Forest Basins Summit in Brazzaville, which hosted 32 countries from the Amazon, Congo and Borneo-Mekong regions that make up 80 per cent of the world's equatorial forests, also said they would work together on scripting a forest protection agreement in time for next year's Rio+20 UN Conference in Brazil.

But despite recent successes, governments still need to support forest-based investments through policies such as credit, microfinance, leases and certification schemes, the UNEP report said.

"Supportive social, legal and institutional settings are key to the sustainable management of natural resources," said Eduardo Rojas-Briales, chairman of the Collaborative Partnership on Forests. "Optimal land use, further life cycle analysis, ecosystem landscape management, and governance are all key themes that will help unlock the full potential of forests in creating green economies."

The report, entitled Forests in a Green Economy, also references the work of the Economics of Ecosystems and Biodiversity report, which sought to calculate the value of the natural world to nations' economies and was followed by a UK equivalent.

It found that natural capital such as forests can represent up to 90 per cent of the GDP generated by the rural poor, citing schemes that seek to put a value on natural capital, such as a project to restore natural mangrove forests in Vietnam, which cost $1.1 million but resulted in the avoidance of sea dyke maintenance costs worth $7.3 million.

A related report published in the online journal PLoS One identified that UN efforts to put a price on forests and issue tradable credits for slowing the rate of deforestation should take into account the size of trees in a forest and not just the area covered. The survey of 68 countries found the amount of carbon stored by forests in Europe and North America has increased from 2000 to 2010 despite no real change in forest area, while African and South American forests saw the total amount of carbon stored fall at a slower rate than deforestation. However, the study said there was not enough data to estimate an overall trend.

An analysis from an Economics of Ecosystems and Biodiversity (TEEB) study has shown that the economic value of the services provided by the natural world, such as water purification, pollination of crops and climate regulation, currently amounts to between $2 trillion and $5 trillion a year.

The report, entitled Mainstreaming the Economics of Nature, focuses on potential solutions to the rapid rate of global biodiversity loss, which some scientists have characterised as equivalent to an extinction event.

It sets out a series of top tips for policymakers and businesses detailing how to better measure the true value of ecosystems to the economy; a value it claims is currently invisible.

That "invisibility" needs to change, Pavan Sukhdev, said TEEB study leader recently. "Unfortunately, the lack of an economic lens to reflect these realities, has meant we have treated these matters lightly that they are not centre-stage when it comes to policy discussions nor centre-stage when it comes to business discussions."

The report drew on the example of the catastrophic oil spill in the Gulf of Mexico, urging businesses to take steps to avoid similar disasters happening to them. Brazil and India have already endorsed the report's conclusions, stating that they would use the TEEB findings as a guide, while the European Union, which part funded TEEB, also agreed to incorporate recommendations in its policy decisions.

http://thecitizen.co.tz/editorial-analysis/20-analysis-opinions/14430-40bn-a-year-could-halve-deforestation-worldwide.html

A Ray of Light in the Forests of India

Varad Pande & Pranjul Bhandari

09/12/2011

The 250 million forest-dependent people in India have been victims of major historical injustices such as continuation of repressive colonial forest laws and are amongst the poorest in the country. To empower forest communities, India has passed two historic laws in the last 15 years. However, their effects on the ground have been disappointing. While all of this sounds desultory, a number of “transformations” have been taking place recently, which if harnessed properly, could significantly better the lives of these communities.

Background

When Devaji Tofa, the community leader of Mendha Lekha village in tribal Gadchiroli district received a transit pass from his Gram Sabha in April 2011 that would allow his community to harvest and sell bamboo, it was more than just a symbolic act. It provided the possibility of a better future to all forest-dependent people. While for most, India’s forests conjure up images of tigers, flora, and fauna, there is another world out there that often goes unnoticed; a world of toiling humans living at the margins of existence. It is estimated that more than fifty million people known as “forest dwellers” live in or in the fringes of India’s forests, and up to 275 million people known as “forest dependents” depend on them for at least a part of their livelihood. Both forest dependents, and especially forest dwellers are

the most economically backward and socially vulnerable. They have also been victims of major historical injustices such as the continuation of colonial forest laws that did not give them any rights over land and resources or participation in forest conservation. Until 2006, communities living in forests did not have tenurial security or property rights over the land they had lived in for centuries.

The First Winds of Change

Fifteen years ago, India took the first steps towards changing the status quo. The 1996 Panchayat Extension to the Scheduled Areas Act (PESA Act) decentralized governance in scheduled tribal dominated areas by bringing the Gram Sabha or "village assembly" into center stage of resource management and recognizing the right of tribals over "community resources" such as land, water, and forests. Ten years later, in 2006, the Forest Rights Act (FRA) took the cause of empowering forest dwelling communities one step further and gave tenurial rights to forest dwellers over the land they have lived in, and legitimized their right of ownership and use of minor forest produce (MFP).

While both legislations were historic, their effects on ground have not been satisfactory. State laws have not been in line with the spirit of the Act and in many cases excluded community ownership of the most valuable forest produce. Moreover, the progress in giving Community Forest Rights has been slow. Entrenched governance systems, resistance from local bureaucracies and the forest department's dependence on revenue generation from forest produce, have stymied real substantive empowerment of forest communities.

The Four Transformations in the Lives of Forest Communities

While all of this suggests a desultory state of affairs for India's forest-dependent communities, at least four major recent trends suggest that a ray of light may finally be reaching their lives driven by a strong civil society and recent government action. The first major transformation relates to the implementation of legal entitlements. For the first time since its implementation in 2006, the enforcement of the FRA is being taken seriously. Compliance with the FRA has been made a condition for the granting of forestry clearances for new projects by the Ministry of Environment and Forests as of August 2009. Even in high profile projects, the government is taking a view that demonstrates that it is serious about this Act. For example, the stopping of Vedanta Group's Bauxite mining project in Orissa sent a clear and unequivocal message that the legal rights given to forest dwellers are unimpeachable and will be enforced.

In addition, further legal provisions are being enacted to end historical prejudices. In a proposed amendment to the Indian Forest Act, the Union Cabinet has approved the requirement that forest officers shall have to consult the concerned Gram Sabha before imposing compounding fines on local people for minor offenses. This is being seen as a

major step in arresting the harassment of forest-dependent communities at the hands of forest officials.

The second major transformation involves local communities in forest management and conservation. Local communities have traditionally been largely excluded from forest conservation and management, which has long been the domain of the forest department. Engaging forest dwellers in conservation as "community foresters" has a win-win benefit which is finally being recognized, and experiments are being undertaken across the country. Local tribal youth are being trained and employed for forest management. Due to a major new impetus over the last two years, about 2.5 million mandays of employment for these local communities are being generated annually. For example, the Van Gujjars at Corbett seem to be effective frontline "foot soldiers" against poaching.

On the same theme of engaging local communities, the government has just launched an ambitious ten-year, ten billion dollar projected titled National Mission for a Green India, which has people-centric forestry at its core. The revamped Joint Forest Management Committees (JFMCs), tasked with implementation of the mission at the grassroots level, will be set up by the Gram Sabha and also be accountable to it. This presents a major paradigm change towards people-centric decisions in investment and management.

The third transformation – perhaps the most significant from a livelihoods perspective – relates to "bamboo." Access to bamboo, an economically valuable crop, many argue, could hugely enhance livelihoods of forest-dependent communities. Rough estimates show that if communities were allowed to harvest bamboo, it could add 20,000 - 40,000 rupees crore each year to their incomes and benefit over fifteen million people. The debate on whether bamboo is a "grass" and therefore MFP (which forest communities "own" and can harvest and use for value-addition or sell), or whether it is a timber (which can only be harvested and sold through the forest department), had been raging for a while, until the Environment Ministry recently clarified in March 2011 that bamboo is indeed an MFP. What this implies is that communities can now harvest bamboo with the permission of their Gram Sabha, which has been authorized to issue the "transit passes" allowing for its transport and sale. This could have significant livelihood benefit for forest-dwelling communities, as bamboo commands a good price and is an essential raw material for many indigenous crafts and cottage industries. The symbolic ceremony at the Mendha Lekha village was the first step in this direction. Initial anecdotal evidence from Mendha Lekha already suggests a major increase in the incomes of the villagers.

The fourth transformation enables forest communities to benefit from their traditional knowledge of local biodiversity. India has been a prime mover of the Access and Benefit Sharing Protocol (ABS) under the UN-Convention on Biological Diversity, which was signed in October 2010. This protocol obliges countries to ensure fair and equitable sharing of benefits arising from the use of "traditional knowledge" associated with genetic resources with local communities holding such knowledge. The ABS Protocol, backed by domestic

legislation (FRA and the Biological Diversity Act) is the first step in ensuring that forest communities are compensated fairly.

Similarly, India has been an active advocate in international negotiations of the Reducing Emissions from Deforestation and Forest Degradation (REDD+) initiative, where countries that reduce emissions and undertake initiatives for the sustainable management of forests will be entitled to receive resources as incentives. Although still at a nascent stage, some studies estimate that REDD+ initiatives in India could provide more than three billion dollars as carbon service incentives. The government has committed that all the monetary benefits from REDD+ will flow to local, forest-dependent, forest-dwelling and tribal communities.

Thus, the fourth transformation is about safeguarding, monetizing and incentivizing the flow of benefits from forest-based resources to local communities.

A Ray of Light, But a Thin One at Best: The Challenge of Implementation

Many challenges lie ahead however. Getting the governance machinery right for these transformations will be a huge challenge. We are on a long learning curve which started with the "JFMC's version 1.0" in the late 1980s, and is evolving as we go along. Bridging this will require sustained leadership and commitment from the top echelons of government and ongoing monitoring by civil society.

The concept of representative, well-functioning Gram Sabhas that make decisions through consensus is good in theory, but difficult in practice. Even if we assume that Gram Sabhas can reach agreement and are not prone to elite capture (or hijacking by special interest groups), they will require major capacity building to be able to make informed decisions.

Moreover, the mindset, training, and behaviors of the forest department and other local government functionaries towards forest-dwelling and dependent communities will need to undergo a major change at all levels. This will be far from straightforward. Forest departments may not take easily to their new role as just, benevolent facilitators allowing local communities to access MFPs, especially as bamboo and other MFPs have been a core revenue channel and a source of power and control for them.

Well-functioning competitive markets for MFPs will need to be created so that forest dwellers get a fair value for their produce. This will require innovative mechanisms that go well beyond declaring a minimum support price. It will require, for example, institutional support to organize forest dwellers into effective supplier groups; a non-trivial challenge given our experience with cooperative movements in the past.

Conclusion

Empowering forest-dependent communities will not only undo historical injustices and enhance livelihood, but also help protect our natural forest and heritage. An additional "co-benefit" is that social and economic empowerment of these communities could also be an

effective tool to fight Naxalism (which draws strength from local forest villages and funds from forest produce).

We hope that the momentum which has created the four transformations, powers on, and the silent journey from the village of Mendha Lekha lights up the lives of our forest communities.

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Sustainable Materials: An Introduction

by Mike Klepfer

Bamboo is considered a sustainable material.

People are starting to realize that industrial materials such as petroleum-based plastics, cotton and synthetic textiles and plantation-farmed rubber are destructive to our environment. Not that the processes used to make these materials was ever environmentally-friendly, but the scale to which production of these materials has grown to has cast them in a harsh light. People are looking for alternatives.

Sustainable materials seem like a solution. Produced using less energy-intensive production processes, or sourced from natural resources that are less scarce, sustainable materials are being used in construction of sustainably-designed buildings, in the clothing we buy, or in the next generation of sustainable cars.

Let's take a look at some of these materials.

"Natural Materials"

To clarify something quickly, "natural materials" often refer to materials that are whole plants or simple derivatives thereof. Such as bamboo, or the ingredients used to make cob for building: clay, sand and straw. These designations are subjective anyway. What one may deem "sustainable" may not meet the standard of someone else.

Sustainable Materials

Recycled Rubber

Rubber comes from trees. Originally rubber was sourced from large, South American plantations. It was the quintessential colonial crop and its discovery led to manifold industrial uses, most notably coming in the form of tires. The traditional manner of

producing rubber, separating rubber from the latex that trees secrete when cut, was deemed inefficient and synthetic rubber was created.

Recycled rubber is rubber that has already been produced, which would normally sit in landfills. As it is extremely flammable, landfill tire fires are difficult to extinguish. Recycled rubber re-purposes the rubber from the waste-stream. Recycled rubber has found use in athletic facilities, such as running tracks, as an additive to asphalt and in composting municipal sewage waste. It is also used in building: mixed with concrete, it adds to a structure's thermal gain and sound-dampening capacities.

Bamboo

Bamboo is a rapidly-reproducing grass that has been used in construction for centuries. It has replaced lumber in sustainable-building projects and could effectively replace wood as a widely-used building material. Bamboo needs no outside inputs, such as fertilizer, once established and its rapid growth rate means that it is more "renewable" than other popular materials.

http://www.theinnovationdiaries.com/2140/sustainable-materials-an-introduction/