Decent Work through Green Jobs in a Green Economy

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Abstract:

The Philippines is facing two difficult and intertwined environmental tasks: minimizing the adverse impact of climate change through varied mitigation/adaptation measures and restoring its degraded environment. The way forward for the country is to pursue these tasks with greater vigour, coherence and consistency in the context of the need to green the economy and the labor market. This green economic shift is value-adding, job-creating and a key to the creation of jobs that are both green (help restore the environment) and decent (promote dignity, security, equity and stability at work).

However, crucial to this greening process is the formulation of appropriate national action plans on environmental education, skills training and human resource development

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in support of this greening vision. These plans are not yet in place despite a law on the integration of environmental education at all levels, although there are significant education/skills initiatives by both the public and private sectors.

At the moment, there are no evident shortages or mismatches in environmental education and skills development, except in projects involving the importation of new technology, largely because the green shift is just starting. The challenge, therefore, is to strategize environmental education and skills development in anticipation of a green shift in the industrial, agricultural and services sectors, including the greening of the environment and the communities that are vulnerable to climate change risks.

Introduction

The world has changed. The hedonistic globalization that has been the hallmark of the past twenty years has finally run its course. Undoubtedly, the liberalization of trade, finance and labor markets has produced many benefits — the period from 1998 to 2008 saw the global economy expand at an unprecedented rate. But there were winners and losers. Countries integrated into the global supply chain benefited the most and possibly none as much as those in Asia. Similarly well educated workers were able to migrate with ease and find jobs where demand for their services paid the highest return.

But some countries with incoherent and inconsistent market, fiscal and development policies fared less well than they might have done. Least benefit accrued to the poor and uneducated; they sank further behind. Certainly, there was demand for their labor and a thriving trade emerged in so-called migrant workers; but often the work they were offered —and which out of necessity many took —was hardly decent. Exploitation of the poor and gullible was rife, and in many instances overseas contract workers were not afforded protection under the national laws by their host country. Filipino workers, which tended to be better educated and destined for the service industries of the world, did better than many others.

The Global Financial Crisis (GFC) that emerged in the United States during the latter half of 2008 had been brewing for some time. The warnings were certainly there but little attempt was made at correction before the storm broke. The result was close to catastrophic and the financial crisis quickly turned into a global economic crisis. Fortunately, once the crisis was upon us, action was swift with many countries, including the Philippines, launching measures designed to contain the damage to their economies and their workers through stimulus packages. Nevertheless many economies, including those of the industrial world as well as many developing economies sank for a period into recession.

As countries emerge from the GFC, there is widespread recognition that future development, to be sustainable, must also be "green". This means a global shift towards low carbon economies, industries and greener jobs. The imperatives of climate change, the realization that both climate and weather are changing more rapidly than earlier thought possible and warnings that the entire world may be close to a "tipping point" beyond which change becomes irreversible, have injected a new dimension into the debate about economic recovery.

There is now a belated realization that to deliver a sustainable future in terms both of economic growth and decent work, climate change will require both adaptation as well as mitigation and both will impact on manufacturing and employment. This is an issue of paramount importance to the Philippines for a number of reasons. Firstly, while the Philippines is regarded as a "low emission country" in terms of its contribution to global warming, the consequences of rising global temperatures and an increasing frequency of extreme weather events will be profound. Secondly, as a party to the United Nations Framework Convention on Climate Change (UNFCCC) as well as the Kyoto Protocol,[1] the Philippines has undertaken to promote technologies, practices and processes that control and reduce greenhouse gas emissions as part of global mitigation efforts. It is in this context that this report looks at the issue of developing new "green" industries as well as the "greening" of existing industries for the Philippines. These provide both challenges and opportunities.

Building a green economy

This report argues that the Philippines has a fresh opportunity to build a resilient economy appropriate to the new millennium but we start

from an environment that is highly degraded. Before we can set a target and a roadmap we have to know where we are.

A degraded environment

The Philippine environment is a degraded one. This can be easily gleaned from the list of environmental concerns which the Department of Environment and Natural Resources (DENR) enumerates each year in its Annual Report. The Philippines is facing a number of environmental problems that are all equally urgent and distressing. They include the following:

1. Loss of forest cover

Foremost among these environmental concerns is the massive and continuing decimation of the country's forests. Forest lands are supposed to account for half of the country's land area, or 15.8 million hectares in all. However, most of these so-called forest lands are badly denuded, with the actual forest covering less than a fifth of the country.

At one time, the forest products, timber and wood industry was one of the country's leading dollar earners. This was in the period 1950–1978, when the deforestation rate was around 200,000 hectares a year (NSO, 2005). The industry tapered off in the 1980s. However, deforestation has persisted up to the present, due to illegal logging, swidden agriculture, population invasion and other man-made factors. This phenomenon has, predictably, destructive consequences such as flooding, soil erosion and shifting land formation; it has also contributed to changing climate patterns and global warming.

2. Loss of biodiversity

In 2006, Haribon (Philippine Biodiversity for Beginners, 2006), a leading environmental NGO, reported the alarming loss of biodiversity in the country as reflected in the fact that the Philippines has 54 common birds and 54 mammal species facing extinction even if the country is reputed to be the leading host

of endemic endangered species in the world on a per area basis. Haribon blames this loss of biodiversity on the damage to the country's forest cover, mangroves and seas. It pointed out that only five per cent of the country's reef system is in "excellent condition", and only 112,400 hectares of the original 400,000 plus hectares of remain. This has naturally reduced the fish catch in the country. Haribon also claimed that there are 16 major rivers, including five in Metro Manila, which are biologically dead.

3. Air pollution

Philippine air quality, which improved slightly over the period 2003–2007 due to reduced total suspended particulates (TSP), remains problematic. According to the National State of Brown Environment Report(2005–2007) (DENR-UNDP, 2009), the TSP geometric mean concentrations are still above the 90 μg/Nm3 annual mean TSP guideline. The biggest source of air pollution in the country is transport because of the widespread use of fossil fuel and poor compliance with the Clean Air Act, including smoke-belching by old, second-hand and poorly-maintained vehicles.

4. Water pollution and depletion

This is a major problem, particularly in highly urbanized areas. There are 20 major river basins and 421 principal rivers within the country. All the rivers in Metro Manila have failed the tests for "dissolved oxygen" (DO) and "biochemical oxygen demand" (BOD). The National State of Brown Environment Report (DENR-UNDP, 2009) wrote that the major sources of water pollution are domestic sources (48%), agriculture (37%) and industry (15%).

To the pollution problem must be added depletion of groundwater and aquifers. This has already produced subsidence in some areas of Metro Manila and climate change will add to water stress in some localities.

5. Poor solid waste disposal

This is a nation-wide problem and is most serious in the urban centres. The same report cited above explained that Metro

Manila alone generates 2.86 million tons of solid waste per year, followed by nearby Southern Tagalog and Central Luzon, with 1.69 million tons and 1.21 million tons respectively. Overall collection efficiency ranges between 40 per cent (rural areas) to 70 per cent (urban areas). Recycling is also very limited. In 2007, there were 826 open dump sites versus 35 sanitary landfills and 359 controlled disposal facilities. The leading wastes are chicken parts, plastic and paper. Accordingly, only 2.8 per cent of the local government units (LGUs) have complied with the law on solid waste management requiring the LGUs to maintain ecological sanitary landfills (PDI, 2009). A majority of the provinces and towns still operate 900 open or controlled landfills.

In September-October 2009, the Philippines was hit by two powerful storms — "Ondoy" and "Pepeng", terribly validating the truth on the destructive impact of climate change as the two typhoons flooded more than half of Luzon, including Metro Manila. These storms revealed the extreme vulnerabilities of the country to floods and landslides due to massive loss of the forest cover, eroded watersheds, and silted river systems. These storms also validated the earlier observation about the Philippine tragedy as being a low emitter of greenhouse gases (GHG) including carbon dioxide but yet the country is a major victim of climatic changes and abnormalities.

The rise of the environmental movement

National awareness on the central importance of a healthy environment is fairly high in the Philippines. To a great extent, this is due to the sustained efforts of environmental advocates and activists within the government and in the large civil society movement or NGO sector in the country. These efforts now span four decades of environmental awareness-raising and campaigns for various environmental causes.

As early as the late 1970s, the National Environmental Protection Council (NEPC) under the then Ministry of Human Settlements (MHS) had been advocating land use planning and zoning (including identification of areas for "controlled development" such as cultural minority settlements), rehabilitation of forests and soil conservation, coastal resource management, development of "non-conventional" renewable

energy sources, and varied pollution control measures for air, water, lakes, solid wastes, sewage and industrial effluents (NEPC, 1979).

At the same time, Haribon, originally a bird-watching society, was already raising the problem of declining biodiversity. Proponents of "organic agriculture" such as Domingo Abadilla, a pioneer environmentalist and former Administrator of the Philippine Coconut Authority, were writing about the poisoning of the soil by "chemical agriculture" (mostly associated with the Green Revolution of the l970s) and the looming "environmental crisis" in the country (Abadilla, 1982a; Abadilla, 1982b).

Many of the existing environmental programs today were in fact the subject of policy discussions and debates dating from this time. One major policy outcome from these early environmental discourses was the issuance by President Ferdinand E. Marcos of Presidential Decree No. 1151 (issued June 6, 1977) requiring energy- and resource-intensive industries to submit an "environmental impact statement" about their proposed project, including the "adverse environmental effect" of the project and "alternatives to the proposed action". Subsequently, this decree gave birth to PD 1586 on "environmental impact assessment" (EIA) and, later, the requirement for such projects to get "social acceptance" or "social acceptability" by the host community.

In the second half of the l980s, the environmental movement in the Philippines reached a new high, with the change of government in 1986 and with the release in 1987 by the World Commission on Environment and Development of its report entitled *Our Common Future* (WCED, 1987). More popularly known as *The Brundlandt Report*, the Philippine edition was reprinted by a Church-funded "Lingkod-Tao Kalikasan", which declared itself as the "Secretariat for an Ecologically Sound Philippines".

There has been a proliferation of environmental NGOs since then, estimated by the Philippine Council for Sustainable Development (PCSD) to be over 1,200 in the 1990s (Severino, 1998). Among the more prominent NGOs today are the pioneering Haribon and the Philippine chapters of Greenpeace International and World Wildlife Fund (WWF).

During the term of President Corazon C. Aquino, most of the environmental programs were lodged in the reorganized and expanded DENR through its Environmental Management Bureau (EMB). With the help of then DENR's Secretary Fulgencio Factoran, Haribon worked for the establishment of the Foundation for Philippine Environment (FPE). The FPE, in turn, obtained an endowment fund from the UNDP, which the

FPE manages to help sustain the operations of a number of environmental NGOs.

The DENR, between l987–89, also tried to formulate a "Philippine Strategy for Sustainable Development" or PSSD. In 1992, following the Earth Summit in Rio de Janeiro, the government created the Philippine Council for Sustainable Development (PCSD) chaired by the National Economic Development Authority (NEDA) and co-chaired by the DENR. The PCSD revisited the PSSD when it came up with its local draft of "Agenda 21" as mandated by the 1991 Rio de Janeiro Earth Summit.[2] Briefly, the PCSD, an inter-agency body, serves as the government's coordinating centre to monitor Philippine compliance with its global environmental commitments and to foster coherence in domestic economic-environmental policies. Part of the Agenda 21 is "Business Agenda 21", which outlines the role of the private sector in the management of the environment. The ILO (Villacorta and van Meirhaeghe, 1995) noted that Agenda 21, a product of "consensus-building" involving both employer and trade union groups, hewed closely to the ILO advocacy program for "Environmental Management at the Enterprise Level", which promotes stronger work-environment harmonization.

Today, the main preoccupation of PCSD is how to flesh out the Philippine response to the "Climate Change" challenge under the 1992 UNFCCC and the 1997 Kyoto Protocol. The Philippines ratified both UN documents in 1994 and 2003 respectively.

However, one outcome of the Philippine ratification of these documents and participation in the global war against climate change is the increased role of the Department of Energy (DOE), which heads the campaign for the research and development of clean renewable energy (RE) as well as the reduction of per capita power consumption in the country. Since 2002, the DOE has been cooperating with the Austrian-supported and UN-backed REEP or "Renewable Energy and Energy Efficiency Partnership", which seeks to promote tie-ups with investors going into RE and with companies seeking to adopt more efficient energy utilization schemes. REEP involves awareness-raising, third-party financing for would-be investors and technical assistance in setting up RE projects.

In the meantime, the advocacy for a clean and healthy environment has been embraced by an increasing number of LGUs. Many of these LGU initiatives support eco-tourism projects. One pioneering and successful LGU-led eco-tourism project is the "ecotour" at Subic Bay where the indigenous people (Aeta tribe) serve as the tour

guides for "trekking" in the preserved forests of the former US naval base (Villacorta and Meirhaeghe, 1995). Another but bigger eco-tourism program is that conducted by the LGU of Puerto Princesa, which promotes itself as the country's "greenest city" and which markets its lush forests, exotic caves, underground river and biodiversity as attractive come-ons for nature lovers. Similarly, the LGU of Bohol has transformed the island province into a major tourist destination by cleaning and sprucing up the entire province, and mobilizing the people in support of eco-tourism.

Some LGUs are also militant in the defence of their environment against the potential threats posed by large-scale mining, such as the ordinance adopted by Oriental Mindoro against the Mindoro Nickel Project. Governor Arnan Panaligan said that the 9,000-hectare nickel project is a threat to Oriental Mindoro's watershed areas and the ancestral domain (or land) of the Mangyan and Kabilogan tribes (Jandusay and Reyes, 2009). The stand taken by Governor Panaligan is the same stand taken by almost all bishops in the Philippines, who have aligned with militant anti-mining activists and environmentalists in the country. A similar Church-LGU anti-mining campaign led to the abandonment by a big influential business group of a 7,000-hectare coal exploration-development project in Catanduanes in the Bicol region (Remo and Gianan, 2009).

The LGU of Albay province in the Bicol region has a disaster preparedness program in place. Like the other provinces of Southern Luzon, Albay is in the path of typhoons that often originate in the Pacific Ocean. Albay is also host to an active volcano, Mayon, which has undergone 50 eruptions in recorded history and which last erupted in December 2009. In addition to the danger posed by volcanic activity, the lahar deposited on the slopes often generates dangerous mud slides in the villages and towns around it during storms.

Recent policy responses to the environmental challenge

During the period of the Arroyo Administration (2000–2009) the main focus of the environmental debate was on the promotion of alternatives to fossil fuels sector (e.g., biofuels, geothermal, wind and solar). This came about in response to the twin pressures of the ever-rising cost of imported fuels and the need to contribute to the mitigation of global warming.

The 2004–2010 Medium-Term Philippine Development Plan (MTPDP) called for the implementation (or application) of energy projects

under the Clean Development Mechanism (CDM) of the Kyoto Protocol, establishment of wildlife farms and zoos to safeguard biodiversity, strengthening of protection for "vulnerable and ecologically fragile areas" (forest ecosystem, coastal/marine ecosystem and biodiversity resources), better management of air and water resources, improved handling of solid waste (especially in Metro Manila), and mitigation measures against natural disasters (landslides, floods and volcanic eruptions). However, there are also program thrusts under the MTPDP that have come under the critical scrutiny of NGOs and environmental activists such as the liberalization/streamlining in the issuance of the environmental compliance certificates (ECCs), opening up of denuded forest lands to private sector development, and the promotion of mining as a dollar generator.

In summary, a chronology of the Philippine environmental laws (see Table 1) shows that the country has responded positively, in terms of legislation, to the emerging environmental concerns, starting with the grim issue of deforestation in the l970s to the CC-related and rising cost of fossil fuel.

An evaluation of the enforcement of these environmental laws and the implementation of related environmental programs is worth pursuing. However, such an exercise is not only beyond the scope of this report but also difficult to undertake in the light of the limited enforcement/implementation data available in the various concerned agencies. Thus, one government report to the UN Committee on the Convention on Biological Diversity, *Assessing Progress Towards the 2010 Biodiversity Target* (2009, p. 29), frankly admitted:

> *There are no actual figures for agro biodiversity decline or gain in the country due to the absence of national indicators as well as lack of monitoring.*

Table 1. Significant Environmental Laws, 1970s–2008

Year	Event
1970s	PD 1151 (Philippine Environmental Policy)
	PD 1152 (Philippine Environmental Code)
	PD 705 (Forestry and Mangrove Preservation)
	PD 1586 (Environmental Impact Assessment)
	PD 1586 (Environmental Impact Assessment)
	PD 1586 (Environmental Impact Assessment)
	RA 7586 (National Integrated Protected Areas or NIPAS)
	RA 9275 (Clean Water Act)
	RA 8371 (Indigenous Peoples Rights Act)
	RA 8749 (Clean Air Act)
	RA 9003 (Ecological Solid Waste Management Act)
2006	RA 9367 (Biofuels Act)
2008	RA 9513 (Renewable Energy Act)

Source: Author's compilation

High awareness but little substantive action

The Philippines situation can be described as one of relatively high public awareness of environmental concerns, due partly to the sustained efforts of the environmental advocates and activists within the government and in the broad civil society movement but little by way of action. Degradation of the environment continues despite efforts to contain this degradation at the local level.

One problem is that public awareness of the myriad environmental problems and the necessary solutions are rarely translated into actionable programs. And if these programs are in place, they are not implemented. This is clearly the situation in relation to the deforestation problem, which generated a number of sound but non-implemented solutions as early as the 1970s.

There are several possible explanations for this complacent attitude. One obvious explanation is bureaucratic inertia. Another explanation for the weak implementation of environmental programs is that they are seen by some sectors as a threat to jobs and livelihood. In a 1991 ILO-supported conference on "Labor and Ecology", Atty. Evelyn Dominguez of the then Pollution Adjudication Board of the DENR spoke harshly about the "reactionary" attitude of organized labor towards the

environment because the Board's "pollution control efforts" were "seen as a threat to jobs, food and economic security". In the 1990s, the Board prosecuted several hundred firms, mainly in the manufacturing sector, which were discharging effluents and other wastes into the Pasig River and the Laguna Lake. Many of these manufacturing plants were issued with a "cease and desist order", an order which was often opposed by the workers themselves (Dominguez, 1991).

However, most of these factories, which are no longer around or to be seen along the banks of the Pasig River, closed down not only because of the environmental compliance orders from the DENR but also, and more importantly, due to the general crisis of manufacturing in the country. This was particularly true in the early 1990s, when Luzon was hit by a debilitating power crisis and outages lasting as long as 10–12 hours. In the mid-1990s, the solution to the power crisis turned out to be expensive. To solve the crisis, the government used oil-fired power barges as a stop-gap measure but the generating cost of electricity from these plants was high. This high cost of power was further compounded by the accelerated liberalization of the market during the Ramos Administration, paving the way for the entry into the domestic market of cheaper imports. The decade ended with the 1997–98 Asian financial crisis which reduced demand and, with many power contracts signed on a "take or pay" principle, costs have remained high in the Philippines ever since.

Another explanation is the generally complacent attitude of Filipino officials and even the public in general. In 2000, the Philippine Social Weather Station (SWS) participated in an international social survey program (ISSP, 2000) on environmental attitudes (Social Weather Station, 2004). The SWS found that the Filipinos exhibited the most complacent attitude towards the environment as indicated by the highest percentage (66%) of those who said that their country is "already doing enough" on the environment; this contrasted to an average of 63 per cent in 15 other countries who answered "not enough". And in a 2007 SWS survey, *"76% of Filipinos want global warming addressed, but most say it should be done gradually"*, an answer interpreted by the SWS as another sign of complacency (Mangahas, 2009).

Today, it is hard to find a business person, a labor leader or a government functionary opposed to environmentalism or to any mitigation/adaptation measure related to climate change. In fact, the term "green jobs" is now part of the vocabulary of the tripartite actors. At the recently-held Copenhagen Summit (December, 2009), most of the labor

groups in the Philippines supported the statement of the International Trade Union Council (ITUC) entitled "Equity, justice and solidarity in the fight against climate change" (ITUC, 2009). The Department of Labor and Employment (DOLE), on the other hand, has been supporting the ILO's program on "green and decent jobs" and has been urging companies to adapt "greener ways" at work (BusinessWorld, 2009a).

Hopefully, the natural disasters which hit the country in September-October 2009 due to the twin typhoons will spur all sectors of society to be more aggressive in pushing for appropriate environmental solutions and programs. In the meantime, there should be no slowing down in deepening the public understanding of environmental problems and their implications for the economy, jobs and skills.

Environmental education and awareness raising

The school system provides a good medium for raising environmental awareness and honing environmental skills. However, this has been given official attention only in recent years. Textbooks or courses discussing the environment were largely written or taught on the initiative of individual teachers or private school institutions; for example, the Catholic Education Association of the Philippines (CEAP) has integrated environmental studies into the social studies (Makabayan) and science curriculum for high school students (DENR-UNDP, 2009).

Approved in December 2008, RA 9512 or the *"Environmental Awareness and Education Act of 2008"* mandates the integration of environmental education in

> *"...school curricula at all levels, whether public or private, including in barangay day-care, preschool, non-formal, technical-vocational, professional level, indigenous learning and out-of-school youth courses or program. Environmental education shall encompass environmental concepts and principles, environmental laws, the state of international and local environment, local environmental best practices, the threats of environmental degradation and impact on human well-being, the responsibility of the citizenry to the environment and the value of conservation, protection and rehabilitation of natural resources and the environment in the context of sustainable development. It shall cover both theoretical and practicum modules comprising of activities, projects, programs including, but not limited to, tree planting; waste minimization; segregation; recycling and composting; freshwater and marine conservation; forest management and conservation; relevant*

> *livelihood opportunities and economic benefits; and other such programs and undertakings to aid the implementation of the different environmental protection laws" (Sec., 3, RA 9512).*

In recent years, a long-running theme in the education-skills development sector has been the issue of job-education/skills mismatches. Either the youth of the country is being educated in courses which have no demand in the labor market, or there are available jobs in the labor market but with a lack of qualified candidates to take them up. The job-skills mismatch was, in fact, a major topic in:

- the 2007 National Human Resource Conference (ILS-DOLE-NWPC-ILO, 2007);
- the 2008 *Surging Ahead: Towards Enhanced Worker Employability* of the Technical Education and Skills Development Authority (TESDA); and
- the 2008 Final Report of the Presidential Task Force for Education *(The Philippine Main Education Highway)*.

In the 2007 National Human Resource Conference, the multi-sectoral participants focused on the supply-demand issues of the labor market identifying as key employment generators (KEGs): (i) agribusiness, (ii) construction, (iii) cyber services, (iv) mining, (v) maritime, (vi) hotels and restaurants, and (vii) health, wellness and medical tourism. Despite the passage of RA 9512, green skills did not even merit a single line, neither in this conference nor in the 2008 TESDA's *Surging Ahead* nor the 2008 Report of the Presidential Task Force for Education, all of which covered other important education-skills concerns such as financing, globalization and so on. This is unfortunate given the fact that a shift to a green or greener economy would necessarily entail the development of green skills for the work force needed by the green/greener industries of the new millennium.

However, it is not correct to say that there have been no advances in environmental education at all; rather that there has been no policy focus at the national level. There has been some progress, especially at the tertiary level and in specific institutions. This is thanks to the contributions of two national networks for environmental education and the pioneering efforts of some educational institutions.

The two networks at the forefront of this work are the Environmental Education Network of the Philippines, Inc. (EENP) and the Philippine Association of Tertiary Level Institutions in Environmental

Protection and Management (PATLEPAM). EENP was established in 1987 with financial support from the Ford Foundation and the Canadian International Development Agency (CIDA). Its membership is composed of 68 research and academic institutions and one national federation of NGOs. For EENP, "green professions" is not entirely a new concept because the network had already introduced such a concept in the 1990s. For example, on October 23–25, 1996, the EENP organized the First Philippine Congress on Tertiary Environmental Education with the theme "Greening the Professions through Environmental Education". In particular, the congress became a venue for discussions and workshops on the environmental dimensions and perspectives in architecture, urban and regional planning, medicine and law.

EENP claims it continues to implement strategies to help enhance environmental education in the country such as teacher training, curriculum development and research projects. Other reported accomplishments of EENP include the development of an environmental education assessment program for "Dark Green Schools" and the conduct of two congresses per year that deal with regional and national environmental issues (Segovia and Galang, 2002).

The Commission on Higher Education (CHED), on its part, has been deliberating on its proposed commitments to the NEEAP and RA 9512. According to CHED officials consulted in the preparation of this report, some of the environmental education challenges are to be found in environmental training for teachers, development of instructional materials, formulation of standards for environmental education, and establishment of database on Philippine biodiversity.

For the Department of Education (DepEd), the mandate of RA 9512 is further buttressed by the requirement of the Climate Change Act of 2009 which tasks DepEd to incorporate climate change principles and concepts into primary and secondary curricula and/or subjects, including science, biology, sibika,[3] and history. In addition, educational materials such as textbooks and primers must also contain information about climate change.

The research team visited TESDA twice. During the first visit, the team was able to interview Director Irene Isaac of the Qualifications and Standards Office and Ms. Marisa Legaspi of the Planning Office. After the research team's discussion of "green jobs", Director Isaac realized that TESDA had been honing environmentally-related skills without formally branding them as "green skills" or "skills for green jobs". This included skills training for solid waste management, integrated pest management,

and recycling. For example, in line with the Clean Air Act of 1999, TESDA organized training courses on how to conduct emissions testing and how to undertake retro-fitting/conversion for vehicles shifting to cleaner LPG/CNG fuel. In order to do this, TESDA amended its Training Regulation (TR) for the Automotive Servicing NC III Qualification to include LPG conversion and re-powering and developed a corresponding Competency-Based Curriculum for this qualification.

TESDA furnished the research team with a list of 16 qualifications (out of the 215 promulgated TRs as of July 2009) that clearly specify environment-related knowledge, skills and attitudes in the TRs and curriculum. In addition, the 14 TRs in the agriculture and fisheries sector can also be classified as being meant for green jobs. TESDA also has an ongoing program with DOE to integrate the use of energy-efficient lighting in the TR for electrical installation and maintenance qualifications.

For most of the technical-vocational courses, Director Isaac pointed out that TESDA is likely to push for the inclusion of the environment as a component — mainly as an awareness component — in the curriculum. In relation to this, TESDA is planning to conduct a curriculum review and undertake revisions to incorporate environmental concerns and climate change issues in the contextual-learning matrices for all promulgated qualifications. According to TESDA Commissioner Tony Asper, labor's representative on the TESDA Board, the need to integrate climate change issues in TESDA qualifications also intensified after the calamities caused by typhoons Ondoy and Pepeng.

TESDA does not allocate a separate budget for the development of TRs related to green jobs. Green jobs or not, the funding for every qualification package (consisting of the TR, competency-based curriculum and assessment tools) comes from the TESDA's TR Development Fund. On the average, the funding amounts to roughly P100,000 per qualification package, which varies depending on the nature of the qualification. In addition to the regular TESDA funding, TR development also obtains financial support from Official Development Assistance (ODA) donors and industry requesting for the development of TRs for certain trades. While TESDA apportions a specific budget for TR development, there is no separate budget that provides financial assistance to individuals who want to undergo technical-vocational training. Primarily, this is because the training programs are not conducted by TESDA itself but by the technical-vocational schools and other training providers nationwide. The cost of the training is paid by the training participants through their tuition fees. However, scholarship grants of up to P20,000.00 are given

to qualified technical-vocational students through the Pangulong Gloria Scholarship Program.

CHED, TESDA and DepEd are all required by RA 9512 to deepen environmental education. However, given the realities of curriculum planning and budgetary programming, concrete action measures are likely to be in place only in 2010, at the earliest.

PATLEPAM, formed in 1995, has a membership of 380 academic institutions from different parts of the country. PATLEPAM not only provides linkages among colleges and universities but it also networks with CHED, EMB and the EENP. One of the proposals of PATLEPAM to CHED is to include a three-unit course on "Environment and sustainable development" in the general curriculum of higher education (Segovia and Galang, 2002).

Some universities and colleges, especially the members of EENP and PATLEPAM, are now offering degree programs specializing on the environment such as B.S. in Environmental Studies, B.S. in Sanitary Engineering, M.S. in Environmental Engineering, M.S. in Environmental Science and even Master in Mountain Engineering. Accordingly, CHED has been coordinating with the DENR's Environment Management Bureau (EMB) on the design and standards for environment education. The degree programs include courses on environment-friendly technologies, energy conservation and efficiency guides, as well as renewable/non-conventional energy sources (solar, wind and water). Some elements of the environmental education curriculum are based on Philippine Agenda 21 (DENR-UNDP, February 2009).

One of the leaders in environmental education in the Philippines is the College of Engineering of the University of the Philippines, Diliman Campus (CE-UP Diliman). In 1973, the Environmental Engineering Graduate Program (EnE) in CE-UP Diliman was established in partnership with international organizations and academic institutions, including the World Health Organization, United Nations Development Program, University of California-Berkeley, and University of North Carolina—Chapel Hill. The academic programs offered in UP EnE are M.S. Environmental Engineering and Ph.D. Environmental Engineering. Aside from the courses for graduate programs, UP EnE also offers environmental engineering courses for undergraduate engineering students, such as Technology and the Environment and Special Problems.

Clearly, as the Philippines enters the second decade of the new millennium and with climate change coming increasingly to the fore in the international debate about building a sustainable future, there is a

historic opportunity for the Philippines under a new administration to revisit national policy, overcome complacency among the population and develop a new social contract among the tripartite partners to encourage new green industries and the greening of existing ones. In this process, agencies such as the DOLE, TESDA and the trade unions have to be brought into the mainstream of debate.

Green restructuring and green capability building

At this stage, there is no decisive or tectonic shift toward a greener economy although we may be seeing some glacial movement in this direction. The newspapers these days are filled with various environment-related stories. There is also increasing reporting on individual companies "going green" or becoming "greener", as can easily be gleaned from the titles of some business stories, for examples: "SM unit eyes carbon credit trade" (Morales, 2009), "WHO cites Maynilad water safety plan as best practice" (BusinessWorld, 2009b), "E-jeepneys finally on public roads" (Hermosa, 2009), "New business 'philosophy' for Ayala" (Salvosa, 2009), and "Green gizmos enhance buildings in RP" (Salazar, 2009).

However, the initiatives of a score or more firms to "go green" is not enough to draw the conclusion that there is now a green groundswell in the different sectors that make up the economy. There are around a million registered business establishments in the country. In the last establishment census (2000) by the National Statistics Office (www.census.gov.ph), the country recorded 820,960 enterprises employing 5.9 million workers. Wholesale and retail accounted for more than half of the total, followed by manufacturing which had a total of 125,467 establishments as of 2000. Thus, the green initiative of a score or so enterprises, even if they are big, does not mean the economy is now going green. The situation is complicated further by the fact that there is no NSO data nor NSO census/survey on establishments going green/greener. Moreover, one should keep in mind that the establishment data does not cover the vast majority of workers who belong to the informal economy. The Employers Confederation of the Philippines (ECOP) claims that as much as 77 per cent of the labor force is in the informal economy.

As to the green industries being promoted in the Philippines, these are mostly in the renewable energy (RE) sector. DOE has been publicizing the fiscal and other incentives that investors, local and foreign, can get by investing under the Renewable Energy Act of 2008 (geothermal,

wind, solar, hydro and biomass) and the Biofuels Act of 2006 (biodiesel, bioethanol). There are exciting investment projects, one of which (San Carlos Bioenergy) has been documented in the main report as a case study (Ofreneo, 2010). However, some observers lament that the renewable energy sector is still unable to attract higher level of investments. In a recent special report entitled "Nascent renewable energy industry awaiting investments", Jose Bimbo Santos (BusinessWorld, 14 January 2010) wrote that one reason why the industry is not attracting investors is the fact that the location of RE ventures is mostly in unprofitable remote areas where the demand for electricity is low and where RE exploration/ development cost is high.

Faced with a complex situation, the research team that prepared the main report outlined the possible shape of an economy-wide greening process and the likely HRD/skills requirements needed for such process. To the research team, this meant assessing the existing structure of the present economy and the labor market and discussing the possibility of a high-value, labor-friendly green restructuring in order to ensure that jobs generated should be, in the words of the ILO, both "green and decent". Here the IR/HR background of the research team naturally came into play. However, given the paucity of industry data and non-existence of a green job/greener job catalogue or directory, this exercise had obvious limitations; hence, the operative phrase used by the research team was "to outline".

The research team was also mindful of the ILO-UNEP-IOC-ITUC study (ILO-UNEP-IOE-ITUC, September 2008), which indicated that green jobs and jobs with "shades of green" are likely to be developed in the following sectors/industries:

- Energy supply (carbon sequestration, co-generation and renewables);
- Transport (more fuel-efficient vehicles, car-sharing, public transport);
- Manufacturing (clean technologies, energy efficiency);
- Buildings (green buildings, retro-fitting, solar heating);
- Materials management (re-cycling, de-materialization);
- Retail (eco-labels, non-product services);
- Agriculture (soil conservation, water efficiency, organic farming); and
- Forestry (reforestation, agro-forestry).

There are a number of Philippine initiatives in these various sectors/industries. However, it should be pointed out that a green shift in the economy should be able to address the green requirements of other sectors as well, in particular, industries in the service sector such as tourism and those of the large informal economy. Also, a restructuring should be based on a realistic recognition of the existing economic structure, employment patterns, and likely trajectories of the economy if environmental or CC-related adjustments are put in place.

The conduct and selection of case studies

Nine enterprises were selected for case studies (see Box 1) compiled by the team to supplement or illustrate more concretely the nature of skills needs and challenges related to (i) training/retraining for the industries going green/greener, (ii) the HRD requirements of green-collar jobs in the new or emerging green industries, and (iii) the greening of existing jobs. Training/retraining issues naturally arise when an economic adjustment or restructuring, especially a green one, is undertaken. Training/retraining and other HRD programs are needed by virtually all — managers, supervisors and staff/rank-and-file—if they have to fulfil the green/greener mission of the enterprise.

It is a given that the HRD and skills development program of every enterprise is driven by its business vision and mission. If the purpose of a business investment in a renewable sector, e.g., recycling, is to make money out of a recycling operation, the job of the HRD manager is to determine how to achieve this purpose in terms of personnel policies (organization, hiring, deployment, compensation, etc.) as envisioned by the investor, owner or board of directors. Thus, in the conduct of the case studies, the research team's inquiries were focused on the following fourteen questions:

1. What is the business vision-mission of the enterprise?
2. How is this business vision-mission affected by the emerging culture of environmentalism and development challenges posed by climate change and environmental degradation?
3. How are the business vision-mission and business commitment to environmentalism translated into HRD/skills development programs?

4. What are the personnel problems and skills gaps encountered? How are these remedied?
5. What are the good and not-so-good experiences in HRD and skills development?
6. What is the culture of employer-employee relations present in the enterprise?
7. How are the employees/managers/professionals responding to the challenge of environmentalism?
8. What are the enterprise and employee commitments to environmental programs? What are the indicators?
9. What are the incentives for the enterprise to go into environmental mode?
10. What are the enterprise achievements in the area of environmental concerns?
11. How are the employees involved?
12. What are the key HRD/skills learning in all of this?
13. What are the competencies needed to achieve the business and environmental objectives of the enterprise?
14. What are the lessons and learning based on the company experience?

In undertaking each case study, the research team sought to establish contact with the responsible officers of the enterprise. Once accepted to undertake company interviews, the research team's initial inquiries focused on the business vision-mission of the company/ institution in the light of the environmental challenges. These questions were followed by inquiries on how these challenges are addressed in the HR programs/policies. Finally, the research team validated these findings through focus group discussions or individual interviews with select representatives doing green jobs/tasks/assignments.[4] The list of participating firms and their reason of interest is shown in Box 1.

Findings from the case studies

The nine companies and organizations chosen represent three different aspects of the greening process: (i) those traditional companies developing green skills within their workforce (ii) green enterprises and (iii) companies and organizations that have adopted a green agenda. These case studies are all documented in detail in the main report (Ofreneo, 2010).

Box 1: The Nine Case Studies

Greener firms and greener HRD/Skills development

- Philippine Associated Smelting and Refining Corporation (PASAR), a government copper smelting firm privatized in 1999. The new owner invested in pollution abatement measures and initiated a number of environmental projects in and around the smelter site. Its copper output has an ISO 14001 certification.
- Halsangz Plating Cebu Corporation (HPCC), an export-oriented but energy-intensive firm located in the Mactan Export Processing Zone (MEPZ) in Cebu. It reportedly succeeded in drastically reducing its energy consumption through an energy rationalization program involving the entire work force.
- Toyota assembly plant in Sta. Rosa, Laguna. Toyota has adopted greener methods and processes and has initiated a number of green projects within and around its sprawling facility. Some of the green projects are part of the Toyota's world-wide greening program; others have been undertaken on the initiative of the Philippine joint venture partners of Toyota.

Green Collar Occupations

- San Carlos Bio-Energy Inc. (SCBI), the first bio-ethanol plant in the Philippines and in Southeast Asia.
- Energy Development Corporation (EDC), the biggest geothermal project in the Philippines.
- Metal Wealth, the country's biggest plastic recycling firm, which buys waste plastic materials of all shapes, sizes and colours from plastic waste collectors.

Greening existing occupations

- Jollibee, the country's largest food chain, with over 3,000 employees and hundreds of stores located nationwide;
- Haribon, one of the country's oldest and biggest environmental NGOs. Aside from its usual environmental awareness-raising programs, Haribon has projects on "rainforestation", which promotes sustainable reforestation through the use of native species and the development of livelihood programs for communities living in the reforestation areas;
- NISARD or the Negros Institute for Sustainable Agriculture and Rural Development, an NGO promoting organic or sustainable agriculture based on a cooperation agreement by the two provincial LGUs (Negros Occidental and Negros Oriental).

Source: Ofreneo (2010)

Among the findings of this policy research:

- There appears to be no major shortage of skills and talent in support of green restructuring.
- A key element in successful greening is the commitment of top management.
- A basic requirement in the recruitment of technical people is trainability and willingness to learn. New skills invariably build on and enhance existing skills. The only example found where this did not apply was in the shift from chemical to organic farming where farmers had to learn to take care of the soil rather than the crop and allow the soil to take care of the crop.
- Allied to trainability is motivation. Motivation strategies seem to work.
- In none of the instances studied did "greening" reduce the number of jobs; rather the reverse – the process created more and better jobs.
- For many companies, environmental issues and safety issues are considered inseparable.
- Investments into environmental initiatives produce multiple benefits; environmental compliance can actually result in cost-saving measures for a company.
- Promotion of ISO 14001 certification by companies will result in both "greener" managers and "greener" employees.
- In rural areas, the practice of "integrated social forestry" protects forest and watersheds while creating livelihood opportunities for forest dwellers and allows them to participate in the decision process; more generally, community engagement pays dividends in terms of support for industry.
- While the DA is officially promoting organic agriculture and organic fertilizer production, at the same time it is heavily committed to chemical farming. This is creating confusion.
- In terms of the "greening of communities", there is an immediate need to set up strategic disaster preparedness measures, including relocation, for communities lying in flood-prone coastal and lowland areas as well as those in the deforested high lands.

The green vision

Is a green Philippine economy attainable? We believe the answer is that it is. But the "transition" is likely to be long and complicated. In a Forum on Green Jobs organized by the DOLE's Institute of Labor Studies (ILS, 2008), it was correctly pointed out that:

> *...people must guard against...the idea that the transition to a sustainable green economy is inevitable...we need to have a global transition at a speed that is probably in the realm of maybe two or three decades. It has to go against the existing trends. In all the economic transition that people can think of, there have always been many losers, some winners...*

Given the Philippines' own sad experience with its reforestation program dating back to the 1970s, the 2–3 decade transition appears very optimistic when applied to the Philippine economy. Nevertheless, the importance of a no-nonsense drive towards a green restructuring of the economy cannot be belabored. Such a drive would entail, in the view of the research team, the following initial agenda:

a) identification of key obstacles to a green shift and how to overcome them;
b) a reorientation of the agro-industrial policy regime in support of the green shift;
c) adoption of policies addressing urgent environmental concerns (particularly climate change challenges); and
d) intensification and broadening of positive or affirmative environmental programs initiated by both the public and private sectors.

Eventually, a green restructuring will naturally have serious consequences or ramifications on the labor market and the HRD/skills requirements of the work force.

Obstacles to going green

There are many obstacles to making a green shift that have to be overcome. A short list was prepared by the DENR in 2006. In the *Framework Plan for Environment and Natural Resources Management*

(DENR, 2006) prepared with the help of the UNDP, the DENR identified the following key obstacles to environment and natural resource management:

- High population growth rate (about 2.3%), which leads to intense use and abuse of the environment;
- High poverty incidence (about 40% of the population affected), which pushes impoverished groups to invade and destroy various eco-systems;
- Industrialization; and
- Globalization.

On industrialization, the DENR said that the stagnation of Philippine manufacturing, reflected in the decline of its GDP share in the economy (from 37% in 1970 to 30% in 2000), does not mean less environmental degradation. Instead, they foresee this decline giving rise to the proliferation of small and medium-sized industries whose collective impact on the environment could be worse than before and yet where individual operations are difficult to monitor.

On globalization, the DENR cited both the positive as well as negative impact of globalization on the environment; positive because global competition puts a premium on eco-labelled products and negative because globalization can also facilitate the "dumping" into the domestic market of dirty or polluting products and technologies.

On eco labelling, SGS and other international certifying bodies give globally-competitive industries in the Philippines certifications on quality assurance (ISO 9000 series), food safety assurance (Codex HACCP/ GMP), social accountability (SA 8000), environmental management (ISO 14001) and other standards imposed by global markets. For example, the country's two leading pineapple exporters—Dole Philippines and Del Monte—work hard to get all of these certifications, so that their canned and fresh pineapples can be retailed in Europe, North America and Japan. These certifications are only given by global certifying bodies after a rigorous audit of production methods, including work processes. There are even overlaps in some of these certifications, for example, the ISO 14001 label is a certification that a product or a process has met the environmental standards for that particular product or process, while SA 8000 is a certification that an exporting company respects internationally-recognized core labor, human, and environmental rights. Incidentally, the environmental and quality certifications are also sought by companies

catering to the domestic market so as to demonstrate their compliance with global assurance standards, for example, cement companies like Holcim and water companies such as Manila Water and Maynilad have ISO 9000 and ISO 14001 certifications.

On the other hand, globalization can indeed facilitate the dumping of dirty products and technologies, some of which adversely affect or displace existing domestic industries in a major way. For example, liberalization of the vehicle market has eased the entry of second-hand vehicles from Japan, the Republic of Korea and other countries. These imported vehicles, which outnumber the locally-assembled vehicles in the annual registration of "new" vehicles, are accident-prone (often because of conversion of the drive from a right hand to a left hand position). They also violate the Clean Air Act's provision on air pollution, which discourages trade in polluting second-hand imports. To top it all, most of these second-hand imports are undervalued and, therefore, under-taxed. This form of "technical smuggling" is happening not only in the vehicle market but also in the markets for textiles, garments, shoes, plastics, tiles, rubber and so on. Collectively, these under-taxed smuggled imports are called *ukay-ukay* or cheap second-hand imports (Fair Trade Alliance, 2006). Yes, most of these imports are cheap for they do not pay the right taxes and oftentimes represent export surpluses being dumped by major exporters when there is overproduction of these goods and the American/European/Japanese market gets saturated. Consequently, they displace domestic producers, workers, and farmers in an unfair or uneven way. They degrade the environment because most of these products, smuggled and dumped as they are, often escape rigorous environmental and other product standard scrutiny.

Obviously, each of the above four obstacles — high population growth, high poverty rate, weak industrialization and poor management of globalization — requires separate research and policy analysis in the context of climate change and economic-environmental policy formulation. However, in relation to the green shift framework, all these obstacles are inextricably linked to the need to overhaul or reorient the existing agro-industrial policy regime.

Green initiatives

There are already a number of Philippine initiatives in the various sectors/industries as the case studies show. However, it should be pointed out that a green shift in the economy should be able to address

the green requirements of other sectors as well, in particular industries in the service sector such as tourism and those of the large informal economy. Also, a restructuring should be based on a realistic recognition of the existing economic structure, employment patterns, and likely trajectories of the economy if environmental or CC-related adjustments are put in place.

The Philippines was a leading industrializing country in the 1960s but is now considered one of Asia's agro-industrial laggards, subsisting mainly on the remittances of around nine million overseas Filipinos. During this period, many marginal and energy-inefficient firms have disappeared due to their failure to stand up to the challenges of globalization, deregulation and (we suggest) smuggling. A national policy on greening must address the challenge of overhauling the present export oriented industry focused policy regime.

A starting point would be to identify those sectors and sub-sectors to be promoted or greened and the kind of skills and talents that are likely to be in short supply. The research team has identified these sectors/sub-sectors as follows:

- Agriculture (shift to sustainable agriculture);
- Service industries (adoption of greener approaches such as more efficient use of energy);
- Local community development (re-building, relocation, etc.);
- Industry (shift to green/greener modes); and
- RE/biofuel sector development.

While a number of pioneering companies have taken the initiative to develop a green or greening outlook, far more needs to be done. They key is to encourage new investment and here the processes available under the UNFCCC and the Kyoto Protocol can play a key part.

The Climate Change Act and the CDM process

The latest environmental law to be enacted by the government is Republic Act No. 9729 *(An Act Mainstreaming Climate Change into Government Policy Formulations, Establishing the Framework Strategy and Program on Climate Change)*. Passed in September 2009, the main content of the law is the creation of a Climate Change Commission (CCC), to be headed by the President. The CCC is envisioned to serve as the country's

sole policy-making body on climate change, thus eliminating the confusion and "squabbling" between the DENR and the DOE as to who should lead or coordinate CC-related programs. Aside from the Inter-Agency on Climate Change (IACC), the government has established a Presidential Task Force on Climate Change (TFCC) and office of the Presidential Adviser on Global Warming and Climate Change. The leadership of IACC and TFCC had been see-sawing between DENR and DOE (Romero, 2009).

The new law reaffirms the Philippine adherence to the UN's Agenda 21 sustainable development framework, its commitment to cooperate with the global community on the resolution of CC issues, and its declared policy of integrating CC in *"various phases of policy formulation, development plans, poverty reduction strategies and other development tools and techniques by all agencies and instrumentalities of the government".* The Commission is tasked to formulate within six months a "Framework Strategy on Climate Change" in order to mitigate GHG and other "anthropogenic causes of climate change".[5]

The law also creates an advisory board composed of 14 national line departments and representatives of LGUs, academe, business sector, NGO sector, as well as two special government bodies, the National Security Council and the National Commission on the Role of Filipino Women. However, it is noticeable that DOLE has not been included in the list. Furthermore, neither TESDA nor the trade union sector has been included.

The carbon market

As a Party to the UNFCCC and the associated Kyoto Protocol, the Philippines has a number of opportunities to use the mechanisms provided under this regime to build a green economy, both from encouraging the establishment of new industries and the greening of existing industries.

As countries emerge from the GFC, there is now a general global recognition that future development, to be sustainable, must also be green. This means a global shift towards low carbon economies. The Philippines stands to benefit from this shift over the short to medium term, in a number of ways:

- The CDM provides opportunities for the Philippines to participate in the global carbon trading market while at the

same time gaining new technologies that can contribute to future economic development.
- The CDM also provides incentives for reforestation activities that can benefit local communities — as demonstrated through examples cited in this report.
- Greening produces new jobs and new skills that can be used as the basis for enhancing the Decent Work Agenda.
- Greening does not necessarily impose costs on companies but can also (depending on circumstance) bring rewards.

There are longer term benefits too, provided, the incoming administration of President Aquino can improve the domestic investment climate. In recent years, foreign direct investment into the Philippines has been among the lowest in Southeast Asia due to the high cost of doing business as well as perceptions of problems with governance and rule of law. Poverty is the enemy of mitigation and adaption efforts since the focus of the poor is on their immediate need. Greater investment will create more jobs and materially assist in lowering poverty levels; this will reinforce the "greening" process as part of a virtuous cycle.

Participation in global carbon emissions trading

A key Philippine involvement in the global CC program is its participation in the "Carbon Credit Market" under the CDM process provided for by the Kyoto Protocol. The Kyoto Protocol, under Article 12, allows developed countries to limit or reduce their GHG emissions by buying carbon credits or "certified emission reduction units" (CER) produced by developing countries under the CDM.

The Philippines has been participating in the CDM market since the establishment of the implementing rules of CDM in 2005. As of November 1, 2009, a total of 87 CDM project applications had been received by DENR, the Philippines' designated national authority (DNA) for CDM. Out of the 87 applications, around 40 CDM projects have been registered while the remainder are awaiting review. However, only two CDM projects had been issued with CERs as of 2009. These are the Quezon City Controlled Disposal Facility Biogas Emission Reduction Project (QCCDF) in Barangay Payatas, Quezon City, and the NorthWind Bangui Bay Project in Bangui, Ilocos Norte. The QCCDF had earned 30,860 CERs as of June 2009, while NorthWind had received CERs for two crediting periods and is earning

approximately 56,788 metric tons of carbon dioxide (CO2) reduction equivalent per year.[6]

For a project to be eligible for registration, it must first secure approval from the designated national authority (DNA), which, for the Philippines, is the DENR. This approval is granted not only on the basis of the potential emission reductions but also on the project's sustainable development benefits. Simply put, projects are assessed not only in terms of their potential GHG emission reduction equivalents but also on whether they can provide livelihood and economic benefits in the host community (economic), comply with environmental policies and standards (environmental), and raise the capacity (education and training) of the local stakeholders (social).[7]

The CDM application-certification process is a lengthy one, usually lasting for at least a year from project development to registration. According to Gigi Merilo, Senior Environmental Specialist, Environmental Management Bureau's (EMB) Environmental Education and Information Division, one of the factors that slows down the process is the lack of local CDM auditors, which necessitates the hiring of the services of international CDM auditors in order to validate the CDM project applications.[8]

The Philippines has much to gain from participation in the carbon market, in terms of export earnings new investment as well as technology transfer; but the ability of local projects to attract foreign partners willing to enter into carbon trading arrangements will depend on the ability of the incoming administration to improve the overall investment climate. Policy initiatives to promote a "greening" of the economy cannot be viewed in isolation. They must be a part of a broader economic and investment strategy.

In terms of attracting new investment, the Philippines has a number of advantages to exploit. Firstly of course there is the educated and available labor force. The availability of industrial land and the proximity to major Asian markets provide a second set of advantages. If the government can address negative international perceptions and improve the investment climate then there is an ideal opportunity for the Philippines to benefit from a new wave of "green" industrialization that will reinvigorate the manufacturing sector and provide long term sustainability for the economy.

Conclusions and recommendations

The varied and mounting environmental problems facing the country — deforestation, loss of biodiversity, poor management of solid wastes, decimation of mangroves and coral reefs, urban congestion, deteriorating air and water quality, soil erosion and so on — are well documented. They have been articulated by a motley but militant group of NGOs and environmental activists, who have been pushing for environmental reforms since the 1970s. One outcome of this environmentalism is the large number of environmental laws enacted by the country, from the laws on reforestation and EIA of the 1970s to the clean air and solid waste acts of the 1990s and the RE and biofuel acts of the past decade. As a Party to both the UNFCCC and the Kyoto Protocol and with its Climate Change Act of 2009 in place, the Philippines has committed to undertake various mitigation and adaptation measures outlined by UNEP. Additionally, the CDM process is in place, with the DENR serving as the DNA-certifying body for CDM-eligible projects.

The issue, therefore, is not whether the Philippines should embrace environmentalism or not or whether it should support or not the global campaign on CC. Policy-wise, the government has taken the affirmative side. The core issue, however, is the consistency and decisiveness of the country in implementing existing policies in support of environmentalism and CC mitigation. The woeful record of the Philippines in the implementation of its reforestation laws is a sad testimony to these twin problems of policy inconsistency and indecisiveness.

To these concerns, another policy issue should be added — coherence. Are existing economic and development policies coherent or aligned with environmentalism and the challenges of CC? Apparently, they are not. This is why in the context of the Green Job Challenge posed by the ILO-UNEP, there must be a green shift in the economy. Green/greener jobs can only be generated by a green/greener economy. Also, the green laws will only work in a green economy.

The problem is that this green shift in an environmentally-degraded economy is not easy. There are many obstacles — political, institutional and even attitudinal problems. Sadly, short-term expediency prevails over longer-term sustainability. Nowhere was this attitude — and the consequences — more evident than in the lead-up to the GFEC.

Yet, there are public and private sector green initiatives already underway such as reforestation, river dredging, mangrove rehabilitation and so on. But these green projects are like isolated trees in a vast denuded

forestland. The CC-inspired programs on RE and biofuels, along with the earlier program on solid waste management, have opened up possibilities for a green sector in the economy. However, these possibilities by and large have remained as possibilities because the anticipated flow of investments on RE and biofuels as well as the country-wide overhaul of the system of solid waste management have not yet occurred, with the exception of a few outstanding cases such as SCBI, Bangui, Quezon City controlled disposal facility and so on as discussed earlier.

The truth, however, is that there are huge possibilities in greening the economy. Apart from the RE/biofuel sector, greening should include or cover the agriculture sector (through sustainable farming practices such as organic farming and organic fertilizer production), services sector (through the adoption of more eco-friendly and eco-oriented business practices), renewal of urban and rural communities (in both the lowlands and highlands), and the greening of the industrial sector (through energy-saving, value-adding and environmentally-friendly processes). The immediate challenge clearly is to determine how to effect a decisive, coherent and sustained green shift in the economy. Longer-term, the challenge is to expand the economic base by promoting investment into new green industrial sectors as opportunities arise.

How prepared is the labor market for this green shift? From the case studies and the labor market data compiled by this study, a number of conclusions may be drawn:

- A green shift is job creating (in all the sectors cited in the study) and will help alleviate unemployment. This is illustrated by the "rainforestation" scheme developed by the Visayas State University and which EDC has successfully used in regenerating the forest concession and in generating jobs for the surrounding communities. Haribon has been propagating this scheme in as many areas as possible.
- The leading labor market problem in the country is the lack of effective domestic labor demand, especially for those possessing elementary and secondary education only. The rise and expansion of green projects such as organic farming, rainforestation, mini hydro power development and eco-based urban/rural community renewal will help stimulate and sustain demand for this sector of the workforce.
- Labor displacement due to a green shift is minimal or likely to be so. Most of the industries targeted by the DENR's campaign

> to clamp down on effluent disposal into the Pasig River and other rivers have already closed, due largely to the failure of these industries to survive global competition, smuggling, and high cost of doing business. Their closure had little to do with environmental compliance. Those that have remained are the more financially capable ones which can invest in expensive pollution abatement facilities such as PASAR without displacing workers. The capable ones also include a majority of the export-oriented or EO industries, mostly those involved in electronic and auto parts manufacture. Most of their environmental programs are inspired by the ISO 14001 certification requirement of the global market.

As to the labor market mismatch issue in the green/greener industries, this does not appear to be a major problem. The green sector investors have had no problems securing environmental engineers and other professionals as shown by the case studies included in this report. For mechanics and operators of new technologies such as a bioethanol distillery or a windmill project, what the sector requires are trainable technicians with an engineering/technological education background. For new machines being introduced in the country for the first time, foreign experts are asked to do the initial training for the benefit of would-be local experts. This should be seen as a benefit to the Philippines that must be embraced.

Indeed technology transfer is an integral part of the obligations of Annex II countries under the UNFCCC (Article 4, Para 3).[9] The Philippines should maximize its advantages in this area. As to claims that graduates of environmental courses cannot find jobs in the country or overseas and end up working in other areas, the research team has not been able to get any data to support this assertion.

The reality is that there appears to be neither green skills shortages nor mismatches in the Philippines because there is no detectable national green shift yet — except as an initiative of some private companies, LGUs and NGOs. What is in abundance are the usual official declarations that the country has fully aligned itself with the global aspirations to build a climate-friendly world and has put in place the needed enabling environmental laws such as those dealing with renewable energy, solid waste management, reforestation, biological diversity and so on.

The reality is somewhat different. There is a wide gap between the enactment and enforcement of the laws, as most vividly illustrated in

the Philippine experience with its laws on reforestation that were enacted way back in the 1970s.

Environmental considerations are also glaringly absent in the usual job-skills mismatches discussed by TESDA, CHED and DepEd when it comes to education/skills development planning and analyzing the requirements of the labor market. In the first place, green industries and greener industries are not even officially treated as "key employment generators" or KEGs, although there are, again, numerous discussions on how these industries can create more jobs such as those in the renewable energy sector, recycling business and in the eco-tourism industry.

Implications on skills and HRD development

The Philippines is considered relatively advanced in Asia in environmental education, as reflected in the steady enrolment of Southeast Asian students in environmental engineering and science courses offered by the University of the Philippines College of Engineering. Despite the absence of a nationally-coordinated program on environmental education, a number of higher education institutions in different regions have also been offering environment and environment-related courses.

On the TVET side, TESDA has indicated its readiness to develop and integrate "green" competencies in different technical-vocational programs.

However, institutions providing environmental education and skills development services need to be more proactive in touching base with key industries or sectors going green or becoming greener. One good starting point is the identification of industries or sectors identified by various environmental laws for greening. These include the following:

- **RE/biofuel sector**, which is covered by the RE and the biofuels acts. Investors in the sector such as SCBI have had no difficulty securing professionals and skilled workers nor in providing new training in the specific area of SCBI's work. This was due mainly to the close similarity of work in the ethanol distillery with the processes involved in sugar milling, which abounds in the province of Negros. This may not necessarily be the case in other areas, as what happened in the case of Bangui's windmill project where European professionals skilled in handling wind-generating technologies were instrumental in skills transfer to Filipinos.

- **LGU sector** and the communities covered by them. The Climate Change Act of 2009 singles out the LGUs for CC education. Apart from the requirements of the earlier laws on solid waste management and clear air/clean water, the LGUs have the responsibility to take a leadership role in educating their citizenry in environmental matters, including CC mitigation and adaption as well as measures aimed at protecting communities and equipping them to deal with environmental risks. This is clearly a massive task, for it entails the transformation of tens of thousands of local development planners, LGU leaders, village chieftains and local community organizers/developers into environmental and CC specialists. Environmentalism should be embedded in local development work. CHED and TESDA have a huge job ahead of them in the general area of community renewal alone.

And as outlined earlier, a green shift would require greening of agriculture, greening of the industrial sector and greening of the service sector. Again, the implications on environmentalism and green HRD/ skills development are far-reaching. At the moment, however, most of the HRD/skills issues in the greening processes are being addressed by the private and NGO sectors with minimal help from government.

Policy recommendations: economy, environment, education and skills development

Recovery from the GFC does not imply a return to "business as usual". Rather it presents a unique opportunity to rethink the growth paradigm in order to ensure sustainable development into the 21st century. An important component of recovery is the need to incorporate both adaption and mitigation programs into future economic development so as to combat climate change. Integral to this is a greening of the global economy.

There is no need to belabor here the central importance of a green shift for the Philippines economy. Such a shift does not mean growing only the green sector; it also means greening the existing agricultural, industrial and service sectors. In addition, the greening process should cover the green renewal of urban and rural communities all over the country in the context of CC mitigation/adaptation. This green shift

requires policy coherence, decisiveness and consistency on the part of the government and other stakeholders in Philippine society. It is lamentable, for instance, that RA 9729 (Climate Change Act of 2009) still has no implementing rules (as of January 2010).

This green shift entails a restructuring of the economy and the labor market. A successful and thoroughgoing shift means more and better jobs through the creation of green/greener and decent jobs by the greening processes. The green restructuring of the economy and the labor market will obviously take time, patience and policy boldness. Fleshing out the details of this green restructuring is a major challenge for all sectors of society.

A transition program, as articulated by the ILO-UNEP and the DOLE's Institute of Labor Studies (Cruz, 2009), is also clearly in order. This transition requires social consensus, which, in turn, requires deeper and sustained social dialogues between and among various stakeholders in society, for example, on key strategic thrusts enumerated by the ILS, namely: building knowledge assets, targeting green sectors, setting standards, maximizing community benefits, linking green job creation with job training, partnering towards building adaptive capacity, mapping pathways out of poverty and measuring results. Fleshing out the transition scenario and organizing social dialogue, an expertise of ILO, are also significant challenges.

The green shift has serious implications for the education/skills development sector; for example, the tertiary sector needs to graduate more environmental engineers, climate change scientists and researchers, sanitary engineers and so on. The TVET sector should integrate environmentalism in all TRs and tech-voc courses and develop more TR standards on green jobs and DepEd should promote environmentalism among the schoolchildren nationwide. However, it is inexcusable that all the three sectors still have no comprehensive operational programs on environmental education in their respective sectors as mandated by RA 9512 (Environmental Education Act of 2008). This should be addressed immediately. CHED and TESDA should also take the initiative of talking to industry, LGUs and other sectors on advancing environmental education and skills development.

Overall, the Philippines cannot afford to lag behind in the global race among countries to shift to a green economic arrangement. Indeed, early action would enable the Philippines to once again regain a pre-eminence within Asia under the new post-crisis economic structure. Such a shift requires green capability building, mainly in the form of

environmental education and environmental-related skills development. Without such capability building, a green shift is either likely to be stopped in its tracks because of environmental skills shortages or even mismatches.

The case studies show that the green shift is attainable in the Philippines. There are green experts and greening experiences which abound in lessons on which others can draw. The challenge lies not in making the green shift possible but, rather, in making it inevitable. A good starting point for government would be to foster a dialogue among society's stakeholders, especially the tripartite social partners.

The point is to make the green shift now!

Endnotes

[1] The Philippines ratified the UNFCCC on 2 August 1994 and the Kyoto Protocol on 20 November 2003.

[2] UN's Agenda 21 is a product of the 1992 UN Conference on Environment and Development (UNCED), which is better known as the "Earth Summit". This Summit produced a number of strategies on sustainable development, which are collectively dubbed as "Agenda 21".

[3] Loosely translated as "social and cultural studies"

[4] However, there were understandable limitations in the conduct of case studies. Companies, even if they were cooperative towards the research project, value company and employee time. One problem encountered by the research team was in setting appointments based on acceptable schedules for the target enterprises. For this purpose, the research team was flexible in adjusting to the different management styles of companies. Some companies are open and liberal and were willing to allow the research team to go around the company premises freely and interview needed personnel. Others allowed only limited time and access. In two cases, top management brought in right away all the managers and technical men/women in one meeting session. In such a situation, the research team had no choice but to simply transform the meeting-interviews into focused group interviews and exchange. This was fine because such an arrangement usually leads to a more in-depth analysis of the green challenges in a company and a fuller and rounded discussion of the HRD concerns in the company. Issues raised or neglected by some informants are supplemented or amplified by others.

[5] See for example core publication, Agenda 21, UN Department of Economic and Social Affairs, Division for Sustainable Development. Available at: <http://www.un.org/esa/dsd/agenda21/> [Accessed 18 May 2010].

[6] These projects are discussed in the main report (Ofreneo, 2010).

[7] For further background on the processes involved, see for example CDM Manual for CDM Project Developers, ADB 2010 (forthcoming publication).

[8] Interview with Senior Environmental Specialist Gigi Merilo, Environmental Education and Information Division, Environmental Management Bureau,

Department of Environment and Natural Resources, 1 December 2009.

[9] The full text of the Convention can be found at http://unfccc.int/essential_background/convention/background/items/1349.php [Accessed 7 July 2010].

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