



# Climate Change and Private Sector Development

Integrating green growth strategies  
into the MSME Development Plan 2010-2016



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for Economic Cooperation  
and Development



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## Acronyms

ADB	Asian Development Bank
AO	Administrative Order
APEX Bank	wholesale mechanisms that channel funds, with or without supporting technical services, to retail finance institutions in a single country or integrated market
ASEAN	Association of Southeast Asian Nations
BDS	Business Development Services
BOI	Board of Investments
BOT	build operate transfer
BMSMED	Bureau of Micro Small and Medium Enterprise Development
CC	Climate Change
CDM	Clean Development Mechanism
CER	certified emission reduction units
CFL	compact fluorescent lamps
CIF	Climate Investment Funds
CLEECF	Credit Line for Energy Efficiency and Climate Protection (LBP)
CLF	cooling load factor
CNG	compressed natural gas
COMO	Consulting fuer Projektmanagement und Organisation GmbH (Consulting for Project Management and Organisation GmbH))
CPF	Carbon Partnership Facility
CREBA	Chamber of Real Estate Builders' Association
CSR	corporate social responsibility
CWPO	Consumer Welfare and Promotion Office (DOE)
DANIDA	Danish International Development Agency
DA	Department of Agriculture
DBP	Development Bank of the Philippines
DENR	Department of Environment and Natural Resources
DepEd	Department of Education
DNA CDM	Designated National Authority for the Clean Development Mechanism
DOE	Department of Energy
DOST	Department of Science and Technology
DOT	Department of Tourism
DOTC	Department of Transport and Communication
DPWH	Department of Public Works and Highways
DTI	Department of Trade and Industry
ECCP	European Chamber of Commerce of the Philippines
ECO	Energy Conservation Officer
EEL	Energy Efficient Lighting
EFR	environmental fiscal reform
EIP	Ecoindustrial Parks
EISCP	Environmental Infrastructure Support Credit Program
EMS	Environmental Management Systems

EO	Executive Order
EU	European Union
EUR	Euro, official currency of Eurozone
FPRDI	Forest Products Research and Development Institute
GDP	Gross Domestic Product
GHG	greenhouse gas
GRIPP	Green Renewable Independent Power Producer Inc
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HVAC	Heating, Ventilating and Air Conditioning
IACCC	Inter-Agency Committee on Climate Change
IAWG	Inter-Agency Working Group
IFC	International Finance Corporation
IEMKN	Industrial Environmental Management Knowledge Network
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
IPCP	Integrated Program on Cleaner Production
ISO	International Standards Organization
IT	Information Technology
JBIC	Japan Bank for International Cooperation
kmh	kilometer per hour
LBP	Land Bank of the Philippines
LGU	local government unit
LPG	liquefied petroleum gas
MBFOE	million barrels of fuel oil equivalent
MFI	microfinance institution
MFO	Major Final Output
MSME	Micro Small and Medium Enterprise
MSMED	Micro Small and Medium Enterprise Development
MSMED Council	Micro Small and Medium Enterprise Development Council
MTPDP	Medium - Term Philippine Development Plan
NAMA	Nationally Appropriate Mitigation Actions
NAPA	National Adaptation Programs of Action
NERBAC	National Economic Research and Business Action Center (DTI)
NGA	national government agencies
NGO	nongovernment organization
NGVP	Natural Gas Vehicle Program
OECD	Organization for Economic Co-operation and Development
OHS	occupational health and safety
OPIF	Organizational Performance Indicator Framework
PAGWCC	Presidential Adviser on Global Warming and Climate Change
PBE	Philippine Business for Environment
PBIDC	Philippine Bamboo Industry Development Council
PCARRD	Philippine Council for Agriculture, Forestry and Natural Resources Research and Development



PCIERD	Philippine Council for Industry and Energy Research and Development
PCSD	Philippine Council for Sustainable Development
PEPP	Philippine Environmental Partnership Program
PEZA	Philippine Economic Zone Authority
PGBC	Professional Green Building Council
PHP	Philippine Peso
PPP	Private Public Partnerships
PSD	Private Sector Development
PSP SMEDSEP	Private Sector Promotion Small and Medium Enterprise Development for Sustainable Employment Program
PTFCC	Presidential Task Force on Climate Change
QI	Quality Infrastructure
RA	Republic Act
R&D	Research and Development
SCP	sustainable consumption and production
SEQUA	Partner of German Business
SME	Small and Medium Enterprise
SO	Special Order
TAPI	Technology Application and Promotion Institute
TESDA	Technical Education and Skills Development Authority
TRIKE	Tricycle sa Kabuhayan at Ekolohiya (Tricycle for Livelihood and Ecology)
TVET	Technical and Vocational Education and Training
UN	United Nations
UNEP	United Nations Environmental Program
UNFCC	United Nations Framework Convention on Climate Change
UN REDD	United Nations Collaborative Program on Reducing Emissions from Deforestation and Forest Degradation
USAID	United States Agency for International Development
USD	United States Dollar
VC	Value Chain
WB	World Bank
WRI	World Resources Institute
WTO	World Trade Organization

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# 1 Background of this Study

**Climate change (CC) adaptation and mitigation** are identified as **priorities** in the *Updated 2004 – 2010 Medium -Term Philippine Development Plan (MTPDP)*, in the light of recent extreme weather events that are disturbing not only communities and livelihoods, but also the natural resource base, thereby critically threatening the pace of economic growth and development. Recognizing this, the **Climate Change Act** <sup>1</sup> of 2009 is mainstreaming CC adaptation and mitigation into government policies. A **Climate Change Commission** is tasked to coordinate and synchronize CC activities.

The recently approved **National Framework Strategy on Climate Change** (2010 – 2022)<sup>2</sup> defines key result areas to be pursued, providing guidance to all development actors on CC mitigation and adaptation. Accordingly, budget and resources of all relevant government agencies and local government units (LGUs) shall be allocated for the formulation, development and implementation of their respective CC programs and plans including training, capacity building and other interventions.

Against this background, the Philippine Government through its **Department of Trade and Industry** (DTI) requested GTZ to integrate measures for CC mitigation and adaptation into the **Micro, Small and Medium Enterprises (MSME)** Development Strategy for the period 2010 to 2016. The Program had already committed to assist the DTI in formulation of the strategy prior to this request. In order to be informed on this process, a consultancy mission was conducted, aiming at reconciling the objectives of private sector development with the policy goals of the Climate Change Act and the National Framework Strategy on Climate Change. Policy measures were identified, tapping the opportunities of developing a green economy and facilitate low carbon growth.

## Box 1 Content of Chapters of this report

This report describes the process that the team of consultants undertook to carry out the assignment (Chapter 2), outlines current and expected effects of climate change in general and the Philippines in particular (Chapter 3) and how to turn the climate challenge into an opportunity (Chapter 4), describes a policy mix that is needed to address climate change and private sector development simultaneously (Chapter 5), presents existing policies and instruments that are currently being applied in the Philippines (Chapter 6), elaborates recommendations for DTI on how to integrate *Green Growth* into the new MSME Development Strategy (Chapter 7) and gives a very brief outlook on next steps (Chapter 8).

<sup>1</sup> <http://www.senate.gov.ph/lisdata/64265717!.pdf>

<sup>2</sup> [http://www.neda.gov.ph/references/Guidelines/DRR/nfscg\\_sgd.pdf](http://www.neda.gov.ph/references/Guidelines/DRR/nfscg_sgd.pdf)

## 2 The Process to Develop Recommendations for a *Green Growth* Strategy

This chapter briefly describes the different steps to make in order to develop recommendations for DTI and its partners in integrating *Green Growth* elements into the new MSME Development Plan.

**Prior to the field trip** the following steps were undertaken

- development of a **three page brief** to give an **introduction to the topic** (this also served as information provided to the stakeholders interviewed during the field trip)
- discussion of the intended **process of the work** and the **major chapters of the report** with GTZ Home Office staff
- development of a **policy and instrument overview** according to different intervention levels (supranational, macro, meso, micro and meta) based on international good practices, with feedback and additional points taken from GTZ Home Office staff
- development of **themes for government** to follow in each of the intervention levels
- description of **current and expected effects of climate change** in general and the Philippines in particular
- description of the **linkages between climate change and private sector development**
- development of **four objectives to be pursued simultaneously** in a *Green Growth* approach.

**During the stay in the Philippines** the team conducted interviews and focus group discussions with stakeholders from the public sector, the private sector, NGOs and donors as well as analyzed policy and strategy documents in order to

- understand and present the **political and institutional context** in the country regarding climate change and economic development
- provide an overview of **existing policies and instruments** that are currently being applied in the Philippines
- identify **sectors** of the economy with relevance to MSME **where both challenges and opportunities from climate change could be addressed** in the new MSME development plan and
- present to and discuss **preliminary findings** with DTI.

Moreover, during the course of the mission, preliminary ideas of a **systemic approach to foster *Green Growth*** were developed. The approach was initially labeled the ***Push-Pull-Enable approach towards *Green Growth****.

**After the mission**, the team

- prepared a **policy brief with draft recommendations** for DTI on how to integrate *Green Growth* strategies into the MSME Development Strategy 2010 - 2016 and
- developed this **full report**.

### 3 Current and Expected Effects of Climate Change

#### 3.1 Situation in General

The last few years have seen a **combination of crises** that threaten our ability to spread prosperity and sustain our planet. **Climate change, environmental degradation, unemployment, poverty, insecurity and inequality** seem to feed on one another. At their **roots** are prevailing **extractive economic models** and governance systems **that are not capable of shaping a world that respects nature's potentials and limits**.<sup>3</sup> As Thomas L Friedmann rightly puts it: *Today's global economy is a monster truck whose gas pedal is stuck. No one can stop it.*<sup>4</sup>

**Demand for energy and raw material** has **grown enormously** in the past and will continue to grow in the future. Over the next four decades the world's **population will rise** from six to around nine billion people. During the same period, **the number living in industrialized societies will triple** to around four billion people. This means there will be an additional massive increase in demand for industrially manufactured products, leading to **additional pressure on and – if no action is taken - damage to the environment**.<sup>5</sup>

It is now considered inevitable that **climate change**, a byproduct of this unsustainable growth, **will threaten the lives and livelihoods of many, especially poor** people.<sup>6</sup> According to the most recent UN estimates, the livelihoods of one third of the world's population could be affected by water scarcity by 2025 and - by the end of the century - half of the world's population could face severe food shortages due to rising temperatures. As a result, previous gains in development are being reversed – leading to an estimated loss of five to 20 percent World Gross Product by 2050.<sup>7</sup>

Under the **most pessimistic emissions** scenario, by the end of this century temperatures could rise to more than 4°C above 1980 – 1999 levels, ranging from 2.4 – 6.4°C. In relation to the preindustrial level **global average surface temperature has already increased** by 0.76°C.<sup>8</sup> This still relatively moderate global warming **has already caused significant climatic volatility** such as changed precipitation patterns and increased frequency and **intensity of extreme weather events** including typhoons, heavy rainfall and flooding, as well as droughts. It has led to a rise in mean global sea levels.<sup>9</sup> **Continued rising**

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<sup>3</sup> DANIDA 2009

<sup>4</sup> Friedmann, T 2008

<sup>5</sup> BMU, German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety 2008

<sup>6</sup> Intergovernmental Panel on Climate Change IPCC 2007

<sup>7</sup> Stern, N 2007

<sup>8</sup> IPCC 2007

<sup>9</sup> ADB 2009

**temperatures will also pose more serious risks** to lives and livelihoods, particularly for the world's most vulnerable people and countries.

Beyond the individual dramatic fate that comes along, these effects create turbulences that would affect business cycles, economic and social structures as well as growth patterns globally. No one has yet looked into the effect on political systems and security as well as on society as a whole.

It is widely believed that **climate change is largely a result of human made greenhouse gas** (GHG) emissions. If no action is taken, it is likely to intensify. Therefore, the ecological results of the present period of industrialization and our current economic models are coming to the forefront of discussions and everybody is searching for alternatives.<sup>10</sup>

### **3.2 Situation in the Philippines**

Already being ranked highest in the world in terms of vulnerability to tropical cyclone occurrence, the impacts of CC will be felt extra hard in the Philippines. The country is **increasingly exposed** to extreme weather events, temperature rise, shifting rainfall patterns and sea level rise. The 2009 typhoons Ondoy (Ketsana) and Pepeng (Parma) alone inflicted damages and losses in the order of USD 4 billion, or almost 3 percent of Gross National Product (GNP), according to the WB paper entitled *A Strategic Approach to Climate Change in the Philippines*.<sup>11</sup> Besides the immediate damage, the extreme weather events will heavily impact on productivity. Any sea level rise will directly hit coastal cities and municipalities where 60 percent of the people reside. Some of the impacts of CC are detailed in the following box.

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<sup>10</sup> For another good discussion on policies and options for global action on climate change see OECD 2009: The Economics of Climate Change.

<sup>11</sup> World Bank 2010

## Box 2 Climate Change Impacts in the Philippines in Numbers

- Natural disasters already account for more than 0.5 percent of GDP on average annually and climate change is expected to increase these losses further, making it an economic and development issue rather than one confined to environmental concerns.
- The 2009 typhoons Ondoy (Ketsana) and Pepeng (Parma) alone inflicted damages of about USD 4 billion or almost 3 percent of GDP.
- The country's average annual mean temperature will increase by 0.9 – 1.2°C by 2010 and 1.7 – 3.0°C in 2050. Warming will be worst in Mindanao.
- Increase in rainfall is particularly evident in Luzon and Visayas while Mindanao is expected to undergo a drying trend.
- Sea level rise will increase the risk of flooding and storm damage. Projected impacts of 1 meter sea level rise in many areas of the country show vast portions being inundated, affecting coastal settlements and livelihoods. The coastal poor will be affected hardest. Fisheries account for about 4 percent of GDP. An estimated one million people are engaged in the fisheries sector.
- Infrastructure facilities are threatened by climate change. Impacts could be severe where infrastructures are not designed to cope with increased rainfalls, sea levels or droughts.
- The Philippines is one of the 18 mega biodiversity countries. However, due to increasing temperatures and extreme variability in rainfall, this uniqueness of the Philippines is in danger.

Source: National Framework Strategy on Climate Change 2010 – 2022

Figure 1 below shows the areas vulnerable to potential climate hazards. Some of the highly vulnerable provinces are Albay, Batangas, Bulacan, Cavite, Laguna, Pampanga, Tarlac, Iloilo, Cebu, Davao del Sur and Zamboanga del Norte.



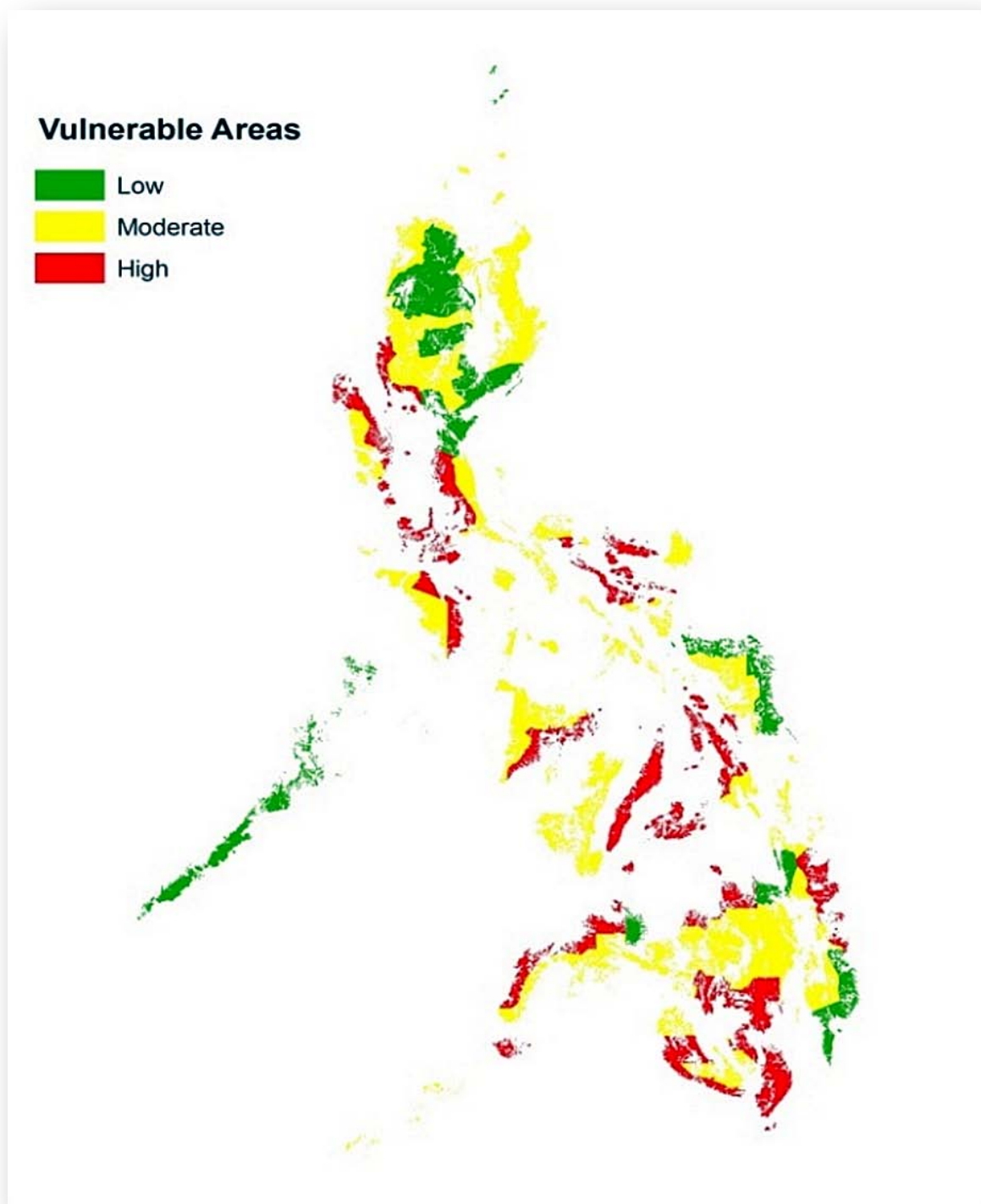


Figure 1 Most Vulnerable Areas to Potential Climate Hazards in the Philippines

Source: Department of the Environment and Natural Resources 2010: *Philippine Strategy for Climate Change Adaptation, 2010 - 2022*

Another worrying aspect is the relationship between the areas most vulnerable to climate change and provinces that have high poverty incidence. The Department of the Environment and Natural Resources (DENR) in its *Philippine Strategy for Climate Change Adaptation 2010 - 2022*<sup>12</sup> explains this vulnerability poverty nexus. The following table shows that 15 provinces should receive the most attention in this regard, with the provinces of Tawi - Tawi and Zamboanga del Norte as top priorities for intervention.

Table 1 Vulnerability Poverty Nexus

	Vulnerability to Climate Change	Poverty Incidence of Families (%)	Rank (Poverty Incidence)
<b>Philippines</b>		<b>26.9</b>	
Tawi - Tawi	High	78.9	1
Zamboanga del Norte	High	63.0	2
Sulu	High	46.5	13
Camarines Sur	High	41.2	26
Leyte	High	40.5	31
Camiguin	High	39.3	34
Bohol	High	38.8	35
Albay	High	37.8	38
Negros Occidental	High	33.4	44
Nueva Ecija	High	32.0	45
Basilan	High	31.7	46
Mindoro Oriental	High	31.5	48
Biliran	High	31.4	49
La Union	High	27.6	56
Pangasinan	High	27.6	56

Source: Department of the Environment and Natural Resources: Philippine Strategy for Climate Change Adaptation, 2010 - 2022

It has therefore become a national priority to find strategies to adapt to the impacts of CC as well as to mitigate further greenhouse gas (GHG) emissions. Even though the National Framework Strategy on Climate Change emphasizes adaptation as the anchor strategy, mitigation is seen from an opportunistic angle.

Against the background that the Government of the Philippines has ratified the **Climate Change Act** of 2009, **calling all relevant government agencies to work on mitigation and adaptation policies and their implementation**, this study provides proposals on how DTI and the National MSMED Council can integrate the CC objectives into their development strategy for MSMEs.


<sup>12</sup> DENR 2009

## 4 Turning the Climate Challenge into an Opportunity

While governments around the world are calling for coordinated responses to CC in different policy areas and the threatening, negative outlook typically is in the forefront of the discussion, **private sector agents** are increasingly seeing new **business opportunities** from the challenges often associated with CC. Just to name a few

- **energy efficiency** measures that help mitigate GHG emissions reduce costs tremendously, with often quick return on investment
- **renewable energy** production for own consumption is an additional cost cutting option and also guarantees energy supply in rural areas
- **products and services for a green economy** are on increasing demand
- large local and international buyers are undertaking tremendous efforts to **green** their **supply chains**, helping MSME become more competitive through going green measures.

**Businesses of all sizes can improve their competitiveness through these measures**, even the smallest ones. Through increased competitiveness and innovation, **new employment opportunities** may be created in some areas of the economy, as the current discussion on *green jobs* shows. The Philippine Institute of Labor Studies for example defines *green jobs* as jobs that contribute to a climate solution.<sup>13</sup> The bulk of documented growth in *green jobs* however occurred mostly in developed countries and in few rapidly developing countries like Brazil and China. Nevertheless, *green jobs* are also beginning to be seen in other developing economies, for example in the renewable energy sector, for producing and applying clean technology, to construct energy efficient buildings or to produce organic products. A project in Bangladesh, training local youth and women as certified solar technicians and as repair and maintenance specialists, aims to create some 100 000 jobs. In India, an initiative to replace inefficient biomass cooking stoves in nine million households with more advanced ones could create 150 000 jobs.<sup>14</sup>

 **The Philippines** can also take advantage from those new **opportunities** and promote the creation of **green jobs in different sectors**. The relevant MSME sectors that can benefit from this trend are outlined in Chapter 7.

An important **driver of new employment opportunities** is the substantial growth in **investment necessary to achieve** internationally agreed climate

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<sup>13</sup> Cruz, C 2009

<sup>14</sup> UNEP et al 2009

**mitigation and adaptation objectives.**<sup>15</sup> The United Nations Framework Convention on Climate Change (UNFCCC) estimates that USD 200 billion will go annually into mitigation by 2030 and tens of billions into adaptation. The **magnitude of mitigation and adaptation investments** suggests the development of a **strategy** to make best use of these investments and **to generate green jobs also in the MSME sector.**

The other, **more important driver** is the **companies themselves.** They have realized that developing **sustainable business strategies**, which include greening and beyond greening strategies, have become important **to build long term competitiveness and protecting their core business.** **Greening strategies** include measures by companies to increase their competitiveness through increased resource efficiency, for example by improving existing production systems and processes, thereby reducing emissions, waste or the use of chemicals. **Beyond greening strategies** include innovations which enable companies to break with existing resource intensive production systems, technologies and business models.<sup>16</sup>

**Green employment creation** is thus often the **result of a decision by companies** to adopt more sustainable business practices or to make use of business opportunities. **Many of the companies driving renewable energy and other clean technology solutions are small and medium enterprises.** Often they are very innovative, taking individual initiative and are oriented to problem solving.

### Box 3 Innovative Company E-SaVe

A good case of such an innovative company in the Philippines is E-SaVe Transportation Systems, Inc established in 2008 building electric powered tricycles, and now expanding into tourist buses and fishing boats. To recharge the batteries, E-SaVe is currently developing charging stations that will be powered by wind and solar energy.

Source: ECCP Business Review 2010

**Green innovation** helps businesses remain competitive and keep costs down by reducing wasteful practices. Market leadership may also enable them to take advantage of such innovations to expand sales and exploit new (export) markets. Late adapters, by contrast, run the risk of falling behind on innovation, losing the competitive edge and possibly go out of business as a result.

As the examples show, the **green development path** and **private sector development** are not necessarily conflicting as often perceived. Resource

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<sup>15</sup> UNEP 2009

<sup>16</sup> Hart, S 2005

efficiency, for example, reduces costs, thereby contributing to increased competitiveness and, at the same time, mitigating GHG emissions. Thus, the motivating factors for companies to go green and thus contribute to *Green Growth* are often the same as those of private sector development, with **competitiveness** being **the core**. With the *green* focus, the attention of private sector development *shifts* to environmentally friendly and low carbon, low GHG emitting practices of businesses. Governments can therefore **tackle in parallel the challenges resulting from Climate Change and the objectives of private sector development**, aiming to achieve the following four **objectives** simultaneously

- **Mitigation:** reduce GHG emissions thereby contributing to mitigating impacts of disasters which affect individuals and businesses
- **Adaptation:** assist individuals and businesses to adapt to changes caused by climate variations and severe weather conditions as well as long term changes in sector trends
- **Competitiveness:** improve the long term competitiveness of companies by helping them develop and implement sustainable green business strategies
- **Green jobs:** make use of growth opportunities and market potentials that arise from investments into mitigation and adaptation as well as new products and services needed in a green economy.

## 5 Building a *Green Growth* Strategy

The **big question** that governments as well as businesses are facing is **what kinds of policies and instruments are available** and have proven to work in order to achieve the four objectives. *Green Growth* policies and instruments are already in wide use, some of them in the Philippines as well (see below and Chapter 6). For others, the Philippines can tap into the rich experiences of other countries in order to reach **a right policy and instrument mix for the Philippines to go on a green, sustainable path**.

*Green Growth* policies and instruments can be grouped into interventions at different levels

- **Macro level:** The government takes political responsibility beyond legislative actions by **setting the right incentives and price signals** and by playing a role model regarding all issues of sustainability
- **Meso level:** The government proactively **builds the institutional capacities needed for *Green Growth***. Due to their limited resources, the MSME are especially dependent on the availability of adequate, affordable **Business Development Services (BDS)** in order to cope with the necessary reorientation of business strategies and business models
- **Micro level:** The government **fosters the long term competitiveness of companies** through resource and energy efficient and conservation measures, the use of renewable energy as well as measures that make them more resilient to climate change. **Sustainable consumption and lifestyles** will trigger demand for products and services of companies that operate in an environmentally sustainable manner.

Additionally to the work on macro, meso and micro level, governments need to **get proactively involved at the supranational level**, trying to improve and secure commitment for the international agreements regarding climate change, help set and shape the right financing instruments at a global level (like the Clean Development Mechanism) and achieve the reduction of trade barriers for environmental goods and services like clean technology.

Last but not least, governments need to **work on the meta level**, discussing and building **a vision for *Green Growth* shared among all stakeholders** in the country. **New modes of working together in partnerships and networks** require **cooperation management** skills that governments need to establish at all levels.

Besides grouping the policies and instruments into the different levels, they can also be classified into **policies and instruments that either *push, pull or enable* companies to go green**.

## Push-Pull-Enable Approach<sup>®</sup>

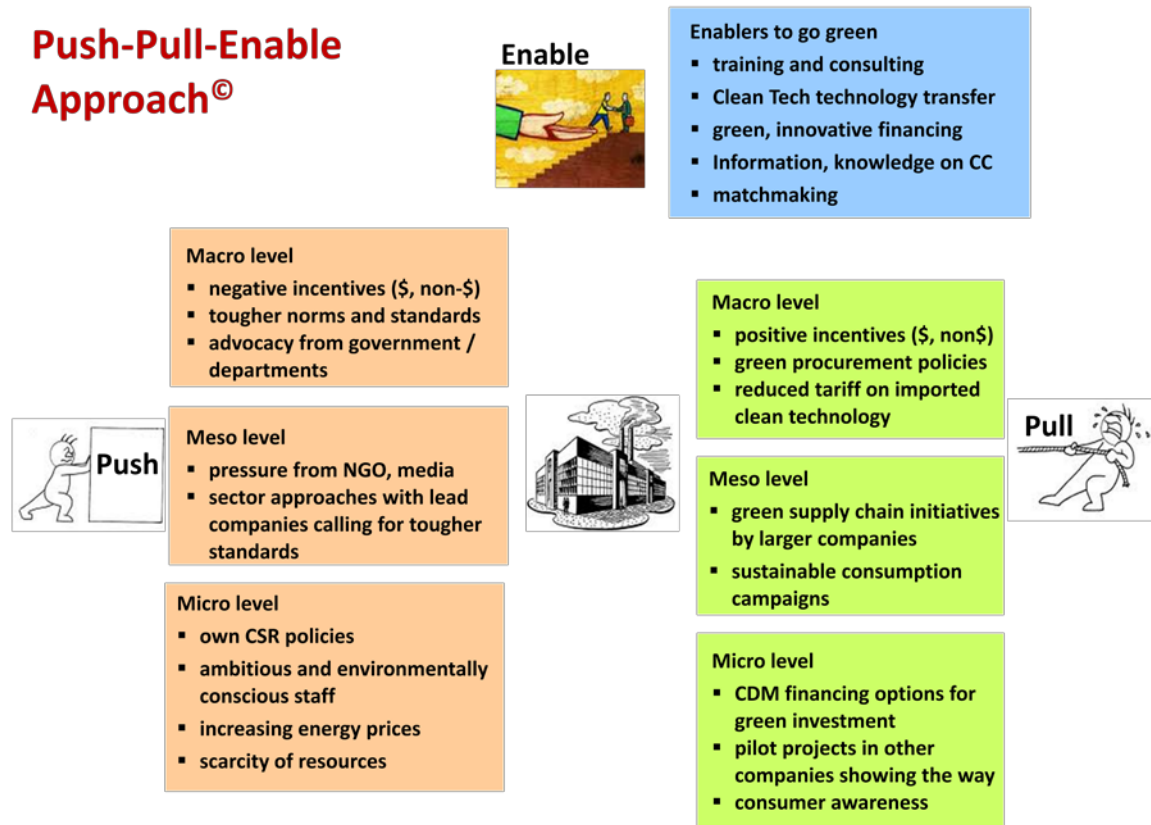


Figure 2 The *Push Pull Enable Approach* toward *Green Growth*

Source: COMO / GTZ

The list of policies and instruments to push, pull and enable companies towards *Green Growth* in this figure is not complete. A more comprehensive **overview** of the **most important policies and instruments** available to address both climate change and private sector development is found in **Annex 1**.

The **relevance of these policies and instruments vary for the different types of MSMEs**. The degree with which MSMEs are reached through the policies and instrument differs from case to case. In particular, it depends in large part on how the policies and instruments are being designed. For example, if policy makers want to make sure that even micro and small companies invest into resource efficient clean technology, innovative financing products need to be developed (leasing, rental schemes, etc). Motivating micro and small enterprises to invest in resource efficiency measures and new technology **requires**, among others, **targeted instruments** such as **specialized awareness raising, information, training, consulting and financing**.

The **difficulty for DTI** is to **find its role in these complex undertakings**. Various stakeholders need to be involved in designing and implementing the



policies and instruments at the different levels. As an example, other departments and government agencies are needed to work on legislative and regulatory issues such as energy efficiency standards as well as the implementation of support measures such as training and consulting which need to be carried out at the local level, through public and private service providers.

There are therefore **two options for DTI** to choose from. Either it undertakes a **comprehensive Green Growth approach** and actively works together with the multiple stakeholders to design the policies and instruments needed for a full fledged *Green Growth* approach or it **builds on existing efforts** undertaken by various stakeholders, working with them **and helping them rollout and upscale the initiatives**.

Whatever the option chosen, and most probably it will be a sequenced combination of both, the operational task at this point in time is to build **Green Growth policies and instruments** into the new MSME Development Plan 2010 - 2016. This task should not be too difficult, as the policies and instruments needed to achieve *Green Growth* are synergized with the four outcome areas of the MSME Development Plan.

Table 2 Link between *Green Growth* Policies and the MSMED Plan Intervention Areas

<i>Green Growth</i> Policies and Instruments	Impact on Outcome Areas of the MSME Development Strategy
development of <b>sustainable value chains initiatives</b> like organic products	improved <b>access</b> to often high end markets
<b>green procurement policies</b> for example for food and beverages	improved <b>access to market</b> for producers of environmentally sustainable products and services
<b>clean technology transfer</b> such as cleaner production equipment	improved <b>efficiency and productivity</b> of processing units, office buildings, retail shops, hotels and restaurants
laws that guarantee <b>tax incentives</b> and nonfinancial incentives for energy efficient devises and renewable energy	improved <b>business and investment enabling environment</b> as it gives companies the confidence and incentives they need in order to undertake green investments
promotion of <b>CDM projects</b> through providing SME with information	improved <b>access to finance</b> for alternative energy and energy efficiency projects (if bundled they are feasible for MSME as well)

Source: COMO / GTZ

As a matter of fact, there are a lot of efforts undertaken in the Philippines already to *push and pull* companies into a greener direction, less so on assisting them to adapt. Some of the responses from government and the private sector that DTI could build on in order to work on its *Green Growth* agenda are the following



## Response from government and donors

- Different laws and regulations aim at fostering *Green Growth*. Examples are the Renewable Energy Act, Biofuels Act, Clean Air Act, Mini-Hydroelectric Power Incentives Act, Clean Water Act, etc.
- Different norms and standards address energy efficiency as well as waste and pollution topics that push companies to go green. Examples are the equipment energy standards and building energy usage standards from DOE and the Clean Air Act. Further efforts are planned in the proposed Green Building Act and the Energy Conservation Act.
- Different **programs by government and its development partners** are being implemented, like the Philippine Environmental Partnership Program (PEPP) of the DENR, which provides incentives and assistance to encourage companies improve their environmental management including energy efficiency, the Integrated Program on Cleaner Production Technologies (DOST), the Philippine Efficient Lighting Program (DOE and ADB), the ecolabeling program *green choice* (DTI) and the EU Switch Program with projects on energy efficiency, zero carbon resorts and sustainable consumption and production (SCP).

## Response from businesses and their associations

- As many companies are experiencing the initial impacts of CC threatening their core businesses, setting up **measures to improve energy efficiency and waste management, to use renewable energy sources etc** will improve their competitiveness.
- Nestle Philippines has been implementing its *Greening the supply chain* program since 2000, now involving 170 suppliers, help them become more competitive with better environmental practices and resource efficiency.
- The Philippine Green Building Council (PGBC) has developed building standards for voluntary compliance and is encouraging construction companies to apply them.
- The European Chamber of Commerce of the Philippines (ECCP) is implementing **energy efficiency initiatives** and promotes the **sustainable consumption and production (SCP)** concept in its **green weaving products** project with DOST and DTI.

## Emerging market for green business development and financing services

- Construction companies pay for **green building auditing services**.
- Farmers and small agribusiness are spending for **organic certification**.
- Public and commercial banks have windows for **credits to finance clean technology**.

- The **Clean Development Mechanism** (CDM) is used to finance green investments.
- Some NGOs have set up **green microfinance** schemes.

Chapter 6 describes in more detail our findings regarding the policies and instruments currently applied in the Philippines. Chapter 7 explains how DTI together with its partners from the MSME Development Council can build on some of the existing initiatives in its effort to generate *Green Growth* in selected MSME relevant sectors.

## **6 Findings of Existing Policies and Instruments Applied in the Philippines**

Prior to the field mission in the Philippines, an **overview table with policies and instruments** available at the different levels was developed, based on good practices in many countries (Annex 1). This overview **served as a checklist** for the team **to identify the relevant topics** to look at during the course of the mission, **identify the stakeholders to be consulted** and thus **get a broad overview of the policies and instruments that are currently being applied** in the Philippines.

Due to the complexity of the topic and the limited amount of time available, the team could not look into all the different policies and instruments in detail. The team focused on the ones most relevant in light of potential intervention areas of a *Green Growth* strategy for the Philippines.

### **6.1 Macro level**

#### **6.1.1 Institutional and policy responses to climate change at national level**

The **Inter-Agency Committee on Climate Change (IACCC)** was established in **1991** through Administrative Order (AO) 220 of the President, followed by the ratification and finally signing by the Government of the Philippines of the Kyoto Protocol in 1998. Thereafter, the DENR was elected as the Designated National Authority for the Clean Development Mechanism (DNA CDM) in 2005. Rapid issuance of policies ensued until late **2009** when the **Climate Change Act** was passed by Congress. Meanwhile older groups such as the Philippine Council for Sustainable Development (PCSD) have adopted CC as an agendum of development since 1992, followed by other independent groups like those coming from the private sector and the academe based centers in the ensuing years.

Table 3 Sequence of governmental laws and regulations concerning climate change

Year		Government laws and regulations
1991	⇒	AO 220 created the Inter-Agency Committee on Climate Change (IACCC) with main task to coordinate various climate change related activities and propose national positions, namely UNFCCC
1992	⇒	Government of the Philippines signed the UNFCCC; established the Philippine Council for Sustainable Development (PCSD), a multistakeholder body which charts the sustainable development direction of the country including the concern on climate change
1994	⇒	Senate of the Philippines ratified the UNFCCC
1998	⇒	Government of the Philippines signed the Kyoto Protocol
1999	⇒	RA 8749, Clean Air Act
2000	⇒	RA 9003, Ecological Solid Waste Management Act
2004	⇒	RA 9275 Clean Water Act
2005	⇒	Executive Order (EO) 320 designated the DENR as the National Authority for CDM
2006	⇒	SO 2006-787 created the Inter-Agency Working Group (IAWG) and a Program Steering Committee for the Adaptation to Climate Change
	⇒	SO 2006-788 defined DENR representation to the Inter-Agency Committee on Climate Change
		RA 9367 set the framework for the biofuels industry
2007	⇒	AO 171 created the Presidential Task Force on Climate Change (PTFCC) with DENR as Secretariat and IACCC as its technical arm.
2007a	⇒	AO 171a established the PTFCC based at DOE and chaired by the DOE Secretary
2007	⇒	DENR Special Order 2007-653 created the Advisory Council on Climate Change Mitigation, Adaptation and Communication; served as a technical arm of the PTFCC
2008	⇒	EO 774 reorganized PTFCC and established various Task Groups on Climate Change
	⇒	RA 9513 set the framework on the development, utilization and commercialization of renewable energy
	⇒	RA 9501 defined <i>An Act to Promote Entrepreneurship Strengthening Development and Assistance Programs to MSME</i> , amending RA 6977, otherwise known as the <i>Magna Carta for Small Enterprises</i>
2009	⇒	EO 785 mandated PTFCC to develop the National Climate Change Framework; effectively coalesced the <i>old PTFCC</i> and the PAGWCC into the <i>new PTFCC</i>
	⇒	DENR AO 2009-04 established a Climate Change Office under the Office of the DENR Secretary
2009	⇒	RA 9729 (Climate Change Act) passed by Congress establishing the Climate Change Commission
2010	⇒	National Framework Strategy on Climate Change, 2010 - 2022
		The Philippine Strategy for Climate Change Adaptation, 2010 - 2022

Source: several

Concrete CC related initiatives reflected the evolution of development thinking on environment and natural resources management in the country since 1972 - from a strong emphasis on Integrated Area Development in the 1980s to Sustainable

Development in the 1990s to general CC issues and finally to CC mitigation and to CC adaptation in 2000 - 2010.

Under EO 785 in 2009, the President was the Chair of the Presidential Task Force on Climate Change, supported by an Executive Secretary (with Cabinet rank), two Undersecretaries, and five technical consultants (see below), with a budget of about PHP 100m pesos. A similar organizational structure was adopted in the Climate Change Act with the President as Chair of the Commission, a Vice Chair (Secretary rank) and two Commissioners.

Despite the fact that responding to the challenges of climate change was for some time identified as a concern in the Philippine development agenda it was not included in the 2004 – 2010 Medium - Term Philippine Development Plan (MTPDP). Nevertheless, the **recent update of the MTPDP** shows progress in **mainstreaming climate change into decision making**. However, in the immediate past, resources have mainly gone into disaster management activities especially highlighted by the need for emergency response to the series of extreme weather events that hit the country.<sup>17</sup>

Only recently has climate change adaptation interventions begun to receive attention. Activities include the German Environment Ministry funded EUR4.25m three year Adaptation to Climate Change and Conservation of Biodiversity in the Philippines Project which seeks to assist in the development of national adaptation and mitigation policies and strategies, the conservation and sustainable management of biodiversity and preparation for gaining access to funds from international carbon trade.<sup>18</sup>

Six months after the enactment of the Climate Change Act by Congress, the **National Framework Strategy on Climate Change**<sup>19</sup> 2010 - 2022 was **approved** by the President and the Philippine **Strategy for Climate Change Adaptation** 2010 - 2022 was **formulated**.

### 6.1.2 Selected sector strategies with regard to climate change

So far, there are **no comprehensive sector strategies in place that try to tackle both challenges and opportunities that stem from CC**, applying policies and instruments on all levels as explained above in a systemic way. What exist are certain policies and instruments that the Philippine Government has put in place at the different intervention levels (macro, meso and micro) and some policies in cross cutting sectors like the energy sector. The policies and instruments applied in these fields are mentioned below, especially in the section that deals with incentives and regulations.

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<sup>17</sup> World Bank 2010

<sup>18</sup> World Bank 2010

<sup>19</sup> [http://www.neda.gov.ph/references/Guidelines/DRR/nfscs\\_sgd.pdf](http://www.neda.gov.ph/references/Guidelines/DRR/nfscs_sgd.pdf)

### 6.1.3 Environmental fiscal reform

Environmental fiscal reform (EFR) allows government to set the price signals and incentive mechanisms for producers and consumers to go green, providing positive and negative tax incentives as well as subsidies, or by introducing other measures such as investment allowances for clean technology. EFR as a steering instrument is therefore one of the key instruments to foster the development of green economies.<sup>20</sup>

#### ➤ Providing positive incentives

The government and its related departments and agencies in charge of climate change and private sector development related policy making have come up with several policies and instruments that aim at steering the economy into the direction of low carbon growth through positive incentives

- The **Renewable Energy Act**<sup>21</sup> (RA 9513) of 2008 was enacted to accelerate the exploration and development of renewable energy resources such as biomass, solar, wind, hydro, geothermal, ocean energy sources and hybrid systems. Incentives include tax holidays for carbon credits, reduced income tax, *feed in tariffs* (upcoming), tax reduction for equipment purchase. The Renewable Energy Act is a landmark policy for curbing carbon dioxide emissions of the country as well as creating business opportunities, also for MSMEs. The *feed in tariff* system that is currently being elaborated for different types of renewable energy sources will determine the economic viability of a renewable energy venture. The *feed in tariff* is a regulated incentive which shall pay a stable price for electricity generated from renewable energy that is fed into the grid, thus providing an incentive to potential investors. Additional to this incentive, others are in place, which include
  - seven year income tax holiday
  - potential carbon credits generated from renewable energy sources will be free from taxes. A ten percent corporate income tax, as against the regular 30 percent, is also provided once the income tax holiday expires
  - 1.5 percent realty tax cap on original cost of equipment and facilities to produce renewable energy
  - power generated from renewable energy sources will be value added tax exempt
  - net operating loss carry over, accelerated depreciation, etc.

<sup>20</sup> For a good discussion on EFR see for example the Stockholm Environment Institute and the Chinese Economists 50 Forum 2009: Going Clean – The Economics of China's Low-carbon Development.

<sup>21</sup> [http://www.senate.gov.ph/lis/bill\\_res.aspx?congress=14&q=SBN-2046](http://www.senate.gov.ph/lis/bill_res.aspx?congress=14&q=SBN-2046)

Accompanying these incentives are regulations that provide trading of renewable energy sources through the Wholesale Electricity Spot Market and the Renewable Portfolio Standard which regulates that distribution companies must source a percentage of their power from renewable energy power plants and that renewable energy generated is prioritized for distribution by companies. While the latter regulations are more targeted towards the larger renewable energy investments, the range of incentives provided could very well apply to the MSMEs, particularly those in the off grid zones. **EO 462** additionally provides several financial incentives for developers of **wind energy projects**. **Presidential Decree 1442**, *An Act to Promote the Exploration and Development of Geothermal Resources* gives various financial incentives and privileges to those who invest in **geothermal energy development**.

- The **Biofuels Act**<sup>22</sup> RA 9637 aims to *reduce dependence on imported fuels with due regard to the protection of public health, the environment, and natural ecosystems...utilizing indigenous renewable and sustainably-sourced clean energy sources*.<sup>23</sup> The positive side effect is that the production and use of biofuels will also mitigate GHG emissions, increase rural employment and income and ensure the availability of alternative and renewable clean energy without any detriment to the natural ecosystem, biodiversity and food reserves of the country. A **fiscal incentive** provided under the Act is that biofuels is free of specific tax unlike regular fuel. **Nonfinancial incentives** are that the water effluents from the production of biofuels will not be covered by the Clean Water Act and that investments into biofuels receive special attention from public financial institutions. In addition to these incentives, the government has regulated the use of biofuels, mandating a minimum of two percent blend of biodiesel in all diesel and five percent bioethanol in annual total volume of gasoline. Currently, there are 12 biodiesel producers and two bioethanol producers which are accredited. The prospects for more MSMEs to invest into this industry are good, as crops for biodiesel production abound. Last but not least, **EO 488** allows zero percent rated import duty on imported motor vehicle parts and components that will be used for the assembly and manufacture of vehicles powered by **alternative fuels**.
- **Mini Hydroelectric Power Incentives Act**<sup>24</sup> RA 7156 gives incentives to private sector entities with at least 60 percent Filipino ownership that invest in mini hydro facilities and participate in the development of the mini hydropower industry. These **incentives** include: special privilege tax rates, tax and duty free importation of machinery, equipment and materials, tax credit on domestic capital equipment, special realty tax rates on equipment and machinery, value added tax exemption, seven year income tax

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<sup>22</sup> [http://www.senate.gov.ph/republic\\_acts/ra%209367.pdf](http://www.senate.gov.ph/republic_acts/ra%209367.pdf)

<sup>23</sup> Guzman, R 2009: Status of Biofuels in the Philippines.

<sup>24</sup> [http://www.doe.gov.ph/Downloads/RA+7156\\_0.pdf](http://www.doe.gov.ph/Downloads/RA+7156_0.pdf)

holiday, and access to technical and financial packages offered by financial institutions.

- The **Philippine Environmental Partnership Program (PEPP)** of DENR<sup>25</sup> provides a **set of incentives** and a package of assistance to encourage companies to improve their environmental performance including **energy efficiency**.

➤ **Ecotax on fossil fuel**

Unlike in other countries, **no environmental taxes on energy consumption that stem from fossil fuels** are currently under discussion. As the country has the **second highest energy costs in Asia** after Japan, the **price signals** from the market are strong already and should provide **enough incentive for companies and households** to undertake energy efficiency and conservation efforts.

➤ **Eliminating harmful subsidies**

Unlike in other countries, **no subsidies** are provided **on fossil fuel consumption** in the form of low, regulated prices or tax levels.

➤ **National carbon cap and trade system**

Unless it is considered as a policy option in other countries (for example in China), **setting up a national cap and trade system is currently not considered** in the Philippines. Rather, several government agencies are trying to enhance the use of the international carbon market to attract financing for emissions cutting projects. For details on how the Clean Development Mechanisms is used in the Philippines, please see Chapter 6.2.2 on green financial services.

#### **6.1.4 Regulatory instruments**

Parts of the above mentioned instruments providing positive incentives to shift towards energy efficiency and a low carbon growth path also contain regulatory instruments such as norms and standards. They are rules set by public authorities (*command*) that subsequently are enforced by compliance procedures (*control*). This has lead to the term **command and control** for this group of policy instruments. Norms and standards include, among others, laws, directives and technical guidance documents as far as these are of a legally binding nature.

Norms and standards are applied to achieve numerous aims: reducing emissions and waste, increasing resource or energy efficiency, reducing the use of toxic substances and protecting ecosystems. Furthermore they aim to increase the application of certain technologies regarded as beneficial for resource efficiency gains. Norms and standards can also be used to implement the **polluter pays**

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<sup>25</sup> <http://www.emb.gov.ph/>



***principle*** a policy approach that attempts to shift the costs and responsibilities associated with pollution to the polluter who is compelled by the state to address the damage to civil society aspects of their activities.

In the Philippines, the **Clean Air Act**<sup>26</sup> is an important instrument **setting emissions standards** to companies on air quality, but its effect on energy and thus emissions savings is little. Besides, **more specific norms and regulations are set in different sectors** or segments of the economy to make them greener. One example is the **Green Building Act** promoted by the **Philippine Green Building Council (PGBC)**<sup>27</sup> which establishes green building standards for planning, design, construction, operation or maintenance practices, renovation, expansion and retrofitting of government building projects in the country. This has a *pull factor* for the sourcing of energy saving devices and better insulation material from the construction material industry which is highly MSME dominated. The **National Energy Efficiency and Conservation Program** of DOE is another attempt that calls for a continuous implementation and expansion of the appliance and equipment energy standards and of building energy usage standards.

Through the **Bureau of Product Standards** and the **Association of Home Appliance Manufacturers**, energy efficiency **standards for room air conditioners, refrigerators, freezers and lamp ballasts are being imposed**. The DOE through its Fuels and Appliance Testing Laboratory implements the energy labeling and undertakes energy performance testing and certification of specific household appliances and energy equipment in the implementation of the energy standards and labeling program. Around 7800 million barrels of fuel oil equivalent (MBFOE) is expected to be saved by the end of the planning period. To improve performance of industrial fans and blowers, a National Fans and Blower Certification Program will be developed and is expected to result in approximately 270 MBFOE energy savings.

Another example is the **Administrative Order 183** which directs the use of **Energy Efficient Lighting / Lighting Systems (EELs) in Government Facilities** mandating all government facilities to change to EELs, with the Energy Conservation Officer (ECO) of each government entity / agency formulating a phased in lighting replacement program in their existing facilities to be submitted to the DOE.

### **6.1.5 Green public procurement**

The public sector accounts for a huge amount of the overall market for goods and services in the country. The transition to a green economy could be accelerated if a large number of government units (at the central, regional and

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<sup>26</sup> <http://www.elaw.org/node/2810>

<sup>27</sup> <http://philgbc.org/>

local level) were to decide to adopt sustainable, development oriented procurement policies. In this regard, the **Green Procurement Executive Order 301** by the President in 2004 is an attempt to steer the economy into this direction, as it would create a huge *pull factor* for sustainably produced and energy efficient products. Unfortunately, it appears that the Green Procurement Program is **not followed by all departments**, bureaus, offices and agencies of the executive branch of government as it aims to.

## **6.2 Meso level**

### **6.2.1 Green nonfinancial Business Development Services (BDS)**

In order to make use of the opportunities related to climate change (energy efficiency measures, production and use of renewable energy, products and services for a green economy, etc) and to increase the *adaptive capacities* of MSMEs, these companies need specific services. The role of governments in setting up these services (if they are public) or helping to develop a commercial market for these services (if they are private) is no different for green BDS as for any other BDS that companies need to improve their competitiveness. The only difference is that green BDS help MSMEs improve their long term competitiveness while at the same time meeting mitigation and adaptation targets.

During our mission, we have identified several BDS that are currently offered to help companies in their attempt to green their processes. This list is by no means exhaustive but it gives a first quick impression on the kind of services that are available.

The **Department of Energy** offers **trainings** for the commercial and industrial sector where energy conservation measures for equipment operation and technologies are discussed. The department also provides **advisory services** and **energy audits**.

The **Department of Science and Technology** (DOST), particularly through the Integrated Program on Cleaner Technologies is providing a range of business development support to MSMEs. These include **prototyping** or modeling of **technologies**, conducting **assessment to match technological need and demand**, subcontracting business to develop clean technologies, providing technical written guides, procedures as well as instructions and **training on clean technology** for business. The biggest asset of DOST is the **networking with universities and colleges** nationwide which helps improve the skills of teachers / trainers while contributing to technology development.

One important private service provider in the topic of resource efficiency is the **Energy Efficiency Practitioners Association of the Philippines**.<sup>28</sup> It provides seminars and trainings (regular or inhouse), energy management consultancy services, energy audits and assessments and energy management studies and feasibility studies. Regular training courses include Basic Energy Management Training Course, Sustainable Energy Management and Energy Audit Training Course. Specialized courses include Heating, Ventilation and Air Conditioning (HVAC) System Audit, Combustion Efficiency, Energy Management and Energy Audit.

The **Philippine Business for the Environment (PBE)**,<sup>29</sup> an NGO, assists companies and organizations to identify their carbon footprints using the GHG Protocol Corporate Accounting and Reporting Standard developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development. This initiative was piloted in the Philippines together with the Klima - Manila Observatory and the DENR with assistance from USAID. The GHG Protocol is the preeminent standard for preparing a GHG inventory using GHG calculation tools designed to improve the accuracy of data on GHG emissions that companies collect and report. Companies can avail of either an inhouse seminar and / or a mentoring assistance program to develop their GHG emissions summary, which can subsequently serve as basis for their GHG management / reduction programs. Regarding information, the PBE has been helping local industries to become aware of their impact on the environment and their responsibility for protecting resources. PBE has done so by providing business with environment related information and acting as intermediary with technology providers through an Industrial Environmental Management Knowledge Network (IEMKN).

Other business associations are also strongly pushing the topic of competitiveness through resource efficiency. The **European Chamber of Commerce** in the Philippines (ECCP) is organizing the first Philippine **Energy Efficiency Forum** together with the DOE in July 2010. Additionally, it just started the **SMART Cebu program**<sup>30</sup> together with SEQUA and three local business associations (financed primarily by the EU) to assist MSME in the production of **ecofriendly home and lifestyle products**. The program helps – together with additional partners like DTI and GTZ - align three Cebu industries to current market realities driven by **sustainable consumption and production (SCP)** principles and the requirements of **green markets**, as the targeted niche is the market for high standard design and quality with a green image. It thus helps MSME follow a **cleaner production** and green product marketing to support a sustainable business development path.

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<sup>28</sup> <http://www.enpap.org.ph/>

<sup>29</sup> <http://www.pbe.org.ph/GHG.htm>

<sup>30</sup> <http://www.switch-asia.eu/switch-projects/project-progress/projects-on-greening-supply-chains/smart-cebu-for-environmental-accountability-responsibility-transparency.html>

Besides the institutional service providers, **individual companies are also providing energy saving trainings and consultancy services** to the companies. For example, TUV Rheinland provides certification services for ecofriendly resorts, which include energy efficiency standards.

### 6.2.2 Green financial services

A bottleneck to investing in mitigation or adaptation measures has long been attributed to the limited access to financial resources. Over the last couple of years, however, the situation has improved: Financial institutions are increasingly offering innovative financial products with a potential to help achieve mitigation and adaptation objectives. **Green Finance** can foster investments in low carbon, resource efficient production technologies or housing and infrastructure improvements by providing loans and grants on more favorable terms. Product examples include **environmental credit lines** to small and medium industries and **energy efficiency programs**. Innovative products like **weather insurance schemes** may also help MSMEs cope with the effects of climate change. Today most of these weather insurance schemes are developed for farmers, but there is a big potential and a big demand for new insurance products for small businesses in other sectors (like small processing industries, tourism operators, fishermen) in order to better protect them from CC related effects.

Additional financial resources can also be accessed through project based carbon trading under the **Clean Development Mechanism (CDM)**, which is a market based mechanism included in the Kyoto Protocol.<sup>31</sup> In order to meet their GHG reduction commitments, companies in industrialized countries purchase *certified emission reduction units* (CERs) from projects that contribute to sustainable development and climate change mitigation in developing countries that are not bound by emission reduction targets, resulting in real, measurable and long term GHG reductions that are in addition to any that would otherwise occur.

Developing *green* financial products and making use of the CDM is just in its infancy stage in the Philippines. Financial institutions like promotional, development or APEX banks provide the financing directly to clients or retail banks or via the commercial banks or other authorities. The **Development Bank of the Philippines** (DBP) and the **Land Bank of the Philippines** (LBP) have the scope for becoming involved in climate change related initiatives. Both provide loans to local government units (LGUs), cooperatives, private corporations and small scale producers. Both institutions have started to prioritize lending to environment related projects (like cleaner technology investments or industrial pollution prevention / reduction projects) including CDM eligible projects.

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<sup>31</sup> IPCC 2007

- In the Philippines, there are currently **41 CDM projects registered** at the executive board, 83 letters of approval and 90 applications. The DENR is the Designated National Authority in charge of the CDM, including the monitoring of CDM projects. Up to now a lot of the projects are agribusinesses, applying for projects in the area of biomass, solid waste management or renewable energy.<sup>32</sup> Due to an increased interest, various financial supporters and investors including national government, bilateral and multilateral financial institutions as well as commercial banks have set up CDM funds (such as Prototype Carbon Fund, Community Development Carbon Fund, BioCarbon Fund) for assisting the implementation of the CDM project activities. New approaches around **bundling CDM projects for groups of small scale companies** are currently being explored to better enable MSMEs to get access to the CDM.
  
- The **Credit Line for Energy Efficiency and Climate Protection (CLEECP)**,<sup>33</sup> a Land Bank product supported by KfW, is one example providing subloans to reduce electricity consumption and GHG emissions, thereby contributing to mitigation while at the same time increasing the competitiveness of companies through resource efficiency. Borrowers are private companies and entities like cooperatives and associations, LGUs, national government agencies as well as government owned and controlled corporations. Eligible projects include the replacement or retrofitting or energy efficient modernization of chillers and general energy efficient investments, directly reducing primary energy (like diesel, coal, gas) consumption or direct GHG emissions. Project examples include the replacement and modernization of manufacturing systems powered by coal, diesel or gas.
  
- The **Development Bank of the Philippines (DBP)** through its **Industrial Pollution Control Loan Project II**,<sup>34</sup> a policy based lending program, supports SMEs' investments in efficient production and environmentally sound technologies. It further aims to promote environmental protection and occupational health and safety (OHS). For specific problems, DBP is supporting borrowers with the advisory service of international environmental technology experts. DBP has been supported by a loan of the Japan Bank for International Cooperation (JBIC) to establish a facility aiming to finance enterprises to implement CDM projects. The scope of the CDM includes projects from *waste to energy*, methane recovery, wind, geothermal, hydropower, among others. Further, the Environmental Infrastructure Support Credit Program (**EISCP**) II, a lending program, aims to support investments in projects that improve the quality of the

<sup>32</sup> Official website of CDM Philippines: <http://cdmdna.emb.gov.ph/cdm/public/cdm-home.php?main=home>

<sup>33</sup> [http://www.devbankphil.com.ph/sme/sme\\_lending.php](http://www.devbankphil.com.ph/sme/sme_lending.php) and [http://www.co2-handel.de/article343\\_11001.html](http://www.co2-handel.de/article343_11001.html)

<sup>34</sup> [http://www.devbankphil.com.ph/sme/sme\\_lending.php](http://www.devbankphil.com.ph/sme/sme_lending.php)

environment through reduction or prevention of pollution. Projects eligible for funding are projects on pollution control (pollution treatment / abatement, pollution prevention, waste minimization and / or cleaner technology), improvement of OHS, promotion of efficient use and / or management of natural resources, establishment of an Environmental Management Systems (EMS) and certification under ISO 14001, purchase of monitoring equipment of emission or effluent, environmental infrastructure under *build operate transfer* (BOT) arrangement, common waste treatment / disposal facilities, compliance of SMEs to environmental requirements as well as installation and / or upgrading of environmental facilities for existing plants.

- The Department of Science and Technology through its Technology Application and Promotion Institute (TAPI) offers the **Venture Financing for Environmentally Sound Technologies** Program.<sup>35</sup> This specialized venture financing facility aims to strengthen the competitiveness and productivity of local manufacturing industries in a sustainable manner through the adoption of cleaner production technologies and equipment. Priority sectors are food processing, metal finishing, plastic recycling and wood furniture industry. In addition to the financial assistance, technical assistance and expertise on the selection of the technology and equipment may also be provided. TAPI likewise offers support for prototype development and product development.

**Multilateral development banks** like the World Bank provide additional finance for countries and their respective government agencies to address CC mitigation and adaptation, some of them being accessed by the Philippine Government.

- **Mitigation: Climate Investments Funds** (CIFs), for example, were approved in July 2008 with over USD 6 billion in pledges. The **Clean Technology Fund** seeks to scale up financing to contribute to demonstration, deployment and transfer of low carbon technologies with a significant potential for long term GHG emissions savings. It includes programs in the power sector (renewable energy and highly efficient technologies to reduce carbon intensity), the transport sector (efficiency and modal shifts) and energy efficiency (buildings, industry and agriculture). It uses a range of 20 concessional financing instruments such as grants and concessional loans as well as risk mitigation instruments such as guarantees and equity. The **Strategic Climate Fund** provides financing through several pilot programs for new development approaches or to scale up activities aimed at a specific climate change challenge or sector response through targeted programs (like Forest Investment Program). The **Carbon Partnership Facility** (CPF) is designed to target investment programs that have the potential to contribute significantly to a transformation of emission intensive sectors in client countries of the World

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<sup>35</sup> [http://www.unescap.org/tid/publication/chap4\\_2127\\_phil.pdf](http://www.unescap.org/tid/publication/chap4_2127_phil.pdf)



Bank Group. The CPF makes a market for long term GHG reductions (at least ten years beyond 2012). It purchases certified emission reductions under the CDM or other market schemes and offers a platform for systematic collaboration of public and private sector partners from industrial and developing countries.<sup>36</sup>

- **Adaptation:** The **Global Environment Facility** has been the main source of grants and concessional funding for adaptation projects and is of relevance for the Philippines: The **Special Climate Change Fund** under the UNFCCC was established to support activities in adaptation, technology transfer, energy, transport, industry, agriculture, forestry as well as waste management and economic diversification. The Philippines' Climate Change Adaptation Program is an example of a project that is expected to draw on the support of this fund.

### 6.2.3 Knowledge, research, technology and innovation

Many of the solutions to CC mitigation and adaptation are based on knowledge, science and technology. Clean technology solutions, for example, can reduce emissions. Infrastructure improvements help enterprises adapt to possible effects of CC. Research and Development (R&D) hence play an important role here including basic and applied research by government and private research institutions as well as companies themselves. New technologies realized through R&D can help raise productivity and competitiveness of companies. In addition, it can also foster innovation to find new ways of delivering products and services in a less resource intensive manner. Knowledge and technology transfer from R&D to the private sector and a broad diffusion of technologies are hence critical for **mitigation**. At the same time, research based knowledge can help **identify adaptation strategies** for companies affected by CC.

Technology transfer is a cross cutting issue. Many of the policy instruments mentioned above have effects on the use, adaptation and absorption of new technology. Apart from good R&D policies, government plays an important role in clarifying the future direction of policies and decision making to give business the confidence and incentives it needs in order to undertake *green investments*, for example, in *green* product development or new production processes. Price incentives or standards can trigger a change of use in technology and push structural change in production patterns towards *green* technology. **Coordinated policies of different agencies** and **cooperation among government, the private sector and civil society** are needed to generate much needed solutions.

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<sup>36</sup> World Bank 2010

Following are a few examples that we came across in the Philippines

- Three of the five sector councils of the **Department of Science and Technology** (DOST) have formal statements concerning R&D and technology transfer related to climate change. The **National Framework Strategy on Climate Change** sets as a strategic priority to develop and implement a national, comprehensive, multisectoral climate change R&D and science and technology agenda, based on the initial inputs of research and science agencies and institutions.
- Currently, much research is done by the **Philippine Council for Agriculture, Forestry and Natural Resources Research and Development** (PCARRD), which had developed a comprehensive research framework on CC for the agriculture and forestry sectors in 2009. Through vulnerability and impact assessments and the development of **strategies for adaptation and mitigation**, the **Science and Technology Framework** in Agriculture, Forestry and Natural Resources aims to sustain the productivity and competitiveness of agriculture and forestry of the Philippines. The **Forest Products Research and Development Institute**<sup>37</sup> (FPRDI) conducts research on proper identification, properties, uses, processing and protection of forest products. The FPRDI is working on adaptation to CC through R&D on utilization of wastes for development of construction materials. There are plans to develop further biomass to energy systems. Further, FPRDI has developed a study on **CC impacts on forest based industries**. Projects proposed include the study of (a) carbon footprints from the processing of wood and nonwood products, (b) design and improvement of environmentally friendly houses to adapt to or to mitigate CC, (c) alternative energy from lignocellulosic materials and (d) capacity building for Philippine forest products industries.
- The **Philippine Council for Industry and Energy Research and Development (PCIERD)**<sup>38</sup> plays a key role in the implementation of the Biofuels Law as it is responsible for the development and implementation of **R&D programs on sustainable improvement in biofuels production and utilization technology**. It developed the Biofuels R&D program to support the implementation of the law, and involved activities such as biofuels technology research, assessment, validation and documentation, alternative feedstock identification and development, feedstock raw material and biofuels analysis, performance testing of biofuels from different feedstock, technoeconomic viability assessment of biofuels production plant, and technology promotion and transfer. The country's first vehicle research and testing laboratory located in UP Diliman can determine the viability of different alternative fuels as well as fuel saving and emission control devices.

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<sup>37</sup> <http://www.fprdi.dost.gov.ph/>

<sup>38</sup> <http://www.pcierd.dost.gov.ph/>



- **DOST**<sup>39</sup> offers a wide range of capacity development activities: Since the 1990s it has been involved in numerous projects that supported **cleaner production activities** in the industry. For example, the **ECO 201** is a capacity building program focusing on ecology and economics for small businesses. The training courses have contributed significantly to energy savings while at the same time helping CC mitigation.
- There are several **research institutions** (such as Klima Climate Change Center<sup>40</sup> Philippine Network on Climate Change) conducting research on CC related topics. Many of them focus on resource management issues and are also involved in awareness raising activities. They actively disseminate their research results to government agencies and the public. **Manila Observatory**,<sup>41</sup> for example, has developed a tool for assisting the disaster risk and vulnerability decision support system for the **Municipality of Baclayon** in the island of Bohol. The tool provides a qualitative rating system which considers present and probable future conditions surrounding Baclayon's development. The tool helps the local government in evaluating development plans to optimize gains, ensure sustainability and generates options in developing adaptation strategies.
- The **Technology Transfer Act of 2009**<sup>42</sup> aims to promote and facilitate the transfer, dissemination and effective use, management and commercialization of intellectual property, technology and knowledge, resulting from R&D funded by government. It strengthens the collaboration of government funded research institutions with the private sector. Scientists can now create, manage or serve as consultants to companies that can commercially exploit technology arising from their government funded research. The act may foster the diffusion and commercialization of new low carbon technologies, developed in public R&D institutions.

#### 6.2.4 Ecoindustrial parks (EIP)

The DTI promotes the establishment of environment friendly economic zones all over the country to respond to the demands for *ready to occupy* locations for foreign investments. At the helm of this strategy is the Philippine Economic Zone Authority<sup>43</sup> (PEZA), an investment promotion agency and a government owned corporation, attached to the DTI. The PEZA grants fiscal and nonfiscal incentives to developers of economic zones (ecozones), export producers and information technology (IT) service exporters. It offers *ready to occupy* locations in

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<sup>39</sup> <http://www.dost.gov.ph/>

<sup>40</sup> <http://www.klima.ph/>

<sup>41</sup> <http://www.observatory.ph/>

<sup>42</sup> [http://www.senate.gov.ph/lis/bill\\_res.aspx?congress=14&q=SBN-3416](http://www.senate.gov.ph/lis/bill_res.aspx?congress=14&q=SBN-3416)

<sup>43</sup> <http://www.peza.gov.ph/>

environment friendly ecozones and IT parks and buildings to foreign investors who are export producers or IT service exporters. The agency likewise promotes efficiency in production and the use of low carbon technologies among industries.

## **6.2.5 Education and qualification**

Due to the limited time available during the study, we were unable to look into this topic. From what we heard, our impression is that at all different levels in the educational and vocational system (universities, colleges as well as technical and vocational training) topics relevant to a green economy need to receive more attention, especially regarding technological and managerial aspects of energy efficiency, renewable energy, other clean technology and sustainable business models.

## **6.3 Micro level**

### **6.3.1 Social and ecological standard and Environmental Management Systems (EMS)**

The implementation of social and environmental standards, accomplished through EMS and other approaches to advance sustainable development as they (1) contribute to economic growth through improved competitiveness, (2) improve working conditions for (often) poor workers and (3) take better care of natural resources. While Point 2 and Point 3 are quite obvious, Point 1 is not. But experience has shown that **complying with quality, environmental and social standards improves the competitiveness of companies.**

Although complying with standards has a cost, the benefits outweigh them

- improvements in the quality of the product or service = higher sales, often at higher prices
- better management of resources = less costs
- higher motivation of staff = higher productivity
- less accidents = higher productivity
- better image = better access to markets and stable trading relations
- less environmental damage = sustainability of the business.

As explained above, different sets of norms and standards have been set in the Philippines to direct the economy into a low carbon growth direction. Complying with national laws and regulations appears to be problematic though, especially for MSMEs. Enforcement of the regulations is difficult. Therefore, it is important to **convince the private sector and especially MSMEs of the economic benefits of fulfilling environmental standards** so that they voluntarily change

their habits and put their business and the economy on a greener track. Several programs of different government agencies and donor supported initiatives have been and are currently working on these topics.

### 6.3.2 Market launch programs

Two important market launch programs for clean technology that we came across are currently being applied in the Philippines.

In a **WB** supported program together with **DENR**, **energy saving chilling systems** are being installed in commercial centers in the Philippines. While the focus so far is on larger shopping malls, this program could be rolled out to smaller retail shops throughout the country (see also GTZ experience PROKLIMA on alternative chilling technology transfer).

Within the framework of an **ADB** supported **Philippines Energy Efficiency Project**<sup>44</sup> traditional light bulbs are being replaced by **energy saving compact fluorescent lamps** (CFL). CFLs use less power and have a longer rated life. 13 million CFLs will be distributed to households all over the country, accompanied by the *Switch to CFL Advocacy*, a massive social mobilization campaign. The Philippines is the first country in Asia to launch a campaign of this magnitude.

### 6.3.3 Green value chains

As mentioned in Chapter 4, companies are increasingly aware of the fact that their **long term competitiveness depends on the ecological sustainability of their entire supply chain**. For many years larger companies have worked with their suppliers in order to improve the quality of the products that they source from them. Today, environmental aspects have reached the focus of attention, additionally to social standards. On the one hand, larger companies want to make sure that their smaller suppliers operate in an ecologically sustainable manner in order to be **competitive**. On the other hand, larger companies are keen to help their smaller suppliers fulfill **legislative and regulatory requirements**, as the violation of laws and regulations endangers their entire supply chain. Last but not least, the **image** of the larger company is threatened if the company does not make sure that its sustainable sourcing policy (which most companies nowadays have) is being followed. NGOs would criticize them for not fulfilling their social and environmental responsibility within the whole supply chain.

In the Philippines, many larger companies have started initiatives to assist their smaller suppliers to become greener. **Nestle** has carried out its **greening the supply chain program** since 2000, **reaching out to over 170 of its local**

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<sup>44</sup> <http://www.adb.org/Media/Articles/2009/13006-philippines-energies-projects/fast-facts.pdf>

**suppliers**, among them many small companies. Thanks to this initiative, MSMEs are becoming more competitive through resource efficiency and other environmental good practices.

#### 6.3.4 Ecolabeling

The objective of ecolabeling programs is to eliminate the least efficient products from the market, by informing consumers which products can help them reduce their monthly electricity bill. This change in demand will again encourage manufacturers to improve product efficiency, thus contributing to reduce GHG emissions.

**Green Choice Philippines** is the **national ecolabeling program** recognized by the Global Ecolabeling Network,<sup>45</sup> a nonprofit association of third party, environmental performance labeling organizations which aims to identify environmentally responsible products in the market.

In addition to that initiative, energy labels are used to inform companies and consumers about the energy efficiency of certain products (air conditioners, CFL, ballasts and refrigerators). The **Energy Labeling Program**<sup>46</sup> uses labels in the form of mandatory stickers or labels that are affixed to products or their packaging.

Under the **National Energy Efficiency and Conservation Program**,<sup>47</sup> **lists of certified products** (for air conditioners, CFL, ballasts and refrigerators) are available for consumers and companies to influence their buying behavior.

Through ecolabeling programs, MSMEs have better information about energy saving technology which can help them improve their business performance. It also opens up markets for those companies who are able to come up with new products that will be promoted under an ecolabeling scheme.

#### 6.3.5 Consumer awareness raising

Besides the government (see Chapter 6.1.5 Green public procurement), **consumers** are another **strong force that influences the demand for green products and services**. Consumer awareness campaigns are therefore an important instrument to make sure that this demand increases, thus creating a

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<sup>45</sup> <http://www.gen.gr.jp/philippines.html>

<sup>46</sup> [http://www.energylabel.org.tw/other\\_en/label/list.asp](http://www.energylabel.org.tw/other_en/label/list.asp) and <http://www.bps.dti.gov.ph/>

<sup>47</sup> <http://www.doe.gov.ph/neecp/default.htm>

***pull effect on the market***, from which also MSMEs can benefit if they are able to offer green products or services.<sup>48</sup>

The **Manila Observatory** has even **targeted children and students** through awareness campaigns. The **Consumer Welfare and Promotion Office of DOE** is publishing **fact sheets** with tips for consumers **on energy saving measures** and **energy efficient technology**.

As awareness on CC and other sustainability problems keeps rising, the market for green technology and green products will continue to grow steadily. Based on OECD data, the **global market for environmental goods and services** today already accounts for **EUR 410 billion**. This is a huge market which MSMEs can also exploit either through own marketing efforts or through being part of a green supply chain (see Chapter 6.3.4) driven by a larger buyer.<sup>49</sup>

#### **6.4 Meta Level, New Forms of Partnerships and Cooperation Management**

The political and institutional setup with the Climate Change Commission in place is a unique opportunity for the government to involve stakeholders from the private sector and civil society into **developing a long term vision for a green country**. Under its leadership, a visioning process could be designed and implemented, followed by a **nation brand building program based on the vision of a green, low carbon economy**.

In order to reach this vision of a green economy, the **cooperation of different actors is required**, as the problems are just too big and too complex for a single actor (either government, private sector or civil society) to handle. Therefore, **new cooperation mechanisms are spreading**, where **partnerships between the public and private sector**, often with the involvement of civil society are being built.

In the Philippines, this is also starting to happen. One example is a project initiated by the ECCP together with DOST and DTI in Bohol, setting up the production of green weaving products by local MSME which directly supply to an international buyer.

Another example is the cooperation that GTZ undertook together with Holcim in order to organize the supply chain of waste from the very small scale informal sector used for fueling the ovens of the cement factory of Holcim.

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<sup>48</sup> For a good discussion on sustainable consumption and how to support it see for example UNESCAP 2008: Greening growth in Asia and the Pacific.

<sup>49</sup> Wenzel, E / Kirig, A / Rauch, C 2008: Greenomics: wie der grüne Lifestyle Märkte und Konsumenten verändert.

These kinds of partnerships have turned to be an excellent tool when it comes to linking MSMEs into value chains for local and international markets. If these partnerships focus on green products and services or on *greening* or *beyond greening* business models, they also contribute to tackling climate change. They require cooperation management skills that enable partners from different sectors to engage in trustful partnerships on equal basis.

## 7 Recommendations to Incorporate *Green Growth* as an Important Pillar of the new MSMED Plan

### 7.1 Overall recommendations

As could be seen in the previous chapter, a lot of efforts are being carried out already that DTI and its partners in the MSME Development Council could build on in order to address both challenges and opportunities that stem from CC. Due to the limited time available for the mission, we could not get a 100 percent complete picture of all the policies and instruments that are currently being applied. Also, we may have overlooked some of the programs and initiatives that are ongoing to address the issues of climate change adaptation and mitigation as well as competitiveness.

Nevertheless, the picture we have drawn is complete enough to understand that there are certain gaps in the policies and instruments that would need to be addressed in order to further promote *Green Growth*. In particular, **many existing instruments do not reach out to the majority of MSMEs or would need to be adapted in order to make them viable for MSMEs**. Additionally, it became apparent that a more systemic approach to foster *Green Growth* will be needed in order to achieve sustainable impact in all four objectives: mitigation, adaptation, long term competitiveness and *green jobs*. Here, the cooperation and coordination of many different stakeholders will be required to come up with interventions at all different levels (supranational, macro, meso, micro and meta).

But this is feasible! Based on our findings and the recommendations of stakeholders interviewed, we therefore recommend to DTI and its partners in the MSMED Council to making *Green Growth* as one important pillar in its new strategy to support economic development in general and MSMEs in particular. Basically we see two options for integrating *Green Growth* in the MSMED Plan

- a) **add a fifth result area** referring to the promotion of environmentally sound and low carbon practices of MSMEs in addition to the four result areas of the MSMED plan
- b) **mainstream *Green Growth*** relevant policies into the existing four result areas.

We would **prioritize option b**, as climate relevant measures could be easily integrated in the existing result areas.

Table 4 Strategic Directions and Proposals for Mainstreaming *Green Growth* Support Measures into new MSME Development Plan 2010 - 2016

Result Area MSMED Strategy	Strategic Directions and Proposals for Mainstreaming <i>Green Growth</i> Support Measures into new MSME Development Plan 2010 - 2016
<b>Access to Markets</b>	<ul style="list-style-type: none"> <li>■ provide MSMEs access to support for enhancing their environmental management and technological capabilities, tapping new business opportunities and becoming competitive in the domestic and international market through increased resource efficiency and new <i>green</i> products and processes</li> <li>■ provide support in identifying and developing new business opportunities through the development of new business ideas and product and process innovation that promote <i>Green Growth</i></li> <li>■ provide MSME in selected sectors with information on trends and development with regard to <i>Green Growth</i> (new production technologies and processes, specialized BDS provider, new trends in the industry, training)</li> <li>■ strengthen support to growth industries that are active in international markets in order to sustain and enhance their competitiveness and improve access to domestic markets through <i>greening</i> and <i>beyond greening</i> strategies</li> </ul>
<b>Access to Finance</b>	<ul style="list-style-type: none"> <li>■ develop MSME financing support programs for clean technology and resource efficient production equipment, strengthening the institutions that provide financial services to MSMEs</li> <li>■ expand the access to special credit lines and microfinance for new clean technology as well as improving the access to venture capital; new innovative financing mechanisms need to be developed such as leasing models</li> <li>■ develop MSME insurance schemes in order to strengthen the MSMEs capacity to cope with extreme weather events and impacts of climate change</li> </ul>
<b>Productivity and Efficiency</b>	<ul style="list-style-type: none"> <li>■ develop environmental management and technological capabilities that help MSME increase their productivity by increasing resource efficiency</li> <li>■ harness the use of <i>low carbon</i> and resource efficient technology and equipment</li> <li>■ strengthen linkages with technology and service providers to increase resource efficiency</li> </ul>
<b>Business and Investment Enabling Environment</b>	<ul style="list-style-type: none"> <li>■ streamline the implementation of policies and regulations affecting <i>Green Growth</i> and MSME development (such as the Renewable Energy Act, Biofuels Act, Clean Air Act, Mini Hydroelectric Power Incentives Act, Clean Water Act )</li> <li>■ strengthen and build capabilities of institutions that generate and implement programs for <i>green</i> MSME development</li> <li>■ facilitate partnerships and build on existing initiatives and support programs, rolling out and upscaling of pilot programs</li> </ul>

Source: COMO / GTZ



## 7.2 Institutional Recommendations for DTI

### 7.2.1 Develop a policy on *Green Growth*

In order to bring the topic on the agenda of the entire DTI, it is recommended that an Administrative Order (AO) be developed on a *Green Growth* policy, which effectively will establish the authority, responsibility and accountability of DTI to *Green Growth* of MSMEs in particular and the economy in general. The AO would expand the function of the Bureau of Micro, Small and Medium Enterprise Development (BMSMED) to be the focal point on *Green Growth* within DTI.

The most important mandates of the focal point would be to

- **mainstream *Green Growth*** into policy making at national and local levels
- **support private service providers** to develop MSME specific financial and nonfinancial services needed for MSME to go *green*
- **enhance capacities of DTI** on all aspects relevant to *Green Growth*
- **build alliances with the business sector** for *Green Growth*
- **make use of existing initiatives** and help establish new ones
- **support business associations** in their efforts to help their members go green
- **carry out *Green Growth* MSME Forum on a regular basis**
- **use the media** for highlighting innovations and success stories
- **carry out award schemes** for ***Best Green MSME*** and ***Best Green MSME Initiative***.

### 7.2.2 Budget, funding for *Green Growth* and positioning of DTI

It is recommended that a **Major Final Output (MFO) on *Green Growth*** be defined and made part of the *Organizational Performance Indicator Framework* (OPIF) of the DTI, as basis for determining a yearly budgetary allocation from the government general appropriations. In **this way, activities on *Green Growth* get core funding every year**. With this, DTI could start to undertake the option explained above, building on existing initiatives and help to roll them out and upscale.

**In parallel**, and in order to initiate a full fledged *Green Growth* approach, DTI could aim at **tapping into the resources available with the bilateral and multilateral development partners on topics related to climate change**. With these resources, the Philippine Government through DTI could **carry out a full fledged program to foster *Green Growth*** of the economy, and of MSMEs in particular, thus improving their competitiveness and creating *green jobs*.

This undertaking is also an **opportunity for DTI to position itself as lead body** of the *Green Growth* agenda that would help improve the long term competitiveness of Philippine companies while at the same time contributing to mitigation of GHG emissions and adaptation to climate change.

### **7.3 Suggested Interventions to Promote *Green Growth* and the Role of DTI**

As explained in earlier chapters of this report, **interventions** to foster *Green Growth* need to be carried out at different levels: **supranational, macro, meso, micro and meta level**. The **themes for government to undertake** at each level were also explained. Therefore, DTI and its partners from the MSMED Council need to find their specific role at each intervention level and each specific policy and instrument, **according to the specific mandates of the institution**, its **cooperation** and **coordination** capacities as well as its human and financial resources. The most relevant levels are briefly analyzed below. A more detailed description of the interventions and the role of DTI and its partners in the MSMED Council are elaborated in Chapter 7.4. for each of the suggested *Green Growth* focus sectors.

#### **➤ Macro level**

At this level, DTI, in cooperation with other departments and in consultation with the private sector must work on the **legislative and regulatory framework conditions** by setting the right incentives and price signals **to push and pull companies towards *Green Growth***. For **example**, in the construction and green building sector, DTI should team up with the Green Building Council and the Department of Public Works and Highways (DPWH) in order to help **enact the Green Building Act** and make sure that it also governs commercial buildings and not only public buildings like it is currently planned. DTI should also **engage itself into the discussion of the feed in tariff under the Renewable Energy Act**, making sure that the upcoming scheme also encourages MSME to invest into renewable energy production. For more details on specific legislative and regulatory framework conditions to be worked on, please see the sector recommendations in Chapter 7.4.

#### **➤ Meso level**

At this level, DTI, in cooperation with other departments, other public institutions and in strong cooperation with private service providers must work on building the **institutional capacities needed for *Green Growth***, especially **green business development services to enable companies in their greening effort** as explained above. As energy consumption is one of the biggest cost factors in many of the MSME in the sectors that we looked at, **energy efficiency services are of extreme importance**. These services must cover **both managerial aspects** (quick wins through improved energy management as well

as small scale, easy and quick investments like better insulation of shops and production facilities) **as well as technology services** though with a good return on investment through more efficient power generation or cooling equipment. For more specific institutional capacities and green business development services to be worked on, please see the sector recommendations in Chapter 7.4.

➤ **Micro level**

At this level, DTI, in cooperation with other departments, must **foster the long term competitiveness of companies** through resource and energy efficient and conservation measures, the use of renewable energy as well as measures that make them more resilient to climate change. This can be done by **helping to rollout**, for example, **the existing programs** on energy efficient cooling systems. It can also be achieved through **working in partnership with larger companies, helping to rollout their greening the supply chain initiatives**, reaching out to more MSMEs and building the necessary service schemes to make these initiatives sustainable. **Sustainable consumption and lifestyle** habits of consumers must also be encouraged, for example, **rolling out the consumer awareness campaigns on energy efficient appliances** or on lighting systems **as well as the labeling schemes for green products**. For more details on specific market launch programs to be rolled out, greening the supply chain initiatives to be upscaled or consumer awareness campaigns or labeling schemes to be expanded, please see the sector recommendations in chapter 7.4.2.

## **7.4 Sector Focus of Green Growth Measures**

Based on our findings and the dialogue with different stakeholders, six potential priority sectors were identified where DTI and its partners from the MSMED Council could focus on in their endeavor to engage into promoting *Green Growth*. The sectors were reviewed in the context of their contribution to GHG emissions and the potential to increase competitiveness of companies through *green* practices like energy efficiency, waste to energy conversion as well as ecolabeling for marketing schemes. Due to the short period of time to look into the details of the sectors, the findings would need to be validated and specified through further discussions with stakeholders and experts and potentially further research.

## 7.4.1 Food processing

### ➤ The rationale

About half of all manufacturing businesses are micro and small enterprises involved in food processing.<sup>50</sup> The sector is using about 25 percent of total energy consumption in the Philippines, thus making it a good group for CC mitigation while showing the way for improved company competitiveness while instituting resource efficiency measures and the use of renewable energy.

Analyzing the value chain of food processing, for example of fruits and marine or aquaculture products, it becomes clear that energy consumption is a dominant expense. Often, the cooling system for the whole local value chain is making up for about 80 percent of energy costs. Experiences have shown that alternative cooling systems in the fruit processing industry have a quick return on investment (about 1.5 years), hence helping the companies become more competitive in a short period of time. Other *no cost* or *low cost* solutions also contribute to energy savings. In many cases, there is no high tech solution required. Minor changes along the production process can mean big differences with regard to energy use.

Additionally, better waste management can reduce greenhouse gas (GHG) emissions from organic waste and through capturing the methane, energy can be produced for own consumption, lowering energy costs further.

Besides these mitigation efforts aiming at the competitiveness of the MSME, adaptation measures are urgently needed in the supply chain. Processing companies need to work with their suppliers in order to make them more resilient to more extreme weather conditions. The measures may include improvement of crop species and breed, reengineering of pond infrastructure, diversification and others.

### ➤ The interventions

**Energy saving initiatives at company level through service providers** Pilot projects need to be carried out at the company level to improve energy management and apply new technology for the entire cold chain. Additionally, other *no cost* and *low cost* energy saving measures need to be identified through energy audits and implemented through energy savings trainings and advice. The results of the pilot projects need to be documented and disseminated through sector associations and chambers.

**Waste management and energy generation at company level through service providers** Together with DENR and private service providers, better waste management and the generation of electricity by capturing methane should be promoted. Other ways of producing energy from renewable sources (wind, mini hydro and solar) should also be explored and disseminated.

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<sup>50</sup> DTI 2004: MSME Development Plan 2004 - 2010.

**Labeling schemes** Ecolabeling schemes like the *green choice* label or internationally recognized ones for organic products as well as labels like the *carbon footprint initiative*<sup>51</sup> can be used in order to increase demand for the products that originate from sustainable, green companies.

**Financing** There are different funding sources for investments into energy savings, clean technology and renewable energy devices. Potentials exist to bundle small scale projects into a larger project that would qualify for the CDM. Other financing schemes are preferential credits that can be offered through public or commercial banks or preferential depreciation rules provided by government. Finally, innovative financing mechanisms like leasing models and cash flow based lending need to be developed to make it easier for companies to shift into a green direction.

**Norms and regulations** The relevant authorities should consider establishing stricter norms and standards for cooling devices used in the food processing industry. Here, a possibility is in advocating with DOE for the Energy Conservation Act. This would push the companies into using energy efficient and GHG saving devices.

**Adaptation measures in the supply chain** Looking beyond the processing companies, these should also work together with their local suppliers in order to help them shift to organic production, as these are less GHG emitting than conventional products. This also helps processing companies explore opportunities in the growing market for organic products. Moreover, processing companies need to work with their suppliers and assist them to become climate change resilient by introducing new species and varieties and by improving physical infrastructure.

#### ➤ **The role of DTI**

DTI would need to team up with the respective business associations and local chambers of commerce in order to undertake this *greening the food processing industry project*. For the regulatory effort to develop and enforce stricter norms and standards, it would need to work with the respective bureau and with DOE and DENR. For the financing schemes, it needs to work with the banking sector as well as DENR on potential CDM projects.

One important role would be to create a market for business development services that help food processing companies in their effort to go green: audits, training and consultancy services, information and awareness, matchmaking with banks and technology providers.

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<sup>51</sup> [www.carbonfootprint.com](http://www.carbonfootprint.com)

Another role would be to facilitate partnerships with larger companies that source products from local suppliers. Here, greening the supply chain initiatives like that of Nestle can be taken as an example.

Dissemination of good practices through the sector associations and chambers would round up the task of DTI in this sector.

## **7.4.2 Wholesale and retail**

### **➤ Rationale**

Micro and small enterprises in the commercial sector including businesses involved in the value chains of the wholesale and retailing sector account for the vast majority of businesses operating in the Philippines. The sector is a major energy consuming and waste generating sector, especially with regards to its linkages down the value chain.

Energy is a big cost component for MSMEs in this sector and the potential for saving costs is high, especially with new energy efficient technologies on the market. There are ongoing initiatives to replace inefficient chillers with energy efficient ones which can easily be rolled out to include also air conditioners. Even for MSME saving energy can cut costs: energy efficiency on the workplace can mean replacing and retrofitting air conditioners or lighting fixtures, for example. Through better management of waste and recycling practices, additional costs can be saved.

### **➤ The interventions**

**Legislative Instruments and regulatory measures** Changes in energy consumption in the sector could be achieved through regulatory measures such as obligations to use certain technologies. Currently an Energy Conservation Bill is being drafted which is an example of such a measure. The challenge, however, lays in the implementation of these laws.

**Positive incentives** Calling on businesses' voluntary engagement is another policy option. Establishing a *Carbon Standard* as a benchmarking award, is a way to reward businesses' commitment to mitigation targets. A similar effect has the introduction of Carbon labels or Ecolabels for the retail and service industry, that make the carbon footprint and the environmental impact of a company transparent to the consumers. Energy labels for appliances like air conditioners, refrigerants or washing machines inform MSMEs about their possible energy savings. The installation of energy meters can help businesses monitor their energy consumption.

**Replacement and retrofitting programs** The replacement of air conditioning systems (chillers) operating with climate and ozone damaging cooling load factor (CLF) refrigerants is one option for cutting emissions and decreasing the energy



costs. Pilot projects demonstrate benefits and broadly disseminate technological innovations. World Bank / IFC for example supports the replacement of chillers, especially in malls and big commercial buildings. Such projects also help to raise awareness and to decrease reluctance towards change and could easily be rolled out to smaller retail shops.

**Finance** Financial products which give loans with preferential conditions such as low interest rates or flexible repayment rates are important in making technology accessible. In order to help disseminate the technologies especially among MSMEs, innovative financing mechanisms like leasing models or cash flow based lending need to be developed.

**Training and capacity development** In order to decrease energy demand, government support can focus on energy management trainings through private business service providers, energy efficiency information campaigns and awareness raising activities as well as on establishing linkages between companies and R&D entities.

#### ➤ **The role of DTI**

DTI could build on pilot projects such as the World Bank / IFC program and roll them out, but also link with existing initiatives that are driven by the private sector such as the initiative by the ECCP on energy efficiency. In order to improve access to energy efficient technologies, DTI could engage with financial institutions to develop innovative financing models like leasing models and cash flow based lending schemes.

DTI could partner with other agencies (DENR, DOE, DOST) to share costs of activities like awareness raising and trainings. In the area of waste management, dialogue with DENR on possible measures to decrease waste production in the retail sector needs to be explored.

Disseminating information on the cost saving opportunities to MSMEs can be promoted through working with chambers and associations.

### **7.4.3 Tourism (hotels, resorts, restaurants)**

#### ➤ **Rationale**

The tourism sector, including hotels, resorts and restaurants, is an important sector in the Philippine economy with high relevance to MSMEs. Accountable for significant GHG emissions itself, it has linkages to many other climate change relevant industries like food processing, furniture, souvenir items, wholesale / retail and transport.

Efforts are currently being undertaken to develop ecotourism products and reduce waste generation and water consumption. An EU funded *zero carbon*

*resort* initiative is targeting 500 small resorts.<sup>52</sup> Besides cost saving potentials via energy efficiency, renewable energy production from organic waste is another option.

In addition to these measures that contribute to improving the competitiveness of the companies while at the same time mitigating GHG emissions, adaptation measures are urgently needed in this sector. Here, a pilot project by the Manila Observatory is a good example of how local stakeholders can engage into analyzing the impact of climate change on their economy, drawing conclusions and planning necessary adaptation measures.<sup>53</sup>

### ➤ **The interventions**

**Energy saving initiatives at company level through service providers** Pilot projects need to be carried out at the company level to improve energy management and apply new technologies for the entire tourism value chain. Additionally, other *no cost* and *low cost* energy saving measures need to be identified through energy audits and implemented through energy savings trainings and advice. The results of the pilot projects need to be documented and disseminated through the sector associations and chambers.

**Waste management and energy generation at company level through service providers** Together with DENR and business development service providers, better waste management and the generation of electricity through capturing methane should be promoted. Other ways of producing energy from renewable sources like wind, mini hydro and solar should also be explored and disseminated.

**Labeling schemes** International ecolabeling schemes for the hotel industry should be promoted. Local service providers like TUV Rheinland already provide auditing and certification services to ecofriendly hotels and resorts. These initiatives can be further rolled out through information, training and advisory services for hotels and resorts.

**Financing** There are different funding sources for investments into energy savings, clean technology and renewable energy devices. Potentials exist to bundle small scale projects into a larger project that would qualify for the CDM. Other financing schemes are preferential credits that are offered through public or commercial banks or preferential depreciation rules provided by government. Finally, innovative financing mechanisms like leasing models and cash flow based lending need to be developed to make it easier for companies to shift into a *green* direction.

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<sup>52</sup> <http://www.switch-asia.eu/switch-projects/project-progress/projects-on-improving-production/zero-carbon-resorts.html>

<sup>53</sup> The complete description and working tools of the pilot project will be accessible to the public soon.



**Norms and regulations** The relevant authorities should consider establishing stricter norms and standards for stricter energy efficiency standards for chillers, air conditioners and refrigerators. Here, a possibility is in advocating with DOE for the Energy Conservation Act. This would push the companies into using energy efficient and GHG saving devices.

**Adaptation measures** Together with local governments, the impact of climate change on the tourism sector needs to be analyzed, in order to draw conclusions and undertake adaptation measures to make this vulnerable sector more climate change resilient.

➤ **The role of DTI**

In this sector, DTI needs to closely cooperate with DOT. Together, they should build on existing initiatives and help rollout pilot projects. The replacement of chillers program could be expanded to include air conditioners and refrigerators used in hotels, resorts and restaurants.

DTI would need to team up with the respective business associations and local chambers of commerce in order to undertake this *greening the tourism industry project*. For the regulatory effort to develop and enforce stricter norms and standards, it would need to work with the respective bureaus and with DOE and DENR. For the financing schemes, it needs to work with the banking sector as well as DENR on potential CDM projects. For the ecolabeling of hotels and resorts, DTI would need to coordinate with the DOT in the context of the Ecotourism Law and the recently passed Tourism Law.

One important role is to help create a market for BDS that assist hotels, resorts and restaurants in their effort to go green. Audits, training and consultancy services, information and awareness services, matchmaking with banks and technology providers are all topics to be explored.

Another is to facilitate partnerships with companies involved in the value chains that feed into the tourism sector like food processing, furniture, souvenir items, wholesale / retail and transport, in order to undertake measures that help *green* the tourism value chain.

Dissemination of good practices through the sector associations and chambers rounds up the task of DTI in this sector.

#### **7.4.4 Construction and green building**

➤ **Rationale**

Construction is a business activity that requires a large volume of supplies and materials. Construction materials such as metal based products, wood based products, cement, clay and ceramics are major Philippine exports. MSMEs are

prominent in the sector which currently accounts for roughly five percent of the GDP. The sector has shown crisis resiliency in the past and offers potential for employment creation, as there has been an 8 percent growth between 2004 and 2009. Future gains are expected. Apart from the successes, low productivity is among the most prominent issues confronting the sector.

Construction is a major source of carbon dioxide emission. Climate risks, rising energy costs and competition for resources are drivers for business to engage in energy and resource efficiency strategies. Big construction companies have already started to engage in that area, pulling also suppliers. The demand for *green buildings* is hence increasing in the Philippines.<sup>54</sup> In addition, the National Framework Strategy on Climate Change 2010 – 2022 is calling for reducing the carbon footprint of the sector through energy efficient design and materials in order to meet mitigation as well as adaptation targets. Greening the construction and building sector hence contributes to the objectives mitigation, adaptation, competitiveness and employment creation.

### ➤ **The interventions**

**Legislative instruments, laws and regulations** With a complex set of changes required along the supply chain, policy measures such as national building codes and standards or labeling for construction material can support *greening* the sector.<sup>55</sup> The proposed bill on Green Buildings<sup>56</sup> requires all government buildings *to establish high performance building standard, for the planning, design, construction, operation or maintenance practices, renovation and expansion of building projects and the retrofitting of existing government buildings which will mitigate the environmental, economic and social impacts of built structures*. This Act needs to be extended to also include retail and commercial sites in order to foster innovation in the construction sector. DTI could become actively involved here, partnering with the Philippine Green Building Council that is advocating this Act.

**Economic incentives** Generally, tax reductions, improved loan conditions, rating systems or energy audits are *pull factors* that set incentives for companies to change their practice. One example is the Green Building Rating System which aims at measuring the environmental impact and performance of buildings. This encourages stakeholders to consider *green* building materials. The Philippine Green Building Initiative<sup>57</sup> is at present developing its rating system that is adapted to the country's tropical climate. DTI could disseminate information to

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<sup>54</sup> For more information on the *greening* potential in the construction sector see: ILO: Greener Business in Asia. Philippines. Draft Report (forthcoming 2010)

<sup>55</sup> UNEP 2007: Buildings and Climate Change.

<sup>56</sup> House Bill 6397

<sup>57</sup> Includes the Philippine Society of Ventilating Air Conditioning Refrigerating Engineers, Institute of Integrated Electrical Engineers of the Philippines, American Society of Heating Refrigerating & Air Conditioning Engineers Philippine Chapter, Philippine Institute of Interior Designers, Geological Society of the Philippines, Heritage Conservation Society and International Council of Monuments & Sites Philippines.

MSMEs working along in the construction sector, making them aware of new opportunities.

**Technology transfer and innovation promotion** *Greening* the construction sector also requires measures that promote the use of new technology, new materials and production processes that stimulate firms to innovate. Innovation along the production process occurs through cleaner production trainings like those of the *Integrated Program on Cleaner Production Technologies*.<sup>58</sup> The program provides technical support to cement manufacturers in the use of alternative fuels and raw materials in cement processing. Strengthening the exchange between research institutions like those at DOST and MSMEs can promote innovative production processes and cleaner production. Disseminating results of pilot projects, new technologies and innovation through exhibitions, fairs and competence networks is another field for activities in this sector.

**Networks and dialogue** Strengthening communities of practice, dialogue fora, matchmaking events and networks of excellence should be on the agenda. Supporting R&D and innovation through strengthening research and industry linkages and also education, training and information dissemination are similarly important. Especially with regard to improving production processes towards cleaner production, technology transfer plays an important role.

**Awareness raising in the whole building sector** Apart from the construction sector itself, the *green building* agenda gives attention to the shares of energy consumed for heating, cooling, lighting and other appliances. *Greening* hence also involves measures in order to increase resource efficiency in the operational stage of the building which will have a *pull effect* on suppliers in the MSME sector.

#### ➤ **The role of DTI**

DTI can build on existing *greening* initiatives that have been led so far by the private sector. DTI could partner with such initiatives in order to work on regulatory obligations, norms and standards. DTI could partner with the Philippine Green Building Council, an NGO advocating the *green building agenda* and responsible for a national certification scheme (*Building for Ecologically Responsible Design Excellence*). Initiatives by the Green Building Council aim to create environmental awareness and to inspire integrating sustainability measures into the building and construction sector. Part of their work is to organize events and facilitate networking and exchange in the industry on innovative trends in building products, architecture, engineering and construction. DTI could partner with the Green Building Council in order to work on stricter standards and regulations, for example to extend the Green Building Act. Higher standards would be a driver for innovation with regard to production processes, building materials and appliances in the construction sector, thus constituting a source of growth.

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<sup>58</sup> <http://cptech.dost.gov.ph>

**BDS provider and partners** DTI should identify the potential of working with partners on the *forefront* of new developments like the United Architects of the Philippines or the Philippine Green Building Initiative in order to identify sources of expertise and service providers. Partnerships with applied research institutions and technology transfer programs such as the Integrated Program on Cleaner Production (IPCP) offer a potential. Especially at the provincial level, DTI and DOST could work together in areas such as technology transfer, awareness raising and training. Through an operational Memorandum of Agreement DTI could partner with IPCP as a BDS provider for technical development and cleaner production. By working with the associations such as the Chamber of Real Estate Builders' Association (CREBA) demands by the private sector can be identified and good practices can be passed on.

DTI could also engage in the dialogue on wider policy issues in order to tap the potential of *greening* the construction and building sector. Coherence of policies is a necessary prerequisite in order to reach the fullest impact of policy measures.

#### **7.4.5 Bamboo processing**

##### **➤ Rationale**

Supply of wood for furniture and construction has substantially dwindled due to the log ban which protects the remaining forests. As an alternative, the much lighter coconut lumber was used, but as of late, this also has been restricted because the coconut oil industry was threatened.

Utilizing tree species for processed wood other than those covered by the log ban policy will relieve pressure on the forest resources, especially in zones where illegal wood harvesting still is a problem. Of the alternatives, bamboo is most promising because it is a fast growing species, a good water retainer and could even serve as carbon sink. Bamboo plantations will boost the commitment of the Philippines for 1 million ha of reforested areas to the Association of Southeast Asian Nations' forecast of 20 m ha of forests by 2020. The initial target is 500 000 ha. Leading the bamboo industry is the Philippine Bamboo Industry Development Council (PBIDC) which was established through EO 879 and is chaired by the DTI.

In addition to building up the bamboo alternative, assisting the existing wood processing companies improve their material usage will also relieve pressure on the remaining forest. Besides, energy efficiency measures and the use of wood waste for own energy consumption is a strategy that would help reduce GHG emissions and make the companies more competitive.

### ➤ **The interventions**

**Establishing a partnership with the international bamboo network** In order to undertake the ambitious government program on bamboo, a partnership could be set up with International Network for Bamboo and Rattan. Being the leading institute worldwide for the sector, it helps countries in all aspects needed for setting up bamboo processing industries.

**Waste and energy saving initiatives at company level through service providers** Training on better material flow and usage at the wood processing companies will improve their resource efficiency. Energy costs can be cut by using the wood waste for own energy consumption.

**Labeling schemes** Certification scheme like the Forest Stewardship Council are important for entering European and American furniture markets. Promoting the application of this scheme which assures that the wood used for processing and furniture making stems from sustainably managed forests would further contribute to the protection of remaining forests.

**Financing** The renewable energy law allows companies to avail of financial and nonfinancial incentives in case energy used is from renewable sources, making it possible for companies to use their wood waste to access these incentives. Moreover, possibilities exist to set up CDM projects among a number of companies.

**Norms and regulations** Forestation policies need to be considered before embarking into bamboo production. The DENR with the Department of Agriculture (DA) could delineate regions that are most suitable for bamboo plantations and where they can provide adequate technical support to the growers. Mapping these zones in relation to their vulnerability to typhoon, flooding and drought as well as their production suitability will provide a good basis for communities and companies to go into bamboo farming.

### ➤ **The role of DTI**

The most important role in this sector would be for DTI to attract investors into wooden bamboo processing and bamboo plantations. As Chair of the PBIDC, it will *promote the bamboo industry development project and direct the use of bamboo for at least 25 percent of the desk and other furniture requirements of public elementary and secondary schools* in the country. Aside from answering to the DepEd requirements, MSMEs will need to step up and go for high end bamboo products where DTI could work with service providers and sector associations to provide training and advisory services. Moreover, it could also encourage professional groups such as the Philippine Green Building Council (PGBC) to move into wooden bamboo for construction. Additionally, downstream industries like adhesives and other laminating processes can be promoted as the demand for bamboo based wood products increases.

## 7.4.6 Transport

### ➤ Rationale

The transport sector and cities are considered as engines of growth, and play key roles in economic development. In the country, the development of more roads and highways to increase movement of goods and people has resulted in less investment for public transport and created a string of environmental and social problems.<sup>59</sup> Land transport contributes the biggest share at 33.4 percent<sup>60</sup> of GHG of the energy sector, followed closely by the energy industries with 27 percent. Estimates of CO<sub>2</sub> emissions totaled 30 million tons and the transport sector accounted for 38 percent of the total fuel combustion in 2000. If the status quo prevails, the number of motorized vehicles will double before 2020.<sup>61</sup>

The dominant public transport modes include buses, jeepneys, tricycles and *habalhabal* (motorcycle which rides three to five passengers) which has become a popular transport in Mindanao and some parts in the Visayas. Accordingly, emissions from the transport sector have tripled within 15 years and are expected to further increase given the rapid urbanization. Specifically, there are about 1.3 million three wheeled *tricycles* powered by two stroke engines which are heavy pollutants.<sup>62</sup>

A great number of these land transport operators, especially the jeepneys and short distance buses, are MSMEs. The potentials for helping them green their business and at the same time improve their competitiveness through cost savings are high.

### ➤ The interventions

**Policy development and implementation of energy saving initiatives as well as shift to cleaner technologies** Since the transport in the energy sector is the biggest contributor of GHGs, it is logical to have a deliberate policy of shifting to engines that utilize alternative fuels which are cleaner and technologies with more efficient fuel consumption ratios. Such action strengthens further the policy of percentage mix of biodiesel and ethanol for diesel and gasoline fed engines, respectively. The shift requires speedier technological development and testing of customized engines.

Support will be needed in promoting alternative transport fuel sources which are in their various stages of testing and / or for commercial application. For instance, DOE has successfully tested the use of compressed natural gas for buses, and planned to roll that out. The Natural Gas Vehicle Program (NGVP) for public

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<sup>59</sup> Herbert, F 2009

<sup>60</sup> IACCC 1999

<sup>61</sup> World Bank 2010

<sup>62</sup> Biona, J B M, Culaba, A B and M R I Purvis 2007



transport and the upcoming compressed natural gas CNG stations in Metro Manila and Batangas could be leveraged for MSMEs to invest into cleaner buses especially for the small provincial transport system players. Expand this thrust to regions where CNG is sourced is another policy option. It would need to be seen if the incentives outlined in the Renewable Energy Act could also apply to the shift of engines. Apart from replacing gasoline run taxis with liquefied petroleum gas, the scheme could be expanded to other transport systems like jeepneys and buses. More urban areas could emulate Makati City which is currently maintaining jeepneys with battery run engines.

Encouraging more investors nationwide to go for higher ratios of ethanol or biodiesel mixtures is another option, but this has to be supported with BDS. The economics of such ventures have to be shown to MSMEs as more cost effective and profitable. Additionally, the DA needs to be involved as this topic raises concerns on food security given the large requirements for land in planting jethropa.

**Labeling schemes** Labels such as *clean buses, jeepneys and tricycles* could be used in order to stimulate demand from the environmentally conscious traveler. To emphasize compliance with standards, the DOTC, DOE, DENR and DTI certifications have to be prominently printed on the body of the vehicles. Also, the technical description of these vehicles needs to be visible on the sides or front portions of the vehicles.

**Norms and regulations** The standards defined under the Clean Air Act, Biofuels Act and the Climate Change Act could be met without difficulties by the transport using alternative, cleaner fuels and more fuel efficient engines. Streamlined process for certification of these business ventures need to be facilitated by mandated agencies so that they could avail of the incentives provided by the laws without delay. Guidelines and procedures for registration and renewal of licenses for these transport types have to be accomplished by the investors without bureaucratic red tape, suggesting the preferential treatment for cleaner and more energy efficient transport technologies.

**Financial and nonfinancial support to CC sensitive transport** Financial and nonfinancial incentives under the current laws could be expanded and made available especially for transport MSMEs. For instance, the Land Bank's Credit Line for Energy Efficiency and Climate Protection (CLEECP) financing for MSME transport sector could be boosted with a national marketing push for an easy access window for alternative, clean and more energy efficient transport system.

The Board of Investments (BOI) which allows the Philippine LPG Bus and Taxi Co Inc to import buses from China on duty free importation basis could expand the duty free import to other types of transport like the tricycle which is present in every urban space of the country and which is a lot less polluting.

Good examples such as the Tricycle sa Kabuhayan at Ekolohiya or TRIKE Fund<sup>63</sup> in Puerto Princesa City which provide seed money for other means of livelihood and soft loans for upgrading tricycles with four stroke engines could be widely disseminated to convince other cities to retrofit tricycles. The Palawan Provincial Office with the Technical Education and Skills Development Authority (TESDA) conducted preventive maintenance training for tricycle drivers and operators to cut on operating costs. The Vigan Tricycle Retrofit Program<sup>64</sup> has helped introduce direct injection retrofit technology which reduces hydrocarbon emissions by 90 percent, carbon monoxide emissions by 75 percent, eliminate tailpipe smoke and increase fuel and oil efficiency by 35 to 50 percent. These initiatives could be rolled out quite easily.

Efforts of local transport engineers should likewise be supported. A gadget such as *kaos* which increases fuel use efficiency for gasoline run engines by as much as 15 to 20 percent should be promoted. Just recently (Philippine Daily Inquirer PDI, 24 June 2010, pB1), the ADB announced a USD 1 billion allotment for renewable and energy efficient projects over the next three to four years beginning 2011. Most of the funds will be disbursed in the form of loans, although some grants will also be available. This is an opportunity for the transport sector to move quickly and avail of the financial window. Business development support will be needed for the MSME transport group to access the funds.

**Aggressive promotions** Widespread public promotion on the economic and CC benefits as well as presenting the financial and nonfinancial support to MSME's shift to transport that is cleaner and more fuel efficient must take priority. For example, promotional materials should argue that retrofitting tricycles with four stroke engines while initially costing more than the two stroke engines, brings in more profits to the operators and drivers as the return of investment is quick with savings on fuel as their tricycle will travel another 50 percent of distance compared to the two stroke engine on the same amount of fuel. Another example is that electric jeepneys<sup>65</sup> can significantly increase income by reducing expenses on fuel, also demonstrating that an electric jeepney is a viable investment. Maintenance cost is also much less than the conventional, thus increasing financial returns. Concrete arguments like with eight hours of charging, the electric jeepneys can run at a maximum speed of 60 kmh and travel up to a distance of 120 km. One time charging of the battery costs about USD 3 compared to a full tank of diesel which costs USD 35. Thus, the additional initial investment of PHP 100 000.00 to build an e-Jeepney is easy to recoup within a few months of operation.

### ➤ Role for DTI

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<sup>63</sup> The Air and Noise Pollution Reduction Strategies Project has been funded by Poverty and Environment Program of the Asian Development Bank.

<sup>64</sup> The project was funded by the Bohemian Foundation and the Swiss Embassy in the Philippines.

<sup>65</sup> The Electric Jeepneys under Green Renewable Independent Power Producer Inc (GRIPP)'s Climate Friendly Cities project has been shown by Makati City as a viable and cost efficient and CC sensitive transport.



**Networking** Services available from providers are sometimes not known to potential investors, so DTI's role could be to organize matchmaking between operators and service providers. At least some basic information should be made available to parties being networked to facilitate discussions. Some of these services are provided free of charge while others are available for a fee. On the side, DTI could encourage technology inventors to register their products for commercial application. Building on initiatives and rolling out small technologies for wider use like the *kaos* gadget is an opportunity of upscaling. DTI could also invoke partnerships, particularly with DOST, to attract private sector investment on the machines, either as manufacturers or assemblers. The other networking role is to introduce investors to financial institutions which offer financial products for *green* transport businesses.

**Facilitator for business development support** As any other business, transport operators need BDS to improve their business. Regarding greening their business, creating awareness about the economic and ecological benefits of cleaner technology is of utmost importance. A DTI - DOTC collaboration for encouraging *green* transport business through systematic and planned activities like training, workshops and orientation sessions could eventually generate more operators to go green.<sup>66</sup>

Post establishment support for green transport will be an emerging field of business, specifically for the maintenance, repair and fabrication of parts of engines. DTI, in conjunction with TESDA, could proactively set up professional training for this upcoming demand for technical services.

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<sup>66</sup> Under the NERBAC system (RA 7470) the DTI spearheads investment promotion and knowledge management.

## 8 Outlook

Altogether, the findings of the mission show that there is a lot of potential to tackle both climate change and improve the competitiveness of Philippine MSME if a comprehensive *Green Growth* approach is pursued. DTI can play a major role in pushing the *Green Growth* agenda, and in strong cooperation with other government agencies and the private sector, contribute to achieving the development objectives of the Philippines.

The *Green Growth* approach presented in this report will be further developed over the coming months to provide policy makers and practitioners in the public and private sector with further guidance on how to pursue a low carbon, *green* economy.

## ANNEX

### Annex 1 Overview of Policies and Instruments with a Combined Effect on Climate Change and Private Sector Development

Level	Policy areas	Areas of intervention / instruments	Role of government / objectives	Contributes to
<b>Theme Take active role in shaping global governance mechanisms, framework conditions and financing schemes for climate change issues</b>				
<b>Supranational level</b>	<b>International Governance / Agreements</b>	<ul style="list-style-type: none"> <li>United Nations Framework Convention on Climate Change (<b>UNFCCC</b>)</li> <li>potential successor of Kyoto Protocol</li> </ul>	<ul style="list-style-type: none"> <li>positioning, preparedness</li> <li>get proactively involved in trying to reach and get commitment for the international agreements regarding CC</li> <li>to give the right framework and international commitment for CC initiatives</li> </ul>	In the long term / indirectly <ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>global emissions <b>cap and trade system</b> / Global Carbon Market (<b>CDM</b>)</li> </ul>	<ul style="list-style-type: none"> <li>proactively contribute to building a functioning global <i>cap and trade system</i> as the key midterm goal of global climate policy</li> <li>get proactively involved in improving the current CDM so that small scale projects can accumulatively participate in order to get more CDM financing for mitigation projects of MSME</li> </ul>	Directly <ul style="list-style-type: none"> <li>mitigation</li> </ul> Indirectly <ul style="list-style-type: none"> <li>competitiveness</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li><b>development assistance</b></li> </ul>	<ul style="list-style-type: none"> <li>increased priority to CC through national programs and agendas (National Adaptation Programs of Action, NAPA, Nationally Appropriate Mitigation Actions, NAMA), to increase chance of more development assistance for CC initiatives</li> <li>maintain additionality of funds</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>global Markets for <b>Ecosystem Services</b> (Reducing Emissions from Deforestation and Forest Degradation REDD, etc)</li> </ul>	<ul style="list-style-type: none"> <li>get pilot projects on the ground</li> <li>get proactively involved at supranational level to get the overall / global REDD mechanisms settled</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> </ul>
	<b>International / Regional Trade</b>	<ul style="list-style-type: none"> <li>reduction or elimination of tariff and nontariff barriers for environmental goods and services (multilateral / Doha Development Round)</li> </ul>	<ul style="list-style-type: none"> <li>push for and agree on multilateral or bilateral trade agreements with the reduction or elimination of tariff and nontariff barriers</li> <li>helps improve the availability and affordability of</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>

Level	Policy areas	Areas of intervention / instruments	Role of government / objectives	Contributes to
		<ul style="list-style-type: none"> <li>integration of environmental aspects into multilateral trade negotiations (like facilitate technology transfer, including patent and innovation schemes and monitoring environmentally harmful subsidies)</li> <li>structural adjustment following adapting new trade policies</li> <li>integration of environmental aspects into regional trade agreements.</li> <li>improvement and harmonization of policies and rules (bilaterally, regionally) on green competitions policy, green investment and green public procurement</li> </ul>	<p>more efficient, diverse and less expensive environmental goods and services</p> <ul style="list-style-type: none"> <li>enables government to identify interests, take position and negotiate respective rules and schemes</li> </ul>	
<b>Theme Take over political responsibility beyond legislative periods by setting the right incentives, regulations, price signals and being a role model.</b>				
<b>Macro level – Policies and framework conditions</b>	<b>Green industrial Policy</b>	<ul style="list-style-type: none"> <li>Policies to foster structural change within the economy, adapting the economy to changing factor endowment, utilizing (changing) comparative advantages</li> </ul>	<ul style="list-style-type: none"> <li>actively promote structural change and economic reform</li> </ul>	<ul style="list-style-type: none"> <li>green jobs</li> <li>mitigation</li> <li>competitiveness</li> </ul>
	<b>Sector analysis and strategies with regard to CC</b> (continuous process in analyzing cost efficient actions and priorities)	<ul style="list-style-type: none"> <li>this forms the necessary basis for developing the right CC and Private Sector Development PSD / MSME development strategies / policy and mix of instrument suitable to the local situation</li> <li>objective is a first step to gain an insight of challenges and opportunities of different economic sectors with regard to CC (greening potential in existing sectors, growth potential in new sectors / market niches, decoupling strategies, adaptation needs, etc)</li> <li>coherent overall strategies needed in order to have a significant impact, macro strategies combined with sector approaches</li> </ul>	<ul style="list-style-type: none"> <li>together with the private sector, coordinate / elaboration of sector analysis and strategies (Public Private Dialog) – important to foster government / business relations with regard to CC actions</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>

Level	Policy areas	Areas of intervention / instruments	Role of government / objectives	Contributes to
	<b>Environmental fiscal reform (EFR)</b>	<ul style="list-style-type: none"> <li>■ <b>tax incentives</b> to promote environmental friendly technology (e.g. ecological differentiation of value added tax rate) and environmental management</li> <li>■ <b>tax disincentives</b> on the usage of carbon based energy (carbon tax, such as introduction of tax on the consumption of fossil fuels according to their level of carbon content)</li> <li>■ <b>fiscal depreciation</b> arrangements (such as favorable depreciation rules for efficient technology)</li> <li>■ introduction of <b>investment allowance</b> for energy-efficient / green technologies</li> </ul>	<ul style="list-style-type: none"> <li>■ engage in designing and enforcing new laws and regulations regarding EFR</li> <li>■ EFR is one of the key instruments to foster the development of green economies by using tax incentives and disincentives to steer the economy into a green(er) direction</li> <li>■ the instruments allow interventions at different government levels</li> </ul>	<ul style="list-style-type: none"> <li>■ mitigation</li> <li>■ competitiveness</li> <li>■ green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>■ reduction of environmentally <b>harmful subsidies</b> (like reduce fuel subsidies)</li> </ul>	<ul style="list-style-type: none"> <li>■ engage in designing and enforcing new laws and regulations in order to reduce or eliminate harmful subsidies</li> </ul>	
		<ul style="list-style-type: none"> <li>■ setting <b>positive subsidies</b> (like promote installation of renewable energy or clean technology devices)</li> </ul>	<ul style="list-style-type: none"> <li>■ engage in designing and enforcing new laws and regulations in order to introduce positive subsidies</li> </ul>	
		<ul style="list-style-type: none"> <li>■ set up a national / regional <b>cap and trade system</b> for green house gas emissions</li> </ul>	<ul style="list-style-type: none"> <li>■ design and establish the <i>cap and trade system</i> for green house gas emissions</li> <li>■ build institutional capacities to implement it</li> <li>■ the <i>cap and trade system</i> is another mechanism to price carbon which encourages energy efficiency and pulls innovation in clean technology</li> <li>■ enforcement</li> </ul>	
	<b>Regulations and standards</b>	<ul style="list-style-type: none"> <li>■ establish regulations for <b>energy efficient buildings</b></li> </ul>	<ul style="list-style-type: none"> <li>■ set and enforce regulations</li> </ul>	<ul style="list-style-type: none"> <li>■ mitigation</li> <li>■ competitiveness</li> <li>■ green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>■ set ambitious and predictable <b>CO<sub>2</sub> limit values for cars</b> and other vehicles</li> </ul>		
		<ul style="list-style-type: none"> <li>■ improve <b>waste regulation</b> to increase recycling rate</li> </ul>		
		<ul style="list-style-type: none"> <li>■ develop <b>energy labels</b> (such as for household appliances)</li> </ul>		

Level	Policy areas	Areas of intervention / instruments	Role of government / objectives	Contributes to
		<ul style="list-style-type: none"> <li>prescribe <b>smart metering</b> with intelligent counting and measuring systems</li> <li>improve the legal basis for <b>energy contracting</b></li> </ul>		
	<b>Public procurement, transparency and a role model</b>	<ul style="list-style-type: none"> <li>set relevant green house gas relevant <b>standards for public procurement</b> of goods and services (like state of the art vehicles, office equipment, lighting etc)</li> </ul>	<ul style="list-style-type: none"> <li>introduce high standards for public procurement of goods and services and apply them</li> <li>use the massive public purchasing power (like the German Government purchases of EUR 360 bn / year) to create a major pull for clean technology and energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li><b>transparency</b> for the public sector: <b>CO<sub>2</sub> footprint</b> and CO<sub>2</sub> avoidance potential</li> </ul>	<ul style="list-style-type: none"> <li>national and local authorities must conform to emission saving targets. Monitoring and publishing their emissions creates pressure to mitigate.</li> <li>the public sector's CO<sub>2</sub> footprint will also make it possible to identify emissions savings potentials</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>green jobs</li> </ul>
	<b>Green infrastructure</b>	<ul style="list-style-type: none"> <li>master plan and investments for <b>sustainable transport systems</b> and other elements of urban development</li> </ul>	<ul style="list-style-type: none"> <li>develop master plans</li> <li>provide human and financial resources</li> <li>use other instruments (see above and below) to provide the right incentives and price signals, etc.</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>master plan and investments for <b>sustainable energy systems</b> (like through <i>feed in tariffs</i>)</li> </ul>	<ul style="list-style-type: none"> <li>develop master plans</li> <li>provide human and financial resources</li> <li>use other instruments (see above and below) to provide the right incentives and price signals, etc</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li><b>land use management</b> <ul style="list-style-type: none"> <li>establish laws and regulations to protect forest and other carbon relevant areas</li> <li>improve land use techniques to reduce carbon emissions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>establish and enforce laws and regulation</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> </ul>
		<ul style="list-style-type: none"> <li>improve protection of coastal areas through <b>coastal zone management</b></li> </ul>	<ul style="list-style-type: none"> <li>establish and enforce laws and regulations</li> <li>invest into capacity development of involved public institutions</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> </ul>
		<ul style="list-style-type: none"> <li>develop green cities through CC relevant <b>urban planning</b></li> </ul>	<ul style="list-style-type: none"> <li>develop master plans for green cities</li> <li>provide human and financial resources</li> <li>use other instruments (see above and below) to foster shifts towards green cities</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>

Level	Policy areas	Areas of intervention / instruments	Role of government / objectives	Contributes to
<b>Theme Take an active role as Government to build institutional capacities needed especially for supporting MSME</b>				
<b>Meso – active Government to build institutional capacities</b>	<b>Green nonfinancial BDS</b>	<ul style="list-style-type: none"> <li>foster <b>markets for green BDS</b> (energy efficiency information, training, auditing services etc) also with partners like chambers and business associations to assist companies with services needed to go green</li> </ul>	<ul style="list-style-type: none"> <li>improve framework conditions for BDS providers</li> <li>encourage the use of services through incentive schemes (voucher system, etc)</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
	<b>Green financial services</b>	<ul style="list-style-type: none"> <li>offer <b>clean tech loans</b> with subsidized rates</li> <li>include <b>CDM</b> in banking business and support CDM project broker</li> </ul>	<ul style="list-style-type: none"> <li>improve framework conditions for MFIs</li> <li>encourage the use of clean tech credits through subsidized loans to MFIs</li> <li>create market demand through pilot projects with a clear exit strategy</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li><b>microfinance</b> for renewable energy and clean technology</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li><b>leasing models</b> for energy efficiency and clean technology measures</li> </ul>	<ul style="list-style-type: none"> <li>improve framework conditions for leasing models</li> <li>encourage the use of leasing schemes</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>index based <b>insurance</b> to cover damage from CC related weather events</li> </ul>	<ul style="list-style-type: none"> <li>encourage the use of micro insurance through subsidized pilot projects</li> <li>collaborate in development partnerships with insurance providers to set up pilot projects</li> <li>define the role of government in cost coverage</li> </ul>	<ul style="list-style-type: none"> <li>adaptation</li> </ul>
		<ul style="list-style-type: none"> <li>venture and risk capital for innovation activities of SME</li> </ul>	<ul style="list-style-type: none"> <li>provide subsidized loans through financial institutions</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
	<b>Quality infrastructure (QI)</b>	<ul style="list-style-type: none"> <li>foster the establishment of CC relevant <b>quality infrastructure</b> to assist companies with certification, testing and other QI services</li> </ul>	<ul style="list-style-type: none"> <li>build framework conditions for quality infrastructure with regard to CC issues</li> <li>build institutional capacities for quality infrastructure with regard to CC issues</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
	<b>Innovation systems</b>	<ul style="list-style-type: none"> <li>strengthen <b>university - industry linkages</b>: <ul style="list-style-type: none"> <li>foster <b>R&amp;D</b> cooperation for sustainable technologies and business models; basic and</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>institutional reforms of universities</li> <li>investment into CC relevant human and financial resources of universities</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> </ul>

Level	Policy areas	Areas of intervention / instruments	Role of government / objectives	Contributes to
		<ul style="list-style-type: none"> <li>applied research;</li> <li>▪ establish CC relevant <b>education and training programs</b> for employees in companies, associations and agencies</li> </ul>	<ul style="list-style-type: none"> <li>▪ support twinning arrangements with foreign universities and cooperation with companies</li> <li>▪ support mobility between universities and industry</li> </ul>	<ul style="list-style-type: none"> <li>▪ green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>▪ set up of <b>environmental technology centers / competence centers, centers of excellence</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ capacity development of staff</li> <li>▪ investment into physical infrastructure of technology centers</li> <li>▪ support twinning arrangements with foreign technology centers and with companies</li> </ul>	<ul style="list-style-type: none"> <li>▪ mitigation</li> <li>▪ adaptation</li> <li>▪ competitiveness</li> <li>▪ green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>▪ establish <b>technology transfer</b> schemes</li> </ul>	<ul style="list-style-type: none"> <li>▪ support twinning arrangements with universities, technology centers and with companies from abroad</li> </ul>	<ul style="list-style-type: none"> <li>▪ mitigation</li> <li>▪ adaptation</li> <li>▪ competitiveness</li> <li>▪ green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>▪ foster <b>R&amp;D cooperation between companies</b> for sustainable technologies</li> </ul>	<ul style="list-style-type: none"> <li>▪ set up development partnership and matchmaking funds</li> </ul>	<ul style="list-style-type: none"> <li>▪ mitigation</li> <li>▪ adaptation</li> <li>▪ competitiveness</li> <li>▪ green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>▪ creation of a <b><i>Climate Protection Innovation Fund</i></b></li> </ul>	<ul style="list-style-type: none"> <li>▪ provide human and / or financial resources</li> <li>▪ clarify institutional mandate</li> </ul>	<ul style="list-style-type: none"> <li>▪ mitigation</li> <li>▪ adaptation</li> <li>▪ competitiveness</li> <li>▪ green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>▪ establish public database for CC relevant technologies and business models (<b>best practice list</b>)</li> </ul>	<ul style="list-style-type: none"> <li>▪ provide human and / or financial resources</li> <li>▪ clarify institutional mandate</li> </ul>	<ul style="list-style-type: none"> <li>▪ mitigation</li> <li>▪ adaptation</li> <li>▪ competitiveness</li> <li>▪ green jobs</li> </ul>
	<b>Education and qualification (including TVET)</b>	<ul style="list-style-type: none"> <li>▪ integration of <b>CC relevant</b> topics into the <b>curricula</b> of Universities and vocational schools</li> </ul>	<ul style="list-style-type: none"> <li>▪ institutional reform of education system</li> <li>▪ provide human and / or financial resources</li> </ul>	<ul style="list-style-type: none"> <li>▪ mitigation</li> <li>▪ adaptation</li> <li>▪ competitiveness</li> <li>▪ green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>▪ <b>qualification of trainers</b> concerning energy efficiency, abatement, resource management, renewable energy sources, etc</li> </ul>	<ul style="list-style-type: none"> <li>▪ provide human and / or financial resources</li> <li>▪ finance scholarship programs</li> </ul>	<ul style="list-style-type: none"> <li>▪ mitigation</li> <li>▪ adaptation</li> <li>▪ competitiveness</li> <li>▪ green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>▪ investments into physical infrastructure of <b>clean technology training and learning centers</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ provide financial resources</li> </ul>	<ul style="list-style-type: none"> <li>▪ mitigation</li> <li>▪ adaptation</li> </ul>



Level	Policy areas	Areas of intervention / instruments	Role of government / objectives	Contributes to
				<ul style="list-style-type: none"><li>■ competitiveness</li><li>■ green jobs</li></ul>
	Ecoindustrial parks	<ul style="list-style-type: none"><li>■ establish <b>eco industrial parks for clusters of companies</b> with a focus on CC relevant technologies and business models</li></ul>	<ul style="list-style-type: none"><li>■ improve regulatory framework for ecoindustrial parks</li><li>■ provide fiscal incentives or subsidies for attracting companies into ecoindustrial parks</li></ul>	<ul style="list-style-type: none"><li>■ mitigation</li><li>■ competitiveness</li><li>■ green jobs</li></ul>
	Social and ecological standards	<ul style="list-style-type: none"><li>■ build <b>certification schemes and services</b></li></ul>	<ul style="list-style-type: none"><li>■ institutional reform and mandates</li><li>■ provide human and / or financial resources for public services</li><li>■ provide short term fiscal incentives or subsidies for facilitating the setting up of private services</li></ul>	<ul style="list-style-type: none"><li>■ mitigation</li><li>■ adaptation</li><li>■ competitiveness</li><li>■ green jobs</li></ul>
		<ul style="list-style-type: none"><li>■ foster <b>voluntary commitments</b> of private sector actors to comply with social and ecological standards</li></ul>	<ul style="list-style-type: none"><li>■ engage into multistakeholder dialogue</li><li>■ support CSR platforms and initiatives</li></ul>	<ul style="list-style-type: none"><li>■ mitigation</li><li>■ adaptation</li><li>■ competitiveness</li><li>■ green jobs</li></ul>
		<ul style="list-style-type: none"><li>■ establish <b>partnership funds</b> / programs for climate protection, energy efficiency and innovation projects</li></ul>	<ul style="list-style-type: none"><li>■ provide human and financial resources for the funds</li><li>■ objective is to foster public private cooperation in this field</li></ul>	<ul style="list-style-type: none"><li>■ mitigation</li><li>■ adaptation</li><li>■ competitiveness</li><li>■ green jobs</li></ul>
	Market launch programs	<ul style="list-style-type: none"><li>■ <b>market launch program</b> for ultra efficient appliances</li></ul>	<ul style="list-style-type: none"><li>■ provide the right incentive mix so that technological innovations actually reach the market</li></ul>	<ul style="list-style-type: none"><li>■ mitigation</li><li>■ competitiveness</li><li>■ green jobs</li></ul>
		<ul style="list-style-type: none"><li>■ <b>climate protection booster program</b> for commercial refrigeration systems or other technologies</li></ul>	<ul style="list-style-type: none"><li>■ provide investment grants or subsidized loans through the banking system</li><li>■ both areas offer incredible energy saving potentials</li></ul>	<ul style="list-style-type: none"><li>■ mitigation</li><li>■ competitiveness</li><li>■ green jobs</li></ul>
Theme Build long term competitiveness and take over responsibility for social and ecological effects of business operations				
Micro - companies	Sustainable vision and business model	<ul style="list-style-type: none"><li>■ develop greening and / or beyond greening <b>business strategies</b></li></ul>	<ul style="list-style-type: none"><li>■ awareness campaigns for the need to take action</li><li>■ award schemes for best CC relevant business strategies</li></ul>	<ul style="list-style-type: none"><li>■ mitigation</li><li>■ adaptation</li><li>■ competitiveness</li><li>■ green jobs</li></ul>
	Energy and resource efficiency	<ul style="list-style-type: none"><li>■ improve <b>energy and resource efficiency</b></li></ul>	<ul style="list-style-type: none"><li>■ support / incentives / price signals provided through instruments at the macro and meso level (see above)</li></ul>	<ul style="list-style-type: none"><li>■ mitigation</li><li>■ adaptation</li><li>■ competitiveness</li></ul>

Level	Policy areas	Areas of intervention / instruments	Role of government / objectives	Contributes to
				<ul style="list-style-type: none"> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>develop and use <b>clean technologies</b></li> </ul>	<ul style="list-style-type: none"> <li>support / incentives / price signals / capacity building etc. provided through instruments at the macro and meso level (see above)</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li><b>product responsibility</b>: Implement <i>cradle to cradle</i> concept (take over full responsibility in the whole product lifecycle)</li> </ul>	<ul style="list-style-type: none"> <li>support / incentives / price signals / capacity building etc. provided through instruments at the macro and meso level (see above)</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
		<ul style="list-style-type: none"> <li>climate friendly <b>production techniques</b> on farm level (agriculture)</li> </ul>	<ul style="list-style-type: none"> <li>support / incentives / price signals / capacity building etc provided through instruments at the macro and meso level (see above)</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
	<b>Products and services for the green economy</b>	<ul style="list-style-type: none"> <li>make use of <b>market and international trade opportunities</b> regarding mitigation possibilities and adaptation needs</li> </ul>	<ul style="list-style-type: none"> <li>support / incentives / price signals / capacity building etc provided through instruments at the macro and meso level (see above)</li> <li>facilitate diversification into trade with new products and services</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
	<b>Sustainable value chains (VC)</b>	<ul style="list-style-type: none"> <li>integrate / strengthen sustainability aspects in the <b>whole value chain</b> together with other VC actors</li> <li>establish <b>low carbon label</b> for the VC</li> </ul>	<ul style="list-style-type: none"> <li>support / incentives / price signals / capacity building etc. provided through instruments at the macro and meso level (see above)</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
<b>Theme Taking over responsibility about the own ecological footprint through consumption decisions and a sustainable lifestyle</b>				
<b>Micro - consumers</b>	<b>Ecologically and socially sound consumption</b>	<ul style="list-style-type: none"> <li>not only voiced but actual <b>buying preference</b> for ecologically and socially sound products, thereby pulling supply</li> </ul>	<ul style="list-style-type: none"> <li>awareness campaigns for the need to take action</li> <li>create transparency through labelling schemes</li> <li>set price signals and other incentives through instruments at macro and meso level</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>competitiveness</li> <li>adaptation</li> <li>green jobs</li> </ul>
	<b>Change of life style</b>	<ul style="list-style-type: none"> <li>encourage <b>changes of living habits</b> of individuals towards a more sustainable lifestyle</li> </ul>	<ul style="list-style-type: none"> <li>awareness campaigns for the need to take action</li> <li>facilitate and award change with incentives provided through instruments at the macro and meso level (see above)</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
	<b>Ecologically</b>	<ul style="list-style-type: none"> <li><b>investment decisions</b> according to social and</li> </ul>	<ul style="list-style-type: none"> <li>awareness campaigns to foster investments of</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> </ul>

Level	Policy areas	Areas of intervention / instruments	Role of government / objectives	Contributes to
	<b>and socially responsible investments</b>	ecological criteria	<ul style="list-style-type: none"> <li>individuals into CC relevant companies and / or projects</li> <li>consider tax breaks for investments into CC relevant projects</li> </ul>	<ul style="list-style-type: none"> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
<b>Theme Build a vision of a sustainable society based on partnerships and cooperation</b>				
<b>Meta level topics</b>	<b>Vision of a green country</b>	<ul style="list-style-type: none"> <li>involve stakeholders from private sector and civil society into developing a long term vision for a green country</li> <li>implement a nation brand building program based on the vision</li> </ul>	<ul style="list-style-type: none"> <li>design and moderate the vision building process</li> <li>implement the nation brand building program</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
	<b>Cooperation, new alliances</b>	<ul style="list-style-type: none"> <li>no sector can tackle the challenges of CC alone, cooperation / cooperative relationship between public and private sector and civil society will be very important in forging paths to sustainable development</li> </ul>	<ul style="list-style-type: none"> <li>foster cooperation arrangements</li> <li>engage into multistakeholder dialogue</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>
	<b>Change in organizational cultures</b>	<ul style="list-style-type: none"> <li>the changes listed above require changes in underlying organizational cultures in all sectors</li> </ul>	<ul style="list-style-type: none"> <li>invest into human organizational development of CC relevant public sector actors</li> </ul>	<ul style="list-style-type: none"> <li>mitigation</li> <li>adaptation</li> <li>competitiveness</li> <li>green jobs</li> </ul>

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