

# GREEN PRODUCTIVITY GP

An Approach to Sustainable Development  
Presented to the World Summit on Sustainable Development  
September 2002 by the Asian Productivity Organization





### ***What is the Asian Productivity Organization (APO)?***

The APO is an inter-governmental organization established by Convention in 1961 to contribute to the socio-economic development of Asia and the Pacific through the promotion of productivity. In 1994 the APO launched Green Productivity as a new approach to sustainable development in response to the Rio Earth Summit as a means of entering the race for sustainability and meeting our core mandate.

The APO is a non-political, non-discriminatory, non-profit organization, headquartered in Tokyo with 19 member economies throughout Asia and the Pacific.

# CONTENTS

Executive Summary - The Race, The Carrot and the Dare.....	2
Message from the Secretary-General.....	3
The Manila Declaration on Green Productivity.....	4
Two such simple words: Sustainable Development.....	6
Why Green Productivity?.....	7
What makes Green Productivity so attractive?.....	8
How does Green Productivity assist enterprise?.....	9
Why is the concept of Green Productivity gaining ground with Governments & Enterprises?.....	10
Green Productivity Success in Six.....	14
The Look of Success.....	18
Green Productivity In Action.....	20
Strategic – Green Productivity Promotion Missions (GPPM).....	22
Practical – Green Productivity Demonstration Projects (GPDP).....	23
Tactical - Green Productivity Dissemination Assistance (GPDA).....	26
The Value of Green Productivity to Enhance Community Development.....	27
The New Millennium - Starting with Results.....	28
Conclusions.....	29
Recommendations for GP Actions.....	30
An Invitation to the 2 <sup>nd</sup> World Conference on Green Productivity (GP)..	32
Are you ready for success?.....	33
Acknowledgements.....	33



# Executive Summary

## THE RACE, THE CARROT AND THE DARE



**Green Productivity** is a holistic strategy whereby nations can leverage the dynamism of productivity to achieve a better quality of life for all people, with social justice and fairness for their citizenry, and enhanced prosperity for their enterprises. In this special report the Asian Productivity Organization (APO) invites you to learn about Green Productivity (GP):

- its tools, techniques and methodology that are gaining acceptance in the APO's nineteen member economies,
- the results that are being seen in enterprise and community projects, and
- the enthusiasm that has been shared with the APO by those who have already adopted Green Productivity with success.

The Asian Productivity Organization recognizes that humans are in a **race** – a long distance marathon. The **race** is not against other countries but against the challenges that humans have created for themselves.

It is a **race** where winning occurs through cooperative competition – where the closest person, the smallest enterprise and the farthest country with whom and which member economies trade are able to live a life of quality. To achieve this goal APO member economies need to work cooperatively to bring forward policies to foster the transition to sustainability using Green Productivity. Even as 19-strong, we will not succeed on our own. We must work alongside other governments to ensure that we remove hurdles to enterprise, to foster innovation and develop market pull for the production of greener products and services.

Collectively we must take every effort to discourage those activities that delay this transition. Together we must dangle the proverbial **carrot** to our respective citizenry so that they as individual taxpayers, investors and consumers allocate their votes, investments and purchasing power to accelerate the global transition to a sustainable lifestyle.

The Asia-Pacific Region holds a significant role in the escalation of sustainable development. The Region is also home to half the world's population - many of whom are struggling to raise their standard of living to match developed country standards; others simply want to have clean air and pure water – an environment where their children can survive.

Green Productivity has proven to be a practical approach for enterprises and communities. Green Productivity enables them to innovate their business practices while improving environmental performance. Recent application of Green Productivity in communities to foster economic development and environmental protection shows evidence of success. As Green Productivity offers step-by-step guidance with a portfolio of proven tools, techniques and technologies, it has universal appeal. This is an important attribute of Green Productivity.

As the plethora of enterprise in the Asia-Pacific Region is hosted by small and medium enterprises (SMEs), their ability to benefit from the power and simplicity of Green Productivity is especially important to our member economies. Other nations have the same potential to benefit by innovating environmental protection and enhancing community development.

*Seeing is believing. We invite you to view the results of Green Productivity; we feel the results are exciting enough to attract others to try.*

# MESSAGE FROM THE *Secretary-General*

The Asian Productivity Organization (APO) has been conducting various activities related to the environment over the past 10 years to increase environmental awareness and promote policy, technology, and know-how on the protection and improvement of the environment among its member economies.

In line with the 1992 Earth Summit recommendations that both economic development and environmental protection would be key strategies for sustainable development, the APO launched its Special Program for the Environment in 1994 under a special grant from the Japanese government. In an endeavor to find practical and attractive approaches for its members to deal with both productivity and environmental protection for sustainable development, the APO introduced the concept of Green Productivity (GP).

By the definition as coined by the APO, GP is a strategy for enhancing productivity and environmental performance for overall socio-economic development. It is the application of appropriate productivity and environmental management policies, tools, techniques, and technologies in order to reduce the environmental impact of an organization's activities.

In launching its GP program formally, the APO organized the First World Conference on Green Productivity in Manila in December 1996. The "Manila Declaration on Green Productivity" was issued and endorsed by the conference delegates.

Since then, the objective of the APO's GP program has been to enhance productivity and simultaneously reduce the negative impacts on the environment in its member economies. It seeks to realize this objective by propagating GP consciousness; by performing the roles of think tank, catalyst, regional adviser, institution builder, and clearinghouse of information on GP; and by promoting and disseminating GP skills in its member economies.

Initially taking off in the industrial sector, GP is now being increasingly applied to agriculture, the service industry, and even communities. GP is thus evolving as a driver with comprehensive strategies for sustainable socio-economic development and better quality of life for all.

The APO takes pride in pioneering the GP concept as a practical approach to sustainable development and addressing global environmental issues. Our experiences of operationalizing GP through the APO-sponsored demonstration projects have shown that GP works in the industry, agriculture, service sectors as well as in communities to address the issues of resource management, environmental protection, and enhancing bottom-line benefits.

We are happy to share our GP achievements and the lessons learned with the world community on the occasion of the World Summit on Sustainable Development in Johannesburg. Through this special publication, the APO would like to make its official statement on GP known to the world community.

The message is simple: it is essential to integrate productivity concerns in our quest for sustainable development. GP is a practical and workable strategy for this aim. The APO would therefore like to urge all stakeholders to adopt GP principles and practices in their pursuit of sustainable development and millennium development goals.

The APO is committed to continuing its efforts in GP. It is also committed to the objectives of the WSSD and millennium development goals. It is an exciting challenge to expand the horizons of the APO GP program. The APO invites cooperation from like-minded organizations in this endeavor, so that together we can make this world a better place for future generations.

Mr. Takashi Tajima  
Secretary-General  
August 2002



Mr. Takashi Tajima,  
Secretary-General



# *The Manila Declaration on*



Convinced that Green Productivity, being a concept of integrating socio-economic aspirations and a means to harmonize environmental protection and economic development, is the key to sustainable development for enhancing people's quality of life, the Asian Productivity Organization, in collaboration with the Development Academy of the Philippines, organized this APO World Conference on Green Productivity in Manila, the Philippines from, 4 to 6 December 1996. The participants deliberated on the concept and current status of Green Productivity practices, discussed related issues and problems and adopted strategies for promoting the Green Productivity Movement in the Asia-Pacific region and worldwide.

**SUBSCRIBING** to the principles adopted at the Rio Earth Summit in 1992 that sustainability must be the basic consideration for overall socio-economic development of the world and the consensus reached at the World Summit for Social Development in Copenhagen in 1995 that equity and justice in all respects must be the primary goal of our society;

**REALIZING** that the Asia-Pacific region is home to over half the global population and that, while the remarkable economic development in the region in recent years has been facilitating the improvement of living conditions of the majority of its vast population, it has also been causing deterioration of natural environment and depletion of non-renewable resources;

**REALIZING** that promotion of sustainable economic development with concrete measures for the Asia-Pacific countries will not only contribute to achieving greater employment opportunities and steady improvement of people's life in the region and to forestalling global environmental degradation, but will also serve as an important model for the other countries in the world; and **NOTING** that concerted efforts for balanced and equitable socio-economic development require fundamental changes in people's attitudes, perspectives, and lifestyles as well as re-orientation of ways to produce goods, render services and use natural resources;

## **This Conference resolves that:**

- Industrial development should be pursued more vigorously by promoting technology development and availing of technological advancement, with emphasis on building indigenous capacity for development and adoption of green products and green production processes to conserve natural resources;
- Service industries should ensure that the provision of service to society is bereft of damage to environment and is in consonance with environmental conservation concepts;
- Agricultural development should be re-oriented towards applying environment-friendly methods and practices to ensure sustainable food and nutrition security for the growing population and improve employment opportunities as well as welfare and amenities in the rural areas;
- Due heed should be given to the need for ISO 14000 standards to be effectively applied to all levels of economic activities especially in the industry sector, as such standards will have a significant bearing on the promotion of Green Productivity practices;
- Comprehensive market-based instruments should be instituted to enhance regulatory approaches in order to accelerate the shift to Green Productivity;
- Key industries having substantial contribution to national income and employment generation should provide the lead in demonstrating efficient implementation of Green Productivity concepts and practices;
- In order to realize sustainable and equitable socio-economic development as a whole, priority should be given to the needs and requirements of developing countries and their small and medium enterprises, in particular. For successful implementation of Green Productivity practices in small and medium enterprises, consideration should be given to introducing, at the initial stage, low-cost improvement measures before taking up sophisticated technologies. Good house-keeping and good engineering practices can be the starting point for pollution prevention, as such measures could bring about substantial savings of resources and reduction in wastes; and
- Cooperative labour-management relations should be forged for introducing and operating cleaner technologies.

# Green Productivity

**To realize these resolutions, therefore, this Conference urges:**

**GOVERNMENTS** to institute macro-level frameworks and systems such as national development policies, legislation, regulations and economic measures and implement them effectively along with complementary micro-level systems to promote Green Productivity and encourage creation of green product alternatives through various measures including taxation, financing and human resource development;

**AGRICULTURE, INDUSTRY AND SERVICE SECTORS** to adopt and implement Green Productivity policies and practices, particularly environmental management systems, cleaner production and, as a supplementary measure, the use of end-of-pipe treatment;

**INTERNATIONAL, REGIONAL AND NATIONAL INSTITUTIONS** to collaborate with relevant agencies, support the concept of Green Productivity and have it reflected in all their development activities, provide special supporting funds for projects having significant components of Green Productivity, and make constant efforts to create favourable environment towards Green Productivity enhancement;

**THE ASIAN PRODUCTIVITY ORGANIZATION**, as a regional productivity organization spearheading productivity promotion efforts in the Asia-Pacific region, to embrace the concept of Green Productivity, integrate it in all its program of activities on human resources development, technical assistance and information dissemination and continue extending its activities aiming at SMEs to help them apply cleaner production systems, upgrade their absorptive capabilities for ISO 14000 standards and take steps to set up networks for the effective promotion of the transfer of technology and south-south cooperative activities;

**THE NATIONAL PRODUCTIVITY ORGANIZATIONS** to place a high priority on Green Productivity in all of their activities such as surveys, fora; seminars, training and consultancy services, and information exchanges and act as Green Productivity

promotion centres in order to promote and coordinate all the Green Productivity-related activities at the national level;

**NGOs AND COMMUNITY-BASED ORGANIZATIONS** to propagate ideas and techniques of Green Productivity, particularly at the grass-roots level, encourage people's participation in community development projects and render extension services to raise social awareness and promote income-generating activities;

**ACADEMIA** to lay special emphasis on research and education in Green Productivity which should also be included as an essential element of all environment-related education and training;

**MASS MEDIA** to focus on Green Productivity in order to increase public awareness of environmental issues and establish fora for free exchange of views and ideas on all matters related to Green Productivity, particularly in publishing successful Green Productivity showcases;

**TRADE AND BUSINESS ASSOCIATIONS** to strengthen their functions as clearing houses of information in order to bring home to their members the clear message that they have a social responsibility to adopt Green Productivity practices in their operations and that such practices will enhance their own productivity; and

**ALL STAKEHOLDERS** to promote awareness and mutual cooperation in Green Productivity by actively participating in networking of complementary activities, exchanging of ideas and experiences, disseminating information, and encouraging the involvement of everyone in the Green Productivity Movement as the strategy for better quality of life for all.

6 DECEMBER 1996  
MANILA, THE PHILIPPINES



## Two such simple words: **Sustainable Development**

Yet when combined they represent the single largest challenge to the collective creativity and intellectual spirit that humans have ever faced.

If the whole history of the world were framed within the context of one day, the presence of humans would constitute but a fraction of this period. Yet in a span of time much less than two seconds, humans have caused profound changes on the face of this planet. The time in which it takes to snap one's fingers.

In the thirty years since the introduction of environmentally sustainable economic development at the 1972 Stockholm Conference on the Human Environment, the environmental issue has evolved from being an intellectual pursuit of the few to a core business concern of the mainstream. With the publication of "Our Common Future" by the Brundtland Commission in 1987, the formality of a globally sculpted definition rallied the interests of policy-makers and vision-shapers in many nations to focus on the pursuit of **"development that meets the needs of the present without compromising the ability of future generations to meet their own needs."**

With the closure of the 1992 Earth Summit in Rio, more than 178 Governments adopted Agenda 21, the Rio Declaration on Environment and Development, and the Statement of Principles for the Sustainable Management of Forests. The time to move from rhetoric to results arrived.

However, it is in the operational meaning of this defined phrase where much debate has ensued. The matter of ecological integrity, as well as social and economic equity, must become the focus of innovation. Just as human systems adopted agriculture and the use of fossil fuel as the first and second transitions that completely changed the way global society operated, the third transition that humans must address is to operationalize sustainability. To be successful we must transform these three factors into meaningful policies, supported by unified social action and show evidence of our success in our respective corporate triple bottom-line results.

Despite the challenge and the potential for success, nations have not entered the race in a unified manner. The APO believes that we have found a track that moves us from the evocative to where we have evidence of results. In this publication, we offer an introduction to Green Productivity, its history, its method, tools and techniques. We also share our efforts as catalyst for change and examples of the various successes that private enterprise, including small companies and communities, have had.



***Innovation is a primary driver of economic growth. Green Productivity greens the process of innovation.***

# Why Green Productivity?

The starting line was productivity as a cost-reduction strategy. By picking up the baton of quality, productivity has metamorphosed to incorporate environmental protection and community enhancement as a means to increase prosperity. Under the umbrella of Green Productivity, innovation, a key engine of economic growth, becomes part of a holistic strategy to move towards a sustainable future.

## Productivity is essentially a marathon without a finishing line.

Just as productivity was the essential strategy that enabled Japan to rebuild after the Second World War, with other Asian nations being attracted to the lure of its success, the 19 member economies of the Asian Productivity Organization have rallied behind a more broadly defined concept of productivity to race in the marathon for sustainability.

In "The Concept of Productivity and the Aim of National Productivity Agencies" formulated in Rome in 1959 the Productivity Committee of the European Productivity Agency defined productivity as follows:

*"Productivity is above all a state of mind. It is an attitude that seeks the continuous improvement of what exists. It is a conviction that one can do better today than yesterday and that tomorrow will be better than today. Furthermore it requires constant efforts to adapt economic activities to ever-changing conditions and the application of new theories and methods. It is a firm belief in the progress of humanity."*

**Green Productivity starts with an intellectual dare – to shift from a monochrome bottom line to a more colourful triple bottom line.**



Green Productivity is a strategy for simultaneously enhancing productivity and environmental performance. Its aim is well-rounded socio-economic development that leads to sustained improvement in the quality of human life. It is the combined application of appropriate productivity and environmental management tools, techniques and technologies that reduce the environmental impact of an organization's activities, products and services while enhancing profitability and competitive advantage.

In 1994, the APO launched its Special Program for Environment, under a special grant from the Japanese Government, to help member economies integrate environmental concerns into their productivity enhancement work. The Environment Department, under which the program is administered, fosters the greening of productivity enhancements through three main activities: promotion, demonstration and dissemination. A special focus on small and medium-sized enterprises (SMEs) was taken in recognition of the important role they play in economic development, environmental degradation and the lack of resources and expertise that generally limits their advancement.

In 1996, the Asian Productivity Organization tabled its strategy to meet this challenge head on - through Green Productivity. At the December 1996 World Conference on Green Productivity held in Manila, the APO demonstrated empirical evidence that it had found a way to move sustainable development from the possible to the practical.

**Green Productivity has already proven to be as effective in the boardroom as it is on the shop floor.**

**The universality of its application should not be underestimated.**

**SMEs are the backbone of most national economies. GP's "Success in six" steps offer SMEs the chance for competitive advantage by doing better with less.**



# What makes Green Productivity So Attractive?

We need to shift from "mandate, regulate and litigate" to "smart growth" and unleash the collective creative ingenuity of mankind. Innovating sustainability is key.

Previous approaches to environmental protection have tended to ignore economic performance. Regulators were tasked with the dubious honour of having to closely monitor those with the deepest pockets and most suspect of the greatest 'wrongdoing' - sparked by the events such as Chernobyl, Bhopal and the Exxon Valdez. This surveillance has led to substantial reductions in single point source pollution in most countries. However it has left the seemingly trivial individual contribution of day-to-day inefficiencies in other larger and smaller enterprises and public organizations unattended.

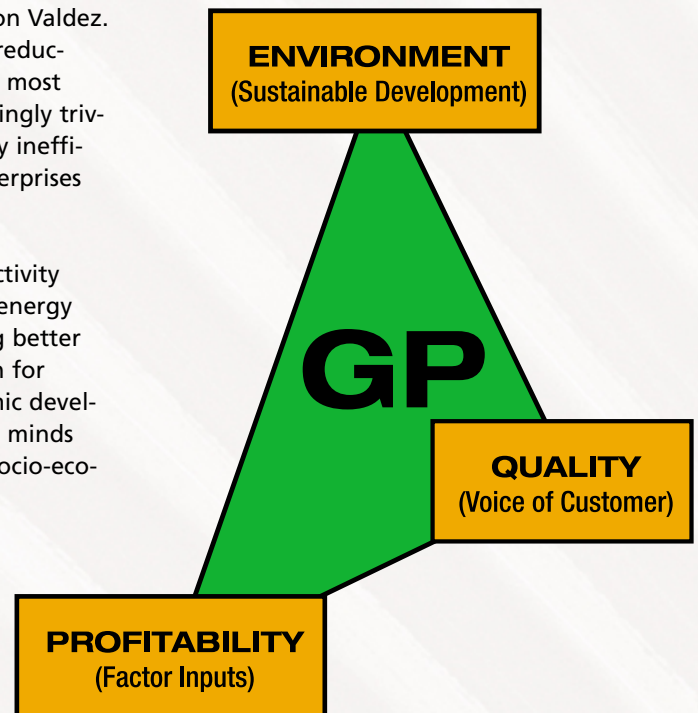
Essentially the practice of Green Productivity results in using material resources and energy more efficiently and sustainably - doing better with less. We know spurring innovation for products and services enhances economic development, therefore greening innovative minds enables development with less risk of socio-economic and environmental degradation.

According to the World Economic Forum's Year 2000 Report, the ability of a nation to improve its competitiveness is measured by its environmental performance in addition to more traditional economic criteria. Central to improved competitiveness is productivity. This makes the concept of Green Productivity a simple but elegant solution - to make environmental protection a core business attractor instead of an isolated cost contributor.

The recognition that environment and development are two sides of the same coin came in response to the need to link economic development strategies with environmental preservation. Between 1993 and 1994 a number of the APO member economies were involved in research focused on applications and opportunities for cleaner production as the cornerstone for guiding Asian countries towards a more environmentally friendly industrialization.

While the tools, techniques and methods have expanded over the last eight years, the goal has remained the same - to balance environmental and economic needs. In doing so we improve the quality of life for society as a whole. This

balance is achieved by keeping a focus on Quality (representing the voice of the customer), Profitability (determined by how well you do with what you have - factor inputs) and the Environment (our natural capital).



Between 1996 and 1998 our efforts were focused on mainly in the smaller enterprises in the electroplating, textile, food processing and papermaking sectors. As such, there was a very strong emphasis on the manufacturing process in the methodology used. Subsequently, the application of Green Productivity extended to farms and also to solving problems of village communities. The methodology had to be modified and made more general so that it can be applied to other areas related to productivity and environment.

Between 1994 and 2000, over 1,000 people involved in specific projects have shown the success of Green Productivity. With the start of the new century, we see a growing enthusiasm for the power of Green Productivity as a strategic driver for innovation. In this new Millennium, Green Productivity will help Asia and we hope others to innovate a sustainable future.

# How does Green Productivity Assist Enterprise?

Green Productivity starts as a strategy for enhancing productivity and environmental performance for overall socio-economic development. It is the application of appropriate productivity and environmental management tools, techniques, and technologies to reduce the environmental impact of an organization's activities, goods and services.

In its formal definition, Green Productivity uses three terms and phrases:

- strategy
- productivity and environmental performance
- socio-economic development

Building on its strategic foundation, Green Productivity focuses on enhancing profitability through combined improvements in productivity and environmental performance. This engenders an important mind shift from environment as a cost or externality to an asset and opportunity for increasing efficiency and profitability. The power of this mind shift is not to be underestimated. When excessive use of resources and materials or generation of pollution is seen as a manifestation of lower productivity as well as poor environmental performance, these are seen as manufacturing defects that need to be consistently corrected. The next level of Green Productivity offers the logical method drawn from quality management and provides practical tools and techniques. The knowledge and approaches under the umbrella of Green Productivity can help companies attack their productivity challenges with increased confidence, leading to a better bottom line and competitive advantage.

Green Productivity follows through on the strategic framework by seeking technical and managerial interventions, based on the concept of continual improvement. Asia's strength in

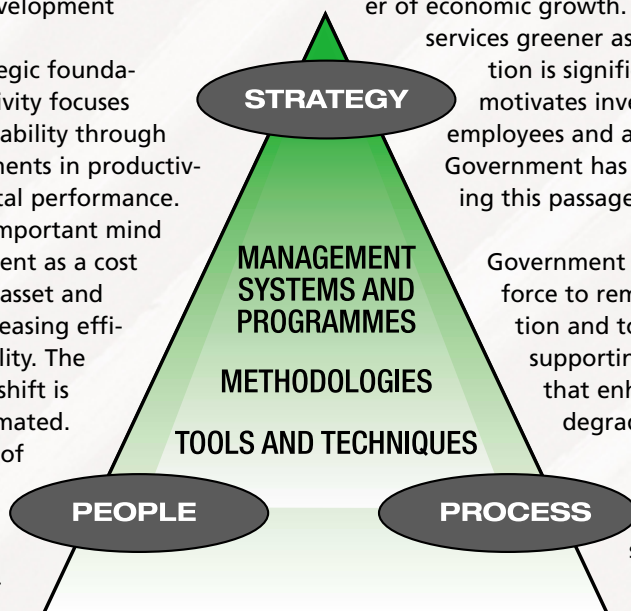
implementing and improving through the cyclical nature of quality management has been an asset in the initiation of Green Productivity.

Another important factor along with this mind shift is a transition from end-of-pipe thinking to design for environment. Design changes necessitate research and development, and this evolves the response of a company from concentrating on the cost of clean-up to the excitement of innovating new products and services. This is a critical crossover that Green Productivity enables passage through, as innovation is a primary driver of economic growth. Making products and services greener as a condition of innovation is significant. It excites business, motivates investors, intrigues employees and attracts consumers. Government has a role to play in fostering this passage.

Government policy is an important force to remove barriers to innovation and to think sensibly about supporting new technologies that enhance rather than degrade the environment.

Green Productivity is being aided by the shift to a demand side market. As consumers have more money

they are asking for products with environmental sensitivity be it shade tree coffee, recycled paper stock, to cars with lower emissions and greener energy sources. The lucrative lure of the market is a carrot. As markets demand greener products and services, Green Productivity helps to push the supply side by providing a logical process and practical tools and techniques by which this transformation can be accomplished.



Even the tight focus on cash flow that keeps the one-person shop operating can see the value in Greening Productivity.

We need to think beyond our current horizons to make our future technology "down-to-earth".



# Why is the concept of Green Productivity gaining ground with Governments & Enterprises?

The cyclical approach of Plan-Do-Check-Act in quality management was founded on the study of how nature manages variation. Green Productivity leverages this congruence for profit-oriented results.

Green Productivity is an integrated approach. It addresses the concerns of policy makers and the realities that those who produce face. The practice of Green Productivity is characterized by four distinguishing criteria.

**Integrated people-based approach:** One of the strengths of Green Productivity is its worker involvement and team based approach. Its people focus extends to improved working environment, worker health and safety, non-discrimination and related social welfare issues. The people involvement also ensures transparency and accountability.

**Productivity Improvement:** The other side of the Green Productivity coin is productivity improvement. The Kaizen approach of continuous improvement forms the basis. This has to accompany environmental protection. The concept of continuous improvement achieved by adopting the tenets of the PDCA (Plan, Do, Check and Act) cycle is aimed at ensuring not only productivity improvement; it includes environmental improvement, unlike classical productivity improvement programs. This is a dynamic and iterative process.

**Environmental Compliance:** The heart of Green Productivity is environmental protection, which is the purpose of legal instruments. It is one of the most challenging tasks facing industry. The practice of Green Productivity assists through tools and techniques for pollution prevention and source reduction. Residues will require

being managed using end-of-pipe treatment measures. While achieving environmental compliance it is the unique characteristic of Green Productivity that productivity will also improve.

These practices may lead to a situation beyond compliance with the ultimate aim of ensuring quality of life. It is paramount that government support enterprise to innovate new technologies that go beyond compliance, as it will bring greater returns.

**Information-driven improvement:** Documentation and reporting are the strengths of Green Productivity drawn from management systems that exist for quality and the environment (QMS and EMS respectively). The adage "What gets measured gets done" is one of the driving forces of Green Productivity.

Performance of an organization after establishing a Green Productivity program would be continuously measured and evaluated using a set of defined Green Productivity performance indicators.

The integration between what is conventionally termed productivity improvement concepts and environmental protection concepts is evident. Ecological and productivity principles marry the responsibility and accountability for environmental restoration into the producer's hands so that the business benefits of profit and competitive advantage reward the people taking action.



# Green Productivity offers a **Strong Framework** that enables fluid passage to productivity improvements

Green Productivity has an open framework to absorb several of the existing, proven approaches that leverage the benefits of eco-efficiency, cleaner production, pollution prevention, amongst others. The framework is based on two key components:

- a set of tools used to rationalize the input-throughput-output focus and
- a set of defined sustainable practices that will guide the practitioner to achieve the objective of Green Productivity.

The emphasis of the framework however is not on terminology or systems. It is based on the strategy of sustainability in economic development and environmental protection, a logical step-by-step path for change.

## What is productivity? As an integrated concept

$$\text{PRODUCTIVITY} = \frac{\text{Output} \times \text{Satisfaction}}{\text{Input} \times \text{Innovation}}$$

as objective ➡ Socio-Economic Concept  
as a means ➡ Technical concept

INPUT	THROUGHPUT	OUTPUT
Life cycle assessment is used as the basis for generating information on a product/service. Decisions are made on product design, manufacturing practices, purchasing policy, product distribution and management practices based on this information.	Product design must follow the principles of eco-design thereby subscribing to the need to develop products that have a lower environmental burden. Having incorporated eco-design principles into product design, the first step is to examine the purchasing policy for inputs and where required modify it to ensure green purchasing.	Apart from green purchasing, eco-design requires that environmental objectives be incorporated into the manufacturing operation, with no or minimum loss of product performance, useful life or functionality while reducing the generation of waste, reduction of toxics content of the product, reduction of the energy requirements and/or extending the useful service life of the product. This will also ensure health and safety in the workplace as well as for consumers using the products. In using eco-design as the basis, product stewardship must be adopted in the distribution, use, and disposal of the outputs (products).

The benefits in adopting this framework must be measurable. Progress must be shown and shared. Metrics used to measure an organization’s performance based on the impact of Green Productivity are Multifactor Productivity (MFP) and Profitability Analysis. These are measurements that are commonly used in business. *Green Productivity adds dimension and value.*



# Profitability is the cornerstone of Green Productivity

Green Productivity advocates the need to generate profits be it through savings on raw materials by practicing resource efficiency, improved productivity, quality, sales, etc. Green Productivity recognizes this as significant in that for any form of economic activity to be sustainable, profitability is an essential ingredient. Competitive advantage is essential for businesses to establish and maintain a market position. This also translates into profitability. This principle advocates competitiveness in pricing, quality and, in the case of Green Productivity, in 'eco-

Similarly, integrating environmental protection into business strategies will return advantages that businesses will realize, enabled by Green Productivity.

Green Productivity helps to leverage progress within an enterprise by transferring knowledge and building confidence. People building and employer orientation is crucial at two levels. One is the commitment of the top management since these people are responsible for setting priorities for the company, allocating resources, motivating



*Ensures Profitability*

*Reduces Environmental Impact*

*Enhances Quality of Life*

friendliness'. In the practice of Green Productivity, the integration of environmental and productivity improvement will create new business opportunities and provide competitive advantage in a market where "quality" has been the focus. Extending this concept to include environmental quality is shared by the global consensus that developed the international management standard ISO 14001. Of all the tools available under the umbrella of Green Productivity, ISO 14001 is valuable for internal management improvements that align environment performance with quality and as a means of communicating these improvements to others using a globally accepted model. ISO 14001 is gaining in importance as a purchasing criterion and a passport to trade.

In the case of the quality revolution, businesses eventually realized that apart from cost reduction, quality could increase profitability.

and encouraging employees. For Green Productivity to be successfully adopted in business, a pre-requisite is employer (top management) commitment to adopting "green" as a value-adding foundation. The second level is worker involvement in the practice of Green Productivity. The involvement and commitment of the line workers must be included for the effective implementation of Green Productivity. Workers enable the seemingly trivial contributions that add up over time to produce exponential value.

Empowering people to feel confident enough to change daily habits, reduce their ecological footprint<sup>1</sup> and be rewarded with a business advantage is an important benefit that Green Productivity offers.

<sup>1</sup> The Ecological Footprint measures the amount of nature's resources an individual, a community, or a country consumes in a given year.

# Green Productivity

takes the symphonic complexity of sustainability and harmonizes it into a tune that anyone can whistle while they work

---

## Why does Green Productivity work?

It takes the future vision of sustainable development, an amorphous concept for the average person, and gives it form, reason, and process. It brings sustainability from rhetoric to within reach in a methodical, logical and affordable manner. Increased efficiency enables greater cost control, increased cost-effectiveness and this leads to a more profitable position.

The central concept of Green Productivity is that substances should not be produced faster than they can be reintegrated into cycles of nature. In reality, there is no such thing as "away", energy is neither created nor destroyed, it just changes form. Therefore it is important to optimize the use of the materials and energy to obtain full value of one's efforts and investment.

## What proof do we have?

The companies that have participated in Green Productivity have shared their results with us. They understand the need to increase the wealth of their businesses by building on a sustainable foundation including economic, environmental and social criteria as cornerstones. When walking through their factories, across their shop floors the hum of efficiency has a new pitch. There is pride in their voices about the company's progress using Green Productivity. This echoes on the street where they work. It filters through to others in their community. It reverberates as a wave upstream and downstream along their supply chain.

## How does Green Productivity start?

**It begins with the end in mind – success.**



 *Makes Quality Products*

 *Improves Health & Safety*

 *Increases Profitability*

 *Raises Morale*

 *Enhances Company Image*

 *Ensures Regulatory Compliance*

 *Promotes Environmental Protection*

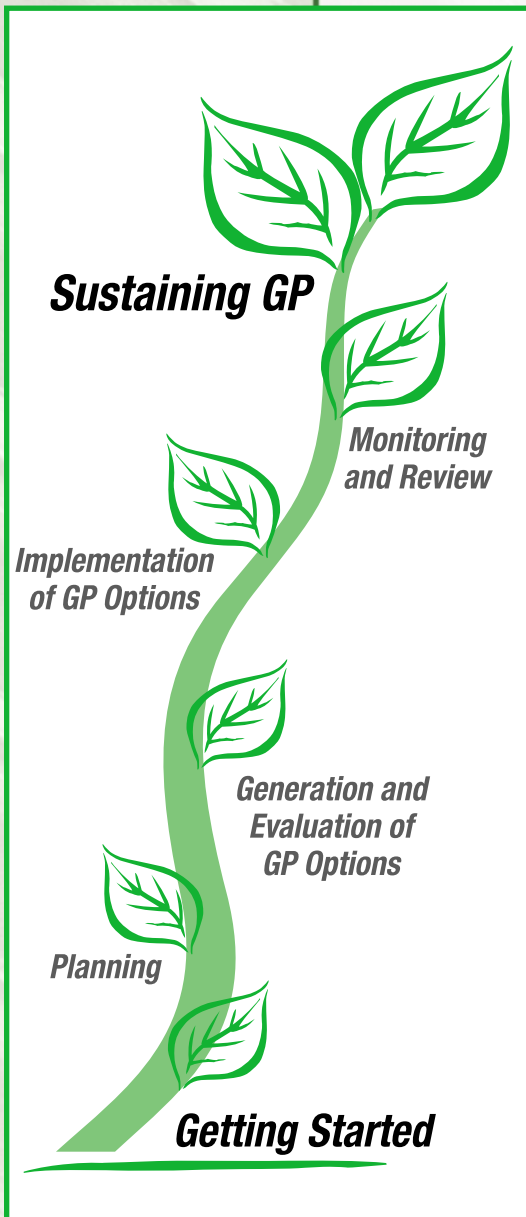
 *Leads to Sustainable Development*



# Green Productivity Success in Six

In six simple steps an enterprise can examine and evaluate both its production processes and products to reduce its environmental impacts and highlight ways to improve productivity and product quality.

Green Productivity is a method by which any enterprise, large or small, can understand what it is they do or have that impacts the environment, reduces their efficiency, adds cost, and suppresses their productivity.



- I. **Getting started** is an easy task. Identifying the people who are going to be involved and forming a Green Productivity team marks the beginning. These people, led by a champion, walk through and survey the site or facility and record first impressions. This allows the team to gather baseline data and identify areas where there may be a problem. This data gathering activity is made even easier through the use of Eco-mapping<sup>2</sup>, a simple, visual and practical tool for gathering, analysing and managing the environmental performance, which is especially suited to smaller enterprises. It is vital to have senior management's buy-in to ensure that adequate resources are available for successful implementation.
- II. **Planning** allows an organization to leverage the information gained in the first step to analyse the potential for improvement, along with analytical tools such as material balance, benchmarking, Eco-mapping and fishbone diagrams. Objectives and targets can be established and performance indicators identified to help guide the improvement process, allowing the company to manage and measure progress.
- III. **Generation and Evaluation of Green Productivity Options** involves the development of options to meet the objectives and targets formulated in planning. It involves a review of prevention of pollution and application of existing or new control procedures to support the development of the options to enhance productivity. Options are screened against performance indicators. Those most likely to net the economic and technical results desired are given first priority; the company is now ready for action.
- IV. **Implementation of Green Productivity Options** involves two actions, preparation and execution. Preparatory work includes awareness building, training and the development of competencies. If new equipment or systems are required, these are installed along with the operator instruction and hands-on training to ensure success.
- V. **Monitoring and Review** of the new Green Productivity options is vital to check to see that they are producing or exceeding the anticipated results. This includes monitoring the whole system to ensure that it is on track and performing as designed. Findings are reported for review by management.
- VI. **Sustaining Green Productivity** requires action to correct where necessary or to build on existing success. Having a feedback loop is essential to keep progress on track and to respond to the changing circumstances imposed by internal and external drivers including customer expectations, the environment and other innovations that may accelerate the greening of productivity.

<sup>2</sup> Eco-mapping<sup>©</sup> is a shareware tool created by Heinz-Werner Engel of Belgium for mapping where the location of environmental problems and inefficiencies lie. Within minutes a small business can see the value in Green Productivity. Detailed Eco-mapping<sup>©</sup> information is on line at [www.inem.org](http://www.inem.org).

# Green Productivity Tools and Techniques

## What are tools for Green Productivity?

**They are aids that can assist the enterprise in drawing quantitative and qualitative conclusions.**

Tools are matched to the step or steps where they can provide the most benefit.

Many of the tools in Green Productivity come from quality management. The reason for this is the results of the system of Profound Knowledge that found a home in Asia with the expert help of the late quality guru, W. Edwards Deming.

The start of Green Productivity draws upon many tools that support the generation of new ideas, the basis for innovation. Flowcharts, process flow diagrams, brainstorming, benchmarking, cause and effect analysis using a fish-bone diagram created by Ishikawa, all help to generate ideas to solve existing problems and think of new ways to reduce the environmental impacts a business has on the environment. New thinking is critical to success. It is the shot of the start pistol that leads to improvements in productivity and innovation.

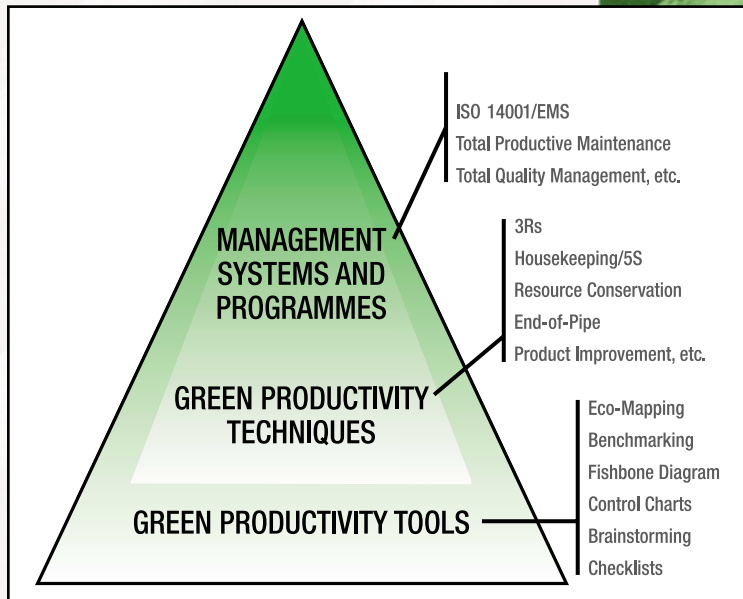
A tool that has proven useful especially to enterprise is Eco-mapping as it helps even the smallest shop owner quickly see where money is being lost from activities impacting on the environment. As many of the problems faced are location-based, this tool is particularly helpful. It requires few skills to apply, minimal resources and provides immediate quantifiable results.

Armed with a clear picture of the challenges, a small business owner can apply other tools such as Pareto charting, checklists, control charts among others to analysis their existing inefficiencies and areas of strengths.

**What are Green Productivity techniques? They are methods of performance or work improvement, applicable to people, processes, equipment, material/energy, products and waste.** These techniques are focused on the generation of options to support the adoption of Green Productivity strategy in enterprise.

Green Productivity techniques range from simple housekeeping approaches to more elaborate technologies for designing for the environment.

They bring about changes that result in better environmental performance and improved productivity.



Good housekeeping entails simple awareness building to the 5S (a technique that focuses on maintaining processes, equipment, workplaces and people in the way they should be), process modification that can involve energy conservation, and a broad range of waste management techniques to core process design, where companies conceive of entirely new products and services.

In cases where radical re-design is the option, companies innovate to create products unheard of before. This is a focus of serious competitive advantage and where new market niches are created for services that improve the standard of living.

How would the market react to a material twice as tough as the highest-tech ceramic?  
How valuable would it be to a business if it had the rights to produce the thinnest thread that was five times stronger than the best steel?  
Or an adhesive that sticks to anything, including situations underwater, with no primer?

Green Productivity fosters the innovative mind-set that creates greener products and services.



# Green Productivity Success in Six

---

## STEP 5

### STEP 4 Options for

- **Implementation of**
- **Awareness Building, and Developing Competence**

### STEP 3 Generation and

- **Generation of Green Productivity**
- **Screening and Evaluation of Green**
- **Preparation of Implementation**

### STEP 2 Planning

- **Identification of Problems & Causes**
- **Setting objectives and targets**
- **Brainstorming**
- **Cost benefit analysis**
- **Eco-mapping**
- **Fishbone Diagram**
- **Force field analysis**

### STEP 1 Getting Started

- **Form a Green Productivity Team**
- **Conduct a walk through survey and gather information**
- **Brainstorming**
- **Attribute Analysis**
- **Needs Analysis**
- **Responsibility matrix**
- **Checklists, tally charts**

## STEP 6 Sustaining Green Productivity

- ☐ **Incorporate changes**
- ☐ **Identify new or additional problem areas for continuous improvement**

*The tools are repeated here since the activities are looped back to the previous steps to provide consistency and encourage continuous improvement. This empowers the people involved to build on their new knowledge with confidence for success.*

## Monitoring and Review

- ☐ **Monitoring and evaluation of results**
- ☐ **Management review**
- ☐ **Solution effect analysis**
- ☐ **Eco-mapping**
- ☐ **Failure mode and effect analysis**
- ☐ **Charts (control/tally, etc.)**
- ☐ **Spider web diagram**

## Implementation of Green Productivity

- selected options**
- Training,**
- ☐ **Training needs analysis**
- ☐ **Team building**
- ☐ **Responsibility matrix**
- ☐ **Critical path analysis**
- ☐ **Gantt chart**
- ☐ **Spider web diagrams**

## Evaluation - Green Productivity Options

- Options**
- Productivity Options Plan**
- ☐ **Brainstorming**
- ☐ **Cost benefit analysis**
- ☐ **Eco-mapping**
- ☐ **Failure mode and effect analysis**
- ☐ **Pareto charts**
- ☐ **Program Evaluation Review (PERT)**

- ☐ **Flowcharts and process**
- ☐ **Flow diagram**
- ☐ **Material balance**
- ☐ **Benchmarking**



# The Look of Success

Between 1994 and the present, the APO has invested substantially in engaging experts from around the world to Asia to share knowledge, skills and the transfer of technology to Asia Pacific.





The APO serves as think tank, catalyst, regional advisor, institution builder and clearinghouse for information on productivity for member economies.

We provide human resource development, technical expert assistance and dissemination of knowledge and know-how on Green Productivity and other fields to support productivity improvements in general.

The APO activities include:

- Basic research studies, surveys, symposia, study meetings
- Training courses, seminars
- Fellowships, technical expert services, study missions
- Publications and audio-visual material



# Green Productivity In Action

The three key activities we employ to push Green Productivity through markets are:

- **Green Productivity Promotion Mission (GPPM)**
- **Green Productivity Demonstration Program (GPDP)**
- **Green Productivity Dissemination Assistance (GPDA)**

## **Green Productivity Promotion Mission**

The Green Productivity Promotion Mission (**GPPM**) is one of the key activities that the APO undertakes to support the acceptance of Green Productivity as a strategic and high-level management goal. Deputized experts spread awareness among top-level government officials, business executives, and other environmental stakeholders of member economies on the importance of Green Productivity. More specifically, the GPPM seeks to promote partnerships in member economies by creating close working relationships between the National Productivity Organizations (NPOs) and environmental agencies in both the public and private sectors. The local network promotes Green Productivity, helps member economies identify major problem areas, and assists in choosing options for Green Productivity implementation. These promotion missions are conducted in close cooperation with NPOs, with support and collaboration from relevant agencies or organizations in the host countries.

## **Green Productivity Demonstration Program**

In 1995, the APO initiated the Green Productivity Demonstration Program (**GPDP**) to help NPOs establish demonstration projects in a factory, farm, community, or service enterprise to demonstrate empirically that environmental protection and productivity improvement can be profitably harmonized, even in smaller enterprises. Specifically, it shows how Green Productivity increases productivity while at the same time reducing environmental impact without the need for substantial financial investment. It emphasizes doing better with less. The experience and lessons gained from the demonstration projects are then disseminated to other APO member economies for their information and application, thus multiplying the number of environment-friendly factories, farms, communities, and service enterprises in the region. A critical component of a demonstration program is to build the organizational capacity and capabilities of the NPOs, which in turn promote and support Green Productivity activities.

The APO has so far implemented many GPDP projects with a high degree of success. They were in tannery, metal plating, printing, precision tools, dye manufacturing, fruit canning, livestock and crop farming, and community-based improvement projects.



## **Green Productivity Dissemination Assistance**

Under the Green Productivity Dissemination Assistance (**GPDA**) Program, the benefits of experience and information gleaned from demonstration programs are leveraged among member economies. The main purpose is to promote further awareness of Green Productivity and to create a domestic pool of experts in conjunction with NPOs. These local Green Productivity experts help to amplify success in enterprise and community development. The opportunity to develop a competitive advantage through cooperation is a strong attractor for other businesses. Lessons learned from a peer or like-minded entity enables a chain reaction; projects initiated with the assistance of Green Productivity Demonstration projects foster success.



*The APO also works to diffuse knowledge, empower change, and in cooperation with other agencies around the world, heightens the receptivity of markets for Green Productivity as a means to foster sustainability. Two more activities are helping to diffuse the knowledge, skills and benefits of Green Productivity: Technical Information and Advisory Services, and International Cooperation.*

## Green Productivity Technical Information and Advisory Services

In 2001, apart from deputizing Green Productivity experts to engage in GPPM, GPDP, and GPDA activities, the APO deputized experts to make presentations or provide advisory services in member economies for the following purposes:

- ◆ Life cycle assessment case study development in selected APO member economies (Singapore).
- ◆ Development of an interactive CD ROM on the APO GP Program (Malaysia).
- ◆ Preparation of the proceedings of the "APO International Symposium on Management of Industrial Estates through Green Productivity."
- ◆ Technical assistance for implementing natural farming system for Green Productivity (Philippines).
- ◆ Assessment of biogas reactors (Malaysia).

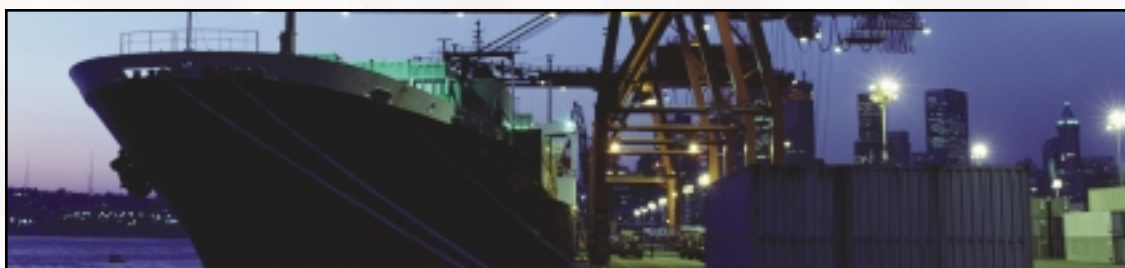
## International Cooperation

The APO maintains close links with other international and national entities to enlarge the knowledge base of subject areas important to the APO member economies. Liaison with these organizations enables collaboration and broadens the network for sourcing experts to serve as in the technical expert scheme. This enables the parties involved to promote solutions to matters of common interest and concern. The countries that have joined us already include Australia, Canada, France, Germany, the Netherlands and the USA.

***The APO is pleased to identify that cooperative arrangements exist with the following institutions.***

The French Agency for International Business Development (UBIFRANCE), France	Colombo Plan Secretariat	International Food Policy Research Institute (IFPRI)	United Nations Environment Programme (UNEP)
ASEAN Foundation	Department of Business, Economic Development and Tourism (DBEDT), Hawaii	International GP Association	United Nations Development Programme (UNDP)
Asian Development Bank (ADB)	Economic and Social Commission for Asia and the Pacific (ESCAP)	International Labour Organization (ILO)	United Nations Industrial Development Organization (UNIDO)
Asian Development Bank Institute (ADBI)	European Association of National Productivity Centres (EANPC)	International Rice Research Institution (IRRI)	United Nations University (UNU)
Asian Vegetable Research and Development Center (AVRDC)	Food and Agriculture Organization (FAO)	International Water Management Institute (IWMI)	United States-Asia Environment Partnership (US-AEP)
Canadian International Development Agency (CIDA), Canada	Food and Fertilizer Technology Center for the Asian and Pacific Region (FFTC)	International Organization for Standardization (ISO)	United States Environmental Protection Agency
Carl Duisberg Gesellschaft (CDG), Germany	Green Productivity Association of Malaysia	Maastricht School of Management (MSM), the Netherlands	United States Agency for International Development (USAID)
Center on Integrated Rural Development for Asian and the Pacific (CIRDAP)	International Atomic Energy Agency (IAEA)	Regional Institute of Environmental Technology (RIET), Singapore	World Bank (IBRID/IDA)





## Strategic - Green Productivity Promotion Missions

In 2001, there were four missions that went to Bangladesh, India, Malaysia and Nepal.

### India

**Organizer:** Kanpur Productivity Council, a local affiliate of the National Productivity Council (NPC) of India. Cooperation with External Experts: US Environmental Protection Agency

**Format:** Workshop on Green Productivity and Environmental Management Systems/ISO 14001



### Malaysia

**Organizer:** Malaysian Employers Federation and the National Productivity Corporation (NPC) of Malaysia

**Format:** Workshop on Enhancing Organizational Competitiveness through Green Productivity



### Bangladesh

**Organizer:** National Productivity Organization of Bangladesh and the Dhaka Chamber of Commerce

**Format:** Introductory Workshop on Green Productivity

**Outreach Activity:** Chowdhury Leather and Company Ltd., Fortuna Bhaban, Bangladesh Small and Cottage Industries, Ministry of Industry, and the Department of Environment.



### Nepal

**Organizer:** National Productivity and Economic Development Center and the Federation of National Chambers of Commerce and Industry.

**Outreach Activity:** Narayani Leather Industries (Birgunj), Birgunj Chambers of Commerce, Bhrikuti Paper and Pulp Mill (Bharatpur), and Surya Carpets (Kathmandu).



# Practical - Green Productivity Demonstration Projects

## GPDP

### Shen's Art Printing Co. Ltd.

A leading company in the field of cultural, commercial and art printing.

#### Why did GP appeal to the company?

Prior to Shen's adopting GP, it had already reduced pollution and improved energy efficiency by installing water recycling, temperature-control, dust filtration and air change systems. The company saw GP as an excellent way to develop new technical and management solutions to its business challenges. The pull of innovation that GP fosters helped the company capitalize on reductions in raw material and resource consumption to lower production costs, upgrade productivity and improve the work environment. Shen's implemented ISO 14001 as part of the GP improvement process.

What was the payback? By using the six-step method, Shen's was able to improve its environmental performance, which led to an annual estimated US\$ 261,615 savings on an annual turnover of US\$10,000,000.

*"Obtaining ISO certification and our research in minimization of waste are the results of the joint effort of our company and our customers in seeking excellences in the market."*

*By forming a team with our customers, Shen's Art will success in pioneering an approach that promises endless opportunities."*

**Mr. Hsi Chen**, General Manager, Shen's Art Printing Co. Ltd.



### Shui-Hua Leather Industrial Co.Ltd.

Shui-Hua tannery products are used as household names around the world.

#### Why did the company decide to implement GP?

The leather tanning industry in Taiwan faces significant pollution challenges; in particular wastewater contains strong alkalis, bio-wastes and high concentrations of heavy metals such as chromium. If not well managed these chemicals can result in high risk to the environment and human health. GP helped the company address these issues in a timely and efficient manner bringing improved productivity, a higher level of compliance and economic returns. Process improvements alone netted the company a savings of US\$ 2.3 million.

*"From this experience, I personally believe that implementing Green Productivity Methodology is the best way to reduce the environmental burden of an organization and at the same time improve its productivity."*

**Mr. Ching-Tsung Cheng**, GP Demonstration Project Manager



### Solasia Energy Development Co. Ltd.

One of Taiwan's leading solar energy equipment manufacturers.

The GP demonstration project at Solasia shows that improvements in resource usage and waste minimization are technologically and financially feasible in the solar collector manufacturing process. In fact, the program results indicate that this sector could achieve a state of zero discharge of key pollutants. Also the key environmental problem waste water from electroplating can be dealt with in an economically effective way.

#### What did GP net Solasia?

Between a reduction in the amount of discharged nickel, the benefits of recycling degreasing liquid and rinsing water, Solasia realized an annual benefit of US\$ 72,225.



## Practical - Green Productivity Demonstration Projects



### Kwan Kee Electroly Dyeing Factory

Located in the Tsuen Wan industrial area to the south west of the Kowloon peninsula, the company worked with the Hong Kong Productivity Council (HKPC) to minimize the volume of toxic wastes that created problems of non-compliance and human health risk.

The company's annual savings on chemicals was US\$ 5,153 and on water was US\$ 541. The early stage success this represented encouraged the company to explore where other new improvements could be made. Their success was seen as an attractor to other area factories.

"Despite an initial capital outlay, we found that the savings produced by the GP program made the system profitable. We found that we reduce both cost and pollution and anticipate that we can earn back the investment capital within one to two years."

*Mr. Andy Yau, Director, Kwan Kee Electroly Dyeing Fty. Ltd.*

### Dintex Dychem Ltd.

The GP project at Dintex focused on the production of vinyl sulphone that causes acute environmental problems. The project showed that a pollution prevention approach to environmental improvement could lead to significant production efficiency and profitability. The GP survey showed that the waste generated by dyestuff manufacturing requires complex and expensive treatment and that many of the outputs of the manufacturing processes can be reused and thus represent a resource and income stream.

#### Was implementing GP helpful to the company?

"After implementing all the suggestions generated by the GP program, we will be able to meet the relevant regulatory standards. This was not possible earlier.

Now we are also getting wealth from the waste. In this way we are marching towards Green Productivity."

*Mr. Dinesh S. Shah, Managing Director, Dintex Dychem Ltd.*

What was the impact to Dintex' bottom line? The savings result in over US\$ 357,136 a year from an initial investment of some US\$ 357,457. Save resources, save a dollar, in fact many!

### Nasser Tannery Co.& Tanchem Industries

These two tanneries are representative of the challenges faced by the tannery industry in India. Their participation allowed for an assessment of how issues of scale affect environmental and economic performance in the sector. Their role in GP also enabled a better understanding of the different leather production processes used for hides and skins.

#### Was the implementation of GP of value?

"This project introduced a systematic approach to continuous improvement in environmental performance and productivity. Among the changes we observed was a shift in the approach and attitude of our employees--they were very much concerned about wasted resources and took all steps and measures to reduce losses."

*Mr. A. G Nasser Ahmed, Managing Director, Nasser Tanning Co.*

## Spindex Industries Ltd.

### Why was GP of interest to Spindex?

By applying GP methodology, the company has been able to identify new areas of environmental improvement while maintaining its core focus on quality. GP methodology has now been integrated into Spindex's ISO 14001 Environmental Management System (EMS). GP solutions were helpful in identifying new targets and programs for the existing EMS. It also helped the company to attract talented employees who otherwise avoided the precision machining industries due to its unclean working environment.

### What were the environmental and economic benefits that the company realized?

The new drag-out minimization facilities resulted in appreciable savings in the amount of cutting oil used (~ 40% for larger parts and 10% for smaller parts.) The improvements also resulted in less oil sludge generation and a reduction in the VOC problem at the kerosene wash. GP helped Spindex uncover where US\$ 56,170 worth of cutting oil was wasted with other savings netting them around US\$ 7,000.



## Banglee Chromium Co. Ltd.

The electroplating industry is a major contributor to environmental pollution. Untreated wastewater from factories contain toxic metals (copper, nickel and chromium) that are also hazardous to human health. For an SME, the typical barriers to improvement are financial and knowledge about how to start. The clearly defined six-step method enabled Banglee to identify chemical loss, excessive water consumption and layout and production inefficiencies that caused pollution and lowered production.

"I personally gained benefits not only in the field of waste prevention but also in the field of new plating process technique applications. Once they have observed GP implementation in our process, I think that both public and plating entrepreneurs will gain more confidence that waste prevention is a viable technique."

**Mr. Prayut Chongkol**, Owner, Banglee Chromium

### Can a small business benefit economically by improving environmental performance?

Yes! Banglee saved US\$ 7,738 annually through energy efficiency, material savings and reduced wastewater discharges.



## Chiang Mai Food Industry Co. Ltd.

### What did GP offer Chiang Mai?

The GP project at Chiang Mai shows that the same systematic analysis method can be applied to two different production processes to yield significant environmental improvements and profit gains. The project's significance to the food industry in Thailand and other developing countries is potentially massive, since it shows that cost effective solutions exist to the industry's main problem- waste water generation.

### Did the company realize any savings?

Yes. In one growing season, Chiang Mai could realize a total savings of US\$ 6,943.

"By adoption GP methodology, Chiang Mai Food Industry Co. Ltd. Is able to save substantially by minimizing citric acid and other resource usage and also on waste water treatment costs.

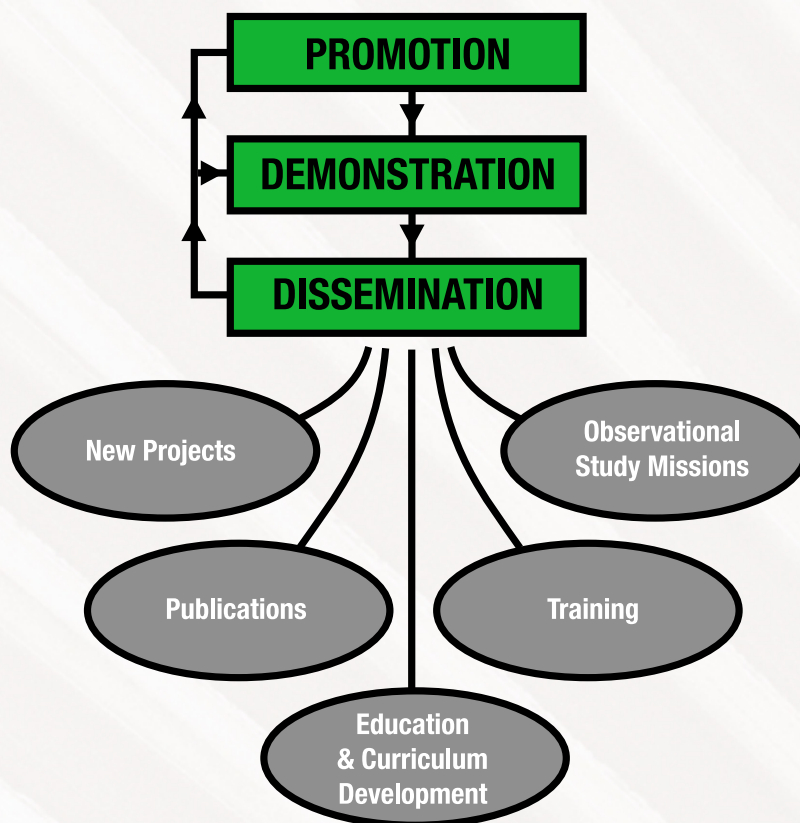
We expect more companies in Thailand to adopt this GP methodology and gain similar benefits."

**Dr. Suporn Koottatep**, Chiang Mai University, Thailand



## Tactical - Green Productivity Dissemination Assistance

*The challenge we face requires efficiency at every possible opportunity. The APO looks to leverage the benefits from one activity to provide multiple returns. Sharing the success that companies achieve in implementing Green Productivity is a strong attractor to others.*



Publications on the experiences that Green Productivity has produced are available through the APO office, or by visiting the APO's website at <http://www.apo-tokyo.org/gp.new/index.htm>.

- Green Productivity: In Pursuit of Better Quality of Life
- Green Productivity in Asia: APO's Demonstration Projects 1995-1999
- Linking Green Productivity to Eco-tourism: Experiences in the Asia-Pacific Region
- The International Symposium on Management of Industrial Estates through Green Productivity (GP)
- Technical Summaries, Reports and Video Tapes of Green Productivity Demonstration Programs

*In 2001, almost as many people participated in the core programs offered by the APO as those that were involved in the first 6 years. The success of Green Productivity is a powerful attractor.*

# The Value of Green Productivity to Enhance Community Development

## Innovating Sustainability

The APO also established the Integrated Community Development (ICD) program in the mid 1990s. The ICD program aims to strengthen local capacity for sustainable community development by enhancing individual and collective productivity improvement. Just as small business plays a critical role in national economies, there is recognition that local communities play a critical role in the protection of the environment and in the sustainable use of natural resources. To address the problem of the growing disparity between rural and urban development that exists in many of our member economies, GP-ICD projects were created, by incorporating GP concept and principles in ICD.

### ***Vietnam - An Example of Green Productivity Success in Local Economic Development***

The Vietnam Productivity Centre (VPC) decided to implement its Green Productivity Demonstration Project in three different villages instead of a factory or farm situation. The rationale for this decision was that 80% of the population in Vietnam live in small village communities. If successful in the demonstration phase, the potential for replication was high.

The issues chosen to address were arrived at through a consensus process that involved the villagers:

- Drinking water supply
- Management and use of human and animal wastes
- Rubbish and solid waste management
- Pest management in rice and vegetable farms

Over a one-year period, about 1,055 people attended workshops and received training on Green Productivity concepts and the methodology. One indication of the success of this project was the adoption of Green Productivity in neighbouring villages without official support. The empowerment of people to be self-reliant is a powerful approach for sustainability; Green Productivity enables this to happen.

### ***Why is this case study an important one to share?***

In a second phase nine other villages were identified as candidates. The Vietnam Productivity Centre subsequently received requests from 63 other provinces in Vietnam. The Centre hopes to get the joint GP-ICD project adopted by the Government of Vietnam as official policy to ensure that adequate human and financial resources are allocated. Ultimately they hope to have all 10,000 village communities involved.

As the APO went to press, we were informed that 72 communities in Vietnam are starting Green Productivity – Integrated Community Development as a means to move to a better quality of life. These 72 villages cover 21 out of the 61 provinces that exist in Vietnam. While it is too soon to know if every country can be assured of this kind of success, this initiative demonstrates the potential return in a social contract for sustainability.

**The Rule of 72 has a new meaning.**



THE NEW MILLENNIUM - STARTING WITH RESULTS			
2001 PROJECT TITLE	VENUE	2002 PROJECT TITLE	DATE & VENUE
M/s Rama Phosphates	Indore		
Hoang Thach Cement Factory	Hai Duong		
Jo Na's Corporation	Manila		
J.F. Trading Farm	Sarawak		
Workshop on Green Productivity with a special focus on Occupation Health and Safety (OHS)			
Multi-Country Workshop on GP and Hazardous Waste Management	New Delhi		
Forum on B2B Cooperation on "E2Commerce (Electronic-Eco-Commerce)	Taipei		
Enhancing Organizational Competitiveness through GP			
Practicum Workshop for Trainers on Green Productivity	Hanoi		
Workshop on the Application of Total Quality Environmental Management (TQEM) for Green Productivity	Petaling Jaya		
Multi-Country Workshop on Green Productivity and Eco-Tourism	Yogyakarta		
Workshop on Environmental Impacts Assessment (EIA) and Green Productivity	Nadi		
Workshop on Green Productivity and Eco-Tourism	Fukushima	Practicum Workshop for Trainers/Consultants on Green Productivity	25 Feb-29 March Kuala Lumpur and Penang
Multi-country Workshop on Green Productivity for Hospitals	Bangkok	The Asia Pacific Regional Eco-tourism Conference: The Sustainability Challenges and Green Productivity	15-17 April, Nadi
Advanced Workshop on Environmental Economics: Cost Effectiveness of Green Productivity (GP)	Manila	Advanced Workshop on Green Productivity for Productivity Facilitators	27-31 May, Manila
Workshop and Seminar on Energy Efficiency for Green Productivity	Singapore	Workshop and Seminar of Green Energy for Green Productivity	22-26 July, New Delhi
US EPA/APO Workshop on Sustainable Forest Management in Vietnam	Ho Chi Minh	Workshop on Green Productivity with Special Focus on Occupational Health and Safety (OHS)	5-9 August, Jakarta
		Multi-country Workshop on Green Productivity (GP) for Sustainable Investment (SI)	19-23 August, Bangkok
		Advanced Workshop on Green Productivity for Educators	1-5 Sept, Tehran
		Workshop on Green Productivity and Natural Farming	10-14 September, Seoul
		APO-France Study Meetings on Urban Environmental Management (UEM) through GP	16-24 September, Paris
		International Symposium on Ecotourism and Green Productivity (GP) – Asia Pacific Ecotourism Conference APeco 2002	3-6 October Kota Kinabalu, Sabah
		Workshop on GP and Hazardous Waste Management	28 Oct-1 Nov, Taipei
		2nd World Conference on Green Productivity (GP)	9-11 December, Manila

# Conclusions

**Green Productivity offers a successful strategy for innovating sustainability.** The information tabled in this report is the measurable results of APO member economies, local communities and private enterprise. Green Productivity provides a practical method for creating value-added products and services that result in triple bottom line results. Communities benefit from economic development while improving environmental protection. The rewards it enables are quantifiable and demonstrate a method to obtain an enhanced quality of life.

Too often the apparent dilemma between environment versus development boiled down to arguments about who pays. Valuable time and resources were absorbed in fruitless banter. The truth is we all pay when inappropriate action is taken or indifference leads the way. The APO has empirical evidence that Green Productivity ends the dilemma, replacing "who pays" with those who profit and prosper. With the support of our respective countries, corporations and citizens, we can progress Green Productivity from triggering innovative ideas to be a full innovation – where environmental protection nets prosperity.

The business of managing the planet for prosperity demands a balanced approach between good governance, profitable enterprise and people who have a quality of life. More often than not people will pay for quality when the choice is offered. As more businesses understand that there is profit in improved environmental performance, that there is competitive advantage in offering green products and services, a demand-side market will pull sustainability forward.

**Governments have an important role to play in supporting this transition.** We need to set a good example by our own actions – with supportive policies, sensible laws and appropriate financial incentives. With the results that Green Productivity has captured, the conceptual dare for business and politicians evolves to be a carrot that leads to competitive advantage and poverty alleviation. Green Productivity builds political will, community confidence and profit-oriented results.

**There are signals that supporting market driven approaches will pay off.** The investment interest in the stocks under the Dow Jones Index for Sustainability<sup>3</sup> indicates that investors are coming to appreciate more and more the management qualities that support a sustainability ethic. There is US data on the environmental technology market that shows the process and prevention

technology market segment grew by 23.3% annually between 1989 and 1998. While this sector is only 1% of the entire environmental technology market, it is the fastest growing one. Projections show this trend increasing. This is evidence that both governments and private enterprise are interested in moving away from end-of-pipe technologies to prevention of pollution. It is interpolated as a shift in both the public and private sectors moving their attention regarding environmental policy and management upwards and forward<sup>4</sup>. The strategy, method, tools and technologies in Green Productivity reinforce this refreshing shift.

Cooperative competition in theory and in practice can reduce costs and spread economic development opportunities. We must cooperate beyond our traditional borders to bring competitive advantage to local communities, a market driven variation of the "think globally, act locally" mantra.

**We need to send a powerful message to the market – that natural capital must be integrated into pricing.** We need to move our money and our management decisions upstream and recognize the true costs of inefficiency. As governments we must make policy decisions that overcome the barriers to change, our policies must support 'watershed economics'. By adopting Green Productivity into national policy, we can take action to foster greener innovation.

The APO does not suggest that we have won the war on waste – be it in any form. However, the results of Green Productivity have enabled enterprises, which have dared to think beyond compliance, to obtain competitive advantage.

Greening Productivity changes the pace of the marathon – the stakes involved are enormous. We have everything to gain; but we risk all if we do not enter the race.

***Just as profit is the carrot that tempts enterprise to improve productivity, we as governments must run in parallel to help enterprise in the race for the carrot and innovate sustainability.***

<sup>3</sup> <http://www.sustainability-index.com/>

<sup>4</sup> Innovation and the environment: OECD Proceedings: 2000 at [www.oecd.org](http://www.oecd.org)

**Green Productivity enables those who are daring enough to think beyond compliance, innovate their businesses, and shift to a more competitive position by doing better with less.**



# Recommendations for GP Actions

---

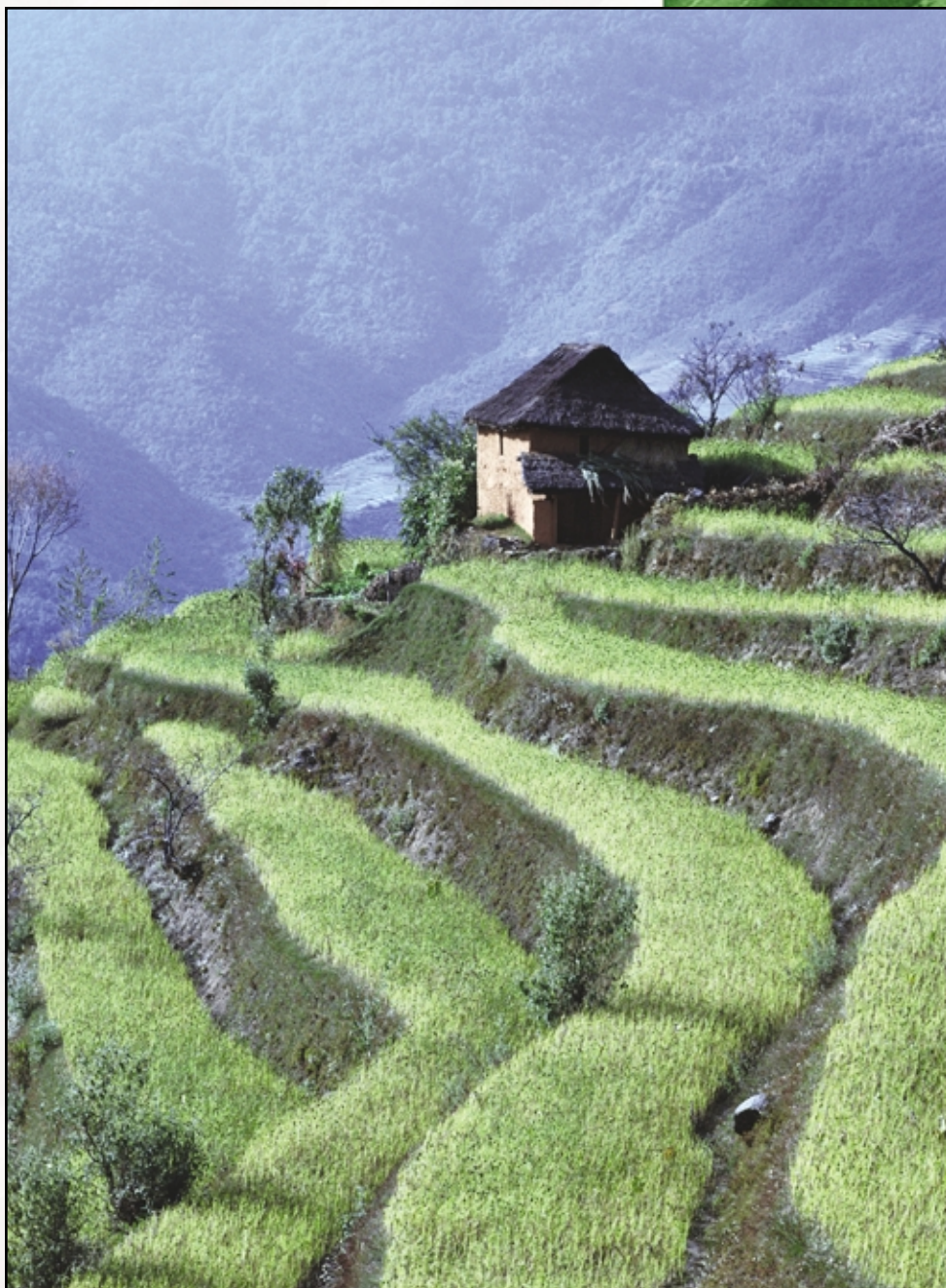
**The message is simple.  
Promote Green Productivity  
as a sensible strategy to  
innovate sustainability for  
triple bottom line returns  
(economical, environmental  
and social) returns and  
poverty alleviation.**



- Encourage nations to adopt Green Productivity into policy and governance measures, and position it to support sustainability through innovation.
- Increase cooperative alliances with public and private sector partnerships to enhance the diffusion of Green Productivity.
- Institute comprehensive market-based instruments to encourage sustainability, pulled by the market place and pushed by regulatory measures to accelerate the shift to sustainability.
- Improve the ecological literacy of consumers so that they understand the power and rewards of green consumerism and apply this power.
- Promote adoption of sustainable practices for micro-enterprise and small and medium-sized enterprise by helping them adopt Green Productivity.



- Facilitate cooperation between labour and management to introduce Green Productivity and improving working conditions.
- Facilitate the development of green supply chains throughout all levels of governance and in business clusters.
- Focus Green Productivity activities on product redesign based on innovations.
- The APO's initial experience in leveraging Green Productivity with Integrated Community Development indicates that Green Productivity has a great potential in poverty alleviation, in line with Millennium Development Goals. Disseminate the experience in community economic development and Green Productivity to other countries.
- Promote the diffusion and adoption of ISO 14001 recognizing its role in greening supply chains and as a passport to trade.



*Green Productivity has brought forward substantial, tangible results in less than a decade. The Asian Productivity Organization is proud to have contributed towards realizing the goals and visions of Agenda 21 by bringing sustainability "down-to-earth". The APO pledges to continue this progress in the Asia-Pacific Region and through cooperation, extend Green Productivity to accelerate a growing green global marketplace.*



*You are invited to*  
**the 2nd World Conference on Green Productivity (GP)!**  
**Manila, Philippines, December 9 – 11, 2002**

The Asian Productivity Organization invites you to join us, National Productivity Organizations, Partnering Organizations and confirmed participants to engage in the relentless pursuit to innovate sustainability through Green Productivity.

The first conference in 1996, "In Pursuit of Better Quality of Life", brought together more than 450 participants from 32 countries including senior government officials responsible for productivity promotion and environmental management, representatives of United Nations' agencies, other international organizations, non-governmental organizations, industry, agriculture, labour unions, academia and the mass media. At the closing, the Manila Declaration on Green Productivity was adopted, casting the seeds needed to sprout green innovation.

Join us at this important event where we share the roots of progress, the measurements and stories of GP success.

**The conference will address four key objectives:**

- 1.** To review the GP concept, principles, methodology, and tools as a practical approach to both global competitiveness and the environmental problems on the occasion of Rio+10 Conference;
- 2.** To assess the opportunities for enhancing the GP concept, methodology, and the tools and techniques by incorporating other modern concepts and trends;
- 3.** To identify new and innovative approaches to strengthen and sustain GP practices within NPOs and other organizations, as well as at the national level; and
- 4.** To network with like-minded national as well as international organizations to bring about synergistic effects in regional activities on GP promotion and dissemination.

For details contact either the APO office in Tokyo or:

**Productivity & Development Center  
Development Academy of the Philippines (PDC-DAP)**

4th Floor, DAP Building  
San Miguel Avenue, Ortigas Center  
Pasig City, Philippines

Phone: 63-2-631-2137/631-0921 to 30

Fax: 63-2-631-2137/631-2123



# GREEN PRODUCTIVITY

is

...a strategy for enhancing productivity and environmental performance for overall socio-economic development. It is the application of appropriate techniques, technologies and management systems to produce environmentally compatible goods and services. Green Productivity can be applied in manufacturing, service, agriculture, and communities.

***Are you ready for success?***

For inquiries and comments on this publication, please contact:

**Asian Productivity Organization**

2-10, Hirakawacho 1-chome, Chiyoda-ku

Tokyo 102-0093, Japan

Tel: (+81-3) 5226 3920

Fax: (+81-3) 5226 3950

Email: [env@apo-tokyo.org](mailto:env@apo-tokyo.org)

**[www.apo-tokyo.org](http://www.apo-tokyo.org)**

**Acknowledgements**

This publication was prepared by:

**Lynn Johansson**, B.E.S. (Hons.), M.Sc., FRSA

President

**E2 Management Corporation (E2M)**

Georgetown, Ontario, Canada

Email: [etwom@inforamp.net](mailto:etwom@inforamp.net)

[www.e2management.com](http://www.e2management.com)

Printed by:

**Simpson Screen Print & Lithography Ltd.**

Ontario, Canada

[www.simpson-print.com](http://www.simpson-print.com)

