



# Productivity Improvement: The Green Way

## GREEN PRODUCTIVITY

Green productivity (GP) is a strategy for simultaneously enhancing productivity and environment performance for overall 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.

### INSIDE THIS ISSUE

Green Productivity Methodology .....	2
Green Productivity tools & techniques .....	2
Case Studies .....	3
“Green can be Gold” .....	3

### SPECIAL POINTS OF INTEREST

- Green Productivity tools
- Green Productivity techniques

**Green Fact:**

The computer you're using right now, in all the years you'll own it, will never consume more energy than was required to create it. 81% of the life-cycle energy costs associated with a single computer is from its manufacture, only 19% from its operation. The production of a single computer also uses 42,000 gallon of water. Please recycle your used electronics and turn them off when not in use.

Source: [www.goinggreentoday.com/blog/10-green-facts-that-will-make-your-head-spin/](http://www.goinggreentoday.com/blog/10-green-facts-that-will-make-your-head-spin/)

**Step I: Getting Started**

Checklists, tally charts, plan layout, flow charts, process flow diagram, material balance, benchmarking

**Step II: Planning**

Brainstorming, Cause and effect analysis, critical path analysis, eco-mapping, Gantt chart

**Step III: Generation, Evaluation and Prioritization of GP options**

Brainstorming, cost benefit analysis, eco-mapping, Failure Mode and Effect Analysis, Pareto charts

**Step IV: Implementation of GP options**

Training need analysis, team briefing, responsibility matrix, critical path analysis, spider web diagrams

**Step V: Monitoring and Review**

Solution effect analysis, Eco mapping, Failure Mode and Effect Analysis, control charts, spider diagram

**Step VI: Sustaining GP**

Control plan, charts

Figure 2 : Common productivity tools used at the various GP methodology steps

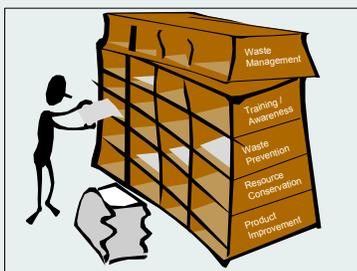


Figure 3 : GP Techniques

## BUSINESS ADVANTAGES & BENEFITS

Having a good green productivity program will:

- Increases profitability
- Improves health and safety
- Makes quality products
- Promotes environmental protection
- Ensures regulatory compliance
- Enhances company image
- Raises employees morale
- Leads to sustainable development

## GREEN PRODUCTIVITY METHODOLOGY

The GP methodology comprises six steps and 13 tasks and is based on the continuous application of the PDCA cycle to achieve kaizen at work place (Figure 1).

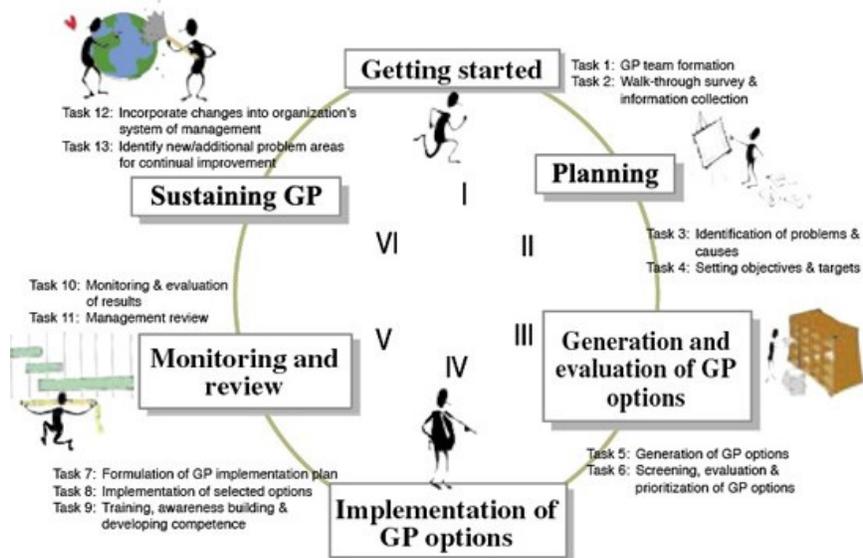


Figure 1 : GP Methodology

What make the approach special is that it includes an investigative walk-through process of the entire workplace and reviews resource utilization at each step through the technique of material balance. It brings about the opportunity to apply the various productivity tools (Figure 2) and environmental techniques (Figure 3).

GP helps in reducing the cost of operations through better resource utilization, reducing long term liabilities, complying with government regulations, and improving corporate image that will eventually impact profitability. GP has been successfully implemented in both the manufacturing and service sectors.

Source: APO

## GREEN PRODUCTIVITY INITIATIVES: INTEL MALAYSIA'S EXPERIENCES AND PERSPECTIVES

This case study focuses on Intel's operations in Penang, Malaysia and the company's adoption of the Environment, Health and Safety (EHS) policy that committed them to conserving natural resources and reducing environmental waste and emissions. They implemented green productivity strategies such as waste minimization, total chemical management, 5R pollution prevention and community environmental initiatives. This led to a positive environment impact, savings generated in operational costs as well as an enhanced image and reputation.

Source: Alarilla, M. & Decena, J. (2009). Green Productivity Initiatives: Intel Malaysia's Experiences and Perspectives

## WASTE REDUCTION WITH GREEN PRODUCTIVITY APPROACH FOR INCREASING PRODUCTIVITY

This case study focuses on findings alternatives to reduce liquid waste during the production process of automotive glue using phenol by an Indonesian company. The alternatives to reduce waste disposal are evaluated by using the concept of Green Productivity Indicator and through a financial feasibility analysis. The paper defines green productivity and green productivity indicator. It also shows that the best solution from the alternatives suggested was to install the chiller and increase the rate of productivity by around three percent.

Source: Singgih, M., Suf, M. & Putra, C.A. (2010, December). Waste reduction with green productivity approach for increasing productivity (Case Study: PT Indopherin Jaya).



### GREEN CAN BE GOLD

#### Key Findings

A survey was conducted by the Nihon Keizai Shimbun newspaper in November 1997 on 1,295 publicly listed companies. They were asked to respond to 14 questions about the environment. Based on these responses, the newspaper established a scale based on how much consideration these companies gave to the environment and then ranked the top 100 companies. The top 30 companies had an average revenue increase of more than 4%. Companies ranked 31 to 100 had an average revenue increase of 2%. Further, the top 10 companies had an ordinary profit increase rate of 54%, while the companies ranked 11 to 100 showed profit increases of only 18%. This survey illustrates that "Green can be Gold"

Source: Tadahihiro Mitsuhashi (2000). "Japan's Green Comeback: Future Visions of the Men Who Made Japan"

For more information on Innovation & Productivity resources, Lean Six Sigma project coaching and implementation, research and benchmarking and seminars, please contact :

**Singapore Innovation & Productivity Institute  
c/o Singapore Manufacturers' Federation**

2985 Jalan Bukit Merah  
Singapore 159457

Telephone & Fax  
(65) 6826 3000(65) 6826 3068

Email  
[sipi@smafederation.org.sg](mailto:sipi@smafederation.org.sg)

Office Hours  
9:00am to 6:00pm (Mon - Fri)

