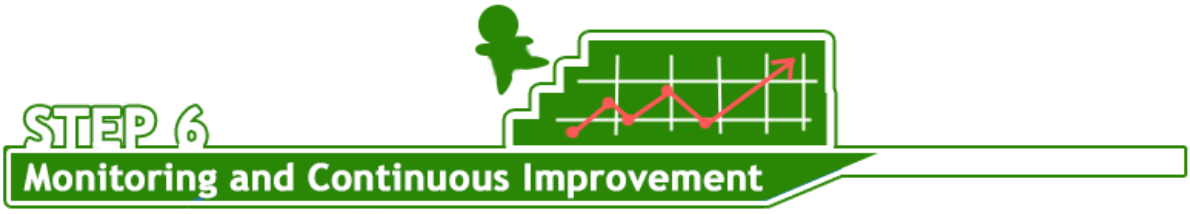

STEP 6 MONITORING AND CONTINUOUS IMPROVEMENT

Outputs

- Monitoring indicators
- Monitoring process
- Reporting process
- Continuous improvement plan

Resources

Needed for **Step 6** covers output from **Step 1, 2, 3, 4 and 5** together with the detailed description of monitoring plan.

Activities

Step 6 consists of four main activities:

- ⇨ Defining monitoring types and indicators : Results evaluation, Time monitoring, Satisfaction monitoring, Financial monitoring and Human resource monitoring
- ⇨ Planning the monitoring process
- ⇨ Planning reporting process
- ⇨ Planning continuous improvement activities : Plan-Do-Check-Act Cycles

EPP principles

- **Applicability**
  - ⇨ Monitoring plan framework should be able to do within the budget and time set
  - ⇨ Monitoring plan should define all of the indicators which can be measured
  - ⇨ Monitoring process should be able to find the errors arising from implementation of the project
  - ⇨ Continuous improvement planning should be used in any crisis problem of the project.
- **Validity**
  - ⇨ Monitoring plan should be updated and improved over time
- **Communicability**
  - ⇨ Continuous improvement plan of the project should be easily understandable by avoiding the technical words

Monitoring and evaluation system is a critical part to execute a program effectively. Timely and reliable monitoring system should provide all significant information for the EPP developers to make prompt response dealing with the situation. Moreover, it also supports EPP activities by offering holistic view of project implementation. On the other hand, we can

say that monitoring is *"A maintenance phase during which the program moves from support activities toward enforcement capabilities"* (IEA 2010).

The purpose of this guideline is to emphasize the establishment and implementation of an EPP monitoring and reporting system rather than providing detailed guidance on conducting evaluations. It should ensure that the program will be executed successfully. Continuously monitor on effectiveness of the EPP program is also very significant in order to determine quality of the program implementation and revise the setting goals.

The design of a monitoring program should be done by providing clear statement of the objectives. It is recommended to prepare details of EPP plan. The primary goal of EPP is to reduce CO_2 emission and the secondary goal is to increase the consumption of Eco-products or services. Result-based monitoring (RBM) approach should be employed to achieve goals. RBM is an approach of program management based on clearly defined results, and the methodologies with tools to measure progress.

When the monitoring and evaluation process actives, it should focus on *communicate openly, accept diversity and evaluate continuously* (See **Table 6.1**). The elements of good monitoring and evaluation are stated as follows:

Table 6.1: Components of effective monitoring and evaluation

Element	Description	Advantage
Communicate openly	● Report the result regularly to relevant parties ● Establish channels of communication and share information ● Decide who can access the database	● Wider communication ● Improve understanding ● Ensure that any concerned issue or result is informed ● The stakeholders can prioritize the compliance action
Accept diversity	● Respond proportionately ● Involvement of stakeholders ● Response to international and local obligations	● Enforcement must be fair and reasonable and meet the expectations of all stakeholders ● Enables data sharing and leverages limited resource ● Ensure that sanctions are applied consistently without bias ● Protect authorized person from allegations of unfairness
Evaluate continuously	● Enforce vigorously ● Adjust policies to new circumstances ● Measure success (qualitative and quantitative)	● Avoid devaluation ● Ensure that the EPP program and its enforcement remain relevant

6.1 Defining monitoring types and indicators

Before monitoring the EPP, the EPP office should select the monitoring type and indicators properly. For the EPP indicators, they are divided into 5 types as DESCRIBED in **Table 6.2**

Table 6.2: Monitoring types and main indicators

Monitoring type	Requirement	Description
Results monitoring	• Carbon reduction (direct goal) • Market share and Market growth rate (indirect goal)	To track effects and impacts of the program after completion. This is the final evaluation to determine if the EPP is on target towards its intended results and whether there may be any unintended impact (positive or negative). For example, a competition of producers in eco-products market may lead to an improvement of energy-efficiency technology.
Time monitoring	• Time for implementation of the EPP	To track the progress of activities for both timing and budget spending. It examines how activities are delivered – the efficiency in time and resources. It is often conducted periodically in order to make corrective actions to put the program back on schedule.
Satisfaction monitoring	• Satisfaction of stakeholders	Beneficiary monitoring tracks perceptions of program stakeholders. It includes satisfaction or complaints with the EPP. It often includes stakeholder complaints and feedback mechanisms.
Financial monitoring	• Budget for implementation of the EPP	Accounted for costs by input and activity within predefined categories of expenditure. It is often conducted in conjunction with periodically review. For example, participating enterprises may monitor the eco-point awarded and redeem, and ensure implementation is according to the budget and time frame.
Human resource monitoring	• Skill of human resource	Human resource monitoring tracks skills of the stakeholders in order to implementation of the EPP smooth and sustain.

6.1.1 Result monitoring

The Results monitoring aims to investigate whether the results follow the goal or not. Indicators of the goal for EPP are divided into 2 parts which include indicators of the direct goal indirect goal.

6.1.1.1 Indicators of the direct goal

Main indicator of the direct goal is *Carbon Reduction* which determined in form of percentage or quantity. The carbon reduction is divided into 2 types; *Absolute Carbon Reduction and Carbon Intensity* (carbon emission per a certain unit of goods/services)

- *Absolute carbon reduction*

  Indicators for monitoring the absolute carbon reduction are described as followed:

  1. Inventory data of materials and energy (for cradle to gate) for producing the eco-goods and services (for cradle to grave, the EPP office must determine the carbon from treatment or disposal process.
  2. Emission factor of material
  3. Method for calculation of carbon reduction
  4. Quantity of carbon emission from previous year or the year which the EPP office wants to compare carbon emission.
  5. Carbon reduction goal

- *Carbon intensity reduction*

  Indicators for monitoring the carbon intensity are stated as follows:

  1. Inventory data of materials and energy (for cradle to gate) for producing the eco-goods and services (for cradle to grave, the EPP office must determine the carbon from treatment or disposal process)
  2. Emission factor of the material
  3. Method for calculation of carbon reduction
  4. Quantity of eco-goods and services which are produced.
  5. Quantity of carbon emission per a certain unit of the eco-goods and services from previous year or the year which the EPP office wants to compare carbon emission.
  6. Carbon reduction goal

6.1.1.2 Indicators of indirect goal

Main indicators of the indirect goal are market share and market growth rate

- *Market share*

  Indicators for monitoring the market share are illustrated as follows:

  1. Sales revenue and sales volumes data of eco-goods and services

2. Sales revenue and sales volumes data of goods and services which are the same type of the eco-goods and services
3. Market share goal

- *Market Growth rate*
  Indicators for monitoring the market share are illustrated as follows:
  Sales revenue and sales volumes data of eco-goods and services
  1. Sales revenue and sales volumes data of eco-goods and services from previous year or the year which the EPP office wants to compare carbon emission.
  2. Market growth rate goal

6.1.2 Time monitoring

Indicator of the time monitoring is the real time for EPP implementation and the time set in each step in order to compare between real time with time set .The objective of this step is to find the lose time or surplus time or on time.

6.1.3 Satisfaction monitoring

Indicator of the satisfaction monitoring is *satisfaction of the stakeholders*. The EPP office may distribute questionnaire to determine the satisfaction of the stakeholders.

6.1.4 Financial monitoring

Indicators of the financial monitoring are real budget in each activity of EPP implementation and the budget set in each step.

6.1.5 Human resource monitoring

Indicators of the human resource monitoring are skills of the stakeholders and the time that stakeholder take to implement the EPP. The EPP office may distribute questionnaire to determine the satisfaction of the stakeholders. (Establishing the reporting, n.d.)

6.2 Planning monitoring process

Monitoring process is a process to control the implementation of the EPP. Monitoring process is divided into 5 processes as a followed:

6.2.1 Result monitoring

Result monitoring of the project will consider on the goals which can be divided into direct goal and indirect goal. And the EPP office should periodically monitor the results of the EPP for each activity (i.e. every year).

6.2.1.1 Direct goal

Processes for monitoring and evaluating direct goal are stated as follows:

1. Collect the inventory data of eco-goods and services production and/or the processes for acquisition of eco-good and services and/or cycle of eco-goods and services.
2. Calculate carbon emission by applying the data collected from step 2.
3. Compare carbon emission of eco-goods and services with historical data to monitor carbon reduction in the form of percentage.
4. Compare carbon reduction with goal set before implementing the project.
5. Investigate the results whether it reaches the target or not, if not, the EPP developer should find the causes of these errors.

Note: For absolute carbon reduction, the EPP office collects inventory data of the all eco-goods and services.
For Carbon intensity reduction, the EPP office collects inventory data per a certain unit of the eco-goods and services.

6.2.1.2 Indirect goal

Indirect goal is divided into 2 specific targets which include percentage of market share and market growth rate.

- *Percentage of market share*
  Processes for monitoring and evaluating the percentage of market share are as follows:
  1. Collect the sales revenue and sales volumes data of eco-goods and services.
  2. Compare the data with the same goods and services by calculating the increasing or decreasing percentage of sales revenue and sales volumes of eco-goods and services.
  3. Compare the increasing or decreasing percentage of sales revenue and sales volumes with the goal.
  4. Consider the result whether it hit the target or not, if not, the EPP office should find the causes of errors.

- *Market growth rate*
  Processes for monitoring and evaluating the market growth rate are described as follows:
  1. Collect data of the sales revenue and sales volumes of eco-goods and services.
  2. Compare the data with existing data by calculating the increasing or decreasing percentage of sales revenue and sales volumes of eco-goods and services.
  3. Compare the increasing or decreasing percentage of market growth rate of eco-goods and services with goal.
  4. Consider the result is on the target or not, if not, the EPP office must find the causes of errors, i.e. why it is not on the target.

6.2.2 Time monitoring

Time monitoring focuses on timeframe of the project implementation. The EPP should periodically monitor the time spent for each activity (i.e. every 4 months). And the time monitoring processes are as follows:

1. Review progress for implementation of the EPP
2. Compare progress and plan, after that the EPP office will find the gap between progress and plan (if not, the result show that progress based on plan)
3. The EPP office should determine why the gap between progress and plan.
4. The EPP office should set plan if progress is delay. And the EPP office should set the new plan of each stage based on total plan.

6.2.3 Satisfaction monitoring

Satisfaction monitoring is a process to survey the opinion of the stakeholders about eco-goods and services of the EPP. The EPP office should periodically monitor satisfaction of the stakeholders for each activity (i.e. every year). And the processes of satisfaction monitoring are as follows (How Do I Monitor Customer):

1. Give the questionnaire to stakeholder (questionnaire should be easy to understand and the results can be measurable)
2. Determine and evaluate the results
3. Improve the EPP or the process in order to make the stakeholder more satisfy

6.2.4 Financial monitoring

Financial review is a process to monitor the budget of the project. The EPP office should periodically monitor budget for each activity (i.e. every 6 months). The processes for financial monitoring are as follows:

1. Collect the real budget of all activities (all activities can follow in step 5) which contain income and expose of the EPP office
2. Compare the between the real budget with the budget plan
3. Determine that the real budget based on the budget plan, if not, the EPP office should find the reasons and manage the budget adequately or find more budget for the EPP implementing smoothly.

6.2.5 Human resource monitoring

Human resource monitoring is a process to survey and determine that stakeholders have skills and suitable with role and responsibility. The EPP office should periodically monitor the human resource skill for each activity (i.e. every year). The processes for human resource monitoring are as a followed:

1. Give the questionnaire for evaluating the skill of the stakeholders to the head of the each section
2. The EPP office should determine and evaluate the skills results and the time for working of stakeholder, if the results are not based on the plan, the EPP office should set the practice program for increasing the skill of the stakeholders

6.3 Planning reporting process

Reporting the results of monitoring is very important for project improvement. And the reporting the results is helped to shape strategy, goals and objectives. The reporting process comprises 5 main stages:

6.3.1 Defining the reporting objective

Defining the reporting objective is the first step in the reporting process, which is for the company to determine reporting objectives. These should be the strategic base for developing the report in the future. In particular, the objectives should define:

1. The report's overall purpose
   The report's for EPP has purpose for collect the real data which are from implementation of the EPP and use data for improving the EPP.

2. The report's target users
   The target of the EPP report is people who interest in the EPP and the head of the EPP office.

6.3.2 Planning the report

The report planning requires decisions on the following areas:

1. Implementation related issues
   The EPP office should determine the implementation related issues such as eco-point exchanging, advertisement process and etc.

2. Information to report
   The EPP office should define the information to report such as percentage of market share, quantity of carbon reduction, quantity of the eco-point, real budget of implementing the EPP and etc.

3. Gathering and collecting information
   The EPP office should gathering and collecting all of information which want to report such as the results, the mistakes or problems, the most way that people use for exchange eco-point to rewards and etc.

6.3.3 Constructing the report

This stage is divided into 2 different activities that are usually performed in parallel.

1. Collection, aggregation and analysis of data
   The EPP office must collection, aggregation and analysis of data for making sure that the data complete and correct.

2. Writing and layout
   The EPP office should write the report with not technical word for easy to understand. For the topics of the EPP report include the results of the each stage for EPP implementing, the results which are compared between measured results with goal, the way or method to improve the EPP and suggestions

6.3.4 Distributing the report

The EPP office should distribute the report in line with the report's purpose and the identified target users.

6.3.5 Collecting and analyzing feedback

The EPP office should collect and analyze feedback for improving the report in the future by questionnaire or meeting.

6.4 Planning continuous improvement

After monitoring process, the program operator will obtain the results for continuous improvement in each step. The result should represent the concerning point or issue in the overall process. To illustrate, it will be focused in the case the implementation does not go as planned and what points able to enrich completeness of the program.

6.4.1 The significance of the EPP improvement

1. Correcting the problem of the EPP and making the EPP more complete
2. Enhancing the EPP implementation more efficiency
3. Developing the EPP more successfully and sustainably
4. Persuading the stakeholders to participate in the EPP

6.4.2 Plan-Do-Check-Act Steps

A continual improvement process, also often called a *Continuous Improvement Process* (abbreviated as CIP or CI), is an ongoing effort to improve products, services, or processes of project implementation. General method for running the project consists of 4 steps; **Plan–Do–Check–Act Cycle** (**Figure 6.1**). Just as a circle has no ending point, the PDCA cycle should be repeated again and again for continuous improvement to fulfill the success of program. Moreover, the EPP developer can use plan-do-check-act for improvement of the project, each step will be described as follows:

1. **Plan** → Establish the key objectives and necessary processes to deliver results in accordance with the expected output (the target or goals) and plan an implementation ("Plan" matches with **Step 1**).

2. **Do** → Develop the plan and execute the process until they carry out a small-scale study for testing ("Do" matches with **Step 5**).
3. **Check** → Review the implementation, analyze the actual results and compare against the expected results ("Check" matches with this step - **Step 6**, except the continuous improvement stage)
4. **Act** → Take action based on the results in the study step: If the implementation does not work, then go through the cycle again with a different plan. If it-succeeds, the developer will integrate and broaden the results from the implementation step into wider implementation. Apply the results to plan new improvements and start the cycle again ("Act" matches with the continuous improvement stage in this step – **Step 6**)

6.4.3 The process for the project improvement

Continuous improvement of the project matches with the act stage based on Plan-Do-Check-Act cycles. In addition, the improving processes also apply plan-do-check-act cycles for running the process as shown in **Figure 6.1**.

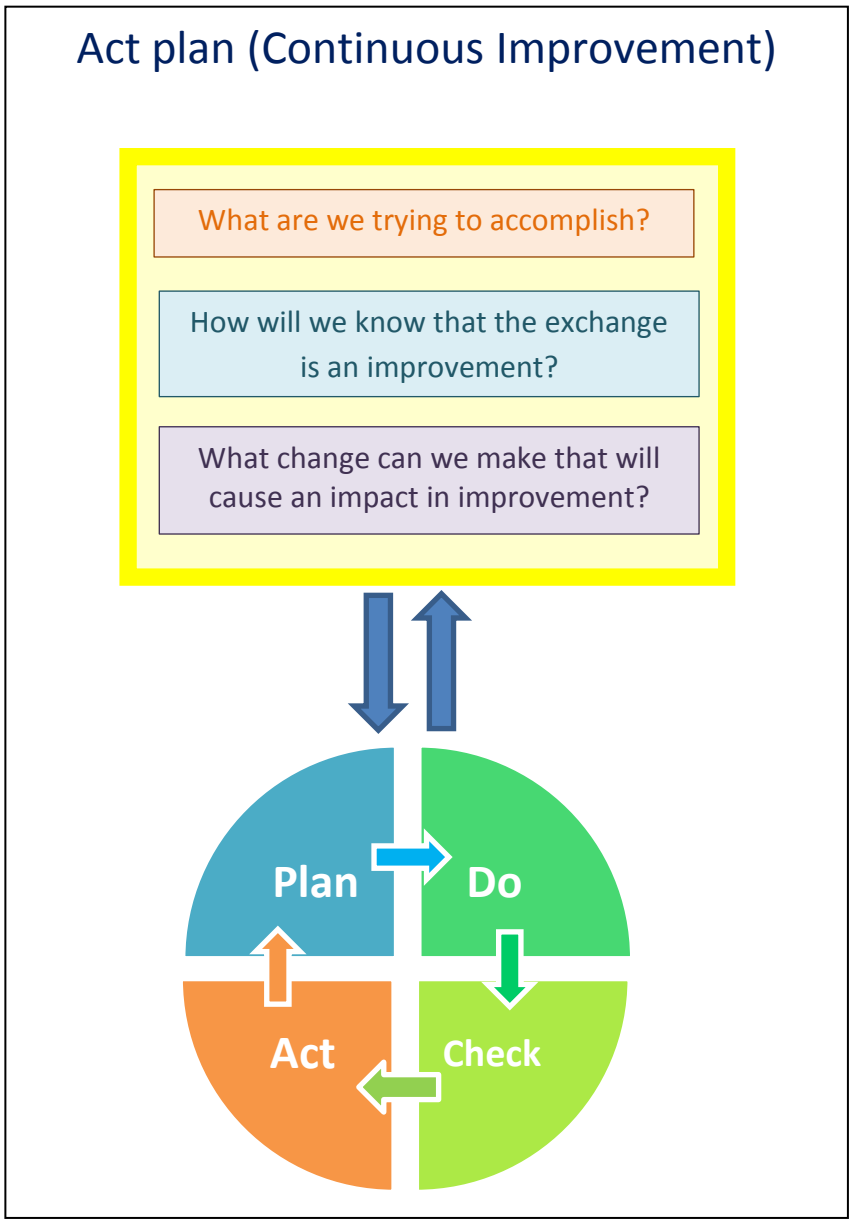

Figure 6.1: The cycles for implementing the improvement process

The process for improving the project is divided into 8 parts (Institute of Healthcare Improvement, n.d.):

1. **Setting the questions**
   The questions for improving the project cover the 3 illustrated aspects as follows:
   - What is the EPP developer trying to accomplish?
   - How will the EPP developer know that the exchange is an improvement?
   - What change can we make that will cause an impact in improvement?

2. **Discovering the problem**
   Obtaining the data from monitoring and evaluating the process to find out what are the main problems or the causes of an unsuccessful project. The goal of the stage is to determine which variables can make the project obtain the greatest benefits.

3. **Setting goals for project improvement**
   The improvement project team should set the future goals (for example increasing the quantity of carbon reduction of eco-goods and services from 10 percent to 20 percent) .It should be measurable under timeframe and budget which are defined in previous steps. Moreover, the EPP developer should clarify the difference between the current status and future goal.

4. **Selecting process**
   Idea for changing the process or method for improving the project may come from stakeholders or the experts of the project. The chosen method should be realistic based on goals and framework.

5. **Testing changes**
   One of the well-known methods for testing the changes which may occur in real situation is the Plan-Do-Check-Act Cycles. This is the scientific method adapted for action learning.

6. **Implementing changes**
   After testing the changes in a small scale, learning from each test and refining the change through several Plan-Do-Check-Act Cycles, the EPP developer should create documentation for the new process. In the following step, the EPP developer will execute the change on a broader scale.

7. **Spreading changes**
   After successful implementation of the changing project development, the EPP developer should spread the changes to stakeholders, for example the future goal, the new process, etc.

8. **Monitoring and evaluating changes**
   Monitoring and evaluating changes of the project will follow methodologies of step 6. The EPP developer should repeat the improvement process to discover the root problem and develop the plan.

6.4.4 Success factors of the EPP

After the program developers run the test for program improvement in small scale in each study point, the program developer will obtain the successful factors of the EPP in overall processes. They are the significant variables to fulfill completeness and successfulness of the EPP program in the next phase.

The examples of important variables affecting direct and indirect goals are illustrated below:

- ✓ Indirect Goal
  In the monitoring step, the result shows that market share of eco-products does not increase by 10% compared to year 2010 as program's target baseline. The continuous improvement process has to be conducted through the program development to find the hotspots in each step of the problem. The examples of causes of problem are the amount of eco-products, cooperation of the private sector and government, fiscal constraints, communication process, operational procedure, etc. Hence, the program developer has to establish the measure to improve that step by applying the PDCA cycle.
- ✓ Direct Goal
  According to the goal, the benchmark of carbon emissions is necessary for operational and monitoring process of the EPP including existing intensive schemes about climate change or global warming policy.

Table 6.3 Example of success factors of the EPP for continuous improvement process

Specific Goal	Successful factors
Indirect Goal	• Amount of eco-goods and services in market • Cooperation of private sector and government and EPP office • Financial incentive constraints • Communication and promotional process • Operational procedure for business owner and customer
Direct Goal	• Benchmark of carbon emissions of eco-goods and services • Existing intensive schemes

Furthermore, in the case of some countries in where the EPP was developed under indirect goal in primary phase, and would like to shift to direct goal, the program developer has to make the benchmark of carbon emissions of eco-goods and services. These types of data will be used for eco-point calculation including the monitoring and evaluating process.