

# Integration approaches in good governance practices, functions of management and PDCA concept in recycling programmes formulation

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# Integration Approaches in Good Governance Practices, Functions of Management and PDCA Concept in Recycling Programmes Formulation

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**Abstract.** The National recycling programme has been launched in the year 1993 and then re-launched in the year 2000; however, the recycling rate is at a very low level in Malaysia. The solid waste generation has been increasing due to population growth, rapid growth of economy, urbanization and changes in lifestyle. Hence solid waste management is challenging in Malaysia. Currently, most of the solid wastes are disposed in landfills as it is one of the cheaper and easier methods in Malaysia. However, the landfills have reached a maximum and critical level due to high volume of solid waste generation. Meanwhile, most of the landfills are open dumping sites, which has caused environmental pollution. New landfill sites are difficult to identify as they have been rejected by the local community, such as the Bukit Payong landfill. Nevertheless, recycling is the most convenient method to reduce the solid waste disposal in landfills. Many recycling programmes have been conducted to achieve the recycling target, including the mandatory waste segregation at source programme. Many researchers have studied the failure in sustainability of recycling programmes aimed to increase the recycling rate in Malaysia. Therefore, this research paper is based on the conceptual framework findings from the literature review of recycling programmes and aims to develop a recycling programme based on integration approaches of good governance practices, functions of management, and the PDCA concept. The integration approaches of good governance practices, functions of management and PDCA concept will be used in recycling programme formulation. All stakeholders shall be involved in the recycling programmes formulation at each stage of planning, implementation, monitoring, and improvement. The continuous improvement cycle shall be practiced in the recycling programmes for sustainability. This framework of recycling programme formulation will act as a guideline for other environmental programmes in Malaysia.

## INTRODUCTION

Solid waste management is a major problem in many countries including Malaysia. High volumes of solid waste generation are due to population growth, rapid growth of economy, urbanization, and changes of lifestyle. Solid waste generation has reached a measure of 33,000 tons daily, which has surpassed the estimation of 30,000 tons daily made by the Japan International Corporation Agency (JICA) in 2020 [1]. This phenomenon has reflected the public's lack of awareness towards the cleanliness of the environment and has resulted in activities such as throwing rubbish everywhere, lack of consciousness of environmental pollution, food waste, and attitude toward goods and resources [2]. The first official recycling programme in Peninsular Malaysia in 1993 was initiated by Ministry of Housing and Local Government (MHLG). In December 2000, MHLG re-launched the recycling programme, and 11<sup>th</sup> November of every year is declared as the National Recycling Day. The government's commitment in solid waste management is the existence of the Solid Waste and Public Cleansing Management Act 2007 (Act 672). The main strategies proposed for implementation under the Act 672 include source separation, efficient solid waste treatment, interim treatment, and final disposal of solid waste particularly through landfills. The gradual introduction of this Act started in September 2011. The responsibility for solid waste management and public cleansing was then transferred from Local Authorities to the Federal Government. As a result, new federal institutions, including the Department of National Solid Waste Management and Solid Waste Management and Public Cleansing Corporation (SW Corp) were established. Clause 101 emphasized on Reduction, Reuse and Recycling of controlled solid waste. This Act claims to

bring solid waste management in line with global state of art practices at no additional cost to the public. It includes regulation and enforcement tools as well as imposes higher responsibilities on the stakeholders. This Act also enabled the privatization of solid waste management [3]. Under Act 672, one of the objectives of setting up SW Corp was to integrate the practice of recycling into solid waste management. Despite the various efforts from the government and stakeholders in promoting waste segregation since 1 September 2015 under Act 672, the community participation in solid waste segregation and recycling programmes is still at a very low level [4]. Hence, good governance practice is one of the crucial elements needed to attain effective policy implementation [5].

Recycling provides a sustainable means to the nation's solid waste management problems, especially with the increase in waste generation and the limited space for waste disposal [6]. Most of the solid waste generated ends up in landfills, which are gradually facing a shorter lifespan. Additionally, it is very difficult to identify any sites for new landfills, as most of the time, they are rejected by the local community, as is the case of the Bukit Payong landfill in Batu Pahat, Johor. Recycling is the easier method, and it is also convenient to implement at the household level. The practice of waste separation at source and scheduling of waste collection 2+1 have been implemented since the setting up of SW Corp. The aim of this research paper is to review the issues of sustainability of recycling programmes from the literature reviews. Then, the integration approaches of good governance practices, management control and PDCA concept are implemented into the formulation of a recycling programme to address the issues of sustainability in recycling programmes.

In general, there are seven key good governance practices, which are participation, consensus-oriented, responsiveness, effectiveness and efficiency, responsibility, transparency, and rule of law. Table 1 shows the description of good governance practices.

**TABLE 1.** Descriptions of Good Governance Practices [7]

GOOD GOVERNANCE PRACTICES	DESCRIPTION
Participation	All genders should have a voice in decision making, either directly or through legitimate intermediate institutions that represent their intentions. Such broad participation is built on freedom of association and speech, as well as capacities to participate constructively.
Consensus-oriented	It mediates differing interests to reach a broad consensus on what is in the best interest of a group and where possible, on policies and procedures.
Responsiveness	Institutions and processes try to serve all stakeholders.
Effectiveness and efficiency	Processes and institutions produce results that meet needs while making the best use of resources.
Responsibility	Decision makers in government, the private sector, and civil society organizations are accountable to the public, as well as to institutional stakeholders.
Transparency	Built on the free flow of information. Processes in institutions and information are directly accessible to those concerned with them, and enough information is provided to understand and monitor them.
Rule of law	Legal framework should be fair and enforced impartially.

A good governance concept defines that the decision is made in order to promote sustainable development, which includes environmental protection. The application of good governance is necessary to achieve sound waste management and a sustainable recycling industry [8]. Good governance practice is crucial for the effective public policy implementation of solid waste management. The process of public policy, which consists of policy formulation and implementation, requires good governance practice intervention. Effective policy implementation should involve the citizens. Hence, it is crucial to strike the right balance within the institutional and citizen perspective for effective solid waste management policy implementation [7] [9]. Henri Fayol said that the managers were called as such because they performed the managerial functions of planning, organizing, commanding, coordinating and controlling. Fayol's concept of management can be seen in Table 2.

**TABLE 2.** Functions of Management [10]

<b>Management function</b>	<b>Description</b>
Planning	The selection of objectives and goals.
Organizing	Mobilizing of man and material, through an organizational structure that clarifies task, authority, and responsibility.
Commanding	Giving of direction to employee; making sure they are working towards organizational goals where rewards and punishment are inherent.
Coordinating	The harmonizing of resources and the work of employees to be in line with organizational goals.
Controlling	Monitoring of the progress of a plan. Evaluating to ensure that all are working towards organizational goals and instituting corrective measures where necessary.

Continuous improvement process is a management process, which consists of the process of learning from what one has done and making it better in the future. Nowadays, there are some successful implementations which have used the approach of the plan-do-check-act cycle (PDCA cycle). PDCA cycle enables an organization to ensure that its processes are adequately resourced and managed, and that opportunities for improvement are determined and acted on. The four basic major steps consist of great influences in determining the success of improvement as well as the role in a continuous improvement process. Table 3 shows the PDCA cycle steps for continuous improvement.

**TABLE 3.** PDCA Cycle Steps [11]

<b>PDCA cycle</b>	<b>Description</b>
Plan	To improve your operations first by finding out the things that are going wrong and come up with ideas for solving these problems. In this phase, analyze what you intend to improve, looking for areas that hold opportunities for changes. The first step is to choose areas that offer the most return for the effort you put in; the biggest bang for your buck.
Do	Changes designed to solve the problems on a small or experimental scale first. This minimizes disruption to routine activity while testing whether the changes will work or not. Within this phase, implement the change you decided on in the plan phase.
Check	Whether the small scale or experimental changes are achieving the desired result or not. Also, continuously check nominated key activities to ensure that you know what the output is at all times, to identify any new problems when they crop up. This is a crucial step in the PDCA cycle. After you have implemented the change for a short time, you must determine how well it is working. Is it really leading to the improvement in the way you had hoped? You must decide on several measures with which you can monitor the improvement.
Act	To implement changes on a larger scale if the experiment is successful. This means making the changes a routine part of your activity. After planning a change, implementing, and then monitoring it, you must decide whether it is worth continuing that particular change. If it has consumed too much of your time, was difficult to adhere to, or even lead to no improvement, you may consider aborting the change and planning a new one. However, if the change led to a desirable improvement or outcome, you may consider expanding the trial to a different area, or slightly increasing your complexity.

Stakeholders in solid waste management can be divided into three groups which are primary, secondary, and tertiary stakeholders. Primary stakeholders refer to the people who are responsible for policy development, enforcement, and implementation. The private sectors that participate in policy implementation either formally or informally are known as secondary stakeholders. Besides that, tertiary stakeholders belong to the local community group.

## **LITERATURE REVIEW**

Many researchers have studied the failure of sustainable in recycling programmes in Malaysia. There are multiple factors contributing to the failure of recycling programmes. A study has been conducted in three districts in Negeri Sembilan on the household perceptions on waste management, knowledge and practice in recycling, and community involvement in waste management. The results show that the community's knowledge on recycling concepts and the

separation of recyclables is relatively high. However, the level of exposure to programmes and dissemination of information on recycling facilities by the Local Authority or Solid Waste Management and Public Cleansing Department is very low. Furthermore, recycling practices need to be strengthened and need to involve all parties in an integrated approach. The success of recycling programmes and solid waste management is difficult to achieve, even though the knowledge and practices of sustainable waste management among the community are very high [12].

Surau Al-Husna in Shah Alam has selected five criteria in the evaluation process for assessment of the sustainability of a community waste recycling program. These criteria were divided into the continuous publicity of recycling program, operation cost, participation rate/recyclables collection rate, dissemination of information regarding recycling, and the enthusiasm level regarding environmental concerns. The results showed that Surau had a proper management system. The management of Surau Al-Husna publicizes community waste recycling program through various activities; posting flyers or banners, sending mass SMSs to the community, talking after prayer sessions and posting on blogs and Facebook. Community members can easily drop-off recyclable items at any time. Furthermore, Surau Al-Husna also promotes several motivational programs, such as continuous education and awareness programs. The sustainability of the waste recycling program implementation at Surau Al-Husna was based on recycling practices key performance index (RP-KPI). The function of RP-KPI is to assess the performance, reliability, and verifiability of and to suggest improvements to management decisions. Through this assessment, the recycling practices are assessed on the performance, selected indicators, and currently implemented recycling practices [13].

A study of households' perspectives in recycling policy and program strategies in Muar, showed the households strongly support strategies that provide them monetary benefits such as rebate (53.66%) and incentive (67.39%); convenience such as recycling drop-off centres (77.67%), recycling bins in housing areas (86.91%), recycling collection points (84.18%), knowledge gain, such as environmental education on recycling (80.47%), and awareness campaigns (81.45%). Based on the ranking, households prefer to be offered with recycling convenience and proper facilities, besides being provided with knowledge, rather than purely receiving monetary rewards. The success of recycling strategies depends on how these approaches are carried out to pave the way for households towards sustainable recycling behaviour [14].

Households are the primary source that contribute to the municipal solid waste and thus, it is well justified that they should be targeted in waste recycling policies for the improvement of recycling rates in this nation. Aware of the significant role among the households, Malaysia has taken a series of initiatives to improve the national policies for solid waste management to foster waste separation practices among households. These waste management policies have focused on waste separation and waste recycling behaviour among households in Malaysia. This is because a well-managed and planned waste policy is one of the vital factors that will enhance waste separation and recycling behaviour among households. However, Malaysian households still resist in practicing waste separation. One of the reasons to explain this matter is the lack of awareness in households towards the significance of waste separation and recycling activities. Besides, considering the household's awareness, the authorities and waste management bodies should play their part in improving the enforcement of Act 672. Moreover, the lack and inconsistency in supporting the existing regulations could be one of the causes for low participation in recycling and waste separation behaviour among households [15].

The level of awareness of recycling activities among households is important to the sustainability of our environment. Recycling awareness among households is critical as most of the solid waste is from household consumption. Although the government has tried to adequately equip households with relevant knowledge and know-how to manage households' solid waste through the different kinds of environmental preservation programs, the knowledge on recycling among households still seems to be inadequate. Hence, they carried out to address the above-mentioned issue by examining the level of awareness of recycling activities initiated by the government. The study was conducted in the residential areas of Selangor. The findings suggest that households' level of awareness on recycling activities is at a moderate level. 66% of respondents claimed that they have knowledge on recycling activities initiated by the government and 16% claimed that they have a high level of awareness, and the balance of 18% showed a low level of awareness on government initiatives. It is expected that these findings will be beneficial to the local municipal councils to regulate a more effective and significant program on recycling campaigns so that households will have high awareness, which would then lead towards better participation in recycling [16]. Table 4 shows the overall summary of issues in the recycling programmes, as obtained through this literature review.

TABLE 4. Overall Issues in Recycling Programmes

No	Issues
1	The level of exposure to programmes and dissemination of information on recycling facilities is very low. Recycling practices need to be strengthened and involve all parties in an integrated approach.
2	The sustainability of the recycling program at Surau Al-Husna was based on five criteria of good continuous publicity program in community, effective cost operation, participation rate/recyclables collection rate, dissemination of information regarding recycling, and the enthusiasm level regarding environmental concerns. To assess the performance, reliability, and verifiability of, and to suggest improvements to management decision.
3	Households prefer to be offered with recycling convenience and proper facilities, besides being provided with knowledge, rather than purely receiving monetary rewards. The success of recycling strategies depends on how these approaches are carried out for households in recycling behaviour.
4	A well-managed and planned waste policy is one of the vital factors that will enhance waste separation and recycling behaviour among households.
5	The local municipal councils to regulate a more effective and significant program on recycling campaign so that households will have high awareness, which would result in better participation.

## METHODOLOGY

This research paper is based on the conceptual framework findings from the literature review of recycling programmes and aims to develop a recycling programme based on integration approaches of good governance practices, functions of management, and the PDCA concept. The integration approaches of good governance, functions of management and PDCA concept will be used in recycling programmes formulation.

## RECYCLING PROGRAMME FORMULATION

The overall formulation of the recycling programme is based on integration approaches of good governance practices, management functions and the PDCA concept. Figure 1 shows the recycling programme formulation.

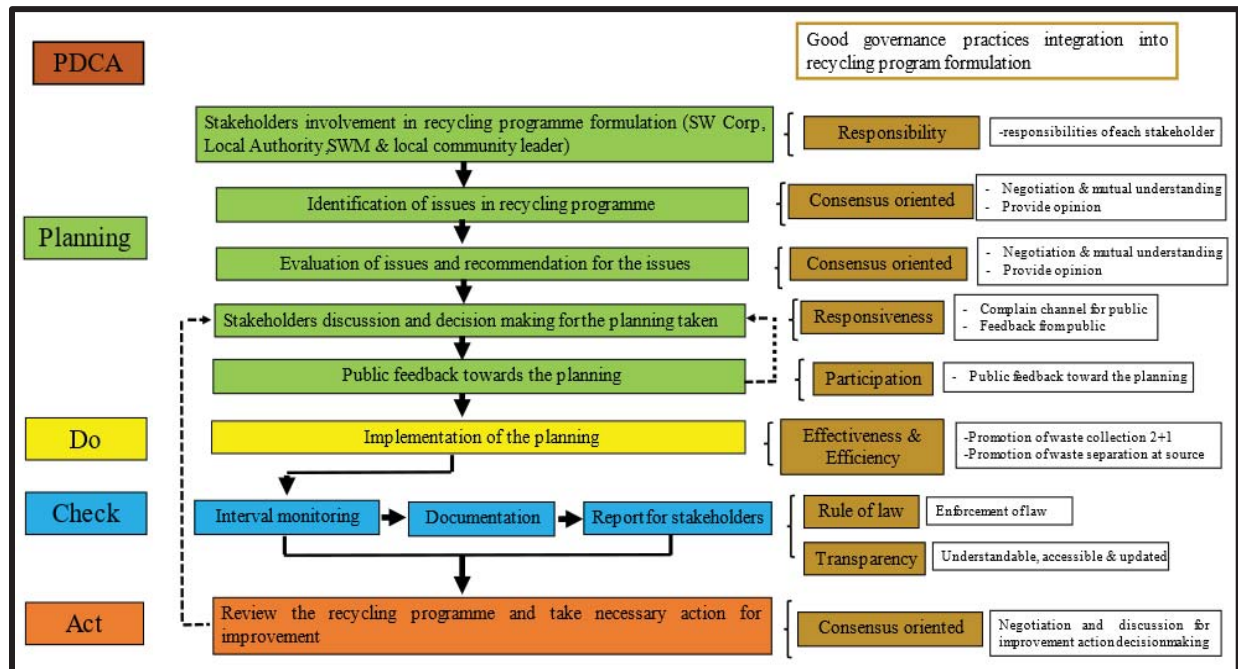


FIGURE 1. Recycling Programmes Formulation

In the planning level, all stakeholders shall clearly understand their main responsibilities. Stakeholders shall negotiate and have a mutual understanding of identifying the issues in the recycling programme by giving opinions through **brainstorming** and **5W** (Why-Why-Why-Why-Why). After the identification of the causes, stakeholders shall evaluate the causes and recommendations to address the issues. Stakeholders shall discuss and make decisions, decision making for the action to be taken in the planning level. The planning shall consider the channel of complaints and feedback from the public. The draft of planning shall be made publicity available to the public for feedback within a specific timeframe. Public participation is vital in providing a valuable feedback, and the final draft of planning shall look into public comments. The feedback from the public would enable development of a **SWOT** (Strength, Weakness, Opportunities, Threats) analysis. The stakeholders shall be able to enhance the strengths and opportunities, correct the weaknesses and pursue preventive actions for the threats in the final draft of the planning. The selection of objectives and goals shall be based on **S.M.A.R.T.** (Specific, Measurable, Achievable, Relevance, Timeframe). It means the recycling programmer's objective shall be specific and clearly understandable. Data collection is measurable for its performance. The setting objective must be achievable and relevant to the local community. Lastly, the recycling programme must have a timeframe. Meanwhile, **5W1H** (What, When, Where, Why, Who & How) is a useful method to analyze all aspects in the recycling programme's planning. Stakeholders could take into consideration the recyclable items that need to be collected, when is the best time to conduct the recycling programme, where is the strategic location area, why conduct the recycling programme, who are the target groups, and how to implement the recycling programme. A steering committee shall be set up for the recycling programme, and it shall include all the stakeholders. The recycling programme leader shall be selected from the local community leaders. All the activities in the recycling programme planning shall be put into a **Gantt Chart** that illustrates the task, scheduling, and timeline.

In the implementation level, the leader is responsible in organizing the resources of man and material based on the Gantt Chart. The leader shall give the commands to the working committee to implement the recycling programme objectives in accordance with the scheduling. The leader shall coordinate the tasks and resources for a smooth implementation of the recycling programme, and directly manage the operation costs of the recycling programme. Good commanding and coordinating are vital to ensure the effectiveness and efficiency in using the minimum resources to have the maximum output in the dissemination of information in promoting the waste collection 2+1 and waste separation at source concepts to the local community. Publicity of recycling helps to increase the public's awareness and exposure to the advantages of recycling, which is vital for public participation in recycling programmes.

The check level is vital in controlling the policy implementation. Monitoring is the best controlling method. Monitoring of the progress of a plan is done to ensure all aspects are working towards the organizational goals. Interval monitoring means scheduling activities to monitor the progress of the recycling programme. Monitoring could be in observation, survey, auditing, documentation review, and report review. All the monitoring activities in the recycling programme shall be summarized into a report and distributed to all stakeholders to evaluate their achievements. The report shall be understandable, accessible, and up to date. This process is important as stakeholders are able to know their efforts and performance in the recycling programme from time to time. It also motivates the public to actively participate in the recycling programme. Rewards are one of the motivation factors. Rewarding for the outstanding performance of a community is necessary.

In the action level, all the stakeholders in the steering committee shall review the overall performance of the recycling programme. The stakeholders shall discuss the performance through **SWOT** analysis. The discussion and decision making among the stakeholders shall be targeted towards weaknesses in the recycling programme. The weaknesses shall be analyzed for further improvements. The issues shall go back to the planning level for improvement planning discussion and decision making. This process action is the PDCA concept whereby the continuous improvement cycle enhancement is conducted.

## CONCLUSION

In general, good governance practices are crucial for effective public policy implementation [7]. In addition, recycling practices need to be strengthened and need to involve all parties in an integration approach [12]. Hence, the integration approaches in functions of management, good governance practices and PDCA concept need the involvement of all stakeholders in the recycling programme's formulation. A well-managed and planned waste policy is one of the vital factors that will enhance waste separation and recycling behaviour among households [3]. Additionally, monitoring is vital for policy implementation. The assessment of performance, reliability, and verifiability is needed to suggest improvements to management decisions in recycling programmes [13]. The

continuous improvement cycle is vital to keep the recycling programme on a path to progress, with the aim of achieving a better recycling rate. The recycling programme formulation is a framework suggestion as a guideline for the environmental programme in the local community.

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