TURNING TRASH INTO TREASURE

RECYCLING BANK PROGRAMME IN TWO SCHOOLS IN BALIK PULAU, PENANG

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The logo depicts a butterfly on a flower with three petals. The flower petals actually represent the letters BKS which are the initial first letters in Bank Kitar Semula (Recycling Bank). A butterfly was chosen as the emblem of representation due to its very short life span. Within this short life span, a butterfly will have to survive by feeding on the flower’s nectar as much as it can to gain energy and reproduce to ensure its species' survival.

In this context, we will secure and recover as many resources as we can and bank them in the Recycling Bank. By practicing this, we are directly ensuring that the environment will be continuously preserved during our ‘short life span’ while gaining back some incentives.

As people are the building blocks of societies or communities, social institutions such as schools must provide for an education that meets their needs. This means being very aware of the interrelated dependence between people and their surroundings. Without a conducive environment, communities and people will face difficulties in their sustainability. As such, the Recycling Bank Programme in schools provides a responsible approach to the environment and empowers the next generation to create and maintain a sustainable way of life.
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## Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
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<tbody>
<tr>
<td>3R</td>
<td>Reduce, Reuse, Recycle</td>
</tr>
<tr>
<td>ABS</td>
<td>Acrylonitrile Butadiene Styrene</td>
</tr>
<tr>
<td>DANIDA</td>
<td>Danish International Development Assistance</td>
</tr>
<tr>
<td>HDPE</td>
<td>High-density Polythylene</td>
</tr>
<tr>
<td>Kg</td>
<td>Kilogram</td>
</tr>
<tr>
<td>LDPE</td>
<td>Low-density Polyethylene</td>
</tr>
<tr>
<td>MPPP</td>
<td>Majlis Perbandaran Pulau Pinang (Pulau Pinang Municipal Council)</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organisation</td>
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<tr>
<td>PET bottle</td>
<td>Polyethylene terephthalate bottle</td>
</tr>
<tr>
<td>PEWOG</td>
<td>Penang Environment Working Group</td>
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<tr>
<td>PTA</td>
<td>Parent Teacher Association</td>
</tr>
<tr>
<td>SERI</td>
<td>Socio-economic &amp; Environmental Research Institute</td>
</tr>
<tr>
<td>SK</td>
<td>Sekolah Kebangsaan (Primary School)</td>
</tr>
<tr>
<td>SMK</td>
<td>Sekolah Menengah Kebangsaan (Secondary School)</td>
</tr>
<tr>
<td>SWM</td>
<td>Solid Waste Management</td>
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</tbody>
</table>
Ensuring environmental sustainability has increasingly become a concern amongst all countries in the world, as unsustainable development has led to severe environmental problems, such as pollution, global warming and diminishing resources.

Malaysia has done a commendable job in pursuing sustainable economic development, but the task is tremendous and strengthened efforts are still needed. As one of Malaysia’s fastest developing states, Penang has had to deal with an increasing amount of solid waste, but with the limited space on the island and its two landfills reaching full capacity, the Majlis Perbandaran Pulau Pinang (MPPP) has had no choice but to be committed to the 3R, i.e. Reduce, Reuse, Recycle.

This publication details one attempt of MPPP to raise awareness on the need to recycle resources already in the schools, by setting up the Penang Recycling Bank Programme, which encourages school children to recycle by providing them with a monetary incentive. The implementation of this project is simple and yet effective, and could be duplicated by any interested schools. The project is part of the Malaysian Government-DANIDA Community Initiatives programme. Along with other initiatives in this Programme, the project aims to increase public participation and awareness in solid waste management.

It is our hope that other Local Authorities, Non-governmental Organisation (NGOs), schools and individuals all over the country may use the experiences learnt from this project to work together and incorporate community involvement into the existing solid waste management system.

I would like to extend our deepest thanks and appreciations to everyone who has supported this project, especially the Danish International Development Assistance (DANIDA), Ministry of Housing and Local Government (MHLG), Social Economy and Environmental Research Institute (SERI), the recyclers, the participating schools, children and their parents. Without their commitments, enthusiasms and efforts, this project would not have been as successful.

Sr. Tan Cheng Chui
Yang Dipertua
Majlis Perbandaran Pulau Pinang
Message

Public participation and awareness are instrumental for improving the way we deal with our waste today. Waste reduction and recycling can only be successful if the authorities, the private sector and the public work together in unity for the better of the society.

In 2005, the Government of Denmark through the Danish International Development Assistance (DANIDA) agreed with the Government of Malaysia to establish a fund to support Local Authorities, who were committed to carry out such initiatives to increase public participation and awareness in solid waste management on the local level.

The fund was subsequently established in 2006, and the local authorities were requested to submit proposals for funding. The response from the Local Authorities was overwhelming and very encouraging. It was not easy for the Ministry and DANIDA to select the 10 initiatives, among the large number of interesting and promising ideas, which could be financed within the budgetary limits. The strong response is a clear demonstration of the commitment and enthusiasm towards saving resources and protecting the environment that exists in many Local Authorities and communities.

The initiatives selected include a very broad range of activities involving many parts of the society, including residents, school children, hotels, restaurants, hawkers, tourists to mention a few. And the ranges of subjects are similarly broad including waste reduction, recycling, home composting, bulky waste management and cleanliness.

The present booklet concerns on the successful community initiatives – the School Recycling Bank Initiative in Penang.

DATO’ DR NADZRI BIN YAHAYA
Director General
Department of National Solid Waste Management
Ministry of Housing and Local Government
Preface

By utilising resources that would otherwise be discarded, and consequently enabling a reduction in waste streams, recycling is a credible substitute to conventional waste management practices. Application of the concept translates into environmental and societal benefits as well as financial savings from waste disposal costs and the potential for profits for those engaged in the handling of waste. However, without public acceptance and a willingness to participate in sorting the waste, recycling cannot be applied. This means that finding effective and sustainable ways through which public participation in recycling can be facilitated is pivotal for the alleviation of the problems related to solid waste.

The National Solid Waste Policy of Malaysia emphasises the will to achieve an efficient, cost-effective and sustainable solid waste management (SWM) system to safeguard public health and the environment and to enhance the quality of life in Malaysia by 2020. This folder presents one attempt to achieve this, which has shown remarkable results - the Penang Recycling Bank Programme. The programme has been run as a pilot project in schools in Penang for over a year to date. In short, it is a unique and simple incentive system of recycling based on the idea of banking in recyclable waste at a cash account.

The Recycling Bank project in Penang is a part of the Community Initiatives Programme, initiated by the Department of National Solid Waste Management and the Danish International Development Assistance (DANIDA). The programme currently supports solid waste related initiatives in 10 Local Authorities around Peninsular Malaysia, which are targeting public participation as an inherent element of an improved SWM system. This folder document and propagation of the project in Penang can provide information on how to approach, plan and implement similar Recycling Bank Programmes in other schools. The motive behind the sharing experience on such good practices is not only to facilitate replication of the project, but also to inspire new ideas and practices, thereby creating a focal point to a brighter future for SWM in Malaysia.
Background

Penang is one of the examples of the states in Malaysia which has undergone phases of successful economic development. It consistently records high economic growth rates while its poverty and unemployment rates are amongst the lowest in Malaysia. With the third largest state economy and generally being regarded as one of the most globalised and cosmopolitan states in the country, the future prospects for the citizens of Penang are looking bright. However, this upward spiralling trend has been accompanied by a proportional increase in population density, consumerism, and unsurprisingly, in waste generation. Responsibility for the waste management and operational services on Penang Island lies on the Majlis Perbandaran Pulau Pinang (MPPP). MPPP data showed that the per capita waste generation in Penang is now approaching that of developed nations.

The majority of the waste generated is disposed off in the state’s 2 approved operating landfills. The MPPP thus faces the daunting task of handling thousands of tonnes of waste being discarded daily while the landfills are approaching their maximum capacities. Any expansion is particularly costly and the problems are exacerbated by the difficulty of locating suitable locations due to the scarcity of land in Penang. In addition to these financial and administrative challenges faced by the MPPP, greenhouse gas emissions, air pollution, water pollution and depleting natural resources – to name a few – will continue to take their toll on the state’s atmosphere, ecosystems and eventually, the quality of life of its citizens if alternative methods are not implemented. Consequently, the MPPP is committed to waste minimisation, involving reduction at the source, composting and recycling.

Penang presently records one of the highest recycling rates in Malaysia due to this proactive stance taken by the MPPP, in addition to which there is an independent and reputable recycling community with strong affiliations to the private sectors. Some of the more important advocates of recycling initiatives are local schools. Their activities range from encouraging students to bring recyclable materials from home to selling office papers to recycling contractors. A significant number has already been practising the full range of 3R activities to reduce, reuse and recycle resources, which include saving water and electricity, composting canteen waste and greening their school environment with trees and landscaping. However, these efforts have never been properly documented or formalised and as such, some schools may appear to have a more comprehensive and efficient system than the others.
SELECTED SCHOOLS:

• Sekolah Menengah Kebangsaan Seri Balik Pulau, a secondary school with 1,400 students from Form 1 to 6.
• Sekolah Kebangsaan Balik Pulau, a primary school with 567 students from Standard 1 to 6.

PROJECT OBJECTIVES ARE AS FOLLOWS:

• Encourage students to practise and understand recycling
• Keep the school and its surroundings clean
• Promote waste separation at source
• Turn waste into resources
• Reduce waste to landfill
• Preserve the environment
• Generate income
Imagine a child in the early morning hours busily working in the family’s living room; not to catch up on any delayed homework but instead to carefully separate trash into piles: old newspapers, beverage cans, empty bottles, plastic containers, etc. before going to school. In the past year, scenarios like these have taken place in the homes of students of Sekolah Menengah Kebangsaan (SMK) Seri Balik Pulau and Sekolah Kebangsaan (SK) Balik Pulau - and with great frequencies. The reason is found in the incentive system, the simplicity and very few basic requirements of the Recycling Bank Programme.

The Recycling Bank uses the same principle as a real-life bank by banking in at a cash account. However, here you do not bank in cash, but recyclables. The students will open an account in the bank and receive a recycling bank book. This contains identification of the student as well as slots to be filled in when banking in, including the weight of recyclables and the subsequent amount of points to be credited.

When students bank in recyclables, the materials are received and handled by fellow students, who are trained to operate the bank. The materials will be sorted, weighed and the data translated into points in the students’ recycling bank books as well as in a computer spreadsheet. The latter is established to enable double checking of the student accounts as stated in the students’ bank books. In addition, a main record book will be kept to record the data as a backup for the computer spreadsheet. The recyclables are stored in containers or jumbo bags until collected by the recycling agent. Every month, the Recycling Bank holds a payment day, where the points accumulated are translated into cash and distributed. The more recyclables being banked in, the more money the students will get – it’s as simple as that.
• Recycling Bank Book for Recording Transactions for Schools Students
The bank opening hours in SMK Seri Balik Pulau is every Wednesday and Friday from 3.00 pm - 6.00 pm.

A pool of officers is needed to operate the Recycling Bank. As it requires only simple operational processes, these can be the students themselves, when trained to function as bank officers to operate the bank. If the school has established a Student Environmental Club, its members may be selected for training as bank officers.
Students trained as bank officers

FOUR BANK OFFICERS ARE ON DUTY DURING OPENING HOURS, WHERE THEY WILL PERFORM THE TASKS OF:

• Sorting and measuring the weight of the recyclables brought in
• Placing the recyclables in jumbo bags or containers, and
• Recording the type and weight of recyclables, and the corresponding points into the students recycling bank books, the computer spread sheet and the main record book. The bank officers in the schools in Penang are further equipped with formal bank uniforms in order to highlight the importance of their role, which they take great pride in wearing.

A small voluntary group of teachers also needs to be attached to the Recycling Bank as bank managers. They will share the overall responsibility and will supervise the bank officers, perform trouble-shooting and essentially function as the prime implementers of the programme on the ground. Such teachers may also be referred to as Environmental Champions.
THEIR SPECIFIC TASKS INCLUDE:

- Arranging duty rosters for bank officers
- Checking and maintaining accounts of all transactions, and
- Liaising with a recycling contractor for the collection and sales of the recyclables.

Upon every collection, the recycling contractor will remit payment to the bank managers for the recyclables in accordance with market prices. 5% from the total sale of recyclables are retained by the Recycling Bank for management and administration as well as for the maintenance of the bank. The balance will be given back to the student. Prior to the commencement it has to be agreed with the recycling agent(s) on what types of materials that are accepted in the Recycling Bank, as well as the development of a collection schedule. Much emphasis should further be put into preparing a systematic arrangement/categorisation of recyclable items at the centre to ensure ease of sorting and carriage by the recycling contractor.

• ESH Resources Management, the appointed recycling contractor collecting the recyclables
THE TYPES OF ACCEPTED RECYCLABLE MATERIALS IN THE RECYCLING BANK ARE:

- Paper – all kinds of paper
- Cardboard – all kinds of cardboards
- Polyethylene terephthalate (PET) bottles
  – mainly mineral/drinking water bottles
- Other plastics – other polymer based materials, e.g.
  Low-density Polyethylene (LDPE), High-density Polyethylene (HDPE), Acrylonitrile Butadiene Styrene (ABS), etc.
- Aluminium cans – all kinds of aluminium based cans
- Other metals – all kinds of ferrous and non ferrous metals,
  e.g. metal bars, copper, etc.

To ensure effective mobilisation, detailed explanations to teachers and students on how to establish and operate the Recycling Bank must be given. Pamphlets with clear instructions on how to separate the waste and the types of items accepted in the Recycling Bank must be prepared and distributed. In the initial stages of the project, the bank officers were not familiar with the categorisation of the recyclables. However by the second training session, the bank officers were well aware of the different categories of recyclables and proper documentation procedures. Continuous capacity building programmes for the bank officers must therefore be performed.
Building a Broader Environmental Understanding

In order to create a holistic and meaningful understanding of the waste and environmental framework in which the Recycling Bank is operating, presentations and demonstrations on solid waste management and Reduce, Reuse, Recycle (3R) activities in a broader perspective may also be given. For Penang, such presentations included composting, household hazardous waste management and field trips to the sanitary landfill, resource recovery centre, etc. The field trips presented the students and teachers with an on-site view on how waste is processed and reminds them that all waste generated does end up somewhere.

Furthermore, a Recycling Bank Carnival was organised by the schools in conjunction with the schools’ Co-Curriculum Day. Various competitions were carried out including making water rockets, drawing and colouring, floral arrangements and making musical instruments out of the recyclable items. The carnival has provided a fun experience for all the participants including the parents who were invited to observe with their own eyes what their children had been so eagerly engaged in for the past months. The many 3R talks and demonstrations have stimulated interest and participation in the Recycling Bank Programme which in turn enhanced interest and embedment of the 3R culture among the teachers and students. Essentially, the message to be delivered is that waste is an issue that involves everyone and the choices we make in our daily lives will influence our environment and subsequently our health.

• Talks and demonstrations on 3R activities given to students
The Recycling Bank Programme and additional 3R talks and demonstrations present the students with an experience far different from a normal teaching setting. Through such activities, the values of recycling, waste reduction and natural resource conservation are demonstrated by engaging the students in fun, hands-on and real-life experiences.

For example, when participating in the process of paper-making, the students are introduced to a miniaturised version of actual recycling in industrial manufacturing. The prospect of supplementing the students’ pocket money and at the same time, doing something beneficial for the environment provides an ever increasing motivation for the students to participate in the Recycling Bank Programme. Thus, the schools have reported that the students have showed great initiative and joy in taking part and began to display concern for and an understanding of waste. They are now able to offer their peers an articulate account on many different types of paper products, how they are recycled and how much they contribute to the total waste stream. As the students collaborate with the bank managers on the day–to-day running and trouble-shooting of the bank, a miniaturised real-life scenario for future business management is further created and the students are introduced to entrepreneurial areas such as accounting and bookkeeping.
Project Results

Waste surveys were conducted before and after the project implementation to measure (if any) changes in waste practices had taken place at the schools. Waste was collected from all waste baskets on the school compound to measure the amounts and composition of the waste disposed of.

<table>
<thead>
<tr>
<th>Item</th>
<th>Before Project (kg)</th>
<th>After Project (kg)</th>
<th>Difference (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper &amp; Paper</td>
<td>0.95</td>
<td>0.28</td>
<td>0.67</td>
</tr>
<tr>
<td>Cardboard</td>
<td>0.10</td>
<td>0.04</td>
<td>0.06</td>
</tr>
<tr>
<td>Aluminium can</td>
<td>0.14</td>
<td>0.06</td>
<td>0.08</td>
</tr>
<tr>
<td>Plastic</td>
<td>0.17</td>
<td>0.11</td>
<td>0.06</td>
</tr>
<tr>
<td>PET bottle</td>
<td>0.33</td>
<td>0.14</td>
<td>0.19</td>
</tr>
<tr>
<td>Metal</td>
<td>0.05</td>
<td>0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>Food waste</td>
<td>0.36</td>
<td>0.20</td>
<td>0.16</td>
</tr>
<tr>
<td>Garden waste</td>
<td>0.26</td>
<td>0.10</td>
<td>0.16</td>
</tr>
</tbody>
</table>

The figures show a significant reduction in recyclables being disposed off after the project implementation in the secondary school although some recyclables were still found left in the waste baskets. The school has both morning and afternoon sessions and a population of 1,400, which makes it more difficult to achieve full compliance among all the students and staff. However, whatever recyclables were discarded subsequently were salvaged by the school cleaners for recycling, thus ultimately all waste was recycled (food waste excluded).

<table>
<thead>
<tr>
<th>Item</th>
<th>Before Project (kg)</th>
<th>After Project (kg)</th>
<th>Difference (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper</td>
<td>2.14</td>
<td>-</td>
<td>2.14</td>
</tr>
<tr>
<td>Cardboard</td>
<td>0.31</td>
<td>-</td>
<td>0.31</td>
</tr>
<tr>
<td>Aluminium can</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Plastic</td>
<td>0.39</td>
<td>-</td>
<td>0.39</td>
</tr>
<tr>
<td>PET bottle</td>
<td>0.28</td>
<td>-</td>
<td>0.28</td>
</tr>
<tr>
<td>Metal</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Food waste</td>
<td>6.92</td>
<td>6.06</td>
<td>0.86</td>
</tr>
<tr>
<td>Garden waste</td>
<td>0.04</td>
<td>0.11</td>
<td>(0.07)</td>
</tr>
</tbody>
</table>

Table 2 shows that the primary school students have put the concept of waste separation and recycling fully into practice. Prior to project implementation, newspapers, cardboards, PET bottles, metals as well as non-recyclable waste (e.g. garden waste) were all discarded into the baskets across the school compound. Upon implementation, only food waste was discarded.
Compared to the secondary school, the primary school has a smaller population (567 students and 60 staff) and it is only a single session school. This was most likely the decisive factor in achieving the larger behavioural change among the students. Additionally, the younger students seem to show better acceptance to the concept of recycling and the 3R culture than the older students. The total amount of collected recyclables and sales from the two schools are shown in the following tables.

<table>
<thead>
<tr>
<th>Item</th>
<th>Weight (kg)</th>
<th>Item</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>7,100</td>
<td>Paper</td>
<td>3,980</td>
</tr>
<tr>
<td>Cardboard</td>
<td>1,965</td>
<td>Cardboard</td>
<td>1,710</td>
</tr>
<tr>
<td>Plastic</td>
<td>53</td>
<td>Plastic bottle</td>
<td>94</td>
</tr>
<tr>
<td>Other plastic</td>
<td>248</td>
<td>Other plastic</td>
<td>128</td>
</tr>
<tr>
<td>Aluminium</td>
<td>64</td>
<td>Aluminium</td>
<td>73</td>
</tr>
<tr>
<td>Metal</td>
<td>249</td>
<td>Metal</td>
<td>157</td>
</tr>
<tr>
<td><strong>Total sales</strong></td>
<td><strong>9,679</strong></td>
<td><strong>Total sales</strong></td>
<td><strong>6,142</strong></td>
</tr>
</tbody>
</table>

More than 2,000 students and teachers have participated in the project and the results has displayed the incontestable success of the project. Through the Recycling Bank Programme and the appliance of the 3R concept, a significant change in attitude and behaviour was achieved among the students. Both schools have considerably improved their skills in recycling and waste minimising practices. This was demonstrated by an almost complete reduction in recyclable waste disposed in the waste baskets around the school. The objectives for the project, such as turning waste into resources, reducing waste disposed onto landfills, generating income, keeping the school surroundings cleaner and subsequently taking measures to preserve the environment, have hereby been fully met.

The project is therefore a testament, that mindset can be changed through education and practice – both amongst students and their families. It was thus reported that recycling had become a joint adventure between the parents and students in the households, where the students became “little teachers” and shared their classroom experiences with family members and other community members. A father of three students expressed: “With the introduction of the Recycling Bank, I now have to separate our newspapers in three equal portions so as to be fair to all my children”. Through the students, the message of recycling and environmental awareness was brought to the doorsteps of community households, thereby introducing a broader segment to the vast potentials in waste recycling and possibly enabling a community-wide sustainable practice to reduce waste.

The project has thus shown its ability to provide a win-win situation for all parties involved: the students are able to accumulate recycling points and convert them into cash, the schools have benefited from cleaner surroundings, the financial and administrative burden on the municipality is alleviated and a stepping stone on the path to conserving the environment and quality of life is created. From here it follows, that instead of conducting recycling activities on an ad hoc basis as is widely being practised in schools nowadays, the institutionalisation of Recycling Programmes and associated 3R activities will raise awareness and participation in recycling and waste minimisation activities on an on-going basis.
The basic requirement for any successful project is a good and solid network of stakeholders. For the project in Penang, a well functioning network between the city council (MPPP), the private sector and the schools was indeed in place, with each player fulfilling their complementary roles proficiently. The MPPP acted as the core initiating and supporting agency with the Socio-economic & Environmental Research Institute (SERI) as the appointed consultant for the project implementation. The support from the council was essential to the project’s success as it has set the policy directions and identified and coordinated the various stakeholders.

A project taskforce was established, consisting of representatives of all stakeholders that included the consultant (SERI), the District Education Department, the Parent and Teacher Association (PTA), ESH Resources Management as the waste recycling contractor and the non-governmental organisation (NGO), Penang Environment Working Group (PEWOG). PEWOG was responsible for organising a number of talks and demonstrations to disseminate knowledge on 3R activities and recycling practices among students and teachers in the schools. The inputs from all the stakeholders in the project taskforce provided a firm basis for decision making, planning and the continuous coordination of the project. A very important reason for the successful implementation of the programme was the partial “bottom-up” approach. The council listened to recommendations and concerns from the various stakeholders, acted on those and adjusted plans to meet the needs and demands. This contributed to the creation of ownership, trust and motivation among the stakeholders in the project.

A key group that has contributed greatly to the project results was the engagement of the Environmental Champions in the schools. They have voluntarily enrolled to spearhead the programme and in close partnership with SERI, actualised the implementation of the Recycling Bank. They were also members of the PTA, thereby cooperating as an entity on the project. Without their engagement and strong motivation, the implementation of the Recycling Bank Programme would have faced obstacles. When asked about the reasons for their enthusiasm, one teacher replied: “This is our way and a very rewarding way of giving something back to the community as well as protecting the environment”. The involvement of a competent and committed consultant was also essential to the project’s success. A staff from SERI was appointed as the project leader who was equipped with multiple roles, including as technical advisor, in-charge in the communication linkage between the MPPP, as the taskforce and the schools and general ground-coordinator of the project. His knowledge of the local community and his experience from previous environmental projects allowed for a quick adjustment of any problems and the smooth cooperation between all parties. He also functioned as a documenter of the project activities through the production of reports to the MPPP and DANIDA. This greatly eased the work of the MPPP and allowed it to focus on the overall coordination of the project.

Although some agents have played decisive role in the project, the involvement and corporation of all parties from the outset of the project, was essential in order to make the project successful. Awareness campaigns, meetings (formal as well as informal), site visits, etc. were all important tools to mobilise the various stakeholders and to ensure the contribution of their ideas and inputs to the project.
For simplicity purposes, the involved parties may be divided into two groups: the MPPP as the organisation body and secondly, the Taskforce consisting of the project leaders from SERI, PEWOG, team of Environmental Champions/Parent Teacher Association and bank officers. The following is an overview of their responsibilities as well as a flowchart on the scope of work:

**MPPP**
- Provides policy directions
- Constitutes an internal Inter-departmental Committee
- Provides infrastructure
- Provides financial support
- Establishes the implementation team which supports the stakeholders group
- Reviews action strategies and proposals
- Integrates stakeholders planning decisions with formal planning processes

**TASK FORCE**
(Project leaders from SERI, PEWOG, Environmental Champions/Parent Teacher Association and bank officers)
- Implements activities of the recycling bank
- Calls for regular meetings
- Reports to and liaises with the City Council (MPPP) and DANIDA
- Consults with the school community and establishes planning priorities
- Reviews action plans and integrates plans
- Provides the technical support and advice to other schools
- Provides problem-solving or trouble-shooting
- Monitors impact and evaluates progress and changing conditions
- Analyses problems and opportunities
- Proposes actions, options and targets for business expansion
- Prepares draft action plans for future development
- Develops outreach programmes
- Seek out new sponsors and business partners
- Analyses outcomes and documents of all project activities

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**Flowchart on the scope of work:**

1. Identify target location for programme
2. Identify stakeholders to be involved
3. Hold explanatory meeting to key personnel
4. Hold explanatory meeting, programme introduction and identifying modus operandi to be employed
5. Execute pre data collection
6. Execute program and intermediary data
7. Post data collection and analysis
8. Achievement analysis and discussion with stakeholders
9. Make changes if necessary
10. Sustaining programme
Project Contribution to the SWM in Malaysia

The project succeeded in mobilising its target groups to engage in recycling and promoting a sense of environmental awareness. It confirms the huge potential of public participation in unlocking the vast potentials for waste reduction through recycling. The success of the project can as such be a cornerstone in the facilitation of a more environmental conscious culture in Malaysia. In overview, the project has created the following environmental, economical and social benefits to a greater or lesser extent:

ENVIRONMENTAL BENEFITS (NATIONAL):
Through the separation of recyclable materials, natural resources have been conserved, methane gas from landfills has been reduced, energy has been saved, air and water pollution has been reduced and landfill capacity saved.

CAPACITY BUILDING BENEFITS:
The project has built capacity within the municipal bodies, the relevant stakeholders and the recycling network in Penang to design and implement sustainable recycling programmes in the future. Through the Recycling Bank Programme and the 3R outreach campaigns, the student’s and the community’s awareness and understanding of recycling and waste minimisation has increased.

ECONOMIC BENEFITS:
Costs for waste collection and landfilling have been reduced. The project has also contributed to the students’ financial income.

SOCIAL BENEFITS:
Although difficult to measure, the project has had a positive social effect on the broader community. The involvement and cooperation of the many groups and stakeholders such as the MPPP, students, teachers, parents, community based organisations and community representatives have assisted in building stronger ties and a more cohesive community. In both schools, teachers and students have created tighter bonds with each other and induced a positive social environment.
The Way Forward

Practising recycling is not only a question of knowledge but also of values and moral position. In order for a project that relies on public participation to be sustainable, the value-system of its participants must be taken into account. Therefore, the commitment to recycling and waste reduction on the part of the organisers - Local Authorities, Federal Government with the new Department of National Solid Waste Management – must be strong so that necessary infrastructures and appropriate mechanisms can be provided. As the Recycling Bank Programme has shown its effects in achieving behavioural change from its participants, it may also prove to be a resourceful alternative to traditional recycling centres. If the Recycling Bank is expanded to encompass more types of materials, it has the potential to function as a showcase for proper solid waste management.

Providing financial assistance for the subsequent disposal of waste, e.g. batteries – as an example of commodity expansion - will thus, help to reduce pollution by toxic chemicals from improper disposal of hazardous materials as such financial aid would as such be required, but the environmental benefits may easily outweigh these financial burdens. In order to sustain or replicate such a promising programme, it is necessary to identify the factors that determine its success as well as the necessary improvements needed to achieve its sustainability.

Sustainability

- Continuous publicity should be carried out to remind the school population as well as the surrounding communities of the Recycling Bank activities.

- A fraction of the income from sales of recyclables must be deducted (5 - 10%) for maintenance and operational expenses. An option is to seek sponsors and business partners that can provide alternative financing for the running of the Recycling Bank. The names and logos of the sponsors can be put onto the recycling uniforms and/or the Recycling Bank cabin.

- The schools should use every opportunity to operate the Recycling Bank during major school events, especially during those that involve parents and other outsiders. The Recycling Bank Carnival held on 27 October 2007 showed the importance of carrying out such events, especially to the parents of the students, so that they are constantly reminded of the activities their children are involved in. If these activities are not taken seriously at home, the chances of a child losing interest and dedication are significantly increased.
Continuous training must be conducted in order to ensure that the knowledge and experience of the bank officers are maintained at a high standard and can be passed on to the next tier of students, who will be managing future programmes. These will also provide students with an invaluable experience to sharpen their business acumen for their future careers.

It is apparent that a money-oriented Recycling Bank will create financial motivations to the students to take part. In this respect, it is important that the students do not lose sight of the environmental aspects, if the efforts to instil a pro-environmental value system takes root. The rewards to the students could therefore also be given in other ways than cash money, such as coupons to buy stationery or exercise books in the school, pencil boxes or crayons or products made by recyclable materials, etc. Naturally, the economic incentive cannot be ignored, but it should be given attention to stress the importance of environmental issues while down playing the money issue.

The various environmental awards offered by the Department of Environment and the Penang Chief Minister's Green Award would be additional incentives for the selected schools to maintain and persevere in their efforts to continue the Recycling Bank Programme.

**Replication**

- The project can be replicated in any school, depending on the size and area of the school; schools with smaller areas can still undertake the project without the construction of the Recycling Bank cabin. Ordinary classrooms may be used as long as they are in a secured area. There should also be enough space for holding areas before the recyclable items are sold to the recycling agent.

- “Train the trainer” sessions should be conducted to teach bank officers on the operations of the Recycling Bank. The trained bank officers in the two schools in Penang may be called upon to share their experiences, disseminate information to other schools as well as provide a durable guidance until new participating schools can operate independently.

- The relevant agencies such as the Department of National SWM and the Department of Education can support in publishing pamphlets and materials for the use of Recycling Banks.

- The local authorities can aid in identifying recycling agents that can cooperate and buy all the types of materials that are collected.
BANK KITAR SEMULA

PENGENALAN KEPADA BANK KITAR SEMULA

Logo ini memaparkan seekor rama-rama di atas kelopak bunga.

Tubuh rama-rama melambangkan manusia sejagat
Sayap berwarna BIRU melambangkan langit dan air
Sayap berwarna HIJAU melambangkan bumi
Tiga kelopak bunga berwarna MERAH melambangkan Bank Kitar Semula

Rama-rama telah dipilih sebagai lambang bank kerana rama-rama mempunyai jangka hayat yang pendek. Dalam masa jangka hayat yang pendeknya, rama-rama perlu hidup dengan menyedut manisan madu daripada bunga sebanyak mungkin untuk mendapat tenaga dan membiak serta memastikan bahawa spesisnya terus hidup kekal selama-lamanya.

Dalam kontek ini, kita akan mengumpul sebanyak mungkin hasil-hasil kitar semula dan memasukkannya ke dalam bank kitar semula. Dengan mengamalkan amalan ini, kita secara langsung telah memastikan bahawa alam persekitaran kita terpelihara secara berterusan disamping menikmati sedikit insentif dalam jangka hayat kita yang pendek’ ini.

OBJEKTIF

Menggalakkan para pelajar memahami dan mengamalkan kitar semula
1. Memelihara persekitaran sekolah supaya lebih bersih
   1. Menggalakkan pengasingan sampah di punca
   4. Menjadikan sampah kepada sumber
   3. Mengurangkan sampah ke tapak pelupusan
   4. Memelihara alam persekitaran
Recycling Bank Logo

The logo depicts a butterfly on a flower with three petals. The flower petals actually represent the letters BKS which are the initial first letters in Bank Kitar Semula (Recycling Bank). A butterfly was chosen as the emblem of representation due to its very short life span. Within this short life span, a butterfly will have to survive by feeding on the flower’s nectar as much as it can to gain energy and reproduce to ensure its species’ survival.

In this context, we will secure and recover as many resources as we can and bank them in the Recycling Bank. By practicing this, we are directly ensuring that the environment will be continuously preserved during our ‘short life span’ while gaining back some incentives.

As people are the building blocks of societies or communities, social institutions such as schools must provide for an education that meets their needs. This means being very aware of the interrelated dependence between people and their surroundings. Without a conducive environment, communities and people will face difficulties in their sustainability. As such, the Recycling Bank Programme in schools provides a responsible approach to the environment and empowers the next generation to create and maintain a sustainable way of life.
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