CHAPTER 1

AN OVERVIEW OF THESIS

1.1. My Vision for the Research

In the last two decades, Malaysia has seen rapid development and prosperity, thanks to a strong economy. We are much clearer in this day and age of the extent to which environmental conditions are being sacrificed for economic prosperity. There is a misconception in Malaysia today, that development is linked only to economic progress. This development has grown rapidly since independence, which in turn is causing rapid environmental degradation. This issue is in clearer focus and a review of relevant documents reveal that most of these efforts are looking at the end of pipe solutions, i.e. acting after the damage has been done. Existing responses provide only temporary solutions, which over time make things worse.

For example, a number of water-catchment areas in Peninsular Malaysia has already been adversely affected by logging and other human activities (Gurmit, 1998). High silt loads arising from erosion adversely affect water resources and aquifer capacities have been lowered. High soil loss continues as a major problem, being caused to a large extent by agriculture and urbanization. Levels of 2,000-tons/km²/year of soil loss have been recorded in a number of river basins. Water quality remains a national problem. The Environmental Quality Report (DOE, 1996) notes that almost all aspects of the environment have been affected by development activities ranging from deforestation to air and water pollution to erosion and siltation and the hazardous and toxic wastes. It reported that in 1995, out of 119 rivers monitored, 48 were clean while 14 were very polluted. It further reported that the coastal waters were contaminated with oil and grease, total suspended solids and faecal coliform. Heavy metals such as cadmium, chromium, copper, lead, mercury and arsenic were also detected at a number of monitoring locations with values exceeding or within the proposed standard.
In a search for a Malaysian approach to alter this trend, this thesis is written against a background of concern for the need of a balanced development in the economy and social well being and simultaneously preserving the environment. I strongly believe that a focus on development at the community level could be a potential approach to providing an alternative way for meeting human needs and its interaction with the environment. Chapter 2 in this thesis provides the context of communities and the community development in Malaysia.

In Malaysia, any discussion of in-depth changes and transformation of economic, organizational and social systems has to be focused on the post-colonial period, especially after 1970. The Malaysian developmental program is implemented through what is known as the Five-year Malaysia Plans, which first started in 1966 (See Appendix 1). The National Economic Policy since 1971 has addressed restructuring and poverty eradication. The Industrialization Policy since the Fourth Malaysia Plan (1981-85) on the export-led industrialization program has transformed Malaysia into what it is today (Ali, 1995). The National Environmental Policy, which aims to promote economic, social and cultural progress through environmentally sound and sustainable development, has not been gazetted (Malaysia, 1996). However, the National Policy on the Environment guided the environmental and natural resource management under the Seventh Malaysia Plan (Malaysia, 1996). Under the Eighth Malaysia Plan (2001-2005), it has been stated that the government will place continuous emphasis on the environmental and resource management issues (Malaysia, 2001).

Malaysia is aiming to be a fully industrialized nation by the year 2020 with approximately 70 million-population targets. I consider this to be a major challenge for a developing country to achieve an industrialized status within these 50 years, which is a very short period. Despite tremendous economic development in the past four decades, the increasing environmental pollution problems in Malaysia are alarming. It is becoming clear that most of Malaysian primary industries, including agriculture, manufacturing industries and the use of natural resources, are non-sustainable. In recent years these activities have intensified, resulting in further deterioration of the environment. Furthermore, the increasing social problems are of great concern for the Malaysian society that was once popularly known for warm hospitality and its courteous culture. If sustainable development is to be realized, a more concerted effort must be made to strike a balance between economic development, social well being and
ecological integrity in this country.

In the environmental science field, the focus is mainly on the environment per se; and in the environmental health discipline, the focus is mainly on the impact of environmental degradation in relation to human health. Like humans, other forms of life on Earth are dependent upon the capability of both the local ecosystem and the global ecosphere for maintaining health. However, in relatively recent time, people in industrialized and newly developed countries such as Malaysia, have developed an erroneous perception of health being separated from nature’s processes. This is the way science, being a dominant discipline in the modern world, has influenced our thinking to a limited dimension. Knowledge that transcends the boundaries of traditional scientific disciplines (due to the compartmentalization of the individual scientific discipline) is necessary for achieving inter-disciplinary scientific understanding. This could be addressed using the scientific dimensions of social wellbeing, economic development and ecological integrity to reach consensus among the plurality of societal interests and viewpoints in order to promote appropriate policy changes.

Environmental management today should shift from enforcement and instruction approach to informed decision-making. On consensus, Malaysia has taken the initial step towards this direction. The Annual Environment Report 1999, prepared by the Department of Environment (DOE) has taken a step forward by changing the usual format in reporting by integrating the surveillance of the environmental conditions with the possible health implications (DOE, 1999). Furthermore, since 1998, the State of Selangor has appointed the Institute of Environment and Development at the National University of Malaysia (LESTARI) to conduct a Strategic Study on Selangor’s Sustainable Development program (Agenda 21 Selangor). Subsequently since mid February 2001, the outcome of this study known as the ‘Selangor Agenda 21’ has been adopted as the guideline document for the implementation of the Selangor Development Plans towards 2005. As will be described in Chapter 3, these development strategies will be based on economy reformation, taking into serious account the impact of development on the environment, natural resources and the local communities.

The attempt in this thesis is to link Chapter 2 on the context of the different communities and Chapter 3 on the environmental management in Malaysia within the context of sustainable development, with the aim of the study. The aim is to identify an alternative approach in
managing the local environment for health, starting from a value position of regard for local knowledge and abilities, and for scientists and administrators working together with local communities in their natural settings. The proposal tested in this study is that working with the community as one of the core providers of knowledge and understanding of their local environment could provide an antidote to arrest the present downward trend in sustainable development in Malaysia. The desired outcome would be for the local communities to contribute as a full partner to the scientific approaches in designing local management strategies.

Perhaps the greatest challenge for Malaysia and the rest of the world will be the actual implementation of the ‘Sustainable Development’ principle. It is observed that while definitions of sustainable development appear to differ from one author to another, they share one common theme, which contain three fundamental concepts- environment, futurity and equity. Malaysia in principle has already committed to the concept. This spirit in this concept was officially endorsed in the Third Malaysia Plan (1976-80) and continued to be the thrust in the Fifth Malaysia Plan (1986-90) and the Sixth Malaysia Plan (1991-95). The Langkawi Declaration on Environment and Development, mooted by Malaysia and issued by the Commonwealth Heads of Government on Oct. 21, 1989 provides an affirmative program of action to help protect and conserve the Planet Earth (Sham, 1999). The Seventh (1996-2000) and Eighth (2001-2005) Malaysia Plans continued to give emphasis to environmental and resource management to ensure balanced and sustainable development.

While there may still be no consensus on the proper balance between social and economic development and environmental resource management, an understanding of the interactive processes between them, mainly at the local context is crucial. To put a stop to the continuous deterioration of environmental conditions, it is a challenge to maintain a comprehensive and committed effort towards a healthy environment and a sustainable future. In order to achieve this, let us go back to the grassroots of the problems, the anthropogenic causes, which give a better understanding of the underlying factors that, are the causes for unsustainable lifestyles.

Success on the implementation of the mitigating measures for environmental protection requires the involvement of critically informed public. The shift in the Public Health service in Malaysia is in accordance with the global shift to New Public Health as guided by the
World Health Organization (WHO). The strategies for community involvement include the health promotion approach as in the Ottawa Charter (WHO, 1986) and development of infrastructure as an enabling platform that reduces barriers of the compartmentalization. In Malaysia, the initiatives for the inter-sectoral integration towards sustainable development are Agenda 21 and Local Agenda 21 under the Ministry of Housing and the Local Government (MHLG) and the WHO Healthy Settings programs (healthy cities, healthy workplace, healthy village, healthy school, healthy district and healthy islands) under the Ministry of Health (MOH). Each of these initiatives, now adapted worldwide, facilitates communication between local communities and other stakeholders in environmental management.

As a species, humans are seen to be in competition with other biota in the environment, rather than as being ‘arm in arm’ with them. In addition, the concept of ecological integrity is still foreign to many public health professionals. The public health approach even now often advocates solutions that are based on individuals, with harmful effects on the ecology. As an example, problems will continue to escalate through the recommended use of air conditioners for people with respiratory disease during bad air pollution or haze episodes. This was found to be true in my study with the scientific community, as the recommendation itself could lead to more air pollution problem from the air conditioners, as chlorofluorocarbon (CFC) is known to contribute towards global warming leading to climate change and more respiratory disease. Solutions for health concerns that do not harm the environment in the longer-term are therefore needed.

For public health’s role to be meaningful, trans-disciplinary, expertise and multi-stakeholder interests will need to be involved if the most appropriate measures are to be recommended. These will differ across regions in the world and even within countries. The domains of individuals, social and ecological integrity may be needed equally for adequate modeling (Karr, 1993). This need is especially true for environmental management, as it requires social, economic and environmental considerations. Historically, the dominant scientific societies have failed to consider these three domains, with the consequent dissociation of humans from life-support systems. It may be shown that all three domains bear relation to one another, and that any disharmony in this relationship could be predictive of overall ecological disintegrity. Indeed, if the public health role is to be meaningful, public health will need to modify its view of human relationships to living systems in this broader context.
Consensus has been reached by the Environmental Health fraternity worldwide that major paradigm shifts are needed in social and economic policies if current trends in ecosystem degradation resulting from human activities are to be arrested. As a response to this need, this research work resulted in my own paradigm shift from a specialized background of medical and public health to a broader approach in managing the environment for health. I wish to link the different disciplines of socio-cultural, environment and economy together through the understanding of the processes within the local community structures in Malaysia. My intention is to transcend the gaps between all the disciplines in managing the practical issues of sustainable development in these communities at a given time and place. I intend to explore the issues of concern in different communities within Peninsular Malaysia and experience their capacities to respond and the grounded basis for their community-based actions. With a better understanding in these communities, it could provide an insight on how they could be supported to facilitate their actions towards sustainability. Through Malaysianisation of the western concept of community development, this thesis provides a practical application in managing the environment for health towards a sustainable future.

The focus for many researchers through fully engaging and utilizing community knowledge in order to change the development planning and process and implementation at community level is important (Cernea, 1992). Communities play an important role in both the process and in determining the direction of change. They need to be in tandem with professionals and managers in this process in order to increase the understanding of ill health and to affect the possible solutions, which help them to gain control over their present and future. Such dialogue and collaboration is aimed at achieving change, which can be sustained through incremental improvements. Community development and health improvement is a result of continuous pressure on organizational structures and individual perspectives to move, and this does not always result in measurable outcomes.

One of the growing areas in developing theory is meeting of social needs and the achievement of sustainable societies (Overton and Scheyvens, 1999). Two related concepts are:

1. Participation or development from below—embodies the key idea that people must be seen as primary participants in the development process, identifying and meeting their own needs than merely being objects for externally imposed project or charity. It is crucial also for all people to participate, especially those otherwise marginalised in society (women,
the poor, the disabled, etc)

2. Empowerment—development should occur by providing the means by which the poor or marginalised groups can change their own lives for better.

Increasingly, participation as an exercise in empowering people has gained widespread public support. However, empowerment is a term, which is difficult to define. Some see it as the development of skills and abilities to enable people to manage existing development delivery systems better and have say in what is done (Daly, 1987). While, others see it, as more fundamentally political, enabling people to decide upon and to take actions, which they believe, are essential to their development. While the term has slipped easily into the vocabulary of development practice, its link with action is not always understood.

The concept of empowerment is commonly used in this thesis. Another definition of empowerment is, it implies giving more power to individuals over the compass of their lives through better administrative structures and improved social arrangements. It should be possible to set mutually acceptable limits to individual empowerment that do not impinge on the right of others (Short, 1991). Empowerment and participation are related: empowerment without participation is power without responsibility; participation without empowerment is responsibility without power. Power with responsibility entails both empowerment and participation. It is this understanding of the concept of empowerment that is used in this thesis.

While it is now widely recognized that effective people’s participation is essential for empowerment, the means of achieving this are still being debated. At the macro level, the debate is concerned with what we might call ‘participatory societies’ and brings the notions of governance and democracy to an argument. It suggests that people’s participation can only flourish in supportive political systems, which encourage it. In other words we cannot merely talk in terms of ‘participatory projects’, we must examine the whole political context of the country. Whatever the outcome of this debate, the empowerment aspect of participation seems to have been accepted as part of current practice (Wallenstein, 1993 and Stiefel, 1994).

Furthermore, global ecological integrity is an essential overriding principle of ‘sustainable development’ and has been proposed as foundational in environmental laws (Westra, 1998).
Development implies a more integrated social/value-based approach to continued societal change than does growth. Indeed growth means ‘getting bigger’. It implies an increase in physical scale without necessarily any improvement in the actual experience of people. Development on the other hand, means ‘getting better’. It implies a qualitative improvement in structure, capacity, skill, ability, understanding, and the like, at either the individual or society level (Daly, 1987). Understanding the relationship between these concepts is the basis for assessing concerns about the consequences of human health of disintegrity.

Most particularly, one can conceive of a world which adapts to global change in such a way that it develops without growing. On the other hand, the economy may well grow without developing. Indeed equating development with growth in present circumstances could well imply that many parts of the world and/ or some social strata would experience negative impacts of growth (including ill health) without the benefits of development (Soskolne and Bertollini, 1999).

Following this stream of recent thinking on the topic, I strongly belief that in managing the environment for health, the focus area should be on the health of environment as a whole (Mc Michael, 1993, Soskolne, 1998). It is thus related to public health by virtue of the link between sustainability of human health as a function only of the ecological integrity or sustainable health of life-support system (Soskolne, 1998).

This thesis aims to identify the alternative approach in managing the environment for health starting from the local knowledge and the experiences working together with the communities in their natural settings. This study also aims to find ways to search for local interpretations of socio-economic development and ecological integrity, knowledge and experience which lies outside the boundaries of the traditional science disciplines.

Policymakers, researchers and experts from numerous disciplines are now engaged in major efforts to link the local with the global approach. They are looking at the global changes in environment, society, technology and culture in terms of their effects on local places where individuals actually live and work and on the ways in which local activities contribute to global change. The importance of local knowledge has been acknowledged as a powerful unifying force to initiate environmental protection. This trend is clearly evident in recent
efforts to prevent global climate change, where bottom-up initiatives are being accompanied by efforts to downscale both science and policy approaches. In Malaysia a similar initiative has been undertaken by the government in initiating the project on Local Agenda 21 in Petaling Jaya as will be described in my first community story in Chapter 5.

Looking at the challenges in environmental management for health, the Malaysian government has been committed to address this need. In 1996, following a consensus between the Ministry of Science, Environment and Technology with the Ministry of Health, an Environmental Health Research Center (EHRC) has been established in the Institute for Medical Research. The establishment aims to address research needs in environmental health and to promote collaboration between researchers in the environmental and health disciplines. Being a researcher within EHRC, I am taking this challenge as a big task to bridge the gaps within government, scientists and the local communities.

Partnerships across sectors are essential because the problems are embedded in complex interactions, which cross all sectors boundaries. Forming active and effective partnerships will require not only the relevant sciences to substantiate arguments for needed societal changes, but also indicators and yardsticks for measuring change. It will need social scientists and humanities experts to provide ethical/legal arguments to lawmakers. It will need non-government organizations (NGOs), the private sector, the industry as well as the laymen to be able to use arguments to support political will for positive changes.

Furthermore, in this study, I also examine the interaction processes between people and the environment in Malaysia. I aim to identify the interface between the environment and health and to contribute towards an optimum approach in managing the environment for health with emphasis at local community level. I hope Malaysia’s way forward in attaining sustainable development could start from the experiences of working with the local communities as a key component of strategies for change. From these experiences a strategic plan can be drawn up which will act as a catalyst to prompt social change. The strategic plan can start small, but it has the potential to become a bigger change agent.

As a summary, the aims and objectives of this study were as stated below:
1. To explore the issues of environmental concern in different communities within
Peninsular Malaysia. It also aims to identify the capacity of these communities to respond and the grounded basis for their actions.

2. To identify an alternative approach in managing the environment for health starting from local knowledge gained through the experiences of working together with the communities in their natural settings. The study explores ways to search for local interpretations of socio-economic development and ecological integrity, knowledge and experience that lie outside the boundaries of the traditional science disciplines.

3. To identify the interface between specialized and local knowledge through observing and taking part in the interaction processes between these communities and their environments.

4. Finally, to contribute towards practical approaches for managing the environment for health.

1.2. Overview of Thesis Structures

This thesis represents an attempt to articulate the above vision and to provide a theoretical model for environmental health that will relate community development, environmental context and community actions towards a sustainable future. Chapter 2 provides the context of communities and the community development in Malaysia. Chapter 3 deals with the global concepts on the sustainable development and the environmental management in Malaysia. Chapter 4 describes research methods, research tools, the field studies and the methods of data collection and analysis. Chapter 5 and 6 describe the community stories of the place-based communities: Chapter 5 on the empowered communities and Chapter 6 on the unempowered communities. Chapter 7 describes of the stories of the knowledge-based communities: the stories of the clinical and the scientific communities. Chapter 8 represents the analysis on the community stories and the results. Finally, chapter 9 discusses the findings, lessons from these findings and the conclusions for this study. These findings provide a range of lessons for those who want to integrate local and scientific knowledge in community projects and in government policy and practice.
CHAPTER 2

THE CONTEXT OF COMMUNITIES AND COMMUNITY DEVELOPMENT IN MALAYSIA

2.1. Geography and climate of Malaysia and its impact on the living structures of the communities.

Malaysia is located in the heart of South-East Asia. Peninsular Malaysia, covering some 132,000 square kilometers, is separated from Sabah and Sarawak, which cover some 200,000 square kilometers, by about 500 kilometres of the South China Sea (Noor Laili, 1982). South of the country lies Singapore, which is joined to the Peninsula by a narrow causeway across the Straits of Johore. To the south and west of Malaysia lies Indonesia, to the north is Thailand, and to the east is the Philippines. Sabah and Sarawak are in the north of the island of Borneo, bordering Indonesia’s Kalimantan (Figure 1).

Figure 1. Map of Malaysia
Malaysia is a coastal nation, with extensive and resource rich territorial waters and continental shelf claims. Malaysia comprises the eleven states of Peninsular Malaysia and that of Sabah and Sarawak. In addition, there are the Federal territories of Kuala Lumpur, Putrajaya and Labuan. Land matters are under the jurisdiction of individual states. In the peninsula, the smallest administrative unit is the mukim, managed by the appointed assistant administrator (penghulu). Under the penghulu, there are several small villages, and each is lead by the village headman (ketua kampung), supported by the village development committee members. The mukim are grouped together to form a district (daerah) and managed by the district officer. Jajahan is a mid-order administrative unit unique to the state of Kelantan on the East Coast of the peninsula.

The climate in Malaysia is characterized by uniform temperature, high humidity and copious rainfall (Teh et. al, 2000). This is mainly due to maritime influences. Winds are generally light and variable. Situated at the equatorial doldrums, it is extremely rare in Malaysia to have a full day with a completely clear sky. On the other hand it is extremely rare to experience a few days without any sunshine, except during the northeast monsoon.

The living structures in Malaysia, mainly in the traditional villages, are adapted to this type of climate. The houses are wood-based with many windows, which are kept open during daytime for ventilation and sunlight. The roof of the houses is made of the sago palm leaves and these do not last long and the supplies are progressively limited and difficult to find. The trend now is progressively towards zinc roofs. However due to unbearable noise when it rains and the enormous heat during hot days, some of affluent families have switched to tile roofs which are more expensive.

In more urbanized areas, the houses are made of bricks and they are either in single terrace, double storeys, bungalow units, the low cost units with one to two bedrooms flats and higher cost units such as apartments and condominiums. In tropical climates wooden houses with sago leaf roof have a natural cooling effect because the wood and leaves absorb the heat during daytime and cool down rapidly at night. However the brick houses release heat when the surrounding temperature falls at night. This heat becomes intolerable at night especially with the closure of windows and doors to avoid mosquitoes, which lead to the need to install air conditioning unit for those who can afford it.
The country is affected by the El-Nino/ Southern Oscillation (ENSO) event, which occurs once in two to seven years. This effect is felt more in Sabah and Sarawak. During El-Nino, prolonged dry spells occur which may lead to forest fires. The forest fires coupled with prevailing climatic conditions such as lowering of air temperature and less convectivity give rise to haze and other pollutants (Teh et al, 2000).

2.2. Demography and Social Structure of the Malaysian Communities

The population of Malaysia has undergone several major changes since 1957 in tandem with the country’s rapid development. In order to address the local context of sustainable development, mainly to facilitate the community-based actions in managing the environment for health, an understanding of the different communities in Malaysia is important. This section describes the social-cultural context of the majority of the population of Peninsular Malaysia.

Malaysia can be viewed as a microcosm of Asia (Leete, 1996), with the three largest communities in its heterogeneous population - Malays, Chinese and Indians - representing samples of Asia’s three most populous countries - Indonesia, China and India. Each of these cultures has a different interpretation of the human/ environment relationships and different traditional systems of environmental management, thus making a different mix at the local scale.

The total population of Malaysia, according to the Population and Housing Census 2000, was 23.27 million compared to 18.38 million in 1991 thus giving an average annual population growth rate of 2.6% over the 1991-2000 period (Malaysia, 2001a). Of this total population, about 21,890 thousand or 94.1% were Malaysian citizens. Of the total Malaysian citizens, Bumiputera comprised of 65.1%, Chinese 26.0% and Indians 7.7%, the ethnic composition being 60.6%, 28.1% and 7.9% respectively in 1991. Non-Malaysian citizens totalled 1,385 thousand (or 5.9%) in Census 2000 as against 805 thousand (or 4.4%) in 1991.

The proportion of population of Malaysia below 15 years of age in the Census 2000 was 33.3% compared to 36.7% in 1991. State-wise, this proportion was very low in Wilayah Persekutuan Kuala Lumpur (25.6%), Pulau Pinang (26.9%) and Selangor (30.5%). At the other end of the spectrum, this proportion was high in the states of Kelantan (41.5%),
Terengganu (40.3%) and Sabah (38.4%). Conversely, the proportion of population 65 years and over for Malaysia in Census 2000 was recorded at 3.9% compared to 3.7% in 1991. Consequently, the median age for Malaysia as a whole increased from 21.9 years in 1991 to 23.6 years in 2000. All these different age parameters point clearly towards a continuation of the trend of population ageing in Malaysia. In term of sex ratio, Census 2000 revealed that for Malaysia as a whole, men outnumbered women, a pattern not unsimilar to that observed in 1991. There were 104 males for every 100 females, a marginal increase over the sex ratio of 103 in 1991 (Malaysia, 2001a).

Economic restructuring since the late 1950s, marked by a progressive shift from heavy dependence on the export of primary commodities (agricultural products) to manufactured goods, has important repercussions on the population. Residential and employment patterns have become less differentiated since the 1970s because of government policies especially those aimed at redressing economic inequalities and geographic imbalances under the New Economic Policy. In the postcolonial era, population growth depended largely on natural growth. Rapid economic development has helped augment urbanization, so that over half of the population lives in urban areas.

2.3. The historical perspectives on the formation of Malaysia with the influence of colonization on the Malaysian communities.

Peninsular Malaysia was formerly known as Malaya, comprising eleven Malay states that became an independent nation in August 1957 (Figure 2). The constituent units of this new entity consisted of the settlements of Penang and Malacca, which together with Singapore formed the British colony of the Straits Settlements prior to the Second World War. These important commercial port towns had been under British control for well over a century, and were federated in 1896. Of the other nine constituent Malay states, four - Perak, Selangor, Negeri Sembilan and Pahang - were grouped together as the Federated Malay States before the war. The four states had accepted British protection in the 1870s and 1880s, and it was these states, particularly the first three, which contained the bulk of the rich tin-producing areas of Malaya, as well as a large proportion of the rubber plantations (Leete, 1996).
The remaining five states- Johore in the south, and the northern and eastern states of Kedah, Perlis, Kelantan and Trengganu- formed the Unfederated Malay States. Johore had experienced economic development comparable to the Federated States, and although it did not have a resident British adviser, had entered a protectorate treaty with Britain. The other four states- Kelantan, Trengganu, Kedah and Perlis- which until 1909 had been under nominal Siamese (Indo-Thai) control, were relatively unchanged. The working population comprised mainly peasant farmers involved in traditional methods of rice production and fishing (Smith, 1952; Emerson, 1964).
All the territories that combined to form Malaysia in 1963 had a common background of British colonial administration (Smith, 1963). The gradual extension of British administration to the other Malay states on the Peninsula started with the negotiation of the Pangkor Agreement in 1874, involving the state of Perak, and ended with a treaty in 1914 with the Sultan of Johore. Through this treaty, the sultan, like other Malay rulers in earlier years, agreed to receive a British adviser. This adviser advised in all matters affecting the general administration of the country and all questions other than those touching Malay religion and Malay customs (Mills, 1958; Purcell, 1965). Malaya was thus loosely united in the sense that Britain was the colonial power administering the different states.

In February 1948, a Federation of Malaya replaced the Malayan Union, with the Malay rulers playing an important role in its administration through a federal legislative council and an executive council presided over by the British High Commissioner. The federation provided the basis for subsequent British decolonization and the achievement of full independence on 31st August 1957. The federation survived, despite secession attempts by Penang, Johore and Kelantan, until 1963 when it became the major component of the larger political entity of Malaysia (Ross-Larson, 1980).

The Federation of Malaysia, including Singapore, Sabah and Sarawak came into being in September 1963. The reasons for its formation were primarily political rather than economic. The government of Federation of Malaya wanted to avoid the risk of the spread of communist control, which at that time was also of great concern to Singapore. Sabah and Sarawak as small commonwealth territories in the Malaysian region, without any apparent obvious future as independent states, were brought into the federation, providing an ethnic and political balance to the largely Chinese population of Singapore (Smith, 1963). Brunei, which had also intended to join the federation, withdrew from negotiations because of various disagreements, particularly with respect to the position of its sultan. Moreover, in 1965, again mainly for political reasons, Singapore separated from the federation and became a fully independent nation. Sabah and Sarawak had always been administered separately from the federation of Malaya and Singapore (Lee, 1965; Jones, 1966; Jackson 1968).
2.4. The People of Peninsular Malaysia

Within Peninsular Malaysia, the three main ethnic groups are the Malays, Chinese and Indians. There are also other small minorities, the largest of which are the Orang Asli, a rural indigenous people (Ng et. al, 1992). Of the three main groups, the Malays are usually considered as indigenous and the Chinese and Indians as immigrants. However, this is not strictly accurate since not all Malays in peninsular are indigenous people of the Peninsula. Significant proportions are migrants from Indonesia who readily assimilate into the local Malay community and who have come to regard themselves as local Malays (Del Tufo, 1949; Caldwell, 1962 and 1963a; Chander, 1976). Conversely, a large and increasing proportion of the Chinese and Indians living in Peninsular Malaysia are the second or third generation descendants of migrants, and some have roots in the Peninsula that go much further back.

There had been significant migration of Malays, mainly from Sumatra and Java, throughout the period of independence, particularly during the 1930s due to the global economic recession. Subgroup differences within each of the three major ethnic groups means that the diversity is even greater than that which appears on the surface. The Malays of Indonesian origin often have dialects and appearances that differ minimally from the indigenous Malays. Although they are united in Islam, which helps ensure that they are more readily accepted and more quickly assimilated with the local Malays. Further, until independence, and to a lesser extent subsequently, many Malays regarded themselves primarily as natives of their state of birth and subjects of their own sultan, rather than as nationals of Malaya (Mills, 1958).

At the time of independence, the Malays were predominantly rural people, dependent for a living on rice cultivation with fishing and rubber tapping, which was often taken up seasonally when harvesting activities came to a standstill (Mills, 1958). Only a small proportion of the Malays lived in the towns. The Malay peasants had been encouraged to maintain their traditional way of life and their humble and gentle manners by, for example, limiting their education to basic primary education. They were taught basic literacy and about their customs and religion, but they were not taught skills required for social and economic advancement (Tham, 1977). Such a policy, designed to make their traditional way of life acceptable, suited the Malay rulers because it preserved the essentially feudal order, limited the accumulation of wealth, and maintained the traditional Malay deference to rank that was
reinforced through difference between the commoners and the aristocracy (Milner, 1994).

In the pre-independence era, particularly in the period up to 1947, net international migration was a very important determinant of changes in the size and the ethnic composition of the Peninsula’s population. International migration was long encouraged as part of British colonial economic policy, which needed relatively cheap foreign labor to exploit the export potential of the country’s primary commodities, particularly in the tin mines and rubber estates, as well as for other public work programs.

Major inflows of Indians, mainly from Madras in southern India, to the Peninsula occurred in the early decades of the century when the large-scale growth in rubber plantations could not be met by local labor supply. However, during the depression years in 1930s, when the international demand for rubber and tin slumped, many thousands of unemployed Indians were repatriated to India (Del Tufo, 1949, Saw, 1988). The attainment of independence by India led to another outflow of Indians from Malaya (Smith, 1964).

Large net migration of Chinese to Peninsular Malaysia mainly from south-eastern provinces of China, was conspicuous in the two decades before the Second World War, except during the depression years of the early 1930s. As with the Indians, there was a net outflow of Chinese during these years as the demand for Malaya’s exports plunged (Smith, 1964). The economic depression led to quotas being imposed on Chinese male migration and several years later, also on female migration (Del Tufo, 1949). The pace of Chinese permanent settlement in Malaya increased in the 1930s and 1940s after the imposition of immigration restrictions.

The Chinese, who are mainly Buddhists and Taoists, are divided by mother tongue language and other sub-cultural differences, reflecting differences in place of origin of themselves or their parents or grandparents. Similarly, the Indians, who are mainly Hindus, comprise groups originating from different parts of India with different cultures and customs.

The Chinese dominated trade and commerce and were also involved in all other classes of urban occupation. They were the largest and economically the most important community in most of the major towns, particularly in Penang (Purcell, 1965). However, the Chinese were
not only in the towns, but were also heavily involved in tin-mining, rubber cultivation, and commercial agriculture in rural areas. In contrast to the Malays, Chinese culture placed great values on the accumulation of wealth.

Some Indians settled in towns, especially in the former settlements of Malacca and Penang, but more frequently they went to rubber plantations, where they were the mainstays of the labor force. In general, the Indians were a poor, landless, rural class, limited in status by their terms of employment, low education and earning (Purcell, 1965).

Up until the early 1930s, many Chinese and Indian men, particularly the latter, were temporary economic migrants, 'birds of passage', who had come to Malaya with the intention of staying for a few years and then returning to their homeland. There was thus a significant turnover of Chinese and Indians in Malaya. Subsequently, however, many migrants brought their wives and became permanent settlers. Many single women also came, some of them under special schemes designed to even out the sex ratio. By 1957, the sex ratios of the Chinese and Indian immigrant communities were reasonably well balanced, in marked contrast to the male-dominated communities of the early decades of the twentieth century (Caldwell, 1963b).

2.5. The Political and Religious Context

2.5.1. The Political System

The Malayan Union marked the birth of Malay politics and the start of Malay nationalism. As a response to common struggles against the British proposals, grew a sense of national ethnic solidarity among Malays, which could, for the first time, transcend the force of state rivalries and parochialisms. Out of that struggle was born the United Malays National Organization (UMNO), a party which was to dominate Malayan politics for most if not all of the succeeding years (Leete, 1996).

At independence, the Federation of Malaya became a parliamentary democracy modeled along the lines of the British system, with regular elections for the federal and state governments. As part of the pre-independence negotiations with the British system, the Chinese and Indians had been granted full citizenship and were thereby enfranchised. This
was much to the dismay of many Malays, not just to those in the Unfederated Malay states, who were concerned about the potential loss of political power given the delicately balanced ethnic composition of Peninsular Malaysia in the late 1950s. However, the constitution of the federation asserted the special rights of the Malay and of Islam as the official religion. Special privileges for the Malays include continuing reservation of large areas of land, reservation of positions in the civil service and educational scholarships. At the same time, the social (educational) and cultural (religious) rights of non-Malays were given recognition (Leete, 1996).

A National Alliance government, whose main constituent parties are formed along ethnic lines, has retained power since pre-independence elections since 1955. The Malays dominate the coalition through UMNO, the majority party whose early leaders were mainly members of the aristocratic and administrative elite. Primarily the Malaysian Chinese Association (MCA) represents the Chinese in the ruling coalition, while the Indians, who occupy a subordinate position are represented by the Malaysian Indian Congress (MIC). With the passage of time, the National Front, which in 1974 succeeded the National Alliance, has broadened its representations to include parties from Sabah and Sarawak, as well as a few smaller parties from the peninsula.

Each of the main partners in the national coalition lacks the full support of its ethnic group and faces opposition from parties more radical in ethnic orientation. The principal Malay opposition party, Partai Islam se Malaysia (PAS), formerly the Pan-Malayan Islamic Party, which is strongest in the east coast states, particularly Kelantan, bases its manifesto primarily on fundamentalist Islamic principles. PAS can be viewed as a populist movement which sees UMNO’s efforts in promoting modernization as subscribing to Western materialism (Kestler, 1978). It is a matter of concern to UMNO that it is in the East Coast states, which are overwhelmingly Malay, that it has been most vulnerable, particularly in state government elections. For much of the period since independence, PAS has controlled the Kelantan state government and has also been prominent in Trengganu. Moreover, since the last election in 1999, PAS has been fully in control in Trengganu state government.

Chinese political opposition is expressed through the Democratic Action Party (DAP), which tends to be strongest in the main cities along the west coast, particularly in Penang and the Federal Territory of Kuala Lumpur, where the proportion of non-Malays is high. At the last
election in 1999, alliances between the opposition parties have not met with much electoral success, however there has never been any alliance by all the non-Malays against the Malays. The opposition parties have formed the Alternative Front since the sacking of the former deputy Prime Minister of Malaysia, Datuk Seri Anwar Ibrahim in late 1998. A newly formed opposition party, Keadilan Party headed by Datin Seri Dr Azizah, the wife of Datuk Seri Anwar Ibrahim is represented by the three main ethnic communities; Malays, Chinese and Indians. Keadilan Party has formed alliances with PAS, DAP and Party Rakyat Malaysia in the Alternative Front. Since the formation of this new alliance, the National Front is facing more challenges to maintain its majority seats in Parliament.

2.5.2. The Political Economy

Much political debate and government policy in the decade following independence centered on improving the position of the Malays. Special efforts were made to help the Malays through rural land-development programs, as well as through the provision of social and physical infrastructure. Nevertheless, by the late 1960s, the Malays, who had made inroads into administrative work and were dominant in uniformed services, were still concentrated in rural areas and in low-income activities. By contrast, the non-Malays had higher income jobs and dominated the urban economy, much as they had done before independence.

In May 1969, ethnic riots broke out in Kuala Lumpur sparked off by tensions following elections in May 1969 in which the opposition parties performed much better than expected. However, it has been acknowledged that discouraging economic trends, growing urban unemployment, and controversies surrounding language and education were factors that led to the riots (Reid, 1969). The riots left members of the ruling coalition, particularly UMNO, with a sense of failure and an urgent need for a new beginning, particularly in national ideology, race relations, and economic planning. A state of emergency was declared the parliamentary rule was temporarily suspended, and a National Operations Council (NOC) was established to co-ordinate executive action during emergency. The position of Tunku Abdul Rahman, Malaysia’s first Prime Minister, was no longer tenable, and Tun Abdul Razak eventually succeeded him. Tun Abdul Razak led Malaysia until his death in early 1976, and was succeeded by his deputy, Datuk Hussein Onn, son of the first president of UMNO. Within his first year of office, he appointed Dr Mahathir Mohamed as his deputy. Dr Mahathir, a former
UMNO radical and government critic, became the new, and now the country’s longest serving, Prime Minister in 1981.

An immediate initiative by the NOC was to reexamine the 1967 National Language Bill which sought to make Malay the sole official national language while allowing the continued use of English. The NOC directed that there should be an immediate beginning of the transition from English-medium schools to Malay medium and that, as the then cohorts of primary students aged, the whole university system should transfer to Malay medium. However, Chinese and Tamil schools were allowed to continue to teach with their own languages, except that all students were required to sit for an examination in the national language or Bahasa Malaysia. Dr Mahathir published ‘The Malay Dilemma’ in 1970 following the May 1969 riots, underlined the case for Malay political dominance and the need for discriminatory economic policies to balance Chinese economic dominance (Mahathir, 1970).

The New Economic Policy (NEP), drawn up by the government after the riots, provided a framework for development policy for much of the next two decades (Malaysia, 1971). The NEP placed great emphasis on measures designed to create national unity through poverty reduction programs and racial equality. It encouraged Malay urbanization and greater Malay business participation through employment and ownership quotas, and created educational opportunities for the Malays to study in local and overseas universities. One result was a growing Malay urban middle class.

As the economy grew rapidly up to the mid-1980s, the aims of the NEP dominated government development policy. However, following the short economic recession in 1985 and 1986 came increasing liberalization of the economy (Jomo, 1993) and the emphasis shifted to growth with efficiency. This theme was subsequently reflected in the National Development Policy (NDP) which succeeded the NEP in 1991 (Malaysia, 1991a). The NDP aims to further diversify the country’s industrial base, and encourages the continued transition away from unskilled labor-intensive industries and towards human-capital-intensive technological industries. The country’s industrialization drive had already begun in the mid-1980s, as had its ‘Look East Policy’ and efforts to diversify trade. The theme of the NDP was also enshrined in Dr Mahathir’s Vision 2020, which established the goal of making Malaysia
a fully developed nation by the year 2020 (Mahathir, 1991).

2.5.3. Religion and Islamic Resurgence

Islam is the official religion of Malaysia and nearly all Malays are Muslims. Islam was the most widely professed religion in Malaysia; its proportion increasing from 58.6% in 1991 to 60.4% in 2000. Malaysia, being a multi-religious nation, indicated by the fact that significant proportions of the non-Muslims, that is the majority of the non-Malays, embracing other religions such as Buddhism (19.2%), Christianity (9.1%), Hinduism (6.3%) and Confucianism/ Taoism/ other traditional Chinese religion (2.6%) as revealed in Census 2000 (Statistics, 2001).

Islam is generally considered to have come to Peninsular Malaysia through Malacca during the fifteenth century (Milne and Mauzy, 1985). It was conveyed by Indian missionaries to the Malacca royal family- who converted from Hinduism- and then spread rapidly to the village peasants clustered along the west coast. The missionaries had arrived at the Peninsula on the ships of Indian traders. Islam also entered the Peninsula even earlier through traders en route from Aceh in North Sumatera, through Sungei Petani in Kedah, across to the east coast and up to Pattani in southern Thailand. The earlier introduction and spread of Islam, which was and has remained somewhat more conservative in character, tended to be confined to the four Unfederated Malay States in the north and along the east coast. Malacca and Pattani long remained the important trading centers that were also used for dissemination and propagation of Islam. The former served the West Coast Malay states and the latter the four previously noted Unfederated States as well as the neighboring provinces of southern Thailand. This may well help explain the continued difference in the character of Islam among the population of these two groups of states.

Religion is very important for the Malays and provides a framework, which greatly influences their daily lives, customs and institutions. While some facets of Malay culture have been eroded by modernization, their religious conviction remains strong. The Islamic practices that took hold in the Peninsula were mainly derived from the Indians and from the Sunni school, but were tinged with Sufi mysticism. Thus, Islam in Malaysia was in the main generally of a less conservative nature than that prevailing among the Arabs in the Middle East. However, in the 1970s, there was an upsurge of fundamentalism in both the towns and villages in
Malaysia. The resurgence was led by Malay students returning from government-sponsored studies overseas and reacting to their overseas experience of cultural shock and western modern living. In the late 1970s, PAS was quick to champion the cause of the Islamic resurgence, and charged the government with spreading secularism.

2.6. The Economic Structures Around the Independence Period (1957)

By the late 1950’s, the Federation of Malaya had achieved a reasonable measure of economic development. Economic activities were concentrated on the production of rubber and tin for export, on the output of a variety of food crops and small-scale manufactures for domestic consumption, and on the entrepot trade and commercial and financial services for the domestic market. The Federation of Malaya had become the world’s largest producer of tin and had the second largest output of natural rubber (International Bank for Reconstruction and Development, 1956).

The Federation of Malaya, as well as Sabah and Sarawak, were nevertheless primarily agricultural societies. Rice, the staple food of the population, was the major food crop and rubber was the major commercial crop. Together they accounted for well over 80 per cent of the total cultivated area (Fell, 1960). Despite the dominant position of rice and rubber, there were a number of other important agricultural cash crops, such as pepper and coconuts, and the export of timber was of growing economic importance. Rough estimates of the industrial origin of the gross national product (GNP) in 1957 suggested that approximately 50 percent of the total GNP was accounted for by agriculture, forestry and fishing. Almost the entire output of rubber and palm oil was exported. Other export items of importance were tinned pineapples, coconut oil, copra, and timber. The mining industry, particularly tin, was also an important contributor to the national income, though not comparable in importance to agriculture. Manufactured goods were the third largest industrial group after agriculture and commerce, but no sub-component of manufacturing was particularly large (Fell, 1960).

2.7. Post-independence Economy towards Malaysianisation of the Community.

Since 1957 the Malaysian economy has undergone rapid structural transformation. Since then the Colonial administration was gradually replaced with local administration. More effort has
been made for education among the local populations. In term of economic development, until the mid-1980s, rubber, oil palm, timber and tin were the main income generators for the country. With the fall in commodity prices in the mid-80s, the country was forced to look at alternative possibilities including tourism and industrialization. As such there has been a distinct shift in the structure of the economy. Between 1957 and 1970, the share of the agricultural sector in Gross Domestic Product (GDP) declined steadily, from 38 per cent to 31 per cent and then more rapidly to 12.2 per cent by 1997. Conversely, over the same period the manufacturing sector’s share of the GDP rose from 9 per cent to 35.5 per cent.

As industrialization gathered momentum, there was considerable diversification and restructuring within the manufacturing sector, with chemical products and electrical machinery growing in importance (Young et. al (eds), 1980; Ariff, 1991). The mining of petroleum and natural gas, which had also been a dominant income earner, has stagnated because of limited reserves and the need to conserve production. Tin production is uneconomical due to low prices.

Spectacular gains have been recorded in per capita income and in reductions in poverty throughout Malaysia (Anand, 1983; Demery and Demery, 1991). Government policies and programs, with their emphasis on creating balanced and equitable development, have helped to reduce sharp ethnic disparities in income and social wellbeing (Malaysia, 1991a). Structural changes in the economy are reflected in the changing pattern of sector employment, with substantial shifts away from the agricultural sector and towards the urban industrial and service sector. For example, in 1957 some 58 percent of the working population were employed in the agriculture sector, but by 1991, this figure had fallen to 24 percent, only slightly above the proportion of manufacturing. With growing urban employment opportunities, females have been increasingly drawn into the labor force, such that by 1991, the female participation rate was 47 percent, compared to 36 percent in 1957.

Since independence, there has been a substantial expansion in educational opportunities and in the quality of education. Successive official five-year plans have allocated major proportions of total government expenditure to education, a key objective being to reduce the gap in educational opportunities between the different ethnic communities. Enrolment in primary and (lower) secondary education has been almost universal among the school-age
population since the mid-1960s, and the proportions receiving the upper secondary and tertiary education continue to grow (Khoo, 1983). Not surprisingly, therefore, literacy levels continue to increase. In 1991, an estimated 85 per cent of person's aged 10 and over were literate, compared just over half in 1957. Levels of literacy are much the same for each of the three main ethnic communities. Illiteracy is now almost exclusively confined to members of older generations, particularly females, who typically did not receive any formal schooling when they were of school-going ages in the independence era.

2.8. PUBLIC HEALTH

In the 19th Century, Public Health was concerned with the physical interactions between the human body and the environment. In the early 20th century, the shift occurred to a concern with personal hygiene and a greater focus on individual. Towards the end of the 20th Century, a New Public Health concept emerged. The New Public Health builds on the Ottawa Charter for Health Promotion (WHO, 1986) as the science and art of promoting health and on the ‘Our Common Future’ (WCED, 1987) as the strategic responses to risks to global health and to the environment.

In creating supportive environments, the Ottawa Charter (WHO, 1986) further noted that;
1. the inextricable links between people and their environments constitute the basis for a socio-ecological approach to health
2. the conservation of natural resources throughout the world should be emphasised as a global responsibility
3. the protection of the natural and the built environments and the conservation of natural resources must be addresses in any health promotion strategies.

2.8.1. The histories of Public Health and Medical Services in Colonial Malaya

In the 19th Century, the population of British Malaya expanded rapidly to meet demands for labour. Tropical disease was a major obstacle to colonial expansion and development. The first medical care was provided following the arrival of ship surgeons of the East India Company. With the establishment of naval bases and trading posts in Penang (in 1786), Singapore (in 1819) and Malacca (in 1824), military doctors provided medical care to colonial
administrators and other colonists, for example, military personnel.

The development of hospitals in the Federated Malay States was driven by the tin industry. In the early 19th Century, these states produced 12% of the world’s tin and this rose to 55% by 1895. The importance of maintaining a healthy workforce was obvious. Between 1893 and 1910, several hospitals were built to provide curative services for the sick. By the time of independence in 1957, there were 10 major hospitals and 56 district hospitals in Malaya. The first private hospital was established in the early 1970’s in this country.

In 1901, the Pathology Institute opened in Kuala Lumpur as death and disease from tropical infections appeared to be increasing. It was a major step in addressing the challenge posed by the need to find causes and ways to control infectious tropical diseases. It was renamed the Institute for Medical Research (IMR) the following year. The opening of the IMR occurred in the context of scientific imperialism and international scientific competitiveness. Locally it was precipitated by high mortality of malaria and beriberi. Its achievement included establishing the aetiology of beriberi. Its malaria control program was the first to implement the Ross proposals for broad based environmental controls. The extension of these measures throughout the country was hailed as ‘the greatest sanitary achievement ever accomplished in the British Empire (Watson, 1939) and ‘an epic in the history of modern preventive sanitation’ (Chatterton, 1950).

The colonial medical service adopted a two-pronged approach (Lenore, 1996). Hospitals and ‘outdoor dispensaries’ provided clinical treatment; the prevention of epidemics was addressed through the development of public health programs. Thus, historically the dichotomy between hospital and public health services continued: preventive services were generally labelled ‘health’ and curative services were usually called ‘medical’. The first hospital was opened in Taiping in 1878, a second in Kuala Lumpur soon after. Despite the extension of preventive and curative services, in 1896, in most cases relatively few locals- Malays, Indians or Chinese had access to state health facilities. In 1905, the Straits Settlements and Federated Malay States (FMS) Government Medical School opened to train physicians locally. In the FMS all public health and clinical services were delivered on a state basis until 1911, when the government established a federal health department in Kuala Lumpur. The health care system left by the British was mainly urban-based with heavy emphasis on curative services. The
progress made in health services development was further slowed down from 1930 to 1939, because of the world-wide economic depression (Lenore, 1996).

Current motivations and methodologies in public health are western-based and culturally homogeneous. They perpetuate developmental colonialism public health (Hess, 1999): forced or incentive-induced behavioural changes, which consequently erode or destroy pre-existing cultural values, beliefs and principles. Global issues in both social and natural sciences are framed in western methodologies, excluding most notably the populations subject to influence. Just as political and economic colonialism forced behaviour changes upon indigenous populations in an effort to change the values and beliefs of that culture, development programs are equally culpable of subversive colonialism and results will be equally disastrous.

Documentation from the late 19th Century and early 20th Century, as well as recent evaluation of these sources and other texts has all pointed to the historical depth of Malay ties with the Unanic\(^1\) practitioners and those from other medical systems. They also highlighted the probable adaptation of those systems in their interface with indigenous medical beliefs (Malay medical practitioners or bomoh and traditional midwives or bidan) (Newbold, 1839, Maxwell, 1883, Skeat, 1984, Gimlette, 1971). Chinese medical practice was extensive in the Straits Settlements. From 1884 to 1991, the first Chinese medical institution in Singapore served the needs of nearly 40,000 patients, and the growing demand for Chinese medicine saw, in early 20th century, the establishment of other outpatients clinics, Chinese hospitals and pharmacies (Yeoh, 1989). Ayurvedic\(^2\) practitioners were concentrated in those towns where Tamils and other Indians were most numerous. The Indians on plantations were cared for in the hospitals provided by the rubber estates while the Indian clerical classes had open to them the resources of the government hospitals (Anon, 1926).

Malay bomohs, Chinese pharmacists and acupuncturists and Ayurvedic doctors were only one part of a more extensive network of healers and modalities, and others from all communities

\(^1\) Unanic or Unani-tibbi denotes Arabic or Islamic medicine, also known as prophetic medicine. It traditionally makes use of variety of techniques including diet, herbal treatment, manipulative therapies and surgery. It is a complex system, encompassing all aspects and all fields of medical care, from nutrition and hygiene to psychiatric treatment (Krapp et al, 2001).

\(^2\) Ayurvedic is a system of healing that originate in ancient India. In Sanskrit, ayur means life or living, and veda means knowledge. So ayurveda has been defined as the ‘knowledge of living’ or the ‘science of longevity’.
provided an informal fringe to these professional practices. Geomancers, astrologists, clairvoyants and numerologists guided people in their everyday decision-making, selected auspicious days for weddings and circumcision ceremonies, advised on funerary rites and mourning procedures, protected families and villages from vast and varying casts of spirits and troubles. They provided the familiar health care and were referred to as the specialists to whom many might turn to in times of physical as well as mental or emotional crisis (Watson, 1939). The lack of fit between local spiritual spirits and the role of spirits in the etiology of infections and the available state medical services is one of the possible reason for a continuing need for a variety of practitioners, sorcerers and healers in the Malaysian communities (Braine, 1936).

I hold a belief that the way people seek treatment is very much influenced by the life-styles and cultures that they adopt. Much of the methods used by a bomoh or dukun (the Malay shaman) in his attempts to treat his patient belong to the natural world. While he claims to be able to heal a wide spectrum of illnesses, in reality there would be many diseases that are beyond the range of his ability. Vice versa, there would also be patients whom physicians fail to effectively treat, thus prompting the patient and his family to seek treatment by a preferred dukun. For example, when a Malay is ill, he has a few options in front of him: to seek modern hospital treatment or consult a traditional healer or both. A healthy person to the Malays, as most human beings, is an individual whose physical, psychological and social aspects are in functional balance and are manageable to the individual. Thus to a Malay, even if he is physically healthy, his health is incomplete if he is emotionally unstable or his cognitive function is disordered. And he also cannot be considered healthy if he has interaction problem with society around him. Besides this, the religio-spiritual aspect of his life is of paramount importance to ancient as well as modern Malays.

In these communities, there was a true medical pluralism, a complex mix of different practitioners and therapists to serve the varying needs of sick, injured or disturbed local people. Western medicine was simply another option, and operated best to serve the curative needs of the military and other British officials during the colonization period. The Malaysian government tried to control the practice of non-western healing through legislation, while promoting western health and medical services.

Ayurvedic medicine utilizes die, detoxification and purifying techniques, herbal and mineral remedies, yoga, breathing exercises, meditation, and massage therapy as holistic healing methods (Krapp et al, 2001).
Furthermore, the medical community is not in the forefront of activities governing environmental management. The modern medical system revolves around treatment of diseases rather than maintenance of good health. Living in an unpolluted environment clearly enhances health, but this philosophy typically is not pervasive among physicians and medical researchers. Once, the medical community played an active role in determining the link between infectious disease and poor sanitation. However, the problem is now uncommon in industrialized and in most developing countries and chronic diseases such as cancer and heart disease are more important. Although these chronic diseases also have important environmental exposure components, the link between exposure and effects is indirect.

Public health has uniformly promoted economic development as a primary means to achieving good health (WHO, 1995). Furthermore, just as economists can be chastised for creating economic models that conceptually exclude the environment, so too can the public health profession be chastised. Public health strategies have tended to disregard the ecological consequences of various interventions, continuing to view mankind above natural systems. Traditional public health interventions have focussed predominantly upon mankind as an independent entity, and not in the context of our living environment. As long as public health continues to value human health above any other element of nature, public health will continue to treat nature as a commodity of human health and sacrifice the environment for the short-term health of man.

The challenging question for the new public health is "How can public health place man in nature?" The new community health indicators must be more than the average of individual disease or mortality statistics. These new measures are required to assess health as a balanced system of individuals, communities and the environment. In this way, the primary role of public health must be the creation of sustainable healthy communities and ecosystem. The changing paradigm would require explicit recognition of humankind's niche in a greater environment and of our natural limitations.

Any new paradigms should be based on the ethical principle of respect for life and its support systems. It is the need to draw upon the great religious, philosophical and ethical traditions to restate the imperative of any new paradigm: respect for life, which means respect for the
systems that sustain life (Richter, 1999).

One of the reasons for concern in the current environmental situation is the changing attitude of man towards nature, induced by an increasing involvement in scientific research with technological and commercial exploitation (Vineis, 1999). In the 19th Century, natural science was perceived not only as a tool for producing objective knowledge, but also as a source of answers to traditional philosophical questions. Nature was surrounded by an aura of respect, although in a somewhat distorted way, in that the traditional religious aura (sense of magic and fear) was substituted by an appreciation of the regularity, beauty, and power of nature. The 19th Century scientist, Sir Darwin with wide cultural interests, not necessarily pressured by technological or entrepreneurial commitments (Vineis, 1999). More often than not, they conducted their scientific experiments themselves, mixing scientific activity with a craftsman’s ability.

2.8.2. The current public health and medical services in Malaysia

During the First (1955-1960) and Second (1961-1965) Malaya Plan, the MOH was known as the Ministry of Health and Social Welfare. Since the First Malaysia Plan (1966-1970) until today, it is known as the MOH. In the early post-independence years, the role of MOH was to improve the socio-economic conditions of its population, particularly the 65% of people who lived in the rural areas. At that time, morbidity and mortality from diseases related to poverty and poor environmental sanitation were higher in the rural villages than in towns. In 1958, the government of the independent Federation took control over both public health and medical services. Administration of these services was then passed from the states to the federal government (Malaysia, 2001b).

During these early post independence years, following Alma-Ata Declaration, the MOH had identified the need to break the viscous cycle of rural poverty, ignorance, apathy and ill health, to bring the Malaysian population into the mainstream of progress through developmental and poverty upliftment (WHO, 1978). The established of a wide network of rural health services throughout the country to provide basic health services to the majority of the country’s population was seen as the effective implementation of the health plan in the first 20 post independence years. Adopting the Health for All Policy and Strategy (WHO,
1979), the MOH laid emphasis on: - promotion and preventive measures, the provision of maternal and child health services, health education and promotion, the improvement of the environment (the provision of sanitary latrines and safe water supplies), the provision of basic first aid and outpatient curative services (primary care services) and the equitable distribution of health facilities for the local population.

After 40 years of independence, there have been improvements in health status as demonstrated by the vital statistics (life expectancy, infant mortality rate, etc). These were the outcomes of some 40 years of systematic planning and dedicated implementation of health development plans by the government through the MOH. Currently, in the process of Eight Malaysia Plan (2001-2005), the MOH is focusing on equity, accessibility, affordability, quality, changing disease pattern, environmental health, health technologies, globalization and liberalisation. The MOH welcomes all stakeholders to be involved, in improving the health status of Malaysians. This commitment is reflected in the integration and smart partnerships programs and activities between all stakeholders in health.

2.9. Urbanisation

In the 1991 census, urban areas were defined as gazette towns with populations of 10,000 or more and surrounding areas that are supplied services by the towns. Increases in the proportion of the population living in urban area result mainly from three factors: natural increase, net migration, and reclassification of areas (the latter two factors being closely related). The main factor in the need to classify rural areas as urban is generally migration to the outer fringes of established urban areas, both from rural areas and from within established urban centres (Department of Statistics, 1998).

Up until 1970s, Malaysia was a predominantly rural agricultural society. Urban growth was slow, increasing from 25 per cent to just 27 per cent between 1957 and 1970. Subsequently, the pace of urbanization increased rapidly as a result of policies promoting the growth in urban employment, and those encouraging the migration of the rural Malays to towns. The Malays now comprise a sizeable proportion of the urban population, increasing to 21 percent in 1980 as compared to 15 percent in 1970. By 1991, more than half of Malaysia’s population was living in urban areas. Economic development programs mainly focused on the West Coast urban centers, so that by 1991, more than half of the country’s population was living
in urban centers located predominantly in coastal areas. Nevertheless, levels of urbanization vary widely by state, mirroring differentials in development.

2.9.1. The Malaysian Physical Planning System

2.9.1.1. Development Planning

Successful development planning necessarily involves a combination of top-down and bottom-up approaches and inter-sectoral considerations. As Malaysia has a three-tier government and administration system, planning essentially starts at the federal level in the form of the 5-year plans. Although these are basically socio-development plans, it is at this level that development policies, strategies and programs on a sectoral basis are formulated. This plan is complemented at the state level by the state development plans, which translate the national policies according to state priorities.

At the local level, physical planning is undertaken within the purview of the Town and Country Planning Act. Development planning here is more land-use oriented in nature and carried out on a district-wide basis, or at the urban center level, involving specific physical projects and proposals. At the same time, spatial impact of policies and programs are continuously monitored to provide feedback for improving policy formulation at the national level as well as better implementation at the ground level.

Land-use planning in Peninsular Malaysia is undertaken wholly within the provisions of the Town and Country Planning Act of 1976 (Act 172) and its amendment in 1995 (Act A933). The amendments of the Act attempt to address certain pertinent environmental issues faced relating to sustainable development, e.g. preservation of natural topography and trees. Act 172 contains three basic elements contributing towards an effective planning system, i.e., the planning administrative system, the development plan system and the development control system (Zainuddin, 1998).

2.9.1.2. Planning Administration

Act 172 provides for creation of the States Planning Committees (SPC) and enables the Local
Authority (LA) as the Local Planning Authority (LPA) for its area. As the State Government is the authority on land matters, the SPC is the principal land-use policy maker for the state. Being headed by the Chief Minister of the state concerned, it is potentially a very powerful and influential committee. Among the functions of the SPC are to promote the conservation, use and development of all lands within the state and to advise the State Government on matters relating to the conservation, use and development of land. The Local Planning Authority on the other hand functions to regulate, control and plan the development/use of lands and buildings within its area (Zainuddin, 1998).

2.9.1.3. Development Plans

The regulation and control of land-use by the LPA is based on the need for development proposals to comply fully with the Development Plan prepared and other material considerations. This Development Plan comprises the local plan or the structure plan if such local plan is not available for the area.

A structure plan is a strategic policy document in the form of a written statement on development and use of land. Act 172 places a very strong emphasis on considerations for the protection and improvement of the physical environment. A unique element of Act 172 is the requirement of adequate publicity and public participation in the structure plan preparation process. A structure plan is approved by SPC. Once approved, it will be gazetted and have the force of law (Zainuddin, 1998).

A Local Plan consists of a proposal map accompanied by a written statement showing the LPA’s planning requirements for development and use of land. A basic function of the local plan is to complement the more general structure plan by translating the latter’s policies into detailed proposals and more site-specific on land-use zoning/allocation, including environmental improvement and traffic management. By being more detailed, a local plan also serves as a reference frame for facilitating developers to prepare layout plans and LPA to exercise development control. This is achieved through spelling out clearly the local policy guidelines and planning standards as well as environmental principles on which to base development control decisions (Zainuddin, 1998).
2.9.1.4. Development control

Act 172 stipulates that no person is permitted to use any land or building within a local authority other than in conformity with the local plan. Moreover, no development can be undertaken within a LA area unless planning permission in respect of the development has been granted by the LPA. When granting the planning permission, the Act allows for the LPA to impose certain planning conditions for the purpose of further regulating the development. Additionally, Act A933 requires Development Proposal Report (DPR) to be submitted when applying for planning permission. The DPR is to contain information on the proposed development and its effect on the surrounding physical environment. Thus, LPAs have wide range tools to influence the final outcome of development towards a better urban physical environment (Zainuddin, 1998).

2.9.2. Urban Development

Sustainable urban development is increasingly becoming an important area of urban planning studies and environmental policies. For example, the WHO (1992) has indicated that sustainable urban development should have as its goal that cities (or urban systems) continue to support more productive, stable and innovative economies, yet do so with much lower levels of resource use.

Planning is the allocation of resources, particularly land, in such a manner as to obtain maximum efficiency, while paying heed to the nature of built environment and the welfare of the community. It aims at securing a sensible and acceptable blend of conservation and exploitation of land as the background or stage of human activity (Ratcliffe J, 1981).

Urbanization in Malaysia has been growing rapidly; and is expected to accelerate in the future. It is envisaged that the urban population of the country will grow from 55 percent in 1995 to about 73 percent in the year 2020. The number of urban centers has increased from 67 in 1980 to 129 in 1991. The rapid rate of urbanization and increasing population density have resulted in various problems of traffic congestion, overcrowding, shortage of affordable housing, environmental degradation, flash floods, issues around waste disposal, stress-related diseases and the increase in demand for more and better urban services.
With more inhabitants, more space is needed for dwellings, amenities and infrastructure. Urban centers are seen as the engine for growth and opportunities. The future increase in size and changing composition of the population together with the growing affluence of the people will mean a higher standard on the quality of the organization and efficiency in utilization of the competing limited space, particularly in the urban centers. The potential for accelerated development present within urban areas in Malaysia must be fully realized if the urban sector is to make maximum contribution to national growth. Mounting evidence from cities around the world shows that environmental deterioration is not a necessary or inescapable result of urbanization and economic change. The fundamental challenge for us is to learn how to plan better and manage effectively the process of urbanization, avoiding or alleviating the detrimental side-effects while realizing the positive potential of city growth and change.

In managing urban development, the Agenda 21 of the Rio Declaration proclaimed 27 guiding principles and contain 40 different chapters organized under four main sections as a blueprint for sustainable development (United Nations, 1993). Most of the chapters, especially those in Section 1, 2 and 3, expound programs that are directly relevant for attaining urban development.

Since 1998, the Ministry of Housing and Local Government has managed to persuade the State of Selangor to implement Agenda 21 which is known as Agenda 21 Selangor. Strategies and plans have been formulated with the advocacy of LESTARI. As part of Agenda 21, this ministry has started implementing Local Agenda 21 projects in four regions in Malaysia. Local Agenda 21 was initiated as a pilot project in Petaling Jaya in 1999 and is at the infancy stage three other areas (Miri, Kuantan and Kerian). These local agenda projects emphasized the role of local government in managing the local environment and facilitate the involvement of the local communities.

It is clear that the concepts of sustainable development are in line with the goals and concept of the Healthy Cities. The major themes of Local Agenda 21 are shown in Table 1:
Table 1. Themes in Local Agenda 21

<table>
<thead>
<tr>
<th>Section</th>
<th>Area of Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Social and Economic</td>
<td>Revitalizing growth with sustainability, creating and maintaining sustainable living, systematic and manageable growth of settlements, urban environmental quality, promotion of human health, prosperous society living in a just and habitable world</td>
</tr>
<tr>
<td>2. Conservation and management of resources</td>
<td>Efficient use and protection of local resources such as land, freshwater, forest, as well as global and regional resources like the atmosphere, oceans and seas</td>
</tr>
<tr>
<td>3. Strengthening the role of major groups</td>
<td>People participation and responsibility</td>
</tr>
<tr>
<td>4. Means of implementation</td>
<td>Essential tools and mechanisms that constitute the foundation in the move towards sustainable development</td>
</tr>
</tbody>
</table>

The Healthy City concept arose from the ‘Health for All’ movement launched by the WHO in 1986. It is defined by Hancock and Duhl (1986, p7) as:

_The concept of healthy city is one that offers us an interesting new perspective on the city and an exciting opportunity to enhance health and well being. We believe that the city is the vital centre of our industrialized civilization, that health is a result of the complex interactions of people with each other and their physical and social environments and that the city has a crucial role to play in the health and survival of humanity._

Begun with eleven European cities in 1986, by 1993 the healthy city projects had grown to an international movement with over 1,200 Healthy City communities including about 100 in developing countries. This WHO’s Healthy City Program is a long-term urban health and development initiative which aims to improve the health and well being of people living and working in cities (Touros, 1992).
'The (healthy city) project is rooted in a concept of what the city is and a vision of what a healthy city can become. A city is viewed as a complex organism that is living, breathing, growing and constantly changing. A healthy city is one that improves its environments and expands its resources so that people can support each other in achieving their highest potential' (WHO, 1992, p3).

In Malaysia, the Ministry of Health (MOH) initiated the healthy city project in 1994. Johor Bahru and Kuching were the first cities to be involved in the project. The healthy city project addressed the impact of rapid urbanization in Malaysia, the global healthy city movement, the Malaysian experience with Healthy City Project with special reference to Johor Bahru and Kuching. The concepts of Healthy City focussed on six areas: (1) improving the health status of urban population; (2) development of health related policy at the Local Authority level; (3) ensuring physical and social environment remain healthy; (4) strengthening community actions for health; (5) development of new skills on health; and (6) ensuring the stability of health services within the need of urban areas (Roslan, 1998).

The process of developing a healthy city is intertwined with physical development and planning. The goal of the physical planning is to provide optimal infrastructure facilities and amenities, as well as, to improve and protect the environment and natural resources towards a quality living environment (Zainuddin, 1998).

The healthy city project is purposefully political and process-oriented, promoting political commitment and advocating for fundamental change in local government and its relationships with cities. The MOH, as the driving force behind this healthy project is promoting and disseminating information to those interested in this project. The success of the healthy cities project was due to the strong support of the respective mayors of the cities and the commitment of the community organizations, the NGOs and other groups in the city (Roslan, 1997).

Other initiatives towards sustainable development initiated by the MOH with advocacy from WHO are the healthy settings programs which include; healthy workplace, healthy village, healthy island, healthy school and healthy district.
2.10. Issues for Community Development

The purpose of community development is to re-establish community-based actions as the core component of meeting human needs and adopting the holistic approach towards a sustainable development. The devastating trend of environmental degradation especially since the industrial revolution reflected the mismanagement of the world by the dominant structures. The complexity of human life and the interaction with fellow humans, biodiversity and the environment provide a challenge to search for alternative ways towards better environmental management for health. Community development represents a vision on how things might be organised differently, so that genuine ecological sustainability and social justice can be realised in the experience of the local community (Ife, 1999).

The strong view of community for local sustainability, accepts as shown in Figure 3, the importance of social, economy and ecological factors at any given time and place (Brown, 1997).

Figure 3. Local integrated environmental management

4. Local integrated environmental management integrating:
1. Social justice
2. Supportive environment and
3. Sustainable development

(Source: Brown, 1997)
Ife has identified as illustrated in Figure 4, six dimensions of an integrated community development which are fundamental; the social, economic, political, cultural, environmental and personal/spiritual dimensions. The critical point is that all six aspects of community development are important, and to have a truly healthy and functioning community, it is necessary to achieve high levels of development in all six dimensions (Ife, 1999).

Figure 4: Integrated community development.

(Source: Ife, 1999).

Ife has further outlined 22 principles of community development, which are consistent with the ecological integrity and social justices (Ife, 1999). The important recommendation is the need to allow structures and processes to develop naturally from the community and requires
things to be done different in different communities. The 22 principles are interconnected and represent a coherent approach to community development.

These principles are:

1. Integrated development: the six dimensions as described above: social, economic, political, cultural, environmental and personal/spiritual development. These dimensions need to be addressed by the community, and to seek ways in which development in any one of the six might link with and stimulate development in the other five.

2. Confronting structural disadvantage. Consistent with social justice, awareness of any form of oppression in which class, gender and race/ethnicity, age, disability operates is important. Community development should incorporate strategies specifically designed to overcome any structural disadvantage.

3. Human rights. Human rights are important for community work in both the negative senses (the protection of human rights) and the positive sense (the promotion of human rights).

4. Sustainability. It is an essential component of the ecological integrity. It requires that the use of non-renewable resources and the output to the environment is minimised and growth is limited.

5. Empowerment. It means providing people with the resources, opportunities, knowledge’s and skills to increase their capacity to determine their own future, and to participate in and affect the life of their community. Thus, a complete strategy of empowerment requires the barriers to people exercising power be understood, addressed and overcome.

6. The personal and the political. The links between the personal and the political, the individual and the structural or private troubles and public issues are essential component of community development. Community development has the potential to make these links, and this is a critical step in consciousness-raising, in empowerment and in developing a program of action. These links could be translated into effective community-level actions.

7. Community ownership or sense of belonging. A widening of community ownership is an important aspect of building community; it can help support a community’s sense of identity, and give people more reason to become actively involved at the community level, and it can be a more efficient use of resources.

8. Self-reliance. It implies that the community should seek to utilise its own resources
wherever possible rather than relying on external support.

9. *Independence from the state.* It seeks to provide an alternative to government and is therefore necessary to break free of the constraints of operating within the government system.

10. *Immediate goals and ultimate visions.* Both of these elements are important for community development and it is essential to maintain the balance between them. The challenge is then to link them together and to show how each is not only relevant to the other, but is indispensable for the achievement of the other in a sustainable way.

11. *Organic development.* A community is essentially organic (plant-like), rather than mechanistic (machine-like) and therefore is not governed by a simple technical law of cause and effect, but is a complex and dynamic process; tending and nurturing this development is more an art than a science. Organic development means that one respects and values the community’s particular attributes, and allows and encourages it to develop in its own unique way, through an understanding of the complex relationship between the community and its environment.

12. *The pace of development.* The community must determine the pace at which development occurs and by its nature is a long-term learning process.

13. *External expertise.* The imposition of specific answers, structures or processes from outside the community seldom works. This implies that the community approach itself cannot be imposed, but must genuinely be developed within the community, in ways that fit the specific context and is sensitive to local community culture, traditions and environment. It requires horizontal communication (learning from each other, not from imposed expertise), accountability to the community and the encouragement of diversity. It is thus essential to move beyond traditional bureaucratic top-down frameworks and ways of thinking.

14. *Community building.* It involves strengthening the social interactions within the community (bringing people together and encourage teamwork) and facilitates communication. Loss of community has resulted in fragmentation, isolation and individualisation, and community building seeks to reverse them.

15. *Process and outcome.* The Gandhian approach (Gandhi 1964) sees the process and outcome as integrated. The process is important in determining the outcome and the ethical and moral issues of process are central.

16. *The integrity of process.* The processes of community work always need the closest
scrutiny to ensure that the integrity of the process is maintained. They need to be subject to the constraints of the ecological integrity and social justice principles and to be critically evaluated in their own right.

17. Non-violence. It seeks to change the structure of violence or other form of coercion, and also to seek to do so through non-violent means. It means that processes must seek to affirm rather than attack, to include rather than exclude, to work beside rather than to work against and to mediate rather than to confront.

18. Inclusiveness. It seeks to respect and value with other people idea, values and politics. All people should be intrinsically valued even if they hold opposing views and people should be allowed space to change their position on an issue without 'losing face'. Always seek to establish dialogue and to increase mutual understanding.

19. Consensus. The community development processes should build on a foundation of consensus, and that consensus decision-making should apply as much as possible. The consensus approach means working through an issue and towards agreement and aims at reaching a solution which the whole group or community will 'own' as theirs.

20. Co-operation. It seeks to challenge the dominance of the competitive ethic and aims at establishing alternative structures and processes, premised on co-operation rather than conflict.

21. Participation. Community development aims for everyone in the community to be actively involved in community processes and activities. Different people have different skills, interests and capacities. All forms of participation can contribute to the life of the community and need to be encouraged and seen as valuable.

22. Defining need. Community work seek to bring about an effective dialogue between various need definers, each of which has a legitimate and important role to play, to develop a consensus about the community’s needs.

With the breakdown of traditional communities and the development of modern industrial society, a fundamental change took place in tenature of human interaction, which has been described by Tonnies (1955) as the change from Gemeinschaft to Gesellschaft. In gemeinschaft society, people interact with a relative small number of other people, whom they know well in many different roles. In gesellschaft society, one has interactions with many more people, but these interactions are limited to specific instrumental activities. From the earlier approach of meeting the needs of one’s neighbour, we have moved to a systems based
on meeting the needs of strangers, as described by a number of writers (Titmuss, 1970; Wilensky et. al, 1965; Watson, 1980; Ignatief, 1984)

Today, science has undergone a process of ‘secularization’, which is accompanied by a parallel change in the public’s perception of both scientific activities and nature. We can interpret this change in the well-known essay by Walter Benjamin (1955), ‘Art in the Era of its Technical Reproducibility’. According to Benjamin, in this century, an important shift has occurred, from art as a special support to religious belief (are therefore surrounded by a religious ‘aura’) toward a post-auratic art. This shift was not only because of the general secularization of Western societies, but more specifically, it arose from the technical reproducibility of artwork. In this way, art came to lose its ‘appearance of autonomy’ from the productive world.

Now, the situation has radically changed: the expansion of technological applications and the dependence of scientific activities upon productive and military structures has led to the almost complete loss of any autonomy. However, a characteristic of ‘post-auratic art’ and science according to Benjamin, is the re-creation of a false sense of autonomy for the sake of the public. Living in an era of ‘post-auratic science’ has important anthropological implications. If we believe that nature can be reproduced with technical tools, if damage can be fixed just like any traditional machine can be fixed, what are we to expect people’s respect and sense of wonder toward nature?

From the vantagepoint of any of the local communities, the life experiences looked different in the events of time and place. They were each positioned and positioned themselves differently one from another. They exploited and were exploited in different ways. They lived differently in accordance with different sets of beliefs and value systems. They were exposed and vulnerable to different health risks, their explanations of sickness, healthy living, quality of life, everyday decision making and management diverged. The challenge that is attempted in this study, weaving between intellectual, institutional, political and social and medical disciplines. It intends to capture these differences in perspective and life experience in the local Malaysian communities for better understanding of these community structures to ensure more support is given to them in their efforts to manage the environment for health in their own places towards a sustainable future.
CHAPTER 3

SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL MANAGEMENT IN MALAYSIA

3.1. SUSTAINABLE DEVELOPMENT

Sustainable development has been widely accepted as the solution to the current ecological crisis and to the environment/development dilemma. The Brundtland report, which highlighted the concept of sustainable development, has several definitions for it. The most often quoted is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p.43). Sustainability requires effective interactions among economic, environmental and social considerations in decision-making processes to achieve its goal.

Another definition is given by Agenda 21, the main document to have come out of the first World Conference in Environment and Development held as the Rio Earth Summit in 1992. It states that sustainable development is something which improves the quality of life, improves the living and working environment of all people, provides shelter for all, creates sustainable energy, improves transport and construction activities and stimulates related human resources development and capacity building that is required to achieve these goals (UNCED, 1993).

From these definitions, it can be summarized that the basic aim of sustainable development is therefore the promotion of development that enhances the natural and built environment in ways that are compatible with the following four themes;

i. Environmental quality- avoidance of damage to the capacity of natural ecosystems
ii. Conservation of the stock of natural assets and resources
iii. Social equity and elimination of poverty
iv. Avoiding imposition of added costs or risks on succeeding generation
Sustainability refers to the state at which something is able to continue and be sustained undiminished over time. The biophysical question in sustainability is ‘How can we live within the rules and boundaries of the biophysical environment?’ The development question is ‘How can we run a society in such a way as to provide sufficiency, security and good lives to all people?’ This concept presupposes the maintenance of the total biophysical environment within which Life on earth exists.

3.2. Global Environmental Threats.

The changes needed to create an environment capable of sustaining life, which will include influencing policy, involvement in education, and ensuring a major paradigm shift, will require a broad disciplinary base and multi-stakeholder involvement. Interdisciplinary base and partnerships are obligatory for sustainability, and this reinforces the power of a paradigm shift. In this paradigm shift:- 1) no one discipline has more than a small fraction of the puzzle, and each must ‘fit in’ to achieve a big picture success, 2) no one country or region can proceed alone on sustainability, and 3) for global health we need to have international cooperation in monitoring progress/ regress and to correlate with global ecological and economic trends (Soskolne and Bertollini, 1999).

The term environmental control has become almost synonymous with pollution control. With most environmental management in the United States being directed toward pollution control, engineers have developed many innovative devices to treat wastes and other industrial by-products. Typically, these have been end-of-pipe systems for collection and treatment at the end of the production process. Only recently has attention turned at least in part in the industrialized country, to limiting pollution before it has been created. Engineers now are beginning to be asked to look for designed technological solutions that maximize resource use and minimize pollution generation. Thus, they remain central to current environmental management. However, many environmental quality problems are not dealt with most effectively by changing process designs. To meet modern environmental challenges, environmental scientists, planners, economists and a host of other professionals need to contribute to innovative problem solving.

Chernobyl and Bhopal serve as just two examples of massive – and unintended – releases of
environmental contaminants resulting directly in large number of human fatalities. Dramatic examples of ecosystem disruptions were also obvious. Many waterways were clogged with algae from over-enrichment, or dead from consequences of toxic releases. A variety of species became extinct. More subtle effects also were being discovered. Rachel Carson in her classic book Silent Spring, alerted the public in 1962 about chronic effects associated with the long-term release of small amounts of synthetic organic chemicals (Carson, 1962). Cancers as well as other diseases associated with urban environment have been increasing.

In the United States, active efforts to protect and cleanup the environment from the damage of industrial pollution began in the late 1960s. Conditions had deteriorated to such an extent that public pressure on national-level politicians led to federal legislation. Federal agencies were less susceptible to pressures from industry than state and local government agencies had been, and fairly comprehensive regulations were enacted in such areas as water, air, waste and toxic chemical control. Concurrent with the enactment and enforcement of comprehensive regulations, industry began to tout good environmental management as a revenue enhancer. The environmental conditions prevailing in the United States today thus reflect a period of rapid industrialization accompanied by substantial environmental degradation, followed by approximately 25 years of federal control in trying to restore and maintain adequate environmental quality. Past mistakes are being paid for by today’s taxpayer (Silverman, 1997).

Rapid increases in the last century in world energy consumption (through combustion of fossil fuels and biomass) and in world food production (through animal husbandry, irrigated agriculture and forest clearance) have caused heat-trapping greenhouse gases. The increase in these greenhouse gases is expected to alter world climate. Meanwhile, a separate issue has resulted from the widespread use of various hydrocarbons for refrigeration, air conditioning, insulated packaging, and in industry and agriculture. This process has resulted in the accumulation of certain human-made gases in the stratosphere, where they destroy ozone, and reduces the shielding of the Earth’s surface against incoming solar ultra-violet radiation. This radiation is damaging to living organism, and hazardous to human health.

Climate change and stratospheric ozone depletion are themselves part of a wider complex of global environmental changes that are attributable to human activities. These changes reflect
an apparent overloading of many of Earth’s natural systems. They include loss of biodiversity, declines in ocean fisheries, widespread land degeneration, disturbances of marine ecosystems and depletion of freshwater supplies (McMichael, 1993). For all of these reasons, the assessment of potential health impacts requires the integration of information about climatic factors, ecosystem vulnerability, biophysical systems, and social-economic-political resources and responses.

In 1988, concern over anticipated global climate change and its consequences led to the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the World Meteorological Organisation (WMO) and United Nations Environment Programme (UNEP). The publication of the second assessment report has markedly raised the profile of population health impact as a criterion for policy-making relating to climate change (IPCC, 1996a, 1996b). This applies particularly within the context of the United Nations Framework Convention on Climate Change (UNFCCC) which originated at the United Nations Conference on Environment and Development (UNCED)(UNEP/WMO, 1992).

3.3. The Precautionary Principle

The precautionary principle emerged in the context of marine pollution, international law and “cleaner production” in Europe. Its origin is generally ascribed to the Vorsorgeprinzip. Vorsorge became an important concept in environmental protection during the drafting of air pollution legislation in Germany in 1970. It embodies the notions of long term planning to avoid damage to the environment, early detection of dangers to health and environment through comprehensive research, acting in advance of conclusive scientific evidence of harm (Boehmer-Christiansen, 1994).

Translation of Vorsorgeprinzip into the “precautionary principle” appears to have taken place in the late 1970s and early 1980s through German inputs to discussions with Denmark and the Netherlands on the state of Wadden Sea bordering these countries and the North Sea (Freestone, 1991, Gundling, 1990)

Following this, the precautionary principle is now embraced in a wide range of international instruments, starting with those addressing marine pollution but soon moving to broader
pollution issues and to sustainable development (Harding and Fisher, 1999). Given the increasing pace of environmental degradation, much of it the result of the lack of a precautionary approach in the past, it seems clear that progress towards a more sustainable future will depend on our success in applying the precautionary principle. In keeping with the concept of sustainable development as an integration of ecological, economic and social objectives, such success will involve an anticipatory approach which allows us to minimize or avoid long term environmental degradation whilst maintaining or enhancing the economic and social well-being of societies around the world.

In view of the wide range of potential health impacts, interdisciplinary collaboration and cooperation between developed and developing countries will obviously be essential. Besides precautionary measures aimed at reducing greenhouse warming, controlling environmental pollution and improving consumption patterns of world population, would reduce environmental stress. The UNFCCC, now ratified by 156 countries, has called for reduction of national greenhouse gases emissions to 1990 levels by the year 2000. The protection of stratospheric ozone, although a politically, economically and technically simpler issues, sets a clear precedent for such a precautionary approach. The 1987 Montreal Protocol and its later amendments in 1990 and 1992, aimed to phase out use of ozone-destroying substances globally, was among the first step taken towards controlling and reducing the production and use of the more destructive forms of halocarbons. The Kyoto Protocols (UNFCC, 2002) recommended commitments of the industrialized countries to reduce their emissions of greenhouse gases. Thus the major focus of the mitigation measures on climate change is on international agreements that encourage or mandate national actions.

Actions to abate greenhouse gases are not globally implemented, however, despite much of the rhetoric, most are not even carried out at the national level. Rather they occur when individuals and organizations modify their behavior, change their activities and employ different clean technologies; i.e. all decisions are made at local level. Thus, there has been growing interest in the bottom-up approach to both science and policy, one that would enhance the ability of individual localities to do their own assessments and then act on them. To revise the well-known slogan, the challenge is to ‘Think locally but act globally’ as well as doing the reverse.
Community contributions to national or regional concerns are commonly described as ‘Acting from the ground up’ or ‘Grass-roots support’ or ‘Voluntary contributions’ or ‘Bottom up Actions’. These terms undervalue the capacity of an individual community to take major responsibility for environmental concerns on its own account. It's use obscures the fact that those speaking for each locality taken together provide the key unit of accountability for the region and eventually the planet. The key tool for implementation of United Nations Agenda 21, Local Agenda 21, is based on this principle (Brown, 1999).

The precautionary principle is better recognized and acted upon at the community and continues to be community-driven. It required the political process of the government sector nearest to the community to establish that common ground. A systemic and strategic system is needed in which each of the spheres of responsibility, either the decision-makers, scientists or the community offers the appropriate evidence on value positions and risk assessment. Communication should include top-down, bottom-up and inside-out (Brown, 1999).

3.4. Integrated Policies, Strategies and Actions: Progress since the Earth Summit

The international meetings, from the Earth Summit held in Rio de Janeiro in 1992, to HABITAT II held in Istanbul in 1996, have made it evident that health-and-environment concerns rise ever higher on the broad environment and development agenda. In addition, the environmental issues are growing in prominence on the public health agenda. The health movement has especially emphasized the issues of social justice, equity, and human development. The environment movement has highlighted sustainability in particular. There is no doubt that health, environment and sustainable development are anything other than inextricably linked together (WHO, 1997a).

The Earth Summit heralded a new approach to national and international development, and environmental planning. By adopting the principles of the Rio Declaration and Agenda 21 (UN, 1993) as the route to sustainable development in the 21st Century, the world leaders recognized the importance of investing in health promotion and the environment as a prerequisite for sustainable development. This Agenda 21 was adopted by 179 nations at Rio in June 1992 to address the grave trend of environmental degradation, while acknowledging that human beings are at the center of concerns for sustainable development.
During the five years since the Earth Summit, commitment to securing human health and a healthy environment has become widespread. After the Earth Summit, the Commission on Sustainable Development (CSD) was created to monitor and further promote national and international sustainable development activities. A five years follow-up of progress regarding activities proposed in each of the chapters in Agenda 21 has been prepared (CSD, 1997). The CSD identified several issues that warrant special attention:

i. the need to integrate health into environment impact assessment procedures
ii. the need for effective and environmental health information systems
iii. the need to improve knowledge of environment-health linkages

Agenda 21 calls for integration of environmental and developmental concerns in decision-making. It also calls for the integration of the social sector, including health, into the process of development planning. It further specifies that countries develop plans for priority actions, based on cooperative planning between various government levels, non-governmental organizations and local communities. Only by integrating local and national health concerns into environment and development planning can the most relevant policies and solutions to health-and-environment problems be found.

Agenda 21 also emphasizes the role that local governments can play in fostering sustainability (Box 1). It calls on local governments to enter into a dialogue with citizens, local organization and private enterprise, and to adopt Local Agenda 21. Local Agenda 21 calls upon local authorities to enable this process in consultation with their local communities and stakeholders. This also implies studying and dealing with the issues of sections one and two of Agenda 21 where applicable in their local context. This is an extremely challenging task requiring both understanding of the issues, and the expertise and skills to identify and implement the necessary action.

Endorsement for new planning approaches involving four elements is provided by Agenda 21:

- identification and assessment of health hazards associated with environment and development
- development of an environmental health policy incorporating principles and strategies for all sectors responsible for development
• communication and advocacy of this policy to all levels of society
• a participatory approach to implement health-and environment programs

Box 1. Role of local authorities

Local authorities have a critical role to play in ensuring that development is sustainable and health promoting. Local authorities:
• operate the economic, social and environmental infrastructure
• oversee planning processes
• establish local policies and regulations
• determine parameters for economic development
• serve as important vehicles in the development and implementation of local, regional and national policies
• facilitate community involvement

Source: United Nations, 1993

In Malaysia, the state of Selangor took the initiative to implement Agenda 21 in February 2001. The Agenda 21 Selangor was a document on Sustainable Development Action Plan Strategy for the development at the state level towards 2005. The action plan strategies took into consideration policy, planning, implementation, programs and activities at federal, state and local levels (Agenda 21 Selangor, 2001). It provides information on sustainable scenarios at those different levels, describes the unsustainable priority issues, and emphasizes the basic need for sustainability. It is a comprehensive and systematic action plan, which provides framework for the implementation of the action plan. This document has been adopted as the reference document in the Local Agenda 21 pilot project.

3.5. Frameworks in Environmental Management

Frameworks for environmental and sustainable development indicators, systems of environmental and natural resources accounting, and ad-hoc compilations of indices of human welfare have proliferated in the wake of the United Nations Conference on the Environment and Development (UNCED). They reflect agreement on the need for integrative policies in the fields of environment, population and development. They also reflect disagreement on
how this integration can be achieved both in data compilation and in decision making.

Healthy populations can exist in local environments that have lost their ecological integrity, such as most urban regions, only if healthy ecosystems exist elsewhere to support them (Soskolne and Bertolini, 1999). This is a function of technology and trade, and is a feature of human culture that uniquely distinguishes humans from other animal species dependent on their local environments. From this perspective, the local population imposes its ecological footprint\(^3\) on the global commons\(^4\) and on other regions or countries. It should be noted that the various concepts of global commons, environmental health, ecological health, ecosystem health\(^5\), ecological integrity\(^6\) and the like, generally relate to the conditions of the biosphere that support life.

The current way of reporting is criticized for being too obsessed with improving environmental information sources rather than promoting action and change. However, it has been identified that to achieve sustainability we need to track progress towards defined environmental goals, communicate information to the public and policy makers and integrate environmental, social and economic measure of progress. Indicator and accounting systems provide us with the means to achieve these needs (Hendriks et al, 1996).

Frameworks are needed to structure and organize information such that it is more accessible and more communicable. They can provide the basis for assessing the inter-linkages between cause, effect and reactions to environmental problems. A number of frameworks have been developed recently, reflecting the urgency to integrate environmental information with other information (health, social, economy, political, etc).

3.5.1. Pressure-State-Response framework (P-S-R)

The Pressure-State-Response (P-S-R) framework is based on the earlier work of the Canadian Government and was further developed by the Organization for Economic Co-operation and

\(^3\) The mark left on the earth through the drawing down (or depletion) of ecological capital beyond a local population's political boundaries.

\(^4\) The planet resources available to support the world's population.

\(^5\) Human population and individual health are ultimately dependent on the integrity of ecosystems and the ecosphere (i.e., no environment = no population, no health)
Development (OECD, 1994). The P-S-R framework consists of a set of loosely connected indicators that address issues in a broad framework. To assist with comparison, there are standardized international concepts and definitions (Hammond et. al, 1995):

- **Pressure** indicators describe the stresses or pressure placed on the environment through human activities. They show the causes of environmental problems such as depletion of natural resources through excessive consumption, releases of pollutants into the environment and changes in land-use.

- **State** indicators represent trends in the physical or biological state of the natural world. They measure the 'state' of the environment, particularly the decline of environmental resources and quality as a result of human activities. State indicators include water quality, ozone concentrations, urban air quality and stocks of fish.

- **Response** indicators describe the measures of policy adopted in response to environmental problems. They gauge the efforts taken by society or by an institution to improve the environment or mitigate degradation. Response indicators include measuring regulatory compliance, levels of research and budget commitment to the environment, quantity of protected areas, changes in consumer behavior.

The P-S-R system is developed on the basis of causality. The relationship between the entities is implied by their position within the framework. Figure 5 outlines the basic structure of the P-S-R framework. The Institute of Environment and Development (LESTARI), National University of Malaysia, a key advisor to the Malaysian government has adopted the OECD P-S-I-R as a framework on environmental management in Malaysia.

Proposed indicators at the national level in Malaysia is presented in Table 2 (Peterson, 1997) to evaluate effects of industrialization on the landscape and other meso-scale situations. Industrialization is often accompanied by hazardous waste production, emission of toxic chemicals, ecological effects of industrial effluents in rivers, acid rain, atmospheric haze, marine pollution, etc. The findings of high concentrations of heavy metals in rivers and coastal waters in Malaysia are now being recorded.

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6 Integration of ecosystem structure and function. It is an umbrella concept that includes the following component: the ecosystem must retain the ability to deal with outside interference and if necessary, regenerate itself following upon it (Westra, 1994).
Figure 5. Pressure-State-Response framework

(Source: OECD, 1994, p.11)

Table 2. Proposed indicators at national level in Malaysia

<table>
<thead>
<tr>
<th>Pressure</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrialization</td>
<td>Energy resources</td>
</tr>
<tr>
<td>Land conversion/ degradation</td>
<td>Wetlands/ soil reclamation</td>
</tr>
<tr>
<td>Toxic chemicals</td>
<td>Chemical inventories</td>
</tr>
<tr>
<td>Hazardous wastes</td>
<td>Waste inventories</td>
</tr>
<tr>
<td>Tourism</td>
<td>Forest resources</td>
</tr>
<tr>
<td>Agriculture/ aqua-culture</td>
<td>Food resources</td>
</tr>
<tr>
<td>Air pollution</td>
<td>Motor vehicle inventory</td>
</tr>
<tr>
<td>Wildlife conservation</td>
<td>Loss of bio-diversity</td>
</tr>
<tr>
<td>Environmental laws</td>
<td>Forest degradation</td>
</tr>
<tr>
<td>Development policies</td>
<td>Soil erosion/ loss</td>
</tr>
<tr>
<td>Monitoring and enforcement</td>
<td>Haze/ air pollution</td>
</tr>
<tr>
<td>Environmental education</td>
<td>(Bathing) water pollution</td>
</tr>
<tr>
<td>Cleaner production</td>
<td>pollution impact/ all media</td>
</tr>
</tbody>
</table>

(Source: Peterson, 1997)
Since the introduction of the P-S-R framework, there have been a number of criticisms, including:

i. The distinction between pressures, states and responses can often be difficult to determine. Some indicators such as the increase in motor vehicles may be regarded as a pressure since it leads to an increase in emissions of greenhouse gases and carbon dioxide among other things. However, in context of social amenity, the number of motor vehicles on the road as an indicator can be viewed as a deleterious change in state of amenity (Harding & Eckstein, 1996).

ii. Determining the causal links between the pressure, state and response may be more difficult than is apparent. In some cases the response to an environmental problem may involve large time delays and as a result the link between state and pressure for example cancer, may not be established.

iii. The system focuses on the output issues with little consideration of the inputs or the driving forces behind the pressures. The Wuppertal Institute in Germany identifies this as a major shortcoming of the P-S-R model. Spangenberg et al, state that ‘deriving responses from the selected states necessarily results in the development of (short-term) curative politics, preventing the development of cause-oriented approaches’ (Spangenberg et al, 1995, p.5). In this respect, the P-S-R system reflects a kind of political end-of-pipe thinking and thus cannot fulfil the requirements of proactive environmental policies.

3.5.2. WHO Health and Environment framework

The WHO health and environment cause-effect framework (Briggs, Corvalan and Nurminen, 1996) is intended to highlight the important links between different aspects of development, environment and health and to identify effective strategies for actions to control and prevent adverse health effects (Figure 6). This framework explicitly recognizes that although exposure to a pollutant or other environmentally mediated health hazard may be the immediate cause of ill-health, the ‘driving forces’ and ‘pressures’ leading to environmental degradation may be the most effective points for controlling the hazard (WHO, 1997).

Effective action to protect health needs to consider each of these and might incorporate:

i. action on the driving forces through policy development and implementation

ii. action on the pressures through cleaner production and emissions reduction
iii. action on the state of the environment through pollution control devices
iv. action on human exposures through education and personal protection
v. action on the resultant health effects through medical care of those who become ill.

Figure 6. WHO health and environment framework

<table>
<thead>
<tr>
<th>Driving Force</th>
<th>Population growth</th>
<th>Economic Development</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>Production</td>
<td>Consumption</td>
<td>Waste Release</td>
</tr>
<tr>
<td>State</td>
<td>Natural hazards</td>
<td>Resource Reliability</td>
<td>Pollution levels</td>
</tr>
<tr>
<td>Exposure</td>
<td>External exposure</td>
<td>Absorbed dose</td>
<td>Target organ dose</td>
</tr>
<tr>
<td>Effect</td>
<td>Well-being</td>
<td>Morbidity</td>
<td>Mortality</td>
</tr>
<tr>
<td></td>
<td>Action</td>
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</tbody>
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Action on exposure and on health effects may be seen as a reactive approach, whereas action on driving forces and pressures may be seen as proactive since it will deal with root causes. In addition, the problems facing the health sectors today are increasingly complex, multidisciplinary in nature, often ill defined, and solutions to them uncertain. The health sector cannot address these problems on its own.

New and innovative approach is needed to integrate and implement concepts of environmental sustainability and community development, if human development is to be achieved. Wide-ranging reforms are also needed to more adequately deal with assessment and management of environmental health risks within a framework of sustainable development.

3.5.3. The 4 P’s Framework

A framework for integration of concepts and practice has been developed by Brown (1997) known as the Policy-Problem-solving-Practice-Place (4 P’s) framework. It was built from
grounded theory using data from 300 local governments in Australia. This model operates as both a generic decision-making tool for environmental management and as a framework for state of the environment reporting. It shares some common ancestry with the P-S-R model.

Brown used the concept of 4 P’s model in the sustainable management of social, economic and environmental resources at the local scale. The four dimensions of any locally based decision-making system are policy, problem-solving, practice and place (Figure 7). The four together make-up an interconnected system which can be entered at any point. The links between the four are never a simple relationship, but an interactive process.

Figure 7. Four dimensions of integrated local area management

(Source: Brown, 1997)
Policy provides the guiding principles and objectives for the management decisions and the strategic initiatives, which will implement the policy. The identification of problems to be solved by policy is determined by the framework used to examine the state of the place. The outcome of the problem solving will determine the directions of the professional or personal practice. In a situation of change (and policy is about change) the practices will change.

Transparent decision-making depends, among other things the principles of co-operation and trust, and on everyone involved having access to the evidence on which the decision-making is based. Reliable and valid evidence can be collected through the following processes;

i. Policy is made up of the expectations and intentions of the principal players. It is made visible in terms of aims, objectives, plans and strategic directions.

ii. Problem solving is the approaches brought to responding to the impact of policy on place.

iii. Practice also applies to the individual, the team, the organization, the region or the nation.

iv. Place is the physical state of people and environment.

Managing for local sustainability asks for a range of skills of management. As well as personal skills, sustainable local area management requires an understanding of the underlying principles for example, the principles of ecologically sustainable development (ESD), the development of community as a learning organization, and approaching management as a decision-making processes. Adult learning requires not only theory, but also practical examples of the required skills and the opportunity to test these out in practice.

The act of creating effective indicators expands our understanding of the complexity of society and more accurately represents the condition of the whole system. Feedback from these more holistic, all encompassing sets of indicators can be used for better, more informed decision making. If indicators are recognised as part of the system, they can be used strategically and pro-actively to bring about desired conditions in the system.

The linkages between the dimensions of sustainability are often highly complex and not fully understood but seeking to address them is of utmost importance to both the sustainability debate and for policy making in general. To be effective in promoting sustainability, these
linkages have to be directly relevant to the community and be involved in the development and make use of them as indicators. These indicators in which a society chooses to report are surprisingly powerful. They reflect collective values and inform collective decisions. When indicator creation is combined with community involvement, a powerful tool is created which can both measure and drive progress towards sustainability in local communities.

Science has assisted us in our decision-making processes. However, science does not provide all the answers to our needs. It is helping us in a limited way in trying to understand the interaction between environment and people due to both scientific uncertainty and other limiting factors. Science is not capable of addressing the whole spectrum on environmental management for health. In the scientific literature, there is enormous knowledge within the science of the environment and the human. This specialist knowledge which is dominant in decision-making process has brought us the fragmentation in our thinking on the environment and people. As a result of this, the ways we view each subject is different and separated which has created difficulties into linking them back together. In the real world, we know that there are always active and dynamic interactions between the nature and the species living in it which are interdependent on each other.

Ultimately, sustainability is based on systems, values and processes (Loucks et. al, 1999). Integrity applies at the level of individual (health), communities and global systems. The vision of sustainable environmental health must be a broad one. Ideally, this vision that shapes research priorities and policy directions is of a world in which communities live in a safe environment. It is a world in which environmental resources that enables present generations to better their lives, will be available for future generations. At its core is a sustainable approach to environmental protection - one that recognises that environmental safeguards and economic development should go hand in hand.

Anthropocentrism is most likely responsible for the disregard of any relationship between human-centred activities and their impact on life-support systems. Consequently, with humans having assumed the role of directing the planet, good stewardship would require that necessary and urgent attention be paid to issues of sustainable future, if only out of concern for future generations. Worldwide application of the precautionary principle is encouraged. In this view of the future, all stakeholders should work together to advance environmental
stewardship, forming voluntary partnerships to achieve advances, none could accomplish alone. Individuals and institutions develop and share data to strengthen risk assessment and link data to policy making. Research, regulatory action, and collaboration seek to safeguard community by reducing or preventing exposure to toxic hazards.

There is a clear need for the data essential for making effective policy decisions. Policy makers need the results of more research and testing to understand risks for public health. The scientists and public health experts need to participate in the policy making process and make use of the significant opportunities for multidisciplinary co-operation and collaboration. Information must also be made available to communities at all levels in user-friendly, ways to ensure that citizen and consumers have the information they need to safeguard themselves. With greater co-operation between and among the community and other stakeholders, much can be accomplished to safeguard community and environmental health for today and tomorrow.

3.6. Environmental Management in Malaysia from the Perspectives of the Knowledge-based Communities

3.6.1. Environmental Issues

The environmental experts, whom I refer to as the knowledge-based communities, declared that environmental management was never a planned agenda in this country until early 1970s. The only environmental issue that could be identified prior to 1970 is water pollution due to silting in rivers and watercourses. The problem of soil erosion and silting in rivers and other watercourses started with the opening up of land for tin mining and shifting agricultural activities for cash crops during the earlier part of the colonial period (Aiken, 1982). This was further intensified when more forested land was cleared to make way for rubber estates towards the end of the 19th century and at the beginning of the 20th century.

The situation was rendered more serious with activities such as urbanization, housing, industry and infrastructure development. Land clearing for construction, where hill slopes are not spared is resulting in landslides and massive soil erosion. As a consequence, riverbeds have risen and agricultural land and settlements are being regularly flooded and often
inundated with silt. Presently, more and more urban areas have to deal with increasing frequency and intensity of flash floods due to inadequate drainage system and clogged up drains and streams. In fact, silt is still the main water pollutant in rivers of this country.

Some of the rivers in the west coast of the Peninsula have been known to be very polluted due to discharge of effluents from agro-based industries, namely rubber factories and palm oil mills in the 1970s. Increased efforts at industrialization since the 1970s and changing from agro-based industries to manufacturing and heavy industries have increased the number of rivers that are badly polluted, some even with traces of heavy metals (Department of Environment 1996, 1998). Coastal waters are also known to have been polluted not only from oil spills due to accidents at sea, but also from effluent discharged inland and carried by rivers to the sea. Development of coastal area for resort and recreational facilities has also added to the problems of the coastal waters (Jamaluddin, 2000).

With regards to air pollution, the problems in the 1970s were due to burning of fossil fuels and open burning practices. The scenario has not changed much in the 1980s, where mobile sources contributed to more than 70 per cent of air pollution emission. However, since early 1980s motor vehicles in major urban areas, open burning and forest fires have not only caused air pollution but also created haze that has disrupted economic activities and posed health threats to the nation (Sham, 1984, Sham et al., 1991).

Apart from air pollution in urban areas, motor vehicles also contribute heavily to noise pollution. Since the early 1980s, most urban areas have noise levels that exceed daytime WHO’s standard of 55dBA (WHO, 1980). Other sources of noise pollution are construction activities in housing areas related to building of apartments and low-cost housing.

Growing affluence and increasing concentration of population in urban areas have increased the generation and types of solid waste produced. Presently, solid waste management is one of the most important issues of local authorities where much money is spent in the collection and disposal of solid waste. The increase in manufacturing industries and the number of areas developed for industrial estates also contribute to an increase not only in solid waste but also in toxic and hazardous waste. The industrialization program, which was started in 1970s and diversified further in the 1980s and 1990s, has increased the generation of toxic and
hazardous wastes, especially those produced by the electronic and chemical industries.

Other environmental issues are the over exploitation of forest and forest products, which result in the loss of bio-diversity. In fact, the development processes have endangered certain endemic species in the country (Mohamad, 2000).

3.6.2. Environmental Management

An organized and committed effort of the knowledge-based communities with the support of the government to manage the environment in Malaysia, started a few years after the 1972 Stockholm conference on Human Environment. This was initiated by the formulation of the Environmental Quality Act, 1974, followed by the setting up of the Division of Environment (presently known as the Department of Environment) in 1975. The inclusion of the National Environmental Policy objectives for the first time in the third Malaysia’s five-year development plan (Malaysia, 1976), further demonstrated the government’s concern for the environment alongside the efforts to develop the nation’s economy.

In fact, efforts at managing the environment were started by the British administrators more than a century ago. Going by the presence of laws related to the environment before the 20th Century can only mean that there have been issues that needed to be managed even then. The management of environmental resources and other matters related to the environment from the perspectives of the experts can create a few issues and problems, either in the form of interpretation of constitutional provisions or in the implementation of policies through legislative measures. In Malaysia, the Federal guides management of these issues and State Constitutions and the legislation made under the purview of these constitutions. However clear the provisions in the constitutions and the individual enabling legislation are, without clear knowledge of the constitutions and without cross-reference on the use of the numerous legislations, there are bound to be issues and problems in their implementation (Jamaluddin, 2000). Furthermore, what do these systems of governance in environmental management mean to the local communities? The exclusion of the local communities’ involvement in the decision-making has hindered the success of implementation of these policies.

To the experts, there are number of issues that can be identified in relation to the management
of the environment. Some of the issues are structural in nature and fall within the Constitutions, while others are related to either legislation, institutional arrangements, the manpower handling the legislation or enforcement as well as the funding mechanism.

3.6.2.1. Provisions in the Constitution

Provisions in the Federal and States Constitutions are very clear on most matters related to environmental resources and other environment-related matters. The individual legislation directs the Federal Government or State Government in following the provisions enumerated in the Constitutions (Jamaludin, 1999).

The Federal Government in its efforts to create uniformity in the state laws has often acted according to the provisions in the Federal Constitution to enact uniform legislation over matters related to environmental resources for use by the various states. This action has been well accepted in all states in Peninsular Malaysia. However, there is still much to be desired for Sabah and Sarawak regarding the issue of uniformity of laws since these two states have had their own special legislation before they joined Malaysia (Jamaludin et. al, 1996).

The Department of Environment, being a federal agency does not have full control over environmental resources. Matters relating to land, forest, water resources, local authority areas, fisheries and agriculture are under the jurisdiction of the state or enacted under different legislation, which are not under the charge of the Department of Environment.

For environmental conservation, the Environmental Quality Act, 1974 and the Environmental Quality (Amendment) Act, 1985, were enacted by the Federal Government, however, the management of environmental resources remains within the purview of the State. This has given rise to problems as fragmentation of the environmental management in Malaysia between states and the federal government has resulted in poor enforcement and coordination of activities. Successful implementation of these Acts is very dependent on close co-operation between the federal and state authorities (Jamaludin, 1999).

For example, in the Third Malaysia Plan, 1976-1980, the Endau-Rompin forest reserve was scheduled to be converted to a National park. The proposed National Park comprised of
500,000 acres and included as 'core areas'; 90,000 acres in the State of Pahang and 120,000 acres in the State of Johore. In the second year of the Third Malaysia Plan it was revealed that the Pahang State Government had already leased 30,000 acres of the gazetted park areas. Pahang obtains a substantial proportion of its revenue from land in the form of forest revenue (Shafruddin, 1987). Despite protests from the general public and the non-government organizations, the State Government defended its action by arguing that it needed the revenue. The problem of turning the forest reserve into a National Park required the state government to gazette it before logging could be stopped. Despite continuing public protest and Federal Government concern, the Pahang State Government had plans to issue more logging permits. This issue was resolved when a newly elected State Government in 1978 cancelled the permits.

This Endau-Rompin case highlighted a conflict of interests and priorities between the Federal and State governments. The Federal interest was, inter alia, in forest conservation. The State's interest was in generating as much revenues as possible from a land-based resource, which is under its jurisdiction. If the election had not solved the issue, the Federal Government had constitutional powers to act against the State Government directive (Shafruddin, 1987). In this case the Federal Government appears to have opted for a consultative and consensus building approach ensuring that the final decisions rested with the State authorities.

3.6.3. Environmental Laws

Environmental legislation as advocated by the experts has long been used in Malaysia as one of the strategies to manage the environment. The legislation is not formulated to deal with the environment in general. Most of them seek to regulate human activities that may directly or indirectly affect the quality of environment. Some for preventive purpose to minimize the possible environmental deterioration. Some are in fact legislation related to environmental resources e.g. legislation related to land, water, forest, marine and fisheries and mining.

Prior to the Environmental Quality Act (EQA), 1974, most of the available environmental legislation did not contain standards for enforcement purposes. Under the Section 51(1) of the Act, the Minister is allowed to make various regulations for the protection of the environment.
These regulations can prescribe standards and criteria for pollution such as in the case of water, air, noise, toxic and hazardous waste.

The EQA has been revised two times. The first revision was made in 1985 by introducing Section 34(A) requiring a report on possible impacts of the environment resulting from prescribed activities to be submitted to the Director General of the DOE for approval. Projects cannot be carried out prior to the DOE approval. Such requirement is considered necessary as an environmental planning tool, to help project proponents in identifying possible environmental problems and mitigating measures related to projects identified under the list of the prescribed activities (Jamaluddin, 1999).

The EQA was further amended in 1996 to respond to the outstanding issues regarding current environmental management in Malaysia (Sham, 1997). It focuses on four major areas of concern. These are (1) the management and more stringent control of hazardous wastes and products that are considered environmentally unfriendly. It includes a provision for 'prescribed substance' and prescribed conveyance' as in 'prescribed premises' in regulations made earlier; (2) Environmental Audit; (3) the establishment of research cess\(^1\) and environmental fund; and (4) increased penalties for non-compliance.

3.6.4. Environmental Challenges

The crisis of modern world today, and Malaysia is not exempted, is a result of over consumption, over exploitation of natural resources, mismanagement of wastes and inappropriate use of technology. This crisis is characterised by increasing instability—whether ecological, economic, political, social or cultural. Existing structures are not adequate to provide solutions resulting in the increase of the crisis. A challenge to develop a strategy for a balanced development programme, which is environmental friendly, is therefore needed, and this issue must be given top priority.

If the development is to be sustainable, concerted efforts must be made to harmonize this with a matching conservation plan. From the perspectives of the experts or knowledge-based

\(^1\)Cess is a charge imposed in respect of the different types of wastes generated based generally on the volume and composition of the waste. In the context of EQA, 1974 (Amendments 1996), the cess collected is paid into a fund, provided for under the 1996 amendments, known as the "Environmental fund". The latter is operated as a
communities, one immediate challenge Malaysia needs to grapple with is the question of effective enforcement of the existing environmental and environment-related legislation. The principal act of EQA, 1974 has now been amended twice – one in 1985 and the most recent in 1996. Each time the provisions have been made more comprehensive, the penalty stiffer, and some new provisions added to discourage non-compliance. As legislation, the EQA is being improved from time to time and over the last 24 years has been the most useful environmental management tool. The support it receives from the public - the state and local governments, the government agencies, the private sector, the NGOs and the community - will be critical for the future effectiveness of the EQA. In order to gain this support, a clear understanding of the public or the local communities’ needs with the aim of ensuring compliance is also crucial. The legislation has no meaning if the enforcement is not carried out strictly.

To become effective agents of development, the authorities, mainly the local governments and municipalities need enhanced political support, institutional and financial capacity and support. State governments will need to play a more active role in conservation efforts as many of the present day environmental problems are closely related to activities which are directly under state jurisdiction including land-use, forestry, mining and water resources.

An important point to emphasize is the need to realize that environmental management and conservation are a shared responsibility. In view of the different contribution to environmental degradation and benefits derived from environmental resources, the ‘shared responsibility’ should somehow be differentiated, the spirit embodied in Principle 7 of the Rio Declaration in 1992 (UN, 1993). While every member of the community is expected to assist in environmental protection, conservation and management, the more endowed sections of the community especially the corporate sector will need to shoulder greater responsibility and contribute more substantially to environmental causes.

Malaysian society is undergoing remarkable change. If in the past, the interest in unconstrained growth, material consumption and hard technology was unquestioned, now there appears to be some evidence that the country is moving toward a more pragmatic, more mature ethic that accepts the reality of limits. ‘Smart growth’ as a compromise to the apparent conflict between environmental conservation and the need for development is slowly

Trust Account within the Federal Consolidated Fund and used primarily for pollution research and waste recovery and prevention.
replacing unconstrained growth. This hopefully will be reflected in the increasing concern of the corporate sector for the environment in the future (Sham, 1999).

The role of NGOs in environmental education has long been acknowledged. Their activities, aimed at affecting changes and shaping attitudes, and so, both directly and indirectly, are involved in environmental education. Of great significance is the role of the NGOs in providing a mechanism for feedback to the government and its regulatory agencies on negative side effects of program implementation. In many respects, they are the public watchdogs for the proper use of natural resources, conservation, professional practices, and other activities of the government and the private sectors, which adversely impinge on the environment. The government, on the other hand, should be willing to listen to alternative views without prejudice.

Obviously the very principle of sustainable development requires that environmental management approaches shift from one which deals solely with mitigating adverse environmental impacts to management of available resources for the present and future generations. Experts have claimed that environmental regulations must move beyond mere safety regulations, zoning laws and pollution control enactments; environmental objectives must be built into other areas, such as taxation and foreign trade using whenever appropriate, economic instruments. It is encouraging to note that the government has started to implement ‘Agenda 21’ tabled at the Rio Summit and the proposed National Conservation Strategy (NCS) which outlines an approach to achieving sustainable development. The latter builds on the strengths of existing institutions and mechanisms and contains various economic measures, which can be implemented to assist the integration of the environment and development. The NCS will in effect provide a guide to the government in the integration of conservation and development to ensure a sustainable future for Malaysia.

To the experts, one misgiving is that the process of the approval by Cabinet has taken much too long. However, the Sixth Malaysia Plan (1991-95) and the Seventh Malaysia Plan (1996-2000) were committed to the conservation and enhancement of environment. The implementation of the process is critical for it needs above all political will that transcends rhetoric and narrow sectional interests (Sham, 1999). In most of the circumstances the role of the public in decision-making process for the managing the environment for health is not
clearly defined. Therefore, the involvement of the public is limited and successful implementation of the sustainability principle is questionable.

One critical aspect that has also been overlooked is social engineering with respect to human capital in agriculture (Chan, 2000). The New Economic Policy, which was introduced, with the Second Malaysia Plan (1971-1975) was, among other things, concerned with rural poverty for which the strategy was to enhance rural income opportunities by modernizing the rural sector. Agricultural incomes tend to be lower than those from other sectors are we compare income earners from the same cohort. It should have instead attempted to modernize agriculture and the farms. Without this attempt, it was seen that there was social mobility, which led the youngsters out of the farms and into other economic sectors as evidenced by the aging of the farming population.

3.6.5. Environmental Health

In Malaysia, environmental health is not a well-understood term. To some, it is limited to consideration of the impact of environment degradation on human populations. To others, the health of the environment is of concern independent of human consequence. The Malaysian public is vaguely aware that human action frequently provides stressors leading to reductions in the environmental health of ecosystems, which in turns impact on human health. Currently, in everyday usage, the term environmental health is more on the impact of environmental degradation on human health (Hassan, 1998). To me, environmental health should extend beyond that, ie. protecting the health of the environment as a whole.

In many countries, problems of resource depletion, desertification and industrial environmental pollution are rising along with populations that are undergoing rapid expansion. In recent years awareness has been growing on the association between economic growth and environment protection and many countries are claiming that the strategies for sustainable development are being implemented.

There is a trade-off between environmental protection and economic development. This is a form of blackmail phenomenon, which affects the sustainable development implementation process. They do not address the equity within or between the generations, they do not
address the global dimension and do not give any prediction on the state of the environment in the future. Their strategies are on the ‘sink’ aspect but not on ‘source’ protection or prevention strategies where hopefully it won’t be too late before we run into trouble.

The current approach that has been taken in most countries on environmental management is fragmented, analytical and too focused. It does not have the ability to integrate the economics, environment and the social aspects of sustainability. This is due to the complexity of economic-environment-social relationships and lack of understanding. The evidence for the disintegration in environment management is the way that environmental reporting or environmental indicators are being presented. They are only addressing the biophysical and economic aspects of the state of environment without any social component.

A serious weakness in current state of environmental reporting is its ineffectiveness in addressing issues of sustainable development. This environmental reporting has been in existence for nearly a decade. In Figure 8, it was shown for year 1998 that for more than half a year the air quality in the Klang Valley was at the unhealthy level. It also means that the two million people in the Klang Valley were exposed to poor air quality for more than two third of their time per year. Figure 9 shows that for the past 10 years, there is significant change in the number of polluted basins (DOE, 1999). The country is totally dependent on these basins for drinking water supply. It can be predicted that the proportion of the population who will be exposed to polluted drinking water will significantly increase.

The Malaysian Quality of Life (MQL) Report (EPU, 1999) by the economic planning unit (EPU) in 1999 covers a 19-year period (1980-98) as the base year. The report identified 10 Area indices, which together made up a composite index referred to as the Malaysian Quality of Life Index (MQLI). According to the report, the overall quality of life in Malaysia improved during this 19-year period with an improvement in income and its distribution, education, family life, health, transport and communications, social participation, housing and work life. Factors contributing to these improvements include rapid economic growth (except for the year 1998), which resulted in an increase in the per capita income, and a reduction in poverty, and the government’s development efforts in implementing various policies and programs to enhance the quality of life of the people. However, it was observed that public

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8 The terms sink and source refer to two main functions the environment fulfills our society: sink as it stores or processes wastes we generate and as a source it provides goods and services we consume (Adriaanse, 1996).
safety and environment recorded a decline as indicated by increase in road accidents and deterioration in the river water quality.

Figure 8. Air Pollution Index in Klang Valley, 1998

![Air Pollution Index Chart]

(Source: Department of Environment, 1999)

Figure 9 The river water quality monitoring in Malaysia, 1990-1999

![River Water Quality Chart]

(Source: Department of Environment, 1999)
Looking back from the ancient history till today, so much damage has been done by human species to the environment, that bio-diversity has been threatened. Global population growth currently stands at nearly 90 million per year; which is higher than at any other time in human history (WHO, 1997). The world’s population therefore grew from 5.3 thousand million in 1990, and is expected to reach 6.1 thousand million by year 2000, and 7.7 thousand million by 2020 (UN, 1995). However, unsustainable resource consumption and economic policies that do not fully account for bio-diversity value, continue to degrade environmental quality, habitat loss, uncontrolled pollution and introduction of alien species, which are harmful for other species survival.

Furthermore, over-exploitation of the global environment contributes to global warming. These constraints have been attributed to incomplete knowledge on bio-diversity, lack of holistic approach between policy makers, program managers, economists, scientists, educators and the communities, poor communication and lack of linkage between these role players.

The motivation for improved environmental reporting and accounting has been driven by the notion of sustainability. There are a number of common themes, which describe the notion of sustainable development. One such theme is that sustainable development is an ‘umbrella’ concept under which a number of different disciplines must interrelate (Hendriks et al, 1996) It involves integrating a range of social, economic and environmental goals. Reconciling these goals is a formidable task since it requires a multi-disciplinary approach.

According to Bartelmus (1995) sustainable development aims at integrating environmental concerns into mainstream socio-economic policies by making these policies accountable for the environmental impact. The search for the most appropriate approach to integrate the environmental and economic information systems has become the subject of international debates. While there is a wealth of options for incorporating the environment into policy, there is a definite lack of consensus on approaches and methodologies. What we need are standardized frameworks, which have the capacity to influence policy decisions at the local through to the international level. Balancing the development goals of society requires accurate information on the costs, benefits and effects of all policy options at all level.

It should be acknowledged that we are at a stage of infancy with respect to recognizing and
starting to capture information on the linkages between ecological damage and health outcomes. In particular, global transport of pollutants and their health effects presents a more recent challenge. Developing new paradigms and methods for dealing with voluminous data including establishing linkages, and analyzing and modeling or predicting, needs to be a priority. At the same time, a paradigm shift towards holistic and positive life style is required. As an example, it would be important to make a link between health, consumption and transportation. It is clear that they require broad social and political commitment to become reality. Alternatively, one is left with contradictions such as people driving cars to places when they can exercise by walking or riding a bicycle, or importing fresh vegetables from impoverished eco-systems as part of better diet. As another example, consider the reluctance of governments to implement anti-tobacco policies because they fear economic losses.

These issues amplify the need for research that explores the linking of community, strategic and expert knowledge for sustainable development. However, they present particular research methodology challenges, which will be explored in greater detail in the following chapter.
CHAPTER 4

RESEARCH METHODS

This PhD project is something quite different from other projects I have undertaken in the past, as an epidemiologist and medical practitioner. It uses different methodological tools: community consultations, surveys, site-visits, interviews and in-depth interviews. For the first half of my studies, I aimed to gain insight into community perspectives on their priority needs. From there on, the subsequent action was based upon the idea that when people feel strongly about a particular issue, they will want to act upon it. This is also directly related to the purpose of action research, which is action for change, grounded in sound understanding of needs and priorities within.

This project is a community-based study, and is divided into two parts; 1.) The place-based community actions in managing the environment for health and 2.) A knowledge-based study on the different perspectives on air quality assurance for health.

4.1. Action Research

The first approach that I took in conducting the field studies was the action research (AR) approach. AR is an application of fact finding to practical problem solving in a social situation, with a view to improving the quality of action within it. As such it involves the collaboration and co-operation of researchers, practitioners and laymen (Burns, 1990, Oja and Smulyan, 1989). In this research context, it is focused as much on the action bringing about change in some community settings as it is on research to increase my own understanding or the community's understanding. It involves a total process, in which a problem situation is diagnosed, remedial action planned and implemented and its effects monitored. It is both an approach to problem solving and a problem-solving process.

AR was highly suited to the aims and objectives of this research because it can be viewed as a social process in which professional (expert) knowledge, local knowledge, process skills, research skills and democratic values are the basis for co-created knowledge and social
change (Greenwood and Levin, 1998). AR initiates action-loaded investigation of social conditions, involves people, mobilises their forces, guides them to set goals, produces findings and follows them thorough until they are implemented. In action research, a researcher is not just an investigator, but also a collaborator and facilitator with participatory character. AR helps to empower participants and to develop skills and knowledge required to effect change in their own environment.

Action researchers aim to open the possibilities for change, enhance a sense of responsibility for the direction of the future, and emphasize that the sense that human agency is the centerpiece of social change. These researchers are interested in bringing knowledge and skills to a group of people who collaboratively open up the possibilities for self-managed social change. They strive to develop the capacity of their co-researchers to counter the social, cultural, environmental and economic impacts of impartial control systems.

Action researchers obviously must have expert knowledge, but this knowledge is not treated as a source of unilateral power but rather as their contributions to a social situation in which they participate as contributing human agents. They must also bring a set of analytical frameworks to the process, among them, views on political economy, social structure, change processes, and ideology (Greenwood and Levin, 1998). These analytical frameworks are important to the conceptualization of the relationships between the past and the possible futures.

I regard AR as proceeding in a spiral of steps each of which is composed of planning, action and the evaluation of the result of action. In practice, the process begins with a general idea that some kind of improvement or change is desirable. In deciding just where to begin in making improvements, a group identifies an area where people perceive a cluster of problems of mutual concern and consequences. The group decides to work together on a ‘thematic concern’ (Kemmis and Taggart, 1988). Thus participatory action researchers are joined by a thematic concern: a commitment to inform and improve a particular situation.

Participatory evaluation is all about turning project monitoring and evaluation into group activities. To do this you need to involve people in ways that will be rewarding for them, will allow them to feel part of evaluation and will lead to a commitment for change. It is critical
that participatory evaluation is designed to facilitate learning (Woodhill and Robins, 2000).

Kolb (1984) develops the model of learning based on the theory of experiential learning (Figure 10). Learning according to this theory involves four-stage cyclical process. An individual or group must engage in each stage of the cycle, to effectively learn from their experience. The cycle starts with individual or group experiences of events. However, these experiences alone do not lead to learning. First, it is necessary to reflect on this experience. This means exploring what happened, noting observations, paying attention to the feelings of you and others. It means building up a multi-dimensional picture of the experience.

Figure 10. The learning cycle (Kolb, 1984)

The second stage of the cycle involves analyzing all this information to arrive at theories, models or concepts that explain the experience in terms of why things happened the way they did. Thus theorizing or conceptualizing about experiences is very important to learning. It is where solutions to problems, innovative ideas and lateral thinking come from. Drawing on
and being critical of existing theories is a crucial part of this stage.

Armed with this understanding of past experience, the next stage involves deciding what are important and generating ideas about how to improve future actions. It is working out how to put what has been learnt into practice. Finally, in the fourth stage, putting these new ideas or solutions into practice by taking action will result in a new experience. And so the cycle continues. Being explicit about moving through each stage of the learning cycle has proven to be a very helpful tool in problem solving and project management.

AR seeks to bring the process and the outcomes into the closest possible relationship, and builds research on fundamental aspects in building trust within capacities of the researchers and co-researchers. The research process and the results are adjusted to each other at every point to ensure the continued relevance of the research process to the needs and interests of local partners and to keep the broader research questions being addressed fully in view (Greenwood and Levin, 1998).

As the research process continues and the research partners gain understanding of their issue or problem, the goals of the process are further redefined, refined and even altered completely. The goal is an ongoing collaborative definition of problems relevant to the research partners and the development of information and analyses that enable them to address the defined problems effectively and democratically. AR also emphasizes democratic values and processes by co-creating knowledge applicable to the research partners in efforts to increase control of their own situation.

AR thus is a process co-managed by the interested parties, not a technique applied by a professional to other people. AR promotes research methods that enable nonprofessional researchers to enhance their own control over their lives and their social situations. Jacob (1982) in his book, *The Possible and the Actual* set out to communicate to a general audience a clear sense of the open-ended, dynamic and diversifying character of the evolutionary processes inherent in the AR design. In his relatively early text in the AR field, he strongly criticized the ever-present tendency in research to try to reduce evolution to some kind of preordained and directed optimal process. To this end, he writes about evolution as a process built on a constant dialogue between the possible and the actual. This approach matches
closely the aim of this study, which is to bring to notice the often-invisible community decision-making processes

AR can be seen as essentially a participatory process of research. Participatory Action Research (PAR) not only require an inquiry group to ask questions and follow through the process, but any findings and new recommended actions cannot be imposed. The full research partnership and the wider group for which research seeks to benefit must accept them. Hence all relevant participants must be involved every inch of the way. In a sense it must be their research, in their interests and something they can affect so it works better for them (Kemmis and Taggart, 1988).

AR is a continuous and participative learning process, not as a form of short-term intervention. The change process has an open starting point and often no absolute final goal. The core idea is to create sustainable learning capacities and to give participants the option of increasing control over their own situation. Contemporary AR emphasizes a great deal on dialogue (Gustavsen, 1992), and co-generative learning as a vehicle for sustainable change (Elden and Levin, 1991). AR is indeed a co-generative learning through which professional researchers and interested members of a local organization, community or a specially created organizations collaborate to research, understand, and resolve problems of mutual interest (Greenwood and Levin, 1998).

AR is the way groups of people organize the conditions under which they can learn from their own experience and make this exercise accessible to others. These ideas were the group decision and commitment to improvement (Lewin, 1948). In PAR, groups work together to change their language, their modes of action and their social relationships and thus in their own ways, prefigure, foreshadow and provoke changes in the broader fabric of interaction which characterize our society and culture. PAR has both an individual and collective aspect. Through critiques of these efforts to change, action researchers strongly "Think Globally, Act Locally" (Mc Taggart, 1989).

A PAR approach was highly relevant in this inquiry as it could develop insight into a community’s perspective on their priority needs. This would produce a picture of strength of feeling rather than the quantifiable magnitude of a particular problem. The emphasis placed
on subjectivity is deliberately based upon the idea that when people feel strongly about a particular issue, they want to act upon it. This is related to the ultimate purpose of AR that is action for change, grounded in sound understanding of needs and priority within.

There are four basic characteristics of AR: 1) It is *situational*- diagnosing a problem in a specific context and attempting to solve it in that context. 2) It is *collaborative*, with teams of researchers and practitioners working together. 3) It is *participatory*, as team members take part directly in implementing the research. 4) It is *self-evaluative*, modifications are continuously evaluated within the ongoing situation practice.

AR is also composed of a balance of three elements, if any one of the three is absent, then the process is not AR (Greenwood and Levin, 1998):

1. Research: AR is one of the most powerful ways to generate new knowledge.
2. Participation: In participation, a strong value on democracy and control over one’s own life situation is placed. These values permeate the arguments and create a strong general commitment to democratizing the knowledge generation process. AR is a participatory process in which everyone involved takes some responsibility.
3. Change / Improvement: AR aims to alter the initial situation of the group, organization, or community in the direction of self-managing, liberated state to create a kind of liberation through greater self-realization. AR practitioners are democratic reformers rather than revolutionaries.

Two broad and distinct interpretations of participation in development are identifiable. They are neither clear-cut nor mutually exclusive, but they represent two different purposes and approaches to promoting participatory development (Chambers, 1997):

- Participation as a means- participation is seen as a process that ensures local people’s cooperation or collaboration with externally introduced development programs or projects. Participation thus facilitates the effective implementation of such initiatives.
- Participation as an end- participation is seen as a goal in itself, that can be expressed as the empowerment of people in terms of their acquisition of skills, knowledge and experience to take greater responsibility for their development.

The essence in that people’s participation in development concern two things: structural
relationships and the importance of developing people's capacities and skills to negotiate for and to seek the resources and changes they require to improve their lives. These are methods and techniques used to ease local people's involvement in development programs and projects (Chambers, 1997).

As this research approach was totally new to me, my initial research process focussed heavily on the planning elements of the AR cycles:

Stage 1- Planning

i. Identification of issues of serious concern

This involves the identification, evaluation and formulation of general issues of concern to a community. These issues refer to a state of affairs or situation a participant wishes to change or improve on.

ii. Clarification of the issues

This is the time for fact finding so that a full description can be given of the situation. All these facts help to clarify the nature of the issues. The collection of this information can provide a basis for classifying the relevant facts. It can also lead to some fairly radical changes in one's understanding of the original ideas. This is the approach in Chapters 1 and 2.

iii. Formulating critical questions

This may involve a review of the research literature to find out what can be learned from comparable studies, their objectives, procedures and problems encountered. All this is related and synthesized with the critical review of the issues in step (ii). Critical questions can now be formulated which themselves act as informed levers for exploring the key determinants of the problem. These questions are developed and posed in Chapters 5, 6 and 7.

iv. Testing critical questions

Having brainstormed issues of concern, one generates some critical questions, where one can then proceed to gather information that is relevant to answering them. The gathering
of this information or evidence may also involve deeper questioning and further explanation
the problem situation. This response to questioning does not produce statistical explanation or
single result. Rather it seeks to determine is seeing whether the evidence is congruent with the
key question. Even when one has developed critical determinants and found them to apply,
they should retain the status of open questions rather than conclusions, since one can always
encounter instances where the determinants do not apply, and which prompt a search for more
comprehensive explanations. The process of analysis is an endless one, but in an AR it must
be interrupted for the sake of action. And the point of interruption should be when one has
sufficient confidence in the explanation to allow them to guide action. The work on assisting
communities to speak for themselves follows this pathway in Chapter 6.

v. Negotiation among team members for an action plan

Before going into action, there is a need to discuss and negotiate the proposed actions
with the interested parties. Their capacity to take action properly could be influenced by the
effects of proposed changes. As a general principle, the initial action-steps proposed should
lie within areas where the action-researchers have the maximum freedom of decision. This
negotiation forms part of the research design outlined below.

Stage 2- Action: Implementation and monitoring of action-plan

Decisions about the conditions and methods of data collection, monitoring of tasks and
the transmission of feedback to the research team, and the classification and analysis of data
are carried out at this stage. During implementation of an action plan, it may create
troublesome side effect, which require a shift into fact-finding in order to understand how
these arise. And this in turn may require some modifications and changes to the general plan
and a revamped action-step.

In order to monitor implementation;

i. One needs to use monitoring techniques that provide evidence of how well the course
of action is being implemented. It will be noted in the description of the conduct of the
research that a series of tools were tried, and a series of analyses were performed,
following the lessons learnt from field studies.

ii. One needs to use techniques that provide evidence on the unintended as well as
intended effects. Ideas such as the use of the management tool of SWOT analysis
emerged during the course of the study.

iii. One needs to use a range of techniques, which will enable one to look at what is going on from a variety of angles or points or view (triangulation). Here these included document review, participant observations, key informant interviews, and focus groups.

Stage 3- Evaluation: Interpretation of data and overall evaluation of the project.

Ideally, case study reports should be written at the end of each cycle, each building on and developing previous reports. At least one full report should be written at the point where one decides to end a particular spiral of action and research, and switch to a quite different issue or problem. In this inquiry a case study report adopts a historical format; telling the story as it has unfolded over time, showing how events hang together. It should include accounts of the following:

- How a general idea evolved over time.
- How an understanding of the problem situation evolved over time.
- What action-step was undertaken in the light of the changing understanding of the situation.
- The extents to which proposed actions were implemented, and how research partners coped with the implementation problems.
- The intended and unintended effects of the research actions and explanations for why they occurred.
- The techniques selected to gather information about;
  a. the problem situation and its causes; and
  b. the actions undertaken and their effects
- The problems encountered in using certain techniques and how they were resolved.
- Any ethical problems that arose in negotiating access to, and release of information and how these issues were resolved.
- Any problems that arose in negotiating action-steps with others, or negotiating the time, resources and cooperation needed in the course of action.

In this research, the decision to work within six different communities for maximum coverage of the environmental sustainability issues for voiceless communities meant that the reports were prepared and written in parallel. Time limits meant that the studies could not be
repeated, but cross-learning from the parallel studies took the place of the learning over time recommended above.

Stage 4. Replanning.

At this stage, the cycle is likely to begin again, with the problem and action modified to meet the evaluation comments. Discussion on the findings will take place in the light of previously agreed evaluative criteria. Errors, mistakes and problems will be considered. At the end of several cycles, outcomes of the project are reviewed, recommendations made and arrangements for dissemination of results to interested parties decided.

As AR necessarily involves participants in self-reflection about their situation, as active partners in the research, accounts of dialogue with participant about the interpretations and explanations emerging from the research should be an integral part of any AR report.

This stage, the re-iteration of the studies for the informants, has been regarded as an important part of the study validity and practical applications, and so returning to the informants has been undertaken wherever possible.

4.2. Grounded Theory Research

The second approach to research in this inquiry is through grounded theory. It is a general theory of scientific method concerned with the generation, elaboration and validation of social science theory (Glaser and Strauss, 1967). It is ‘grounded’ because it is related to, emerged out of, created through and grounded in empirical data. Grounded theory research begins by focusing on an area of study and gathers data from variety of sources, including interviews, survey and field observations. Once gathered, the data are analysed through an iterative process of identifying them. When analysis is done, theories are generated to explain the themes, with the help of interpretative procedures, before finally being written up and presented. This latter activity, Glaser and Strauss (1967) claim, is an integral part of the research process.

The grounded theory researcher does not begin a project with a preconceived theory in mind, unless his or her purpose is to elaborate and extend existing theory. Rather, the researcher begins with an area of study and allows the theory to emerge from the data. Theory derived
from data is more likely to resemble the ‘reality’ than is theory derived by putting together a series of concepts based on experience or solely through speculation (how one thinks things ought to work). Grounded theories, because they are drawn from data, are likely to offer insight, enhance understanding, and provide a meaningful guide to action (Strauss and Corbin, 1998).

The general goal of grounded theory research is to construct theories in order to understand phenomena. Strauss and Corbin (1998) recommended that a good-grounded theory is one that is:

i. inductively derived from data,
ii. subjected to theoretical elaboration, and
iii. judged adequate to its domain with respect to a number of evaluative criteria.

They further claimed that the requisite skills for becoming a grounded theorist are summarised as in the following characteristics: The ability to step back and critically analyses situations:

1. The ability to recognise the tendency towards bias
2. The ability to think abstractly
3. The ability to be flexible and open to helpful criticism
4. Sensitivity to the words and actions of respondents
5. A sense of absorption and devotion to the work process

These abilities are explored in Chapters 1, 2, 3, and 8, and throughout the conduct of the thesis, respectively.

Most importantly, the approach to grounded theory is one of emergence. Thus, the design like the concepts must be allowed to emerge during research process. As the concepts and relationships emerge from data through qualitative analysis, the researcher can use that information to decide where and how to go about gathering additional data that will assist further in the evolution of theory. Whatever approach one takes, the driving force should always be the evolving theory. The methods represent the means to achieving that end. The final chapter 9 summarises the emergence of both theoretical and practical insights in the course of this study.
4.3. Critical Research

In the context of studies across culture, Goetz and LeCompte (1984) suggest that good research has the following characteristics:
1. recorded materials are representative of the participant's world view
2. research activities take place in the real-world setting
3. the various contexts and situational complexity are well documented and
4. a variety of research techniques are used to amass data

Through their work, critical researchers aim to give voice to those who have previously been silenced by allowing others to describe, interpret and explain their perspectives of their world to wider audiences. Using a critical approach to data collection and analysis, this research aim to generate new data with the participants in this study. The style of interaction moves beyond one interested in meaning making, to one where participants are deliberately asked to reflect on their lives in ways that may be new to them and to share in the production of a theory relevant to their lives (Stephenson, 2002).

The critical research approach has formed a basis for all the work of this thesis, underlying the Action Research and Grounded Theory which have provided the basis for choosing the particular research tools described below.

4.4. Research Tools and Methods of Data Collection

4.4.1. Research Tools

The following research tools are used in the field studies during the stages of data collection.

4.4.1.1. Focus Group Discussion

Focus groups are employed extensively among many social researchers (Stewart and Shamdasani, 1990). They are used as a preliminary study leading to quantitative research (McQuarrie, 1996), as a self-contained and principal method of research, as a supplementary source, or as a part of a multi-method study (Morgan, 1997). In any case, focus groups
involve persons specially selected owing to their particular interest, expertise or position in the community. It is an attempt to collect information on a number of issues, as well as to brainstorm a variety of solutions, and ultimately to facilitate group discussion as a tool of data collection and possibly, policy construction (Sarantakos, 1998).

In my field studies, a group of participants were invited for a round table discussion. Different sessions of focus group discussions were conducted for each identified group at their own settings. Focus groups in these settings allowed participants to see issues important to them from a range of different perspectives.

Prior to each focus group discussion, briefing sessions with the gatekeepers were organized to discuss the agenda for the focus group discussion. I started the briefing by explaining the aim of the discussion with the communities. The initial aim for focus group discussion is to gain insights into the ways that the communities carry out their daily activities. These insights could improve my knowledge about the communities and plan for the supporting mechanism to improve the management of the environment for health and which facilitated the community involvement. They were also briefed on the selection criteria of the participants for the focus group discussion. The selection criterion for these participants was the community representatives or the members of the local community who had active interactions with their community. They were also informed that participation was voluntary and a mixture of age group, sex and ethnicity was encouraged.

When a date for the focus group discussion has been finalized, the logistic arrangements were confirmed with the gatekeepers. The gatekeepers determined the venue, preferably in the community hall or any common meeting place of the community group. Prior to the discussion, the tables and chairs were arranged to form a circle to ensure the participants could face each other, which could facilitate discussion. A tape recorder was placed in the middle of the circle and switched on when the discussion started. Whenever any participant came in, he or she was welcomed. When he or she has sat down and while waiting for the other participants, a questionnaire containing the demography questions was distributed. When most of the participants had arrived, I chairing the session initiated the discussion.

During the focus group discussion, I gave a welcome address to the participants. The first 30
minutes of discussion were aimed on gaining entry and building trust with the participants. The discussion started off with the invitation to the participants to briefly introduce themselves and describing their daily living to the group. In between the discussion, light refreshments were served and they were invited to take refreshments during the discussions.

Then the next 30 minutes of the discussion were focussed on following issues:
1. The current issues in the community
2. The issues of concern in the community in three aspects; social, economic and environment
3. Three main issues of concerns and ways to address and improve them
4. The community vision in the next 10 years
5. To identify the most important issue that need urgent attention and to work together towards developing an action plan to improve the situation.
6. Planning on the implementation of the action plan.
7. To identify the period for evaluation of the action plan.

For each group discussion, I presented back the range of possible projects the participants identified. A number of joint projects where participants could work together emerge in each case. The next step was to prioritize the most important issue that they would like to improve or change. Although it was difficult to achieve consensus for the joint project, based on the interactions between the researcher and the participants during the hour-long group discussion, some of the participants managed to develop an action plan for a joint project. Immediately after the discussion, together with the gatekeepers, we would identify key persons to form a working group.

A number of arrangements such as meetings and informal discussions were organized with the members of the working group for further detailed planning of the joint project. In depth individual interviews were conducted to collect as much information with them. Follow-up phone calls were made to facilitate communications between them. Subsequently, I collected other information on these communities from various other sources such as document analysis, surveys and site visits.
4.4.1.2. „Billiard table effect”s

The “billiard table effect” may also be referred to as the “interactive effect” is whereby someone tosses in one idea; it bounces around the group raising several other ideas in quick succession (Wadsworth, 1997). One of those ideas combines with another person’s idea and reminds someone of something else they’d never thought of linking to the original issue at hand, and a remarkable new solution is suddenly given birth to. It incorporates many elements and principles of the mind mapping process.

4.4.1.3. Participant observation

Participant observation is an observation of a social situation by someone taking part in that social situation. This is generally informal and neither very self-conscious nor systematically recorded. It is necessary to be highly aware and very reflective about social situation being examined, and to keep records, which can later be drawn on, written up and shared for further discussion regarding meaning and interpretations (Wadsworth, 1997). The challenge for the participant observer is not simply to generate large amounts of observations. Rather it is to develop supporting evidence from which questions can be asked about the actions carried out or the extent to which the person can reflect, in her or his mind, or on her or his own actions and on those of the others in social situation. This relates to the extent to which a researcher can mentally stand outside the situation and look at her of his acting. This is a very important tool for increasing communication and getting people’s coordination and trust.

Often participant observers may most easily resolve potential problems they face by seeking informed consent. If the process is relatively or entirely covert, it becomes particularly important to have taken time to think about it from many angles as possible and talk it through with a group, so the ethics and purposes and possible alternative methods for researching are clear and comfortable.

At a first step in this inquiry, detailed notes (field notes) were taken with interpretation kept to a minimum. Day by day diaries are one way of doing this. Over the length of this, research themes began to emerge, reflecting and reinforcing things frequently seen or heard; points that seemed important to other participants and so on.
4.4.2.4. Brainstorming

Brainstorming or idea generation can and should be a structured activity, carried out early in the life of a project, in response to a significant problem, or in difficult negotiation situations when both sides are aware of each others’ principles, but no solution is evident (Brown et. al, 1995).

The benefit of brainstorming to this inquiry is that it has the following elements:
- No evaluation of any kind- put energy into generating ideas, not defending them.
- Thinks of the wildest idea possible- suppress internal judgement, which may inhibit new ideas.
- Go for quantity of ideas- quality can come later.
- Build on ideas of others (billiard table effect)- combinations or modifications of previously suggested ideas often lead to new ideas superior to the original ones. Wacky ideas may help more sober people break out of limiting.
- Ignore rank, qualifications and other indicators of authority- good ideas can come from unexpected quarters.
- Keep a record- its easy to forget
- Keep it open, and don’t put names against ideas.

The necessary conditions for successes in brainstorming session (Brown et. al, 1995) are:
A facilitator who:
- makes sure everyone is involved
- stops anyone hogging the limelight
- does not allow criticism
- helps people share their ideas
- keeps a running record of the ideas (but not the people)

Ground rules which;
- make it safe for anyone to suggest anything
- put all the energy into the ideas not the reasons behind them
- encourage everyone to build on each other’s ideas
- allow wild ideas to be developed
These were new skills for an epidemiologist and clinician, and they were developed under the supervision of community workers and academic colleagues during the study.

4.4.1.5. Surveys: Questionnaires and Interviews

Surveys are methods of data collection in which information is gathered through oral and written questioning. Oral questioning is known as interviewing; written questioning is accomplished through questionnaires (Sarantakos, 1998). Questionnaires are the instruments used to bring the researcher the information that is required for formulating answers to research question. Interviewing is a form of questioning characterized by the fact that it employs verbal questioning as its principal technique of data collection. Researchers conducting interviews also employ questionnaires.

In this study, few surveys among the communities have been carried out. Both methods using questionnaires and interviews were employed. The surveys on the communities consist of the survey on community characteristics and community perception on their environment (in communities B, C, D and E) and the air quality survey in community F. Standardized questionnaires were used in the surveys in this is study as attached in the Appendices 3a, 3b and 9b.

4.4.1.6. Individual Interviews

An individual interview is simply a face to face meeting in which two people have a conversation. It is, however, a particular kind of conversation- one in which one person is setting out to get answers to particular questions, to hear the other person’s views and ideas, and about that person’s position and life (Wadsworth, 1997). It aims to get an in-depth information on some specific issues. It is always a reciprocal interaction in terms of the interviewer inevitably communicating some of her or his own views and ideas, which also includes shared values and purposes.

As with most conversation, you are trying to build a relationship of trust, where the other person feels free to speak. A good interviewer (see Wadsworth, 1997) need to have few characteristics:
1. good questioning: Ask for the most strategically powerful questions to obtain required information
2. good listening: Be empathetic, encouraging and agreeable to show that you are listening.
3. good hearing: Take in what you hear and don’t jump ahead with your early assumption or conclusion. Make sure you understand what they meant when they used that word or phrase.
4. good notes: it is essential to be able to refer accurately to the contents in order to draw on the data, the evidence on which a conclusion is based or an observation is made.

These were well-developed skills from my work as a public health specialist, and I found these transferred readily to the action research. However, I did note there was a tendency to diagnose and draw conclusions as a physician which was in direct contrast to the need of the researcher to remain open-minded.

4.4.1.7. Site Visits

Site visits were visits to the study places to gain visual perception and better understanding of the living conditions of the communities. Site visits to all the place-communities (Communities A, B, C and D) have been conducted. Specific site visits have been carried out together with the gatekeepers and volunteers in the communities to gain more information on the communities specific issues (refer to the communities stories in chapter 5 and 6).

4.4.1.8. Documentary Methods

Documents have always been used as a source of information in social research, either as the only method or in conjunction with other methods (Sarantakos, 1998). When you read written documents, you are doing a ‘content analysis’. Again you must be clear in your own mind what you are trying to find out and read the documents (Wadsworth, 1997). These questions are exactly comparable to the questions you ask in questionnaires or interviews.

4.4.1.9. The Case Study

A case study is typically defined as ‘an empirical inquiry that investigate a contemporary phenomenon within its real-life context when the boundaries between phenomenon and
context are not clearly evident; and which multiple sources of evidence are used' (Yin, 1991).
A case study can be generated by using a variety of techniques (interview, questionnaire,
observation, self-written-account) to assemble a range of information about a single case,
event, group or organization. Sometimes the case may be used as representing a broader
population as a sample.

The present project could be described as set of six case studies, extended by the
consideration of a range of theoretical questions about the nature of communities and of
community-based knowledge

4.4.1.10. Indirect Methods: Meetings and Informal Discussions

Indirect methods do not rely on the direct participation of respondents. In these methods, data
are obtained without the knowledge of the subjects, in an indirect and non-obstructive way. In
some cases, cases, the respondents are not aware of the fact that they are being investigated.
In other cases, although they may know that they are involved in a research project, they do
not know what is really being studied (Sarantakos, 1998).

In this study, notes and observations recorded during formal and informal meetings were
considered as the data sources for indirect methods. The approaches taken for data sources in
this study are shown in Figure 11 and an overview of the field studies is presented in Table 3.

4.4.2. Methods of Data Collection

The methods of data collection in this study could be divided into two stages;

i. The detailed observations, surveys and interviews and notes and minutes on the
focus groups discussion, meetings and the informal discussions carried out in the
field. The documentation of this stage is reported in the notes and minutes of the
consultations and presented in Appendices 4 to 9.

ii. The interaction notes from the subsequent actions and processes following the first
stage were supported and recorded, investigating the proposition that if people feel
strongly about an issue, they will want to act upon it. The documentation of this
stage is also reported in the notes on the interactions with communities and
presented in Appendices 4 to 9.
These two notes made up the key data bank and were used in two ways;
a. to construct community stories (syntheses)
b. diagnosis on community stories through SWOT (strength, weakness, opportunity and threat) analysis

4.5. My field studies

As the approaches taken in my field studies were totally new to me, I kept referring to the theory on the research methods as outlined above (Figure 10 and Table 3). The initial arrangements started off with identifying the community for this study. A number of telephone calls were made and a number of discussions with my colleagues in the Institute for Medical Research were made before the selection of the communities.

The basis for selection of the community was mainly on some known initiatives involving the communities and discussions with my colleagues who work within or with the communities. Once these communities had been chosen, arrangements were made to plan for the community consultations in the form of focus group discussions. Finally six community groups were selected from the study locations as in Figure 12 and their categories are summarized in the Table 4.

The methodology used for communities A and E was working on or ‘at some distance from’ these community. There was no close interaction between these two communities and myself. My informations on the processes in the communities were collected from gatekeepers and through analysis of documents on the activities or projects in these communities. For community B, C, D and F, the methodology centered on the notion of working with the community, where close rapport was built with them.

A project dairy was kept to record all arrangements and notes of interactions with the communities. A summary of the key contact arrangements and data gathering events is presented in Table 5. Before conducting the focus group discussions, some items as in the checklist for the arrangements were prepared.
These items were:

1. The letter of invitation to the participants. These letters were given personally to the participants through the gatekeepers.

2. Questionnaire on the characteristics and perception of the participants on their living conditions were given out immediately before the focus group discussion.

3. Date, time, place and refreshments for the focus group discussion arrangements.

4. Transportation and accommodation arrangements.

5. Stationary and other items: tape recorder, camera, name stickers, tape, pen, markers, white cards, pencils, notebooks, tissue papers.
Figure 11. Overview of the data sources and the processes in this study

- Critical Research

- Grounded Theory
  - Focus Group discussions (4.4.1.1.)
  - Participant observations (4.4.1.2.)
  - Billiard table effect (4.4.1.3.)
  - Brainstorming (4.4.1.4.)

- Research Data
  - Community survey: Group Interviews and Questionnaires (4.4.1.5.)
  - Individual interviews (4.4.1.6.)
  - Site visits (4.4.1.7.)

- Indirect Methods: Meetings and Informal Discussions (4.4.1.10.)

- Documentary Methods (4.4.1.8.)
  - Case study (4.4.1.9.)
<table>
<thead>
<tr>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A community liaison</td>
<td>Person</td>
<td>An assistant nurse</td>
<td>A district nurse</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
<td>/</td>
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<table>
<thead>
<tr>
<th>&quot;Contingency via Gate Keeper&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation / reflection / feedback</td>
</tr>
<tr>
<td>Monitoring of action plan</td>
</tr>
<tr>
<td>Initiation</td>
</tr>
<tr>
<td>Learning</td>
</tr>
<tr>
<td>Collaboration / co-genertive</td>
</tr>
<tr>
<td>Negotiation</td>
</tr>
<tr>
<td>Test hypotheses</td>
</tr>
<tr>
<td>Formative hypotheses</td>
</tr>
<tr>
<td>Challenging issues</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research methods and tools</td>
</tr>
</tbody>
</table>

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Table 3. An overview of the field studies.
Figure 12. Map of Peninsular Malaysia with the location of the study communities

Table 4. The categories of the communities in this study

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Locality</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Place-based community</td>
<td>The empowered community</td>
<td>Urban setting</td>
<td>Community A</td>
</tr>
<tr>
<td></td>
<td>The unempowered community</td>
<td>Semi-urban setting</td>
<td>Community B</td>
</tr>
<tr>
<td></td>
<td>The unempowered community</td>
<td>Rural (Peri-urban) setting</td>
<td>Community C</td>
</tr>
<tr>
<td></td>
<td>The unempowered community</td>
<td>Rural (Remote) setting</td>
<td>Community D</td>
</tr>
<tr>
<td>2. Knowledge-based</td>
<td>The clinical community</td>
<td>Hospital setting (parents of children with asthma)</td>
<td>Community E</td>
</tr>
<tr>
<td>community</td>
<td>The scientific community</td>
<td>Institutional setting</td>
<td>Community F</td>
</tr>
</tbody>
</table>
Table 5. The arrangements with the different communities in this study.

<table>
<thead>
<tr>
<th>Community</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact person</td>
<td>Community liaison person</td>
<td>Medical officer</td>
<td>Chief health inspector</td>
<td>Health officer</td>
<td>Child specialist</td>
<td>Nil</td>
</tr>
<tr>
<td>Gate-keeper</td>
<td>Community liaison person</td>
<td>Assistant health inspector</td>
<td>A district health nurse</td>
<td>Assistant health inspector</td>
<td>Clinic assistant nurse</td>
<td>Nil</td>
</tr>
</tbody>
</table>

4.6. Methods of Data Analysis

Just as multiple methods were used to gather data, multiple tools were used in the data analysis. Keeping in mind how grounded theory works, no predetermined standardized procedure for the data analysis was followed. Rather the methods of analysis were selected in response to particular situations as I found them in communities.

The data collected were analyzed in 4 stages as summarized diagrammatically in Figure 13.

The stages of this analysis were:


The experiences of working with these communities are synthesized from the key data as the communities' own stories and are presented in chapters 5 to 7. Chapter 5 and 6 present the
stories of the place-based communities. Chapter 5 on community A and chapter 6 on communities B, C and D. Chapter 7 presents the stories of the knowledge-based communities: the interview with the parents of asthmatic children in a hospital setting (community E) and the consultation and the air quality survey among the scientists (community F).

Stage 2. Diagnosis of Key Issues: The Positives and Challenges
From stage 2 onwards, the findings of the data analysis are presented in Chapter 8.
In order to link community stories to standardized forms of government and professional decision-making, the SWOT (strengths, weaknesses, opportunities and threats) analysis was applied to these community stories. This SWOT analysis was used as a diagnostic tool (rather than as a problem identification device). The findings of SWOT analysis on these communities A to F are presented in table 17 to table 25.

The next step from SWOT analysis, in this first stage was grouping strengths and opportunities as the positive findings and the weaknesses and threats as the challenges.

Stage 3. Categorization: Themes arising from Positives and Challenges
The positive findings and challenges from SWOT analysis on the place-based communities (Communities A to D) were subsequently categorized into the specialized category (social, environmental and economic components) to enable linking them back to departmental areas of responsibility.

However some dynamic findings which did not fit into this specialized category were categorized as the community process. The results were referred to as themes A and are reported in section 8.2.1. to 8.2.4. for communities A to D. For the knowledge-based communities, similar attempts were made to categorize the findings from SWOT analysis but it was unsuccessful. The themes for these knowledge-based communities were reported as positive findings and challenges and are given in section 8.2.6.
Figure 13. Analysis of Findings

Stage 1. Analysis of communities' stories: Identification of Issues: Chapters 5 to 7.

Stage 2. Diagnosis of Key Issues: Positives and Challenges

- Place-based communities A-D
- Knowledge-based communities E-F

SWOT

Tables 15 to 24

Strengths / Opportunities → Positives
Weaknesses / Threats → Challenges

Stage 3. Categorisation: Themes arising from Positives and Challenges

Specialized: Social, Environmental, Economic

Community Process

Themes A:
A-F individually
Text: 8.3.1. to 8.3.6.

Stage 4. Reanalysis: Themes arising from Grounding and Validation

- Communities stories
- Observations

Themes B:
A-D and E-F cross-comparisons
Tables 25 to 30

Stage 5: Interpretation: Themes B: Text 8.5.1. to 8.5.2.
PLEASE NOTE

The greatest amount of care has been taken while scanning the following pages. The best possible results have been obtained.
CHAPTER 5

THE PLACE-BASED COMMUNITY: THE EMPOWERED COMMUNITY

1. The Story of Community A: An Empowered Community

Community A is located in Petaling Jaya, an urban setting which is about 20km from Kuala Lumpur. Petaling Jaya is bounded by Sungai Buloh in the north and Petaling Selatan in the south. It has approximately 500,000 inhabitants and covers an area of 97.2 km square. The Petaling Jaya Town Council (MPPJ) manages the multitude of development and diversity in sources in Petaling Jaya. Community A is considered as an empowered community due to the availability of resources. Their society is a middle class society with high education levels (mostly above the secondary level), strong local and federal government support, the local Agenda 21 (LA21) pilot project in this community and the international support from the United Nations Development Programme (UNDP).

MPPJ was selected by the Ministry of Housing & Local Government (MHLG) in November 1999 to initiate and implement the LA21 pilot project, a joint project with the Economic Planning Unit (EPU) and UNDP. My involvement with community A of Petaling Jaya started in June 2000. I played a role as an observer to the process of Petaling Jaya LA 21 (LA21) project in this community.

2. The background of the Local Agenda 21 Project in Community A

The underlying concept for the PJ LA 21 project was based on Agenda 21 of the Rio Conference (UN, 1993). Chapter 28 in this agenda emphasized the role of local authority to take a positive approach in implementing Agenda 21 towards Sustainable Development at the local level. Under Section 3 of Agenda 21, other major groups such as women, children, non-government organisations (NGOs), community-based organisations (CBOs), youth, workers, business & industry sector and indigenous people also play an important role together with the local authority. This initiative is known as “Local Agenda 21” – a local action plan towards sustainable development in the 21st Century. The PJ LA 21 emphasises / promotes:
• **Partnership** between the local authority (MPPJ), non government-based organizations, neighborhood-watch or *Rukun Tetangga (RT)*, Resident Associations, Government Agencies, Private Sectors and others; as well as

• **Public Participation** in identifying issues, formulating action plans, implementation, monitoring, evaluation and feedback towards sustainable development which integrates the social, economic and environmental aspects.

The MHLG had also initiated three other local agenda projects in Kerian, Perak (200-300 km from Kuala Lumpur, towards north-west), Miri, Sarawak and Kuantan, Pahang (200-300 km from Kuala Lumpur, towards north-east). The UNDP supported the funding for the appointment of the Community Liaison Consultant for the pilot project of PJ LA 21. The MHLG planned to expand these projects to all 145 local councils in Malaysia by replicating the processes. In conjunction with LA21, at state level, Selangor State took up the Agenda 21 in 1998 and has given LESTARI the role of coordinating the strategies and activities.

5.3. **Range of PJ LA 21 Activities**

The PJ LA 21 activities were initiated by a local non-government organization (NGO) established for environmental protection activities. This NGO was established in 1980. It has taken the role of strengthening community participation in environmental protection. An interview with the advisor for this NGO was conducted on the 1st April 2001. The advisor strongly believed that the initiatives of implementing the LA 21 in Malaysia were started by its activities. These efforts were documented in the proceedings of its seminars in 1997 and 1998 (EPSM, 1997 and EPSM, 1998).

In response to the needs to address the LA 21, this NGO has organized a series of seminars – Seminar on 'Local Communities and the Environment' to enhance community education and awareness on environmental protection. Further sequences of events in relation to these efforts are summarized in table 6.

The first seminar organized by this NGO was held in 1997 and a slogan of “*I Can Make A Difference*” was selected to motivate the community. In 1998, with financial support from DANCED, a more focussed program for a whole year was planned. It comprised a two-day LA 21 planning workshop together with a one and half day seminar. Altogether there were six
Stage 4. Reanalysis: Themes arising from Grounding and Validation

Validation of the findings was carried out to double check that the different sources of data were addressed. These sources were either from the communities stories or for researcher’s observations. At this stage the findings were then differentiated either as drawn from the community stories and those drawn from the researcher as a part observer.

From all these findings, common themes (Themes B) were found emerging from comparisons with the different communities, either within the place-based communities (communities A to D), or within the knowledge-based communities (communities E to Z). These findings are presented in tables 26 to 31.

Stage 5: Interpretation

The interpretation and meaning of Themes B are given in section 8.5.1. to 8.5.2. and include implications for community, scientific community, government and policymakers.
capacity building seminars on selected chapters of Agenda 21 and six LA 21 planning workshops with local authorities.

Table 6. The milestones for the Local Agenda 21 initiatives in Malaysia

<table>
<thead>
<tr>
<th>Date</th>
<th>Events</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Seminar on ‘Local Communities and the Environment’</td>
<td>Organized by an NGO to enhance community education and awareness on environmental protection</td>
</tr>
<tr>
<td>1998</td>
<td>Agenda 21 initiated in the state of Selangor</td>
<td>LESTARI, UKM to coordinate the strategies and activities</td>
</tr>
<tr>
<td>1998</td>
<td>A two-days Local Agenda Planning workshop</td>
<td>DANCED financial support to the NGO for the implementation of LA21 programs</td>
</tr>
<tr>
<td>1998- September 1998</td>
<td>Six planning workshops for LA21</td>
<td>The NGO with the local authorities</td>
</tr>
<tr>
<td>October 1998</td>
<td>Planning on Local Agenda 21 Pilot Project with UNDP, EPU, and MHLO</td>
<td>Final stage of discussions</td>
</tr>
<tr>
<td>Nov 1998-September 1999</td>
<td>Six capacity building seminars</td>
<td>Chapters on air, water, waste, land and strengthening the role of major groups in Agenda 21</td>
</tr>
<tr>
<td>September 1999</td>
<td>Seminar on Partnerships for Local Agenda 21 –</td>
<td>Chapter 28 of Agenda 21</td>
</tr>
</tbody>
</table>
| September 1999    | Establishment of Petaling Jaya Local Agenda 21 Unit in Petaling Jaya Town Council | Officer in charge: A MPPJ town planner  
Appointment of a UNDP-funded community liaison consultant. |
| February 2000     | Workshop on Issues identification for PJ communities                  | 3 priority issues identified were: Environment, social integration and safety |
| May 2000          | Seminar on Local Agenda 21                                            | Formation of 6 working committee for PJ LA 21                          |
| October 2000      | Official launching of Pilot Project of Local Agenda 21                | Officiated by the Minister of Housing and Local Government  
Venue: Auditorium Civic, PJ |

The advisor of the NGO was also the coordinator for these seminars. She informed that the principles of the seminars were based on the concepts from the Agenda 21, the Rio Declarations (UN, 1992), United Nations Conference on Environment and Development (UNCED, 1993) and the United Nations Conference on Human Settlements or Habitat II (UNCHS, 1996). These seminars on ‘Local Communities and the Environment’ to her were examples of a community response to Agenda 21.
Six capacity building seminars were conducted between November 1998- September 1999 on specific chapters of Agenda 21. They were focussed on:

- air,
- water
- waste
- land and
- strengthening the role of the major groups in Agenda 21.

With the guidance and assistance of UNDP Asia Pacific 2000 (now known as The Urban Governance Initiative for Asia or TUGI), two officials from the International Council for Local Environmental Initiatives (ICLEI), generously donated their time and expertise to conduct the Workshop for thirty participants at the Seminar. This raised the profile for LA21 and even attracted some key government officials as participants. Furthermore, not only did the Petaling Jaya Mayor officiate at the workshop, the Petaling Jaya Town Council also accepted the NGO’s invitation to host an afternoon session for participants with briefings on the operation of the Council.

The final capacity building seminar on ‘Partnerships for Local Agenda 21 - Chapter 28 of Agenda 21’ was held on 25 September 1999. A representative of the Director-General of the Department of Local Government presented the keynote paper. He announced to the participants that discussions with the UNDP and EPU for a LA 21 pilot project (which began soon after the NGO’s second seminar in October 1998) had reached the final stages. Finally, this pilot project is launched nationally by the Minister of MHLG in October 2000.

5.4. The Local Agenda 21 Project in Community A

Immediately after the appointment of MPPJ by the MHLG to implement the LA21 pilot project in September 1999, a PJ LA 21 unit was formed within the MPPJ. A senior town planner in the Planning Unit of MPPJ took the leadership of the PJ LA 21 project and worked together with the UNDP appointed Community Liaison Consultant.

A LA 21 Workshop was held on 1st and 2nd February 2000 wherein 150 participants representing non-government organizations, resident associations, government agencies,
schools, private sector and MPPJ attended. The organizers pre-determined three main issues of concerns in Petaling Jaya for brain storming at the workshop. These issues were;

- the environment
- social integration
- safety issues.

MPPJ has adopted a vision to be together with the community and the various authorities of Petaling Jaya to give commitment to resolve the identified issues. It promotes greater public participation, consultation process and overall awareness to build a conducive, safe, harmonious and healthy city within a sustainable environment.

Following the workshop, MPPJ organised a Local Agenda 21 Seminar on 10th May 2000. The purpose of the seminar was to inform the participants and stakeholders of Petaling Jaya on the findings of the workshop held in February 2000. The seminar was also a forum for stakeholders of Petaling Jaya to give their feedback and reach consensus regarding the implementation process of PJLA 21 pilot project. At this seminar, the participants identified three neighbourhood areas in Petaling Jaya to be the PJLA 21 pilot project sites. They were Section 21, Section 22 and Section 2.

In July 2000, a Local Agenda 21 PJ Committee was set up with the mayor of MPPJ, as the chairperson. The committee consists of 37 members, representing the NGOs, community based organisations (CBOs), religious institutions, private sectors, government agencies and MPPJ. At this same time, a PJ LA 21 logo and slogan entitled ‘PJ Towards Sustainable Development’ was launched.

The functions of the PJ LA 21 pilot project Committee are:

i) To facilitate in the implementation of PJ LA 21 pilot project.

ii) To steer the direction of PJ LA 21 pilot project PJ LA 21 in Petaling Jaya.

iii) To formulate action plans and strategies for implementation of PJ LA 21 pilot project.

iv) To coordinate, implement and monitor the progress of PJ LA 21 pilot project.

v) To report the progress of the project to MPPJ Council, Technical Coordinating Committee and National Steering Committee.
At the first committee meeting held on 25th July, 2000, six working groups were set up (Table 7):

Table 7. The PJLA 21 Working Group

<table>
<thead>
<tr>
<th>NO.</th>
<th>Working Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Safety</td>
</tr>
<tr>
<td>2.</td>
<td>Social Integration</td>
</tr>
<tr>
<td>3.</td>
<td>Environment</td>
</tr>
<tr>
<td>4.</td>
<td>Section 2</td>
</tr>
<tr>
<td>5.</td>
<td>Section 21</td>
</tr>
<tr>
<td>6.</td>
<td>Section 22</td>
</tr>
</tbody>
</table>

The functions of the Working Groups are:

i) To carry out awareness raising activities via dialogues, research and campaign at the local level.

ii) To formulate action plans and implementation strategies.

iii) To coordinate, implement and monitor the progress of PJ LA 21 pilot project.

iv) To report the progress to PJ LA 21 Committee.

The first meeting of the PJ LA 21 committee for the year 2001 was held on the 22 March 2001, chaired by the former PJ Mayor. The second meeting was held on the 4th April 2001 and was chaired by the new PJ Mayor. During each PJ LA21 committee meeting, each group will be reporting on the progress of LA 21 projects and other related issues. The PJ LA 21 Committee agreed to adopt the Selangor Sustainable Development Strategies Selangor Agenda 21 and to use it as a guide in formulating its action plans, publicity programme, courses and training.

The details of two meetings, which I attended on the formulation of the action plans for the environment and the social integration working groups, are provided in Appendix 4.
5.4.1. The Environment Working Group

The Environment Working Group was chaired by an Exco member of Damansara Jaya or Section 22 (SS22). The group members identified domestic waste management as a priority area. This priority was due to concerns about environmental pollution of air, water and land.

The group members have found out that currently, each household in Petaling Jaya generates an average waste of approximately 1-1.22 kg per day as compared to 0.7kg per day in 1995. In total, currently, the waste generated in this community was about 550 tons per day as compared to 297 tons per day in 1995. Only 2% of the waste disposed at the dumping sites was being recycled. Ninety seven percent of this waste was being landfilled and 1% was being composted. However, it was estimated that at least 50% of these wastes could be recycled but was not. Petaling Jaya is undergoing tremendous development and there was a very strong competition for land use. With the cost of land increasing, it was not viable to have landfills. The only landfill available in Kelana Jaya had been recently closed down due to overloading. Therefore, due to the conflict of the needs on the landfill for the 97% of waste and the other competitors for land use, the committee members considered the focus on domestic waste management important.

In order to address this problem, they identified that their needs were:

- to improve this domestic waste problem through community participation, consultation and promoting awareness in the entire community;
- to create a healthy city with joyful, safe, harmony and healthy sustainable environment.

They formulated an action plan to address the issue of domestic waste management that comprised of the objectives with the strategies, monitoring and evaluation.

The objectives of the Environment Working Group were:

1. to provide a more efficient domestic waste collection system;
2. to provide effective enforcement;
3. to enhance community awareness towards prevention, waste segregation and minimization of waste; and
4. to provide enough reuse centers.
The strategies addressing each objective have been formulated. The activities for these strategies had been planned and the people to carry these activities have been identified. This group would be working closely with the Alam Flora PTY Limited, the concession company for domestic waste management.

The implementation of the action plan for this Environment Working Group would be taken over by Petaling Jaya Section 22. They already had an active resident association, the Damansara Jaya Residents and Owners Association (DJROA). Damansara Jaya has 2041 households. The members of DJROA were approximately 580 people that represent only 28% of the total household in the area. The chairperson of DJROA chaired this working group.

For this working group, the DJROA will focus on realizing the principles of 3R’s (Reduce, Reuse and Recycle) for the implementation of LA 21. The theme adopted is to address the needs of the environment group on the domestic waste management. They started off with the recycling project. They found a cabin for the administration of the recycling activities. It has been called the Community Recycling Centre (CRC). The CRC is manned by the DJROA committee members and began operations in November 2000. Proceeds from the CRC will be channeled to fund environmental improvement activities in Damansara Jaya. The Minister of Housing & Local Government has presented a letter of award as a recognition for the recycling project to the DJROA chairperson during the launching of a nationwide recycling campaign in February 2001.

For these recycling activities they have drafted an action plan encouraging more resident participation, involved schools and private colleges within their areas, business and hawkers organizations and the Alam Flora Sdn Bhd. They would also collect some statistics from the recycling activities and used them as strategies to enhance participation.

An action plan on the domestic waste management has been finalized after a few brainstorming sessions with the working group members. For the purpose of implementing the Local Agenda 21 PJ Pilot Project, PJ SS 22 would implement the action plan on Domestic Waste Management. The SS 22 Working Committee had since developed and distributed flyers on Domestic Waste Management to increase the awareness of the community in that neighborhood and established a recycling buy back center.
Apart from the above, promotion of Local Agenda 21 has stimulated interest from other NGOs and CBOs to initiate community development projects in other areas. Thus far, a working committee of Section 17 Town Centre Cleanliness & Beautification was formed. Section 17 is located at the northern section of Petaling Jaya. It has boundaries with section 16 to the east, Section 19 to the west, section 13 to the south and Kiara Mount area, Kuala Lumpur and SPRINT highway to the north. Section 17 was identified as the town center under the Structural Plan of Petaling Jaya District and small part of the Klang District. PJCC will be working together with the Alam Flora Pty Ltd, Tetuan Petaling Garden, car parking managers in Jalan 17/13 and the representatives of the hawkers and business associations.

In Section 17, there were six rows of 43 double-storey shop lots. A wet market of 137 lots is located at Jalan 17/27 and it functions day and night.

The current situation in Section 17 was critical due to:

- the sanitation aspect of the whole area,
- the drain blockages,
- indiscriminate garbage disposals,
- road destruction due to trading activities,
- illegal hawkers and
- filthy, unhygienic environment.

These problems were due to uncoordinated work of the relevant agencies. The selection of this town center was found to be appropriate by the local communities to improve the image of it and to evaluate how the action plan worked in this center. Activities that replicated the PJ SS22, such as waste recycling and monitoring of waste collection were carried out as ongoing processes.

5.4.2. The Social Integration Working Group

An Exco member of Damansara Utama (Section 21) chaired the Social Integration Working Group. This working group focused on the issue of 'Strengthening the Relationship of Neighborhood'. It will implement the action plan for this issue. In the group discussions, they performed SWOT analysis on their current neighborhood situations as shown in Table 8.
Table 8. The SWOT analysis on the current neighborhood situations in PJ.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Strong committed Resident Association</td>
<td>• Need common cause</td>
</tr>
<tr>
<td>• Different RA/RT willing to support each other when issue arise</td>
<td>• Needs consistent motivation and efforts</td>
</tr>
<tr>
<td>• Most of us know each other on all fronts-talking weekly over the fence</td>
<td>• Community are reserved (mind own business and apathy)</td>
</tr>
<tr>
<td>• Some form of cooperation</td>
<td>• 10-30% residents are members of a RA</td>
</tr>
<tr>
<td>• Residents prepared to take initiatives</td>
<td>• Lack of time, funds and venues</td>
</tr>
<tr>
<td></td>
<td>• Lack of information</td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
<td><strong>Threats</strong></td>
</tr>
<tr>
<td>• Willingness to help each other</td>
<td>• Deteriorating environment</td>
</tr>
<tr>
<td>• About 10-20% residents willing to pay or join security scheme</td>
<td>• New and inappropriate developments</td>
</tr>
<tr>
<td>• Relationship- Overall good response and support if there is a group to</td>
<td>• Uneducative tv programmes</td>
</tr>
<tr>
<td>lead the initiatives</td>
<td>• Negative attitude by all parties</td>
</tr>
<tr>
<td>• Easy for neighbours to get to know each other with programmes</td>
<td>• Negative activities</td>
</tr>
<tr>
<td>• Resident Associations are set up because of an issue</td>
<td>• Insufficient infrastructure</td>
</tr>
<tr>
<td>• Internet communication</td>
<td>• Insufficient facilities</td>
</tr>
<tr>
<td>• To form new RA/ RT</td>
<td></td>
</tr>
</tbody>
</table>

RA=Resident Association
RT= *Rukun Tetangga* or neighborhood watch

They have also identified a few objectives to realize the social integration in these neighborhoods. These needs were:

• to achieve a balanced lifestyle,
• to develop a peaceful, healthy and equitable society and
• to promote a common needs to enhance mutual understandings.

Finally after a few meeting sessions, the Social Integration Working Group formulated three strategies to work with:

• To enhance the establishment of the Residents Associations (RA)/ Neighborhood Watchers (RT) by promoting new memberships or intensify their activities.
• To encourage participation of youths to ensure continuity and sustainability.
• To continue and intensify the existing programs and activities.
This working group launched a competition on “Best Neighborhood in Petaling Jaya” on 30th August 2001. Closing date of this competition is was the 15th January 2002.

5.4.3. The Safety Working Group

The progress of the Safety Working Group has been a bit slow. During the planning period a social problem was anticipated in a nearby residential area due to some misunderstanding among the residents. This working group is currently formulating two action plans on Petty Crime Prevention and Vandalism.

The Section 2 in Petaling Jaya will implement the action plans produced by this Working Group and would be headed by the representative of this area. The selection of sites for implementation is based on its current situation and initiative. This area has mainly older settlements including a few squatter areas. The infrastructure in these localities is poor. Safety and sanitation were the immediate important issues that needed to be addressed. This however will not prevent other areas from implementing the same initiatives or other programs.

5.5. Progress of the Local Agenda 21 in Community A.

In July 2001, a local inter-net web-site was created for Malaysian who is interested in becoming Local Agenda 21 partners. This web-site provides a platform to interact with each other. I have joined the group and am on the mailing list. I continuously receive news on any relevant issue of Local Agenda 21 and am in contact with the other group members.

The PJ LA 21 vision statement on the continuing effort of LA 21 has stated that Local Agenda 21 is a long term and continuing process to achieve sustainable development. It’s promised that the principles and component of partnership and participation will continued to be promoted in every action plan that is being formulated. Furthermore, as a continuing step, a 2nd action plan from each working group will follow suit and welcomes any form of participation (MPPJ, 2001).
CHAPTER 6

THE PLACE-BASED COMMUNITY:
THE STORIES OF THE UNEMPowered COMMUNITIES:
COMMUNITIES B, C AND D IN SEMI-URBAN AND RURAL
SETTINGS

These communities were categorized in my study as the unempowered communities. They were community B from a semi-urban area and communities C and D from rural settings in Malaysia. The communities were placed in this category due to unavailability of any external support or funding from any established organization. In addition, the initiatives from this work came from my own interactions with these communities. I felt that without my input, the communities were not aware of any established initiative towards sustainable development.

The locations of these unempowered communities are shown in Figure 12. The descriptions of the participants in the focus group discussions within these communities were summarized in Table 9 and Table 10. They are active community members from each setting and were representing the communities in most formal meetings with their local authorities.

Table 9. The descriptions of the participants in focus group discussions within the unempowered communities in this study.

<table>
<thead>
<tr>
<th></th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Min, Max</td>
<td>Mean, SD</td>
</tr>
<tr>
<td>Age in years</td>
<td>18</td>
<td>21,79</td>
<td>49, 16</td>
</tr>
<tr>
<td>No. of children per</td>
<td>18</td>
<td>1, 9</td>
<td>4, 2</td>
</tr>
<tr>
<td>group member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of person per</td>
<td>18</td>
<td>6,12</td>
<td>6, 3</td>
</tr>
<tr>
<td>family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family income in RM*</td>
<td>18</td>
<td>100, 2000, 734, 512</td>
<td>14</td>
</tr>
<tr>
<td>per month</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of stay in the</td>
<td>18</td>
<td>2, 79</td>
<td>38, 22</td>
</tr>
<tr>
<td>area (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of stay in</td>
<td>18</td>
<td>2, 75</td>
<td>27, 20</td>
</tr>
<tr>
<td>their current houses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(years)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N = Responses, RM* = Ringgit Malaysia
Table 10. The characteristics of the participants in the focus group discussions within the unempowered communities.

<table>
<thead>
<tr>
<th>Participants characteristics</th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex: Men</td>
<td>18</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Women</td>
<td>0</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Ethnicity: Malay</td>
<td>9</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Chinese</td>
<td>2</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Indian</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Orang Asli</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Religion: Muslim</td>
<td>12</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Buddhist</td>
<td>2</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Hinduism</td>
<td>2</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Christianity</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Atheism</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Marital status: Married</td>
<td>18</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Single</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Education level: Lower primary</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Upper primary</td>
<td>6</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Lower secondary</td>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Upper secondary</td>
<td>4</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>College/ Diploma</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Type of job: Head of village</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Self-employed</td>
<td>6</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Own business</td>
<td>4</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Rubber tapper</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Administrative worker</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Health worker</td>
<td>5</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Pensioner</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Housewife</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Access to electricity</td>
<td>18</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>Water supply providers:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Works Department (WWD)</td>
<td>11</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Gravity Feed System</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>WWD &amp; spring water</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sewage system: Septic tank</td>
<td>4</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Flush toilet</td>
<td>10</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Pit hole</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>River</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Solid waste disposal: Burying</td>
<td>4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Burning</td>
<td>4</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Local authority</td>
<td>2</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Private company</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Burying &amp; Burning</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total number of participants</td>
<td>18</td>
<td>14</td>
<td>11</td>
</tr>
</tbody>
</table>
6.1. The Semi-Urban Community: Community B

Community B in this study is located approximately 35 km from Kuala Lumpur. It had a population of 22,000 people in 1998. Majorities of the population are Malays, followed by Indian, then Chinese and others including Orang Asli (the indigenous people). The area in this community has undergone rapid development for the past 15 years due to its proximity to Kuala Lumpur. The infrastructure has improved significantly, with more residential units, factories and small industries have been built. In 1998 a commuter station was built to facilitate transportation to the city center.

My gatekeeper was an assistant health inspector who is a local person and has worked for more than 20 years in the local health clinic. He had been briefed on my project on community-based action in the environment for health. He volunteered to give his full support to ensure this project was successful. He had made the arrangements for the community consultation. The doctor in charge of the clinic, who was his immediate person in-charge, was also supportive to this project.

There were three community consultations in community B: two of which times were with the community representatives. Both resulted in two community-based actions: (1) A study of air pollution due to a cement factory and (2) A cleanliness campaign in a squatter settlement. Another consultation was with the Orang Asli. Various arrangements including surveys, meetings, informal discussion and case investigation with the relevant authority were conducted within this community.

The first community consultation was on the 12th July 2000 in a community hall, near the health clinic. Six people inclusive of the assistant health inspector participated in this community consultation. Three of the participants were in mid thirty to forty years of age and the other three were in their sixties. The latter participants were retirees from government services. Subsequent paragraphs present the summary of this consultation and the details are described in Appendix 5a.
6.1.1. The first community consultation in Community B

This community consultation aimed to explore the issues of concern and the capacity of this community to respond and work together to address the main issue of concern. The community felt that there was improper development in this area and that it was responsible for a number of environmental problems. There were problems with drainage, the sewerage system and solid waste disposal. These led to flash flood and water pollution either of surface or underground water. They considered this improper development due to inadequate planning for the land-use and infrastructure and amenities of this small area. This improper development also led to environmental degradation (river water pollution, air pollution, inefficient waste water system, improper solid waste disposal) and social problems (illegal gambling machines, drug addiction, loafers culture) and road safety problems.

This community was frustrated with the problems of environmental degradation. They were concerned with river pollution. They mentioned that about 10 years ago, they could swim in the nearby river and take their families to picnic in this area. These opportunities were all gone due to the pollution. They identified that the sources of the river pollution were due to rubbish disposal, latrines, and squatters along the riverbanks, the industries (palm oil mills, small and medium scale industries) and quarry activities.

The second problem they were facing was that of air pollution. They identified the sources of this air pollution were from a cement factory, quarrying activities from five quarries situated next to each other, a palm oil mill, the heavy vehicles mainly the lorries from the quarries, construction lorries and sand lorries.

The issues that were highlighted during this consultative session were summarized as follows;
1. Economic development and population growth brought up problem of space – overcrowding due to migration; urban-suburban and rural-suburban migration.
2. Development was being enhanced by proximity to urban areas eg the distance from Kuala Lumpur was only 30-40km.
3. Improper development caused more problems- unavailability of proper drainage, sewerage system and improper solid waste disposal led to flash flood and water pollution either surface or underground water.
4. An unplanned development was a development without proper land-use planning and incomplete infrastructure and amenities; health facilities, solid waste disposal, drainage and sewerage system.

5. This unplanned development led to environmental degradation (waste water, river water pollution, improper solid waste disposal) and social problems (gambling machine, drug addiction, loafers culture)

6. The problem of environmental degradation were:
   a. Water pollution:
      Sources: rubbish, latrines, squatters, industries (palm oil mills, small and medium scale industries), quarrying activities
   b. Air pollution:
      Sources: industries (cement factory, palm oil mill, quarrying activities), motor vehicles (busy heavy traffic- mainly lorries from the quarries, construction lorries and sand lorries)
   c. Waste management:
      Types: solid waste due to unavailability of solid waste disposal system and illegal squatters, human waste due to improper sewage system and illegal squatters, animal waste due to illegal cattle breeding

7. The social problems were due to illegal video gambling which was a serious problem mainly affecting the youth and adults. This gambling could lead to other social problems eg increased violence rate, robberies, prostitution, broken families etc. Other social problems were drug addiction and loafers.

8. The other problems identified were:
   a. safety in the village: mainly road safety and the other safety issues such as thievery, and fire safety
   b. insufficient graveyards due to rapid population growth caused by immigration of rural population into urban areas
   c. poor education achievement among the community due to insufficient schools and unhealthy social interactions
   d. lack of recreational area
   e. lack of fire hydrants
   f. poor environmental management, mainly lack of coordination in the government agencies in addressing environmental issues.
Plate 1. The community consultation with community B

Plate 2. The view of house structure in community B.
A joint project with this community was planned to address the problem of air pollution due to a cement factory. This issue was raised mainly in consideration for the health of 150 primary school children. This school is located immediately opposite the cement factory and close to this school is the village, which has approximately 100 households, mainly Chinese. This village is about 100 years old. In addition to the problem of air pollution, they are also disturbed by the noise from the factory activities.

A Movement and Action Committee was formed during this consultation. Mr B took the leading role. Mr A provided secretarial assistance and the others who participated agreed to become the members. I took on the role of a facilitator.

After the departure of the other participants, short discussions with these key people to plan further their activities on the proposed project. They were informed that a proposal for the project would be prepared. The project would begin once the proposal was completed. Mr A would be given a few copies of the proposal together with the minutes of the workshop to be circulated to the committee members. Other communication would be through telephone and members were encouraged to contact and consult each other if there was any query on the project.

A first step in this project was the identification of the sources of air pollution. It was initiated by a ‘walk-through survey’ on 2<sup>nd</sup> August 2000. Mr B, drove me around the area together with Mr A, and explained the prevailing conditions with emphasis on the cement factory and the quarry activities that contributed to the serious air pollution in this area.

6.1.2. A community survey in Community B

Based on the information gathered from the ‘walk through survey’, a questionnaire was designed for a community survey. The questionnaire was in Bahasa Malaysia (Malaysian language). Mr B and Mr C were not able to conduct this survey due to their lack of fluency in the Bahasa Malaysia. However, they fully supported the survey by informing their community beforehand and translating some of the questions into Chinese during the survey in their areas. This community survey was conducted in September 2000. A total of 192 people from 40 households were surveyed. The demographic profile of the respondents in the survey is shown
in Table 11. The general conditions as perceived by the community are shown in Table 12, whereas their perceptions on the environmental and social conditions are shown in Table 13.

Table 11. The demographic profile of the respondents

<table>
<thead>
<tr>
<th></th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age in years (mean + SD)</strong></td>
<td>29 ± 19.5</td>
</tr>
<tr>
<td><strong>Income in RM (mean + SD)</strong></td>
<td>1774 ± 1034</td>
</tr>
<tr>
<td><strong>Sex (N, %)</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>102, 53</td>
</tr>
<tr>
<td>Female</td>
<td>90, 47</td>
</tr>
<tr>
<td><strong>Ethnicity (N, %):</strong></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>72, 37.5</td>
</tr>
<tr>
<td>Chinese</td>
<td>93, 48.4</td>
</tr>
<tr>
<td>Indian</td>
<td>27, 14.1</td>
</tr>
<tr>
<td><strong>Education level (N, %):</strong></td>
<td></td>
</tr>
<tr>
<td>No schooling</td>
<td>28, 14.6</td>
</tr>
<tr>
<td>Primary</td>
<td>52, 27.6</td>
</tr>
<tr>
<td>Secondary</td>
<td>87, 45.3</td>
</tr>
<tr>
<td>Tertiary</td>
<td>5, 2.6</td>
</tr>
<tr>
<td>Unknown</td>
<td>20, 10.4</td>
</tr>
<tr>
<td><strong>Job category (N, %):</strong></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>52, 27.1</td>
</tr>
<tr>
<td>Laborer</td>
<td>35, 18.2</td>
</tr>
<tr>
<td>Housewives</td>
<td>35, 18.2</td>
</tr>
<tr>
<td>Business</td>
<td>15, 7.8</td>
</tr>
<tr>
<td>Unemployed</td>
<td>11, 5.7</td>
</tr>
<tr>
<td>Arm forces</td>
<td>10, 5.2</td>
</tr>
<tr>
<td>Driver</td>
<td>7, 3.6</td>
</tr>
<tr>
<td>Pensioner</td>
<td>3, 1.6</td>
</tr>
<tr>
<td>Rubber tapper</td>
<td>2, 1.0</td>
</tr>
<tr>
<td>Not applicable (small children)</td>
<td>22, 11.5</td>
</tr>
</tbody>
</table>

Table 12. The general living conditions as perceived by the respondents.

<table>
<thead>
<tr>
<th>Conditions (N, %)</th>
<th>Good</th>
<th>Moderate</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Air</td>
<td>2</td>
<td>4.9</td>
<td>7</td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Noise</td>
<td>3</td>
<td>7.3</td>
<td>9</td>
</tr>
<tr>
<td>Social safety</td>
<td>14</td>
<td>34.2</td>
<td>18</td>
</tr>
<tr>
<td>Neighbourhood spirit</td>
<td>38</td>
<td>92.6</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 13. The environmental and social problems in the area

<table>
<thead>
<tr>
<th>Problems</th>
<th>Problem 1</th>
<th>Problem 2</th>
<th>Problem 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Air pollution</td>
<td>Road safety</td>
<td>Noise</td>
</tr>
<tr>
<td>Social</td>
<td>Illegal video gambling</td>
<td>Drug abuse</td>
<td>Loafers</td>
</tr>
</tbody>
</table>
Plate 3. Silos from the cement factory where the cement dusts were emitted.

Plate 4. Waste sludge's from industrial activities in the local drains
The survey found that 97.5% of the people complained of the negative impact of air pollution on their health. 97.5% of them reported sickness, 95% had coughs and colds, 87.5% had sore throat, 72.5% had phlegm, 65% had shortness of breath and skin itchiness, 62.5% had eye irritations and 52.5% had asthmatic attacks. They also claimed that the dust in the air affected their house and properties (87.5%). The respondents identified the sources of air pollution to be the cement-packaging factory (87.5%), quarrying activities (55.0%) and motor vehicles mainly, lorries carrying sand (32.5%).

In response to the questions on ‘Whose responsibility is in protecting the environment?’, an equal number of people (28.2%) believed that it was the responsibility of the community or government, 10.2% the community and government, 5.1% the government and the private sector, another 5.1% were not sure of the answer and 23.5% did not respond to this question.

Ninety two percent of the people claimed that regulations were not effective in protecting the environment. A positive culture prevailing in the area is the neighborhood spirit where 92.6% of the people found it good and 7.3% moderate but none found it bad. Majority of the people (75.0%) felt that gotong-royong or working together to clean up their areas were necessary community activities to protect the environment. However, 20% of them claimed that they did not have any capacity to respond to the needs of environmental protection.

These findings were consistent with the findings from the community consultation in this community such as the environmental and social problems in this community and their perceptions and responses to these problems.

6.1.3. A factory investigation by the Department of Occupational Safety and Health in response to air pollution caused by the cement factory

Based on the community consultation, this community filed complaints on the air pollution problem to Department of Environment. This action did not bring any immediate response. Accordingly, a follow-up letter of complaint was sent to the State Director of the Department of Occupational Safety and Health (DOSH). A follow-up complaint was also made to my colleague, a health officer in the same department. He then confirmed the date of investigation to the factory. The details of the investigation are described in Appendix 5b.
Four officers from the Department went to the factory and as the authorized DOSH officers, they carried out an investigation on the air pollution in the factory. From this investigation, it was found that the factory was a cement depot where cement from the north was transported to the factory via rail. From this depot, the cement was transferred to cement lorries for delivery to the client. The lorry drivers were subcontracted. The working environment in this cement depot mainly in the storage and transfer section was very dusty. This was due to poor ventilation and leakage of the transfer tubes. This also led to the poor air quality outside the factory due the dispersion of cement dust into the atmospheres. Besides the problem of dust, the noise level within and beyond the factory always exceeded the permissible level. This depot is subjected to the ‘Use and Standards of Exposure of Chemicals Hazardous to Healths’ Regulation (OSHA Act, 2000) and the ‘Noise Exposure’ Regulations (Factory and Machinery Act, 1989).

The DOSH officer, who was also an industrial hygienist, issued a ‘Notice of Improvement’ to the manager of the factory. The factory was given a three month period to produce an action plan and implement it to improve the working conditions. The DOSH officers will make a follow-up visit after three months. The manager was also informed of the subsequent procedure of enforcement. If the work conditions had not improved in the time specified, a ‘Warning Notice’ could be issued which in reality is a stop work order. If the work conditions had improved satisfactorily, the notice of improvement will be cancelled.

6.1.4. Progress of Environmental Health Monitoring in Community B

Continuous arrangements have been made with Mr A to monitor the progress of the activities that had been planned and to have updates on current community issues. Mr A informed the committee of his concern for problems caused by the lorries carrying sand. Everyday, along the area’s main road, many of these lorries pass by the area. Wet sand could regularly be seen dropping to the road. This dries up during warm weather and creates a dusty environment. Most of the windows and doors of the residents houses along the road are kept closed to minimize dust entry. Another issue of concern was the road safety due to these lorries. Mr A has informed the Police Traffic Unit in the district on these activities and the problems caused by them. A police inspector has promised to send his officers to investigate and take the necessary actions. Mr A watches over these drivers and monitors that they follow rules and regulations and he continues to be the public watchdog in this area.
A 24-hour air quality monitoring exercise was conducted during November 2000 and July 2001. The dust sampler was set up on top of the roof of a house in the residential area close to the cement factory. This house is located less than 100 feet opposite the cement factor. The house owner, Mrs J gave us permission to set the dust sampler unit up and took care of this unit while it was in operation. The results have shown that during November 2001 when Malaysia was experiencing northeasterly monsoon, the particulate levels in this area was low. The 24-hour readings showed that PM10 levels did not reach 100 microgram per meter cube. However, the reading on 19th July 2001, which was during the southwesterly monsoon in July, showed high level of particulate reaching more than 100 microgram per meter cube. However, the level fell soon after the morning rain on the 20th July 2001.

On the 19th July 2001, during the period of dust-monitoring, short interviews with Mrs J, Mr K, the principal of the primary school, Mr L, the assistant principal and Ms M, the school cleaner were conducted. These interviews were conducted separately. Mrs J informed us that she has been living in the same house, together with her husband, a lorry owner and her two sons for twelve years. She noticed that there was a slight reduction in daily dust emission as compared to last year. However, two days ago, she noticed a bulk of dust was emitted from the factory. She also complained of the noise from the factory. The noise has been there since the factoring started operating in 1980.

Plate 5. The air monitoring on the roof of a resident’s house, opposite the cement factory
Mr L was concerned for the health of the school children because of the school's proximity to the factory. He told us that there were 128 students divided into six classes from class 1 to class 6. The school hours were only in the morning session (7.30am to 1.00pm). He has been working there for 12 years and teaches English and science. He added that there was not much improvement in dust levels as compared to last year. He also stated that the noise was really disturbing especially at night, mainly to the residents nearby. The suspended dust settles on the school windows and the school cleaner, Ms M wiped them at least once a week. A layer of the dust can been seen when you wipe your finger on the school windows. Mr K started working there since early this year. Mr L and Mr K did not notice any additional health problem among the students due to the dusts. However, according to Mr L, this may be due to the fact that the students did not go to them for health problem. Their parents may take them to the clinic for any treatment. Ms M told us that she found a thick layer of dust on the windows and she regularly wipes them off. She admitted that she had regular cough and sore throat, which she thought was due to the dust. Therefore she said that she always covered her mouth, nose and eyes using towels while she did the cleaning.

6.1.5. The Second Community Consultation in Community B

A second community consultation was conducted at the local community hall at on the 31st July 2001. Prior arrangement for the study was made with the gatekeeper. Four health workers assisted him. Invitation letters were sent few days before the consultation commenced. The medical officer in charge of the health clinic was also invited to the meeting.
A few new issues identified during the second consultation were

- The illegal settlements of the illegal immigrants
- The food safety and hygiene from the local food stalls
- Dissatisfaction of the dengue control program by the health department
- The lack of coordination among government agencies in providing services
- Dissatisfaction on the current practices in handling the bodies of AIDS patients by the hospital workers
- Sanitation problem in a squatter area
- Drugs problem in a local secondary school

A joint project on a cleanliness campaign to address the sanitation problem in the squatter area was chosen for the next activity in this community. Arrangements such as planning for the campaign and searching for donation to provide some refreshments for the volunteers have been made with the health department, the village representative and the NGO president for this campaign. The details of these arrangements are described in Appendix 5d.

A partnership with community B has been established. This community continues to communicate with me and has informed me on their progress regularly. Further activities for year 2002, have been planned together with the local health clinic. The action plans are to organise regular blood donation campaign, talks on environment and health issues and the 'gotong-royong' activities.
Plate 6. The dirty drain and rubbish dumping in the squatter area of the community B.

Plate 7. The cleanliness campaign in the community B.
6.1.6. A survey on community perception in Community B

In conjunction with the second community consultation in community B, a survey on community perception was conducted among the participants. The questionnaires (see Appendix 3) were distributed before the session started. While waiting for other participants, some of the early comers completed the questionnaires. Most of them were self-administered and nine participants responded to the questionnaires.

In response to the biophysical questionnaires (see Table 14) two to five people perceived that air, river, lake/pond, and plants were in moderate conditions. Three people felt that the air and plant conditions were good and only one person felt that they were in bad condition. Three people felt that the river was badly polluted. In terms of noise, two respondents were satisfied with the noise levels, five were moderately satisfied and another two felt, it was bad. The infrastructure in this area: refuse disposal and public toilets were felt to be good (two and six persons respectively) and moderate (six and three persons respectively). In response to safety, the social safety was good for five respondents and moderate for four of them. Property safety was felt to be good among two respondents and moderate for seven of them. Five respondents felt that they have good neighbors and another four respondents considered the relationship as moderate. Three respondents' felt that the road safety was bad, another four of them felt it to be moderate and two of them felt it good.

<table>
<thead>
<tr>
<th>Bio-physical Parameters</th>
<th>Good</th>
<th>Moderate</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>3</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>River/Lake/Pond</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Plants</td>
<td>3</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Noise</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Refuse disposal</td>
<td>2</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Public toilets</td>
<td>6</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Social safety</td>
<td>5</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Property safety</td>
<td>2</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Road safety</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 14. Responses of a survey on community perception

In response to the open-ended questionnaires, all respondents felt a good neighborhood pleased them most. The second important thing that pleased them was healthy and comfortable environment (three responses) and healthy community (one response). Clean
river and ability to have outdoor activity such as playing football was perceived as important for one respondent each. The third thing that would please the respondents was better housing, easy communication, peaceful, 'gotong-royong' spirit and healthy plants.

The most important factor of concern among them was air pollution (two responses), and one response each (not in any order importance) for drug abuse, river pollution, illegal immigrants, road safety, fire safety and thievery. The second factor of concern was (one response each, not in any order importance) illegal immigrants, illegal settlement condition, dirty drains, diseases caused by mosquitoes, road safety, fights and social problem of youths. The third issues of concern were road safety (two responses), noise levels (two responses) and selfishness, thievery and water quality (one response each). The immediate actions that they thought they could take to improve their living conditions were ‘gotong-royong’, organize public talks, inform the authorities, supporting all government efforts and maintain the cleanliness of the area. The other actions that they could take were to monitor their children activities, collaborate with the authorities, clarify problem with others and participate in community actions.

The most important actions that they would like to take (not necessarily within their capacities) to improve their living conditions were participation in community action, notification to the local authority, asking assistance from the local authority, repair the roads, and using concrete drains. The other actions that they would like to take were to organize discussions, work with the community, prevent open burning, and deepen the river and control illegal settlement.

They perceived that the most important barriers to their actions were disagreement among others, government agencies that did not carry out their duties, information did not reach the community, people in need do not receive any help, less community actions and the distance of their villages to the highway. The other barriers were uncooperative neighbors, rapid development, negative attitude of the community such as intolerance, uncaring and misunderstanding. The most important resources that could help them are government assistance, authorities carrying out their responsibilities, well-informed community and the provision of public facilities. Other helpful resources are coordination of government agencies, collaboration of the community with the government agencies, availability of
counseling assistance, provision of raw materials, the village headman and private organizations.

The most important negative factors that disrupt their community development program are mainly the negative attitude of the community such as the ‘don’t care attitude’, spread of lies and refusal to work together. Other negative factors were many migrants, bad road conditions and clogged drains which causes flash floods, information that did not reach the community, rapid unplanned development, selfishness, relevant authorities that do not provide assistance and those who work independently for selfish reasons.

The vision of the community for the next five to ten years is to be peaceful, happy, and to create beautiful village, have healthy environment, develop caring family and be without worries. Their mission is to develop healthy current and future communities, good infrastructure in the village such as good road conditions, clean water supply, and electricity, responsible residents with stable economic status, strong neighbourhood spirit, good religious belief and absence of unhealthy activities.

6.1.7. The first community consultation with Orang Asli in community B

A community consultation with the Orang Asli community was carried out on the 31st July 2001 (Appendix 5e). A group of six people attended. One of them, Mr. BD is a Malay man who married an Orang Asli woman and has adapted himself to their culture. A staff nurse from the health clinic was also invited to the session due to her knowledge and familiarity of the culture of the Orang Asli. She has provided health services to this community, mainly in the area of family health, for more than two years.

The session was held in the Orang Asli community hall, which is situated very near to their settlement. Prior preparation of the meeting room was carried out before the meeting. The tables were cleaned and arranged to make a square where the group members could face each. Drinks were served to the group members and to five Orang Asli children who accompanied them. Children following the parents on their outings is a cultural habit practiced by Orang Asli. These children stayed for a quarter of the session. The meeting was conducted in Bahasa Malaysia and it started at 3.00pm. I gave an introduction about my assistants and myself. I
explained to the group that the aim of the consultation was to gain some insights on the way of living of the Orang Asli community and the related issues of concern in this community.

The information gathered during the consultation with the Orang Asli communities were:

- The history of settlement of the Orang Asli
- The current number of Orang Asli in the village and their ways of living
- Their satisfactions on the current health services provided by the local health clinic
- Their concerns on the water quality from the Gravity Feed System
- River pollution - a. River siltation due to quarry activities  
  b. Worms infestation due to an upstream fishpond.
- Dissatisfaction with the nearest hospital service for Orang Asli
- Low education level among Orang Asli children
- Social structure of the Orang Asli community

The main issue that arose from this consultation was the quarry activities, which led to;

a. river siltation which lead to flash floods in their settlements
b. dusty environment
c. noise problem
d. risk of injuries from flying rocks

These issues were similar to the wider community B. I was unable to conduct other session with the Orang Asli community due to time constraints.

6.2. The Rural Settings: Communities C and D


Community C in this study is a rural community located 120-km southwest from Kuala Lumpur. The topography of this community area is similar to Kuala Lumpur, which is a valley. The size of population in year 2000 in this community is 73, 392 people with majorities of Malays, followed by Chinese, then Indian and others including Orang Asli. It has a small town nearby, but most of the population lives in the village practicing subsistence

9 Orang Asli= indigenous community
farming. Two community consultations were held at the district health office with the support of the health officer in charge, Dr A.

6.2.1.1. The first community consultation with the villagers in community C

The first community consultation with community C was carried out with some of the village headmen on the 15th August 2000. The age range of the headmen were mid forty to mid sixties years. The details of this consultation are described in Appendix 6a. During this consultation, it was found that this community was very satisfied with their living conditions due to the availability of the basic facilities. The relationship of the community with the local health workers especially the lower rank staff was very close. The neighborhood spirit was very good where good teamwork was found at all village activities such as weddings, religious celebrations and 'gotong-royong'.

The main issue of concern to this community was the drop in the size of population in this area. This was due to the out-migration of the people to the urban centers to seek employment. They claimed that the youngsters were more interested in getting full-time paid jobs than working on an agricultural job.

Agricultural activities do not attract the younger generation. This 'disagricultural phenomenon' was further aggravated by the problem of marketing of agricultural products where the middlemen controlled the crop price and kept it very low. The headmen further claimed that the reason for this 'disagricultural phenomenon', could be attributed to the current education systems, which they felt over-emphasized theoretical learning at the expense of practical applications. They found that the youngsters were taught more information technology and less farming at school. This resulted in students who could not manage to go for higher education and who were unable to practice what they had learned for their future jobs and living conditions. Therefore, they had little interest in agricultural jobs.

During this inquiry, the majority of the populations remaining in the village were senior citizens. This gave rise to problem of neglected agricultural land and poor social interactions, which hindered the capacity for community development. They perceived that further development was being slowed by the problem of poor road accessibility connecting the area to the nearest city centers.
Plate 8. The community consultation with the villagers of community C.

Plate 9. The view of the house structure in the villages of community C.

Plate 10. The problem of neglected land in the villages of community C.
Other issues that were discussed were:

- the problem of discipline among school children due to interference of parents.
- dirty water supply in some areas due to lack of water treatment plant.
- traditional livestock breeding where the animals are not kept in paddocks and this results in destruction of farms or gardens.
- The phenomenon of ‘loss of community’. The youngsters were more interested in working in the factories or industries. They were commuting everyday to workplaces up to 40 km away from the village. They worked more than 10 hours per day to gain extra income. The community found that these youngsters have little time for themselves and for any social interaction.

6.2.1.2. The community consultation in the small town of Community C

Seeing the minimal capacity to individually respond to any community-based project due to the problem of population out-migration, another group within the community was located. From the discussion with the local chief health inspector a second community consultation in this community C was conducted among NGO members. This NGO was an active organization in this community. Its members lived within the small town in this area. Three men and eight women participated in the first consultation (see Appendix 6b).

The participants identified that their main issues of concerns were:

- Problems of rubbish disposal, which lead to water pollution, clogged drains and dirty environment.
- Noise, waste and water pollution due to the night markets
- Air pollution due to open burning activities and road traffic
- Water shortage in certain areas

They felt that the reason behind these problems was lack of awareness. They initiated an action plan and wanted an environmental health campaign organized by the district health office and my team in 2001. This campaign contained most of the health and environmental health education messages. The health campaign comprised free medical examination, blood tests for cholesterol, glucose and blood donation campaign. The environmental health campaign focused on poster exhibitions to increase awareness for environmental protection
photographs for the posters and they produced the notes for each poster. My team provided expertise in making posters and the health office provided the display panels.

Plate 11. The community consultation in the small town of community C.

Plate 12. The living conditions in the small town of community C
Besides this campaign, they requested regular public education on environmental health issues to be broadcast through their local radio station. They planned to organize a cleanliness campaign soon after the environment and health campaign. In this campaign they wanted the district council to be involved to ensure success.

A second consultation session with these NGO members was held on the 15th February 2001 on 8.30pm at the local Rest House. This Rest House was the common venue for this NGO’s meetings. The district health officer, Dr A, also attended this session. The meeting reported on the arrangements for the environment and health campaign and the necessity to get the involvement of the district council. Two important issues were raised again, which needed immediate attention of the district council. These issues were the problem of inefficient rubbish disposal system and the location of the daily night market that is in the middle of the town. The secretary of this NGO, Mr Q was assigned the duty of inviting the district officer to participate in the next meeting.

The third consultation session was conducted on the 5th April 2001, at the same place and time. During this meeting, the final arrangements for the campaign were completed. A meeting with the district officer was yet to be fixed for the next session. Mr U, an advisor to this NGO offered his assistance to fix an appointment with the district officer and other relevant government agencies to address the issues of concern for this community.

The health and environment campaign was organized on the 7th April 2001. It took place in the compound of the police station, in conjunction with the Police Day. The NGO members produced flyers and distributed them to the whole district. There were banners displayed outside the gates of the police station to inform the public about this campaign. Beside the health and environment campaign, the Police Unit also organized an exhibition on their activities. Their exhibition consisted of criminal, safety and prohibited drugs sections.

For the environment and health campaign, my colleagues and I prepared the environmental health posters. It covered current problems on solid waste management (with the inclusion of photographs taken by the NGO members and the district health office), environmental pollution, coastal water pollution, and technical papers on laboratory analysis for parasite and pesticides contamination in water samples. The staffs from the district health office prepared the health posters that covered topics on healthy lifestyles, healthy eating, heart diseases,
diabetes and children health. The posters were arranged side by side occupying three display boards. In addition to the poster exhibitions, together with the NGO members, they organized the free health screening and blood donation campaign. The health screening included calculation of body mass index, blood pressure and glucose measurement, cholesterol screening and consultation on healthy eating.

The responses from the public were moderately good. An estimated 100 people turned up during the campaign. 70% of respondents were the family of police forces and another 30% were the public. A total of 40 people responded to the blood donation campaign. A total of six local people responded to a survey on the community perception of their environment. The results of this survey were as follows:

- Most of the respondents perceived that their main concern was the social problems such as school dropouts, thievery and youth problem. One Most of them (five out of six respondents) perceived that the environment in their areas such as the air, river water and plants were in good condition. Some of them were pleased with their good neighbors where the neighborhood spirit was strong, caring and the environment was peaceful. They felt that the infrastructure in the area and the road accessibility were satisfactory. The only problem was the road to the nearest town center was a winding road that passed through a hill.

- Most of the respondents perceived that their main concern was the social problems such as school dropouts, thievery and youth problem. One respondent was unhappy with the safety condition in his neighborhood. The second issues of concern were their low socio-economic status and fewer job opportunities locally. Other problems were neglected land and the muddy road. They perceived that their problems were attributed to lack of awareness, no job opportunity and the land ownership system. The problem of land ownership is due to the strong heritage system where, if there were more than two owners in the certified land grant, without full consent of all the owners, the land could not be developed.

- In managing their environment, most of the respondents were relying on the authorities for example reporting to the police, referring to the district office or informing parents on their children's problem. They were willing to work hard and increase safety in their area.

- Their visions reflect more on physical development such as better educational facilities (more schools and higher learning institutes) and infrastructures such as better housing,
Plate 13. The environment and health campaign in community C: the environmental health exhibition with free health screening and blood donation campaign.
economic development such as more job opportunities and community development such as more successful children, less social problems (school drop-outs and peaceful village).

6.2.1.3. Progress in Community C

Subsequent phone contacts were made with the NGO members and my gatekeeper in community C in June and July 2000 for the arrangement of an inter-agency meeting with the district officer, NGO and the district health officers. The meeting aim was to address the issues of concern in the local community mainly the town residents. It took time to confirm the date of the meeting. This delay was due to few factors; a new district officer had been appointed on the 4th August 2001, and the NGO was celebrating its inaugural anniversary in June and had undergone a new election for committee members in July. The new president of this NGO was Mr Q and the district secretary was my gatekeeper, Ms T. Therefore all subsequent activities commence only after August 2001. Phone calls had been made to Ms T and Mr U on the 28th August 2001. The planned inter-agency meeting was finally fixed with Dr A for 18th September. However, this meeting was then cancelled due to inability of the district officer to attend. Dr A was given a briefing on the project and he promised to continue his support. He advised me to keep in touch with the members and follow the progress of the activities, which had been planned earlier.

6.2.2. Community D in Pahang

Community D in this study is located 250 km to the northeast of Kuala Lumpur. The size of the district is 5,198 km square. The center of this district is a valley and is situated in the middle of Peninsular Malaysia. It is considered the heart of the peninsula and the main government administration offices are located in the center of the district. It had a total population of 76,951 people in 1998.

The initial request to work in this area was made to the health officer, Dr A. The first visit to this district was on the 27th August 2000. A meeting with Dr A and her chief health inspector, Mr B was held to brief them on the aim of the study, which was community-based action on environmental health. We then went to pay a courtesy visit to the district officer, Mr C.
Mr C gave us on an overview of his job activities. He was not really aware of the Local Agenda 21 (LA 21) program. However he told us that he has received some briefing on LA 21 from his Ministry of Housing and Local Government in Kuala Lumpur. He was supportive of this community-based action plan and would not hesitate to provide assistance if needed. His own interest at that moment was mainly on air quality improvement seeing his two children were asthmatics.

6.2.2.1. The Community Consultation in Community D

The community consultation was held on the 1st August 2000 at Kampung K. Dr A selected this village due to its good performance on village cooperation. The local assistant health inspector, Mr D from the local health clinic, helped to organize the meeting. The venue was at the village-community hall. Eight village committee members including their headman, Mr E participated in this consultation. Five local health workers were also present at this consultation. The details of this consultation with Community D are described in Appendix 7.

The participants identified the following issues during this consultative session, which are:

1. the wastewater problem due to clay soil which hardly absorbed water and is aggravated by no proper drainage system in the village
2. problem of rubbish disposal but minimized by regular gotong-royong activities
3. water pollution due to logging activities and the effluent from a palm oil mill
4. low educational achievement among villagers and their children due to lack of educational programs
5. social problems mainly drug addiction, glue sniffing and loafing
6. traditional livestock breeding which pollute the environment
7. smoke pollution from the palm oil mill

They also highlighted the fact that their village had received three subsequent awards as a visionary village award from the district office due to their active and committed village committee members. They identified their vision to be a garden city with good infrastructure and economic well being. They identified their mission to be:

1. to strengthen their neighborhood relationships
2. to upgrade religious knowledge and social awareness to curb social problems
3. achieve better economic development among the villagers
Plate 14. The community consultation with community D.

Plate 15. The view of a house structure in community D.
They identified two main issues that they needed collective efforts to manage. These were the wastewater problem and the need to increase their knowledge and awareness on the environment and health. A joint effort was planned to address the wastewater problem. The villagers lead by Mr E were required to provide the health clinic with information on the houses which faced these problems, the number of occupants and their monthly water bills to estimate their water load in relation to the wastewater system. Mr D would then collect the information and inform Mr B at the district health office. I would then contact Mr B to get the information. Mr B and I would solicit for some experts' advice for the wastewater management system.

After a delay of two months due to other work commitments (health services in the remote Orang Asli villages), Mr D managed to collect most of the above information which are required. He found that more than 100 houses were experiencing wastewater problems in the village. He sent the layout map to me by post. My initial information was from a civil engineer attached to the Engineering Division in the Ministry of Health. He referred to a good wastewater system in Bachok, Kelantan in the East Coast of Peninsular Malaysia. This system adopted a model from Songkla Thailand. However, Dr A was not confident with the model because the type of soil in Bachok and Songkla was sandy as they were near the coast.

More information was gained from a senior civil engineer, who was also the officer in charge of the Waste Management in the Engineering Division in the Ministry of Health. He informed me of the success of a system developed by Mr Nayan, the Chief Inspector from Kerian Health Office in Perak. This system, known as Kerian’s model won a WHO Award in Geneva in 1998. The model has been patented and is available in the market. The necessary arrangement was then made to pay a visit to Kerian after seeking prior approval from the Health Director of the State of Perak.

6.2.1.2. A study visit to Kerian

With limited budget, a study visit was organized to Perak. Four health workers from Lipis Health Department; Dr A, Mr B, Mr D and Mr P (the later two were assistant health inspectors) together with my team visited Kerian on the 29th and 30th November 2001. Under normal circumstances, with the regular operation budget of the health office, it would have
been very difficult for the assistant health inspectors to have any chance for a study-visit. However, with this small fund we managed to overcome this problem.

A visit to two households in Kerian where the Kerian’s model was installed recently was made. A health inspector from Kerian Health Office accompanied us. It was a very fruitful visit, where the two assistant health inspectors were exposed to a different environment and were able to visualize the necessary changes to be made in order to adapt this new model in their own places.

They noted the differences in Kerian’s model as compared to the existing system. The Kerian’s model had a closed system, did not use a T-shape pipe, had a removable filtration trap and used two bricked coils as water reservoirs. It also separated the domestic wastewater from the bathroom wastewater. The bathroom water was directed to the other absorption system at the same backyard. This helped reduce the water load to the system. Using more or larger bricked coils could also reduce this water load to the system.

6.2.1.3. Progress in the Community D

There was not much progress in this wastewater management from December 2000 until February 2001. This was due to a number of factors; a) rainy season, b) fasting month for the Muslims in December, and c) lots of celebrations in the whole January 2000 - Idulfitr (Muslim’s big celebration day) and the Chinese New Year.

Plate 16. The informal discussions during the study visit to Kerian.
PLEASE NOTE

The greatest amount of care has been taken while scanning the following pages. The best possible results have been obtained.
Plate 17. The public talk on sanitation and the health related risks to community D

Plate 18. The dirty water reservoir (wastewater puddle)

Plate 19. The installation of a new wastewater system through ‘gotong-royong’ activity in Community D
Plate 20. Lunch treat after the 'gotong-rayong' in community D

Meanwhile, Mr D modified the existing system in the clinic by adopting the Kerian model. Next he implemented the model in one household and from our observations it was a success.
Now he has plans to implement it in another 10 houses during my second visit to the area. The second visit was fixed for the 12th March 2001. The village residents were invited to attend the short public talk given during this visit. Approximately 40 people attended the talk. I presented a talk on the environmental sanitation and I presented on the importance of environmental sanitation in relation to health, mainly an overview of vector and water-borne diseases in the rural settings and in the country.

On the morning of the 13th March 2001 from 9.00am, four assistant health inspectors and laborers from the local health clinics and the ten house owners came together to start installation work for the new wastewater system. Mr D took on the supervisory role and by 1.00 p.m., they managed to install the system in six houses. By then they were very tired to the warm weather and postponed the installation of the other four houses to the next day. Mr D was requested to carry out the monitoring for three months to evaluate this new method. If it was found to be successful in solving the wastewater problem in the area, he proposed plan to expand this system to the whole village. Mr B, the chief inspector agreed to it and considered implementing it to the other problematic areas in the district.

An evaluation on the installation of the new waste water system was carried out after three months. In June 2001, Dr A was transferred to the state health department. However, she gave assurance that this project could continue with the support of the new health officer, Mr B. Mr D. Through a phone call to Mr B, it was found that the new system was working well there were no more complaints from the house owners.

However, Mr D and his team also took the opportunity to provide other services to the indigenous population due to the availability of a helicopter in June and July. Mr D contacted me on 24th July 2001 to inform me about his plan to expand the new system to another ten houses. He was satisfied with the progress that has been achieved and he considered that the action plan was successful because it has addressed the community needs.

On 19th September 2001 a phone call was made to Mr B and confirmed that there was a need for the installation of the system in ten more houses. He invited me for a visit to evaluate the installed system in November 2001. On 13th November 2001 I visited the area and I met E, the village headmen, and Mrs G, a committee member. We visited the houses that were installed with the new system six months ago. Altogether, they have installed the new syst
E, the village headmen, and Mrs G, a committee member. We visited the houses that were installed with the new system six months ago. Altogether, they have installed the new system in 30 houses and had plans to continue the installation areas other problem houses within the coming months. It was found that the system had overcome the problem of wastewater in community D. However, due to the rainy season where the water load to the system was very high, the capacity to absorb water reached its limit, thus there were some wastewater back flow into some of the houses. The health workers have been informed about this and they will continue to do some adjustments to the new system to cater for the extra wastewater load especially during the rainy season.
CHAPTER 7

THE STORIES OF THE KNOWLEDGE-BASED COMMUNITIES:

The Communities E and F

Air quality has been in the public’s attention for the past few years. The worst air quality episode experienced by the Malaysian community was the 1997 haze. Due to the significant impact of this haze episode on Malaysia, an attempt has been made to gain insights on this issue in the community presumed to be most affected. There are two groups in this study, the asthmatic group and the scientific community, which indirectly has to manage this issue. This chapter focuses on the community consultations on air quality at different knowledge-based settings: a local and a scientific community. Similar methods of consultations and interviews were applied in these communities as in the place-based setting. Two surveys were carried out in these communities; a face to face interview with the asthma community using an asthma questionnaire and an internet survey with the scientific community using an air quality questionnaire sent to their e-mail addresses.

7.1. Community E: The local community – The parents of childhood asthmatic patients

A group of nine parents of asthmatic children who came for their children’s follow-up appointment were invited to the focus group discussion. Before the discussion, each parent was briefed on the aims of the session, that is, to gain the perspective of parents on their children’s asthma and on managing their daily activities while at the same time, safeguarding their children’s health. They agreed to participate while waiting for their turn for the appointment with the doctor. The details of this community consultation are described in Appendix 8.

During this interview, the parents described their children’s asthmatic problems, the symptoms, triggering or risk factors and the predisposing factors. They were very concerned about their children’s health and how these factors had shaped their daily lives. They recalled
the experiences during the bad air quality episode or haze in 1997. Three of the asthmatic children were badly affected by the haze. Some parents would like the environment to be protected and most parents had taken their own precautions to avoid the risk factors in order to minimize their children’s asthmatic attacks.

Plate 21. The consultation with community E (the parents of childhood asthma patients).
A survey using asthma questionnaire was carried out at the waiting lounge, just outside the clinic room. The face to face interview was carried out while the parents were still waiting for their appointment with the pediatricians or waiting for the medicine in front of the dispensary counter. Seven parents from the same discussion group were interviewed. The results of the survey were as shown in Table 15 and Table 16.

Table 15. Description of the asthmatic children in the survey among their parents.

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of asthma children (years)</td>
<td>0.9</td>
<td>12</td>
<td>5.7</td>
</tr>
<tr>
<td>Age with first asthma attack (years)</td>
<td>0.8</td>
<td>7</td>
<td>3.4</td>
</tr>
<tr>
<td>Frequency of asthma attack per year</td>
<td>3.0</td>
<td>5.5</td>
<td>4.3</td>
</tr>
<tr>
<td>Medical treatment sought per year</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Hospitalisation required per year</td>
<td>1</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>Family income per month (RM)*</td>
<td>RM1000</td>
<td>RM5200</td>
<td>RM2654.40</td>
</tr>
</tbody>
</table>

*RM= Ringgit Malaysia

From this survey, it was found that the children were 5.7 years old on average and were only 3.4 years old when they had their first asthmatic attack. They had 4.4 times attacks per year and all of them had received medical treatment, however they were admitted to the hospital for 1.5 times per year. They came from the middle income families. The most important risk factors for the children in this survey as perceived by their parents were hereditary factor, atmospheric dust and the use of mosquito repellent. Other risk factors were parental smoking, infection, allergic to fur animals or materials. Carpet in house, food allergic, food preservative and exposure to fungus are less important risk factors for these children.

Table 16. The possible risk factors for the asthmatic children in the study.

<table>
<thead>
<tr>
<th>Possible risk factors as perceived by parents</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family hereditary</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Father smoker</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use of mosquito repellent</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>House located less than 1km from main road</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Having infection elsewhere in body</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Allergic to fur animals/ materials,</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Carpet in house or allergic to food or food preservative, fungus</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>
7.2. Community F: The scientific community in a research institute.

A consultation with a scientific community was conducted in a research institute. Ten scientists participated in this consultation. They were mainly scientists who were directly or indirectly managing the air quality problem and were also affected by it. During the consultation, it was found that they were very concerned about the quality of air for health reasons. They claimed that poor air quality means impurities, which could give rise to respiratory effects. In addition, bad air quality contributed to stress. One of them said, “I don’t like to see fumes- dark- it really creates a psychological effect on me”. Another participant claimed that the effect was mainly on the eyes resulting in conjunctivitis. They said that the populations which were most affected by this problem were the children, elderly, people with asthma and those with existing diseases and people residing in city as compared to country side.

The main concern of this scientific community was to reduce air pollution from vehicle sources. Technically, they wanted to implement strategies to reduce exhaust emissions. They claimed that the catalytic converter (to convert carbon monoxide (CO) to carbon dioxide (CO₂)) was a possible tool to control air pollution. They also believed that regulations are effective tools for the government authorities to reduce air pollution. They proposed that industries find clean alternatives for other source of energy such as solar power. Only one scientist suggested that she would take care of the maintenance of her own car to improve the air quality.

The scientific community informed the community that the indicator for air quality is as measured by Air Pollution Index (API). The community believed that, the air indicator is as what is perceived by human senses: visibility, feeling and smell. However during the 1997 haze, people panicked and were alarmed when they could not see the buildings. This was in contrast to the reported API. This has raised some conflicting opinions, as they believe that the reported API does not correlate with their visual perception of air quality.

The scientific community in addressing this issue has recommended that to improve air quality, the blame should not be on the industry alone but on the individual as well. For personal protection during haze episodes, in relation to community behavior, the scientific community recommended that: ‘People should stay indoors and close their house windows’.
They felt that the public should use air conditioners or spend more time in shopping malls with centralized air conditioning rather than going to the park. They should equip their bedrooms or cars with air conditioners in order to reduce the effect of the heat wave and bad air quality conditions. However, there was no discussion about the use of mask. During the 1997-haze period, the public was advised not to carry out any open burning activities. Advice was also given to buy clean air conditioner filters. Further, on advice to smokers, they were requested to go outside to smoke or not to smoke at all.

A questionnaire survey was sent through e-mail to the scientists in the same research institute to gain their perspectives on the air quality problem. Ten scientists responded to this survey. The details of the questionnaires and the responses are given in Appendix 9.

From the survey, it was found that all the scientists could still recall their experiences during the severe haze episode in 1997. Most of them were affected by the haze and were very concerned about the immediate and the long-term health effects of haze to themselves and their family members. To minimize the impact of haze, most of them followed the expert advice given by the Ministry of Health on reducing outdoor activities and putting on mask whenever outdoors.

The scientists were aware about the sources of the air pollution and they identified the main sources to be the vehicular and industrial emissions, open burning, construction and quarry activities. Most of them felt that it is the responsibility of the government authorities and every individual to ensure good air quality.

These communities' stories in this chapter and in chapter 5 and 6 and the detail notes and observations in the appendices 4 to 9 are then analysed in the next chapter 8.
CHAPTER 8

DATA ANALYSIS AND RESULTS

This chapter presents the results of the analysis on the data collected in this study. As was described in Chapter 4 on the research methods, there were four stages in the analysis. The analysis was carried out on the communities’ stories of communities A to F (Chapter 5 to 7). The analyses on the place-based communities (communities A to D) were carried out separately from the knowledge-based communities (communities E and F). The stages of analysis of the findings have been summarized diagrammatically in Figure 13 and are presented again below and the subsequent paragraphs report the details of the analysis according to these stages.

The experiences of working with the seven communities generated the key data bank for this study. Each community’s data were re-presented and re-told, as the communities’ own stories in chapter 5 to 7. At Stage 1 of the data analysis, key themes were extracted from each of the stories and put into tabular form.

8.2. Stage 2. Diagnosis of Key Issues: The Positives and Challenges
In this stage, the tables of key themes developed in Stage 1 were subjected to a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, both for the place-based (communities A to D) and the knowledge-based communities (communities E and F). The intention in applying this SWOT analysis was to link the stories to standardized forms of government and professional decision-making, for each of which, the SWOT analysis is a familiar tool. However, in this study, it was used as a diagnostic tool on the community stories, rather than as a problem identification device as it would be in management.

Table 17 to Table 25 (Appendix 10) present the findings from this SWOT analysis, and were referred to as the following;

Stage 2. Diagnosis of Key Issues: Positives and Challenges

Place-based communities
A-D

Knowledge-based communities
E-F

SWOT
Tables 15 to 24

Strengths / Opportunities
Positives

Weaknesses/ Threats
Challenges

Stage 3. Categorisation: Themes arising from Positives and Challenges

Specialized:
Social, Environmental, Economic

Community
Process

Themes A:
A-F individually
Text: 8.3.1. to 8.3.6.

Stage 4. Reanalysis: Themes arising from Grounding and Validation: Themes B

Communities
stories

Observations

Themes B:
A-D and E-F cross-comparisons
Tables 25 to 30.

Stage 5: Interpretation: Themes B: Text 8.5.1. to 8.5.2.
Table 17. SWOT on Community A: the empowered community
Table 18. SWOT on Community B: the first consultation.
Table 19. SWOT on Community B: the second consultation.
Table 20. SWOT on Community B: the consultation with the Orang Asli.
Table 21. SWOT on Community C: the rural community
Table 22. SWOT on Community C: the consultation with small town community
Table 23. SWOT on Community D: the consultation with the rural community
Table 24. SWOT on Community E: the consultation with the parents of asthmatic children
Table 25. SWOT on Community F: the consultation with scientific community

As an example in Table 17 below, strengths, weaknesses, opportunities and threats were identified in the stories of community A. One of the strengths found in this community was its urbanized setting in Petaling Jaya which is densely populated and has undergone rapid development since 1970’s. The land values in this community are high and there is more competition for land-use. The local council in this community has been selected by the government to implement a pilot project Local Agenda 21. One of the weaknesses that were found in this community was deterioration of the environment due to inappropriate physical development. One of the opportunities was the potential of the pilot project to become a good initiative towards sustainable development. One of the threats found was the negative impact from the environmental degradation to this community.

The next step from SWOT analysis, in this second stage was grouping strengths and opportunities as the positive findings and the weaknesses and threats as the challenges.

8.3. Stage 3. Categorization: Themes A arising from Positives and Challenges

In this stage of analysis, the positive findings and the challenges from SWOT analysis on the place-based communities (communities A to D) were subsequently categorized into the specialized categories of environmental, social and economic components. The intention of this categorization is to enable these components to be linked back to the areas of responsibility in the management system. They were not categories generated from within the communities. However during the analysis, some findings that are dynamic in nature are found. These dynamic findings do not fit into the specialist category and were categorized as the community process.
<table>
<thead>
<tr>
<th>Threats</th>
<th>Opportunities</th>
<th>Weaknesses</th>
<th>Strengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate infrastructure and facilities for environmental protection</td>
<td>Effective partnerships and collaborations</td>
<td>Limited access to financial resources</td>
<td>Strong community mobilization and awareness</td>
</tr>
<tr>
<td>Poor quality of public services</td>
<td>Improved economic conditions</td>
<td>Inadequate local government support</td>
<td>Empowered community membership</td>
</tr>
<tr>
<td>High levels of pollution and waste discharge</td>
<td>Increased awareness of environmental issues</td>
<td>Limited technological capacity</td>
<td>Strong community leadership</td>
</tr>
<tr>
<td>Frequent natural disasters</td>
<td>Improved access to education and training</td>
<td>Limited public participation in decision-making</td>
<td>Strong community unity and solidarity</td>
</tr>
</tbody>
</table>

Table 1. SWOT on Community: A Case Study.
During this stage of categorization, themes A were found and are presented below in text 8.3.1. to 8.3.4. for the communities A to D. The same approach was applied to the knowledge-based communities E and F and their themes A are presented in text 8.3.5. to 8.3.6..

8.3.1. Themes A from Community A
Themes A from community A as shown in Table 16 were as follows;

a. the positive findings in this community were:

i. *the environmental components*:

- the locality of a high population density with high land values which resulted in strong competition for space.
- the urban setting where more facilities were available.
- the community are empowered due to strong community organizations and they received strong support from the local and federal governments and an international body.

ii. *the social components*:

- the willingness of the stakeholders in this community to work together and help each other.
- positive attitude of the community in forming partnership with the local authorities.
- high awareness of the local community on their own needs and high availability of resources especially in term of expertise within the community.

iii. *the community process*

- several seminars for community have been organized for capacity building in the community to increase community awareness on the initiatives for sustainable development.
- an initiative towards sustainable development was initiated in this community as a pilot project of Local Agenda 21 and it has adopted ‘State Selangor Agenda 21’ strategies.
- through this pilot project, a few action plans on the environment, social integration and safety have been formulated which steered the community actions towards common visions.
- application of some management tools eg. SWOT analysis during brainstorming sessions on social integration.
replication of the some of the formulated action plans in other areas within this community.

b. the challenges in this community were:

i. the environmental components:

• many development programs since 1970's in this setting were focussed more on the physical development but less on the social development and the environmental protection.
• these developments had led to rapid environmental degradation and various social problems.
• problem of solid waste management due to space competition and over consumption of the society.
• air pollution due to motor vehicle and industrial emissions and open burning.
• poor infrastructure in the squatters and illegal settlements. Sanitation and safety were the main problems here.

ii. the social components:

• very poor living conditions worsened the intensity of social problems for example a riot between some residents in the squatter area has occurred in this area.
• in spite of committed community organizations, only 10-30% of the community knew each other well and the relationships with the others were based on the role they took on.
• negative attitude of some community towards social integration and lack of television programs which promote positive integration.

iii. the economic component:

• disproportionate wealth distribution was found in this community where urban rich and urban poor existed.

iv. the community process:

• a challenge for a pilot project was the bureaucracy where the processes have to follow certain requirements eg adopting strategies from state Agenda 21.
• selection of issues of concern were pre-determined by the organizer. The community might have different priority issues.
• implementation of environmental action plan emphasized more on recycling but less on reuse and reduce.
• response from public for recycling is still low. Maintaining recycling program is tedious and costly.

8.3.2. Themes A from Community B.

8.3.2.1. The villagers in Community B

From the first consultation with community B, themes A as shown in Table 18 (appendix 10) were as follows;
a. the positive findings in this community were:
   i.  the environmental components:
   • rapid development in this locality (semi-urban) due to its strategic location (it was close to the city centre).
   • easy transportation and easily available local services. The local villagers mostly provided these services themselves.

   ii. the social components:
   • strong interactions in the community which they knew each other well and the neighborhood spirits were strong.
   • the local community still maintained the traditional village life and ‘gotong-royong’ is easily organized.
   • many outsiders migrated to this locality and provided real mixture of Malaysian communities and other nationalities with diverse socio-economic status and ethnicity.
   • high awareness of their daily issues in term of their socio-economic and environmental aspects.
   • self sustaining community (despite unavailability of some basic amenities) such as formation of the fire fighting squad.

   iii. the economic component:
   • rapid development eg. industrialization and construction activities were sources of income for the local community.
iv. The community process:

- A short briefing to participants on the concepts and initiatives towards sustainable development was given during consultations.
- A good gatekeeper facilitates interaction between researcher, local community and administrators.
- A government policy to combat illegal video gambling was established in November 2000 and this has helped in solving the video gambling problem.
- Community-based action was initiated and action plans formulated which was on managing the air pollution problem.

b. The challenges in this community were;

i. The environmental components:

- Insufficient infrastructure such as unavailability of proper solid waste disposal, poor drainage and sewerage systems, absence of a fire station and insufficient public facilities such as recreational areas, graveyards and public secondary schools.
- Absence of clear buffer zone between industrial and residential areas.
- Industrialization led to environmental deterioration such as air and water pollution.
- Quarry activities produced lots of dust and threatened the Orang Asli settlement.
- High construction activities which caused busy traffic especially heavy vehicles which posed a serious road safety problem to the local community.

ii. The social components:

- Rapid population expansion led to insufficient infrastructure, overcrowding by rural and urban in-migration and mushrooming of illegal settlements and immigrants.
- Overcrowding and illegal settlements resulted in social problems and unhygienic conditions which carry possible health risks.
- Traditional lifestyles eg. illegal cattle breeding posed dirty environment and inconveniences to the villagers.
- Negative attitudes of some irresponsible villagers who carried out indiscriminate rubbish dumping causing clogged drains and river pollution. This leads to flash flood and mosquitoes breeding.
- Social problems attributed to the rapid development were illegal video games, drug addiction and loafer culture which were strongly related to each other.
• low education achievements among the local community.
• minimal capacity to response to sustainable development in this community due to lack of knowledge on:
  • how they should respond
  • their own rights and
  • some technical or scientific aspects.

Themes A from the second consultation with community B as shown in Table 19 (appendix 10), were as follows:
a. the positive findings were:
i. the environmental components:
  • an old squatter settlement which recently received municipal pipe water supply.

ii. the social components:
  • strong commitments and interactions of the community, local health workers and the researchers in participating in the consultation.
  • high awareness of the community on their living conditions, their current needs and their response towards safety and hazards.
  • illegal video gambling problem was no more a priority issue.
  • total medical management of AIDS patients by the health workers.

iii. the community process:
  • participation of new stakeholders (a non-government organization) and resources (advisory panels) were identified.
  • new priorities issues were identified and previous priorities and action were reviewed and evaluated.
  • a community-based action was initiated such as the cleanliness campaign for a squatter area.
  • a survey on community perception was able to capture the overall community opinion.
  • action plan for cleanliness campaign was initiated and formulated by the community themselves.
  • the continuity of the action plan towards community improvement was ensured.
partnership was established between the local community, administrators and the researcher.
b. the challenges in this community were:
i. \textit{the environmental components:}
   • poor living conditions of the illegal settlement and squatters such as rubbish problem, clogged drains, overcrowding and sanitation problems.
   • absence of 'buffer zone' between residential areas and industrialized estates.

\textit{ii. the social components:}
• some negative aspects of Malaysian culture such as the presence of superior officers limiting free interaction and hindering the minority in expressing opinions freely and not speaking out so as not to hurt the feeling of others even if one is being victimized.
• various health risks to the residents of these settlements such as infectious disease, flash floods, fire hazards and chemical poisoning.
• lack of responsibility of some stakeholders who caused negative impacts to fellow villagers.
• deterioration of discipline among some school children.
• lack of awareness of the health workers on the cultural sensitivity in handling the body of AIDS patient.

\textit{iii. the community process:}
• more issues of concerns were identified such as illegal settlements and illegal immigrants, vector borne diseases, food safety and food borne disease, drug addiction among school children.

\textbf{8.3.2.2. The Orang Asli in community B}

Themes A from the first consultation with the indigenous community, the Orang Asli in community B as shown in Table 20 (appendix 10) were as follows:
a. the positive findings were:
 i. \textit{the environmental components:}
   • water supply came from the Gravity Feeder System and the quality of this water is monitored by the health department.
ii. the social components:

- Orang Asli settlement existed for more than 60 years in this setting.
- diverse ethnicities inclusive of Orang Asli in this setting and mixture of cultures easily adapted by the community
- satisfactions of the Orang Asli on their current standard of living.
- satisfactions of the Orang Asli on the local health services.
- high sense of responsibility among Orang Asli towards fellow villagers and a positive attitude toward protecting the future, that is any action taken needs to think for the future eg. protecting the environment by preserving young trees for the future.
- no social problem among Orang Asli nor with their youths.
- improvement in educational status among orang Asli children.
- special privileges for Orang Asli such as financial support for higher education, exemption of medical expenses and a specific Orang Asli hospital.

iii. the economic components:

- structural change in Orang Asli economic activities.

b. the challenges findings were:

i. the environmental components:

- threats to the Orang Asli settlement by the five uncontrolled quarry activities. These threats were the risk to their clean water supply from the Gravity Feed System, siltation to the nearby river which lead to river siltation and flash floods. Rock blasting has caused noise, vibration, dusty environment and possible injuries to passerbys from the flying rocks.
- commercial fishpond was discharging dirty water to the river downstream.

ii. the social components:

- negative activities by non-Orang Asli youths were carried out near the settlement but Orang Asli youths were falsely accused.
- Orang Asli children had skin infections and worm infestations due to the river pollution.

iii. the economic components:

- low economic status among Orang Asli.
iv. the community process:

- hospital bureaucracy and high bills led to reluctance and poor compliance of the Orang Asli to seek medical treatment.

8.3.3. Themes A from Community C.

8.3.3.1. Community C - the villagers

For community C in the rural setting, the themes A as shown in Table 21 (appendix 10), were as follows:

a. the positive findings were:
   i. the environmental components:
      - availability of good infrastructure in the villages such as piped water supply, electricity, education facilities, a clinic, a petrol station and other basic amenities.
      - strategic locality with potential for rapid physical development which could provide more job opportunities.

   ii. the social components:
      - traditional village with good neighborhood spirit and close neighborhood ties such as good team spirit and ‘gotong-royong’ in festival celebrations and religious activities.
      - positive attitude of the villagers for change towards improving their living conditions.
      - commitment of housing developers in providing basic amenities in new residential areas.

   ii. the economic components:
      - agriculture was an important source of living and the villagers perceived it as long term profits and enjoyed more freedom due to self-employment.

iii. the community process:
      - involvement of a district health officer in this study.
      - efforts to promote agriculture were carried out by various government agencies and the villagers themselves such as diversify activities, use of modern technology and incorporate farming as a school co-curriculum activity
• a short briefing to participants on the concepts and initiatives towards sustainable development was given during consultations.

• researcher learned from this consultation that having a good gatekeeper is one important step to facilitate close interaction with the community.

• the importance to identify influential persons among the community to get better community participation.

b. the challenges in this community were;

i. the environmental components:

• problem of dirty water supply due to absence of a water treatment plant in some areas.

• road accessibility to the nearest city was still bad.

• maintenance of residential areas was not provided by the housing developers.

ii. the social components:

• lack of awareness of some villagers on mutual responsibilities in the village activities eg ‘passing the buck’ attitude.

• a communication gap between the higher rank service providers with the local community as compared to the lower rank service providers with the local community.

• land development was hindered by the strong heritage system where disagreement between landowners prevents the development.

• younger generation has no interest in agricultural work (dis-agricultural phenomenon) due to problem of marketing and loss of agricultural popularity.

• deterioration of school discipline and social problem among youths.

• weakness of the current education system which overemphasized on theory and less on practical application.

iii. the economic components:

• Few job opportunities in the villages other than agriculture work.

iv. the community process

• problems of disagreement among landowners for land development and ‘dis-agricultural phenomenon’ had led to neglected land and population out-migration where only senior
citizens stayed behind and not enough younger generations to sustain village life. There is thus a risk in slowing village development

8.3.3.2. Community C - the small town community

The themes A from the small town of community C as in Table 22 (appendix 10) were as follows:

a. the positive findings were:
   i. the environmental components:
      • availability of basic amenities.
   
   ii. the social components:
      • availability of resources eg. an active non-government organization and maximizing these resources to promote social change.
      • high awareness of the community on identifying the need for more public education eg. on environmental health issues through public talks, media and campaigns.
   
   iii. the economic components:
      • night market supported by the district office could improve the economy of the community and could bring night life to the small town.
   
   iii. the community process:
      • a short briefing to participants on the concepts and initiatives towards sustainable development was given during each consultation.
      • recommendation to incorporate environmental protection and community development activities in the NGO activities.
      • formulation of action plans and implementation of the environmental health campaign, which was jointly organized with the NGO, the health workers and the researchers.
      • identification of the need to have dialogue with the district officers for their unsolved daily issues.

b. the challenges in this community were:
   i. the environmental components:
the location of the night market in the middle of the town was not suitable.

water shortage in the hilly residential areas where water supply was only available once a night.

insufficient rubbish collections in some areas which led to rubbish piling up along the road sites and indiscriminate dumping in drains and rivers.

ii. the social components:

the night market has caused miserable night life to the nearby residents because of the smoke from frying dishes and noise from night market customers and rubbish truck which collected huge volume of rubbish from the night market activities during the night.

lack of public education on environmental health issues.

iii. the community process:

problem of bureaucracy in the district office and different organisational priorities hindered the dialogue between the NGO and the district office.

8.3.4. Themes A from Community D.

Themes A from the community D in the remote rural setting as shown in Table 23 (appendix 10), were as follows:

a. the positive findings were:

i. the environmental components:

a self sustaining village where every house is self-maintained by the owners.

a nearby highway construction could facilitate development in this area.

ii. the social components:

strong support from the local service providers.

active village committee members and a dedicated gatekeeper were important resources to promote social change.

recognition by the local authority of this community as a visionary village for three consecutive years.

‘gotong-royong’ following block system was carried out regularly every month and every two months for the entire village.
• awareness on the needs for more educational activities for the community to upgrade general and religious knowledge and social awareness to curb social problems.
• self-sustaining community on daily needs such as hiring contractor for rubbish disposal or practising traditional way eg bury or open burning.

iii. the community process:
• a short briefing to participants on the concepts and initiatives towards sustainable development was given during consultations.
• a joint project on wastewater system was identified, an action plan was formulated and implemented.
• utilization of available resources eg manpower and balance materials from the old wastewater system.
• a study visit to learned on the established Kerian’s model for a wastewater system which received the 1998 WHO Geneva award.
• implementation of the action plan by the installation of a new system adopted from the Kerian’s model and evaluation of the system after six months.
• public talks on sanitation and its health related impact was organized in March 2001.
• in-house training to co-workers from other areas in the district during the first installation day
• the vision for the village was to become “a city in a garden” with sufficient infrastructures and strong neighborhood ties, to achieve better economic development among the villagers.

b. the challenges findings were as follows:

i. the environmental components:
• wastewater problem due to clay soil where water absorption was poor and gave rise to water reservoir. This could then led to vector and water-borne disease and intolerable smells.
• river pollution due to logging activities and effluent from a palm oil mill.
• lack of proper rubbish disposal system which led to indiscriminate rubbish dumping.
• traditional livestock breeding which destroy neighboring farms or properties and dirty the surrounding area.
ii. the social components:

- community perceived that they had insufficient general knowledge due to lack of educational activities.
- health risks to Orang Asli and others who rely on the river for their water supply.
- social problems such as drug addiction, glue sniffing and loafing.
- the phenomenon of 'loss of community' was felt in the village that was undergoing a shift from traditional living to modern capitalism.

For the knowledge-based communities, similar attempts have been made to categorize the findings from SWOT analysis into the specialist categories of environmental, social and economic components and the community process but were unsuccessful. The themes A for these knowledge-based communities are reported as the positive findings and the challenges and are given in section 8.3.5 and 8.3.6.

8.3.5. Themes A from Community E: The parents of childhood asthmatic patients.

The themes A from the consultation in community E as in Table 24 (appendix 10) found that:

a. the positive findings were as follows:

- equal responsibility of parents in bringing their children for appointment.
- high awareness and concern about their children's condition.
- knowledge on risk factors that could trigger their children's asthmatic attack.
- took precautions to avoid those risk factors.
- self management of asthma in older children.
- needs for environmental improvement and food safety program to ensure health.
- not all children were seriously affected by the severe haze episode in 1997.

b. the challenges in this community were as follows;

- half of the patients had a family history of asthma.
- risk factors of the children's asthmatic attacks were cold weather or foods, infections, exposure to tobacco smoke, food preservatives, poor air quality.
- avoiding risk factors were sometimes beyond the parents control.
- difficulties and stress to parents in managing children with frequent asthma attacks.
• some parents still continue exposing some risk factors to their children such as carpet, smoking and mosquito repellents.

• asthmatic children who were affected during the haze had more severe asthmatic attacks.

8.3.6. Themes A from Community F: The scientists in a research institute

For the community F, the themes A from consultation as on Table 25 (appendix 10) and on the responses from the air quality survey (appendix 9b) found that;

a. the positive findings were as follows;

• the scientists were very concerned about their own health and the health of the public during the haze especially children, elderly, asthma patients and those with pre-existing diseases.

• the scientists were knowledgeable on the main sources of air pollution.

• they considered people living in cities were at higher risk than those in the country side due to poor air quality in the cities.

• they accepted the established air pollution index (API) as the indicator for air quality.

• they considered that ensuring good air quality is the responsibility of industry, government authorities, the public and every individual.

• they considered that everyone has the right to information and to become a caring citizen, well-informed, concerned and responsible community is important.

• they recommended the public to follow the experts’ advice during haze crisis such as staying indoors, limiting outdoor physical activities, wearing mask when outdoor, using air conditioners and stopping open burning.

• some scientists would take their own initiatives to reduce air pollution such as ensuring own vehicle maintenance, taking public transport, planting more trees, stopping open burning, working with other people to promote good air quality and stoping smoking.

b. the challenges were as follows;

• their main recommendations to reduce source of air pollution were technical measures (such as catalytic converter or solar energy) and regulatory enforcement.

• some recommendations by the experts during haze were considered not practical for some sections of the community such as always staying indoors and use of air conditioners.
• during the haze, the credibility of the API was being questioned because the perception of
the poor air quality through human senses did not match the API reading.
• awareness of the weakness of enforcement and ‘don’t care attitude’ of the public.
• haze episodes were regular phenomenon for the past 40 years however, not much has been
learnt on how to manage the crisis.
• effectiveness of wearing mask was not high which depended on mask type and the way of
usage. However, during the haze, masks were considered one the most important
measures to be taken.
• emphasis on ‘leave it to expert’ attitude to ensure air quality and the need to follow expert
advice.

8.4. Stage 4. Reanalysis: Themes arising from Grounding and Validation: Themes B

Validation of the findings was carried out in order to double-check the independence of the
community-derived data. Since these data were generated by a combination of community
self-report and researcher observations, it was important to be able to determine the
consistency between the two sources.

Results were differentiated into those, which were drawn from the community stories, and
those, which were drawn from the researcher as a participant observer. Cross comparisons
between the communities were carried out comparing these twin sources of data. These cross
comparisons were carried out separately for the place-based communities (communities A to
D), and the knowledge-based communities (communities E and F).

The outcomes of this validation are described as Themes B in Tables 26 to 31 (details in
Appendix 10) and as one fully worked example as in Table 26. The titles of the tables are:
Table 26. The positive findings with the emerging themes through cross comparisons
between the place-based communities as drawn from the communities stories.
Table 27. The challenges with the emerging themes through cross comparisons between
the place-based communities as drawn from the communities stories.
Table 28. The positive findings with the emerging themes through cross comparisons
between the place-based communities as from the researcher as the participant
observer.
Table 29. The challenges with the emerging themes through cross comparisons between the place-based communities as from the researcher as the participant observer.

Table 30. The positive findings and the emerging themes as drawn from the knowledge-based communities stories: Communities E and F.

Table 31. The challenges and the emerging themes as drawn from the knowledge-based communities stories: Communities E and F.

As a fully worked example, Table 26 below presents the positive findings with the emerging themes (Themes B) through cross-comparisons between place-based communities (communities A to D). These findings were drawn from the communities’ stories. These findings were categorised into the specialised categories of environmental, social and economic components and the community process.

Themes B that emerged as positive findings from the communities’ stories as environmental components were the settings and the physical development. Community A was an urban setting with high population density, in community B, it was a semi-urban setting in close vicinity to the city centre. On the other-hand, community C was a rural setting and in transition from a less developed area to more developed area, and community D was a remote rural setting lying in the middle of Peninsular Malaysia.

Eight themes B emerged as positive findings from the communities’ stories as the social components. They were as follows:

i. Community relationships.

   Strong neighbourhood spirits and close neighbourhood ties were found in community B, C and D. These communities were referred as gemeinschaft community. These communities were different from community A where only 10-30% of neighbours in community A knew each other well. Community A was referred to as gesellschaft community because their relationships were based on the role they played in the community.

ii. Availability of resources.

   In community A, resources were readily available. These resources comprised of expertise, manpower from residential and voluntary organisations, financial and institutional support. Due to these resources availability, this community is referred to
as an *empowered* community. In the other communities (communities B, C and D), the only available resources were manpower due to the availability of active residential committee members. Due to these scarce resources, these communities were referred to as *unempowered* communities. However, in community B, self-reliant was evident with the community forming its own fire fighting squad, in response to the nearest fire station being located 40 km away.

### iii. Demography

There were mixtures of Malaysian communities with immigrants in communities A and B. In the other communities C and D, the people were mainly local communities and indigenous community (the Orang Asli) with very small number of outsiders. In community B, there was also an Orang Asli community.

### iv. Living styles

The living style of community A was modern living. In communities C and D, they were mainly traditional village life and *gotong-royong* is easily organised. Both modern and traditional living styles were found in community B.

### v. Knowledge and awareness

Communities A and B had high awareness on their daily issues, needs and threats to their life. Communities C and D had identified their needs as more educational activities to increase awareness among their communities.

Other social components in themes B were only highlighted in community B. These themes were as follows:

### vi. Illegal video gambling

This issue was highlighted during the first consultation with community B. However, it was solved due to the recently established regulation on video gambling by the government.

### vii. AIDS (Acquired Immune Deficiency Syndrome) patients.

Total medical management of AIDS patients by the health workers.

### viii. Orang Asli

The Orang Asli have high sense of responsibility towards fellow villagers and respect for nature. They were satisfied with their current standard of living and the public services in this community. The educational status among the Orang Asli children had shown some improvement. They were aware of some special privileges allocated by the government to them as recognition of their indigenous status.
Theme B in *economic component* that emerged out from the communities’ stories was the economic activity. Various type of economic activities except farming were going-on in community A. Industrial and construction activities were found in community B. There were minimal agricultural activities in community B and they were mainly among the Orang Asli. However, agricultural was the main economic activity in communities C and D. In addition to these, there was also small scale trading in the small town of community C, for example the night market and row of shops in the middle of the town.

Ten themes B emerged as the positive findings from the communities’ stories which were categorised as the community process. They are as follows:

i. Gaining entry through gatekeeper.
   The researcher found during this study that it was very important to have good gatekeepers in order to facilitate close interaction with the communities

ii. Community surveys.
   Surveys on community demography and perception were carried out in communities B, C and D but not in community A.

iii. Capacity building
   Several capacity building seminars were organised in community A to increase their awareness on government’s initiatives on sustainable development. In the other communities B, C and D, the researcher gave short briefings to the participants on the concepts of sustainable development during the first consultation.

iv. Community vision.
   Community A had identified their vision as ‘forming partnership and encouraging public participation for a healthy city and sustainable environment’. The researcher perceived this vision as a very ideal and neat vision. Community B had identified its vision as ‘to have better employment opportunities, more infrastructures with healthy communities and healthy environment’. The vision identified by community C was ‘to have more physical development, more educational facilities and employment opportunities to retain people from migrating out’. In community D, the vision was for ‘their setting to become ‘a city in a garden’ with sufficient infrastructure and strong
neighbourhood ties’. The researcher perceived these visions from communities B, C and D as very real and grounded.

Community A was asked to brainstorm their issues of concern by the organisers of the capacity building seminars under three headings: environmental, social integration and safety. As the topics to brainstorm were pre-determined by the organisers, this approach is referred to as an outside-in approach. Community A identified their needs as to improve the domestic waste management, strengthen neighbourhood relationship and to combat petty crime and vandalism.

In the other communities, they were asked to brainstorm their issues of concern in any area. This approach is referred to as an inside-out approach. Community B identified their issues of concern as air and river pollution, squatter’s sanitation, social problems due to illegal video gambling, drug addiction and loafers culture among youths. Community C identified their issues of concern as ‘dis-agricultural phenomenon’, which led to neglected land and population out-migration, problem caused by the daily night market and lack of awareness on the link between environment and health. Community D identified their issues of concern as wastewater problem and lack of educational activities.

vi. Project: model and community-based projects
A pilot project of Local Agenda 21 had been initiated in community A as an initiative towards sustainable development. This project was identified as a model for local authorities under the Ministry of Housing and Local Government to implement the Local Agenda 21. In the other communities, community-based projects have been initiated in response to their priority needs. These projects were considered as similar initiatives towards sustainable development by the researcher and the community involved in these projects. Community B has implemented action plans to improve air pollution and a cleanliness campaign to improve sanitation in the squatter’s area. Community C has carried out the environment and health campaign and has planned to organise a cleanliness campaign. Community D has implemented the wastewater project and has organised a talk on environmental health.
The high availability of resources in community A was partly attributed to the government support and international funding. However, this gave rise to the problem of dependence on the state as the organisers for the model project determined the direction of this project in this community.

In the other communities, there was no external support for the community-based projects during this study period. These communities had to be self-reliant when implementing these projects and to ensure the continuity of their action plans.

viii. Action plans and implementation
The action plans in community A were formulated by the three working groups in the community and implemented in the other three working groups under supervision of the organisers. In the other communities, the action plans were formulated and implemented by the community themselves.

ix. Negotiation through influential person.
During this study, it was found that it is very important to involve influential persons in the community in order to get better community participation.

x. Progress
The progress of community A in the model project is at different stages. In community B, the action plans on air pollution and cleanliness campaign have been implemented. In community C, the environment and health campaign has been organised and the dialogue with the district officer and the cleanliness campaign have not taken place. In community D, the environmental health talk has been organised and the wastewater project has been expanded to a bigger area and hands-on training has been given to the co-health workers in the district.
PLEASE NOTE

The greatest amount of care has been taken while scanning the following pages. The best possible results have been obtained.
<table>
<thead>
<tr>
<th>Community A</th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergent themes</td>
<td>Emergent themes</td>
<td>Emergent themes</td>
<td>Emergent themes</td>
</tr>
</tbody>
</table>

As drawn from the communities' stories:

### 1. Environmental
-啸音

### 2. Social
-啸音

Table 2. The positive findings with the emergent themes across comparisons between the place-based communities.
<table>
<thead>
<tr>
<th>Category / Emerging themes</th>
<th>Community A</th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge and awareness</td>
<td>High awareness on their own needs and threats to their lives.</td>
<td>High awareness on their daily issues, needs and response towards safety and hazards.</td>
<td>High awareness on the need for more public education.</td>
<td>High awareness on the need for more educational activities.</td>
</tr>
<tr>
<td>Videogambling</td>
<td>No discussion on video gambling.</td>
<td>Video gambling issue was no more a priority.</td>
<td>No discussion on video gambling.</td>
<td>No discussion on video gambling.</td>
</tr>
<tr>
<td>AIDS</td>
<td>No discussion on AIDS patients.</td>
<td>Total management of AIDS patients was discussed.</td>
<td>No discussion on AIDS patients.</td>
<td>No discussion on AIDS patients.</td>
</tr>
<tr>
<td>Orang Asli</td>
<td>No discussion with Orang Asli.</td>
<td>High sense of responsibilities of the Orang Asli towards fellow villagers and nature, satisfactions on their current standard of living and on the local services, improvement on their children’s educational status and awareness on some special privileges for them.</td>
<td>No discussion with Orang Asli.</td>
<td>No discussion with Orang Asli.</td>
</tr>
<tr>
<td>4. Economic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic activities</td>
<td>Various economic activities were going-on.</td>
<td>Industrialization and construction activities with minimal agricultural activities especially among Orang Asli. Some structural change in Orang Asli economic activities.</td>
<td>Mainly agricultural activities in the villages and small scale industries in the small town eg daily night market</td>
<td>Mainly agricultural activities</td>
</tr>
<tr>
<td>5. Community Process</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaining entry through gatekeeper</td>
<td>The importance of a good gatekeeper to facilitate close interaction with the community</td>
<td>The importance of a good gatekeeper to facilitate close interaction with the community</td>
<td>The importance of a good gatekeeper to facilitate close interaction with the community</td>
<td>The importance of a good gatekeeper to facilitate close interaction with the community</td>
</tr>
<tr>
<td>Community A</td>
<td>Community B</td>
<td>Community C</td>
<td></td>
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<tr>
<td>-------------</td>
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<tr>
<td><strong>Cleanliness Campaign</strong></td>
<td><strong>Cleanliness Campaign</strong></td>
<td><strong>Cleanliness Campaign</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Environmental Health Take Action</strong></td>
<td><strong>Environmental Health Take Action</strong></td>
<td><strong>Environmental Health Take Action</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water Quality Project</strong></td>
<td><strong>Water Quality Project</strong></td>
<td><strong>Water Quality Project</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Community-Based Projects</strong></td>
<td><strong>Community-Based Projects</strong></td>
<td><strong>Community-Based Projects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Self-Resilience and Support for the EH Campaign</strong></td>
<td><strong>Self-Resilience and Support for the EH Campaign</strong></td>
<td><strong>Self-Resilience and Support for the EH Campaign</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Projects:**
- Sustainable development
- Environmental education
- Public health awareness
- Weather-related health measures

**Needs Identified:**
- Economic development
- Infrastructure improvements
- Health and safety
- Housing stability

**Vision:** Ideal and real vision
- Community resilience
- Environmental sustainability
- Health and well-being

**Surveys:**
- Community surveys
- Health surveys
- Economic development surveys

**Conclusion:**
- Community engagement
- Environmental action
- Health improvements

**Acknowledgments:**
- Support from local organizations and residents
- Collaboration with external partners

**References:**
- [Citation 1]
- [Citation 2]
- [Citation 3]
Table 26 (continued)

<table>
<thead>
<tr>
<th>Category / Emerging themes</th>
<th>Community A</th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action plans and implementations</td>
<td>Formulation of action plans in the three working groups and implementations of the action plans by three other working groups</td>
<td>Formulation of action plans and implementations of the community-based projects by the community themselves</td>
<td>Formulation of action plans and implementations of the community-based projects by the community themselves</td>
<td>Formulation of action plans and implementations of the community-based projects by the community themselves</td>
</tr>
<tr>
<td>Negotiation through influential person</td>
<td>The importance of influential person among the community (mayor of the local authority) to get better community participation.</td>
<td>The importance of influential person (the gatekeeper) among the community to get better community participation.</td>
<td>The importance of influential person (the district health officer) among the community to get better community participation.</td>
<td>The importance of influential person (the gatekeeper) people among the community to get better community participation.</td>
</tr>
<tr>
<td>Progress</td>
<td>Progress of the different groups were at different stages</td>
<td>Action plans on air pollution and cleanliness campaign were formulated and implemented by the community</td>
<td>Environmental and health campaign has been organized. The dialogue with the authority and the cleanliness campaign are still pending</td>
<td>Environmental and health campaign has been organized. The wastewater project has been expanded to bigger areas and training to co-workers were given</td>
</tr>
</tbody>
</table>
8.5. Stage 5. Interpretation: Themes B (Themes A after validation)

8.5.1. The place-based communities: Communities A to D

Discussion on themes B for the place-based communities (communities A to D) is presented according to the specialised categories (environmental, social and economic components) and the community process.

8.5.1.1. Environmental Components

Themes B from the *environmental* components of the placed-based communities were:

- The *settings* were either urban (community A), semi-urban (community B) and rural (communities C and D). The locality of community A was very strategic as the centre for industrialisation and commercialisation. The locality of community B was strategic because of its vicinity to the town centres. The locality of community C was also strategic as a transit passage to the developed areas. The locality of community D was a remote area and located in the middle of the Peninsular Malaysia.

- The *physical development*;
  i. The physical development in community A had been very rapid as a developed and industrialised area with availability of all infrastructure facilities and high competition in land-use.
  ii. The physical development community B has been rapid as a developing area with active industrialisation and construction activities. The easy transportation and its vicinity to the city centres facilitated this development. Due to the congestion in these city centres, the population growth in this area had increased rapidly which lead to the problems of overcrowding and insufficient infrastructure facilities.
  iii. Community C and D physical development were developing at a moderate pace and had potential for further development. However, the community C was facing the problem of neglected land due to its population out-migration and 'dis-agricultural phenomenon'. Community D anticipated that development would be facilitated after the completion of the southeast highway.
• The *living structures* in community A were mainly modern houses and buildings with a lot of high rise buildings. In community B, there was a mixture of housing types, the brick houses, a small number of low-rise buildings and the traditional wood houses. The *living conditions* in communities A and B were poor in the squatters and illegal settlements. The houses in the villages of community C and D were mostly traditional wood houses with a lot of open spaces.

• *Transportation* to all the communities was good. The community A was in the centre of economic growth and development activities. The transportation in community B was good and was undergoing upgrading. A commuter that facilitates transportation to the capital city of Kuala Lumpur was available since 1998. The transportation to community C was good except a little inconvenient through the hilly winding road and risk of falling into the ravines. The road accessibility to community D was also good. The only problem was the distance to the nearest town, which was about 100km away. A southeast highway is still under construction and would facilitate transportation to this community.

• The *road safety* problem. Road safety was one of the major problems in community B due to heavy vehicles from the construction activities and the lorries from the sand dredging and quarry activities.

• *Environmental degradation* was at a similar pace as the physical development. The environments of the communities A and B were deteriorating very rapidly due to industrialisation and the high construction activities. The high population density lead to overcrowding. The environmental degradation problems were:
  i. the problem of *solid waste management* due to high population density and over-consumptive community A. This problem in the other communities was due to unavailability a solid waste system.
  ii. the problem of *air pollution*. In community A, it was due to motor vehicle and industrial emissions and open burning. In community B, it was due to a cement factory, quarry activities and road dusts. In community C, it was due to open burning in the villages and smoke from food frying from the night market. In community D it was due to dust from a wood factory and emissions from a palm oil mill. However, during the 1997 haze episode, these communities were not equally affected.
by the air pollution due to their different locality. The haze mainly affected the west coast of Peninsular Malaysia and Sarawak in the East Malaysia.

iii. The problem of river water pollution. In community B, it was due to siltation from quarries, industrial effluent, indiscriminate rubbish disposal and a commercial fishpond. In the small town of community C, it was due to indiscriminate rubbish disposal and in community D, it was due to logging activities and effluent from the palm oil mill. The issue on river water pollution was not highlighted in community A.

iv. The problem of water supplies. The Orang Asli in community B relied on the gravity feed system, which was being threatened by the quarrying activities. In community C, the water supply was insufficient. This was due to lack of water treatment plant in the village and aggravated by low water pressures in the hilly area near to the small town. Water supply was not an issue in community A.

v. The problem of wastewater system. It was a main problem for community D due to poor absorption capacity of the clay soil in this area. This problem lead to dirty water accumulation in the backyard of the houses. The wastewater problem in community B was due to absence of a drainage system and was made worse in the squatter and illegal settlement due to overcrowding.

vi. The sanitation problems were prominent in the squatter and illegal settlements of communities A and B. There was no squatter or illegal settlement in community C and D. However, the sanitation problem in community D was due to the wastewater problem.

vii. Other environmental problems, which were only highlighted by the community B, were the absence of buffer zone between the industrial and residential areas and threats to the Orang Asli settlement from the five quarry activities.

8.5.1.2. Social Components

Themes B from the social components of the placed-based communities were:

- The type of community relationships, responsibilities, mode of interactions and community lifestyles could be differentiated as;
  i. The gesellschaft community in community A. This was 
  were mainly based on the role they played in this commi
  them knew their neighbours and willing to
interaction was more bureaucratic such as through newsletters and the website but with less face to face interactions.

ii. The *gemeinschaft* community in the other communities B, C and D due to their strong neighbourhood spirit, close relationships, knowing each other well, easily organise ‘*gotong-royong*’ or doing task together and helping each other as in the traditional village life. The interactions with each other were mainly face to face which brought their relationships much closer.

- The *population density* was very high in community A, high in community B, moderate in community D and scarce in community C. These different distributions of the population led to others problem such as over consumption and overcrowding in the high population density area and slow community development in community C due to population out-migration. The demography of these high-density populations contained mixtures of Malaysian communities while the lesser density population consisted mainly of the local communities.

- *Resources* availability which lead to *self-reliance* by the communities. These resources were;
  i. very high in community A due to availability of various resources such as expertise, voluntary organisations, financial and institutional supports.
  ii. moderate in the other communities due to availability of human resources such as the active community members and the community-based organisations.

- Different *power structures* in the different communities as a respond to sustainable development:
  i. The *empowered* community A due to the presence of high resources within themselves.
  ii. The *unempowered* communities( B, C and D) due their moderate resources and lack of knowledge and awareness on sustainable development.

- Knowledge and awareness of the communities were high on their own issues, needs and the threats to their lives. The *empowered* community A was knowledgeable and were aware on the 3 R principles of ‘reuse, reduce and recycle’. However, the *unempowered*
communities B, C and D were not aware of these principles. They felt that they needed more public education programs and activities. Their knowledge on recycle was only related to the traders who came to buy used paper or iron rods in the villages.

- **Vision for the future.** In community A, the vision was very neat and ideal. It was partnership and public participation for a healthy city and sustainable environment. In the other communities, their visions were very real and grounded. In community B, they were hoping for better employment opportunities, infrastructures and healthy communities and environment. In community C, they were hoping for more physical development and job opportunities to retain people from migrating out and better education for their children. In community D, they wished their place to become ‘a city in a garden’ with sufficient infrastructures and strong neighbourhood ties.

- **Social problems** in community A were on safety mainly the petty crime and vandalism problems while in the other communities the problems on drug addiction and loafers culture were alarming. The illegal video game was an important issue in community B, however the establishment of a new law, which banned video gambling arcades, solved it. Another issue of concern in community D was glue sniffing among school children.

- **Inequity** was found in the community A and B due to disproportional distribution of wealth where urban rich and poor existed in these communities. The urban poor were mainly those people who stay in the squatter or the illegal settlements. They were subjected to various traditional health risks due to their poor living conditions.

- Various **health risks** were identified in communities A and B due to the environmental problems from the rapid industrialisation and development activities. These risks were defined as the modern risks such as environmental health problems, chemical poisoning and flash floods. In community B, in addition to these modern risks, the traditional health risks still existed such as the infectious diseases. In community D, the risks were from the vector and food-borne diseases due to the wastewater problems. In addition, the health risks to the Orang Asli in the community B and D were due to the polluted rivers. However, health risks were not discussed in the community C.
• The issue on school: the education system and school discipline were highlighted in the communities B, C and D. They found that discipline among school children was deteriorating. They perceived that the low education achievements were due to insufficient secondary schools (community B), insufficient public education and educational activities (community C and D). The community C also felt that the current school education system had put too much emphasis on theoretical concepts and less on the practical applications.

• The problem of traditional livestock breeding was an issue to communities B, C and D. The problem was due to the irresponsible breeders who purposely set the animals free which caused inconveniences to the other villagers.

• Negative culture which were found in the unempowered community such as inferiority complex, not to hurt somebody else’s feeling although being victimised and refusal to accept any criticism of their children.

• Other social issues which were specific in one or two communities were;
  i. strong heritage system in community C which hindered land development if any disagreement existed with the heritage land
  ii. Orang Asli in the community B had a high sense of responsibility towards fellow villagers and nature. There were no social problems among the Orang Asli. They were satisfied with their current standard of living and the local public services. They found some improvements in their children education. They were aware of some special privileges for indigenous population but they did not have sufficient knowledge on them.
  iii. Community B highlighted dissatisfaction on the AIDS burial procedures by the hospital or health workers of their family members because their culture sensitivities were ignored.
  iv. Dissatisfaction with the food surveillance system for food safety and hygiene were highlighted in community B and C.
  v. Dissatisfaction with the public services due to lack of co-ordination in the government agencies (community B) and the local authority support on the night
market (community C). However this dissatisfaction was not an issue for community D.

vi. Problem of *bureaucracy* in the pilot project of community A, on the planned dialogue session in the community C and hospital bureaucracy was a problem for Orang Asli in community B.

**8.5.1.3. Economic Components**

The themes B from the *economic* components of the placed-based communities were:

- the type of *economic activities* where various economic activities were going on in community A (from small to large scale industries) except agricultural activities. In community B, various economic activities were also actively going on, especially the small to medium scale industries and the construction activities. Agricultural activities were still going on but on a very small scale inclusive of the Orang Asli traditional way of bread winning. However, the agriculture was the main economic activity for communities C and D and they perceived that there were few other job opportunities in this area.

- the *economic development* which was very rapid in communities A and B. This development was considered low in communities C and D through agriculture, and moderate in the small town of community C through service-based and the commercial activities.

- The *economic status* was mainly medium to high in community A but low in the squatter community. The economic status of communities B, C and D was low to medium. However, the Orang Asli in community B were still under the poverty level (less than RM 500 per month).

**8.5.1.4. The Community Process**

Themes B from the community *process* were:

- The *selection of study areas*:
i. In community A, based on the criteria for an urban setting and parallel with the implementation of the Local Agenda 21 pilot project at the time this study took off.

ii. The community B as the semi-urban setting and the presence of a friend in the local health clinic had facilitated this selection.

iii. The community C was randomly selected to represent the nearest rural setting.

iv. The community D was selected as the remote rural setting and is located in the middle of Peninsular Malaysia and the presence of a friend in the local health office had also facilitated this selection.

- The *capacity building* for community awareness:
  i. Several seminars has been organised by an NGO and the local authorities in community A to increase awareness on initiatives towards sustainable development.
  ii. A short briefing was given to the participants of the community consultations in the unempowered communities (B, C and D) on the concepts and the initiatives towards sustainable development.

- *Gaining entry* through the gatekeeper or key informant within the local communities. A good gatekeeper is important to facilitate the close communications and interactions with the communities.

- The *identification of needs*. Few issues had been identified as the issues of main concerned in these communities.
  i. In community A, the topics to work out the issues were pre-determined by the project organiser and the issues came from the brainstorming sessions in the community. These issues were:
    • Environment: domestic waste management.
    • Social integration: strengthening neighbourhood relationships.
    • Safety: petty crime and vandalism.

  ii. In community B, the issues through the consultations were:
    • Environment: air and river pollution, squatter's sanitation.
    • Social problems: illegal video gambling, drug addiction and loafers culture.

  iii. In community C, the issues through the consultations were:
- 'dis-agricultural phenomenon' due to problem of unused land and population out-migration.
- daily night market in the small town.
- lack of awareness on the link of environment and health.

iv. In community D, the issues through the consultations were:
- problem of wastewater.
- lack of educational activities.

• the projects: a model project or the community-based projects:
  i. in community A, it was a model project which was the implementation of the pilot Local Agenda 21 project. The topics to brainstorm on the issues of concern were predetermined by the organisers.
  ii. in the other communities, the projects were community-based and the issues of concern came from their consultations. In community B, these projects were the air pollution project and a cleanliness campaign in a squatter area. In community C, they were the environment and health campaign and plans for a dialogue with the local authority and organising a cleanliness campaign. In community D, they were the wastewater project and a public talk on environmental health.

• The community surveys which were conducted in three communities B, C and D to obtain their demography and perception on their living conditions. These surveys had captured additional information which might have been left out during the consultations.

• The resources:
  i. The community A were dependent on state resources (financial and expertise) in terms of government support and international funding for the implementation of the pilot project.
  ii. The other communities were self-reliant for the implementation of the community-based projects.

• The action plans and the implementations of these action plans:
i. For community A, the actions plans were formulated by the three working groups and the implementation of these action plans were carried out by the other three identified working groups.

ii. For the other communities, the participants formulated the action plans and they carried out the implementations with the support from the local health workers and the researcher.

- *The negotiation* through influential person among the community was important to get better community participation.

- The *second cycle* in the projects was initiated after the implementation of the first action plans.

  i. In community A, it was shown by the replication of the action plans on the domestic waste management in the other area in the community

  ii. In community B, the new priority issues were identified in the second community consultation and the previous actions were reviewed and evaluated.

  iii. In community C, the plans for a dialogue session and a cleanliness campaign were drafted but did not eventuate.

  iv. In community D, the new wastewater systems installed in the six houses were found to be efficient in improving the wastewater problem. Further action plans for installation in the other houses in this area were made.

- The *progress* of the projects at the time of this reporting;

  i. In community A, the different working groups were progressing at different levels.

  ii. In community B, the second action plans which was the cleanliness campaign had been implemented and other similar campaigns and some public education activities on environmental health were planned to be organised by the community committee members and the NGO members for their near future activities.

  iii. In community C, no progress was made on the subsequent action plans.

  iv. In community D, the wastewater project would be expanded to the entire village and to other area in the district and hands-on training would be organise concurrently with the installation of the new wastewater system.
Other processes which were identified from the communities stories were;

i. *Self-reliance* of the communities such as:

- the replication of the action plans of the working group on domestic waste management in the other area in community A.
- in the community B, they have formed their own fire-fighting squad and the NGO members worked with the local health clinic for the action plans on the cleanliness campaign. These include the informal meetings and communications, sending the invitation letters to the stakeholders and fund searching for the logistic arrangements during the campaign.
- In community C, the environmental and health campaign was jointly organised by the NGO members and the local health office.
- In community D, the study visits to Perak to learn about the patented Kerian’s wastewater model. The gatekeeper, an assistant health inspector was able to adopt this model by using materials from the old system. The implementation on the installation of the new adopted system had been carried out and the expansion of the installation to more houses was still on going.

Other processes which were identified from the researcher’s observations were;

i. the *interaction* with the community was minimal in community A due to the approach of *working on* this community. However, maximum interaction was achieved from *working with* the other communities. These were due to the easy two-way communications via phone calls. In addition, the short distances facilitated more face to face interaction that built closer relationships and mutual trust.

ii. the *challenges*:

- More challenges for community A in the implementation of the pilot project as they started from scratch and the high level of bureaucracy throughout the process due to the dependence on the state.
- However, greater challenges for the other communities B, C and D by the limitations in their response capacity due to insufficient knowledge and awareness. This study was a big challenge for the researcher and was a rough and tough journey. It required a lot of time and patience, as working with the communities at their natural settings was subjected to various unforeseen circumstances. The
process itself demanded a lot of courage, effort and time to build-up relationships and established mutual trust for partnerships with the communities.

8.5.2. The Knowledge-based Communities: Communities E and F

In the knowledge-based communities, as explained in chapter 7, community E was considered to represent the affected population or the consumers and community F was scientists representing the professionals or the service providers. Throughout these cross-comparisons analyses, (Tables 30 and 31), themes B emerging from these communities were found to be different from each other. It was also noticed that they were somehow complementary and responding to each other or totally against each other views.

These themes were;

i. the local knowledge versus scientific/professional knowledge.
   The parents were aware and concerned about the conditions of their children and were adequately informed of the risk factors that trigger the asthmatic attacks. The scientists were concerned about the effects of air quality on the health of the public especially children, elderly, asthma patients and those with pre-existing illness. They assumed that people in the city were at higher risk than those in the countryside due to the bad air quality in most of the cities.

ii. the risks perceptions and the causes of risk.
   The asthmatic attacks were triggered during cold weather, infections, bad air quality, carpet, smoking and the mosquito repellents. An important pre-disposing factor of asthma was the hereditary factor where more than 80% of these children had this risk.
   The other risk factors were cigarette smoke, dust, upper respiratory infections, other infections, house dust-mites, fur materials, certain foods, cold weather and poor air quality.

The scientists had identified that the main sources of air pollution were from motor vehicles and industrial emissions, open burning and forest fires. Air pollution has been accepted as an important cause of morbidity especially respiratory diseases and the population at risk were the asthmatic patient, the elderly and those with pre-existing diseases such as respiratory and cardio-vascular diseases.
iii. the preventive measures

Parents took a lot of precautions and tried their best to avoid exposing their children to those risks. Most of them did not use carpet anymore. They watch their children’s diets, take more precaution when the children have infections and some of them do not smoke. The older asthmatic children were able to manage their asthma by themselves.

The scientists recommended that in order to minimise the air pollution, the best measure were those which individuals could take responsibility for such as stop open burning, ensure maintenance of own vehicle to reduce emission smog, work with other people to promote good air quality and ensure own housekeeping.

iv. The different type of indicators;

*Indicators of susceptibility:* the parents were very alert to their children’s asthmatic condition and watched out for the early signs of asthma attacks. The children’s asthmatic attacks were more frequent and more severe when they were younger and the prevalence of asthma was higher among boys.

*Indicators of effect:* the mean age of getting the first attack was at 3 years old. The average frequency of asthmatic attacks was 4.3 times a year and these children required 1.5 times of hospital admission and sought medical treatment four times a year.

*Indicators of exposure:* the scientists agreed on the monitoring of the air quality through the use of the established air indicator such as the air pollution index (API).

v. The risk communication versus response to risk

The scientists perceived that well-informed and concerned communities are important to become a caring society. Some public education was given on air pollution especially during the haze episode. The affected people were advised to seek early medical treatment, stay indoors, avoid outdoor activities and follow the expert’s advice during haze. Other recommendations were to have air conditioners at home, stop smoking, wear masks and stop open burning.
On the other hand, the parents were well informed on their children asthmatic conditions and were able to manage the minor problems on their own. They had tried to follow the expert’s advice, for example, a father who was a smoker, seldom smoked inside his house to reduce smoking exposure to their children. However, some of them encountered difficulties especially in getting their small children to stay indoors during bad weather or during haze because the children love to play outdoors.

**vi. Reactions towards crisis by the consumers versus the professionals.**

During the haze crisis, some of the parents encountered more difficulties. These were due to the more frequent and more severe asthmatic attacks. These attacks regularly came in the middle of the night, while the parents needed to go to work in the next morning. At that time, most of these children needed hospitalisation or emergency treatment. The scientists on the other hand, during that crisis, felt conflicts between their own senses and the API because their own perception on the bad air quality did not match with the API.

**vii. the impact of risks to the consumers versus the professionals policy.**

The parents encountered difficulties in managing their children who had frequent asthmatic attacks. They parents found that their lives were miserable because of the need to care for their children during each asthmatic attack and their responsibility at the workplace. Other difficulties were the interference by the grandparents who pampered the children by giving them what they like e.g. ice cream that could trigger their asthmatic attacks.

In term of policy for haze, the scientists recommended the public to install air conditioning units, strict surveillance on industrial/ vehicle emissions and open burning and go to live in places with better air quality.

**viii. the issues on masks.**

The scientists knew that the effectiveness of masks depends on the mask types and proper usage. Thus, masks were not a totally effective measure during the haze crisis. However, the advice to the public to wear masks anytime when they were outdoors, was taken as the most important measure during the haze. At the same time, a lot of masks had been distributed to them freely. On the other hand, none of the parents
discussed the issues of masks during the haze or during their children’s asthma attacks.

ix. the management tools; the *preventive measures* versus *technical solutions*.
The parents identified the needs for clean environment, environmental protection and the monitoring of food products. The scientists had recommended measures to reduce the air pollution which were the technical solutions (e.g. the catalytic converter and solar energy) and the regulatory enforcement.

x. consumers versus professional *expectations on social responsibilities*
The parents hoped the government would take certain measures to improve the air quality, more control on food quality, and ensure a clean environment. The parents took their own precautions and responsibilities in dealing with their children’s asthma. The scientists felt that air quality is the responsibility of the industries, the public and every individual. Each individual must maintain his/her own private vehicle or take public transports, plant more trees, stop smoking and do not carry out open burning.

xi. *lessons from the past and issues for the future.*
The haze episodes are a regular phenomenon that comes every 3-5 years. However, the scientist perceived that not much has been learnt on how to prevent and better manage this type of crisis. For the parents, they had taken extra precautions during haze but some factors were beyond their control to prevent asthma attacks.

Lessons learnt: The above findings and the Themes B are the essential outcomes of the study. Having been validated by an iterative comparison method they are assumed to be reliable enough to support the findings discussed in the next and final chapter.
CHAPTER 9

FINDINGS AND CONCLUSION

9.1. Introduction

In the introductory chapter 1, the aims and objectives of this study were as stated below;

1. To explore the issues of environmental concern in different communities within Peninsular Malaysia. It also aims to identify the capacity by these communities to respond and the grounded basis for their actions. These outcomes are explored in chapter 5, 6 and 7, demonstrated in chapter 8 and the issues, responses and basis for actions are discussed further in this chapter.

2. To identify an alternative approach in managing the environment for health starting from local knowledge gained through the experiences of working together with the communities in their natural settings. The study has been successful in finding ways to search for local interpretations of socio-economic development and ecological integrity, knowledge and experience which lies outside the boundaries of the traditional science disciplines. The details are provided by themes A and B in chapter 8 (please refer to 8.2 and 8.5) and explored below.

3. To identify the interface between specialized and local knowledge through observing and taking part in the interaction processes between these communities and their environments. This took the form of a smaller study within the larger communities studies and some comparisons were made as identified in 8.6.

4. Finally, to contribute towards practical approaches for managing the environment for health. This study uncovered a wide range of insight into potential practical approaches including a new model for environmental management for health.

The proposition in this study was that working with the community as one of the core providers of knowledge could provide better understanding of their local environment for both the communities and the specialists working with them. The findings in chapter 8 provide evidence to strongly support this proposition. With these better understanding, the
community could be supported to facilitate their actions towards sustainability. Furthermore this study has shown that there are different ways of communicating, languages and approaches between the providers of knowledge: the communities with the local knowledge and from the specialists with the specialized knowledge. This new knowledge and insights can be used as an antidote to arrest the present downward trend in sustainable development in Malaysia.

More specifically the study provides detailed answers to the questions below.

9.2. How can my findings on community in Malaysia inform the community?

- **Only community can tell you about community reality.**

  1. These findings showed that unless you really work directly within a community (from the inside out), you could not get comprehensive information about them. You cannot predict from the general demography or from the empirical public health data, how a particular community might react to an environmental health risk, nor what that community might need to take responsibility for a response.

  2. The local community issues were different in different settings. The community responses to these local issues also differ according to their capacities to respond. These were attributed to the different community backgrounds such as education levels, economic status, ethnicity, culture, and role in their communities and their life experiences. On the other hand, some of the issues of concern in the communities were similar, however the causes and the responses from the communities were different. For example, the problem of solid waste management in the urban setting (community A) was due to high population density and over consumption. One of the efforts to increase the efficiency of the solid waste management in this community was to promote the ‘reduce, reuse and recycle’ (3R) principles. In another settings, the same problem was due to unavailability of solid waste disposal system and the effort was self-management of solid waste disposal such as bury and burn methods and/or hiring a contractor for the disposal.
3. The experiences working with the community highlights the community’s approach to risk and solutions responding to that risk. For example, the problem of wastewater system in community D. The approach to the risk was due to the their daily problems such as the intolerable smell from the dirty wastewater reservoir. This problem was given more serious consideration by the community after realising the risk associated with vector and food-borne agents as highlighted by the health workers. The solutions responding to the perceived risk were the identification of a better system and utilisation of the available resources to improve the system.

4. The stakeholders in the urban setting (community A) are the gesselschaft community (meeting the ‘needs of strangers’) where the relationships between each other were based on the role they play in this community as compared to the semi-urban (community B) or rural settings (communities C and D). These later communities were the gemeinschaft communities (meeting the needs of one’s neighbor) where close relationships and more face to face interactions were found. In these gemeinschaft communities, ‘gotong-royong’ (working together as a team) is easily organized within these communities.

5. A power structure is evident from the place-based community. Community A was referred to as the empowered community. It was due to the fact that they received enormous financial support and expertise from the government and an international body. Furthermore this community tapped into human resources from the community representatives who had educated backgrounds and middle to high economic status.

In the unempowered communities however (referred to community B, C and D) knowledge or awareness on the initiatives of the government towards sustainable development such as the Local Agenda 21 and the healthy settings programs seemed non-existent. The community-based projects were initiated through my interactions and then infiltrated into these communities, utilizing what resources existed within these communities.

6. A pattern of spatial differences can be seen as we move away from the city centre to the remote area. For example, the problem of environmental degradation could be found as the consequences of the physical development in the urban (community A)
and semi-urban (community B) settings. The air pollution in urbanised settings was mainly attributed to the industrialisation, motor vehicular emissions, construction and the quarrying activities. The river water pollution was due to the industrial effluent, rubbish disposal and the quarrying activities. In the rural settings (communities C and D), these problems were minimal.

7. The phenomenon of ‘loss of community’ was felt in the village that was undergoing a shift from traditional living to modern capitalism. For example in community D, the youngsters were more interested in working in the factories or industries. They were commuting everyday to workplaces up to 40 km away from the village. They worked more than 10 hours per day to gain extra income. The community found that these youngsters have little time for themselves and for any social interaction.

9.3. How can my findings on community in Malaysia inform the specialized communities: the specialists, researchers and practitioners?

1. The method trialed in this study offers a range of ways from which the specialised communities could extend their capacity to inquire in the field through the experiences of working with the communities.

   a. For the place-based setting, the entry point during the community consultation was open and flexible. It started off as an open invitation to share one’s life experiences with the fellow participants. Throughout the processes a free flow of ideas had been promoted where subsequent ideas were build on the ideas of others. Thus the issues that came out cover various angles and were not restricted to any specialised format. However, through the process of analysis, the categorisation of the findings into social, environmental and economic determinants has helped to reorient these issues into the relevant specialisation for the appropriate projection of the results.

   b. Different approaches to community participation in the place-based communities were recognised; one from the ‘inside-out’ and the other from the ‘outside-in’.

      i. In the ‘inside-out’ approach as applied in the unempowered communities (communities B, C and D), the issues came from the communities themselves with high sense of belonging and high driving force to strive for target. A free
flow of communication was secured in own language and own way of communicating. These communications reached out to the majority of the target audiences in these communities and had facilitated the processes. The community developed their own decision-making and fully supported the implementation of action plans.

iii. In the ‘outside-in’ approach in the empowered community (community A), the issues were imposed on them from the authorities which may not represent the community priorities and lead to a poor sense of ownership of the outcome. The driving force was seen as not reaching its maximum potential to strive for the target. The responses to the action plans were slow and participation from community was moderate. There were some problems of miscommunication. These miscommunications could be due to inability of the messages to reach the target audiences in this community or lack of understanding or misinterpretation of meaning. These miscommunications disturbed the flow of processes and difficulties were encountered in reaching consensus on decision making. It is high likely that this could further affect the implementation of the action plans.

In addition, in this ‘outside-in’ approach, where the processes need to follow certain rules determined by the organisers, they were seen to be subjected to certain conditions. This is an example of a problem in bureaucracy. These conditions hindered the free flow of information and the outcomes were thus limited to conditions within it. These were seen similar to laboratory experiments where the outcomes were limited to the conditions within it.

c. From the different modes of entry to each community (Chapter 4, 5, 6 and 7) through the different gatekeepers and different experiences between researcher and each community, it is possible to draw some conclusions about the condition necessary for a researcher to allow communities to speak for themselves. These conditions are called principles of consultation:

- allow inside-out approaches which create an environment where everyone feels easy and comfortable to speak out
- make it safe for anyone to suggest anything
- put all the energy into the ideas not the reasons behind them
• encourage everyone to build on each other’s ideas
• allow wild ideas to be developed

2. Lesson learned from the research methodology
   a. Challenges for action researchers to search for an alternative way outside the normal discipline of quantitative research. This work on community was carried out using a holistic approach, which took into account community reality. The social, economic, political, environment and personal or spiritual are all-important factors and are highly interconnected. Each factor effects the others and a development in one factor has the potential to assist development in other factors.

   b. Action research does not restrict the research technique and/or limit the extent of data collection. Action researchers are free to use any sound technique interchangeably without any boundary. All research techniques either qualitative or quantitative are appropriate to apply into the different situations.

   c. The grounded theory reinforces the principles of induction which should be taken as a flexible guide and not as a recipe. It can appear as not grounded but it tracks practical systemic challenges. These theories were based on the actual experiences learnt with and from the interactions with the communities. Due to the complexity and the dynamic nature of the communities, it brings about a richness of information.

9.4. How can this study improve the communications between the communities and the specialised communities?

1. This study has developed different communication tools to maximise two-way communication between the communities and the specialised communities;
   • stories: recognisable by both groups, offer mutual understanding.
   • tables: detailed case studies, offer a briefing for any profession working with each particular community.
   • SWOT analyses: decision-making information, based on a tool familiar to managers and professionals. They were simple analyses so that communities can work with the results.
• SWOT analyses: decision-making information, based on a tool familiar to managers and professionals. They were simple analyses so that communities can work with the results.

2. In the analysis of qualitative data, it was noted that different processes were found.
   a. The processes throughout the analysis on the communities’ stories were grounded in the stories themselves. These results themselves have been found to influence the next steps of analyses. However, there was no strict rule to follow, it was inductive process where one step of analysis led to the other steps.
   b. The analyses were time consuming than the analysis for the quantitative data due to the richness of information. A lot of data scanning and cleaning needed to be repeatedly carried out through out the processes. There was no restriction on the analysis and it follows the flows of the community stories.
   c. The analysis on the specialised framework such as on the knowledge-based communities were restricted within the boundary of the framework. It was very difficult to expand the analysis to cover broader aspects because the inputs were limited by the compartmentalisation itself.

3. This study has highlighted the need to find a group of people who can bridge the communication gap between the communities and the specialist. It was shown throughout the study that the community workers could act as a catalyst (see Figure 14 below) to facilitate the communication between these two communities. These were seen by the close interactions between these community workers and the communities and the relationship between the community workers with the specialists. The community workers were able to speak the same languages as the communities and they could better understand the language of the specialists to disseminate the message of the specialists to the communities and vice versa.

9.5. **How do my findings extend the standard models of environmental health practice in the field?**

The specialised knowledge of the specialists and the local knowledge in the communities are differently constructed. This study has shown that there are *separate realities* between these two levels of knowledge.
for health. It aims to be used by the practitioners in the discipline of environment and health (Figure 14).

![Diagram of environmental management for health]

**Figure 14. Model for environmental management for health**

As described in the chapter 8 and summarized in Figure 14, the approach taken by the place-based communities was an open inquiry where the communities were invited to share the whole picture of their real life experiences (the ‘inside-out’ approach). The SWOT analysis was applied to these communities stories where the results were then categorized into the specialist categories (of environmental, social and economic) and the community process.

The approach taken by the knowledge-based communities (specialised communities: the client community and the practitioners) was focussed on specialist-client interpretation on specific areas of concern, which were air quality and asthma. Due to the restriction in the
The approach taken by the knowledge-based communities (specialised communities: the client community and the practitioners) was focussed on specialist-client interpretation on specific areas of concern, which were air quality and asthma. Due to the restriction in the scope of inquiry, the results could not be categorized into the specialist categories and community process. The attempt to link the specialist categories of the environmental, social and economic components into the specialised communities ('outside-in' approach) was also unsuccessful.

Furthermore, with the experiences gained through working with these different communities in this study, I found that the community workers could act as a catalyst to prompt social change (the change agents). They have provided significant contributions in facilitating the community processes towards positive changes.

This study has shown that the specialists were unable to give the real picture of an issue because they were only looking through one spectrum. They addressed this issue only within its boundary. On the other hand the local communities looked at the whole picture of an issue which was in fact the community realities. With the open inquiry approach in the local communities, the information gathered was on the whole story, which could be easily put into any category at a later time. It was also demonstrated that there was a lot of missing informations during the pathways of inquiry when the entry points (the initial approach) are focussed. Furthermore, the communication derive from these specialists may not be able to reach those local communities. In order to address this communication gap, the specialists would need to take and use these community perspectives ie. community realities into their ways of communications.

The experiences working with these communities were used by the researcher to write the communities stories. These community stories could be easily understandable by any level of community. By applying the SWOT, the researcher was able to see the positives and challenges in the communities. After reanalysis of the results for validation purpose, the results are describing the perspectives of the communities using the specialist languages. These community perspectives in specialist languages could easily communicated to the specialists, practitioners and policymakers.
These community workers were people who are very close to the communities and understood the different languages used between the local and the speciliast communities. With these close relationships and effective interactions with the communities, positive social changes could be promoted. The community workers in this study were the assistant health inspectors, nurses and active NGO members. Support and training programs should be focussed to these community workers to facilitate the communication between the different levels of communities and to promote change.

9.6. How does this study promote collaboration between government, specialised and local communities towards a common goal for a sustainable future?

1. Sustainable development is an emerging concept, which is proving difficult to put into practice (Chapter 3). The translation of sustainable development into practice at the community scale will not be possible without recognition that:
   a. Specialist and local community knowledges are both needed and have much to contribute to each others’ decision-making on sustainable development; such as the specialised knowledge and priority issues in the community which could only emerge from the community themselves.
   b. The local knowledge must be generated from within each community, and cover the range of types of community and cultures in order to be effective in Malaysia.

2. Community participation or involvement is one important objective or aim that most managers especially the policy makers and the administrators are striving for. However, it was difficult to achieve from the outside-in approach. This difficulty could be seen from the community A story such as the small responses for recycling activities, the need for social integration and the slow progress of the safety group.

3. The community workers who are at the interface between the local communities and the specialists need to be given relevant training and supports to promote a sustainable community development.
9.7. CONCLUSIONS

Findings from this study provide a range of lessons for those who wish to integrate local and scientific knowledge in community projects and in government policy and practice. Active interaction with Malaysian communities was experienced through working together on environmental and health issues. These findings showed the value in working and forming partnerships with the local communities for mutual learning and enhancing the processes towards sustainable future together.

The research approach proved capable of documenting the separate realities of the place-based and the knowledge-based communities within a common interpretative framework. The place-based communities held realistic interpretations of their capacity to contribute to local sustainable development, distinct from one another and also distinct from the same events as perceived by the scientific community. The conclusion is drawn that each needs the other for any effective local application of scientific findings or government support.

The findings from the study extend the standard frameworks for environmental health practice to include the establishment of partnerships between environmental health research and the communities it serves. The new framework integrates evidence on the community’s capacity to act on local environment and health issues as perceived from the ‘inside-out’ and from the ‘outside-in’.

I hope Malaysia’s way forward in attaining sustainable development might start from these experiences to develop viable community structures as a key component of strategies for change. From these experiences a strategic plan can be drawn up which will act as a catalyst to prompt social change. The strategic plan can start small, but it has the potential to become a bigger change agent.

The experience has highlighted the need for the Ministry of Health Malaysia to shift towards the new public health approach, from being a public service provider to involvement of a well-informed community, which better addresses increased human interactions with the environment. This study also represents a shift from my own background of a medical and public health discipline to a broader approach through active interactions with the local communities to prompt the move towards attaining sustainable development.
Finally, this has not been a study of ‘top-down’ or ‘bottom-up’ but one from the ‘inside-out’ with a small study of the ‘outside-in’. It offers another perspectives and an extra set of tools or strategies for the professional community to work with local communities in their environmental management for health.

These whole findings bring out the title of this thesis, which is “Separate realities: community-based environmental management for health from the ‘inside-out’ and ‘outside-in’ ”.
PLEASE NOTE

The greatest amount of care has been taken while scanning the following pages. The best possible results have been obtained.
Appendix 1

Economic Planning and Population Redistribution

First Malaysia Plan (1966-1970)

The First Plan (Malaysia, 1966) was preoccupied with measures designed to promote economic and social integration of Peninsular Malaysia with Sabah and Sarawak. Increased urban development was not a major employment objective. Substantial amounts of total expenditure went directly towards rural development, and in particular to the expansion of new agricultural land settlement projects, through the Federal Land Development Authority (FELDA) and the Federal Land Consolidation and Rehabilitation Authority (FELCRA), for the promotion of commercial export crops, mainly rubber and palm oil.

Second Malaysia Plan (1971-75)

The Second Plan (Malaysia, 1971), which incorporated Malaysia’s First Outline Perspective Plan, was based on the principles of the New Economic Policy (NEP). The NEP emphasised measures designed to create national unity and equality, and sought to modernise and urbanise the low-income rural Malays. Non-Malays especially the Chinese were in better-income jobs and dominated urban areas. The NEP set out radicals’ measures to improve the economic standing and welfare of the Malays, including a target that they should manage at least 30 per cent of commercial and industrial activities within twenty years.

Modernisation of the rural sector was to be achieved by bringing more new land cultivation with the use of modern techniques, and modern management. Land development schemes, to exploit Malaysia’s natural resources and create new economic opportunities, aimed to relieve land pressure and raise rural income levels. One million acres of land were opened up during 1971-75, largely in Pahang, Johore and Negeri Sembilan.

The plan contained measures to encourage migration of rural Malays to urban areas. Extensive government support was given for education and the creation of employment opportunities, particularly within the government sector. Industrialization in existing urban areas was encouraged so that Malays could play an increasing role in ownership, and in employment.

Third Malaysia Plan (1976-1980)

The Third Plan (Malaysia, 1976) continued the emphasis on increasing productivity in agriculture and opening up of new lands and at the same time, promoting industrial and urban development as a means for continued restructuring. Land settlements continued to be a major means by which the government pushed the location of future growth in agriculture, manufacturing and services towards the poorer states. Within the period 1971-80, the two largest agencies, FELDA and FELCRA, resettled 42,200 and 16,600 families respectively.

More urbanization was expected on account of the projected growth, of the manufacturing and services sectors. Further, through regional development and establishment of new growth centers, smaller towns of the 10,000-75,000-size class were encouraged to grow more rapidly. It was reasoned that the low level of skills demanded for employment in small towns would lead to greater migration from rural areas. The plan contained policies to improve the relative position of the lowest-income states, including developing their physical infrastructure, establishing new growth centers, promoting industrial development, and locating government establishments in such areas.
Impact of the First Three Plans

The pace of urbanization was slow during the first plan period, due to the emphasis on rural development. By 1970, just 27 percent of the population were urban, compared with 25 percent in 1957. With the exception of the Klang Valley, there was very limited rural-to-urban migration during this period.

Malaysia's population became significantly more urbanized during the 1970s, such that by 1980, some 34 percent of the population were living in urban areas. During the early part of the 1970s, urban development was mainly concentrated in large towns with populations of 75,000 and above, with the four largest towns being Kuala Lumpur, George Town, Ipoh and Johore Bahru. The later part of the decade saw a reduction in the dominance of these towns and the increasing importance of medium sized towns, such as Kota Bharu, Alor Setar and Kuantan.

Rapid urbanization was due to the growth of the construction, manufacturing, and services sectors, which offered increasing job opportunities. Regional development and establishment of new growth centres also resulted in smaller towns growing rapidly. States, which underwent high rates of urban growth, were Trengganu, Kelantan, Negeri Sembilan, Pahang and Selangor, which encompasses the highly industrialized Klang valley. In 1980, Selangor was the most urbanized state, followed by Penang and Trengganu.

Ethnic composition of the urban population changed with increased involvement of Malays in the industrial and commercial sectors, and particularly in the government sector. Government employment played an important role in the assimilation of migrants within the urban labour market.

Fourth Malaysia Plan (1981-5)

The key element of the Fourth Plan (Malaysia, 1981) were the increasing agricultural productivity, and the expansion and diversification of the sources of growth. In order to accelerate urbanization, settlers of land-development schemes were encouraged to participate in new township activities, such as retail services and small-scale service industries.

Urbanization was promoted by stimulating growth in the modern sectors of the economy, the development of new growth centers, and the consequent demand for rural labour. Further, ethnic composition of urban areas would continue to change as Malays were increasing their participation in the modern sector economy.

Fifth Malaysia Plan (1986-90)

The Fifth Plan (Malaysia, 1986), which came in the wake of the economic recession of 1985, foresaw the private sector taking the lead in generating growth, particularly through increased competition and efficiency in the production and marketing of goods and services. The historical pre-eminence of agriculture had given way to manufacturing as the leading sector in economy and the largest contributor to employment creation. With continued emphasis on manufacturing and related services, further urbanization was inevitable.

The pace of new land-development schemes was reduced as the availability of new land became scarcer and the costs of resettling families on the more marginal land became more costly. The so-called in-situ approach constituted the main thrust of agriculture development during the period, that is, development through the provision infrastructure and replanting facilities, as well as greater commercial orientation aimed at raising productivity of existing farms.
Impact of the Fourth and Fifth Plans

The expansion of the modern sectors of economy stimulated urbanization throughout most of the 1980s. By 1991, more than half of Malaysia’s population was urbanised. With the increasing movement of the Malays into the urban areas, their share of the total urban population rose fastest, such that by 1991, they had become the largest ethnic group among the urban population.

In 1991, the central region of the Peninsula, comprising Kuala Lumpur, Selangor, Malacca and Negeri Sembilan was the most urban. This concentration encouraged the growth of industrial, commercial, financial and administration activities within the Kuala Lumpur conurbation areas. The spread of urban development within, as well as outside, the Klang valley helped accelerate growth in towns like Shah Alam, Bangi, Seremban and Port Dickson.

Urban population growth in the eastern region, comprising Kelantan, Pahang, and Trengganu, was steady, influenced by the industrial and commercial activities in the Paka-Chukai corridor, as well as rapid growth around the three major urban centers of Kota Bharu, Kuantan and Kuala Trengganu. In the south, Johore experienced rapid urbanization during the 1980s, such that by 1991 slightly less than half of the population lived in urban areas. Urbanization in and around the Johore Bharu conurbation was particularly conspicuous.

In the north, Kedah experienced significant urbanization in the 1980s. Nevertheless, by 1991 it still had a relatively low level of urbanization, comparable with states like Kelantan, Pahang and Perlis. Sabah and Sarawak are in the same category, due to the predominance of agriculture and their limited industrial base.

Sixth Malaysia Plan (1991-5)

The Sixth Plan (Malaysia, 1991b) marks the first phase of Malaysia’s Second Outline Perspective Plan (1991a), which incorporate the New Development Policy as the successor of the NEP. It was based on the principles of growth equity and aims to further diversify the industrial base. It emphasizes the development of export-oriented, high value-added, high technological industries. The transition away from unskilled labour-intensive industries towards human capital-intensive technological industries would continue. The plan gave more attention being given to increasing value-added activities and enhancing downstream linkages in the agriculture and industrial sectors. The economy was expected to rely increasingly on exports of manufactured goods for the growth of income and employment, as Malaysia strive to be a fully developed country as envisaged in Vision 2020.

The success of Malaysia’s economic development with a much more diversified mix of exports, and with GDP having increased by around 7-8 per cent per annum for much of the period since 1970s, has brought about acute labour and skill shortages. These have been particularly conspicuous since around 1990, despite high growth rates of the working age population and increased female participation rates. This situation once again encouraged the inflow of large numbers foreign migrants, legal and illegal, from Indonesia, the Philippines and to a lesser extent, Thailand, as well as increasing numbers from Bangladesh.

Seventh Malaysia Plan (1996-2000)

The Seventh Plan addressed the environmental and natural resource issues to ensure that the development was balanced and sustainable. Efforts to integrate environmental considerations into development planning were intensified, and the relevant institutional, legislative and regulatory mechanisms were strengthened. In addition, the use of cleaner technologies was promoted and a market-based approach to address environmental and resource issues was introduced. Environmental education and awareness campaigns were also launched to foster an environment-friendly society.
Eight Malaysia Plan (2001-2005)

During the Eight-Plan period, emphasis will be placed on addressing environmental and resource management issues in an integrated and holistic manner. A major challenge will be to attain the nation’s environmental and natural resource goals efficiently and to reduce the negative environmental impact of development activities. Steps will be taken to identify and implement prudent, cost-effective and appropriate management approaches that yield multiple benefits in order to ensure an economically competitive, sustainable and resilient future. Efforts will be continued to address air pollution, mitigate degradation of rivers, improve marine and groundwater quality, as well as deal with waste in a comprehensive manner. Strengthening land use planning, extending the Biodiversity Action Plan to the various states, expanding the sustainable management of forests and addressing multiple-use issues in marine areas will enhance the management of natural resources. Efforts will also be channeled at promoting environmental performance measurements and market-based instruments as well as engaging communities in addressing environmental and natural resource issues.
Appendix 2. Letter of Invitation to Participants

ENVIRONMENTAL HEALTH RESEARCH CENTRE
INSTITUTE FOR MEDICAL RESEARCH
JALAN PAHANG, 50588 KUALA LUMPUR

Mr/ Mrs/ Ms..............................
..........................(address)......................

Dear Sir/ Madam,

Community Consultation in Managing the Environment for Health

You are cordially invited to participate in a Community Consultation in Managing the Environment for Health. This consultation is jointly organized by Environmental Health Research Center in the Institute for Medical Research and (.....your.....) District Health Office. The objective of this consultation is to identify the environmental issues of concern and to plan and manage together this issues to promote our health status towards sustainable development.

The information’s of this consultation are as stated below;

Date:..................................................

Time:..................................................

Venue:..................................................

Coordinator:...........(Name of gatekeeper).............

Your participation and supports are greatly appreciated. Thank you.

Yours sincerely,

Dr Mazura Bte Sahani
Public Health Specialist
Environmental Health Research Center
Institute for Medical Research
Appendix 3a. Questionnaires Form

DEMOGRAPHY SURVEY OF PARTICIPANTS IN THE COMMUNITY CONSULTATION IN MANAGING THE LOCAL ENVIRONMENT FOR HEALTH

Thank you for your support and participation in this survey. Don't worry because all information will be kept confidential. Please provide right answers and if you encounter any problem, don't hesitate to seek clarification from the officer in charge.

1. Name of interviewee: ...........................................................................

2. Address: ..............................................................................................

..............................................................................................

3. Telephone or Contact No:....................................................................

4. Age: .........years

5. Sex: .................................................................................................

6. Ethnicity: ...........................................................................................

7. Religion: .............................................................................................

8. Marital Status: Married/ Divorcee/ Widow(er)/ Single (please tick one)

9. If you are married, please state number of children:.............................

10. Please state the number of persons staying together in your house:............

11. Your Occupation: .................................................................

12. Estimated Income per month: RM.....

13. Education Level: ................................................................................

14. Length of stay in this village: ............years

15. Length of stay in your house: .............years

16. Has your house equipped with any electrical supply? a. Yes b. No

d. Gravity Feed System e. Others, please specify:.................................

d. River/Lake e. Others, please specify:.................................................

d. Throw in the river/ lake e. Indiscriminate disposal
f. Others, please specify:........................................................................

30/06/00
APPENDIX 3b. Questionnaires Form

Survey on Community Perception on Their Environment
(Survel Pandangan Masyarakat Mengenai Persekitaran Mereka)

Name (Nama): ________________________________

Residential Area (Kawasan Tempat Tinggal): ________________________________

1. In your opinion, how is the condition below in your area?
   Pada pendapatan anda, bagaimanakah keadaan berikut di kawasan anda?
   
   A. Air (Udara)  Good (Baik) [ ] Moderate (Sederhana) [ ] Bad (Tidak Baik) [ ]
   B. River (sungai)  Good [ ] Moderate [ ] Bad [ ]
   C. Lake/Pond (Tasik/Lombong)  Good [ ] Moderate [ ] Bad [ ]
   D. Plants (Tanam-tanaman)  Good [ ] Moderate [ ] Bad [ ]
   E. Refuse disposal (Pelupusan sampah)  Good [ ] Moderate [ ] Bad [ ]
   F. Toilets (Tandas)  Good [ ] Moderate [ ] Bad [ ]
   G. Road safety (Keselamatan jalanaraya)  Good [ ] Moderate [ ] Bad [ ]
   H. Property safety (Keselamatan harta benda)  Good [ ] Moderate [ ] Bad [ ]
   I. Social Security (Keselamatan diri/social)  Good [ ] Moderate [ ] Bad [ ]
   J. Neighborhood spirit (Semangat kejiran)  Good [ ] Moderate [ ] Bad [ ]
   K. Noise level (Tahap kebisingan)  Good [ ] Moderate [ ] Bad [ ]

2. Three things in your area which pleased you (Tiga perkara yang anda sukai di kawasan anda)
   A. __________________________________________________________
   B. __________________________________________________________
   C. __________________________________________________________

3. Three things in your area which worried you (Tiga perkara yang membimbangkan anda di kawasan anda)
   A. __________________________________________________________
   B. __________________________________________________________
   C. __________________________________________________________
4. Action you can take to improve the above conditions. (Tindakan yang anda boleh ambil untuk memperbaiki keadaan di atas)
   A. 
   B. 
   C. 

5. Actions you would like to take to improve the above conditions. (Tindakan yang anda ingin ambil untuk memperbaiki keadaan di atas)
   A. 
   B. 
   C. 

6. Barriers to the above actions (Halangan kepada tindakan yang ingin anda ambil di atas)
   A. 
   B. 
   C. 

7. Important factors (resources) which could help to improve the above condition (Perkara atau sumber yang boleh membantu memperbaiki keadaan di atas)
   A. 
   B. 
   C. 

8. Important factors that make the above condition worse. (Perkara yang memburukkan lagi keadaan di sini)
   A. 
   B. 
   C. 

9. What do your wish for yourself, own family and your area in the future (next 5-10 years). (Impian anda untuk diri anda, keluarga anda dan kawasan anda di masa depan (5-10 tahun di hadapan)

   

Thank you for your cooperation. Information given will be used in the strategies to protect the environment for healthy communities in the current and next generations.

Terima kasih atas kerjasama yang diberikan. Maklumat yang diperolehi akan digunakan sebagai strategi untuk memelihara alam sekitar demi masyarakat yang sihat di generasi kini dan masa hadapan.
Appendix 4: Community A.

The 2nd Environmental Task Force Meeting for LA21

Date: 9th October 2000 @ 1.00 to 2.30pm
Venue: Community Library, PJ Town Council

Mr A and Ms B organized the meeting. Ms B was unwell and was unable to attend. Mr C chaired the meeting. 10 people attended the meeting – 8 men and 2 women. Mr A presented the agenda for this meeting. He also introduced the format of Logical Framework Approach (LFA) that will be used throughout the whole process in the identification of an action plan for the environment. The LFA was first introduced in AID US in the 1960’s. There are 7 steps in LFA;
1. Target stakeholders in participatory analysis
2. Problem analysis: Existing negative state to be converted to problem tree
3. Objective analysis: Transform problem tree to problem solving (objective situations)
4. to 7... Refer handouts...

This meeting focussed on Solid Waste Management (SWM). Each participant underwent brainstorming session for the problem analysis of SWM. They identified three areas of concerns;
1. Type of wastes:- bulky, toxic, mixed, commercial, medical, domestic and wet wastes
2. Attitude of people: lack of awareness, public apathy, lifestyle, high volume of waste, ineffective public participation, open/illegal dumping, manufacturers’ attitude of too much packaging and promotion of plastics packaging
3. Ineffective management:- poor enforcement and supervision, irregular collection, unsuitable collecting vehicles and lack of infrastructure.

Finally, within an hour the logical framework approach on solid waste management was drafted as in table x. Subsequent brainstorming session for this group would be conducted every fourthnight.
Table x. A draft on Logical Framework Approach on solid waste management, 9.10.00

<table>
<thead>
<tr>
<th>Problem analysis</th>
<th>Causes of problem</th>
<th>Objective analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of recycling centers</td>
<td>Inadequate allocation of resources, no policy, no commitment, space availability</td>
<td>More recycling centers</td>
</tr>
<tr>
<td>Poor collection</td>
<td>Poor time management, lack of commitment, inadequate resources-staff and vehicles</td>
<td>Effective collection</td>
</tr>
<tr>
<td>Poor enforcement</td>
<td>Poor discipline and commitment, insufficient resources, inconsistency in action, no sense of responsibility, lack of training</td>
<td>Strict enforcement</td>
</tr>
<tr>
<td>Lack of awareness</td>
<td>Ineffective public participation, public apathy, lack of awareness program, message not getting through</td>
<td>Public education</td>
</tr>
</tbody>
</table>

The 2nd working committee meeting on social integration

Date: 6 Sept.2000 @ 4.30pm-6.30pm
Venue: Bunga Tanjung Room, 1st Floor, PJ Town Council

The meeting was initially chaired by Mr D, an exco member of residential area A. He then had to leave due to another commitment (a meeting with the new appointed Chief Minister of Selangor). Mr E was appointed as the new chairperson for this meeting. Mr A advises, as the coordinator, were sought for any clarification. More than 40 people from various organizations as or individual were present. *(This was the first meeting I attended for LA21 activities in PJ. I did not know anybody in this meeting besides Ms B, the community liaison officer. More than 40 people participated in this meeting, mainly men and only five women including me. Being the observer of the meeting, I knew I needed to document the whole process, I just make sure I went through the process and tended not to worry on what lay ahead)*

The meeting started with a briefing or overview of what has been discussed in to participate in this type of meeting. The report of the first meeting was available. It was then followed by a presentation by an officer from Education Department. He gave an overview of the concept of social integration and the objectives of the Ministry of Education (MoE) within the education system. The concept of MoE was a continuous process, and an integrated approach towards producing a balanced individual. He then explained the role of school curricula in
system. The concept of MoE was a continuous process, and an integrated approach towards producing a balanced individual. He then explained the role of school curricula in implementation of the concept of social integration. The meeting then proceeded with an explanation by Mr A that some of the speakers could not come to give their presentations on issues related to social integration. An officer from the Police Department apologized for not being able to provide an overview of the safety and crime rates and types in PJ. This was due to time constraints and unavailability of readily collected data.

The meeting was then opened for further discussion within the community. Ms E informed that she knew that the education department at each district organized an evaluation meeting for problems in school every three months. She suggested that a representative of the Education Department could be invited to present the current state of social problems in schools.

Mr F commented on the relevance of the statistics for social integration. He considered the statistics could only provide minimal information and demonstrate the extent of the problem but not the reason behind the existing problem. He suggested the organizer to invite and promote more people. He recommended the organizers to define social integration and in what context they wanted to look into it. He also suggested that they come up with something that could monitor the success of social integration. For example, he considered social integration a success as more residents from different ethnic groups get together in social events such as celebrating Aidilfitri, Chinese New Year, Deepavali or Christmas.

Mr G commented the points that he was not clear on the agenda of this meeting. He would like to get the agenda beforehand. He commented on the report of the previous meeting, which was written in Bahasa Malaysia, which he found it very difficult to understand. He suggested the report or minute to be written in dual language- English and Bahasa. Mr A apologized for that and explained that it was due to limited resource. He promised to have the next report in dual language. He then gave the flow chart of the working committee on the proposed plan for this and the subsequent meeting.

Mr G also raised the issue of smart-partnership. To him, smart-partnership occur when groups of people- the policymaker or manager and the nonprofessionals- worked together. Thus if the organizer were really thinking of working together, they must listen to what the
observation - Otherwise he felt that the organizers themselves were not dissociating themselves from the top down approach)

Mr H informed that the organizers should provide the statistics. However he said the police have their figures and the people have their stories. These could complement each other. The public could counter check the police data with their own stories.

Mr G then voiced his disagreement of how this meeting was being conducted. After more than an hour sitting in this meeting, he could see that the organizers had no intentions of listening to them. He then requested the chairperson to step down if he was going to chair the meeting in same manner. Mr E then stepped down and apologized for not being a good chairperson. He told that he was taking somebody work and was trying his best to chair the meeting. Mr A then encouraged him to continue chairing.

Mr H, a state assembly member then advised the participants to cool down and briefed them that PJ was chosen because of the outstanding and committed residents and government officers to develop their area. He also explained the plan of LA21, which was signed in 1992 and had not taken place since then. To him ‘the lack of integration’ was a disgusting word. After 43 years of the country independence, to him integration is not a real problem, for example, racial riot is not a problem in Malaysia anymore as compared before independence. He reminded the people of PJ that they should be proud of their community and work together for the best as they could.

Mr I raised the issue of getting people to be committed in the proposed action. Mr H assured the participants that this issue would be addressed. He suggested the working group to have consistent committee members especially the core team of the three working groups for the implementation of LA21 (from Petaling Jaya in Section 2, Section 21 and Section 22).

Mr G agreed that the questionnaire distributed was good which was proposed by this committee during the the first workshop in the 1st and 2nd February this year. Mr E pointed out that there should be more representatives of the youth and women groups. This group was over represented by the senior citizens. He suggested that invitations be sent to the youth and women groups. Mr A informed that they have done that, where 60 invitations had been sent out to most of the organizations, but the response was still poor. The participants were then
women groups. Mr A informed that they have done that, where 60 invitations had been sent out to most of the organizations, but the response was still poor. The participants were then reminded on the code of ethics of the meeting, which means that ‘the participants are free to voice out their opinions but are not allowed to criticize other members opinion’.

Finally the participants agreed on the flow chart where they have until November to determine the type of action plan for social integration and how to go about it.

The meeting ended at 6.30pm. After the meeting, there was high tea and all participants were invited to joint the high tea. I then took the chance to meet Ms E. I knew of her work with communities from my reading materials. I had a nice chat with her, took her contact numbers and promised to give her a call for an interview. (I could see that most of the residents representatives did not stay behind for the high tea; probably it was late evening or probably they were still frustrated on how the meeting was being handled. I thought that those people who stayed for the high tea could have been the members of the organizing committee since they dressed formally as compared to the residents groups where they were more casual. I then walked together with Ms MC and introduced myself to Mr A. He and Ms E had known each other before. Also present was Mr H. Either Mr A or Mr H just shook his head and said that the people had reacted in an uncivilized manner during the meeting. To me, I felt that they have made premature assumptions!)

An Observation Note on the above meeting

During their second meeting on the 6 September 2000, at which I was present, there were a number of disagreements between the committee members. They were not satisfied with the way the organising committee was addressing the issues on social integration. Some of the members argued the importance of statistics on issues related to social integration as a focused point for discussion. They considered these statistics could only provide minimal information and showed the extent of the problem but not the reason behind the existing problem and how to solve this problem.

A participant suggested that the organizer invites and promotes more people to get involved with the discussion. During this meeting, this group was over represented by the senior
citizens. Another participant suggested that the invitations be sent to the youth and women groups. He also recommended the organizers to define social integration and in what context they wanted to look into it. He also suggested that they find a mechanism that could monitor the success of social integration. To him, the social integration could be seen as more residents from different ethnic groups get together in social events such as celebrating Aidilfitri, Chinese New Year, Deepavali or Christmas.

Another participant raised the concept of smart-partnership. To him it will be realised when the groups of people- the policymaker or manager and the non-professionals- work together. Thus if the organiser were really thinking of working together, they must listen to what the community had to say. If they were to realise the bottom-up approach, they must give opportunities to the community to express their views or opinions. They thus must pay serious attention to the community voices.
Appendix 5: Community B

Appendix 5a

The first community consultation in Kuang.

Date: 12\textsuperscript{th} July 2000  
Time: 10.45 am to 12.45 noon.

Place: Community hall, 20\textsuperscript{th} Mile, Selangor

List of participants:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr A</td>
<td>An assistant health inspector in the local health clinic</td>
</tr>
<tr>
<td>Mr B</td>
<td>A member of Kg\textsuperscript{10} B Committee</td>
</tr>
<tr>
<td>Mr C</td>
<td>A secretary to Kg C Committee</td>
</tr>
<tr>
<td>Mr D</td>
<td>A village headman, Kg D</td>
</tr>
<tr>
<td>Mr E</td>
<td>A village headman, Kg E</td>
</tr>
<tr>
<td>Mr F</td>
<td>A village headman, Kg F</td>
</tr>
</tbody>
</table>

Dr Mazrura and her team arrived at 9.30am. They met Mr A near the community hall and had breakfast together in a nearby restaurant. At 9.45 am they went to the community hall. In the community hall they rearranged the tables and chairs to make a square which could accommodate 15 people. At the same time Mr A went to the same restaurant to fetch some food which had been ordered earlier and some cups for the refreshments. Discussion only started at 10.45am due to delay in the arrivals of the participants. While waiting for the latecomers, interviews were conducted using the questionnaire (Appendix 3a).

Dr Mazrura delivered a welcome address and thanked the participants for their efforts to participate in this workshop. She introduced herself and her two assistants. She explained to the participants that the aim of this workshop was to explore the way of life in Kuang, its current situation, issues of concerns for each participant in view of planning together the village management. The main objective of this workshop was to get participation of the community to manage their own area for sustainable development. She also explained that sustainable development is meant by development for the present and future generations. She

\textsuperscript{10} Kg = 'kampung' or village
further elaborated that this sustainable development can only be achieved if the three components of development are met, which comprised of community development, economic development and environment development. Thus the three aspects of sustainability are social, economic and environment. Each participant was invited to brief this group on the living conditions in the village and to share any issue related to his community, either good or bad. However none of the participant was allowed to comment on other peoples view. She also explained that this workshop was not to find any weakness in the participants. She then kindly invited the first participant, Mr. D to start the conversation.

Mr D explained that there were three factors in development; humanity factor, land and development itself. Humanity was closely related to development. Where there was development, population would increase. This population growth was linked to land or space. The growth of population on the same area (for example on a 10 acre of land, which was impossible to expand anymore) would result in overcrowding. This overcrowding would give rise to other problems. This rapid population expansion was attributed to the location of this area, which were suburbs to Kuala Lumpur, which caused population migration. This problem was aggravated by the influx of immigrants and people from the rural areas. This overcrowding was made worse due to poor surveillance activity by the authority. When there was no monitoring, population settlements were uncontrolled. The drastic increase in the number of settlements led to:
- Improper arrangement of their houses and
- inadequate drainage system for water and sewage system.

Due to this unplanned development, the situation became worse, too crowded, uncomfortable and unhygienic. The immigrants opened up new illegal settlements or rented houses from local people. This overcrowding factor could lead to theft and the unhygienic conditions could lead to health problems. Lots of complaints have been made to the local district authority. Some of the participants had attended meetings and seminars that discussed these issues, however the local authority had not taken effective action.

The second participant, Mr. E informed the group that his village was a traditional village where the houses were builds haphazardly. One of their problems was the clinic, which was at some distance from his village. The nearest clinic was 4 miles away. The health department had previously provided community health services in the community hall in his village. He
hoped the Health Department would be giving the same service to his community. He mentioned that all categories of people need free medical examination; senior and younger citizens, children and adolescent. The third problem was solid waste disposal. His village was not yet under the jurisdiction of the local council (LC). Therefore, there was no facility to collect the rubbish. However his village would be included in the LC soon. Due to unavailability of dustbins, the people did not have other means of disposing their rubbish. Some of them threw their rubbish indiscriminately; for example, they disposed their rubbish into the river. He explained that whenever a monitoring is carried out fewer cases were seen. However, without any monitoring, these problems returned. He explained that to solve the problem of rubbish disposal, the communities have taken their own initiatives, for example, using their own lorries or rented lorries for loading and transporting their rubbish to the waste disposal site. Sometimes, they also organized ‘gotong-royong’ (which means doing task together) to clean up their area. He hoped the health department could give assistance to inspect the toilets, houses, solid waste disposal site and the surroundings. He also hoped the health department could give advice and warn the community on the effects of dirty environment to their health. He felt that warning from health department carry more weight since the community had some fears on the penalty issued by the health authority.

The fourth problem was the water drainage system. His village has been facing floods regularly at least three times a year, up to two to three feet in depth. This was due to non-existence of drains or sewers. He hoped the authority could build the drainage system. This problem has been present for the past 10 to 20 years. They had filed complaints to the authority but no action had been taken till now. Another problem was mosquitoes. He added that the health department has regularly carry out fogging activities against mosquitoes at least three times a year. He hoped these activities could be increased especially in the bushes. The major social problems in his village were drug addiction and the ‘loafers’ culture. The drug addiction problem lead to other social problems like theft and house breaking. Finally he proposed that development should be controlled. Without any controls, the situation will be more disorganized.

The third participant, Mr. F informed that development had caused population migration from Kuala Lumpur to his village. This lead to overcrowding and had led to a situation where the community members didn’t know or recognized their neighbors. Safety condition in his village was considered fair where there were not many thieverys. The health of the
similar to Kg C where there was no rubbish collection service and his village is waiting to be included under the LC’s list. The method of waste disposal practiced by the community was burying or burning. In term of public facilities, his village was considered satisfactory. There were a nearby clinic, a community hall and a multi-purpose hall. They also had a senior citizen committee to ensure the welfare and health of the senior citizens. 60% of the people in his village were factory workers in the nearby industrial estate, 20% were civil servants and 20% were doing the other kind of jobs. The other problem was insufficient graveyard due to rapid increase in population by immigration. He raised his concerns if the old graveyard is to be used again.

Mr. E added that education also reflects a village’s development. Economy and social factors influenced the level of education. Calculating the number of students pursuing their studies in the higher institutions was a way to assess education achievement. His village’s achievement was considered poor in term of education. It was estimated that only 2% of his community achieved higher education level. This poor achievement was being influenced by unhealthy social interactions. Mr. D added that for his village only one household from 70 houses was successful in pursuing higher studies. In term of economy, 60% of the community were poor where their total incomes were less than RM 500.00 per month.

Mr. F continued that Kg F did not have its own school. The nearest school was about 3 miles away from his village. Mr. AA added that the number of schools should be increased because there were too many students in one school and for the whole area, there were only 4 Malay schools. It was not surprising although it was a small area, the number of students in one school reached 2000 students with a morning and an afternoon session and the number of teachers were more than 100 teachers per school.

Another participant, Mr. B from Kg B, informed the group that a cement-packaging factory was emitting dust. This factory has been operating for more than 10 years. It carried out packaging of cement activities and the cement came from Perak. Goods trains transported the cement there. There was a primary school located close to this factory. The community was worried that their children will be exposed to high level of dust, which could affect their health. This high level of dust could be seen from the school windows, which were covered with dust. The fruit trees, for example rambutan trees, had not been producing any fruit for a couple of years. Some of the nearby residents had been complaining of coughing which could
couple of years. Some of the nearby residents had been complaining of coughing which could be due to the dust. This problem has been reported to the relevant authorities but no action had been taken. He felt that there was some corruption in the authority system.

Second problem in this community was illegal video game, which involved gambling. 90% of the customers were Malays, 5% Chinese and 5% other race inclusive of the immigrants. He was worried and regretted on this issue because most of them were the children of his friends. Mr. A added that the video game outlets were open from 11.00 am to 12.00 pm. There were various type of video games offered like animal gambling; horses, dogs, ducks, fruit gambling and airplane gambling. Each video game machine was able to collect RM 1,000.00 per day. The illegal video game operators had own internal contacts who would report on the enforcement activities that are be carried out by the authorities. This enabled them to cease operations during the enforcement period. Mr. B continued that in some places, their workers were immigrant women who also offered illegal sex services. This prostitution was a new problem. People feared to take any action because they knew these operators hired gangsters. Anybody who filed any complaints if identified, would be intimidated.

In term of safety, Mr. B was worried about the road safety due to heavy traffic in this area. The road signs and yellow lines should be improved. Road accidents occurred regularly, almost everyday. In fact, this morning there was an accident between two cars in front of his village. The road across this area was being used by big lorries, which were being driven at high speed. The communities were always worried about their own safety and the safety of their family members.

Mr. C, the fifth participant from Kg C agreed with the road safety problem brought forward by Mr. B. According to him it was estimated that approximately 1000 lorries per day passed through this area. Although the road was narrow, those lorries were very big and were driven at high speed. They also caused this area to be dusty. He explained that the size of his village was 400 acres. In addition to lorries there was a palm oil mill that stinks. It was a large factory and emitted a lot of oily smoke. The smoke could contain chemicals because he noticed that it could fade the car paint of the nearby residents. This factory was also discharging its effluent into the river. It had a water reservoir to collect the effluent, which would then flow into the drain and subsequently into the river. However, the reservoir was small and as it contained various chemicals the absorption was difficult. This resulted in overflow of the effluent into
the river. The community has filed report to the Department of Environment and an investigation has been carried out. However no action has been taken till today.

Another problem faced by the community was illegal cattle breeding which has been going on for more than 20 years. There were hundreds of cows and the herdsmen were four Sikhs. At night these cattle were set free. His village area was full of cow dung and these cattle also unload the dustbin of the residents that made the area very filthy. Mr. F also admitted that his village was facing the same problem of stray cows. Mr. C also added that the insufficient numbers of fire hydrants in his village and the application to increase its number has been submitted. He recommended the building of a fire station in the area because the existing fire station was located far from there.

He further informed the group on the construction of a new township near to his village. A large number of Indonesian construction workers have opened up new illegal settlements. There was theft cases and housebreaking in this area. He also informed this group that there were fifteen video game outlets in his village. Their customers include secondary school students who played there before going to school. In addition, Mr. C brought up the issue of lack of recreational area where there was only one playground in there. He requested for more playgrounds to be built. In the existing playground, there was an old well, which was been used by some Indian. This well could endanger the safety of the children playing there. He requested Mr. A to close the well because he was worried of the children safety and the health of the users of the well water.

Mr. A was a resident in Kg D. He noticed that the main social problem in his village was the video game, which involved gambling. Although with only RM 1.00, man could gain many folds profit eg few hundred ringgit, however the chance was small. To get license issued by the SCT, police certification was needed to certify that the crime rate in the requested area is low. In spite of this, some of the operators were using license permitted for other areas, for example by having copy of the district’s permit, it could be used in this area. He suspected an element of corruption and use of political influence to interfere with the enforcement activities of the officers in carrying out their duties.

Mr. D added that there was no coordination between the government departments in handling community problems. There was separation in carrying out their duties. For example,
was no coordination between the Water Works Department, the Drainage Department, Alam Flora Sdn Bhd (a privatised Sewerage Department) and the Health Department. He suggested combining all government department efforts when trying to solve local issues. For example in a recent meeting with the head of villages and the government agencies, most of the unit representatives were invited except the health unit. He regretted this happened because most of the local issues were closely related to health.

Dr Mazrura put up a request to the participants to give a list of three issues of concern for this community. They agreed that the three issues were:

1. Water problems due to a lack of drainage system and river pollution.
2. Air pollution due to dust from the cement factory, 5 quarries and the lorries.
3. Social problem especially the illegal video game gambling.

When asked on their hopes for their area today and in the future, they took a few minutes to think before giving their opinions. Mr. B hoped the clinic would be expanded and upgraded. He also hoped that the fire station is built in this area because the nearest stations were 11km and 20km away. He explained the example of the difficulties they faced when they were facing a fire. When the nearest fire station was called, several reasons were given to them to call the nearest fire station because this area was not within their service area. Due to this problem, the community has formed a fire fighting squad to control any fire in his village.

Mr. E informed the group that from the 5 years planning for the future, planned in 1997, this area would become a transit center for lorries and cars in the nearby estate on a 100 acres of land. In addition to this, it would become a train workshop center, which will be shifted from Sentul. Its small town would then be upgraded to a city where more public facilities would be build or upgraded. In the future they would have a post office, a fire station, and a health clinic and police station. In addition to these, the reserved cemetery area would be gazetted. His hope was with the development, the village community would have better employment opportunities and better infrastructure facilities. However, he was worried that the development would lead to more problems. His third hope, which was in term of education, was that more secondary schools would be built. At the moment, there is no secondary school for the different streams: Malay, Chinese and Indian, however primary schools were available.
Dr Mazrura invited the group to identify any effort or activity that the community could carry out in meeting their hopes for today and for the future. Initially it was noticed that there was some uneasiness on the face of two of the participants, Mr. E and Mr. D. They were asking the real meaning of the effort or activity. Mr E said that there is not much the community could do themselves to solve their problems. This is due to how things had been happening for the past 20 years. Dr Mazrura then gave some examples, which could promote social change. One example was that highlighted by Mr. B on their fire fighting squad. Mr. E added that those types of activities were part of their culture. The community had been carrying out these activities for years. For example they had ‘Pemadam’ to handle drug addiction, ‘Rela’ and ‘Rukun Tetangga’ or neighborhood watch to take care of the safety in the village. He felt that if they relied too much on these voluntary activities, he feared that the government would try to escape from its responsibilities. He also feared some financial allocations for this area’s development would not be delivered.

Mr. D added that the drainage problem was due to improper planning and cooperation between Water Works Departments and the private sector. He quoted the example that recently a new road was build. A few days later, a telecommunication company dug the road and carelessly covered it back, leading to other problems such as road hole, dusts and broken water pipe. This was an instance of extravagance. Therefore he hoped that the proper planning was done at an early stage.

Mr B, an active community member of Kg B (located near the commuter station), was very concerned about the problem of air pollution due to a cement factory. He provided the address of this factory. He raised the importance of addressing this air pollution as an immediate issue to start work on. This concern was mainly for the health of 150 primary school children. This school is located just opposite the cement factory. Next to this school was the residential village, which has approximately 100 households, mainly Chinese. This village is about 100 years old. In addition to air pollution, they were disturbed by the noise pollution from this factory’s activities.

The participants were then asked to identify one activity to rectify the air pollution problem. Mr. E informed that this type of effort wouldn’t meet any success because they had tried to solve it for more than 10 years. He told that lots of complaints have been filed and had been brought forward in various meetings at the district level. Dr Mazrura then asked the
participants to think of a project which could be carry out together to investigate the extent of air pollution in their area and its effect to the local community. This investigation could become evidence to prove the seriousness of the air pollution problem they were facing. She added that she had expertise in this area and could provide guidance to carry out this project. Her role would be as an advisor in term of technical activities and other activities needed to be carried out by them and their local community. Finally, with common consensus a small committee was formed and it was called ‘the Movement and Action Committee’. A simple election was done and Mr. B was elected as the chairperson of this project, Mr. A as the secretary and the other participants as the committee members. Dr Mazrura volunteered herself as the advisor with the support of her assistants.

Dr Mazrura informed that the project would be initiated in early August. She would make direct contact with Mr. B and Mr. A. They would plan and formulate action plans to run this project. Dr Mazrura explained some of the plans for this project were:

1. To identify the source of air pollution in this area; cement packaging factories, quarrying activities, lorries and the others. This could be carried out by a walk-through survey of the suspected area and investigating the contribution of those identified polluters to the air pollution.

2. To identify the level of air quality in this area through environmental dust monitoring with an air sampler. Dr Mazrura and her team will carry out this activity with some assistance from the local people.

3. To identify the effects of the air pollution to the community; health effects, psychological effects, economic effect and others. This would be achieved by conducting a community survey. Dr Mazrura could help design the questionnaire for this interview, which would be carried out by the committee members.

4. To prepare the report on this project for the next action for example to sent it to the various departments that manage air pollution issues.

5. To formulate a strategy to ensure appropriate action has been taken by all stakeholders to manage air pollution in this area.

Dr Mazrura also informed that the project could start before the second workshop, which was planned in September. In this next workshop, they would evaluate the progress of the project and develop strategic plans to monitor this progress.
Dr Mazrura hopes that this project would be able to proceed as planned. She explained that the success of the project depended on the involvement of the local community and it was similar to the objective of this workshop that was community participation to manage their own environment. The participants promised to give full cooperation as needed to ensure the success of the project. They would try to persuade the representatives of other villages who were not present today to participate in the project and in the next workshop.

Finally, Dr Mazrura concluded this meeting by thanking the participants for their readiness to share their opinions and their commitment throughout the discussions. She kindly invited Mr. B and Mr. A to stay on for a while to plan for the next action. Discussions ended at 12.45 noon.
Appendix 5b

The factory investigation by the Department of Occupational Safety and Health in response to air pollution caused by the cement factory

On 20th March 2001, a letter was sent to the Director of the local Department of Safety and Health (DOSH). Subsequent phone calls were made to my old colleague, Dr G, the medical officer of the health unit in the department to determine whether any steps would be taken to address the issue. Finally, on the 5th April 2001, the DOSH officers, Mr. H who was also an industrial hygienist, Dr H and two occupational health nurses, visited the cement factory for the case investigation. I was invited to come along.

Mr H took the leading role for this factory investigation. After showing their authority badges, we were invited to the meeting room at the administration block. The company manager, Mr I, gave us a briefing on the factory. He informed that he worked for a subsidiary of a cement industry. This factory had been in operation since 1994. It was registered with DOSH last year. Its activities were as a depot for cement from Perlis (in north Malaysia). The carriage train transported the cement. From the train the cements were pumped into the six silos. The cements will then undergoing marketing process either being packed into the paper bags using the automatic packer or transferred to the carrier lorry as bulk cement.

The total workload per day was 300 ton for the bulk cements and 500 cement bags. 12 workers handled the operations for cement packaging. The lorry drivers who were also the sub-contractors handled the bulk cement. These lorry drivers have been given training on their work operations and handled the cement filling from the silos themselves.

We were then taken to the work areas. These work areas were very dusty. We were not given any mask or respirator because they were not available. None of the workers were seen wearing any masks. We found that the cement dusts came mainly during the filling up of the lorry from the silos. Although each silo were equipped with two-exhaust fans, the suction was not efficient to remove the dispersing dusts. The automatic packers for the cement packaging were functioning quiet well and did not emit a lot of dust.
Besides the cement dusts, the noise level was between 95-97 dBA as compared to the Permissible Exposure limit of 85dBA. However the maximum exposure noise level must not exceed 115 dBA at any time (Factory and Machinery Act, 1989). From the worker records, it was found that they were exposed to noise over the permissible level. The housekeeping of the work area was very poor. A lot of equipment was lying all over the place. These conditions were safety hazards.

From this visit, it was found that the work conditions in this cement depot were not acceptable. This also led to the poor air quality outside the factory due the dispersion of cement dusts. This depot is subjected to the ‘Use and Standards of Exposure of Chemicals Hazardous to Healths’ Regulation (OSHA Act, 2000) and the ‘Noise Exposure’ Regulations (Factory and Machinery Act, 1989). The DOSH officer issued a Notice of Improvement to the manager. The company was given three months to produce an action plan to improve the working condition. At the same time the company was advised to implement the action plan. The DOSH officers will make a follow-up visit after three months. They were informed of the subsequent procedure of the enforcement. If the work conditions have not improved, a Warning Notice could be issued which means a stop work order. If the works conditions have improved satisfactorily, the notice of improvement would be cancelled.
Appendix 5c

The Second Community Consultation in Community B.

Date: 31st July 2001  Time: 11.45 am to 13.05 noon.
Place: Community hall, 20th Mile, Selangor

List of participants:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr N</td>
<td>A medical officer of the local health clinic</td>
</tr>
<tr>
<td>Mr B</td>
<td>A member of Kg B Committee</td>
</tr>
<tr>
<td>Mr C</td>
<td>A secretary to Kg C Committee</td>
</tr>
<tr>
<td>Mr D</td>
<td>A village headman, Kg D</td>
</tr>
<tr>
<td>Mr E</td>
<td>A village headman, Kg E</td>
</tr>
<tr>
<td>Mr F</td>
<td>A village headman, Kg F</td>
</tr>
<tr>
<td>Mr O</td>
<td>A resident representative of Kg O</td>
</tr>
<tr>
<td>Mr P</td>
<td>A village headman, Kg P</td>
</tr>
<tr>
<td>Encik Q</td>
<td>A president of a non-government organisation</td>
</tr>
<tr>
<td>Mr R</td>
<td>A labourer in the local health clinic</td>
</tr>
<tr>
<td>Mr S</td>
<td>A labourer in the local health clinic</td>
</tr>
<tr>
<td>Mr T</td>
<td>A labourer in the local health clinic</td>
</tr>
<tr>
<td>Mr U</td>
<td>A labourer in the local health clinic</td>
</tr>
</tbody>
</table>

The community consultation was started at 11.45 am. Six community representatives, five local health workers and a president of a non-government organisation attended this session. The tables were arranged to make a square and the participants were sitting around this square facing each other. Dr Mazrura gave the welcome speech and briefed them on the purpose of the meeting. It aimed to share experiences and thoughts for local community development.

She informed they would discuss issues covering the social, economic and the environmental conditions in this community. The participants were reminded that the aim of the discussion was not to solve problems but to increase awareness and improve knowledge and share experiences of their daily living activities. She reflected the issues that had been highlighted during the previous consultation last year.

In the previous consultation, the participants had identified a few issues of concern. The issues were river pollution, dust pollution and a social problem (illegal videogambling machines). Consensus were reached that the group would address the dust problem faced by
the nearby residents and school children. A movement and action group led by Mr B and assisted by Mr. A and facilitated by her team had carried out some relevant actions. The sources of dust were the cement-packaging factory and the sand lorries and the activities of the five nearby quarries. A community survey was carried out and the findings were given in the earlier section above. Twenty four dust monitoring had been conducted twice, in November 2000 and on 19th July 2001. The result of the dust monitoring in the form of a graph was distributed and explained by Dr Mazrura to the participants.

In addition, Dr Mazrura had sent a letter of complaint on behalf of the local people to a local DOSH director. A DOSH investigation team came over to carry out the investigation on the 5th April 2001 to the factory where Dr Mazrura was also invited. The DOSH officers found that the factory work processes produced a lot of dusts. A notice of improvement was issued to the factory manager. They were required to prepare a proposal paper to improve their working conditions and to maintain their operation in order to minimize dust emissions and the noise problem. They also needed to take other measures to ensure their workplace safety and health. They were given three months to comply with the notice of improvement. In case of non-compliance, a warning notice will be issued where the DOSH has the power to issue a stop work order. The participants were told to be aware of similar problem and become the watchdog for their community. They need to monitor this type of concerns and work together with the relevant agencies to improve their living conditions. Dr Mazrura further assured the participants that they would always get the support from the District Health office to promote their health status and community development. It is further shown by the presence of Dr N, the medical officer in the meeting. Dr Mazrura then invited the participants to share their daily life experiences.

Mr D started the discussion by explaining that too much emphasis was put on the problem of environmental pollution for example, water and air pollution. To him the more important problem that was obvious but had gained little attention, was that of illegal immigrants. He noticed that not many people were facing serious problem due to dust. The illegal immigrants have brought a lot of community problems forward. They came from various countries, for example, Indonesia, Bangladesh and Africa. Most of them worked in the nearby estates. They opened up a lot of illegal settlements over here. He was concerned their presence would bring many infectious diseases in the country. He was uncertain of the effectiveness of government action to curb this problem. Mr E was surprised that when these illegals were nabbed, they
were however easily released after few hours. He suspected some dishonesty on the part of the enforcing officers when carrying out their duties.

Mr D commented on the health department's effort to fight dengue. He felt that the surveillance was not effective. He found that the fogging activity was only carried out after the notification of a dengue case. He said that in the past fogging was a routine activity, and did not take into account the presence of any dengue cases. He recommended that the fogging activity should follow the old routine. Dr N informed the group current procedure was that they only carried out fogging if there was a reported case. However, her health workers routinely carry out inspection of the larvae.

Mr D was also not satisfied about the food control program. He found that the food stalls proliferated without control. Most of them did not follow clean preparation methods. He was concerned about the safety and cleanliness of the food and the food posed risk to human health. Mr E informed that he always took precautions when buying food by carefully choose the clean stall. Dr N informed that the consumer has a right to report to the health authority if he is unsure of the cleanliness or safety of the food sold. The health department would carry out investigation following a complaint. However, the health inspectors routinely carry out regular inspections. Mr D added that a business license was issued once the restaurant owner has passed the medical examination. However the medical examination are not compulsory for the restaurant workers although they were usually the food handlers.

Dr Mazrura recommended that every member of the community to be a well-informed consumer where the purchasing power belongs to the individual himself. The publics need to increase their own awareness on the need to regularly check on healthy food. They need to be careful whenever they want to purchase any food and only buy food from a clean eatery or when they were sure that the food was clean and safe.

Mr E explained that there was a need to coordinate work among the different government agencies. For example, when there was a broken water pipe due to electricity or telecommunication cable installation, which caused interruption in the water supply, the work to fix the water pipe involved several agencies. The public could only provide certain assistance. Seeing that now this area was under town council, a number of coordination needs to be established. Mr B informed that the water only appeared clean but he did not trust it. Mr D
added that whenever it rained, the water supply was found to be dirty. Mr P informed the group that to him, it was important that the water was free of any germs. He therefore stressed the importance of the enforcement of the law. Misconduct in enforcement needs to be fought against thoroughly. He said that we should follow the Singapore government whereby the enforcement of law over there is very strict. Mr D explained that this area needed a big drain to allow water to flow. This drain should be build along 20th mile to 16th mile at both sides of the road.

Mr O from Kg O informed that the people in his village have been facing a lot of problems because of their status as squatters. They had been staying there for 28 years. Furthermore, it does not come under the town council. This village did not have a proper drain. Only recently they received piped water supply. It was nevertheless, considered timely, because the river, the people depended on, was polluted. The living condition in this village was poor because rubbish was thrown indiscriminately and no service from the municipality was provided. The village was overcrowded and the houses were builds haphazardly. He suspected the health of the people was affected and they regularly faced skin problems. Dr Mazrura recommended that Mr. O plan a discussion with Dr N to arrange for public talks for Kg O. It should aim at creating awareness on importance of environmental sanitation and its relation to health of the community. Then they maybe could organize a 'gotong-royong' with the support from the health clinic.

Mr B introduced Mr Q, a president of a non-government organization (NGO) who had worked with the Welfare Department in community development issues. Mr Q informed that his NGO that was formed early this year, had planned some activities. Recently, in June, they had organized a blood donation campaign where 60 donors had come forward. The next planned activity was the Public Talk on the Consumer Rights. It was planned for the 12th August in the hall of Tamil Primary School. All participants in this session were invited to attend. Dr Mazrura hoped that the public talks for Kg O residents would be planned together with this NGO activity in September. She then recommended Mr Q to take the leading role and to work with Mr O and Dr N. Mr Q agreed to take the role and was supported by Mr O, Dr N and Mr B. Mr D suggested getting the involvement of town council for the planned activity.
Dr N briefed the participants on the priority areas in the implementation of the health clinic program. She informed that the patients in the health clinic were not as many as compared to the nearest hospital. In spite of this, she found that there was a 100% increase of patients with the cough, flu and wheezing during the haze period. It indicated the importance of monitoring the air quality as a preventive measure in health management. Besides the vector program explained earlier, the fogging activity was not routinely carried out unless a case of dengue was reported. Mr S supported this explanation and added that larvae investigation was routinely carried out.

Mr D was not satisfied with the way of handling the body of AIDS patient by the hospital staff. He informed that the staff did not give any chance for the family to go closer to the body or to have a last glance of his face. All arrangement was done in hospital and some were taken straight to the graveyards. Mr E said that recently there were 4 AIDS patients who died in hospitals. The families of the deceased were very sad that they were not given any chance to look at the face before they were taken to the burial places. The driver brought the body home and then drove straight to the graveyards. Dr Mazrura and Dr N were not aware of this issue. In term of medical procedures, the handling of AIDS patients must follow strict guidelines and was usually done in the hospital. This was to avoid contact with any biological fluids from the body that contained the HIV virus. After covering the whole body, and ensuring there was no biological fluid or secretions from the body, there is no restriction to have a last glance especially as no physical contact was made.

Dr Mazrura hoped that Dr N could bring this issue to the attention of the district health office and subsequently to the state health department. She strongly believed that the preventive procedure for the handling of the body of the AIDS patient should be strictly followed. However, it should also take account of the sensitivity of the family for example their cultural value as long as it is not against those preventive actions. Although issues like this appear small, the effect on the community is considerable. This is important to ensure that the service provided to them are acceptable and fulfilling their needs.

Mr Q expressed his concern of a chemical storage factory nearby Kg O. There were 30-40 houses located less than 50 feet away from the factory. Each household had five to eight members. The factory stored chemicals outside the factory building. Sometimes, spills and leakage could be seen from the containers. Some residents have seen a few dead stray
animals, very close to those containers. Mr Q complained that sometimes some of the residents had been exposed to the chemical smells. He was worried of the health effects of the chemical to the residents nearby, especially knowing about the death of the animals. Mr B added that the chemical smell was due to the chemical storage. He had also seen some dogs and chicken, which were passing through the area suddenly die. He provided the address of the factory. He added that the area was gazetted as an agricultural area. However, he was surprised and could not understand why the factory was build on agriculture land.

Mr E informed that there was a brick factory in front of this house. He felt that he could not do anything even filing a complaint. This is because the owner was his own friend. He added that Mr S could provide the detail information of this factory. Mr B added, in addressing this problem, man must not think of a friend. To him, most importantly the owner must realize that his factory has caused problems to nearby residents. Therefore, he must be criticized and warned of the problem he has caused and must be made accountable. He must be informed that he needs to take action to improve the work process or the maintenance of the factory. Only this could help in solving the problem.

Dr Mazrura inquired about the social problem highlighted during the last session, that is, illegal video gambling machines. Mr B informed that the problem had been minimized due to new legislation to ban all video game activities in the country. However, the other social problem was mainly the youth problems. He told that there were students bringing drugs or marijuana to schools. However, the school principal did not file any report to the police to protect the name of the school. Mr E added that they knew of the marijuana problem in a secondary school in the area. However, the school is trying to hide it. Other social problems include teenage pregnancy and running away from home. Mr E added that in addition to the problem at home, school discipline also contributed to this problem. This problem worsened because there were not enough male teachers to enforce discipline. He felt that, a female teacher was not appropriate to become a discipline teacher because the responsibility was heavy and it needs teachers who appear scary and strict.

Due to the time approaching 1.00 noon., although the participants still showed their support to continue the discussion, Dr Mazrura needed to end the session. She reminded the participants that through similar discussion, they could know each other better and could together plan to improve certain conditions in the community. She thanked everybody for their support in
sharing their experiences and issues of concern. She hoped that the participants would continuously give their service to their communities and the health clinic for the health services. In the next plan, she felt that they should gave more emphasis on the issue brought forward by Mr O. She would further communicate with Mr O and Mr Q, once Mr Q comes back from Japan after the 4th September 2001. She also hoped that Mr O could organise a discussion with Dr N to plan the activity for the resident of the squatter area in Kg O. The session ended at 1.05 noon.
Appendix 5d

The arrangements for the Cleanliness Campaign in Kg BR.

On the 17th September 2001, a phone call was made to Mr Q, the president of the NGO, to enquire about news on the arrangement for the cleanliness campaign. The NGO was established in the end of 2000. It comprised of 321 members with 21 committee members. He told me that he came back on the 4th September from a two weeks training in Japan funded by the Ministry of Welfare. One week after he returned, he called for a committee meeting of the NGO to discuss the campaign. All committee members inclusive of Mr O, who is also a representative of the residents of Kg O, had agreed to participate in the campaign. He then had a discussion with a Welfare officer. She also supported the planning for the campaign. However, due to some financial constraints, her department was not able to contribute financially because they had recently sponsored two campaigns organized earlier by the NGO.

Mr O and Mr Q have estimated that for the campaign, a minimum budget of RM 500.00 is needed to cater for 100 local participants. He further confirmed that the campaign could be organized. He has also discussed with Dr N in the health clinic on the feasibility of this project. He asked me to find ways to get some funding. I told him that I would try to find a way to search funds. I then informed him that the entire organization would be handled by the NGO. The health clinic and myself would give full support. They have decided the campaign should be neutral from any political influence to get better participation of the public. They also decided not to organize any formal opening ceremony.

A meeting together with Dr N was planned on the 26th September 2001 to discuss on further arrangement of the campaign in the health clinic. Before the meeting I interviewed a driver in my Institute during our trip home from a visit to a Healthy Village project in Taiping. He lived for more than 20 years in nearby area, which was very close to community B. I have asked him if he could identify any person who could donate to the cleanliness campaign. He suggested the name of three political leaders. Two of them were the presidents of the Malaysian Indian Corporation (MIC) in two villages in the neighborhood. Another suggestion was to speak directly with the MIC president in his office in the Ministry of Works. Another opinion was asked from Mr A. He informed that I should push Mr O to get contributions from the Exco of their area. He also reminded me to inform the meeting that from his
experience of the previous cleanliness campaign organized by the health clinic in 1998, the participation of local residents was poor. Most of the work during campaign was done by on the staff. Thus, I need to get assurance from Mr O and Mr Q that they could ensure active involvement from the local residents.

The meeting for the planning of the Cleanliness Campaign in the squatter area.

This meeting was attended by Mr O, Mr Q and Dr N and was chaired by Dr Mazrura. It was conducted in an informal environment. The date of the campaign was confirmed for Sunday the 4th November 2001 from 9.00am to 11.00 am. The agenda for the meeting was;

1. Planning
2. Budget
3. Letters of correspondence and support

1. The campaign would be conducted in Kg O with the aim being to improve the living conditions of the residents due to the sanitation problems and the perceived health effects. Kg O was a squatter’s area and was opened up 28 years ago. Currently there were 200 families living there. Majority of these residents was Indian families. It was estimated to get 50% response rate, thus a participation of 100 residents was projected. For the work activities, the residents would need to bring their own tools- hoe, scoop, chopper and knife. Dr N was willing to provide herbicide and to lend seven grass-cutters from the clinic. Mr O informed that 15 Orang Asli and some members from the Malaysia Chinese Association had promised to join the campaign. Mr O has agreed to take the role of inviting the residents to participate in the campaign. Mr Q suggested making a banner to publicize the campaign if they could get some financial contribution.

2. Dr N would organize a meeting for the advisory panel of the health clinic on the 9th October 2001. She informed that this advisory panel was established in 1999. The panel members were the village headmen and the chairperson was the chief of village headman. She was the secretary for the advisory panel. This advisory panel meeting is organized three monthly. Her intention was to inform the panel members of the campaign and to seek any support from them.
3. The budget to organize this campaign with the view of 100 participants was estimated to be from RM 700.00 to RM 900.00. It consisted of a lunch packed menu of RM 5.50 per person and RM 150.00 for the tea menu (biscuits and drinks) to be given at 10.30am. Mr RS would like to contribute for 10 containers of 500ml mineral bottles. Each container had 24 mineral bottles. The potential donors as identified by Mr O, Mr Q and Dr N were:

i. A local politician.

ii. A local businessman who was one of the directors of a big company

iii. An Exco of this area. He was listed in the reserve list seeing his recent contribution to the senior citizen project in the health department. His personal contribution was needed to get cash deposit for the lunch treat.

4. Mr Q would write letters to the town council, Alam Flora Sdn Bhd and the Fire Department to invite them to participate in the campaign. Their participation are needed to provide the lorry, water hose and to takeaway the rubbish to the landfill. Mr Q would also write letters to the potential donors. A supporting letter from Dr N would be attached to each letter to confirm that the campaign was a joint effort of the NGO and the health clinic. The letters would be prepared in a week and were plan to be sent personally by Mr Q as soon as they were ready.
Appendix 5e

The first Community Consultation with Orang Asli in community B

Date: 31st July 2001  Time: 3.00 pm to 4.15 pm.
Place: Orang Asli Community Hall

List of participants:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mr BA</td>
<td>Orang Asli village headman</td>
</tr>
<tr>
<td>2. Mr BB</td>
<td>Orang Asli community member</td>
</tr>
<tr>
<td>1. Mr BC</td>
<td>Orang Asli community member</td>
</tr>
<tr>
<td>2. Mr BD</td>
<td>Orang Asli community member</td>
</tr>
<tr>
<td>3. Mr BE</td>
<td>Orang Asli community member</td>
</tr>
<tr>
<td>4. Mr BF</td>
<td>Orang Asli community member</td>
</tr>
<tr>
<td>5. Ms BG</td>
<td>Staff nurse in the health clinic</td>
</tr>
</tbody>
</table>

The session started with Dr Mazrura by introducing herself and her assistants. Dr Mazrura explained to the group that the aim of the meeting was to obtain some insights on the way of living of the Orang Asli community and the issues of concern to this community.

The headman, Tok Batin BA started off by explaining that his ancestors were in this area since 1837. They were the Temuan and the Mahmeri group, who were the largest ethnic group in the West Coast of Malaysia. His great grandfather, who was a headman, passed away in 1974. His grave is situated in the bush area in Taman Melawati, which was about 50 km from this village. He said that the mode of transportation in the old time was using cows, boat and on bare foot. He also explained that a generous old king, Sultan Ungku Awang, donated the current Orang Asli village.

Since the 1940’s, there have been three Orang Asli villages in this area. Here it was called Kg AA, further up there, Kg AB and in the middle, Kg AC. Each village had 12-13 houses. Since 1978, the three villages were joined together with a total of 67 families occupying 58 houses. There was an average of 8 to 13 members of the family per household.

Tok Batin BA told that 80% of the Orang Asli worked in the quarry and the furniture factory. The other 20% were self-employed- catching frogs, collecting ‘damar’ wood and wild
fruit such as 'petai'. They earned about RM 7 to RM8 per day or RM 200-RM 300 per month. He felt that since 1970's they have achieved better standards of living. They were very satisfied with the health services provided by the government. The vector services came twice a week, on Wednesday and Thursday and the family health services once a month. The water supply for the village was from the Gravity Feed System (GFS).

Mr BD was concerned about the quality of the GFS water. He wanted to know whether the water is clean or safe. The GFS was build two years ago by the quarry companies. The total cost to build the GFS was RM 12,000.00. The old GFS, which was used for 10 years by this community, was demolished due to the quarry activities in the area. He requested the health department to carry out an analysis of the drinking water. He had heard rumors that the water was acidic, and could gave negative effect to their health. Dr Mazrura told them that her colleague has done a project on the analysis of the GFS water last year. Her results have shown that there was minimal microbiological contamination of the GFS water and the chemical parameters were found to be safe. Dr Mazrura promised to provide them with a written report from this study and would be delivered it to them through Mr A who would provide them the explanation of the result.

Tok Batin BA said that they no longer used the river for their daily activities. The river is now polluted because of the quarry activities. Mr BD told that upstream of the river, there was a commercial fishpond. He noticed that whenever, the fishpond released its water into the river, he could see some worms in the river, especially the small red worms. Some children loved to swim and play in the river. Due to these activities they had skin infections and worm infestations.

Tok Batin BA explained about the problem in his community when they need to be hospitalized, such as during childbirth. The Orang Asli community preferred to be admitted in the Orang Asli Hospital. The current situation was that most of the cases were referred to the nearest hospital. Their reluctance was due to the hospital bills. The Orang Asli Hospital is free of charge. They have to undergo several procedures to get an exemption from the hospital bills. Mr BD usually helped them with the arrangement because he understood the system better. He explained that Orang Asli need to take a certified letter from the Orang Asli Department to obtain exemption from hospital bills. However, in the case of an emergency, where the certification letter was not available, they needed to pay the hospital deposit, which
was seldom affordable. Due to this problem, some Orang Asli refused to go to the hospital. Dr Mazrura hoped staff nurse Ms K would bring the issue to the attention of Dr N and subsequently to the health officer at the state level. This could improve the compliance of the Orang Asli with the health services.

Dr Mazrura inquired on the social problem. Tok Batin BA admitted that he knew the social problem of the other communities especially among the youths such as marijuana abuse and out of wedlock pregnancies. However, he said that none of the Orang Asli was involved with these problems. He knew that there were outsiders who came into their villages to consume marijuana. He was confident that their school children were free from these negative activities. In term of formal education, he said that most of them have completed standard six. There were two people who have completed form five.

Mr BD added that there were six students after their standard six, who were in the Tahfiz Islamiah, the Islamic religious school in Klang. There were two other students in the Entrepreneur Institute in Taman Melawati. The Islamic Council had provided the financial support.

Dr Mazrura inquired of the problems the Orang Asli were facing. Mr BD informed that the quarry activities have given many problems. The problems were not so bad during the rainy seasons. However, during the warm season, there was a lot of dust from the quarry that was only 1 km from their villages. Some trees were also dying. The quarry started their activities five years ago. Mr BC added that, due to the rock blasting, his house wall had cracked. He could not tolerate the noise from the blasting activities. They knew that the activities must be limited up to 5.00 pm but the blasting was carried out up to 7.00pm. Tok Batin BA informed that the windows of their houses, inside their houses and even their television screen were covered with dust. Mr BD informed that due to the dust, his family had asthmatic attacks. The asthmatic attacks worsened such as having more attacks during the warm season.

Tok Batin BA informed that their main problem was the hospital referral. They would be very pleased if the health clinic could help them to get free hospitalizations. The second problem was the river siltation from the quarry activities. Due to this siltation, the river becomes very shallow. Their villages became floods prone during the rainy season. Since 1999, there had been four times flooding episodes. Every time, the floods reached one foot in height with mud
and lasted about 45 minutes. During each flash flood episode, 16 families were affected. Mr J told that two years ago they had discussion with several government agencies to address this problem. These agencies were Department of the Orang Asli (JHEOA), the Department of Environment, the District Office and the Irrigation Department. However, there was no improvement. Tok Batin BA was told that every time the silt was dredged from the river, the river water became dirty. He felt unhappy because this could give problems to the Indian families who lived downstream and who were dependent on the river. However, if the dredging was not carried out, his community will be facing problem. He said in a sad tone in Bahasa Malaysia, “Hendak ditelan, mati emak, hendak diluah mati bapak” which meant “If swallows, the mother dies, if spills out, the father dies”.

Dr Mazrura thanked every member of the group for allocating their time for the discussion and sharing their experiences together. She promised to inform Dr N and health officer in charge of their concerns, and hoped that it would initiate some improvements in the coming future. The session ended at 4.15pm
Appendix 6: Community C

Appendix 6a. The first community consultation with community C

Date: 15th August 2000  
Place: Meeting room, the district health office

Time: 11.00am to 2.20pm

Attendances:
1. Dr A (An health officer of the district health office)
2. Mr B (A committee member of Kg B)
3. Mr C (A village headman of Kg C)
4. Mr D (A committee member Kg C)
5. Mr E (A committee member Kg E)
6. Mr F (A village headman of Kg E)
7. Mr G (A chief health inspector of the district health office)
8. Mr H (A health inspector of the district health office)
9. Dr I (A Medical and health officer of the district health office)

The discussion was initiated by the welcome address by the health officer of the district health office, Dr A. He briefly explained about the discussions to be held. The aim of this discussion was to identify the living condition in this district and to plan together the environmental protection for the area. The participants were also informed that this discussion would contribute to the further post-graduate education of Dr Mazrura. He told them of his full support for this discussion and promised to provide whatever assistance needed to ensure the success of any planned activity.

Dr Mazrura thanked Dr A and Mr G who made all the necessary arrangements for this discussion. She also thanked the participants, representatives of the village community who could spend their time to attend this discussion. She explained that the aim of this discussion was to discuss together the environmental conditions in this area and to share experiences in managing the environment. She further explained that she was trying to gain insights on four placed-based communities and looking at their environmental condition in these areas; urban, sub-urban and rural settings. This district has been chosen to represent one of the rural settings. She added that this discussion is one of her effort to protect the environment in order to achieve sustainable development. She also informed the participants that one of the efforts initiated in Malaysia was based on Local Agenda 21 that was a local action plan to face the 21st century, which was initiated by the local authority.
She informed that environmental protection is very important to ensure health and healthy living for the current and the future generation. Efforts on this were carried out since long time ago. The success of environmental protection could be seen from the decreasing trend of infectious diseases. For example, the incidence of cholera, typhoid and other diseases in this country due to environmental sanitation program conducted by the Ministry of Health after independence (since early 1960’s). These infectious diseases were successfully reduced and were no longer major threats in this country. They existed only in large numbers during an outbreak. To ensure continuous better health status, environmental protection should be stressed. Before further discussion, she invited the participants to take a break 20 minutes for tea with the provided cookies and fried noodles.

After tea, Dr Mazrura invited the participants to move to the front corner of the meeting room because she found that the meeting table was too big to accommodate 10 to 12 people. Over there, few chairs had been arranged to form a circle to enable the discussion to be conducted closely. She explained that to identify issues on sustainable development, it should be tackled from three aspects; community development, economic growth and environmental protection. She then invited the participants to talk about their daily living conditions of the community in their village and to share together issues of concern in this community.

Discussion started by Mr B who told the participants that his village condition was good and satisfactory. More than 80% of its population had piped water supply and electricity. The health department had repaired lavatories and also provided containers for waste disposals. In terms of social development, the community easily extended their helping hand for example in ‘gotong-royong’ or in celebrating festivals. In spite of this, they were facing problem of the young people moving to urban areas. Mr C added that there were lots of houses in his village, however, their number of population was small. The majorities of them were older people and women. Those left behind were unable to carry out agricultural activities for example rubber tapping. The amenities in this village were excellent due to the presence of clinics, a hospital and a petrol station.

The third participant, Mr. D, informed that the basic facilities such as the water supply, electricity and road accessibility were satisfactory. The older people in the village carried out small farming activities for example vegetables planting on the paddy field to increase their economy resources after tapping rubber in the morning. This vegetable plantation project was
a second attempt to solve the problem of unused paddy fields. The first attempt failed due to marketing problem, which was due to the intermediate person who bought the vegetables at low price. Due to this, the younger people had no interest in carrying out agricultural work. They preferred to seek employment in the city. Furthermore, this gave rise to the other problem of unavailability of younger generation in the village to replace the older generation. Most of them did not return to their villages after their parents died. He was concerned of the possibility that the village will not be taken care of and there would be underdevelopment of the village due to absence of the next generation. His village had a large school, however it had only a small number of students.

The fourth participant, Mr E, added that there were about 100 houses in his village that were occupied married couples without any children. This year, there were only 18 children registered for pre-school. However, the neighborhood spirit still existed. Although several attempts have been made such as employing outsiders, solution to address the problem of neglected land failed. For example, after the paddy cultivation failed, they tried corn plantation but that also failed. The problem was due to insufficient workforce. They had tried group plantation, however another problem arose because of disagreements between the landowners. These could also attributed by the heritage land, where if there were more than two owners in the certified land grant, without full consent of all the owners, the land could not be developed. The problem of labor was also crucial. Some of them did employed Indonesian workers. Another problem was marketing. They had received assistance from Farmers Association and Agriculture Department but also failed.

The fifth participant, Mr D, told that to create an interest in farming, it must start from a young age. He added that farming activities had been his practice since he was young as he helped his parents. Since then and after failing of getting any suitable job, he carried out agricultural activities. He felt that self-employment gave him more satisfaction because it gave him more free time. He claimed that the younger generations nowadays had been treated luxuriously and were spoilt which lead to their lazy character. He continued by informing that the facilities in his village were 98% satisfactory. He added that Kg C was a traditional village. Therefore the cleanliness of this village was the responsibility of the owner of each household. He also informed that prior to this, Felcra had initiated a project of palm oil plantation on unused paddy fields. Nowadays Felcra employed Indonesian workers to carry
out the work activities. He felt that it would be much better if there were local villagers to replace those workers.

Mr H, a health inspector, gave an overview of his work area. According to him, he worked in the water supply and sanitation unit. It has a lot of projects to improve the living conditions of the people and their health status. The target area for the year 2000 was on clean water supply. He noticed that the people in this area were good in managing their own residential compounds as compared to the people of where he came from in Penang. Their compounds were clean and beautiful with flowers in their garden. They loved to cultivate fishes in their own lakes that could increase their income. The location of this area was strategic because it was situated between Malacca, Pahang and Kuala Lumpur. Therefore he predicted that it has the potential for rapid development.

Mr F informed that the other problem for his village was the dirty water supply. He thought that the source of this water did not undergo any treatment because there was no treatment plant in his village. Sometimes the water was muddy. There was a time when worms came out of his water pipe. He used well water as his drinking water supply whenever he encountered a water shortage. He then informed that to try to solve the problem of insufficient workforce, he recommended the use of modern agriculture technology, for example, using machinery as in Korea. However, if this did not attract anybody and there was no successor, it will fail. He added that the current school system emphasized more on theory and that there was less emphasis on application. Therefore, schoolchildren had less interest in agricultural activities. To develop these interests any effort should start in primary school.

Mr C said that said that every individual must have own vision and certain target in his life. Agriculture does not yield any product in short period of time as compared to working in the factory. He anticipated that in the next 10 years the price of coconut would increase in few folds. In spite of this, the price increments occurred faster than expected. Therefore, since then he has planted coconut trees and was earning the profits now. He added that the youngsters nowadays were more interested in working in the factories to get faster income. However, he felt that this lead to unhealthy physical and social effects. Physically they appeared pale since they started working in the morning thus they left home early in the morning. They finished working in the late evening, whereby by the time they reached home it was already late midnight. This was their daily life cycle. Their social interactions were
poor because they spent most of their times at work in the factories (I defined this phenomenon as ‘loss of community’).

Mr F told that the Agriculture department had sent a young entrepreneur to Japan to learn new technology. When he returned, he tried many efforts to solve the problem of the unused land. His efforts were successful, however the problem of marketing deterred him from continuing his efforts. Therefore the public could not see a fast successful example such as owning a car and so on. In order to try to attract the attention of the youngsters, they need to show some material change. Mr added that the marketing problem in this area is difficult. They have to sell their crops to Chinese middleman at a very low price.

Mr B added that in this area, there was only small number of developers who came from other places. They were not interested in coming over because they felt the journey was very long, as they needed to pass through the winding hilly road, which was quite dangerous. The distance from the nearest big town, Seremban, was only 40 km, and from Kuala Lumpur a bit more than 100 km. He told that due to this commuting problem, the development in this area was very slow and he felt that the condition in here was like before Independence. The upgrading of the hilly road was planned more than 10 years ago but due to some political conflicts it was not carried out.

Mr C hoped that the majority of people, who will move into this area once it is developed, would be the Malay community because they were the first occupants. To realize this hope, the Malay children should have own awareness. He added that in general, this community was facing:

- Problem of out migration of its population to big towns for job opportunities and development
- Commuting problem to the nearest big town, which delay the development in this area.
- Bad habits of letting their livestock free which will destroy other people’s crops or property.

Mr B thought that some effort could be made in the village area to address the problem of out migration to the city. Among these were the efforts to try to attract the attention of the people to continue staying there or to attract outsiders to come over by upgrading the appearance and cleaning up the area. Mr F told that some of these efforts were carried out sometimes. The
health department had allocated some places for the people to burn their refuse. Currently, they were reconstructing the roofs of the bus stations for uniformity, which could make them more attractive.

Mr F proposed to call the head of the villages because they were more influential people to get the collaboration of the community to carry out any programs to preserve the environment. Mr E added that the internal awareness is crucial. Each member of a society should be aware of his own responsibility. He regretted the attitude of the people that whoever is the leader, he is also the sole worker to carry out any activity. This is due to the difficulty of getting team effort. This could probably due to lack of awareness on the mutual responsibility. In spite of this, the teamwork was easily available during any religious celebration.

In response to Dr Mazrura’s suggestion on awareness campaign on environmental protection for example the recycling activities. Mr C agreed on sorting of the rubbish for the purpose of recycling. He added this type of campaign should be conducted at preschool and primary school levels. It should be extended to the older age group children because he was concerned if it was not being practiced regularly. Mr E added that, based on his experience as a teacher, the implementation of school cleanliness was difficult to carry out because there were too many pupils in each school and because of the multi-ethnicity of the pupils. Currently, he found that discipline in schools had dropped due to interference of parents. Due to this interference, the teachers gave the responsibilities of disciplining the students to the discipline teacher, whereas it should be joint responsibility. There were also worried about the negative impact they will face or threats if the disciplinary actions again the students were carried out. Therefore, the discipline teacher had to take extra responsibilities.

Mr F added that the Japanese had a good culture of not disposing doing rubbish indiscriminately. He felt that if the Japanese could practice a good culture, why couldn’t the local community practice the same. Mr E was over concerned on the continuity of a program on environmental cleanliness because he was worried the program could stop half way through just like the other program they had initiated.

Mr G, the chief health inspector, told that in terms of health department services, there were lots of campaigns to be carried out, however they have workforce constraints. For example, an area could consist of 10 villages, which they sometimes could not provide full coverage.
However, their public health worker had a close relationship with the committee members of the villages. He added 95% of these community enjoyed safe water supply and sanitation. For the new residential areas, they did not encounter any problem because the developers readily provided these facilities. The duty of the health department was on surveillance. Their main focus was on the traditional villages. He proposed the activity of agriculture as a co-curriculum activity in school. He agreed with the others on the importance of Information Technology but it should not be over-emphasized because the students could not totally practice what they have learned for their future jobs and living conditions.

The discussion ended with the hope that the participants could identify types of effort and actions at their own place to improve the conditions in their areas and at same time preserving the environment. Dr Mazrura informed them that she would further discuss with Dr A and Mr G the planning of community development in this area towards a sustainable future based on the information gathered from this discussion. She thanked the participants for their cooperation and their patience throughout the discussion. She apologised to them as the discussion took longer time than expected. She invited the participants to their next discussion and she hoped they would be willing to participate then. The discussion was completed at 2.20 p.m.
Appendix 6b. The first community consultation with the small town community in Community C.

Date: 4th October 2000
Time: 11.00 am to 12.30 noon
Venue: Staff Library, the district health office

Attendances:
1. Mrs J
2. Mrs K
3. Mrs L
4. Mrs M
5. Ms N
6. Ms O
7. Ms P
8. Mr Q
9. Mr R
10. Mr S
11. Ms T

The participants came at 10.15 am. They were casual and most of them wore their NGO’s jackets with some badges for their excellent services. The district health officer, Dr A delivered a welcome address. He then invited Dr Mazrura for a short presentation (using transparencies) on the concepts of sustainable development; community development, economic growth and environmental protection. After the presentation, Mr R requested a copy of the materials presented. He informed that he would like to report this meeting on the NGO’s newsletter.

During this consultative session, Mr Q informed the group about the night market, which was initiated by the district council since end of July 2000 and operated daily at the town centre. These activities had raised many problems. First, was the noise problem. The people who lived in town where the night market were just along the town roads were under continuous pressures. Their family life were disturbed by the noise through the night, their children could not get to sleep early. Most of them have to wake up early to go to school or to work. This market was causing smoke because of the food stalls cooking, frying or grilling activities.
There were also no proper toilets, thus some people urinated at the backyards of their shop-houses. Ms T told that the district office supported the night market. The aim of the night market was to provide income opportunities to the locals especially the Malays and to bring some nightlife to the town center. She was not totally against the night market. She was only against the location of the night market. She proposed that the night market be located on any empty space in town with the provision of basic amenities such as water supply and public toilets.

Mrs M supported the noise problem due to the night market. Another problem in her neighborhood was rubbish disposal. Rubbish collection occurred once a week. It piled up along the roadsides. Although they used proper plastic containers, their domestic waste was easily spoiled with worms and stray dogs scratching on the rubbish bags. Some of them were carrying out open burning activities.

Ms P and Ms O supported the problem of rubbish collection. Ms O was facing the problem of water shortage on and off. Mr R who lived in the R Residential Garden also faced the problem of waste pollution and water shortage. The water supply came only once at night. The residents there had to keep water tanks or containers in their homes.

Mrs N was worried about dust along the town road. She complained of drivers not following road signs, where they make illegal turning near to her shop-house to avoid the next set of traffic lights. Ms K informed that open burning was carried out by her neighbouring residents, and was producing black smoke. She was also worried of the danger of coconuts falling from the coconut trees along the roads. These could hit any trespasser especially the schoolchildren. Ms L considered her main problem was the indiscriminate rubbish dumping. She saw some people throw their rubbish at their backyards, into the drain or the rivers behind their houses.

The participants had identified that their main issues of concerned were:
1. Problems of rubbish disposal, which lead to water pollution, drain blockage and dirty environment
2. Noise pollution due to the night markets
3. Air pollution due to open burning activities and road traffic
4. Water shortage in certain areas
They felt that the reason behind these problems was due to lack of awareness. As an action plan, they would like to organize a environmental health campaign together with the health department and my institute in early March 2001. This campaign will consist of posters in the exhibition gallery, free health screening and blood donation. The health screenings are blood pressure and blood glucose measurements, calculation of a Body Mass Index, pap smears for an early detection of cervical cancers, cholesterol screening and consultation on healthy eating. The exhibitions will focus on to increase awareness for environmental protection and the highlight the impacts of environmental pollution to public health. The participants will need to provide photographs on their problems for the posters. IMR would be preparing the posters from the participants’ photos. The district health office would be assisting in the display of the posters. The participants requested a few talks on environmental awareness during this campaign to be organized. They suggested a regular public education on environmental health issues to be given through their local radio station (Radio 3 Seremban).

They proposed a cleanliness campaign to be organized soon after this environmental health campaign. However, they informed that they had difficulties to get the local town council’s involvement to provide the rubbish collecting vehicles. The meeting were closed at 1 p.m.

Dr Mazrura and Dr A discussed the plans for the environmental health and the cleanliness campaigns. Dr A informed that the problem they faced during the previous cleanliness campaign was poor participation of the residents. Only few people turned up and they were usually the same people who were active volunteers. The others were mainly the workers from the health department and the district council. He proposed the campaign to be held at the end of March 2001, two weeks after the awareness campaign. However this campaign could only be organize if the NGO members could ensure good participation of the residents. He told that he could make arrangements with the district officer, whom he thought would be supporting these activities.
Appendix 7: Community D

First community consultation in community D

Date: 29.8.2000                      Time: 3.30pm – 5.30pm
Venue: The chief village hall

Attendances;
1. Dr A (A health officer of the district health office)
2. Mr B (A chief health inspector of the district health office)
3. Mr D (An assistant health inspector of the health clinic)
4. Mr E (A village headman of Kg A)
5. Mr F (A committee member of Kg A)
6. Mrs G (A committee member of Kg A)
7. Mrs H (A committee member of Kg A)
8. Mr I (A committee member of Kg A)
9. Mr J (A committee member of Kg A)
10. Mr K (A committee member of Kg A)
11. Mr L (A committee member of Kg A)
12. Ms M (A community nurse of the health clinic)
13. Mr N (A junior laboratory assistant of the health clinic)
14. Dr O (A medical and health officer of the health clinic)

Dr A gave an opening speech by introducing Dr Mazrura from IMR and her team at 3.10 pm. She explained that this meeting would discuss the study to be conducted there and would be a collaborative effort between the district health office, the local community and the IMR for community development. She then invited Dr Mazrura to provide further details of the discussion.

Dr Mazrura thanked Dr A and all the staff of the district health office for their assistance in organizing this meeting. She also thanked the participants for their presence. She explained that the aim for this meeting is to promote the concepts of sustainable development. She then highlighted the link between environment with human health. She further explained that the concept of sustainable development covered three aspects; community development,
economic growth and environmental protection. She emphasized the role of the local communities towards realization of sustainable development. This could probably be reached through their active participation in the activities towards that direction e.g. Local Agenda 21, and Healthy Cities. She also provided an overview of the state of environment in the country, the sources of environmental pollution and its impact on human health.

Dr Mazrura then provided the agenda for the discussion, which was:
1. To identify issues of concern in this community
2. To list three main issues of concerns in this community
3. To list the visions of this community
4. To list the possible efforts to achieve the visions
5. To formulate an action plan to be carried out together to achieve one immediate vision

After the briefing, Dr Mazrura opened the floor for any questions or comments. She also invited the participants for further discussion. Mr E told that the first problem faced by the community was the wastewater problem. Second problem was the problem of inefficient drainage system. Third problem was rubbish disposal that was managed individually. Most of the people collected their rubbish at a certain area and burnt them, whereas some of them threw them on the dumping site. Fourth problem was the water pollution of the nearby rivers. The water of these rivers was not clear anymore. This was due to logging activities upstream. He also told that the palm oil mills discharged their effluent into the river that was used by the local people, mainly the indigenous populations. The discussion was then discontinued for a tea break.

The discussion resumed at 3.45pm. Mr E informed of three other problems. First problem was the lack of educational activities mainly among the elderly and young children. They would like to organize additional classes but did not have the teachers. The second problem was drug addiction. This problem was increasing in number everyday. Third problem was the dirty environment. However they carried out gotong-royong regularly.

Ms G was concerned about improper live stocks breeding. Some of the people just set the chickens free, which then caused troubles to their neighbors. Mr E explained that not only the chickens but also other animals such as cattle. He considered that the level of education in this community was low mainly among the older generation. In spite of this, some had
attended adult classes. However, the present generation performed better. Some successful figures were their community leader and a parliamentary representative. He added that girls were more excellent than boys. For example, for this year, 9 girls achieved first grade in the medium certificate of examination but only two boys achieved that result.

According to Mr I, boys love playing and socializing more thus their concentration for education were less. Mr E added that those parents who were busy tend to ignore their children. Ms H considered that the parents lacked the knowledge on proper children education. Mr I explained that the drug addiction involved only boys. It started off from loafing. However, there was no problem regarding ecstasy pills. However there was problem of glue sniffing and petrol sniffing. Most of these drug addicts stayed with their parents. He added although some of them were employed, but they still depend on their parents because their incomes were not enough to support themselves. Mr L informed that there were schoolchildren who were glue-sniffers and sniffed petrol if no glue was available.

In term of village cleanliness, this village was divided into a few blocks. Gotong-royong was carried out based on these blocks. These efforts were started a few generations back but the block system started since the announcement of the village as a ‘visionary village’. Each block carried out gotong-royong at least once a month and once in two month for the whole village. The gotong-royong includes bush clearance, beautifying the area with flower planting and others. However for the sewage system, the respective owners maintain their own system.

According to Mr E, to improve the problem of improper livestock breeding, various methods have been taken. They have made many signboards to remind the villagers not to let their livestock loose in the village but these signs were ignored by the owners. They had came up with some regulations and these also failed. He assumed this was due to lack of awareness among the owners. This problem has been in existence for a long time. The owners just continue to follow the traditional way of breeding.

Dr Mazrura then asked the participants on their visions for Kampung A in the next 5 to 10 years. Mr F wished Kampung KM would become a city in the garden. In addition to that, it would have complete infrastructure. They felt that this would happen when the highway which was under construction, is ready. Mr ZS wished the relationships among the villagers in Kampung KM more closer, as in the past. To him, recently, there were some villagers who
were not on friendly terms because of criticisms about their children. He admitted that some parents did not accept any criticism from their neighbors on matters concerning their children. He thus hopes the harmony of the village would be back as before.

Mr J hoped the villagers would upgrade their knowledge on religious education, social science to increased parenting awareness. Ms H told that social problem depended on the way children were brought up. The children must obey their parents' word. The problem was also due to a lack of religious knowledge. This could be seen especially during Friday prayer where many did not go to the mosque especially the youngsters. Mr E supported her opinion.

Mr K hoped that the development program for the poorest people would meet success and stabilize the economy. Mr E hoped the village identity would be maintained but with more facilities such as cyber center, recreational places and a community hall. Mrs G hoped that the village would become a city not in terms of having high rise buildings but in terms of public facilities. She would also hope for a city in a garden.

Mr N hoped to improve the problems, as mentioned earlier, of drug addiction. According to him, Kampung A has less number of drug addicts to compare to its neighbouring village, Kg B. He proposed to overcome this problem and more dialogue and video shows should be conducted for the suspected addicts. They need to see the real effects of drug addiction. He also proposed to invite speakers and the talks to be organized according to blocks or from house to house. In this type of talks, the social problem should be brought forward. He also proposed to invite counselors in the schools. He admitted, that as a developing country, we could not escape from social problems. He added that other department or agencies should be invited for the talks to solve the problem together.

To address other problems, for example air pollution, Dr A advice them to file a complaint to the higher authority. The problem of smoke from the palm oil mill, Kg A was less affected due to the wind direction. However, if anyone passed through the area, especially motorists, it could cause eye irritation. The dust emitted felt like sand. Dr A informed that according to the factory owner, the smokes contained water steam and so far the local villagers had not reported any health problem arised from the factory pollution. The river pollution from the direct waste discharge from the factory would be investigated.
Mr I told that the people should increase their awareness on the environment. He proposed more regular talks on environmental protection. Dr Mazrura gave a simple example to practice. She said that through using water and electricity efficiently or recycling items could reduce the demand for natural resources and could help the effort for environmental protection. Mr E added that there were people who came to buy the old iron rods or materials but not other used items such as cans or empty glass bottles.

The participants were requested to identify two main issues of concern where their subsequent actions should focus on. They agreed that the first issue was on the problem of wastewater. The second issue was lack of knowledge on environment and health. They were then requested to identify one joint project to address any environmental issue that they faced. Mrs G suggested a wastewater management. With full consensus, all participants agreed to focus their efforts on the wastewater management.

Mr D informed that the problem of wastewater in this area was due to the type of soil. The soil is hard clay that makes water absorption very difficult. Mr N suggested making a big cesspool for those houses with the problem. The drains from these houses would then connect to the cesspool. Mr D disagreed with the suggestion due to the problem of land ownership because the cesspool would take quite a large area. He added that only few affected houses were in a group, the rest were scattered. Therefore, another problem would arise to drain the houses as they were very far from the cesspool. Dr A advised to use the old system because of budget limitation. Mr D informed that they have installed the old system but it did not improve the problem due to the minimal absorption.

Mr K informed that the wastewater problem in his area was very bad. There were seven houses affected and they were facing problem of mosquitoes due to the water reservoirs. If it rained, the conditions worsened and the smell was terrible. The men usually try to escape the smells by eating or drinking outsides at the food-stalls. However he was concerned for the women and children who were most of their time at home and have to continually bear those smells. Mr E asked if the health department could provide some materials for the waste water system. He promised the villagers could provide manpower to carry out the project. Mr D informed that some pipes and brick coils were available for this project.
Dr Mazrura informed that it was feasible to carry out the project but it would need good planning. Each group must take certain role. The villagers lead by Mr E was given the task of collecting information from the houses with the problems. The sort of information's needed were the number of households and their average water bill per month to estimate the amount of water usage per households, and to identify the landowner of any unused land nearby their houses, in case the cess-pool was be built. They needed to give the information to Mr D in a month.

From those informations, Mr D could plot the houses on the lay out map available in the clinic. Mr B would need to find out about other wastewater system used in the other areas or states. Dr Mazrura would need to collect similar information from the Engineering Division of the Ministry of Health in the capital city. Dr Mazrura would also find some expert advice on the most efficient waste water system for this type of problem. She also informed that if needed, she was willing to give a talk on environmental health very time she visited this area. Full support from Dr A and the health department staff are also needed.

Due to the fasting month in November followed by Aidilfitri, the installation of the system could only be planned after January 2001. Dr Mazrura hopes that all the informations would be ready before then. She also hopes that there would be regular communication between the villagers, the health clinic and the health department to discuss this project. She would be in contact with Dr O or Mr D and Dr A or Mr B to discuss the planning and progress of this project. She invited anyone to contact her at anytime in case he or she has any suggestion or doubt.

Dr Mazrura thanked all the participants, the health staff for spending their time and for providing all informations. She apologized for any shortcoming during the discussions. The meeting ended at 5.30pm.
Appendix 8: Community E

A Discussion with Community E: the Parents of Childhood Asthmatic Children

Date: 3.4.2001  Time: 9.00am-10.30am

Venue: Asthma clinic, a Government Hospital

Attendances;
1. Mr A
2. Mrs B
3. Mr C
4. Mrs D
5. Mrs E
6. Mrs F
7. Mrs G
8. Mr H
9. Mr I

The session started with the parents describing their children asthma. Mr A informed that his eldest son was a known asthmatic. Today he had come for asthma appointment for one of his twin sons. He noticed his children had noisy breathing and were weak during asthmatic attack. Mrs B informed that her two years old son had asthma since January this year. It started off with cold and fever and was then followed with noisy breathing. Mrs D informed that her husband and mother-in-law were asthmatics. Her daughter, a nine years old girl, had her first asthmatic attack when she was five years old. It also started off with a cold. Mr C informed that his son easily had his asthmatic attack after being exposed to rain. It was believed that the cold weather triggers the attack. However, none of his other family members had asthma. Mrs E informed that only his ten years old son was asthmatic. She and Mrs B also supported that none of their other family members were asthmatic. Ms F informed that her eight years old son, had his first attack when he was five years old. At that time he had chicken pox and was coughing most of the time. Her husband was also an asthmatic. Ms G informed that her mother in law and her eldest son were asthmatic. Mr H added that his son and his wife were all asthmatic.
Mr I informed of his own asthmatic problem. He had his first attack when he was 30 years old. At that time he was in Japan, and the weather was very cold. His twelve years old son, was known asthmatic since he was six years old. His son was unable to tolerate orange cordial. He assumed that the coloring triggers his son’s asthmatic attack, specifically the orange color. However his son was not allergic to other coloring or any food preservative. Mr A told that his children were unable to tolerate cold drinks or ice cream. Mrs B and D told that the cough and flu precipitated their children’s attacks. Mrs F informed that food preservative, cold drinks, raining season and flu triggered her son’s asthmatic attack. Mr H informed that his son was allergic to ice drinks and watermelon. These foods and the cold weather commonly precipitated his attack. Mrs G informed that her son’s attack came during the hot weather, when the air was dusty.

All parents agreed that carpet was an important triggering factor for asthma. None of them had any carpet at home. Mr I has removed the carpet when he knew he was allergic to dusts. Mrs G and Mrs E informed that besides removing carpet, they did not give furred toys to her children. Mr H had removed carpet recently at home as another step in preventing asthma attacks.

The parents were asked to recall their experiences during the country worst haze episode in 1997. Mr I informed of the serious asthmatic attacks that he and his son experienced that time. That time, his eight years old son very active outdoors. He was unable to minimize his son’s outdoor activities. Ms F informed that during 1997 haze, her son’s asthmatic attack was very bad. He had severe cough, vomiting and his attacks were more frequent and more severe than normal. His eyes and nose were also badly congested during that period. Mrs E also informed that her son was frequently admitted to the hospital in 1997. The other parents did not perceive a lot of difficulties during haze. They were able to control their children from playing outdoors during haze because the children were very young at that time. The rest of these asthmatic children were not yet born before 1997.

The parents were asked on how asthma affected their daily lives. Mr I informed of the difficulties he faced due the asthmatic problem, mainly in relation to his job. His work involved a lot of travelling. At a time where his son’s attack came at night, he had to take him to the hospital and stay awake all night to take care of him. He did not have enough sleep or rest when this occurred which was quite regular.
Mr A informed of his concern about his children’s asthma. He had a friend who died because of some delays in seeking asthmatic treatment. He therefore takes extra precautions most of the time. He would always check on the early signs of asthma on his children such as cough especially before going to sleep every night. His problem became worse whenever one of the twins had the attack, the other twin’s attack usually follows a bit later.

Mrs F was always taking care of her children nutrition. She also limited her children outdoor activities. She prevent them from swimming because she afraid that chlorine could harm them. She breastfed her younger daughter, who does not have asthma, as a precautionary measure.

Mrs B was feeling very bad because her son who is still very young had asthma. Mr I added the old folk beliefs that if small children had asthma when they were very young, they’ll overcome this problem at later age. However, he did not have much confidence in that belief.

Mrs O was disappointed because her daughter could not be active in sport. Previously when her daughter asthmatic attacks were frequent, she was frustrated and felt very sad because it happened to her daughter. She sometimes asked why her daughter, not someone else children. However, as her daughter grown up, she felt better because her asthmatic attack was less frequent. She was also grateful because only one of her children was asthmatic. She had taken leave every time her daughter had the attack.

Mr I told that the environment needs improvement. Precaution on the food intake must also be taken care of. They must always take extra precautions to prevent the asthmatic attack. Mr IA supported his opinion for clean environment. Mrs B and Mrs D also supported the need for environmental protection. Mrs F added that the artificial food products should be minimised.

Mr C told that some factors were beyond parent’s control. Although his son was advised not to buy ice cream at school, he did not listen. Mrs D informed that her daughter was able to take care of herself at school. She brought her inhaler to school in case of an emergency attack. So far, she has not had any attack at school. Mr I informed that in order to prevent the asthmatic attack he would carry out some relaxation activities such as slow jogging or cycling to release the pressure on his mind.
Most of the parents were concerned about the side effects of asthma medications. They were given information on the side effects of certain drugs such as steroids and bicarb. They were advised to consult their doctors if they need specific clarification. Mrs D was concerned that the drugs caused her daughter's eczema. I told her that the drugs did not cause eczema but it was part of the allergic problem, which could come together during asthma attack.
Appendix 9: Community F (the scientific community)

Appendix 9a. Notes on the consultation with Community F

Scientist A: Air is described by the scientific community as a basic element to sustain life ie. for life support system. There are various components of air:
- basic component for human biology: air composed of oxygen (as the main component) and carbon dioxide
- visible or physical component: smog, fog, mist, fumes, exhaust smoke
- invisible: feel by breeze- becomes senses, smell
  microbiological contaminants

Scientist B: Indicator for air quality in the government authority is that measured by the Air Pollution Index (API). While in the community, the indicator is as perceived by their own senses: visibility, feel, smell

Scientist C raised two questions:
Question 1: Adequacy of air pollution index
Question 2: Visibility not reliable with air pollution index i.e API does not correlate with what we see thus misperception of visibility: community seeing air as a whole which is more important than parts

Scientist D: Air is being described by the quality of air for healthy facts. Poor air quality means impurities could give rise to respiratory effects.

Scientist E: Bad air quality contributes to stress- "I don’t like to see fumes- dark- it’s really create psychological effect to me". Other effect to sensitive senses is eyes resulting in conjunctivitis. Color also did tell people something eg color of fumes, and stress eg. stress to eyes.

Scientist F: Population who are most likely affected by this are children, elderly and asthma patients, people residing in city as compared to rural areas.
Scientist G: My child was badly affected by the haze. She had frequent cough and watery eyes. Another concern for me was dust from a furniture factory, which was located very near to my house.

Scientist H: My child who was asthmatic was not really affected during the haze. However, I had taken extra precautions that time by minimising her out-door activities and took her to see our doctor when she started to cough and had the influenza.

Scientist I: Sources of air pollution include transport: 1. car fumes (which is confirmed by Department of Environment as the major contributor), 2. industries where petroleum is the one of the main source of pollution, 3. mining activities which could spread heavy metals to the air and from there, get to our water system (this is an example how air contaminates other life support system ie water), 4. any other activities eg tourism can pollute the air by building hotels and agriculture which use lot of pesticides.

Scientist J: In the north, open burning is a traditional way of agriculture (in padi field or sugar cane), which has been identified as an occupational hazard for farmers. These could cause allergy because of the storage mites. The western researchers highlighted these hazards but there was lack of studies on these issues in Malaysia.

Scientist D: Indicator for air quality in the government authority is as measured by Air Pollution Index (API) while in the community, the indicator is as perceived by their own senses: visibility, feel and smell. Air has been in the public’s attention for the past few years. People tend not to worry much about air because its there until haze came where you could see it. It looks as cumulative effects where air is getting bad as compared with their kid days.

Scientist A: The very poor air quality problem experienced by Malaysian was the 1997 haze. Their first concern goes to the family. People were panic, they get alarmed when they cannot see a building as compared to the reported Air Pollution Index. This has raised some conflicting issues where they were asking themselves, on why couldn’t they trust their own senses anymore? They couldn’t believe that the API does not correlate with their sense.
Scientist C: Malaysian awareness was under the influence of the media. However, during the haze, the media lost its credibility. This is due to media that tend to sensationalise issues was also subjected to government censorship, or it was being controlled.

Scientist H: They were some loopholes in the enforcement operation due to insufficient resources to carry out enforcement activities and also possibly the corruption in the system and the ‘don’t care attitude’ of the public.

Scientist E: Hot line for haze period has turned as advice system for example what must the public do during haze. A lot of calls were received from kindergarten, hyperactive children take in more air and this has placed a lot of questions. The numbers of calls were increasing everyday during this period. Lists of calls were recorded: particulars recorded were name of caller, address, what questions were asked and what advice were given.

Scientists A, B, E and F raised a few questions during the haze period;
How to protect your family? For example, with a child getting allergic reaction, are we doing enough?
As an expert, are we doing enough to protect the community?
In term of people awareness, what can we do?
Who is responsible or who is seen to be responsible of taking care of the air?
Who responds to the complaints?
How to make everyone know/ think / aware that it is everyone’s responsibility?

Scientist I: Mainl concerns for the scientific community is to reduce air pollution eg from vehicle sources. Technically scientists want to develop tools to reduce air pollution. The catalytic converter (to convert CO to CO2) is a possible tool to control air pollution. As for the government, regulations are the tools to reduce pollution. The industries need to find alternatives for source of energy, eg solar power.

Scientist B: They could fix clean technology or take care of the maintenance. However to achieve sustainable development, not only should the blame full on industry but on the individual as well.
Scientist F: For personal control during haze episode, in term of community behavior, the scientific community think that: People should stay indoors and close their house windows.

Scientist A: They should use air conditioner or spend more time in shopping malls with air conditions rather than going to the park. They should equip their bedrooms or cars with air conditioned during heat wave and bad air quality conditions.

Scientist B: To reduce the exhaust smoke, individuals should maintain his/ her own cars.

Scientist A: During the 1997 haze period, the public was advised not to carry out any open burning activities. Advice was also given to buy clean air conditioner filters.

Scientist E: To me, besides that to reduce air pollution, if anyone wants to smoke, he must go outside or don’t smoke at all.
Appendix 9b. The Air Quality Survey among Community F.

THE QUESTIONS

1. How did you feel during the bad air quality episode (eg 1997 haze)?

2. Did you or your family experience any impact from that episode? Please provide some explanations for your answers.

3. If you/ your family have any impact from the haze, what action/s have you done that time?

4. What recommendation/s would you give to other people to deal with the air pollution problem eg. to asthma patients or parents of asthma children?

5. What do you think the main causes of air pollution in your area other than the forest fires? (You can name as many as you think).

6. Who do you think are responsible to ensure good air quality? (You can name as many as you think).

7. What would you personally do to ensure good air quality?

THE RESPONSES

i. Ms K

1. O.K no problem.

2. No impact.

3. Nil.

4. Stay indoors, avoid outdoor activities

5. Fumes from motorvehicles, industrial plants, open air burning

6. Think green. Plant more trees. Strict surveillance on emission of fumes/smoke from industrial plants, surveillance and prohibition of open air burning. Make sure forest reserves are not destroyed.

7. As above.

ii. Ms M

1. Terribly unhappy and frustrated; depressed and anxious.

2. Physical effects: eyestrain and soreness, cough and throat irritation. Social effects: anxiety and mild depression.
3. Stayed indoors as much as possible and installed air-conditioning units.

4. Prevent the problem – locally, stop open-burning; check your vehicle exhaust and ring the hotline if source of smoke emission is seen. For asthmatics – move away from the city.

5. Vehicle exhausts (especially from lorries and buses)
   i) Open-burning in residential areas or dump-sites because there is no proper regular garbage collection
   ii) Emissions from factories

6. The local authority, DOE, road transport authority, developers, factory operators, garbage collectors, the government and every individual.

7. Good practices (which I already do) and encourage colleagues to document or research on air quality – to produce the necessary evidence for the policy-makers to act – that is based on evidence. (unfortunately the field is too controlled and restrictive)

iii. *Mr N*

1. Upset, to think how we contribute to the problem. How irresponsible person still conducts open burning and so on.

2. Only minor complaints, such as itchy skin and eyes. No breathing problems so far.

3. We can seek treatment that’s about it. Don’t stay outdoors too long. As an individual, to reduce haze, just don’t do open burning.

4. Individuals, stop open burning, chuck out your old car that is burning oil, or regularly service your motor vehicle to reduce emission smog. Stop smoking! (*He himself is a known smoker*) He he he… Use public transport more often.

5. Industry, see how the factories are producing the smog. Motor vehicles, esp. buses and 2 stroke motorcycle.

6. All the citizens of the nation. Law enforcement’s? Hah, money talks, bullshit walks

7. Me? Don’t do open burning, regularly service my motor vehicle, reduce the usage of motor vehicle, take public transport whenever feasible

iv. *Ms O*

1. Afraid towards health effect to my family. Uneasy to do routine works

2.1. Bad: conjunctivitis, suffocate, sore throat, mild fever, rashes
2.2. Hard to drive the car because you can’t see clearly
2.3. The weather was hot all the time

3.1. Get treatment from the doctor.
3.2. Drink more plain water
3.3. Don’t go outside from the house often

4. As above (Q3)

5.1. The weather was too hot—no rain for quite some time
5.2. Pollution from the factories and vehicles
5.3. Not much enforcement done by the government

6.1. The government (Ministry of Environment) should do more enforcement towards the public, educate them
6.2. Public as a general

7.1. Don’t do open fire burning
7.2. Service the car on time to decrease the amount of ‘polluted air’
7.3. Use petrol car (the green colour?—environment friendly, if I’m not mistaken)

v. Mr P
1. Not very well.

2. My daughter developed mild conjunctivitis as she was exposed to the haze at school during games.


4. To use a respirator where possible and the recommended type.

5. Wood based factories, quarries and vehicular emission.

6.1. Peoples attitude
6.2. Enforcement
6.3. Cleaner production
6.4. Appropriate incentives for industry
6.5. Good government/community relationship
6.6. Appropriate media support
6.7. General Information Website on Malaysian Environment
6.8. Community based programmes – government funded – to be managed by the community.
6.9. National recognition awards for community heads
6.10. Interdepartmental cooperation

7.1. No open burning
7.2. Maintain vehicles to reduce emission
7.3. Talk about the importance of good quality air for good health
7.4. Work with like-minded people to promote good air quality

vi. Mr Q
1. I felt very warm, dry, easily thirsty and had limited sight.
2. Limited sight endangered motorcyclist while riding, dry throat and body felt very warm.

3. Wear mask while outdoor. Drink lots of water and frequently take shower. Limit time spend outdoor and only for necessary thing.

4. Same as above. Prepare medication for emergency situation. Immediately go to the nearest clinic if condition worsen.

5. Open rubbish burning, open burning from agricultural debris, vehicular and industrial emissions.

6. Department of Environment, Health Department, Department of Agriculture, Local Authorities, factory operators and individual car owner.

7. Proper rubbish disposal without carrying out open burning, repair motor engines to reduce smoke emissions. Usually damaged engine emitted more smokes. Advice other people not to contribute to the pollution problems and file a report on the sources of pollution to the authority.

**vii. Mrs R**

1. Worried about the long-term effects to my health as well as my family’s health.

2. Uneasy and unpleasant as vision is not clear and we can’t perform the normal outdoor activities with the family like playing at the playground or strolling in the park.

3. Stayed at home (in-door) as long as we can and reduced all outdoor activities including going for holidays.

4. Take extra precaution measures like reduce outdoor activities in the area where bad air quality is known (in the city).

5. Vehicle emission and open burning.

6. Each and every one of us who call ourselves ‘CARING MALAYSIANS’!

7. No open burning of garbage, re-cycle and re-use instead.

**viii. Ms S**

1. Very inconvenient, difficulty in breathing, and eye & nose itching.

2. No

3. None.

4. To have something for a breathing aid. Of course asthma patients will be the most suffering ones, but a mask will not help them, it is inconvenient to put on mask, that’s from my own experience...
5. Stationary sources eg: factories, power plants, agricultural processes, other sources of pollution, from all kind of mobiles, eg cars, buses, motorcycles, habit of smoking, open burning etc and natural sources. In fact everyone business and consumers contribute to this problem.

6. Community participation, in not to conduct open burning, vehicles should be strictly looked upon to ensure they are not pumping the air with dirty smokes. If they do so, they should be fined with high penalty. Air is something that doesn't have any boundaries, it is difficult to control it. Hence laws and regulations to correct and control regional and global environment require progressively more cooperation at all levels.

7. Good air quality - everyone should be involved from the highest position till the bottom. If at any time the air is contaminated, it is not easy to get the contaminants out from there. The only natural thing that can help to have clean air is heavy rain, which is a natural process.

ix. Ms T.

1. Suffocated.
2. Luckily, no.
3. None
4. Not to venture to public places unnecessarily i.e keep indoors.
5. Vehicle exhaust fumes, factories, dust from the road and from the newly developed housing areas, rubbish......
6. Authority: Government eg JPJ (transport department), ?? Bodies checking the factory, waterways and on rubbish dumping....
7. Ensure the car is at a tip top condition, a good way of throwing rubbish ie covered well and not throwing everywhere......

x. Ms U.

1. I was shocked because of that first terrible experience. Before that, I stayed in the village where the problem did not exist. During that haze period, there were a lot of other work commitments, and as a new field, I felt incompetence although I was not the main player. I was worried on the long-term effect, because we could not see what's the effect inside our bodies although we could do the prediction. I was surprised with my department as being reactive rather than proactive. It was indeed not a first experience to this department as we had face few haze episodes before but not so bad as the 1997 haze. That time I was new on my job.

2. No impact. I was just worried because of various comments and self-experiencing the haze.

3. I had minimized my outdoor activities especially during weekends. However during workdays, I need to go out as usual.
4. To follow the expert advice. Always beware and be alert.

5.1. The vehicular emissions especially those with black smoke. Another source was the industrial emission in the suburbs. We could clearly see the black smokes. Sometimes, I felt that no action was taken by the authority and as if it was just being ignored. I wonder whether my judgement was correct.

5.2. Quarry although not well spread but it has affected the local community. For example in Sg Buloh, there was a big quarry. I'm sure the PM10 must be very high, so the PM2.5 level must be worst as it could be brought away by the wind. The neighborhood would be affected although some people were not aware. I knew people nowadays were busy to earn one's living, thus they were not fully concerned with the environment. In addition, those affected were somebody else and not their own children or relatives. I felt that our people have changed their attitude from a caring society to selfishness. They did not need to think about other people. These types of attitude need to be tackled.

5.3. There were too many construction activities around KL. I don't know when it would stop. The populations were overcrowded, no more lands but the activities kept going. I felt that they would continue destroying the environment rather than for development purpose.

6.1. Every individual should be responsible for the air quality because the air is shared together. I think knowledge and awareness brought up the sense of responsibilities. Without them, people would be inconsiderate.

6.2. I felt the relevant authority should increase their enforcements. They should issue maximum penalties to the lawbreakers who purposely break the laws for their personal needs, for example corruption. Therefore it hindered the implementations. We have more than enough acts and regulations. The most important thing is how to impose on these regulations. For example, how was a big project being approved such as the approval of a quarry near to the residential area?

6.3. I think a greedy man won't think of other people. In fact he was very selfish. Thus we need to have a person with knowledge and awareness as a leader to curb corruption. We need to give full power to the authority to carry out their enforcement activities without any interference. Sometimes I felt that we could only solve the problems when the laws are respected.

7. Personally I would search for information for me in order not to do anything that could contribute to air pollution. With these knowledge I could give advice to my friend if anything goes wrong. I would ensure that my car was well maintained, for example, it was serviced according to the schedule. I also hope people would stop open burning!
NOTE

The following page(s) missing from original.
### Appendix 10.

**Table 18. SWOT on Community B: The first consultation.**

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weakness</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>The local health clinic involvement. Gatekeeper assistant health inspector: Mr HY who has a good reputation with the local community.</td>
<td>Small clinic to serve a rapidly growing population.</td>
<td>Good gatekeeper facilitates relationship with local community. To upgrade clinic, request to be made to the district health office.</td>
<td>Work overload for health staff. Under served local community.</td>
</tr>
<tr>
<td>Rapid development due to strategic location. Near to Kuala Lumpur and PJ and other town centers.</td>
<td>Overcrowding due to rural and urban in-migration. Poor social interaction</td>
<td>Real mixture of Malaysian communities with diverse socio-economic status and ethnicities.</td>
<td>Space problem. Growing numbers of illegal settlements and squatters – unhygienic conditions- exposed to possible health risks</td>
</tr>
<tr>
<td>A commuter station facilitates transportation</td>
<td>Incomplete infra-structure: Improper:</td>
<td>Absorption to the town council progressively</td>
<td>Indiscriminate dumping, open burning and river pollution. Clogged drains causing flash floods and mosquitoes breeding</td>
</tr>
<tr>
<td></td>
<td>• Solid waste disposal system</td>
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<td></td>
<td>• Drainage system</td>
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<tr>
<td></td>
<td>• Sewerage system</td>
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<td>Insufficient:</td>
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<td></td>
<td>• health facilities</td>
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<td></td>
<td>• post office and banks</td>
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<td></td>
<td>• recreational areas</td>
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<td></td>
<td>• graveyards</td>
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<td></td>
<td>• secondary schools</td>
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<tr>
<td></td>
<td>Absence of a fire station</td>
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</tr>
<tr>
<td>Industrialization- important source of income.</td>
<td>No buffer zone</td>
<td>The community has formed it’s own fire fighting squad.</td>
<td>Short-term and long-term health risks. Populations at greater risks: school children and Orang Asli.</td>
</tr>
<tr>
<td></td>
<td>Polluting industries: cement factory-emitting dust</td>
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<td></td>
<td>Palm oil- chemical smoke to nearby residential area of Kg BK and toxic waste discharged to river.</td>
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<tr>
<td></td>
<td>The 5 quarries- dust problem, damage road access and threatening Orang Asli settlement</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weakness</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>The participation of three out of five previous participants in the first</td>
<td>Health laborers were not active in discussion, most probably because of</td>
<td>The survey on community perception (see text) managed to capture the</td>
<td>The difference in the position in work environment hindered a worker in</td>
</tr>
<tr>
<td>consultation. Participation of three new participants from this community</td>
<td>the presence of their officer in charge.</td>
<td>opinion of the community inclusive of the health laborers.</td>
<td>expressing his/her opinion.</td>
</tr>
<tr>
<td>and 4 health laborers and Dr BR the medical officer in charge in the</td>
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<tr>
<td>health clinic. A real interactive process between local community and</td>
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<tr>
<td>the health people.</td>
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<tr>
<td>The participants who were present since the first consultation (Mr AA, Mr</td>
<td>Mr AA has different priorities: 1. Illegal immigrants who opened up</td>
<td>Awareness of the local people on their own priorities.</td>
<td>Sanitation problem and infectious disease</td>
</tr>
<tr>
<td>AT and Mr GBT) provided their own feedback on the progress that had been</td>
<td>illegal settlements over there and the risk of infectious diseases from</td>
<td>To evaluate the effectiveness of current vector control program</td>
<td>More risks from vector borne disease</td>
</tr>
<tr>
<td>made from Dr Mazzura.'s briefing in this session The priority that was</td>
<td>them. 2. The Vector program- active surveillance (especially forging</td>
<td>All food handlers, including restaurant workers, to undergo medical</td>
<td>Food safety and food borne disease</td>
</tr>
<tr>
<td>taken up previously, was addressing the air pollution problem. Dr BR</td>
<td>activities) only after a new case was detected, previously it was carried</td>
<td>examination before the issue of any permits.</td>
<td></td>
</tr>
<tr>
<td>supported the priority for air quality monitoring. She informed that</td>
<td>out routinely. 3. Food control program. The food stalls were springing up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>during the bad air quality episodes, she found that there were</td>
<td>mushrooms. Permit for food premise given to the restaurant owner who</td>
<td></td>
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</tr>
<tr>
<td>obviously in a greater number of cases of asthma and respiratory problems.</td>
<td>passed his medical examinations but did not include the food handlers. MR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr BR informed the participants of their consumer rights and the routine</td>
<td>AT supported these concerns. Dr BR informed that the health program was</td>
<td></td>
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</tr>
<tr>
<td>surveillance for food program.</td>
<td>implemented according to the capacity of available health resources. Forging</td>
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<td></td>
<td>is carried out upon notification of cases, however investigation of mosquito</td>
<td></td>
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<td></td>
<td>larvae is routinely done. She was supported by Mr MN, the health</td>
<td></td>
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<tr>
<td></td>
<td>laborer</td>
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<td></td>
</tr>
<tr>
<td>Threats</td>
<td>Opportunities</td>
<td>Weaknesses</td>
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</tr>
<tr>
<td>The local residents feel the health centre is far from their homes, the service is not good, and they do not trust the centre.</td>
<td>The NGO provides training to health workers, and there is a sense of belonging to the community among the health workers.</td>
<td>The body of AIDS patients is in an unhealthy state.</td>
<td></td>
</tr>
<tr>
<td>The money is needed to cover other costs. The money is needed to cover other costs.</td>
<td>The NGO's president is well respected among the community members.</td>
<td>The body of AIDS patients is in an unhealthy state.</td>
<td></td>
</tr>
<tr>
<td>Various health facts to K£ BR</td>
<td>Support the health centre and the people representatives. Also support the health centre and the people representatives.</td>
<td>K£ BR is a separate area. It was opened.</td>
<td></td>
</tr>
<tr>
<td>Possible misunderstandings of the health centre and the health staff.</td>
<td>The body of AIDS patients is in an unhealthy state.</td>
<td>K£ BR is a separate area. It was opened.</td>
<td></td>
</tr>
</tbody>
</table>

Table 19 (continued)
<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weakness</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr GBT recommended that to ensure safety and prevent any hazard, they need to take firm action. The attitude of restraining any criticism to protect friendship is not a right if the other party is being inconsiderate himself.</td>
<td>Mr AT asked for help from other members to improve his living environment because of dust from a furniture factory, which was, located in front his house. He dare not criticize the owner of the factory because the owner was his friend.</td>
<td>A buffer zone between residential area and industrialized estates does not exist. The reason behind the lack of responsibility was not clear - was it because lack of awareness or don’t care attitude??</td>
<td>The lack of responsibility of the factory owner who jeopardized the environment of surrounding residential area. The selfishness of a friend who cared more of his economic stability.</td>
</tr>
<tr>
<td>The problem of illegal video gambling was almost solved.</td>
<td>Other social problem among school children- drug addiction. Students were found to bring marijuana to school. The school administration was trying to hide this problem from the knowledge of the community to protect the school’s reputation. Lack of a discipline teacher was a possible cause for the discipline problem in school.</td>
<td></td>
<td>The discipline teacher does not have sufficient impact on school discipline. Claim that it was due to unavailability of male teacher. The majority of teachers currently were female.</td>
</tr>
<tr>
<td>Threats</td>
<td>Opportunities</td>
<td>Weaknesses</td>
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<tr>
<td>Complex medical cases If not only employed to care for their own children, nurses, however, are called upon to care for other patients as well. The problem lies in the lack of adequate training and experience of the nurses in handling such cases. The lack of knowledge and experience of the nurses affects their ability to provide proper care for the patients.</td>
<td>Modern medical services are costly. The cost of medical services is rising, making it difficult for people to afford them. The cost of medical services is also a barrier to accessing healthcare.</td>
<td>Low income: RM 200 - 300 per month</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Threats</th>
<th>Opportunities</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Orange All social economic status remains low Social economic status remains low Social economic status remains low Social economic status remains low. The Orange All is characterized by low income, low education, and lack of resources. This situation is further exacerbated by the lack of access to basic healthcare services.</td>
<td>Women and girls are more affected by these challenges Women and girls are more affected by these challenges Women and girls are more affected by these challenges Women and girls are more affected by these challenges</td>
<td>The Orange All is a community with limited resources. The Orange All has limited access to healthcare services.</td>
<td>The Orange All is a community with limited resources. The Orange All is a community with limited resources. The Orange All is a community with limited resources. The Orange All is a community with limited resources.</td>
</tr>
</tbody>
</table>
Table 20 (continued)

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weakness</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>No social problem among Orang Asli. There was no case of drug abuse or any social problem (out of wedlock pregnancy). Majority of them had completed primary school education. There were few cases of higher educational achievement.</td>
<td>Non-Orang Asli youths came and carried out their negative activities nearby this settlement. This area is isolated and quiet.</td>
<td>Possible to get financial support for Orang Asli children to pursue higher education.</td>
<td>Orang Asli youths being accused by the other community for the negative activities. The Orang Asli children were being exposed to these negative activities.</td>
</tr>
<tr>
<td>Water supply- mainly from the Gravity Feed System (GFS). The quarry companies installed the new GFS, which cost RM 12,000.00, two years ago. The health department carries out the routine water surveillance. The Orang Asli children play and swim in the river.</td>
<td>They were worried about the safety of GFS water. There is a commercial fish pond in the upstream of the river. They found that water from the pond was discharged to the river. It regularly contained small worms.</td>
<td>To provide the results of the monitoring by the health department and the researcher to the Orang Asli through Dr BR. There is a need to analyze the river water quality.</td>
<td>Rumors that the GFS water is acidic. The children had skin infections and worm infestation. It was believed that the health problems were due to the river pollution.</td>
</tr>
<tr>
<td>Strengths</td>
<td>Weaknesses</td>
<td>Opportunities</td>
<td>Threats</td>
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</tr>
<tr>
<td>Provide training for local people locally.</td>
<td>Depressed and dejected householders. Few programs have been held. More money is needed.</td>
<td>Population unaffected or population unaffected.</td>
<td>Old people left behind, no young people.</td>
</tr>
<tr>
<td>They look poor and have no social life. Income but long hours and demanding</td>
<td>Food shortage. Pc. &amp; work. They were more</td>
<td>They age faster. Frailty and congestion. Poor health problems due to poor health.</td>
<td>No land could be developed.</td>
</tr>
</tbody>
</table>
| Economic development, no infrastructure. | Population may move into a very large town. | Development and infrastructure. | Without conscious amount land owned, the 
| No land could be developed. | Population may move into a very large town. | Development and infrastructure. | Development and infrastructure. |

**Table 2. SWOT on Community: The Rural Community**
<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weakness</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture promises a long term profit and self employment gives more</td>
<td>People want to see immediate effect of income, e.g. able to buy own car</td>
<td>The policy to promote agriculture should use other more promising strategies.</td>
<td>The strategies to reduce rural poverty only promote other sector of economy.</td>
</tr>
<tr>
<td>freedom and self satisfaction</td>
<td></td>
<td>Which strategies should it be?</td>
<td></td>
</tr>
<tr>
<td>Strategic location of this village which is in between Malacca, Pahang</td>
<td>Road accessibility through the hilly road to the nearest city was still</td>
<td>Potential for rapid development- more employment opportunities</td>
<td></td>
</tr>
<tr>
<td>and Kuala Lumpur. Could attract outside investors, attract</td>
<td>bad. Planning to upgrade it was slowed down due to political constraints.</td>
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<tr>
<td>youngsters back home</td>
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<tr>
<td>Developers provide basic amenities in the development of new residential</td>
<td>The developers did not provide maintenance of new residential areas.</td>
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<tr>
<td>areas</td>
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<tr>
<td>Good infrastructure for education</td>
<td>Weakness of current education system: Overemphasis on theory eg information</td>
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<td>technology and not on practical application for skilled work</td>
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<tr>
<td>To adopt good culture elsewhere</td>
<td>Younger generation were pampered too much- school discipline deteriorated,</td>
<td>To promote joint responsibility in school discipline from parents and teachers.</td>
<td>Interrogation of parents against school discipline- teachers felt insecure, only the discipline teacher takes all discipline responsibilities</td>
</tr>
<tr>
<td></td>
<td>lazy attitude, other social problem: drug addiction, loafers,</td>
<td></td>
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</tr>
<tr>
<td>The indigenous populations in the village were mainly the Malays and a</td>
<td>Lack of those aims in life</td>
<td>The Malay children should upgrade their own awareness and make more efforts</td>
<td>Social problems among youths.</td>
</tr>
<tr>
<td>small number of Orang Asli. Mr M felt that everyone must have own vision</td>
<td></td>
<td>to develop their own village.</td>
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<tr>
<td>and target for the future</td>
<td></td>
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</tr>
<tr>
<td>Agriculture activities- livestock breeding: poultry, cattle and goats</td>
<td>Old way of livestock rearing</td>
<td></td>
<td>Destroying neighbours crops and properties</td>
</tr>
<tr>
<td>Threats</td>
<td>Opportunities</td>
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<tr>
<td>Improve club publicity</td>
<td>Reduce membership composition</td>
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<tr>
<td>Service oriented</td>
<td>Utilize available resources to improve the club</td>
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</tbody>
</table>
Table 23. SWOT on Community D – The rural community

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weakness</th>
<th>Opportunities</th>
<th>Threats</th>
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</thead>
<tbody>
<tr>
<td>Support from district health office: Gatekeeper – the district chief health inspector, Mr RM and assistant health inspector, Mr WR</td>
<td>High dependency on health staff</td>
<td>To get more community involvement</td>
<td>Work overload of health staff.</td>
</tr>
<tr>
<td>Active village committee members- Kg KM was chosen as a visionary village for 3 consequence years since 1998. Gortaloyong according to block system carried out every month and every two months for entire village.</td>
<td>Attitude of some villagers to livestock breeding</td>
<td>Availability of resources to promote social change. Every house was self-maintained in the village.</td>
<td>Livestock animals which were set loose were destroying neighbouring, garden, farms or properties. Also dirty village compounds.</td>
</tr>
<tr>
<td>Dedicated assistant health inspector and villagers, availability of materials for the waste water system - pipes and brick coils available from previous projects. Tour visit arranged to look at the established Kerian’s model which had won a WHO 1998 award in Geneva</td>
<td>Waste water problem due to soil type-harder than clay – water absorption difficult- water stagnation- reservoir</td>
<td>Consensus by participants to focus on waste water system. Very beneficial visit to Kerian. Mr WR was able to adapt the Kerian model by using available materials from the clinic. Program to install 6 houses with the new system carried out on 13th March. Some staff from other health centers in Lipis also joined to learn the new system. Another plan for installation in September. Invited for evaluation after November 2001.</td>
<td>Vector and waterborne-disease. Intolerable smells.</td>
</tr>
<tr>
<td>Some educational achievements in current generations.</td>
<td>Lack of educational activities due to shortage of teachers and speakers.</td>
<td>Identify needs to have more public talks. Organized public talk on sanitation and health related impact on 12th March 2001.</td>
<td>Perceived the lack of awareness among villagers of general knowledge.</td>
</tr>
<tr>
<td>Dr RH would ask staff to investigate and ask public to file complaint to higher authorities.</td>
<td>River pollution due to logging and palm oil mill.</td>
<td></td>
<td>Health risks to indigenous population who rely on the river for their water supply.</td>
</tr>
<tr>
<td>Self sustaining for rubbish disposal (hire contractor to collect rubbish or burn and bury them). Trader buying reused items – iron rods/ materials.</td>
<td>Rubbish disposal – no regular collection by authority.</td>
<td></td>
<td>Indiscriminate dumping of rubbish.</td>
</tr>
<tr>
<td>Threats</td>
<td>Opportunities</td>
<td>Strengths</td>
<td>Weaknesses</td>
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</tr>
<tr>
<td>Social burden for family and society.</td>
<td>When it's ready, the city's infrastructure needs to be reviewed</td>
<td>Highway congestion is ongoing</td>
<td>Development lead to social problems.</td>
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<td>Sufficient infrastructure Neighborhood vision for the city</td>
</tr>
</tbody>
</table>

Table 23 (continued)
<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weakness</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal number of parents bringing their children for appointment- equal responsibility taken by the father or mother concerning the health of their children</td>
<td>One important pre-disposing factor of asthma is hereditary - more than 50% of the participants had this risk. Exposure to smoking gives 50% additional risk to these children. The mean age of getting the first attack was 3 years and the prevalence of asthma was higher among boys.</td>
<td>Mean frequency of asthmatic attacks was 4.3 a year, required 1.5 times hospital admission per year and 4 medical treatment a year.</td>
<td>Difficulties for parents in managing their children who have frequent asthmatic attacks. The attacks were more frequent or more severe when the children were small and during cold weather, infections and bad air quality period. The parents found their lives were miserable having to cope with the need to care for their children during the asthma attack and their responsibility at the workplace. The attack regularly came in the middle of the night and the parents needed to go to work in the morning.</td>
</tr>
<tr>
<td>Parents were aware and concerned about the conditions of their children and were well informed of the risk factors that trigger asthma attacks. They were taking precautions and tried their best to avoid those risks</td>
<td>The parents had difficulty in controlling their small children from those risks eg. playing outdoor even during bad weather or bad air quality- the children loves to play outdoor or interference by the grandparents who pampered them by giving them what they like eg. ice-cream which could trigger their asthma attacks.</td>
<td></td>
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</tr>
<tr>
<td>The older asthmatic children were able to manage their asthma problems on their own.</td>
<td>Some parents still continue exposing the risk factors to their children: carpets, smoking and mosquito repellents.</td>
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<tr>
<td>The parents wish for clean environment and the control program on food safety to ensure the health of their children.</td>
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<tr>
<td>Threats</td>
<td>Opportunities</td>
<td>Weaknesses</td>
<td>Strengths</td>
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<tr>
<td>Public distrust in the ability of media to report the truth, and fear that they are manipulated by the media.</td>
<td>Lack of effective public transportation systems that link the city to other areas.</td>
<td>Inadequate public infrastructure, especially in the areas of health and education.</td>
<td>Community members are involved in the decision-making process.</td>
</tr>
<tr>
<td>Ineffective public participation in community affairs.</td>
<td>Micromanagement by the government.</td>
<td>Sanitation and waste management problems. They assume that all citizens are responsible for their own waste.</td>
<td>The community is rich in natural resources.</td>
</tr>
<tr>
<td>The media is often biased and sensationalist.</td>
<td>Limited economic opportunities in the area.</td>
<td>Lack of access to quality healthcare.</td>
<td>The community is diverse and includes people from different backgrounds.</td>
</tr>
<tr>
<td>The government is not transparent and does not engage with the public.</td>
<td>Insufficient funding for community projects.</td>
<td>Poor infrastructure and lack of basic amenities.</td>
<td>The community is well organized and engaged in community activities.</td>
</tr>
<tr>
<td>Table 2. SWOT on Community: The Scientific Community</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strengths</td>
<td>Weakness</td>
<td>Opportunities</td>
<td>Threats</td>
</tr>
<tr>
<td>-----------</td>
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<td>---------</td>
</tr>
<tr>
<td>They recommended to minimize the air pollution by own prevention, stop open burning, ensure maintenance of own vehicle to reduce emission, work with other people to promote good air quality and ensure own housekeeping.</td>
<td>‘Leave it to the expert’ attitude- the responsibility of the government to ensure air quality but some also acknowledged the public’s responsibility and get medical treatment from the general practitioner for the minor health effects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Path of pollution due to open burning and industrial emissions and open</td>
<td>Air pollution due to motor vehicle emissions and open</td>
<td>Air pollution due to open burning and industrial emissions and open</td>
<td>Air pollution due to motor vehicle emissions and open</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Path of solid waste disposal</td>
<td>No regular solid waste disposal</td>
<td>No regular solid waste disposal</td>
<td>No regular solid waste disposal</td>
</tr>
<tr>
<td>Physical development of moderate pace due to dis-agricultural phenomenon and the waste disposal system in the villages and slums</td>
<td>Physical development of moderate pace due to dis-agricultural phenomenon and the waste disposal system in the villages and slums</td>
<td>Physical development of moderate pace due to dis-agricultural phenomenon and the waste disposal system in the villages and slums</td>
<td>Physical development of moderate pace due to dis-agricultural phenomenon and the waste disposal system in the villages and slums</td>
</tr>
<tr>
<td>Basic amenities are good and the hygiene system is due to dis-agricultural phenomenon</td>
<td>Basic amenities are good and the hygiene system is due to dis-agricultural phenomenon</td>
<td>Basic amenities are good and the hygiene system is due to dis-agricultural phenomenon</td>
<td>Basic amenities are good and the hygiene system is due to dis-agricultural phenomenon</td>
</tr>
<tr>
<td>Population growth due to rapid physical development and industrialization in the villages and slums</td>
<td>Population growth due to rapid physical development and industrialization in the villages and slums</td>
<td>Population growth due to rapid physical development and industrialization in the villages and slums</td>
<td>Population growth due to rapid physical development and industrialization in the villages and slums</td>
</tr>
<tr>
<td>Activities to overcome and conservation management due to high population density and rapid environmental degradation</td>
<td>Activities to overcome and conservation management due to high population density and rapid environmental degradation</td>
<td>Activities to overcome and conservation management due to high population density and rapid environmental degradation</td>
<td>Activities to overcome and conservation management due to high population density and rapid environmental degradation</td>
</tr>
<tr>
<td>Environmental degradation due to high population density and rapid environmental degradation</td>
<td>Environmental degradation due to high population density and rapid environmental degradation</td>
<td>Environmental degradation due to high population density and rapid environmental degradation</td>
<td>Environmental degradation due to high population density and rapid environmental degradation</td>
</tr>
<tr>
<td>Basic amenities and basic infrastructure are incomplete and inefficient</td>
<td>Basic amenities and basic infrastructure are incomplete and inefficient</td>
<td>Basic amenities and basic infrastructure are incomplete and inefficient</td>
<td>Basic amenities and basic infrastructure are incomplete and inefficient</td>
</tr>
<tr>
<td>Activities for recycling</td>
<td>Activities for recycling</td>
<td>Activities for recycling</td>
<td>Activities for recycling</td>
</tr>
<tr>
<td>Environmental development</td>
<td>Environmental development</td>
<td>Environmental development</td>
<td>Environmental development</td>
</tr>
<tr>
<td>Community A</td>
<td>Community B</td>
<td>Community C</td>
<td>Community D</td>
</tr>
</tbody>
</table>

Table 27. The challenges with the emerging themes through cross comparisons between the place-based communities as drawn from the community stories.

Appendix II.
### Table 27 (continued)

<table>
<thead>
<tr>
<th>Category / Emerging themes</th>
<th>Community A</th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td>River water pollution</td>
<td>River water pollution due to industrial effluent and rubbish dumping from illegal settlements.</td>
<td>River water pollution due to siltation from quarries, industrial effluents, indiscriminate rubbish disposal and commercial fish ponds.</td>
<td>River water pollution in the small town due to indiscriminate rubbish disposal.</td>
<td>River water pollution due to logging activities and effluent from the palm oil mill.</td>
</tr>
<tr>
<td>Wastewater system</td>
<td>No discussion on wastewater system.</td>
<td>Wastewater problem in the squatter and illegal settlements.</td>
<td>No problem with wastewater system.</td>
<td>Wastewater problem due very poor absorptive capacity of clay soils.</td>
</tr>
<tr>
<td>Water supplies</td>
<td>No discussions on water supply.</td>
<td>Orang Asli reliance on GFS: Various threats to the GFS. An old squatter area recently received piped water supply.</td>
<td>Problem of water supply due to unavailability of treatment plant in the village and low water pressure in the hilly areas.</td>
<td>No discussions on water supply.</td>
</tr>
<tr>
<td>Buffer zone</td>
<td>No discussion on buffer zone.</td>
<td>Absence of clear buffer zone between industrial and residential areas</td>
<td>No discussion on buffer zone due to minimal industrial activity.</td>
<td>No discussion on buffer zone due to minimal industrial activity.</td>
</tr>
<tr>
<td>Threats to Orang Asli settlement</td>
<td>No discussion on Orang Asli.</td>
<td>Threats to Orang Asli settlement due to quarry activities such as flash floods, dust, noise pollution, vibration, river pollution and GFS.</td>
<td>Problem to Orang Asli settlement not discussed.</td>
<td>Threats to Orang Asli due to the river pollution.</td>
</tr>
<tr>
<td>Road safety</td>
<td>No discussion on road safety.</td>
<td>Road safety due to heavy vehicles from the construction activities.</td>
<td>Road safety due to the hilly winding road.</td>
<td>Anticipate road safety problem once the highway is ready.</td>
</tr>
<tr>
<td>Population density</td>
<td>Problem of over consumptive community who produced huge volume of solid waste.</td>
<td>Problem of overcrowding which led to health risks and other social problems</td>
<td>Problem of small population size in the village due to out-migration</td>
<td>No problem in population size</td>
</tr>
</tbody>
</table>

### 2. Social

- **Capacity to respond:**
  - **Empowerment/unempowered**
    - Community A: No problem on capacity to respond (empowered community)
    - Community B: Minimal capacity to respond to sustainable development due to lack of knowledge (unempowered community)
    - Community C: Minimal capacity to respond to sustainable development in the village due to lack of younger generation (unempowered community)
    - Community D: Minimal capacity to respond to sustainable development due to lack of knowledge (unempowered community)
<table>
<thead>
<tr>
<th>Community A</th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td>No discussion on food</td>
<td>Food issues</td>
<td>No discussion on food</td>
<td>No discussion on food</td>
</tr>
</tbody>
</table>

**School discipline**

- Poor attendance especially among community members.
- Low education level.
- Lack of educational activities.
- Determination of school discipline.

**Health issues**

- Weak health system, inadequate clinics, and little access to clinics. Various health issues due to the poor environment.
- Water, poor waste and social ill-health risks. Various health issues due to the environment.
- Water, poor waste and social ill-health risks. Various health issues due to the environment.

**Social problems**

- Dying addiction, theft, violence, and war.
- Illegal video gambling, illegal drug sales, and theft.

**Responsibilities**

- No problem of social information.
- No problem of social information.
- No problem of social information.

**Disadvantages**

- Poor infrastructure.
- Poor distribution of urban and rural areas.
- Poor infrastructure in rural and urban areas.
- Poor infrastructure.

**Factors**

- Poor infrastructure.
- Poor infrastructure.
- Poor infrastructure.
- Poor infrastructure.

**Environment themes**

- Category 1
<table>
<thead>
<tr>
<th>Category / Emerging themes</th>
<th>Community A</th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Livestock breeding</strong></td>
<td>Livestock breeding not applicable</td>
<td>Illegal cattle breeding irresponsibly</td>
<td>Traditional livestock breeding irresponsibly breeders</td>
<td>Traditional livestock breeding irresponsibly breeders</td>
</tr>
<tr>
<td><strong>Negative culture</strong></td>
<td>Practise of negative culture is minimal</td>
<td>Negative Malaysian culture: inferiority complex and not to hurt ones feeling in any circumstances</td>
<td>Negative Malaysian culture: inferiority complex which led to communication gap such as poor interaction of the community with the higher rank civil servants.</td>
<td>Negative Malaysian culture: unable to be critiqued by neighbors on their children's problem</td>
</tr>
<tr>
<td><strong>Perception on government agencies</strong></td>
<td>No comment on government agencies</td>
<td>Found lack of coordination in the government agencies. However, the Orang Asli were satisfied with the government services</td>
<td>Unsatisfied with the district office for supporting the night market due to;</td>
<td>Satisfied with the government agencies.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unsuitable location</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No basic amenities were provided</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Noise pollution</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rubbish disposal problem</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Smokes from food frying</td>
<td></td>
</tr>
<tr>
<td><strong>Negative activities</strong></td>
<td>No discussion on this issue</td>
<td>Negative activities by Non-Orang Asli youths near the Orang Asli settlement but the latter received accusation</td>
<td>No discussion on this issue</td>
<td>No discussion on this issue</td>
</tr>
<tr>
<td><strong>3. Economic</strong></td>
<td></td>
<td></td>
<td>Less job opportunities in the village, other than agriculture</td>
<td>Less job opportunities in the village, other than agriculture</td>
</tr>
<tr>
<td><strong>Economic activities</strong></td>
<td>Economic issue not discussed</td>
<td>Low economic status of Orang Asli</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td>4. Community Process</td>
<td>Agriculture</td>
<td>Category</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------</td>
<td>-------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Community B</td>
<td></td>
<td>Agriculture not discussed due to industrial and residential estates converted to other land-use mainly.</td>
<td>Agriculture Themes</td>
<td></td>
</tr>
<tr>
<td>Community C</td>
<td></td>
<td>Most agricultural land has been Deteriorated, awaiting action.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 27 (continued)
Table 28. The positive findings with the emerging themes through cross comparisons between the place-based communities as drawn from researcher as participant observer

<table>
<thead>
<tr>
<th>Category / Emerging Themes</th>
<th>Community A</th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Settings</td>
<td>Urban setting. Strategic location: PJ- High value of land</td>
<td>Semi-urban setting. Strategic location: Near to the city centers - Moderate land value: overcrowding</td>
<td>Rural setting. Transit area for few states to the developed area: Low to moderate land value</td>
<td>Remote rural setting. Location: in the middle of Peninsular Malaysia. About 200km to a nearest city center- Low land value</td>
</tr>
<tr>
<td>Living structures</td>
<td>Mostly modern houses and high rise building. The environment is congested</td>
<td>Mixed of traditional and modern houses. No high rise building</td>
<td>Traditional village- self-sustainable. No high rise building</td>
<td>Traditional village- self sustainable No high rise building</td>
</tr>
<tr>
<td>Transportation</td>
<td>Very good- this locality is in the middle of growth and development activities</td>
<td>Good and undergoing upgrading. A commuter station since 1998.</td>
<td>Good except through the hilly road-problem of winding roads and ravines</td>
<td>(weakness) Far from nearest town center. Southeast highway is still under construction.</td>
</tr>
<tr>
<td>2. Social</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resources</td>
<td>High availability of resources: Funding, expertise, Committed CBO, NGO and private organizations</td>
<td>An NGO( the Brigade) and few members of CBO and the health staffs</td>
<td>An NGO and supportive health staffs.</td>
<td>A committed CBO and a health assistant inspector</td>
</tr>
<tr>
<td>Living standard</td>
<td>The communities were satisfied with their standard of living but they continue to search for improvement in their quality of life.</td>
<td>Orang Asli satisfied with their current standard of living although with low economic status. No social problems among their people and their considerate attitude. The other communities were not satisfied with their current standard of living.</td>
<td>Most of the villagers were satisfied with their current standard of living. However the night market was disturbing the residents in town found their lives miserable.</td>
<td>Most of the villagers were satisfied with their current standard of living</td>
</tr>
<tr>
<td>Type of interaction</td>
<td>A bureaucratic model of interaction: The availability of the residents’ newsletter quarterly a year. A web-site for LA 21 partners was available since July 2001.</td>
<td>More face to face interaction: The participants were the advisory panel for Kuang who meet every 3 months and they were also the village committee members and meet every month.</td>
<td>More face to face interaction in the village. Availability of the quarterly Lions newsletter and their strong interaction with the local Chinese newspaper.</td>
<td>More face to face interaction: The villagers organize formal and informal meeting regularly</td>
</tr>
<tr>
<td>Community A</td>
<td>Community B</td>
<td>Community C</td>
<td>Community D</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>More houses</td>
<td>Reduction in economic development</td>
<td>Activities</td>
<td>Community B</td>
<td></td>
</tr>
<tr>
<td>Minimal interactions because the approach is working with the community</td>
<td>Phased approach is working with the community and short distance</td>
<td>Phased approach is working with the community</td>
<td>Phased approach is working with the community</td>
<td></td>
</tr>
<tr>
<td>Other progress was achieved with the new water system being implemented</td>
<td>More involvement of the community in the decision-making process</td>
<td>Minimal interactions because the approach is working with the community</td>
<td>Researcher needs to conduct further research on this</td>
<td></td>
</tr>
<tr>
<td>The PHQ and health campaign was successful</td>
<td>Continued to implement health education activities</td>
<td>The PHQ and health campaign was successful</td>
<td>Other area needs management in the area</td>
<td></td>
</tr>
<tr>
<td>A remote area is fundamentally selected</td>
<td>A remote area is fundamentally selected</td>
<td>A remote area is fundamentally selected</td>
<td>Self-reference of the action plan on the study site</td>
<td></td>
</tr>
<tr>
<td>The community with the greatest need for assistance</td>
<td>The community with the greatest need for assistance</td>
<td>The community with the greatest need for assistance</td>
<td>Study site for the model project</td>
<td></td>
</tr>
<tr>
<td>Selection of the study site for the model project</td>
<td>Selection of the study site for the model project</td>
<td>Selection of the study site for the model project</td>
<td>Process</td>
<td></td>
</tr>
<tr>
<td>Low economic development</td>
<td>Low economic development</td>
<td>Low economic development</td>
<td>Community A</td>
<td></td>
</tr>
<tr>
<td>Rapid economic development with small to medium scale industries</td>
<td>Rapid economic development with small to medium scale industries</td>
<td>Rapid economic development with small to medium scale industries</td>
<td>Community B</td>
<td></td>
</tr>
</tbody>
</table>

Table 28 (continued)
Table 29. The challenges with the emerging themes through cross comparisons between the place-based communities as drawn from the researcher as the participant observer

<table>
<thead>
<tr>
<th>Category / Emerging themes</th>
<th>Community A</th>
<th>Community B</th>
<th>Community C</th>
<th>Community D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental degradation</td>
<td>Rapid environmental degradation due to industrialization with modern health risks.</td>
<td>Rapid environmental degradation with modern health risks, but the traditional health risks still exist.</td>
<td>Mainly traditional environmental problem eg dirty water supplies.</td>
<td>Mainly traditional environmental problem eg the wastewater problem</td>
</tr>
<tr>
<td>Living conditions</td>
<td>Very poor living conditions provoke other social problems. Recently a racial conflict between the Malays and Indians poor in a squatter settlement in this area occurred.</td>
<td>The poor living condition in Kg BR needs serious attention. Mainly the poor sanitation and the fire hazards due to the congested houses exposed various risks to these squatters.</td>
<td>The daily night market activities make the life of the nearby town residents miserable.</td>
<td>The dirty waste water reservoir affect the living standard of those affected families.</td>
</tr>
<tr>
<td>End of pipe solutions</td>
<td>This racial conflict has caught serious attention of the federal government and all efforts have concentrated here to improve their living conditions.</td>
<td>Only recently, the squatters from Kg BR received pipe water supply after 28 year of waiting period.</td>
<td>The problem of night market still exists, but no obvious health problems were reported.</td>
<td>No obvious health problems were reported.</td>
</tr>
<tr>
<td>2. Social</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community relationships</td>
<td>Gessellschaft- Community relationship mainly based on the role they played.</td>
<td>Gemeinschaft. Close community relationship. Most of the community knew each other well.</td>
<td>Gemeinschaft. Close community relationship. Most of the community knew each other well g</td>
<td>Gemeinschaft. Close community relationship. Most of the community knew each other well</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------</td>
<td>-----------------------------------</td>
<td>------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Process</td>
<td>Low to middle ES.</td>
<td>Low ES in shelters.</td>
<td>Low to middle ES.</td>
<td>Low ES in shelters.</td>
</tr>
<tr>
<td>3. Economic</td>
<td>Drugs, addictions, and looters</td>
<td>Drugs, addictions, and looters</td>
<td>Drugs, addictions, and looters</td>
<td>Drugs, addictions, and looters</td>
</tr>
</tbody>
</table>
Table 30. The positive findings and the emerging themes as drawn from the knowledge-based communities stories: Communities E and F.

<table>
<thead>
<tr>
<th>Emerging Themes</th>
<th>Positive Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Local knowledge versus scientific/professional knowledge</strong></td>
<td>The parents were aware and concerned of the conditions of their children and were well informed of the risk factors that trigger the asthmatic attacks.</td>
</tr>
<tr>
<td><strong>Risk perceptions versus causes of risk (air pollution)</strong></td>
<td>The asthmatic attacks were triggered during cold weather, infections, bad air quality, carpet, smoking and the mosquito repellents.</td>
</tr>
<tr>
<td><strong>The precautionary principles</strong></td>
<td>They took precautions and tried best to avoid those risks. Most of them did not used carpet anymore. They watch for the children’s diets, take more precaution when they have infections or cold and some of them never smoke. The older asthmatic children were able to manage their asthma problem on their own.</td>
</tr>
<tr>
<td><strong>Indicators of effect versus indicators of exposure</strong></td>
<td>The parents were very alert on their children asthmatic conditions and watch out for the early signs of the asthmatic attacks.</td>
</tr>
<tr>
<td><strong>Risks communications versus response to risks</strong></td>
<td>The parents were well informed on their children asthmatic conditions and were able to manage the minor problems on their own. The parents have tried to follow the experts advice, for example, a father who is a smoker, seldom smoked inside his house to reduce smoking exposure to their children. However, some of them encountered difficulties especially in controlling their small children to stay indoor during bad weather or during haze because the children loves to play outdoor.</td>
</tr>
<tr>
<td><strong>Consumers versus professionals expectations on responsibilities</strong></td>
<td>They hoped the government would take certain measures to improve the air quality, more control on food quality, and ensure a clean environment. The parents took their own precautions and responsibilities in dealing with their children asthmatic problems.</td>
</tr>
<tr>
<td><strong>Community F</strong></td>
<td>The scientists were concerning on the effects of air quality on the health of the public especially children, elderly, asthma patients and those with pre-existing illness. They assumed the people in the city were at higher risk than those in the country side due to the bad air quality in most of the cities.</td>
</tr>
<tr>
<td><strong>Community F</strong></td>
<td>They identified the main sources of air pollution were from motor vehicles and the industrial emissions, and open burning and the forest fires.</td>
</tr>
<tr>
<td><strong>Community F</strong></td>
<td>They recommended in order minimize the air pollution, the best measure was by own prevention, such as stop open burning, ensure maintenance of own vehicle to reduce emission smog, work with other people to promote good air quality and ensure own housekeeping.</td>
</tr>
<tr>
<td><strong>Community F</strong></td>
<td>Agreed on the monitoring of the air quality through the use of the established air indicator such as the air pollution index (API).</td>
</tr>
<tr>
<td><strong>Community F</strong></td>
<td>They perceived that well-informed and concerned communities are important to become a caring society. Some public education’s were given on air pollution especially during haze episodes. Other recommendations were to have air conditions, stop smoking, wear mask and prevent open burning.</td>
</tr>
<tr>
<td><strong>Community F</strong></td>
<td>The air quality is the responsibility of the industries, the public and every individual. Each individual must maintain his own private vehicle or take public transport, plant more trees, stop smoking and do not carry out open burning.</td>
</tr>
<tr>
<td>Table 3. The challenges and the emerging themes as drawn from the knowledge-based communities stories: Communities F and F'.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Community</strong></td>
<td><strong>Communities F</strong></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Challenges</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Emerging Themes</td>
<td>Communities E</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Impact of risks to the consumers versus the professionals policy</td>
<td>The parents encountered difficulties in managing their children who have frequent asthmatic attacks. They found that their lives were miserable during the asthmatic attack period, to cope with the need to care for their children and their responsibility at workplace. Other difficulties were the interference by the grandparents who pampered the children by giving them what they like eg. ice-cream which could trigger their asthmatic attacks</td>
</tr>
<tr>
<td>Issue on masks</td>
<td>No discussion on masks</td>
</tr>
<tr>
<td>Responsibilities</td>
<td>No discussion on government management</td>
</tr>
<tr>
<td>Preventive measures versus technical solutions</td>
<td>They identified the needs for clean environment, environmental protection and the monitoring of food products</td>
</tr>
<tr>
<td>Lessons learned from the past and issues for the future</td>
<td>Parents had extra precautions during haze but some factors were beyond their controls to prevent the asthmatic attacks.</td>
</tr>
</tbody>
</table>
REFERENCES


Cornerstone of Public Health” at the WHO European Centre for Environment and Health Rome Division- Rome, Italy, 3-4 December 1998.


SEPARATE REALITIES: COMMUNITY-BASED ENVIRONMENTAL MANAGEMENT FOR HEALTH FROM THE 'INSIDE-OUT' AND 'OUTSIDE-IN'

DR MAZRURA SAHANI
(MD, MPH)

A doctoral thesis submitted for the degree of Doctor of Philosophy at the University of Western Sydney, Hawkesbury.

OCTOBER 2002
PLEASE NOTE

The greatest amount of care has been taken while scanning this thesis,

and the best possible result has been obtained.
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CERTIFICATE OF AUTHORSHIP

I certify that this thesis has not been submitted for a degree, nor has it being concurrently submitted as part of requirements for other degree. Except where otherwise acknowledged, all the material in this thesis is my own work.

Signature: Dr Mazrura Sahani
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ABSTRACT

Despite the tremendous achievement in economic development over the past four decades since independence, Malaysia is facing a problem of environmental degradation at a rapid pace. In searching for Malaysian approach to alter this trend, this thesis is written against a background of concern for a balanced development in economy and social wellbeing and simultaneously preserving the environment. The aim of the study is to identify an alternative approach in managing the local environment for health, starting from a value position of regard for local knowledge and abilities, and for scientists and administrators working together with local communities in their natural settings.

Lessons for this study are drawn from examination of policy documents linking environment and health, and evaluation of initiatives in Malaysia based on the inter-sectoral integration of communities, experts and government on actions towards sustainable development. These provide the context for field studies of four communities in place-based settings and two communities in knowledge-based settings. Issues of concern to different communities within Peninsular Malaysia are explored in order to assess the capacity of these communities to respond to environmental issues. These insights provide understanding of how they could be supported to facilitate their actions towards sustainability.

The analyses of the field study data were linked to standardized forms of government and professional decision-making though a comparative SWOT analysis, providing a diagnostic tool of the strengths and challenges of each community's capacity to achieve sustainable development.

Findings from this study offer a range of lessons for those who wish to integrate local and scientific knowledge. The research approach proved capable of documenting the separate realities of the place-based and the knowledge-based communities within a common interpretative framework. The place-based communities held realistic interpretations of their capacity to contribute to local sustainable development, distinct from one another and also distinct from the same events as perceived by the scientific community. The conclusion is drawn that each needs the other for any effective local application of scientific findings or government support.
The findings from the study extend the standard frameworks for environmental health practice to include the establishment of partnerships between environmental health research and the communities it serves. The new framework integrates evidence on the community capacity to act on local environment and health issues as perceived from the ‘inside-out’ and from the ‘outside-in’.

These valuable experiences on working and forming partnerships with the local communities provided mutual learning opportunities and enhanced the processes towards a sustainable future together. I hope Malaysia’s way forward in attaining sustainable development could start from these experiences to envisage viable community structures as a key component of strategies for change.

Finally, this has not been a study of top-down or bottom up but from the ‘inside-out’ with a small study of the ‘outside-in’. It offers another perspective and an extra set of tools or strategies for the professionals’ community to work with local communities in their environmental management for health. The desired outcome would be for the local communities to contribute as a full partner to the dominant scientific studies in designing local management strategies.
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<table>
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<tr>
<td>CSD</td>
<td>Commission on Sustainable Development</td>
</tr>
<tr>
<td>DAP</td>
<td>Democratic Action Party</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Environment</td>
</tr>
<tr>
<td>ENSO</td>
<td>El-Nino / Southern Oscillation</td>
</tr>
<tr>
<td>FMS</td>
<td>Federated Malay States</td>
</tr>
<tr>
<td>ICLEI</td>
<td>International Council for Local Environmental Initiatives</td>
</tr>
<tr>
<td>IMR</td>
<td>Institute for Medical Research</td>
</tr>
<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
</tr>
<tr>
<td>LA 21</td>
<td>Local Agenda 21</td>
</tr>
<tr>
<td>LESTARI</td>
<td>Institute of Environment and Development, National University of Malaysia</td>
</tr>
<tr>
<td>MCA</td>
<td>Malaysian Chinese Association</td>
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<tr>
<td>MHLG</td>
<td>Ministry of Housing and the Local Government</td>
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<tr>
<td>MIC</td>
<td>Malaysian Indian Congress</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOSTE</td>
<td>Ministry of Science, Environment and Technology</td>
</tr>
<tr>
<td>NDP</td>
<td>National Development Policy</td>
</tr>
<tr>
<td>NEP</td>
<td>New Economic Policy</td>
</tr>
<tr>
<td>NOC</td>
<td>National Operations Council</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development.</td>
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<tr>
<td>PAS</td>
<td>Partai Islam se Malaysia</td>
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<tr>
<td>PJ LA21</td>
<td>Petaling Jaya LA21</td>
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<tr>
<td>TUGI</td>
<td>The Urban Governance Initiative for Asia</td>
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<tr>
<td>UMNO</td>
<td>United Malays National Organization</td>
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<tr>
<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
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<tr>
<td>UNEP</td>
<td>United Nations Environment Program</td>
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<tr>
<td>UNFCCC</td>
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<td>WHO</td>
<td>World Health Organization</td>
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