YAYASAN TUN RAZAK

FORUM TUN RAZAK

NEW CHALLENGES FACING RURAL DEVELOPMENT AND POVERTY ERADICATION

Edited by
Nungsari Ahmad Radhi


Dengan Ingatan
Tulus Ikhlas
dari
Lembaga Pemegang Amanah
Yayasan Tun Razak

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FOREWARD

The publication of this collection of papers is an outcome of the Inaugural Tun Razak Forum held on March 29-30, 2005 in conjunction with the official opening of the new Yayasan Tun Razak building in Kuala Lumpur. Indeed, this publication testifies to the success of the Forum which sought to gather individuals from various fields and professions to share their thoughts on the theme of "New Challenges Facing Poverty Eradication and Rural Development".

The theme chosen for the Inaugural Forum is one that is identified with the late Tun Razak but it was also chosen because of its relevance. The issues raised by the authors show that despite the progress that we have made, rural development and poverty eradication are still relevant concerns. Time and development may have changed the character of poverty as well as the challenges for rural development, but they have not made them irrelevant. It is my hope that the Yayasan, through the holding of the forum and this publication will contribute towards future government policies on the area.

The Tun Razak Forum will hopefully become a regular affair for the Yayasan in the future, along with the publication of the proceedings. Thus, the Tun Razak Forum will not only serve as a platform to discuss issues of national interest but will also play the role of documenting these discussions for posterity.

I would like to thank a fellow trustee of the Yayasan, Emeritus Professor Dato' KJ Ratnam, who chaired the Steering Committee for the Forum, and Universiti Sains Malaysia for their cooperation and assistance in organizing the Forum, and all the writers who have contributed their papers.

Tun Abdullah bin Mohd Salleh
Chairman
Board of Trustees
Yayasan Tun Razak

PREFACE

Malaysia's success story is a story of continuity, in small increments or in large doses, but always building on the same foundation. The challenge in Malaysia has always been the courage to move away from the familiar, not for the sake of being different, but in response to changing imperatives. The ability to adopt changes in the basic assumptions, the approach to development, and institutional framework will be crucial in ensuring further success. Otherwise, the very approach that has resulted in success will constrain future growth.

Independent Malaya inherited a colonial economy that was dominated by two primary commodities. Thus, the economic history of these commodities also shaped both pre-and post-Merdeka politics. Economic functions were racially defined and the politics that developed from such a society were also racially defined. There was also a clear geographic identification of the races. The challenge of forging national unity and integration, so crucial to the newly independent country, remains a relevant part of the agenda to this day. An important part of that agenda is poverty eradication, which targets rural areas that were marginalized by the colonial economy.

The first post-Merdeka government chose to preserve the inherited economic structure and adopted a pro-business policy stance. While this *laissez faire* attitude seemed at odds with the need to address the serious imbalances that existed then, it provided the government with an economy that was quite vibrant, one which could be harnessed for the massive development agenda that lay ahead. The government was ever mindful of the need to address the developmental imbalance between urban and rural areas. The economically more productive urban economy that supported the plantation sector provided the revenue base for the government to finance its rural development programs.

The developmental results, some fifty years later, have been commendable. They seem quite remarkable if the fragility of the political situation and the vulnerability of the economy at Merdeka are taken into consideration. Too many things could have gone wrong. The 1969 racial riot was one of the very few manifestations that something had indeed gone wrong. The resulting New Economic Policy (NEP) represented a form of governmental intervention that was conceptualized then and that has remained ingrained in many of today's policies and political thinking despite the success in eradicating poverty, one of its main objectives.

Three major factors contributed towards Malaysia's success in its poverty eradication agenda.

Firstly, despite its skewed ownership structure and high dependency on a couple of commodities, there was a sound economic base for the newly independent country. This

economic foundation was sufficiently strong to be the basis for further economic development. More importantly, it provided the government with a large enough tax base to fill its own coffers.

Unlike many other countries in similar situations, Malaysia did not nationalize the economy at the point of independence. No British or non-national business concerns were affected by Merdeka. Malaysia was thus spared the disruptions so characteristic of the transition stages in many newly independent countries. There was no need to rebuild the economy.

Secondly, the British left behind an administrative structure and a legal tradition that ensured both the protection of property rights and the capability to plan and implement development plans. In many ways, the British had already created a federal administrative structure to support a strong central government. The post-Merdeka governments benefited greatly from this strong central government structure as it endowed them with the mechanisms to plan and execute national development plans that largely ignored state boundaries while also acknowledging state sovereignty.

By the time of Merdeka, Malaya had had almost two hundred years of legislative and legal history. The long legislative tradition, although not based on elected representative government, coupled with a capable administrative and legal structure enabled post Merdeka governments to administer the country, collect taxes and other revenues effectively, and execute their distribution and development policies.

Thirdly, despite being dominated by individuals from the upper classes of society then, post-Merdeka politics was dependent on the support of the rural masses. Although the rural population was largely divorced from the economic mainstream, rural politics had earlier also been an important factor in pre-Merdeka Malaya. UMNO's political base was and still is rural-based. The fact that the Malay rulers were the beneficiaries of UMNO's politics gathered the Malay masses around UMNO. There was an equally vibrant and perhaps a more sympathetic political movement from the point of view of the rural poor, the radical left-leaning Malay nationalists, but that political movement never gained the mass support of the Malays. UMNO, the dominant partner in the ruling Alliance coalition, reciprocated the rural political support by focusing national development programs on rural areas. The race-based power sharing within the coalition ensured that rural constituents were given lavish attention while the commercial interests of non-Malays were also allowed to grow.

Malaysia also benefited from the peculiarities of a plantation economic structure it inherited at Merdeka. The economy, while controlled from urban areas, was a dispersed one, as a largely agrarian, plantation economy ought to be. As a result, there was the absence of the concentration of population in a few urban centers. This also explains why the support base of many national political parties is found in rural areas.

Traditional agriculture such as padi planting was rural based, as was the plantation sector. Large scale rural-urban migration that would have created immense social dislocation and political instability did not take place on the scale witnessed in many newly independent countries. Further, a concerted effort at *in-situ* development in the rural areas became a disincentive for large movements of population.

The NEP, a more activist government involvement in addressing the poverty issue as well as the issue of racial identification of economic functions, did not radically alter the developmental path. It merely intensified the role of government in its focus on rural areas. The increased role of government, however, changed the character of the economy from one which was more *laissez faire* to that which was mixed; mixing elements of the market and a heavy dose of centralized planning.

As a result, various public institutions were created whose tasks expanded beyond the provision of basic social infrastructure and services. The economic roles of the government were manifested through these institutions. The lines between capacity development of the rural poor and their actual participation in the economy were blurred by the direct involvement of these new institutions in the economic sphere.

The NEP also addressed the need to create ownership of the economy by the largely backward bumiputera. This was the broad policy goal of restructuring society which was quantified in terms of equity ownership and patterns of employment. Various admission and employment quotas were imposed to achieve this objective, but these were enforceable only in public institutions. Thus, public institutions increasingly acquired a bumiputera characteristic while also focusing on the bumiputera constituency. Concurrently, the private sector, which was in need of bumiputera participants, consolidated its non-bumiputera characteristics. The bulk of bumiputera presence in the private sector is represented by institutions and enterprises initiated and sustained by the government. Ironically, the policy objective of removing a dualism defined by race and economics began to put in place the dynamics that created another racial schism but one with a clear governmental role.

As intrusive as it seemed, this policy orientation was politically sustainable because the original premise of "distribution through growth" was preserved. Thus, while government was actively involved in the socio-economic restructuring exercise, it also promoted economic growth and liberalism. Despite occasional contentions to the contrary, it is evident that both sides of the divide benefited from the policy. There was economic growth that benefited the urban centers but also contributed towards rural development in the broad sense, and consequently, the drastic reduction in the incidence of poverty.

However, it was the influx of foreign direct investment (FDI), beginning in the 1970s, that provided the thrust that grew the economy in the last three decades of the twentieth century. There again, the government showed its pragmatism through its liberal attitude

towards foreign investments which had, in the main, been attracted by the availability of cheap labor in the country. The investors were in search of cheap employees and they thus provided ample employment opportunities at the lower end of the skill spectrum.

While poor at creating linkages to the existing domestic economy, such a pattern of foreign investment created a large number of employment opportunities in the core manufacturing areas as well as in the supporting services industries. The transportation industry has been a major beneficiary of this FDI-driven investment as well as those that supported the needs of a growing agglomeration of workers within the industrial areas. It was this creation of jobs that contributed towards achieving the objectives of the NEP. People from the rural areas moved to these new industrial estates, most of which were not located in established urban areas, transforming them into new population centers. This dispersal of population into relatively small population centers that are well-connected to established major urban areas had the effect of simultaneously increasing the total urban population in the country without having created major population centers.

This FDI-led industrialization lessened the burden on the rural economy to create growth to match its population growth. Rural unemployment was kept relatively low despite the lack of real growth in the productive capacity of the rural economy, a feature that remains true even today, because of the employment opportunities in the new, urban-classified industrial areas and those in the major cities. The agriculture-based rural economy never really took off as a major economic sector for the country despite having received sustained focus since Merdeka.

As stipulated by any dynamic growth model, the growth path taken by an economy is highly dependent on the starting point and initial conditions of the economy. If FDI is designated as an exogenous factor, then its introduction will affect rural and urban economies differently. Quite clearly, the urban economy has benefited much more than the rural economy. While it has created significant employment for the rural population, which has contributed to the overall increase of income there, this contribution has come from the lower end of the value chain. The higher value-added activities that supported the multinationals have naturally benefited urban areas.

This contrasting level of benefits of FDI accruing to urban and rural areas explains why income distribution has worsened in the last thirty years although over 90 percent of households have managed to move beyond the poverty line. One of the consequences or characteristics of high economic growth is asset inflation. Although there is a discernable pattern of a real property cycle that sees prices adjust downwards after spiraling upwards, asset prices are generally on an increasing trend with positive economic growth. This phenomenon explains the diverging share of wealth between the rural and urban populations.

The ability to acquire assets is not proportional with income. One has to go beyond a certain threshold income level before being able to do so, and beyond that point, the

propensity to acquire assets increases disproportionately. Since many in the rural areas do not cross the threshold level, their asset-acquisition capability is missing and they do not benefit from any asset inflation. Thus, while relative factor endowment explains differences in factor payments – income – between rural and urban populations, it is the income level itself that determines asset ownership. Unequal income distribution will aggravate overall wealth distribution, and this has happened in Malaysia despite the success in poverty eradication.

The purely developmental role of public institutions of the Tun Razak era acquired significant economic, and increasingly, commercial roles as government sought to broaden its role in the growing economy. There were two broad justifications for this expanded role. Firstly, government was to act as a trust on behalf of the bumiputera community which has grown less rural over the years. Secondly, the government saw itself as a pioneer in selected "strategic" industries on behalf of the nation.

Such adventurism could have resulted in political fallouts but the fundamental premise of "sharing a growing cake" was again preserved despite the premise being stretched somewhat. Continuous economic growth became an essential ingredient in the whole scheme. Thus, while the Malay political landscape, for example, became increasingly fractious in its expectations of the government, the multiracial coalition remained intact.

Public institutions established for developmental roles began acquiring new, enlarged roles. Various new institutions were also introduced. Unlike the first phase of development, the second, Mahathirian phase of national policy no longer had development as its primary focus. The concern was more about economic growth. The nation's economic security was rightly judged as being dependent on its competitiveness in the increasingly globalised economy. It was also a way of sustaining the political side of the equation.

Education and health programs for example, the two pillars of rural development, still consume the bulk of the federal government social expenditures, but the two sectors have since the mid-nineties been targeted for growth as economic sectors. It was not a decision that was driven by the country's competitiveness or by the accumulation of expertise in these sectors, for the country faces severe shortages of both medical personnel and academics. The decision was almost purely driven by the need to create new economic activities out of education and health. Thus, developmental instruments were targeted for applications as growth-generating economic activities. The present government should be wary of this emphasis as history has shown that it was the education and health programs that have contributed towards the capacity building of rural population and therefore, towards their upward mobility. It was these initiatives that contributed towards the eradication of poverty in rural areas, not the development of rural economy.

That international competitiveness mattered meant that the economy was sufficiently developed and linked with the global economy. While this is true for the nation as a whole,

it does not quite resonate in the rural areas. The rural economy, taking away the plantation sector, was and still is weakly linked with external markets. Consequently, the greater part of the rural population is also impervious of such markets. Alarmingly, public institutions that were first developed to fulfill a developmental agenda in a less intractable world have been found to be ill-equipped to prepare or contextualize their programs within the challenges the nation faces internationally.

As the focus changed, rural development and the lethargic rural economy continued receiving fiscal support but the utilization of resources shifted towards the new imperatives of industry and trade. Thus, the order of importance of ministries changed. The ministry in charge of Rural Development was clearly overshadowed by other ministries, particularly those of International Trade and Industries, and Finance.

The public institutions created during the first phase of development deteriorated in many ways. The necessary changes that come about from maturation did not occur; monitoring and impact assessment was almost non-existent, succession planning was poor, the quality of leadership was weakened and many aspects of governance were compromised. But, as in any biological life-forms, organizations too are driven by self-preservation and propagation. There are therefore many public institutions that continue existing well beyond their usefulness.

The national economic and political landscape has changed drastically in the last fifty years. Only a small minority of the present population shares the same collective memory that prevailed at the time of Merdeka. Some things have however remained the same. Expectations have changed largely because the country has been successful in elevating the economy to a higher level through a FDI-driven industrialization. While more is expected of the government, such pervasive governmental presence has also imbued a sense of dependency on the government. This lies in contrast to the need for the economy to be driven by domestic entrepreneurial energy especially since the reliance on foreign direct investments must be lessened as these investments relocate themselves to countries at the stage Malaysia was thirty years ago.

A fast-paced economic growth such as that experienced by Malaysia during the last three decades of the last century will inevitably reveal weaknesses. These were made stark by the 1997/98 financial crisis. Such is the purpose of economic cycles. The environment today is less forgiving and punishes the ill-equipped more harshly than before. Thus, while there is the need to reduce patronage, there is increasingly a genuine need for an effective social safety net for those truly in need.

Continued national economic security, the foundation for national unity in this increasingly globalized but uncertain world requires the nation to optimize the use of its total resources. The rural economy must be a productive economy and contribute towards national

competitiveness. The challenge, therefore, is to transform mindsets to accept the economic reality that the rural economy must create surpluses. The issue of linking the rural economy to the mainstream still looms largely unresolved.

Among the challenges that need to be resolved are the linkages between urban and rural economies which have been weak. It is also true that despite the creation of various public research and extension institutions, especially those in agriculture, the diffusion of knowledge and technology to the rural population has been marginal.

Successful economic development has meant that a larger area of the country and a higher proportion of the national population are already excluded from the rural category, but they remain significant. The rural political constituency is still a potent one and will be instrumental in shaping future public policy relevant to its own interests. The challenge is to couch rural development policy as an integral part of the national development policy which will, in turn, depend on Malaysia's ability to compete internationally.

If poverty is measured simply by income, it will remain a perpetual problem since the world changes continuously and people's location in that changing world also changes. Rural populations can find themselves in poverty again or remain simply trapped at the bottom despite all the changes around them. Poverty has also acquired an urban face which, in all likelihood, will be its future face in Malaysia. If poverty is more than just about income, the challenges are even more insurmountable. Thus, the agenda of poverty eradication never ceases to be relevant.

Moving forward, the issue of poverty should be addressed independently and not be linked solely to rural development. It needs to be understood as a phenomenon regardless of whether it occurs in rural or urban areas. It should be devoid of any geographic or racial characterization. There should also be a thorough review of the various public institutions – statutory bodies that were created in the 1970s – and their impact should be assessed in order to determine their relevance. A rationalization exercise should then follow taking into account the challenges of the future.

The collection of essays in this book represents ideas put forward by the speakers who participated in the inaugural Tun Razak Forum on "New Challenges Facing Poverty Eradication and Rural Development" organized by Yayasan Tun Abdul Razak in conjunction with the opening of its new building in Kuala Lumpur. The themes raised in this introductory chapter are broadly reflective of those addressed by the speakers and participants of the forum.

I would like to thank the speakers for their contributions and for making available their texts, which I have let stand on their own. Thanks also to the rapporteurs for their diligent note-taking during the forum. Professor Muhammad Jantan, Chairman of the Working Committee and Puan Hamidah Ismi, both of Universiti Sains Malaysia, deserve special

mention for making the forum and this publication a possibility. Most of all, I would like to express my thanks and gratitude to Emeritus Professor Dato' KJ Ratnam, the Tuanku Chancellor Professor of Science and Technology Policy at USM and a trustee of the Tun Razak Foundation, for his guidance and constant encouragement. Without his leadership, the forum and this publication would not have been possible. Without him, I would not have written for the forum nor helped out in the publication of its proceedings. All of them are, however, absolved of any responsibility for any errors and shortcomings found in this publication. Should there be any, I am solely responsible.

Nungsari Ahmad Radhi
Editor

Chapter 1

FISCAL POLICY EMPHASIS AND STRATEGIES FOR RURAL DEVELOPMENT

Halipah Esa

1 INTRODUCTION

Malaysia's success in development planning and strategies in rural development has often been set as a model for other developing countries. Malaysia's remarkable achievements in economic and social development are due to the ground-breaking policies and strategies envisioned in the Outline Perspective Plans, which are systematically implemented through Malaysia's national five-year plans.

Malaysia's success has been widely accepted and acknowledged by international development agencies and financial institutions. The following statement substantiates the above fact: "Among the countries that have sustained an impressive record of economic growth in recent decades, Malaysia occupies an unusual – and perhaps unique – position. … Firstly, it is the only one of the dynamic economies of East Asia that is substantially multi-ethnic in social composition; secondly, it is the only 'Muslim-majority' state from the developing world to have industrialised; and thirdly, it is one of the few – perhaps the only – capitalist society to have integrated commitments to poverty elimination and redistribution as central moments in its growth strategy" (Henderson, Hulme, Phillips and Noorul, 2002).

More recently, Jeffrey D. Sachs, the Director of the United Nations Millennium Project, believes that the Government of Malaysia has made big achievements in the Millennium Development Goals (MDGs) due to the country's massive targeted public investments in infrastructure (health, education, etc.) and productivity as well as the presence of good governance.[1] This achievement is made possible through, among others, the extensive adoption of fiscal policy in rural development. Fiscal policy[2], through tax measures and expenditure allocation, has been an important instrument in achieving a broad range of Malaysia's macro and socio-economic objectives: poverty eradication and restructuring of society; growth with equity; macroeconomic stability; and sectoral and regional development.

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1 A public talk by Jeffrey D. Sachs on "Poverty Reduction in the Islamic World: Lessons from the Millennium Development Goals" at Securities Commission, Kuala Lumpur on 8 March 2005.

2 The use of taxation and government spending to influence the economy - this may work via changing tax rates or the rules about liability to tax, or via changes in government spending on real goods and services or transfer payments. Fiscal policy can be used both to influence the level of aggregate demand in the economy, and to change the incentives facing firms and individuals so as to encourage or discourage particular forms of activity *(Oxford Dictionary of Economics*, 2002).

The fiscal policy, in the form of measures, has been embedded in the medium-and long-term development plans and then operationalised through the annual budgets of the Government. Malaysia's five-year plans are set within the longer term Outline Perspective Plans (OPPs). Systematic reviews are conducted at the mid-points of the five-year plans. The sequencing of the Plans is shown in Table 1. Broad policies and strategies are formulated in the three long-term plans or with a central thrust in each Plan, namely the New Economic Policy, the New Development Policy and the National Vision Policy. The philosophy propagated in all the development plans is achieving growth with equity.

Table 1: Overview of Malaysia's Development Planning Framework

1960-1970	1971-1990	1991-2000	2001-2010
Pre-NEP	**New Economic Policy (NEP) OPP1**	**New Development Policy (NDP) OPP2**	**National Vision Policy (NVP) OPP3**
First Malaysia Plan (1966-1970)	Second Malaysia Plan (1971-1975) Third Malaysia Plan (1976-1980) Fourth Malaysia Plan (1981-1985) Fifth Malaysia Plan (1986-1990)	Sixth Malaysia Plan (1991-1995) Seventh Malaysia Plan (1996-2000)	Eighth Malaysia Plan (2001-2005)

Source: Economic Planning Unit (2005), *Malaysia: Achieving the Millennium Goals.*

Since the early years of the nation's development, rural development was given strong emphasis. During the early periods of the development plans, several agricultural institutions were set up. The land development schemes led by the Federal Land Development Authority (FELDA), which operated under the Rural Economic Development (RED) book programme, to resettle the landless, also included the establishment of development institutions in the First and Second Malaysia Plans to support the agricultural sector. The Federal Land Consolidation and Rehabilitation Authority (FELCRA) was established to provide the technical management inputs of overall operations of the land resettlement scheme. The expansion and support of the rubber industry was undertaken by the Rubber Industry Smallholders Development Authority (RISDA) while the modernisation of the fishery sector was spearheaded by the Fishery Development Authority of Malaysia.

2 SOCIO-ECONOMIC AND DEMOGRAPHIC TRENDS

The 1950s to the 1970s witnessed the agriculture sector as the major economic activity and contributor to the economy, with a concentration of high proportion of the population in the rural areas and low density in the urban areas. In 1970, for example, agriculture

accounted for about 32.1% of GDP, while 68% of the population lived in rural areas[3]. Due to the volatility of primary commodity prices in the 1980s, the Government deliberately shifted gear in its development policy orientation to diversify the economy. Embarked on an aggressive industrialisation programme, the nation's economy was aggressively transformed from agriculture-based to industrial-based. Modern labour intensive economic activities in manufacturing sprung up, which inadvertently facilitated and became the "pull-factor" in the influx of rural-urban migration. Rural population has since then declined from 49.3% in 1990 to 38% in 2000 (see Table 2). Currently, agriculture contributes about 8% of GDP, while the manufacturing sector contributes more than 30%.

Being predominantly subsistence agriculture, rural areas were constrained from self-propelled growth and development. With a sector that had the highest incidence of poverty in 1970 (68%), inevitably, poverty was largely a rural problem. On the other hand, commercial primary commodity-based activities thrived to form the backbone of the country's export-led growth benefiting the urban areas. In 1970, rural monthly income was estimated at RM200, whereas that of urban dwellers was RM428. However, the disparity between the two areas was more significant as indicated by the poverty incidence of 58.7% for rural areas compared with 24.6% in urban areas. Among the poor in 1970, more than 86% lived in rural areas. Although rural-urban disparity still exists today, the poverty situation in rural areas has improved significantly, declining to 11.4% in 2002 (see Table 3).

Table 2: Rural Population by State

State	Rural Population			
	2000		2005	
	'000	%	'000	%
Selangor	515.2	11.6	548.7	11.6
Penang	269.9	20.5	296.1	20.2
Malacca	210.3	32.7	209.7	29.4
Johore	971.9	36.1	1,039.8	33.5
Perak	856.1	40.5	919.4	40.7
N. Sembilan	390.5	45.0	413.4	43.7
Kedah	1,018.8	61.3	1,111.7	60.2
Kelantan	905.4	66.5	1,003.2	66.6
Pahang	751.5	57.9	896.6	56.5
Perlis	137.0	66.2	145.6	64.9
Sabah	1,351.8	50.9	1,471.8	50.2
Sarawak	1,075.0	52.1	1,167.9	50.5
Terengganu	456.4	50.6	509.8	50.2
Malaysia	**8,909.8**	**38.0**	**9,643.7**	**37.0**

Source: *Sixth Malaysia Plan, Seventh Malaysia Plan and Eighth Malaysia Plan*, Economic Planning Unit.

[3] Data for 1970 refers to Peninsular Malaysia.

Table 3: Incidence of Poverty and Number of Poor Households, 1970-2002

	1970[a]		1999[b]		2002[b]	
	Rural	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
Incidence of Poverty (%)	58.7	24.6	12.4	3.4	11.4	2.0
No. of Poor Households ('000)	705.9	85.9	271.0	89.16	198.3	69.6
Incidence of Hardcore Poverty (%)	n.a.	n.a	2.4	0.5	0.4	2.3
No. of Hardcore Poor Households ('000)	n.a.	n.a.	52.1	52.1	13.9	12.6
Total Households ('000)	1,203.4	402.6	2,187.5	2,612.5	1,737.7	3,482.9
Mean household income (RM/month)	200	428	1,718	3,103	1,729	3,652

Source: *Mid-Term Review of the Eighth Malaysia Plan,* Economic Planning Unit.
Note: [a] for Peninsular Malaysia. [b] for Malaysia.

3 FISCAL POLICY AND STRATEGIES

The agenda of rural development has and continues to remain a priority in Malaysia, with emphasis on narrowing the gap between the rural and urban areas and to bring the rural population into the mainstream of development. Fiscal policy through budgetary allocations and tax incentives has been used extensively to promote the agriculture sector and rural development.

3.1 Budget Allocation for Agriculture and Rural Development, 1970-2005

The priority accorded to rural development is clearly reflected in the allocation of development expenditure by the Government. Prior to 1980, the single largest allocation was for agriculture and rural development (see Table 4). Under the Third Malaysia Plan (1976-1980), expenditure for agriculture and rural development amounted to RM3.8 billion and accounted for 18.2% of total development expenditure. Meanwhile, the largest expenditure in agriculture was mainly for new land development (see Table 5), accounting for almost 50% in the 1970s, when the push for new land development was at its height.

Since the 1990s, however, the allocation for education and infrastructure development has exceeded the allocation for agriculture and rural development. Nevertheless, rural development continues to be important, as reflected by the significant increase of 72% in allocation under the Eighth Malaysia Plan (2001-2005).

Table 4: Development Expenditure, 1971-2005 (RM million)

	1971-1975	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005
Economic services	**5,036**	**13,575**	**27,904**	**22,198**	**26,182**	**45,045**	**66,250**
Agriculture & rural dev.	1,818	3,845	6,627	5,516	6,202	5,519	9,474
Public utilities	295	1,782	4,561	3,253	3,569	7,564	7,370
Trade & Industry	1,302	3,229	6,767	5,653	4,456	12,189	15,179
Transport	1,366	3,556	7,139	6,909	11,780	18,926	32,263
Communication	255	717	2,810	788	29	526	1,272
Others	-	446	-	79	146	321	692
Social services	**1,120**	**3,517**	**12,018**	**9,293**	**14,097**	**32,697**	**69,459**
Education	739	1,650	4,742	5,615	7,661	18,491	40,303
Health	183	278	661	918	2,341	3,731	9,489
Housing	118	1,167	5,256	1,416	1,089	4,541	8,054
Others	80	422	1,359	1,344	3,006	5,934	11,612
Security	**1,009**	**3,331**	**7,264**	**2,984**	**11,890**	**11,586**	**21,033**
Defence	735	2,347	5,770	1,889	9,864	9,538	16,909
Internal security	274	984	1,494	1,095	2,026	2,048	4,124
General Administration	**319**	**705**	**876**	**1,440**	**2,536**	**9,708**	**13,258**
Total	**7,484**	**21,128**	**48,062**	**35,915**	**54,705**	**99,036**	**170,000**

Source: *Second Malaysia Plan to Eighth Malaysia Plan,* Economic Planning Unit.

3.2 Tax Incentives

The Government has also provided several tax incentives to promote the agriculture sector as well as rural development. The incentives include pioneer status or investment tax allowance for reinvestment in promoted resource-based industries and food processing activity, production of halal food, forest plantation, provision of cold chain facilities and services for perishable agricultural produce and poultry rearing, as well as incentives to promote deep-sea fishing and consolidation of smallholdings and idle land and accelerated capital allowance to promote mechanisation of the agriculture sector.

3.3 Strategies

Several strategies have been implemented to accelerate rural development. The strategies include the following:

Table 5: Development Expenditure for Agriculture, 1966-1995 (RM million)

Programmes	1966-1970	1971-1975	1976-1980	1981-1986	1986-1990	1991-1995
Agriculture	**1,023.7**	**1,734.7**	**4,457.2**	**7,650.4**	**7,127.0**	**8,058.8**
New land development	363.6	899.4	2,040.9	2,218.2	2,117.5	1,184.0
Regional development	-	88.8	703.8	821.7	657.1	930.5
Integrated Agricultural Development Projects (IADPs)	-	-	198.2	476.7	1,021.8	1,351.4
Drainage and irrigation	342.6	217.8	554.8	1,424.6	200.3	844.6
Replanting	188.5	177.7	241.7	396.6	581.2	935.8
Rehabilitation	-	-	-	503.9	812.7	732.4
Paddy fertiliser subsidy	31.2	-	101.8	430.2	396.8	402.0
Agriculture credit, processing and marketing	29.6	138.9	269.6	576.8	586.1	507.0
Extension and other services	19.7	39.7	21.0	75.2	28.9	373.5
Fisheries	9.0	31.8	105.8	301.5	264.4	370.0
Livestock	18.5	57.0	127.2	135.5	130.9	191.4
Other agricultural programmes	21.0	83.5	92.4	289.5	329.3	236.2

Source: *First Malaysia Plan to Sixth Malaysia Plan*, Economic Planning Unit.

3.3.1 Poverty eradication

The Government continues to provide substantial allocations to reduce the incidence of rural poverty, especially hardcore poverty. The incidence of rural poverty has been significantly reduced from 58.7% in 1970 to 11.4% in 2002. Programmes undertaken, such as *Program Pembangunan Rakyat Termiskin* (PPRT) and *Skim Pembangunan Kesejahteraan Rakyat* (SPKR), continue to provide housing and training and improve basic amenities for the hardcore poor. SPKR also focused on income-generating projects. The various projects undertaken by SPKR have benefited some 150,000 hardcore poor during 2001-2003.

3.3.2 Land development

The primary objective of the land development and settlement strategy is to provide land to the landless, as well as more gainful employment and better incomes (Fatimah and Mad Nasir, 1997). Land development has been successfully undertaken by federal agencies, notably FELDA and FELCRA. Currently, FELDA has developed 275 land development schemes covering 450,000 hectares and benefiting 103,000 settlers. To date, FELCRA has developed 234,000 hectares of land involving 91,000 settlers/owners. Meanwhile, RISDA has replanted 275,666 hectares of land, benefiting 120,023 rubber smallholders. In addition, the IAPDs initiated since the early 1970s have benefited 514,000 households.

3.3.3 Infrastructure and social amenities

Continuous efforts have been made to expand and upgrade infrastructure and basic amenities in rural areas with the objective of improving the quality of life. Emphasis has

been given to improve the accessibility of rural areas, particularly in Sabah and Sarawak. Rural roads have also been further expanded and upgraded. The length of paved rural roads has increased from 19,000 kilometres in 1990 to about 50,900 kilometres currently. Rural electricity and water coverage has also been improved, reaching 91.5% and 86% respectively in 2003. Health facilities in rural areas have also been expanded and upgraded. Rural health facilities, comprising community clinics, health clinics and mobile units increased to 2,788 in 2002 and improved the coverage for rural population to 1:3,357 (1990: 1:4,173). In addition, the upgrading of hospitals in smaller towns has also benefited rural communities from the outlying areas.

3.3.4 Human resource development

Human resource or human capital development is of paramount importance in Malaysia, as reflected by the rising allocations in development expenditure for education. Since 1986, education has been the single largest recipient of Government allocations. Efforts have been intensified to improve educational opportunities and facilities for students in rural areas. Educational support programmes such as scholarships, textbooks-on-loan and financial assistance amounted to RM728 million during the Eighth Malaysia Plan review period and have benefited 2.5 million students, especially from the rural areas. In addition to building schools and hostels, living quarters for teachers have also been increased in efforts to attract them to serve in rural areas. Human capital development initiatives have also focused on developing a rural community that is resilient, proactive and knowledgeable.

3.3.5 ICT empowerment

ICT empowerment of rural communities is essential to bridge the urban-rural digital divide. Basic ICT infrastructure has been upgraded in order to improve connectivity. The Government has also provided allocations to connect rural schools and communities through use of wireless local loop technology. In addition, the Universal Service Provider (USP) programme, introduced by the Government, requires all licensed service providers to contribute towards the USP Fund, aimed at ensuring equitable distribution and access to ICT between urban-rural areas. The Government also made efforts to provide ICT facilities to rural communitiesthrough *Internet Desa* and *InfoDesa* centres. As at end-August 2003, a total of 16 Internet Desa and 15 *InfoDesa* centres have been established nationwide.

3.3.6 Economic activities

Efforts have been made to increase economic activities in rural areas, especially the development of entrepreneurs and small- and medium-enterprises (SMEs). In particular, emphasis is on the development of a One Village One Product, which will increase rural incomes. Among the initiatives taken include the provision of training support and advisory services for rural entrepreneurs and SMEs, as well as the provision of micro-credit facilities through Amanah Ikhtiar Malaysia, Bank Pertanian Malaysia (BPM) and Bank Simpanan Nasional (BSN). As at end-2004, BPM has disbursed about RM199 million to 17,500 borrowers, while BSN has disbursed close to RM723 million to about 83,000 borrowers.

4 ISSUES AND CHALLENGES

Although great strides have been made in rural development, there still remain areas of concern that need to be addressed. The current issues are discussed below.

4.1 Rural Poverty

It has been widely accepted that the Government has made tremendous achievements in reducing poverty since the 1970s, and Malaysia is often quoted as a success story by international agencies, including the World Bank. The incidence of rural poverty continues to improve (1970: 58.7%; 1999: 12.4%; 2002: 11.4%), as shown in Table 3. This is understandably so, with rural accessibility to basic infrastructure and amenities like roads, transport, water, electricity and communications lower than in urban areas. The effect of the vicious circle stems from distance to other inter-related factors, such as the uneconomic size of land holdings, insufficient capital, low level of skills, poor education attainment, low value-add and inefficient marketing particularly for perishable produce.

4.2 Reliance on Traditional Agriculture

The practice of small-scale farming is still widespread due to factors such as small family smallholdings, an ageing workforce, uneconomic landholdings or land owned by several owners, often resulting in low yields and low productivity in agriculture. Subsequently, it is difficult to undertake land consolidation to reap economies of scale through use of farm mechanisation and also to manage farms as modern commercial entities. In addition, the planning and implementation of agricultural projects on a non-cluster basis has also hindered value-added and rural income enhancement. The level of R&D is also low in agriculture and agro-based industries as owner-farmers are constrained by financial and skill resources. There is, therefore, heavy reliance on public sector R&D in agriculture, while commercialisation of public R&D findings by the private sector has been quite dismal.

4.3 Ageing Rural Population and Labour Shortage

Rural areas are faced with the problem of an ageing population due to the rapid rural-urban migration, especially among youths. The findings of a survey conducted by the Ministry of Agriculture and Agro-based Industry in 2002/2003 indicated that about 39% of farmers in rural areas are aged 55 and above. The ageing population problem is also exacerbated by the shortage of labour, as local workers tend to shun "dirty and difficult" jobs. As such, there is high dependence on foreign labour in the agriculture sector, especially in the plantation sector.

4.4 Disparity in Development

The more significant disparity is in physical infrastructure between rural and urban areas and between regions. For instance, rural areas in Sabah and Sarawak still lag behind Peninsular Malaysia in terms of infrastructure facilities and amenities due to lower level of road networks, as well as between the east coast and west coast of Peninsular Malaysia (see Table 6).

Table 6: Rural Coverage of Electricity and Water, 2003

Region	Electricity	Water
Peninsular	99%	97%
Sabah	79%	63%
Sarawak	85%	65%

Source: *Mid-Term Review of Eighth Malaysia Plan*, Economic Planning Unit.

4.5 Low Academic Achievement

Government assistance to rural students, aside from scholarships, school textbooks and tuition has also included the construction of rural boarding schools to provide a more conducive studying environment. Nevertheless, the achievement of rural students has generally lagged behind the achievement of urban students, particularly in the critical subjects of Mathematics, Science and English. The low academic achievement of rural students can affect their chances of getting better or professional jobs as well as jobs in the modern sector. It can also impact on rural productivity and income, as well as the ability to compete. With the onslaught of globalisation, the situation could further widen the disparity between urban and rural income.

4.6 Digital Divide

The advent of the information technology (IT) era has resulted in yet another divide between rural and urban areas (see Table 7). The low development of IT infrastructure is attributed to the high cost of providing IT infrastructure in rural areas, lack of teachers as well as IT hardware and software. The wide disparity between urban and rural IT usage can affect the economic opportunities of rural communities, in view of knowledge being an increasingly important factor in competitiveness.

Table 7: Urban-Rural ICT Ownership and Penetration

Ownership/Penetration	Urban	Rural
Computer Ownership	88%	12%
Internet Penetration	93%	7%
Fixed Tel Line Penetration	93%	7%

Source: *Mid-Term Review of Eighth Malaysia Plan*, Economic Planning Unit.

4.7 Income Disparity Between Urban and Rural Households

The Government has always placed great emphasis on poverty eradication, particularly rural poverty. Since 1970, allocation for rural poverty eradication programmes ranged from subsidies on fertilisers to farmers to financial assistance to fishermen in terms of grants for fishing boats. Undoubtedly, this has helped increase rural incomes by more than eight-fold from RM200 in 1970 to RM1,729 per annum in 2002. Despite these efforts, the disparity between urban-rural household incomes still persists and remains a constant challenge for the Government (see Table 8).

Table 8: Rural-Urban Household Income Disparity

Year	Income		Ratio
	Rural	Urban	
1970	RM200	RM428	1:2.14
1990	RM957	RM1,606	1:1.67
1999	RM1,718	RM3,103	1:1.81
2002	RM1,729	RM3,652	1:2.11

Source: *Various Malaysia Plans*

4.8 Impact of Globalisation

The rural-urban IT divide is further intensified as globalisation heightens competition and liberalisation, with implications and impact on the rural farm sector, which is highly dependent on Government assistance and incentives. Rural small industries and entrepreneurs are also unable to compete with the might of large foreign companies, which have more resources such as strong finances and more efficient management, technology and marketing networks.

5 THE WAY FORWARD

Poverty has long been associated with rural areas. In Budget 2005, the Government announced its aim to develop the agriculture sector as the third engine of economic growth after manufacturing and services. The basic premise is a paradigm shift to transform the agriculture sector as a commercially viable sector with downstream processing and value-added activities, such that agriculture, which is associated with the rural sector will no longer be synonymous with poverty. Thus, rural development will be conducted via the development of a modern and dynamic agriculture sector, including agro-based industries.

5.1 Transformation of Agriculture

The long association between low productivity and agriculture as a residual sector is to be discarded. In order to transform the agriculture sector into a commercially viable and modern economic sector, the image of agricultural activities must be improved. Agricultural economic activities must be run and managed as modern economic entities, based on latest technologies and management methods. This requires, firstly that agricultural activities be undertaken on large-scale and economic-sized holdings and on commercial basis to improve productivity, inject professionalism as well as improve image and social standing. Land consolidation or the provision of large tracts of contiguous arable land for agriculture entrepreneurs by state governments and authorities will help address the issue of non-economic holdings. The use of agricultural land needs to be maximised in the light of declining land acreage for agriculture use due to competition from the manufacturing and housing sectors for the use of land. In this context, Malaysia can look east to learn how South Korea, Taiwan and Japan have successfully maximised the use of agricultural land. In addition, longer lease tenure can help address the issue of long gestation period.

The perception of low returns of agricultural produce can be overcome with diversification of farming practices, namely integrated farming-animal husbandry and intercropping as well as downstream processing and value-added.

As the nation is endowed with rich bio-diversity, there is huge potential for Malaysia to exploit and commercialise these natural resources, thus enabling the development of new sources of growth. Among the products with potential include biotechnology, healthcare products, pharmaceutical products as well as herbal and traditional medicine. It is observed that Singapore, despite lacking bio-diverse resources, is no increasingly developing and exporting biotechnology products and biopharmaceuticals. Singapore has been able to attract foreign talent and expertise to develop its biotechnology and biopharmaceuticals. It is, therefore, essential that Malaysia intensify efforts to develop biotechnology products. In this regard, Malaysia should attract foreign expertise, particularly Malaysian scientists who are abroad to return. The present incentives provided by the Government to attract Malaysian expertise to return have been less than effective. Possibly, additional and more attractive incentives could be given to attract foreign and Malaysian expertise.

In moving forward, the issue of lack of R&D in agriculture by the private sector needs to be addressed. Currently, there is high dependence on public sector R&D, which has been focused on plantation crops. The solution could be to further enhance collaboration between public R&D agencies and the private sector with the view to increasing the commercialisation of R&D findings.

5.1.1 Perception change

The agriculture sector must migrate from its current low image, especially for employment and career prospects. The stigma of associating agriculture with "rural poverty" and employment suitable only for "unemployed graduates" should be discarded from the people's minds. Agriculture should not also be associated as a residual sector, where the aged and old toil on farm lands. The new orientation of thinking is vital to enable the take-off of the agriculture sector and agro-based industries. Currently, the emphasis should be on promoting the abundant employment opportunities of the sector for graduates, and not necessarily for only those who major in agriculture.

Farms and agricultural activities on large economic-sized holdings should be run like companies in manufacturing and other sectors. Employment of qualified graduates and a new pay structure can help elevate the image problem as well as injec professionalism in the sector. In line with this, the Government has been promoting awareness and encouraging the young generation to venture into agro-based industries. This move will indirectly provide the needed stimulus for the agriculture sector. Young people are more creative and are full of ideas, hence they can set new directions or strategies to the sector.

5.1.2 Professionalism in agriculture

The agriculture sector can be managed by entrepreneur-driven individuals or by private

and government-linked companies (GLCs). The basic criterion is to inject professionalism into the management of the company. For individual based set-ups, the management requires individuals who know the process of agricultural inputs, for example, high-yield seedlings, packaging and marketing. The establishment of individual agro-business in rural areas can even be managed as formal corporations and organisations by hiring graduates to manage the establishments. Injecting professionalism in human capital that is associated with the agriculture sector is very much encouraged to ensure the way forward for the sector. The Government had in its Budget 2005, proposed that GLCs spearhead this move as pioneers to provide the leadership for others, including individuals to follow. Simultaneously, GLCs too can have their stake in agro-based industries. In both cases, the criteria must be highly entrepreneurial driven individuals or entities with the capabilities and skills to run agro-based industries, and with knowledge of the industries they are involved in.

5.1.3 Entrepreneur-driven individuals

Having the right individuals involved in the agriculture sector can be a boost to the sector. While land in the rural areas is abundant, especially in Sabah and Sarawak, there is, however, a lack of individuals or people with the appropriate skills and drive to work on the land. In relation to this, an "entrepreneur-driven" model is proposed in order to achieve the desired results. The presence of "highly-entrepreneur driven" individuals can be the catalyst to revolutionise rural development via the agriculture sector. The demographics of rural areas consist of a high composition of the aged group. This trend has resulted in abandoned lands due to the inability of the aged to work on their lands. This situation was compounded by the mass rural-urban migration of the young generation in the 1970s who migrated due to the promise of city employment and facilities. The lure of the city or big towns as "where the money is", is the stumbling block for them to return to their roots. Consequently, this has affected the rejuvenation of the rural sector as intended by the Government.

Instead, to reverse the flow, efforts should be emphasised on urban-rural migration as part of the strategies in rejuvenating rural and abandoned lands. In this context too, it is viable for the Government to study and review the processes, regulations and procedures regarding the leasing of land. To make it more effective and economical, leasing tenure can be extended to ensure that it justifies the investments and efforts made by the leasees.

5.2 Mechanisation, New Technologies and Management

Over-dependence on foreign labour can be detrimental to the economy of a nation. Malaysia has a high percentage of foreign migrant workers working in all sectors of the economy (see Table 9). In terms of the total number of workforce according to nationality and sector, the Indonesian workers are dominant in all sectors (Noorul, 2002). While the numbers shown in Table 9 are legal workers, there exists a high number of illegal workers being employed in all sectors in the country. Their presence has posed serious problems to employers, the Government and the general populace.

Malaysia's over-dependence on migrant workers is a critical issue.[4] One of the strategies that can be adopted to resolve this problem is through mechanisation and adopting and adapting high technologies. In addition, the process of downstream activities in the agriculture sector should be intensified and modernised. The development of the plantation and smallholders sectors in rural areas can.

Accelerated through modernisation and application of technology and efficient management. In both cases, especially the smallholders, output will be increased through the utilisation of quality seeds and livestock breeds. With this, the provision of extension services in assisting smallholders is necessary for the utilisation of mechani sation, technology and equipment. Mechanisation not only reduces the labour intensity of the economic activity but also enhances productivity and quality, thereby contributing to the improvement of the image of the agriculture sector. It must, however, be emphasised that mechanisation is possible and viable only in economic-sized farms.

5.3 New Focus and Sources of Growth

In order to sustain growth on a long-term basis, there must be continuous new sources of growth for the economy. New sources of growth as mentioned earlier include biotechnology, biopharmaceuticals, healthcare and herbal products. In addition to livestock rearing, aquaculture and fruit growing as part of the aim to increase food production to reduce the RM16 billion food import bill, food processing especially *halal* food is another strategy to enhance agricultural incomes and foreign exchange. Further value-added and processing activities will also enhance the economic value of the agriculture sector.

The production of *halal* food can be a new source of growth in the rural areas. The global demand for *halal* food is projected to increase to RM2 trillion in 2005. Since Malaysia has many competitive advantages in this area, this vast potential must be further tapped to enable Malaysia to be one of the leading producers and exporters in the world. Moreover, Malaysia's certification and registration of halal logo certificates is recognised and acknowledged throughout the world.

The production of handicrafts is also crucial in rural development. Shireen (1998) views the mobility of households to occupations with lower incidences of poverty has been due in part to the development of rural industries, such as the production of handicrafts. Such rural industries provide off-farm employment opportunities supplementing the incomes of rural households. Technical assistance, support systems and training programs were provided to ensure that rural households were able to participate in such industries. Between 1981 and 1985, government agencies assisted 289 craft entrepreneurs and 35 craft villages (Shireen, 1998). In light of influx of cheap foreign handicraft, the local handicraft industry must further enhance the quality and aesthetic value of their products.

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[4] The amnesty progrramme for illegal immigrants in February 2005 had resulted in a shortage of 200,000 workers in the manufacturing sector, 150,000 in construction, 50,000 in plantation and 20,000 in the service sector (NST, 17 March 2005).

Table 9: Migrant Workforce According to Nationality and Sector (1 January to 31 December 2001)

Nationality	Domestic	Construction	Manufacturing	Services	Plantation	Total
Bangladesh	11	16,403	78,881	10,747	6,897	112,939
Cambodia	588	-	727	5	79	1,399
China	2	109	-	2	-	113
India	19	1,967	7,597	16,480	140	26,203
Indonesia	170,610	39,113	114,980	18,720	107,526	450,949
Myanmar	6	634	4,827	1,016	56	6,539
Nepal	2	554	43,355	2,413	2,113	48,437
Pakistan	2	731	863	614	177	2,387
Philippines	6,502	2	31	203	-	6,738
Sri Lanka	300	-	716	-	99	1,115
Thailand	470	325	1,033	418	262	2,508
Total	178,512	59,838	253,010	50,618	117,349	659,327

Source: Noorul Ainur M.N. (2002), *"Influx of Migrant Workforce in Malaysia: A Threat or An Opportunity?"*, United Nations Population Fund (UNFPA).

5.4 Promotion of Private Investment

The manufacturing sector has been successful in attracting domestic and foreign investments. It is timely to build on the experience gained to promote and attract investments in agriculture sector and agro-based industries. To achieve this objective, Malaysia has to be a competitive global producer of high quality and safe agricultural products that meet international standards. The renaming of the Ministry of Agriculture to include Agro-Based Industry is testimony to the importance of the sector, as well as to provide focus and strategies to elevate the agriculture sector.

For the agriculture sector to be competitive, the sector has to adopt intensive modern agricultural methods through the application of technology and R&D findings, including biotechnology. Malaysia can be strategised to be developed as a centre of processing, packaging and marketing of agricultural products for global markets. In this context, human capital plays a vital role in rejuvenating the agriculture sector. Skilled manpower in agriculture can be developed by local universities, and it is with this in mind that the Universiti Putra Malaysia has been focused to be developed as a centre of excellence for agriculture education.

It is the Government's stated policy that the private sector must be the engine of growth, including for the agriculture sector. For example, GLCs can be a catalyst in the commercialisation of the agriculture sector, as envisaged in the 2005 Budget through the establishment of a fund of RM300 million for seed capital. In this context, public sector agencies will be submitting their business proposals soon. To be globally competitive, the

areas that the agencies will venture into include export processing and R&D in areas such as high-yielding seedlings, fertilisers and export products as well as emphasis on marketing and commercialisation of technology.

6 CONCLUSION

Fiscal policy has been a useful instrument in promoting rural development in Malaysia. The Government has provided substantial budgetary allocations in efforts to bring rural communities into the mainstream of development as well as to promote new economic activities in rural areas and will continue to use fiscal measures for socio-economic engineering. Given the financial constraints, however, the Government will give more emphasis on projects and programmes that will result in capacity building, income generation and value-add. At the same time, the provision of incentives would aim at spurring individual entrepreneurship and drive, instead of fostering the subsidy mentality, normally associated with agriculture worldwide. Meanwhile, in line with the policy of private sector-led growth, GLCs and private investment are encouraged to lead the transformation of the agriculture sector into a value-added economic sector, thereby further enhancing rural development and contributing to growth, national progress and Vision 2020.

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Chapter 2

EMPLACEMENT, LAND OWNERSHIP AND UPWARD MOBILITY: LESSONS FROM FELDA

Nungsari Ahmad Radhi

1 INTRODUCTION

Rural poverty is characterized by the combination of under-provision of the factors of production among the population and under-developed markets. The ability of the poor to participate in the exchange process is severely limited by their lack of endowment, thereby rendering them unproductive. Without any production ability, they cannot consume, and the cycle of exchange and value creation is absent. It is therefore possible to find poverty in the midst of wealth, the case in urban poverty, as the presence of markets alone will not guarantee wealth creation. Rural poverty, however, is a more challenging problem because it is also accompanied by under-developed markets.

The typical prescription for poverty eradication has therefore focused on the development of the participative capacity of the poor through transfer payments or by developing their means to participate in the exchange process. Examples of these are well-known. Less emphasized is the need to concurrently develop markets, and their inter-linkages, to effect this exchange process among the poor. Often times, it is the absence of market mechanisms and their supporting institutions that have made rural economies stagnant despite some of them being self-sufficient in an isolated sense. However, the institutional dimensions of markets and societies have not received their due consideration in the formulation of rural economic development policies. That many rural economies are production-based has made the issue of land ownership an important one despite there being other more important elements for growing the rural economy.

As late as the mid-twentieth century, after the independence of many former colonies following the Second World War, the land reform agenda was seen as a way to economically empower the landless, rural peasant society that was generally characterized by poverty. The arguments for land reform were laced with egalitarian sentiments and predictably attracted popular support. However, the idea of land reform as an economically empowering concept was in stark contrast to the experience of how the more industrialized economies have evolved.

By the time most newly independent Third World countries were clamoring for land reform, Britain, Europe and North America were well into their second century of industrial revolution that saw the great masses of the landless being transformed into the working and middle classes. They achieved this mobility without having gone through the process of land reform as an overtly interventionist policy. It was the application of technology

that spurred the Industrial Revolution, creating a cycle of wealth creation and the unceasing demand for more goods, thereby fueling the cycle of production and consumption. In the process, owners and users of capital, capitalists and industrialists, not land owners, reaped huge returns from their enterprises while the masses of workers were employed in the production process, creating markets that drove more production.

Such an economic organization was liberating in that it allowed for the upward mobility of individuals and households. While this may now seem unremarkable, it is worth recalling that such mobility was largely impossible during the feudal era where one's economic role was largely inherited and tied to land ownership. Despite the class struggle that emerged out of this necessarily asymmetric process of wealth creation, the capitalists benefiting disproportionately more compared to the working classes, it remains indisputable that this has liberated the great masses of people who, only a couple of centuries ago, were trapped in a manorial-type socio-economic existence. It is this success in the industrial West that has propelled their economies towards industrialization and urbanization.

This economic emancipation also created the right kind of political and social environment that has fueled the creative and innovative process thereby keeping alive the flames that keep the market economy going through its process of value destruction and creation. It is these creative processes, be they the invention of the "spinning jenny", the steam engine or the integrated circuit, that have created a chain effect of value creation that saw the eradication of abject poverty in industrial economies.

Compared to most developing countries, Malaysia has performed admirably in addressing the poverty issue. Despite the debates surrounding the definition of the poverty line, it is evident that the rate of hardcore poor in the country has been greatly reduced since Merdeka.[1] The Felda project is but one of the many programs introduced to develop the rural areas as well as eradicating poverty there. The beneficiaries of the project do not represent the majority of the rural poor population but the project itself is unique in comparison with other types of poverty eradication programs. Further, Felda is, in many ways, a remarkable story of successes and serendipities.

The Felda project was premised on the logic for land reform. Its broad concept can be described as "land ownership through land development" which effectively translates to the goal of achieving "upward mobility through land ownership" for the settlers. There are, however, many competing hypotheses to "upward mobility through land ownership" Therefore, the objectives of this essay are, firstly, to provide a framework of testing this hypothesis; and secondly, through insights obtained in the first objective, to derive policy lessons from the successes and shortcomings of the Felda experience.

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[1] The mid-term review of the 8th Malaysia Plan (2000-2005) showed that the national incidence of poverty has been reduced to 1.9% (about 260,000 households) from 26% (about 750,000 households) in 1970. The Bumiputera incidence of poverty is however more than three times the national rate at 7.3% in 2002 (some 87% of the households living in poverty).

2 FELDA: THE CONCEPT, ITS IMPLEMENTATION AND RESULTS

The Felda concept is unique in that the land allocated to the landless was not taken from the landed but instead belonged to the State; all the states in the federation except for Pulau Pinang.[2] Without infringing on the property rights of existing landowners, the process was devoid of the friction usually associated with such reforms in other countries. This was one of the main success factors.

Felda, or the Federal Land Development Authority, was formed in 1956 succeeding some earlier state governments' land development agencies. Participating state governments alienated undeveloped land to Felda which was then entrusted to develop the land. Felda developed the land by dividing it into settlements made up of *blocks*.[3] The number of blocks in a settlement varies but each block is made up of twenty settler households whose houses are located in a group. Felda's initial cost of emplacing a settler was made up of the cost of constructing the settler's house, his share of the physical and social infrastructure cost within the settlement and the cost of developing the plantation. Settlers thereafter work on the plantation, earning an income to sustain themselves and pay Felda off for the total emplacement costs. When these are repaid, each settler obtains ownership of both the house and his share of the plantation land.[4]

Another key success factor is that the Felda project has a well-defined economic rationale. The crops may differ across the settlements but there was a clear economic use for the developed land. Settlers were therefore able to leverage on the economic activity on the land to pay off Felda which made them land owners. Felda also became the largest palm oil plantation concern in the world and, collectively, forms the largest rubber production unit in the country. The revenues it derives from its plantation operations enabled it to pay off all of its loans and become financially self-sufficient – a rare achievement among statutory bodies.

Felda thus spearheaded the expansion of Malaysia's plantation economy beyond the boundaries set by (the formerly) British-owned companies. One could not have expected such private companies to expand the area under cultivation into the remote areas as the development costs would have been prohibitive. Malaysia's position as the world's leading producer of crude palm oil thereafter developed into many downstream industries. As an

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2 Sarawak, however, had only one settlement.

3 The size of settlements varies considerably. The earlier settlements were smaller compared to those developed in the mid-1970s onwards, primarily because the switch of crops from rubber to palm oil required larger clusters of settlements to justify the setting up of milling facilities. Smaller settlements range between 1200-1600 hectares with 300-400 families while larger ones are between 7,000-8,000 hectares with about 1200 families.

4 The total cost of emplacing a settler, therefore the cost to be repaid by the settler to Felda, naturally increases with time. In 1976 it was about RM26,000, ten years later in 1986 the amount was RM50,000. Plantation development expenditures form the bulk of the cost. The typical settler owns the 0.25 acres of his house plot and 10 acres of plantation land upon paying off (Bayaran Kembali) Felda.

industry, the overall palm oil sector is still one of the largest contributors to national production. Compared to many other governmental economic initiatives, Felda's contribution to Malaysia's economic development remained unparalleled.

The Felda project was also an extraordinary example of inter-governmental cooperation. Land in Malaysia is under the purview of the states which alienated them to Felda, a federal government land development entity, which then alienated them to the settlers. State governments thereafter abolished their own land development authorities, effectively surrendering land development efforts on the alienated land to the federal government. While there were hints of state sentiment, by and large, settlers in any Felda settlement were drawn from states throughout the federation.[5] It became a truly national undertaking led and dominated by the federal government through Felda.

The "federalization" of land development went beyond the alienation of land to Felda. State governments have also ceded administrative control of the settlements developed on the land. Thus, the various settlement villages developed throughout the country were administered through Felda's Jawatankuasa Kemajuan dan Keselamatan Rancangan (JKKR), the equivalent of Jawatankuasa Kemajuan dan Keselamatan Kampong (JKKK), the smallest administrative unit under the purview of District Offices throughout the rest of the country. A whole governmental structure was created by Felda that ran parallel to and mostly independent from the mainstream institutional structure. Instead of the states, Felda organizes the JKKR into regions and administers them through the JKK Wilayah (JKKW). At the national level, there is the JKK Pusat, the central committee that is the highest platform of settler-Felda interaction.[6]

Finally, unlike the "transmigrasi" experience in Indonesia, and despite the displacement emplacement process undergone by the settlers, the dislocation effect is minimized as Felda schemes were created mainly in the Peninsula. There was only one scheme in Sarawak and the ones in Sabah were implemented under a different arrangement from the one in the peninsula. Thus, the settlers cannot be any further from their places of origin than Perlis is from Johor. Further, as the settlements were based on newly developed, isolated land, there were minimal issues of frictions created between settlers and existing local populations.

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[5] While settlers were drawn from all participating states, those from Pahang, Johor and Negeri Sembilan dominated the numbers, collectively making up for more than three quarters of the total settler population. Pahang contains three out of ten Felda "regions"– as Felda categorized their groupings of settlements - and saw the largest inflow of settlers. The ten Felda regions are Ipoh, Seremban, Segamat, Johor Bharu, Kuantan, Temerloh, Jengka, Terengganu, Gua Musang and Sabah.

[6] These JKKR-JKKW-JKKP administrative structure is highly democratic in the space it allowed for settler participation. In many ways, it has been more successful than the general JKKK administrative structure at encouraging participation and developing local leadership. It is however a structure that is somewhat isolated from the larger mainstream administrative structure.

2.1 The Results

The land development results of Felda are remarkable by any standards. The Felda concept, an integrated approach with multiple outcomes, was a pioneering one and the results it has obtained have not been replicated by any other land development scheme. There are four key success factors for Felda: the availability of undeveloped land, the organizational capabilities of Felda, sustained political will, and a viable economic model.

The total land alienated by the various state governments to Felda amounted to 853,313 hectares. Felda developed all of the land over a period of some thirty years, allocating some 446,938 hectares to settlers and settlements. The remaining land was developed as a plantation owned by Felda which made it the largest plantation company in the country from which it obtained some RM2 billion in revenues. Further, the businesses of Felda have an aggregate annual turnover of over RM6 billion.[7]

There are now 275[8] settlements throughout the country populated by 103,156 settler families. Thus, Felda not only developed the land into plantations, it also developed and provided basic physical and social infrastructure to 275 settlement villages which are inhabited by an estimated 600,000 people. The Felda community also includes over 3000 staff of Felda, almost 80 percent of whom are deployed at the settlements. Each of its settlements operates a cooperative and the umbrella cooperative formed by Felda, Koperasi Permodalan Felda, is one of the biggest and most profitable cooperatives in the country. The foundation it formed, Yayasan Felda is also one of the more active foundations in the country. Felda has been referred to, in jest, as a "government within a government" in Malaysia. It may not be far from the truth as Felda is larger, in many aspects, than many states in the federation. It is financially independent and has accumulated substantial reserves, a position most of the states in the federation have not been able to achieve.

About 70 percent of the settlements have undergone replanting. As the crop life-cycle approximated the pay-back period, about the same percentage of settlers have also paid off their dues to Felda and have been issued individual land titles. Thus, the objective of land ownership for the settlers is on track.

Felda however deviated significantly on the nature of land ownership granted to the settlers. The original plan identified settlers' land by blocks of two hundred acres collectively worked on by twenty settlers. The block became the basic unit in a settlement as settlers' housing and the local leadership structure are organized by this same definition of blocks. Eventually, upon settlement of their dues, settlers in a block will be granted collective ownership of the block's land. It was a well-conceived plan as it promoted cooperation

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[7] Figures cited are based of 2004 accounts when palm oil and rubber prices are favorable.

[8] As many as 308 settlements were actually developed and 118,845 settlers were emplaced in them during the peak in 1991. Both numbers have been reduced because some settlements were taken out from Felda through land acquisition and their settlers were thereafter excluded from the count.

among the settlers in a block to operate their collectively owned land which will be preserved at an economic size. It was also a mechanism that made the sale of the land unlikely as it will then be akin to communal property.

Most settlers, however, preferred individual ownership, small though the size may be if the blocks were divided into twenty. Felda's insistence on the original plan made many of them unhappy and this dissatisfaction, given the political clout of the settlers, attracted the attention of the government. In anticipation of the 1990 General Election and worried by the strife within UMNO then, the government agreed to grant individual titles just before the election. This was a landmark decision that has had and will continue to have far reaching consequences for Felda and the settlers.

The almost half a million hectares of land apportioned to the settlers became individually owned land. The settlers' gain of individual ownership came at the high price of Felda's loss of control over the management of the plantation land owned by the settlers. The consolidated management of the land, from the choice of clones and other agronomic practices to replanting and harvesting practices were compromised by this decision as individual ownership granted sovereignty to the settlers.

The loss of consolidated management of settler land will continue to have economic consequences to both the settlers and Felda's businesses, but the granting of individual ownership destroyed a key element of the settlers' sense of community. Their vested interests have narrowed to their own plots of land thereby diminishing the community level sense of vested interest. It was a poor decision.

3 A COINCIDENCE OF LIFE CYCLES

There are three different agents to the Felda project: the settlers, the crops they cultivate and Felda itself; the statutory body and the businesses it owns. The story of Felda is a story of the evolution of these three agents and how their life cycles impacted the relationships between them. It is unlikely that these life cycle effects were not anticipated and taken into consideration at the point of implementation, but the fact remains that if they were better incorporated into the various decision-making processes, many of the more unintended, deleterious effects of life-cycles would have been moderated.

After its establishment, Felda started out rather slowly, opening only five settlements in the 1950s. The pace increased steadily in the 1960s but the 1970s saw the rapid growth in the number of new settlements. Some two-thirds of Felda's total settlements were established during the 1970s. The 1980s saw a sharp drop in the number of new settlements and Felda stopped emplacing new settlers altogether by 1988.

Many of the transitional issues Felda – the settlers, the statutory body and the business – is currently facing can be traced to the decision of accelerating the implementation in the 1970s. However, the decision to accelerate the implementation in the 1970s is itself

well understood. After almost two decades of implementation, the Felda scheme was seen as successful in achieving many policy objectives simultaneously. New land areas were developed and cultivated commercially and thousands of landless rural dwellers were in the position to own the land they were operating. Together, these were contributing significantly to the development of the plantation sector of the country. It was therefore a rational decision to implement more of something that had proven to work.

Felda became a key agency in achieving the objectives of the New Economic Policy introduced in 1970. While new agencies had to be created beginning in the 1970s to implement the NEP, Felda was, by then, well into its second decade. The more settlers that were emplaced within the schemes, the faster the objective of poverty eradication would be achieved.[9]

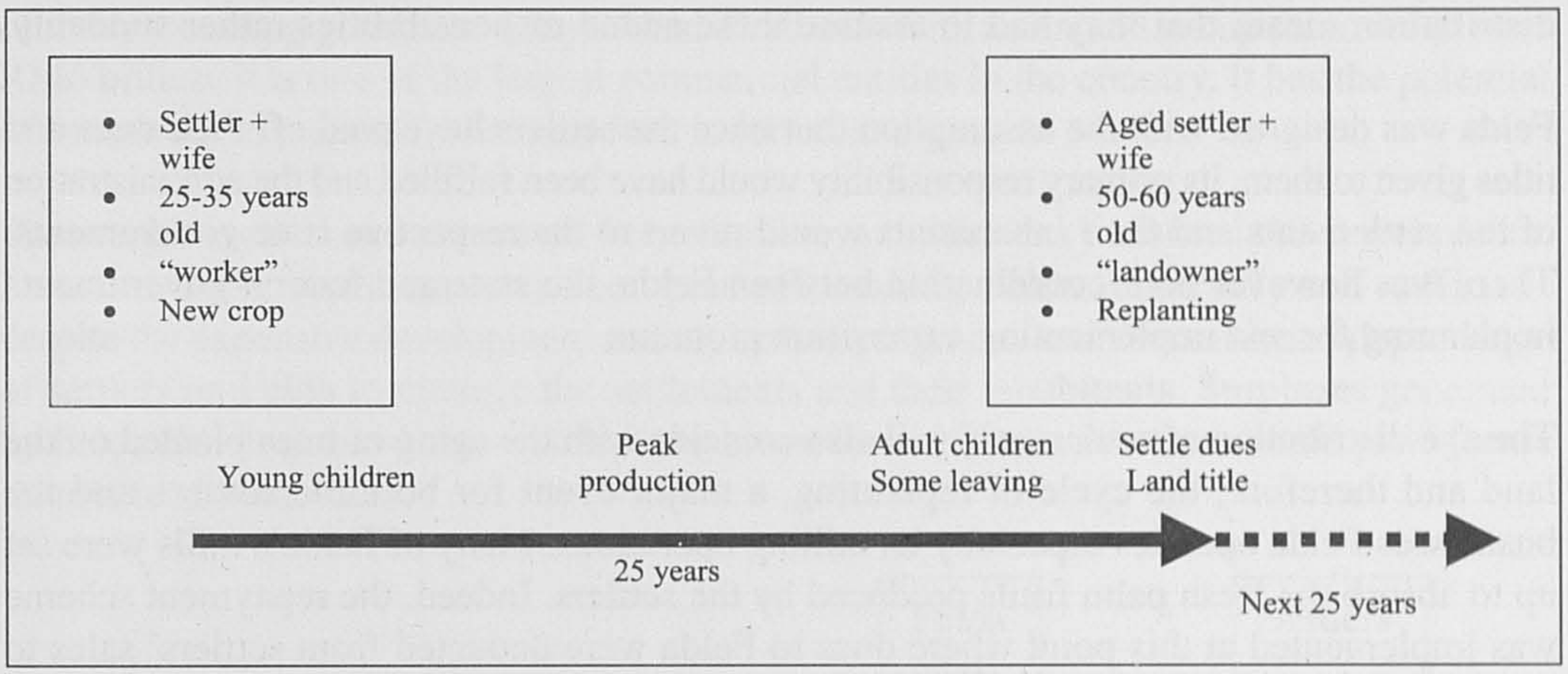


Figure 1 The Settler-Crop Life Cycle

Nonetheless, the age distribution of settlements posed several problems.

The age distribution of settlements approximated the age distribution of settlers in the overall Felda scheme. Such a settlement age distribution means that there is a 'bulge' in the settlers' age distribution contributed mainly by the large number of settlers emplaced in the 1970s. Consequently, by the mid-1990s, the 'bulge effect' materialized and undermined whatever sense of gradualism that would have made the transition easier for the settlers and Felda.

This non-uniformity in settler age distribution meant that the bulk of them undergo their life cycles and age together. For them, replanting will occur together, something everyone

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[9] Since there were some 750,000 households living in poverty in 1970, it can be concluded that Felda has contributed to eliminating more than 13% of them from poverty by emplacing slightly over 100,000 households within its scheme. In terms of Bumiputera households, its contribution is even higher - close to 20%.

knows will be highly risky as palm oil prices are capable of wide fluctuations. Besides the costs, those undergoing replanting will have to wait for another four years before they can start harvesting. This created a tremendous financial burden to the settlers who were, by this time, aging themselves.

That two thirds of the settlements were established in the 1970s meant that the resources of Felda, its organization, personnel and their competencies, were required mainly to emplace settlers and developing the land as plantations during that period. They formed the bulk of Felda's personnel. Twenty-years henceforth, they have aged themselves. As the settlers aged, they changed and their needs changed as well. An organization, and its personnel, that was designed to handle land development and the emplacement of settlers found itself dealing with these changing needs, evolving from mainly land development to that of community development, something they were not really designed to do. The bulge in distribution meant that they had to assume these added responsibilities rather suddenly.

Felda was designed with the assumption that once the settlers have paid off their dues and titles given to them, its primary responsibility would have been fulfilled and the administration of the settlements and their inhabitants would revert to the respective state governments. There was however poor coordination between Felda, the state and federal governments in planning for and implementing a transition program.

The age distribution of settlements will also coincide with the aging of trees planted on the land and therefore, the cycle of replanting, a major event for both the settlers and the businesses Felda operates especially its milling operations. Many of Felda's mills were set up to absorb the fresh palm fruits produced by the settlers. Indeed, the repayment scheme was implemented at this point where dues to Felda were deducted from settlers' sales to Felda mills. As replanting occurred in such an uneven manner, many of Felda's mills suffer from operating well below capacity, making them inefficient. These mills will have to source their input from areas outside the scheme, which can be difficult as those areas may already be served by other mills. Besides the effects of replanting, there is also the effect of settlers who chose to sell their fruits to non-Felda mills once they have obtained ownership of their land. They are then no longer compelled to sell their fruits to Felda.

4 THE CREATION OF AN ECONOMIC BEHEMOTH AND WEALTH SHARING

While there may be questions as to whether the Felda project has created an upwardly mobile community, there is no question about its success in creating a successful business. Whether it was intended or not, the Felda project resulted in the creation of the world's largest palm oil plantation concern.

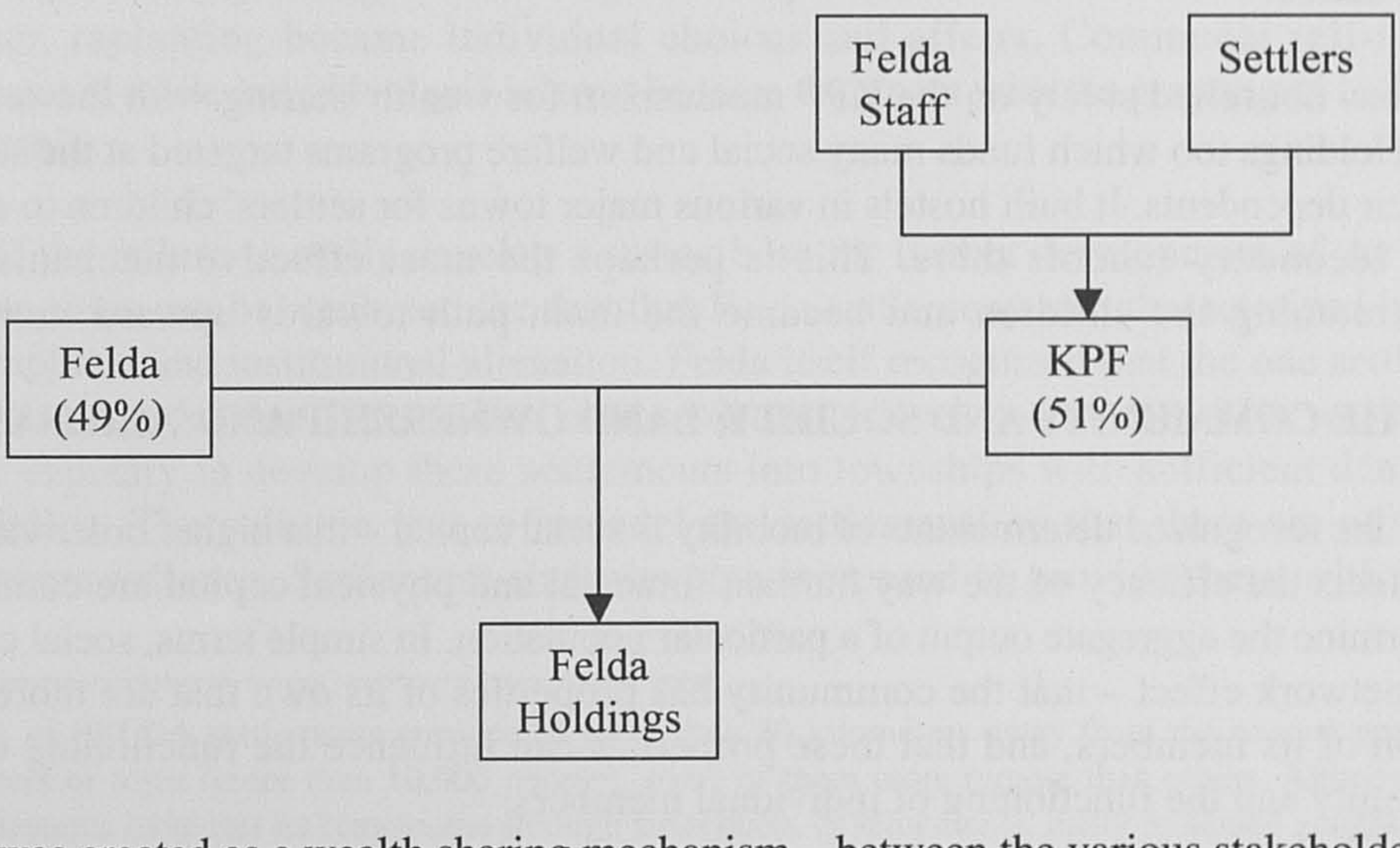
Felda stopped admitting new settlers in 1990 after having emplaced 103,156 settlers on approximately 450,000 hectares of land. There is still another 364,202 hectares of land already alienated to Felda by the state governments. This land forms the bulk of Felda's assets which was developed as a plantation, making it the single largest palm oil plantation

in the world. In 1980 it accounted for 30% of total oil palm hectarage in the country. Although this has deteriorated to 18% in 2000, Felda remains the largest single palm oil plantation in the country.

This large, Felda-run plantation and the almost 450,000 hectares owned by the settlers created the necessity for milling facilities which turned Felda, through its holding company, Felda Holdings, into the nation's largest palm oil mills operator. From there, there were natural directions for the expansion of Felda's businesses as Felda's milling operations effectively control all the crude palm oil (CPO). Koperasi Permodalan Felda (KPF) owns 51% of Felda Holdings while the remaining 49% is owned by Felda.

Today, Felda Holdings is involved in almost all activities along the palm oil value chain, from clone production to cooking oil to shipping. Felda also owns and operates several rubber processing plants in Malaysia and Thailand. With an annual group turnover of over RM6 billion, it is one of the largest commercial entities in the country. It has the potential of becoming to palm oil what Petronas is for oil and gas.

The wealth created and generated from all these activities has benefited the shareholders. Loans to the government have been paid off, making Felda financially self sufficient despite the expensive development and replanting programs, and the continued dependence of settlers on Felda to manage the settlements and their inhabitants. Surpluses generated by Felda Holdings have also enabled it to invest in new businesses that should yield future returns to shareholders.



KPF was created as a wealth sharing mechanism – between the various stakeholders, the settlers foremost amongst them. Its shares have a limited subscription – Felda settlers and staff only. As in all things Felda, KPF as a cooperative is huge compared to other cooperatives in the country. Its share capital is in excess of half a billion ringgit and it has invested almost RM400 million in Felda Holdings and in other businesses.

By any standards, KPF has done well in securing returns to its shareholders, declaring no less than 10% dividend in the last 14 years, higher than any major savings-investment scheme in the country including PNB and Tabung Haji. However, participation in the cooperative is voluntary and depends on the saving culture of settlers. The saving culture, or the lack of it, however, is characteristic of the poor. One may argue that the settlers did not have sufficient disposable income to subscribe KPF shares. This is not entirely inaccurate, but it is also true that settlers failed to capitalize on this excellent opportunity. Had a settler invest RM50 monthly in KPF since its formation in 1986 and the savings are compounded at 8% annually, he would have accumulated almost RM25,000 by today if all dividends were re-invested. That is however not the case. The average settler has only about RM2,000 worth of shares in KPF and even then a substantial portion of that amount was that credited to settlers' accounts by Felda through its distribution scheme rather than being accumulated voluntarily. As a result, even with a 15% dividend payout, the average settler obtains only about RM300 a year.[10]

Had the settlers invested more in KPF, they would have created a second stream of income from these financial assets, lessening their almost total dependence on farm income which can be highly unstable. Their portfolio of assets would have also been more diversified. However, despite the presence of KPF, the intended wealth sharing failed to materialize despite the mechanism being there. The root cause of this failure is the absence of a key prerequisite for upward mobility among the poor – the culture of saving, of investing in the future. In the long term, this is more important than the mere ownership of land. If the ownership patterns of KPF shares are to be used as measures, Felda settlers have largely failed.

Felda has not relied solely on the KPF mechanism for wealth sharing with the settlers. Felda Holdings too which funds many social and welfare programs targeted at the settlers and their dependents. It built hostels in various major towns for settlers' children to attend better secondary schools there. This is perhaps the most effective mechanism of mainstreaming the children and became the main path towards upward mobility.

5 THE COMMUNITY AND SOCIETY: LAND OWNERSHIP AND ALIENATION

One of the recognized determinants of mobility is social capital – that higher order variable that affects the efficacy of the way human, financial and physical capital are combined to determine the aggregate output of a particular population. In simple terms, social capital is the network effect – that the community has properties of its own that are more than the sum of its members, and that these properties can influence the functioning of the community and the functioning of individual members.

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[10] Compared to RM3,750.00 a year if he had saved RM50 a month consistently as illustrated earlier.

The settler community, given its geographical isolation[11] and the unique Felda patronage they enjoyed, should have exhibited some positive effects of social capital formation. To some extent, this was perhaps true. The communal nature of the settlers' existence was akin to Tonnies' gemeinschaft.[12] In the early stages, there was minimal division of labor with minimal distinctions between economic and social relationships which tended to be personal. There was that sense of belonging to a larger Felda family. Even land was communally owned then.

Several factors deteriorated the social capital – aging and individual ownership. The social capital that was formed was a brittle, narrow and an isolated one which, even if it was preserved, would have had limited effect on the mobility of settlers. It failed to be linked to the mainstream society and was thus unable to leverage on the necessarily larger stock of social capital available there. The more mechanistic types of relationships found in *gessellschaft* that typifies the coexistence of independent people in a more developed society never materialized within the settlements. Since there was no urbanization or significant in-migration, the organic community never evolved into a society in the true sense. It could not have possibly happened. The Felda family social capital also becomes diluted when Felda itself reduced its presence in the settlement villages when titles were awarded.[13] There was the deterioration of even the settler community when individual land ownership was granted and the second generation left the settlements.

With individual ownership, there was then no longer the communal sense that existed when they first started. Worse, individual ownership typically coincided with replanting. Where the initial planting was one organized by Felda and attended to in a communal manner, replanting became individual choices and affairs. Communal self-interest deteriorated while individual self-interest became dominant with the granting of individual ownership.

Part of the failure to really develop a strong base for further development of the settler communities can be attributed the fact that Felda settlements are characterized by both geographical and institutional alienation. Felda itself recognized that the one settlement one village model that characterized most settlements developed till the 1970s was lacking in the capacity to develop these settlements into townships with sufficient density of population. The solution was to remodel the settlements so that there are adjoining settlement villages. Settlement size was also increased to provide them with bigger

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[11] 70% of FELDA settlements are located more than 30 kilometers away from the nearest population centers or town (more than 10,000 people), some of them more remote than others. Although some settlements have lost its remoteness through subsequent developments, many remained geographically isolated.

[12] Ferdinand Tonnies' *Gemeinschaft und Gessellschaft* (Community and Society) originally published in 1887.

[13] In the original design, Felda would have withdrawn, and it did that, when settlers were awarded their titles. The settlements should have been reverted to the respective state governments. The transition planning was however very poor. Recent developments seem to compel Felda to remain in the settlements.

populations. It was around this time that the "gugusan" concept, or the clustering of many settlements in a geographical location, was implemented. The Jengka region, initially under a separate regional development authority of the same name, was developed based on this concept. There was however limited success as even these clusters failed to urbanize and be economically inter-linked with major population centers.

6 THE NEXT GENERATION: ACHIEVING MOBILITY

6.1 Mainstreaming

The upwards mobility of the second and subsequent settler generations depends on the success of integrating them to the mainstream – outside the settlements. Indeed, a sizable proportion of the second generation has achieved upward mobility by moving out of the settlements, not depending on the land or the limited opportunities offered by the settlements.

The mainstreaming objective must be achieved at three levels. The first is institutional mainstreaming. Under the original design, the administration of the settlement villages, which was ceded to Felda, was supposed to be reverted to the states upon issuance of land titles. This is an important step in the evolution of the settlements as Felda had acted as the de facto government for the settlers and settlements since their creation. As mentioned earlier, the local leadership and administrative structure were effected through the JKKR instead of the JKKK. This has resulted in the settlements being taken out of the purview of the district offices, and by extension, the reach of many programs implemented by state and federal governments. Felda was the government, and despite the efforts put in by Felda in assuming the role of community development upon completion of its land development task, it was not designed to play that role. Its resources, huge though they are, pale in comparison to those of the federal government.

Unfortunately, there is tremendous pressure for Felda to continue its present administrative role within the settlements and perpetuate its patronage role. Settlers themselves, having gone through the process with Felda are more comfortable with Felda than with any new administrative structure but the continuance of Felda managing the settlements implies that they will remain as Felda settlements; with all of their attending constraints. The inability of many state governments to assume administrative responsibility over the settlements is another key factor inhibiting the institutional mainstreaming agenda. Many state governments do not even have the financial resources to create new local administrative structures in the settlements. Institutional mainstreaming is essentially an administrative decision, a relatively easier option to execute compared to the others.

Geographical mainstreaming is an obvious but radical solution. The best way to gain access to opportunities outside of the settlements and the reach of the full range of developmental programs is to geographically relocate outside the settlements. This was achieved by those who left the settlements. However, there are still those who cannot do so and remain in the settlements trying their best to start their own enterprises within the limited markets there. The constraints they face are enormous. The settlements were never

designed for any other economic activities besides palm oil or rubber cultivation. There are limited opportunities for some retailing activities and the local market is small. Many enterprising settlers and their wives have started small food processing businesses but their successes depend on the ability to market outside of the settlements.

Relocation, however, is an expensive and disruptive solution that is only suitable for selected settlements, those within the vicinity of urban, industrial conurbations – southern Kota Tinggi-Johor Baru area, the Kemaman-Kuantan corridor, Seremban, and the southern Perak- northern Selangor bi-state area. The value of land in these settlements will be sufficiently high to allow settlers' land to be fully exploited as assets. A key determinant of economic mobility is the ability to treat the hard-earned land – both the house and plantation plots – as enablers. There are possibilities to convert the value of these settlers' land into equities in ventures that develop the land beyond plantation. This will accord the settlers the means to relocate outside of the settlements while enjoying returns on their investments during their retirement. When this happens, the legacy of the settlement and the life that comes with it will end, and subsequent settler generations will be mainstreamed.

There is the tendency to view development as merely property development. This should be avoided. The potential is to convert some of these settler lands into major agriculture production and processing areas, and form the key strategic initiative in the government's effort to diversify and commercialize the country's non-plantation agriculture sector. The current high prices of both crude palm oil and rubber, and the tendency to consider only the production of alternative crops on the land, are constraining the alternative use of the land.

If some measure of geographical and institutional mainstreaming is achieved, *economic mainstreaming* will become more probable as the scope of possibilities will greatly enlarge. No longer will the settler community be constrained by the limited possibilities offered by the settlement villages, or even clusters of such villages. Only then can some measure of upward mobility be achieved.

6.2 *In-situ* Development

In-situ development is politically favored as it is the least disruptive way of catering or pandering to the needs of the settler community although it essentially perpetuates the *status quo*. The settlement villages and the settlements themselves were not designed to be anything else other than worker communities involved in plantation activities. As such, the scope for in situ development is limited to improving the infrastructure.

There is limited land available to be developed into additional housing, something highly demanded by the children of settlers who remained in the settlements.[14] By the same token, there is also limited land in the settlements that can be utilized for other economic

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[14] When a settler dies, only one of his children will assume the status of settler.

activities. Without these, the possibilities of enriching economic activities and intensifying the population density in the settlements are severely limited.

The only other option is to convert some of the plantation land in the settlements to commercial or housing use. Individual ownership of the land is a major hindrance to do this which would also require some parts of the land to be used for supporting infrastructure. Unless all the settlers in a block agree to a joint development such efforts are unlikely to materialize.

In-situ development without institutional mainstreaming amounts to Felda playing the role of a regional development authority, something it was not designed to do. Its Felda Jaya project in Trolak, for example, seemed poorly conceived. There, Felda used its plantation land, the area not alienated to settlers, to develop a new township by building houses. However, there is no clear economic rationale to the project whose location, while adjoining the North-South highway, is far removed from existing economic growth poles. Nor is there a clear plan to create a new growth pole within the vicinity.

6.3 Some Comparisons

It is illustrative to compare the Felda scheme with other settlement communities in order to gain an understanding of how these communities evolved:

- The New Villages

The New Villages were the creation of the Emergency period (1948-1960) during the British war against Communist guerillas in Malaya. It was an idea attributed to Harold Briggs, a retired general who was appointed Director of Operations in 1950. Chinese populations were relocated into the newly created villages as a security measure: to insulate them from the communists as well as to prevent them from supporting the guerillas. It was a program that was purely politically motivated, not one motivated from the villagers' welfare. The massive resettlement program was largely involuntary.

By 1951, over 400,000 people had been resettled in 500 new villages spread over most of the west coast of the Peninsular. Although the Emergency ended in 1960, the stigma of the new villagers as communist sympathizers took much longer to overcome which, to some extent, contributed towards slowing their integration with the mainstream.

Like Felda settlements, the new villages comprise homogeneous populations, enclosed in geographically defined spaces. As with the settlers, the new villagers made up an influential political constituency for a partner of the ruling coalition, the Malaysian Chinese Association. However, compared to those outside the villages, they represent the more marginalized segment of the Chinese community, as was the case with the rural Malays emplaced in the Felda settlements.

Beyond these, there were, however, stark differences. The new villages were exclusively resettlement schemes. Unlike Felda, there was no clearly defined economic model. There was no agenda of land ownership as was the case with Felda. The villages were however provided with basic physical and social infrastructure.

Although the new villagers were geographically defined enclosures, they were not isolated from the urban centers, being spread along the main trunk road on the west coast of Peninsular Malaysia. Although many new villagers initially made a living by engaging in small scale agriculture activities and working in the tin mines, there was no prescribed economic model for the new villagers. Eventually, many left to make a living through employment elsewhere or to engage in entrepreneurial activities, the main avenue for upward mobility.

The villages remain today but many have found themselves in new urban or suburban areas; the exceptions being some of those in the mining areas in Perak. Some of the successful ones have turned into mini industrial areas, albeit disorganized ones, employing people from outside the villages.

- The Kibbutz Movement in Israel

The kibbutz movement in Israel started well before the formation of the state of Israel in 1948. Its philosophy and aims are political – to "reclaim the ancestral land of the Jews". To achieve that goal, it expounded a strict communal lifestyle that is based on the land, thus one that is agriculture-based. There is a unique philosophy of living that is based on equality and cooperation in all aspects of life. Given its political philosophy of "occupation", there is no legal foundation to the whole exercise nor do the Jewish settlers recognize the rights of those they displace although the communities themselves adhere to democratic principles. The kibbutz movement is a non-governmental effort with strong governmental support.

There are slight variations of the Kibbutz movement, each with its own political inclinations, but unlike the Chinese new villagers or to a lesser extent, the Felda settlers, they do not form the political constituency of a particular political party in Israel, supporting parties that protect their interests.

Today, there are some 270 kibbutzim[15] housing about 130,000 inhabitants or about 2.5% of the population of Israel. The kibbutzim, however, contribute 33% of national farm produce and over 6% of the national industrial output. Most of their industries are ultra modern and export oriented. Some of the most innovative agricultural practices in Israel originated from the kibbutzim. They are responsible for spearheading Israel's agriculture and agri-business sector in the occupied territories.

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[15] Plural of kibbutz.

The inhabitants are homogeneous in that they are all Jews but came to the kibbutzim from various locations in the world. In that sense, the Jewish settlers are a more varied group compared to those in the new villages, closer in character to Felda settlers. Unlike the Felda settlers, Jewish migrants do not represent marginal communities in their places of origins. They are mainly well-educated although few had previous agricultural experience. Unlike the Chinese new villagers who were mainly coerced to relocate, these Jewish settlers are determined individuals who are driven by their political-religious convictions to occupy the settlements.

The main driver of upward mobility for the kibbutzim is knowledge and enterprise that is molded within a strong sense of communal identity. Despite the physical separation of the communities, they are well integrated with the mainstream economy. As a result, they have been able to accumulate significant wealth through the communally owned enterprises.

Although very different, the Al-Arqam movement in Malaysia shares many features of the kibbutzim that can be used to explain their success in economic enterprises. These are community attributes that are missing in Felda settlements. The settler group identity was not sufficiently strong to underpin any communal economic enterprises. The main communal economic platform, the local settlement cooperatives, failed miserably. They were overshadowed by the JKKR and later on, by political parties. The preoccupation was administrative and political rather than economic.

7 LESSONS LEARNED

A community that is unable to generate internal changes degenerates without any external stimuli. In many ways, Felda settlements suffered from this lack of dynamism that stimulates changes. The objective of self-sufficiency, made necessary by the isolation of the settlements, partly contributed to this malaise. Like all closed economies, self sufficient communities lack the ability to generate sufficient surpluses that can be used to finance purchases from the outside which are necessary if development is to take place.

As the settlements and the settlement villages were created specifically as habitats for settlers to live and work on plantations, there was limited scope for any other economic activities. The settlers' children were well taken care of in terms of the provision of educational, health and many social facilities, but the settlements offer limited employment or enterprise opportunities when they are grown up. The children who leave the settlements contributed to the loss of dynamism in the settlements which thereafter aged naturally.

Another important lesson from Felda is that policies and policy prescriptions derived from them should be dynamic. The life cycle phenomenon observed in the Felda scheme illustrated this point clearly. Programs should anticipate the aging and changing nature of the target group which changes many basic assumptions used in the original design of the programs. It is also evident that the economic rationale put in place to economically

empower the target group may prove to be wrong with the changes in the economic environment, if not altogether debilitating the target group. Creating an environment of isolated dependency to obtain the final objective of land ownership in an era when returns to agricultural land ownership have been marginal may seem a futile effort at obtaining mobility for the landless.

However, could settlers be motivated to uproot themselves, relocate to a remote location with a group of strangers and face the hardships of clearing thick tropical forests without the promise of ownership of land? The promise of land ownership was the compelling factor although there was no clear thinking on how they will proceed from the ownership. Unfortunately for Felda, the change in the nature of ownership, from communal to individual, has complicated matters even further.

More importantly perhaps, in terms of continuity, is the evolution of the implementing institution itself. As with any organization, Felda ages and develops an organizational culture colored by its original mission while the needs of its constituent changes. There should have been clear exit strategies and therefore, well-designed transition plans in all development programs.

8 CONCLUSION

Some things are forever bad but many good things become bad with time as time changes things. Providing aid to those in need is not only a good thing to do but is called for in any development agenda, but there must a point, beyond which, that help must be withdrawn or modified to avoid a dependency relationship.

Felda's success was due to its ability to impose strict discipline and order among the settlers – a regime that does not tolerate, what more encourage, individualistic behavior. However, it is this very type of entrepreneurial behavior that is required to obtain mobility at a latter stage. Some of the more enterprising settlers are those who contravened the rules. Therein lies the contradiction. The need to enforce group discipline at one stage and the need to, thereafter, grant individual empowerment has been a recurring contradiction in many development efforts.

Strong political patronage has been shown to be a crucial element in obtaining upward mobility for communities such as the Felda settlements. Political patronage entails control which hopefully translates into political support. In many instances, this is at variance with the objective of empowerment which is necessary to achieve upward mobility. It is not just true for this case, although the effects here are more pronounced given the distinct character of the settlements, but is true in most developmental politics. It is particularly true for the Malay society.

The subsequent generation of settlers and their dependents cannot remain in the settlements and continue working on their plots of land. The land should be seen as an asset acquired by the first generation settlers through their toil. It was necessary for the first generation to be in the settlements, but when they have paid for their plot of land, they should exit the settlements and the whole Felda community re-integrated into the mainstream.

Whatever is the solution, it must take cognizant of the fact that it took almost fifty years to get to where things are today. The different settlements have been touched by development in varying degrees. It is unlikely that there will be a common solution for all settlers and settlements.

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Chapter 3

RURAL ENTREPRENEURIAL DEVELOPMENT SUPPORT PROGRAMS

Maximus Johnity Ongkili

INTRODUCTION

This paper focuses on rural entrepreneurial development support programs in the three northern districts of Kudat, Kota Marudu and Pitas in Sabah. The whole area is about 4,623 sq. km or 464,368 hectares and is about two hours and thirty minutes drive from Kota Kinabalu. It has a total population of 168,901 comprising the major ethnic races and including the indigenous communities such as the Rungus, Bajau, Sungai, Sonsogon, Ubian, Kimaragang, Iranun, Dusun and Suluk. The local population mix, the different phases of economic and rural development being implemented and the higher incidence of poverty in the area should provide a good platform for the discussion of issues relevant to the objectives of this forum.

Infrastructural development, such as government buildings, schools, hospitals and other public amenities, is mainly centered in Kudat, followed by Kota Marudu and Pitas. As far as community development is concerned, most of the local communities, especially the indigenous poor are still residing in remote and hilly pocket areas planting hill paddy and corn on a subsistence basis. Time and again the Government and several concerned NGOs have extended various incentives in the form of agriculture and livestock subsidies and group or individual training to the underprivileged rural community. Nonetheless, these areas are still considered less developed overall. How they have progressed compared to other communities elsewhere depends on the definition of poverty and what criteria are being used to determine whether one is under the poverty line income (PLI) index or otherwise. In Sabah, the hardcore poor are defined as those having income of less than RM343 or for a household consisting of 4.9 members.

This paper will also highlight the roles of the various designated government agencies involved in rural development programs and will provide a selected inventory of the projects implemented in the districts, their current progress and significance to rural community development as a whole.

RURAL DEVELOPMENT INITIATIVES

Rural development programs have been an integral aspect of planning in Sabah since the early 1970s. In line with the strategies of the national development plans as prescribed under the various economic policies, the State Government has also been very active in spearheading the growth of small and medium enterprises (SMEs). This effort has enabled the State to reach out and provide income as well as employment opportunities in the rural sector. The "Outline Perspective Plan Sabah 1995-2010" (OPPS), recognizes the fact that

poverty incidence is more rampant in the rural sector and has put greater emphasis on reducing the poverty rate to 6% by the year 2010 from 22.1% in 1997.

Besides the provision of physical infrastructure to the rural districts, community development through active participation in agriculture was also introduced with the Koperasi Pembangunan Desa (KPD) as the lead agency. Set up in 1977, KPD was by the far the largest organization then, having an extensive network of district offices through out the state. KPD was also instrumental in introducing better agricultural technology thus assisting rural farmers to produce more quality products. Rural programs to enhance production of agricultural produce such as temperate vegetables, tubers, livestock, poultry and aqua-culture were widely carried out. The overwhelming response from the rural community prompted KPD to devise a contract farming system whereby farmers are provided with the required training, tools and equipment and the initial startup capital. Under this program, the farmers will set aside part of their produce in settlement of the initial investment provided by KPD. The balance of their farm produce was left to the initiative of the farmers to sell them in the open market. Sabah Marketing (SAMA) was later established to assist in the collection, retailing and trading (import/export) of agricultural products including farm produce, equipment, and fertilizers.

Other initiatives by the Government were the commissioning of Ko-Nelayan and the Sabah Fisheries Marketing (SAFMA) to assist the local fishermen. There was also the Sabah Forest Development Authority (SAFODA) to provide the opportunity for villagers to participate in the planting of acacia trees as part of the State's reforestation exercise. SAFODA has been allocated with 90,800 hectares of state land and most of which are located in Pitas. Other State agencies that have large stakes in similar land allocations in the three districts include Sabah Land Development Board (7,531 ha) and the Fishery Department (512 ha).

The Sabah Rubber Industries (formerly Sabah Rubber Fund Board) also plays a significant role in assisting rural farmers to plant rubber trees. On the other hand, the Sabah Economic Development Corporation (SEDCO) together with its subsidiary, SEDCOVEST Sdn. Bhd. also extend their socio-economic programs to assist rura farmers to become better entrepreneurs. Their commitment to establish a resilient Bumiputera Commercial and Industrial Community (BCIC) involves setting up of roadside stalls, shop houses and providing the necessary training courses to groom potential trainees into resilient entrepreneurs.

All of the above efforts, for the most part of it, have been quite successful in the initial stage only to be abandoned or sustained on a breakeven basis. Although, the availability of statistical figures is limited to ascertain the number of beneficiaries who are successful or otherwise, many believe that the rural farmers now have better exposure to business and have taken advantage of the State Government's rural development programs to at least improve and maintain their economic status and enjoy a better standard of living. On the contrary, there are also those who failed and resigned to their own believe that they cannot advance or improve themselves without continuous assistance from the

Government. This is very much the case of negative attitudes and a totally despondent mindset.

If figures are anything to go by to gauge any improvement among the rural poor in the three districts, certainly all the efforts and initiatives on the part of the Government and all the concerned NGOs have not produced the desired results. The poverty figures as indicated in Table 1 shows a total increase of 2,628 or 64% in 2001 from 1995. This is despite the development programs, training and subsidies provisioned to the Northern sector over the past decades.

TABLE 1: Number of Hardcore Poor
(Northern Sector of Sabah)

District	1995/1996 Register	2000/2001 Open Register	2003 Population Census*
Kudat	1,286	1,861	73,349
Kota Marudu	1,518	1,583	33,910
Pitas**	1,284	3,272	61,642
Total	**4,088**	**6,716**	**168,901**

Source: Ministry of Rural development, Sabah.
* Population census is based on the Yearbook Statistic, Sabah 2003.
** The second poorest district in Sabah after Kota Belud.

Although this paper stops short from providing measures to alleviate poverty, the above figures would still provide the inputs for further discussion. Since most of the entrepreneurial programs dealing with the rural community are centered on income generating activities such as selling of farm produce, running of sundry shops, making and selling handicraft, homestay and so forth, with the main aim of improving their standard of living, the statistical results obviously show no positive changes at all.

On the other hand, the targeted beneficiaries may not be the hardcore poor but individuals who have a proven track record of running small businesses and having the potential to be role models who can motivate others to venture into business or at least dwell in some income generating activities. We cannot also ignore the possibility that the figures may have been inflated due to some poor families who have returned to the respective districts to work on their fallowed land. This is typical of the slash and burn method of farming that the indigenous group had traditionally practiced through the generations (IDS, 2003b).

RURAL ENTREPRENEURS

What is an entrepreneur? In most business textbooks, an entrepreneur is defined as a person who is active in business and assuming all the associated risks involved. Some define it further as a risk taker in the private enterprise system and that ther are two types

of entrepreneur i.e. a creator and a manager or similarly a *hunter* and a *farmer* (Harrell, 1994). The hunter is described as a predator, always looking and roaming around for something to bring home, to feed his family or just for the excitement of it. He is of different breed, different blood. On the other hand, the farmer is more at home tilling his land, selling the harvest and repeating his task over again. Both are equally successful in what they do. They are self reliant, have a positive outlook and have stronger determination than the average person within their community. Harrell's description seems to have validity in our local setting. Even in the rural areas, there are some who will stand out with promising entrepreneurial capability. And more often than not, these are the few who are already self reliant, able to grasp the idea of business opportunities thus bringing their families out of poverty.

Their progress would naturally only be limited by the absence of supporting facilities and amenities such as electricity supply, access to market outlet, tools and equipment, product design/improvement (e.g. handicraft) and seed capital. Another issue on the subject of entrepreneurship is whether an entrepreneur is born or made. The real entrepreneur will be more inclined to follow his own 'instinct' and, coupled with what he had experienced and learned, he will have better judgment and make better decisions (Harrell, 1994). On the other hand, proper mentoring or copying what successful people do in running a business, coupled with adequate training, could also prepare one to be a good businessman. Hence, "…with proper conditioning your most powerful subconscious being will mould you into whatever you aspire to be" (Dale Carnegie)—that you don't have to be a born entrepreneur but can be nurtured into one.

Taking the rural setting as our reference point, there would hardly be any individual who will fit the exact description of a born entrepreneur. And there is no evidence that born entrepreneurs are more successful than self-made ones, or vice-versa. Therefore, training programs will be necessary to guide them on how to run their farms as a business concern.

Generally, the rural communities are mainly engaged in farming, fishing, hunting or gathering of forest products. And there are some who inherited skills in making household items such as baskets, stools, wooden kitchen ware, knives, handicraft, etc., while some are gifted village house architects and there are also families that are into boat building. And these few families would hold a certain advantage over the others as they can generate additional income from selling their goods and services. However, their income potential is limited to the number of clients from within their community. Thus the idea of going on a fulltime basis or operating on a bigger scale might turn out to be futile if there are no takers to his end products.

Any government agencies and NGOs alike would target an area that is known for such skills and develop enrichment courses to include use of new tools, designing and packaging, preparing simple business plan, cost budgeting, cash management and understanding market forces and so forth. Indeed, these are also the basic reasons that the Government should intervene through the implementation of entrepreneurial development support

programs; giving the opportunity for the rural entrepreneurs to advance further and to let them become living examples to the rest of the community to emulate.

It is noted, however, that not all of the participants who participated in the government-initiated entrepreneurial training schemes have succeeded in business. This is despite the continuous assistance and mentoring given. Many have given up even before completing the training programs, whilst some are still not prepared to put in the extra effort to run a proper business.

On the other hand, there are those who are completely deprived of modern amenities. They reside on the hilly areas fringing forest reserves and are usually miles away from the nearest dirt road. They live on subsistence farming on squatted state lands to which they do not have any legal claim. They build temporary sheds on such land and hope to hold on to their customary land rights. Illiteracy runs high amongst their group and therefore emphasis on education for their children is secondary to farming the land for food. In fact, they have nothing to show in terms of monetary assets or properties and they are more adamant in preserving their way of life. These are the group that could easily fall into the hardcore poor category. The question is, are we (the public/government) to decide their destiny in life? Are we to decide that our way of life is better than theirs? Although this is not the scope of this paper, there are a few alternatives in the government's approach to effectively reach this special group. Perhaps an extended entrepreneurial support programs could be tailored for them.

CHALLENGES IN PROJECT IMPLEMENTATION

Two important indicators of development are the level of income and the degree of self-reliance. Both measures are the result of individual enterprise – entrepreneurial behaviour. What has been the experience of entrepreneurial development programs, including micro credit schemes, in rural areas? How are they financed? What were their delivery and monitoring mechanisms? How effective have they been?

In exploring the above issues, some examples of the rural entrepreneurial development supports program will be highlighted. This will also include a brief description of how the program is being implemented in the targeted rural areas. The following are some selected on-going projects in the three districts.

Yayasan Usaha Maju (YUM)

YUM was set up as part of the Government's strategy to eradicate poverty by providing micro credit facilities to poor families through out the state. The idea of establishing YUM was mooted following the successful experience of the Grameen Bank of Bangladesh in reaching out to help the hardcore poor in their country. Currently, YUM operates in all the districts of Sabah serving 8,328 participants with total loan extension of over RM43 million. The three northern districts alone show 1,350 members receiving more than RM5.4 million over the period of 14 years.

Table 2: Yayasan Usaha Maju
Micro Credit Participants by District

No.	Districts	No. of Participants	Loan Extended
1	Kota Marudu	498	2,505,875
2	Pitas	389	1,031,033
3	Kudat	463	1,873,992
4	Kota Belud	192	2,884,300
5	Kota Kinabalu	557	3,782,561
6	Tuaran	457	2,666,200
7	Ranau	292	1,912,700
8	Papar	553	2,999,850
9	Beaufort	555	3,108,700
10	Kuala Penyu	305	1,236,650
11	Sipitang	239	3,340,000
12	Tambunan	486	3,155,500
13	Keningau	735	3,779,250
14	Pensiangan	362	1,490,200
15	Tenom	321	771,400
16	Labuk	380	1,597,160
17	Telupid	438	1,180,550
18	Kinabatangan	378	822,620
19	Sandakan	51	356,000
20	Kunak	278	773,700
21	Lahad Datu	129	602,250
22	Tawau	151	1,077,800
23	Semporna	119	195,400
	Total	**8,328**	**43,143,691**

Source: Yayasan Usaha Maju, 2004.
Figures are accumulated since 1990.

The recipient members are selected based on YUM's criteria as follows:

- Gross earning per capita of RM129 a month or less
- Priority to participants earning per capita of RM64 or less
- YUM house Index
- Titled land not exceeding five acres

Upon meeting the above criteria, the applicant will have to fill up an application form and will be evaluated and re-interviewed by the Branch Manager. Normally the process will take about one to two months. Once the loan is approved, the member is required to repay the loan on a weekly instalment. Most of the projects financed are small scale business activities ranging from selling vegetables and fruits to running sundry shop, doing tailoring and operating hair saloons to making furniture and handicraft. Training programs and related socio-economic development courses are also conducted on a yearly basis at the branch level.

The rural community's response to the YUM's micro credit scheme has been quite overwhelming. The 90% overall repayment rate is proof of the seriousness of the members to improve their standard of living through gainful participation in economic activities. The effectiveness of YUM in bringing about entrepreneurial awareness at the rural level is commendable. However, due to funding constraints, YUM has not been able to provide its credit facilities on an extended scale.

Micro Credit Financing

The effectiveness of the micro credit financing in several countries in helping the poor improve their livelihood, provides Malaysia the optimism that its very own credit scheme for the poor would spur development of the SMEs. As of December 2003, there were 99,363 applications but only 55,523 applications were approved with 66.8 percent for Malays, 18.7 percent Chinese, 12.1 percent Indians and 2.4 percent others.[1]

This scheme does not require any collateral from the borrower but charges four percent annual interest rate for a maximum of five years. A person may apply for such loan for amounts from as low as RM100 up to a maximum of RM20,000. The financing covers activities ranging from farming, planting of short and long-term crops, aquaculture, marine fishing to food processing and working capital. The main channels for the micro credit facilities are Bank Pertanian Malaysia (BPM), Bank Simpanan Nasional (BSN) and the Amanah Ikhtiar Malaysia (AIM). In 2003, the allocations given by Bank Negara were RM500 million, RM300 million and RM200 million to the three agencies, respectively. These agencies are quite active in the three Northern districts.

For Sabah, a total of RM24.6 million was given out to 10,314 borrowers from all over the state as of October 2003. However, there are still grouses from many quarters that they are being marginalized for no apparent reasons and many have been cheated by middlemen who would demand up to 50% of the loan borrowed. On the other hand, there are also bogus applicants who took advantage of the less stringent processing method employed by the agencies. Nevertheless, the micro credit scheme has contributed significantly in helping small scale business operators with their financing needs.

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[1] *Borneo Post*, 16 December 2003.

One District One Product

Putting serious emphasis on the need to achieve equitable development in the rural areas, the State Government introduced the One Village One Industry rural economic development concept in late 1996; the term was later changed to One District One Product (1D1P). The Village Industry Unit (or Unit Industri Desa) was entrusted to implement the concept. This unit is currently under the purview of the State Ministry of Rural Development (MRD). The Northern sector was again the major beneficiary of this project. Some of the projects implemented include caged-fish culture, gong-making, handicraft making and honey production in Kudat; fresh water fish breeding and maize cultivation in Kota Marudu; and ground nuts cultivation in Pitas.

A total of about RM385,000 has been spent to build the necessary facilities such as handicraft centre, display hut, construction of roads, provision of tools and equipment and other raw material requirements. The main aim of the 1D1P is to develop and promote *in-situ* economic skills and resources with the hope of encouraging the other community members to participate. Basically, existing village products that have potential market value will be selected for further development. This is as opposed to selecting any lay farmer or fisherman who does not posses any skill and has not had any exposure to business activities. Instead villagers who are directly involved in making the products will be roped in as role models and given related training on product quality and market demand. This first batch of potential entrepreneurs is then expected to encourage and train others to participate in promoting the village industry. Some fine examples of such viable economic ventures are gong-making at Sumangkap, handicraft and honey production in few villages within the Matunggong area.

It is disheartening to note, however, that due to the vagaries of nature, the other village industries mentioned above, i.e., the caged-fish culture, ground nuts, fish breeding and maize cultivation have not produced the desired results. The unexpected drastic changed in weather conditions and rampant flooding during the last few years have proved too difficult for the villagers to mitigate.

Ministry of Agriculture and Food Industry (MAFI)

The State Government through MAFI is actively involved in devising and introducing policies benefiting the rural sectors of the three districts. The implementing arms of the Ministry, namely, the Department of Agriculture (DOA), the Department of Fisheries (DOF) and KPD have been the major players in spearheading rural development initiatives in the areas.

The DOF has made significant changes to the standard of living of the many poor fishermen in the Northern districts. Most of the coastal villages now have been provided with appropriate community facilities such as the provision of outboard engines, fishnets, fishing boats, jetties, floating cages, and related administrative and technical support for various aquaculture activities including seaweed cultivation. Although most of the fisheries programs are focused on fishing and processing or post handling of sea produce, they

indirectly promote entrepreneurship by providing training on how to manage sales and control the cost of production.

The DOA on the other hand extends technical and professional assistance to the rural farmers. Based on field observation by Institute of Development Studies, many of the rural farmers have greatly benefited from the assistance. Some could even afford to own bigger houses, trucks and other family vehicles. However, there are also grievances from the community that they find it difficult to comply with the DOA's requirement of proof of land ownership in order to be eligible for the assistance. Normally, the department would insist on titled land of five acres for short-term crops and ten acres for long-term crops. In response, DOA has relaxed its requirement to also accepts applicants with lands that are still being processed, provided that such lands have been surveyed with the proper *land application* (LA) documentation. There is no provision for applications based on customary land right although in some instances, such application will be treated on an *ad hoc* basis.

Japan International Co-operation Agency (JICA)

JICA has over the years initiated numerous rural development projects throughout Sabah. One such project is the comprehensive development focus on enhancing rural women entrepreneurs as reported in its publication entitled *The Study on Development for Enhancing Rural Women Entrepreneurs in Sabah*. Besides enhancing their skills, the local community is also introduced to new ideas and processes which they can easily apply to take advantage of the abundance natural resources in their areas. A special taskforce has been established to undertake the project. The taskforce is composed of representatives from the State Ministry of Rural Development, District Offices, KPD, KEMAS, Perbadanan Kemajuan Kraftangan Malaysia, Yayasan Usahamaju, IDS, the Department of Agriculture, Sabah Tourism Board and Yayasan Sabah. At least RM200,000 has been spent in the form of a grant to implement the projects and this includes surveys, training, purchase of materials, tools and equipments and other related administrative expenses.

Included in the JICA study is a report entitled *"Utilization of Unused Resources and Products"*, which looked into how rural women used agricultural by-products, for example, banana leaves and trunks; discarded bee-wax used cooking oil or fats into usable and marketable products (JICA, 2003). The idea was not so much on the transfer of technology but purely on enhancing personal capacity by instilling confidence amongst the women folk to be more creative, innovative and productive.

The discussion below is focused on how the project was carried out by the taskforce.

The project started with a three-day hands-on workshop conducted JICA's Japanese handicraft specialist. There were twenty-one selected participants from the district of Kudat, Kota Marudu and Pitas. Following the workshop, the Taskforce proceeded to conduct on-site workshops in three selected villages, i.e. Kg. Minyak in Kudat (candle making-16/10/02), Kg. Terang Kapas, Kota Marudu (paper and soap making16/10/02), and Kg. Kalipuon, Pitas (paper and soap making 17/10/02).

At the initial trial, it was observed that the quality and creativity of the products produced by the participants were below par. This was expected as the initial learning was focused mainly on understanding the process of making the handicraft items. The quality and creative inputs would come later with constant practice through trial and error.

A few more follow-up workshops were scheduled in Kota Marudu to enable the participants to harness their skills and to share some successful and fruitful experiences with the new batch of trainees. These follow-up sessions where handicraft-making competitions were also organized amongst them were indeed successful. During this time, the Taskforce had also identified sixteen individuals to form the initial core group based on their products and determination shown while on training. This group of sixteen was able to produce attractive paper bags and souvenir boxes and candles of various designs and shapes. At the same time, they were also taught how to set prices and control their cost of production.

Almost the same method was used to implement the other projects and the participation from the women was quite encouraging. The JICA projects which ranged from tourism activities to the making of local biscuits and cakes, tailoring, basket weavings and making *atap* from *nipah* leaves have been quite successful in the districts. Several of the participants have registered incomes well beyond the PLI (JICA, 2002).

Other Support Groups

There are also other support groups that have taken the initiative to reach out and extend assistance in the form of *ad hoc* training courses to the rural sector. And these efforts invariably have given further motivation for the locals to respond positively to aspects concerning their well being and their personal progress through participation in economic activities as a means to gain additional income. The Kadazandusun Cultural Association (KDCA), for example, is instrumental in helping to train and promote traditional Rungus dress making in Matunggong. This is part of KDCA's numerous socio-economic activities to provide the opportunity for the locals to make some additional income whilst preserving local traditional and cultural skills. The Unit Hal Ehwal Wanita Sabah (UHEWS)'s concern for the plight of the rural women has also played a complementary role in providing motivational and entrepreneurial courses.

The homestay programs being promoted by the Sabah Tourism Promotion Corporation (STPC) provide a good opportunity for rural farmers to generate extra income. The Rungus longhouse at Bavanggazo, for example, has greatly improved the income of the nine families involved in running the longhouse. Besides having to tend to their nearby farms, these families take turns to take care of their guests, either as guides or by entertaining them with traditional music and cultural dances. Souvenir items such as beads necklace, sashes, and other traditional items are also produced in-house and offered for sale at very reasonable prices. STPC also conducts seminars and workshops to assist homestay operators in marketing, customer relations and maintenance of quality housekeeping services.

Others that have contributed to rural and entrepreneurial development in the three districts include MARDI, AIM, FAMA, and LKIM. These are federal agencies that also have well distributed machineries to assist the rural communities in all the districts throughout Sabah.

CONCLUSION

The notion that anyone should be able to perform well in business if given "a level playing field" may not be totally true given the diverse background of each aspiring rural businessmen. The fact remains that each person has his own individual character, work experiences and his exposure and application of skill and knowledge. In most instances, the person showing greater determination and resilience would most likely be successful regardless of any entrepreneurial support from the government. Essentially, these are the very individuals that should be groomed as role models and mentors to their fellow community members to participate in economic activities to increase their household incomes. And based on general feedback, these individuals are the initial target of the various entrepreneurial support programs initiated by the State Government and several concerned NGOs. Working through them seems to be the preferred first step strategy towards reaching the underprivileged segment of the community, the hardcore poor. The idea is to slowly and eventually introduce the ways and means to additional income and to a better standard of living.

In essence, millions have been spent to uplift the livelihood of the rural poor. Besides the provision of the necessary rural infrastructures, other incentives such as training programs, small grants and financing through the micro credit schemes have also benefited the rural sector in many ways. The three Northern districts of Kudat, Kota Marudu and Pitas in particular, have been at the receiving end for most of the government's numerous efforts to eradicate poverty. Indeed, this is part of the State Government's *Halatuju*, i.e., to bring forth equitable development to the rural areas and to raise the standard of living through improved economic income of the rural community.

It cannot be denied, however, that even in the absence of reliable statistics, the rural community has benefited immensely in terms of access to education, knowledge and skills. Perhaps this is an opportune time to devise yet another advanced level program for the initiated few to guide them on participating in higher value economic activities. This program should involve extensive marketing of rural products and services throughout the nation in concert with the Prime Minster's call for hypermarkets to promote local products in their stores.[2] Similarly, financing through the micro credit scheme has been made easily accessible for aspiring individuals to engage in any economic activity. The RM2 billion allocated for the development of Bumiputera entrepreneurs under the 2005 budget should surely extend the reach for greater business participation amongst the rural entrepreneurs in line with the Government's aim of establishing a resilient Bumiputera Commercial and Industrial Community.

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Chapter 4

AGRICULTURE AND REGIONAL DEVELOPMENT PROGRAMS

Afiffudin Haji Omar

1 INTRODUCTION

The historical notion of the peasantry as being those small farmers ensnared by the forces of market economy has been widely accepted by both academi a as well as developmental practitioners of post-Redfield generations.

However two major schools of thought regarding their socio-economic development emerge forming two paradigms. One adheres to the hypothesis that it is the social and cultural values of peasantry that determine their innovations, and ultimately, their economic status. This paradigm, involving the notion of an uninnovative peasantry with all its contributing factors such as the wrong value system and its entailing attitudinal patterns, has been challenged by empirical analyses and has, in most cases, proven to be unfounded.

The second paradigm, based on studies on the peasantry undergoing economic development has significantly demonstrated that it is the institutional or the structural factors that constitute the determining variables to development; in this context both material and cultural changes. Poignant examples in Malaysia are the successes of FELDA, MADA and FELCRA.

These three agencies have adopted the structural approach in which the participating peasantry is taken as a single holistic entity rather than as individual small farmers. The agricultural activities they perform are deliberately telescoped into a level that achieves the benefits of the economy of scale. The individual learning-curve process does not determine the diffusions of technologies and other innovations but rather the impact of the demonstration effect arising from the operation of bigger farm sizes created by cooperative sharing.

The consequential increase in agricultural productivity and its entailing levels of living have thrust the peasantry further into the monetary economy where the demands for capital and market integration begin to increase. Thus the commercialisation of agriculture and urbanization of peasant culture emerge as the targets of rural development. These form the arms of the developmental model adopted in Malaysia at present. This indeed is the more realistic paradigm.

This essay attempts to look into the future of agricultural development as an integral part of the national aspiration to be an industrialized economy by the year 2020, through its functional integration.with the process of regional development. It is through massive regional development programs that agriculture has been able to grow and within these programs institution-building among the peasant community has been able to progress.

2 REGIONAL DEVELOPMENT

Regional development in Malaysia is not a consequence of the forces of forward and backward linkages of economic growth. There has been deliberate intervention by the government to enforce an infrastructural mould onto regions determined more by political requirements than by economic necessities.

The authorities managing FELDA, MADA and FELCRA have well defined and gazetted regions for agricultural development. The Acts of Parliament governing them spell out their goals and functions mostly in agricultural production, lacking important aspects of spatial development that could get agriculture moving and facilitate the consequent movement towards the commercialisation and industrialization of agriculture. These latter functions are divided up among other statutory and line agencies of the government. Such fragmented approach to regional development has proved to be inefficient.

The MADA Act, for instance, only spells out the boundaries of the region supplied by MUDA irrigation waters as its area for agricultural development. There is no provision given for the planning and implementation of towns and growth centres. Hence conflicts arise between government agencies empowered with these responsibilities. As a result there has been uncoordinated planning and development, which turns out to be wasteful.

One good example is the conversion of agricultural land, which had been invested with irrigation infrastructure five years earlier, into residential and commercial growth areas. The multimillion-ringgit irrigation and drainage infrastructure is simply wasted by being buried under imported earth. Another example is the planning for the establishment of milling and drying facilities in MADA. Drying and milling within a short period of time after each season's harvest is deemed to be very critical. Civil servants in Kuala Lumpur have been impressed by American technology which calls for massive structures and machines. They thus overruled the plan put forward by agriculturalists who asked for smaller and more numerous structures and machines better suited to the infrastructure of the MADA region. The massive American drying and milling complexes would slow operations due to logistical problems while slowly destroying the farm roads through the use of heavy vehicles needed to transport padi and rice to and from the complexes.

Repetitions of this type of fragmented planning and implementation of projects can be seen in many development programs. It does not only result in wasteful and inefficient investment but also creates social chaos and unrest among the peasantry. A number of demonstrations protesting the chaotic handling of marketing and alleged exploitation by officials have occurred.

An ideal model of regional development which has an agricultural base, should be the one which empowers the responsible authority to determine policies and strategies for both agricultural and spatial development. The need to provide markets for farm products calls for an integration of urban (spatial) with irrigation and drainage planning.

The linking of population growth data with agricultural growth forecasts should be within one agency. Thus within one regional development area there would be strategically located towns surrounded by farmlands where irrigation infrastructures are optimally provided.

The planning for the above needs would then take into consideration the provision for space within the towns from where farm supplies and equipment could be obtained. Special workshops, shop houses and showrooms could be included in the structure plans of these towns. In turn these towns should be connected to one another and to developed areas within and outside the region by a hierarchy of road networks.

Such an integrated early planning would generate a high investment efficiency level for the national economy. Furthermore, there would already be a network for the transportation of inputs and outputs within and outside the regional markets, and for new agricultural technologies to flow freely. The advantages and merits of this early holistic, over an *ad hoc* and piecemeal, planning cannot be overstressed. What has been learned from past mistakes should not be confined to lecture rooms and seminars. It should be included in the strategies of the national planning body.

3 INSTITUTION BUILDING AND URBANIZATION

The creation of regional growth and development areas provides an excellent physical framework for organizational activities to create functional institutions among the peasant communities. Agricultural growth can only be achieved through the operation of big-sized farms that is by exploiting fully the advantages of the economies of scale. Such a factor among small farmers can only be instituted through cooperative farming activities as well as the creation of socio-economic groupings. This has been achieved through farmers' organizations.

Farmers' organizations in Malaysia have been observed not only to provide loci for farming and other economic activities but have also been known to nurture the formation of a progressive and innovative culture. However, this development was not anticipated in the early planning because the planner's vision was telescoped solely on planning agriculture growth. Hence, the emerging social problems of second – generation youths, uncontrolled rural-urban migration and obsolete rural facilities begin to rear their ugly heads. Another forgotten factor in the plans is the provision of participatory dimensions for the peasantry in decision – making boards of the development agencies. Ironically most of the administrators and appointed persons sitting in the boardrooms know next to nothing about agriculture or development economics.

In the course of agricultural growth and development in the regions, the production centric plans, physical and institutional, began to generate problems. Firstly, the sudden increase in the production level began to cause snares in the flow of inputs and outputs. This was then followed by the deluge of demands for consumer goods. Later social amenities like water and power supplies as well as educational facilities became short in supply. Finally, political demands could not be met satisfactorily.

The reaction of the authorities to these consequences of uni-dimensional planning has been piecemeal. There has been an inclusion of one or two peasant representatives in the boards of directors of the agencies. However, this political appeasement move does not solve any problem, firstly, because the representatives cannot articulate their constituents' problems effectively due to communication difficulties and secondly, peasant participation at the apex without a strong representation at the base of power proves to be sterile. A peasant representative with a poorly made bush jacket, sitting among English-speaking burueacrats in double-breasted suits in the boardroom would certainly be just a figurehead. While on the ground, decisions are mostly made arbitrarily by petty officials.

Whatever grassroots participatory structures seen today have come through the Taiwanese model of farmers' associations bulldozed through by the Agricultural Development in the 1970s. It was first implemented in the MADA region.

This model incorporates peasant participation from the very grassroot, that is, the village unit that sends its elected representative to the state level, which goes to from the apex, the National Farmers Association. This far-reaching participatory structural innovation goes a long way in increasing production levels, capital building capacity, and credit and marketing facilities, while also providing new avenues for social and cultural activities.

The instant success of this model encouraged the government to wrest way the Farmer's Association movement from the Department of Agriculture to form an agency called Farmers' Organisation Authority. This Authority incorporated the Associations together with the numerous half-dead rural cooperatives to from what is now called the Farmer's Organization. There have been other similar cases of central bureaucracies – in FELDA, FELCRA and RISDA, for example – that have assumed control of innovative local organisations.

What this essay is trying to impress is that the seemingly holistic nature of agriculture development in Malaysia is a result of putting together many ad hoc and piecemeal plans. The question of whether this has been successful in terms of investment efficiency and nation building has yet to be answered. What would the savings have been if there had been an early demarcation for urban areas in agricultural development regions? What would the second – generation population that is left behind in the agricultural region be doing if enough facilities for modern living and farming had been provided in the initial planning? Are the present economic gains enjoyed by the peasantry going to last in the current rush to industrialization?

The move towards a developed industrial economy demands, among other things, a lessening proportion of the population in farm occupations. This presupposes a high agricultural productivity level to support a growing industrial sector. At present, farm productivity has increased significantly if compared to the levels of the 1970s. However, the decrease in the proportion of people depending on farm income has not been significant.

Regional development agencies such as KEJORA, KETENGAH, DARA and KEDA are supposed to absorb the surplus farm labor by providing them resource-based industries located in urbanized growth areas within the regions. The emergence of these agencies in the last three decades has proven to be effective in mitigating an unfettered rural-urban migration. Thus the problems faced by Jakarta, Manila and Bangkok are foreign to Kuala Lumpur, at least at present.

What is left to be done is the setting up of more resource-based industries using state of the art technologies in the growth areas within the developing regions. At the same time farming-out some of the production processes from big factories located in the nearby developed industrial areas could further develop the rural towns. Thus the functional linkage in production between the developed and the adjacent rural region can be established. A hierarchy of urbanization could be planned to form a logical network of cities, regional towns and local growth centers in the country. Such a plan could be instituted for the future development of the Penang-Muda Region with KEDA Region, Johore Baharu-Pasir Gudang with Kejora, West Johore Region, Kuala Trengganu – Dungun with Ketengah Region, Kuantan with DARA Region. A super planning unit is needed and it has to be staffed by experts from diverse disciplines related to development. The existing Economic Planning Unit in the Prime Minister's Department is not well-suited to undertaking such a complicated and enormous task.

4 WHITHER AGRICULTURE?

The significant growth and development of agriculture would not have occurred without the massive regional development programs which started in the late sixties. The old method of innovations and transfer of technologies to individual farmers has proved to be ineffective. The individual peasant may not be innovative, but when he is brought into a functional cooperative movement, he becomes very innovative.

The cooperative nature of farming has increased productivity significantly, particularly in the rice sector. From an average of 3 tons per hectare at the beginning of double cropping, it had reached an average of 6 tons per hectare by the early 1980s. However this increase had stalled by the time the country launches its massive infrastructural and industrial development in the middle 1980s. Apparently, there is a proportionate decrease in the developmental allocation for agriculture.

Looking casually at the state of agriculture at that time, there seems to be a neglect whereby innovations from agencies such as MARDI, RRI and PORIM are not forthcoming. A good example in the peasant sector is the state of padi stand where segregates are rampant. This signals not only a yield decrease but also quality degradation. The recent change in governmental policy which puts agriculture back into its list of priorities is like a breeze of fresh air into a stale and stuffy room. The strategy to increase value added to agricultural products is very much welcomed. This can be a major motivator for productivity increase. Apart from increasing farmers' income, it bodes well for the national aspiration to significantly

lower the annual food import bill which has been increasing significantly since the mid-1980s.

What needs to be done to achieve the above goal is not flamboyant and buccaneering moves like planting apples, grapes or even growing padi on roof tops, but the institution of well planned and calculated steps towards an agriculture that facilitates forward and backward linkages in the rural-urban and farm-factory relationships.

First and foremost, research and development to further increase added value in already established agricultural sectors like rice, rubber, palm oil, pineapple fisheries and pepper have to be carried out. A lot can be done in the downstream activities of these commodities. There are even ready-made research and development products which are awaiting investments to commercially exploit them. Talk about the development of *halal* food hub for the Muslim world has been going on for a number of years. Both domestic and foreign direct investments in these industries should be encouraged.

Newly discovered uses of rubber and palm oil have opened a new dimension for home grown industries like fuel oils, building construction materials, furniture and others. Unfortunately funds allocated by the government for local researchers in these fields have not been taken up. Some local universities must be converted into research universities so that those Malaysians equipped to do research are not overly preoccupied with teaching. For research to depend entirely on MARDI, PORIM and RRI will not be enough to produce the desired quantity and quality of commercially applicable results.

Second, research and development in some areas of agriculture is still lacking. Thailand has progressed so far in the science of pomology which enables them to export various kinds of tropical fruits particularly mandarin oranges and longans. Looking into the lists of food items imported annually, these fruits form significant leakages to the Malaysian economy. While Malaysia has been able to compete in the production of quality durian, the international market for durian is very limited and furthermore durian does not have much import substitution value.

It is ironic that research in citrus production is stalled by problems of root – rot disease due to fungus infection of roots, while Malaysia is known to be successful in keeping dangerous fungi away form its main agricultural export items, rubber and oil palm. Hence efforts in citrus planting should be supported by good research and development products.

Other fruits and vegetables are calling for more support from research and development. Imports of various types of vegetables are also draining the country's ringgit significantly. MARDI's research products in these areas do not seem to diffuse much to the farmers, even to the innovative Chinese vegetables farmers. A good example is the lowland cabbage which is seen as a good import substitute for highland cabbage from Sumatra.

All the above agricultural products command high demand levels in the domestic market. But their levels of local production are still very low. While further researches are being done, effort to diffuse agricultural technologies related to their production should be activated in an acceptable manner.

At the beginning of this essay it was mentioned that the Malaysian peasantry is very receptive to innovations if it is organised into cooperative commercial groupings. If even the relatively more innovative Chinese garden farmers are reluctant acceptors, then they also must be organised into cooperatives.

Reasons for lack of acceptance of agricultural innovations in Malaysia certainly are related significantly to the structure of production. While this essay stresses much on the lack of the economies of scale, hence the need for a cooperative effort, problems in land tenancy and accessibility to productive land must also be addressed. A good example is the utilization of ex-tin mined areas, mostly in Perak. Much of this land has been allowed to remain unused while many vegetable farmers are crying for land . They instead have to resort to renting young rubber and oil palm lands to grow vegetable and fruits like watermelons while nearby vast acres of mined lands are overgrown with tall elephant grass. Such a paradox has to be rationalised.

The recent neglect and lackadaisical attitude towards the production of fruits and vegetables has been rationalised by the classical economic principle of opportunity cost; if we can earn tons of money from palm oil and rubber exports, why should we waste our resources on the production of these items which we can buy cheaply from neighbours like Indonesia and Thailand? But despite that, the increasing food bills annually have been contributing negatively to our balance of payment situation and may lead to serious problems later. Moreover there is the question of food security. What levels of cheaper food imports are we willing to tolerate before considering producing them ourselves? The advancement in biotechnology can enable us to produce our food as cheaply as our neighbours. Their advantage of cheap labor and land can be overcome by our advancement in biotechnology. We have progressed respectably in tissue culture in our oil palm industry and further advances in genetic engineering can be made if Malaysian scientists are allowed to concentrate on them and are given more motivational privileges.

5 AGRICULTURE AND REGIONAL DEVELOPMENT

As argued earlier in this essay, regional development facilitates the growth of factor endowment through cooperative use of infrastructures, capital, labor and land. As a result market integration has also been developed whereby urban industrial complexes connected to the growing world class ports of Penang, Port Klang, Pasir Gudang and Kuantan are functionally absorbed into the region of agricultured growth. Thus rubber and palm oil have become the commodities of export for these complexes.

However, what is lacking is regional production of food for the consumption of those living in these areas. Hence, there need to be regional food production plans for these urban – industrial – port complexes. The South-Johore region is a good example of wanting such a plan. The Singapore factor, where domestic demand for food items competes with demand from Singaporeans who cross the Johore Straits to snatch up food from local Johore markets, generates complaints from Johoreans on the consequential inflationary food prices. This could easily be overcome by an increase in the supply. But there is little local response to that. Instead, responses from Indonesia and Thailand fulfil the market needs. Similar situations are emerging in the complexes of Penang, Klang and Kuantan.

Factors of production, particularly land are still abundant in the in the vicinities of these complexes and we therefore do not need roof – tops to plant on as have been suggested by some quarters. Mechanization has progressed well to replace the dwindling local agricultural labor needed. Capital is there for the taking, not necessarily from banks and corporations but from the farmers' organizations themselves. If we look carefully into the accounts of these organizations, we would discover millions of dollars lying in fixed deposits in local banks. This idle capital can be mobilized with proper guidance by the government.

6 CONCLUSION

The recent government move towards emphasizing agricultural development in the total scheme of national development, particularly in the area of adding value to primary agricultural products, promises a more vibrant regional development in the future. Agriculture will no longer be seen with "tunnel-vision" perceptions as those activities related only to the production of primary goods. Those involved in agriculture from the land tillers to the national economic planners have to focus on the role of agriculture as an important integral part of the national economic development machinery. Agricultural growth and development have proceeded very far since independence. But much of this has been crop-centric. There are not enough functional linkages with the industrial-urban sector. Although agricultural planners have already mapped out agro- climatic regions in the country, they are very agro-centric. Little attention has been paid to functionally link agricultural production to the emerging growth areas such as new townships.

The timely revision of the role of agriculture by the present regime should place the tiller in a higher position than he is in now. Although there are already socio-economic infrastructures instituted for him to participate in the national march towards a developed economy, what is still lacking is a mechanism to empower him to hold sufficient equity positions in national level corporations. The minority position he holds in BERNAS, FELDA Corporations, FELCRA and RISDA are examples of such marginal roles given to him, while much of his savings are lying idle in fixed deposits. It should always be remembered that, in the final analysis, it is man who occupies the central position of any materialistic endeavour.

Chapter 5

UNDERSTANDING HARDCORE RURAL POVERTY

Chamhuri Siwar

1 INTRODUCTION

This paper discusses the issues of hardcore rural poverty and its eradication in the context of poverty and income distribution in Malaysia. The paper will attempt to answer some basic questions: Why are the hardcore poor (HCP) still a reality? Is it explained by inadequate reach or accessibility to intervention and support programs? Have there been institutional design problems and lack of economic opportunities?

In attempting to answer some of these questions, the paper discuses the status of poverty, income distribution and the characteristics of the poor and hardcore poor. The paper also reviews poverty alleviation strategies and programs, focusing on the Hardcore Poor Development Program (PPRT[1]). Some assessments of the successes and challenges of the poverty alleviation programs are then made. Conclusions from several impact studies are also provided to highlight the successes, failures and challenges facing hardcore poverty alleviation programs.

2 POVERTY AND INCOME DISTRIBUTION STATUS

Table 1 shows the incidence of poverty and the number of poor households from 1970 to 2002. Over that period, overall poverty incidence has dropped from 52.4% to 5.1%, a reduction of about 47.3 percentage points in 30 years. Rural poverty incidence is slightly higher, decreasing from 60% in 1970 to 11.4% in 2002. Urban poverty, on the other hand, is lower, reducing from 22.3% in 1970 to 2% in 2002. The number of poor households decreased from 574,000 in 1990 to 267,000 in 2002.

Assuming five member households, it is estimated that there are about 1.3 million poor individuals in Malaysia in 2002.

With the significant reduction of absolute poverty, the focus of poverty alleviation programs has shifted to the problem of hardcore poor (HCP), defined as households with income below 50% the poverty line income (PLI). In 2002, when the official PLI was at RM529 per month, the HCP are those living in households with less than RM265 per month for a household size of 4.6.

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[1] Program Pembangunan Rakyat Termiskin.

Table 1: Poverty Incidence (%) and Number of Poor Households by Strata

Poverty Indicators	1970	1985	1990	1995	1997	1999	2002
Poverty incidence (%)	52.4	20.7	16.5	8.9	6.1	7.5	5.1
Number of poor households	-	-	574,500	370,200	294,400	360,100	267,900
Urban poverty (%)	22.3	8.5	7.1	3.7	2.1	3.4	2.0
Rural poverty (%)	60.0	27.3	21.1	15.3	10.9	12.4	11.4
Hardcore poverty (%)	-	6.9	3.9	2.1	1.4	1.6	0.5
Number of hardcore poor	-	-	137,100	88,000	67,400	66,000	52,900
Urban hardcore poverty (%)	-	2.4	1.4	0.9	0.5	0.5	0.4
Rural hardcore poverty (%)	-	9.3	5.2	3.7	2.4	2.4	2.3

Source: Various Malaysia Plans.

Another important feature of poverty is the ethnic dimension of poverty. In Malaysia, poverty is more predominant amongst the Malays and other Bumiputeras. Although the incidence of poverty for all ethnic groups has been reduced, it is higher for the Malay and other Bumiputeras (see Table 2).

Table 2: Incidence of Poverty by Ethnic Groups, 1970-1997

Ethnic Groups	1970	1976	1984	1987	1990	1997
Malays	64.8	56.4	25.8	23.8	20.4	7.7
Other Bumiputera	-	-	-	-	36.8	17.3
Chinese	26.0	19.2	7.8	7.1	5.4	1.1
Indian	39.2	28.3	10.1	9.7	7.6	1.3
Others	44.8	44.6	22.0	24.3	22.8	13.0
Total	49.3	35.1	18.4	17.3	16.5	6.1

Source: Various Malaysia Plans.

Generally, the sustained economic growth of the country has increased the income levels of all ethnic groups. However, the rate of increase in incomes differs between the groups, and this has contributed to a widening gap in incomes amongst ethnic groups and sectors.

For example, between 1999-2002, overall household income increased from RM2472 in 1999 to RM 3011 in 2002, an increase of 6.8%. This increase was a result of various employment and business opportunities created by economic growth. However, the increases for the Bumiputera and Indian households were below the national average, at 6.2% and 4.1%, respectively, compared to the higher than average increase of 7.4% for Chinese households. In terms of sector, higher employment and business opportunities contributed to higher growth in urban incomes (5.9%) compared to lower growth in rural incomes of 0.2% (Table 3).

Table 3: Gross Average Monthly Household Income by Ethnic Groups, 1999 and 2002

Ethnic Groups	1999	2002	Average Annual Growth Rate (%) 2000-2002
Bumiputera	1984	2376	6.2
Chinese	3456	4279	7.4
Indian	2702	3044	4.1
Malaysia	2472	3011	6.8
Urban	3104	3652	5.9
Rural	1714	1729	0.2

Source: Malaysia 2003.

The differences in the growth rates in household incomes and the differences in relative factor endowments contributed to inequalities between the ethnic groups and sectors (see Table 4). For example, the income inequality ratios for Bumiputera/Chinese widened between 1990 and 1997, narrowed between 1997 and 1999, and widened again between 1999 and 2002. Similar patterns are observed in the income inequality ratios between urban/rural sectors, denoted by better agricultural prices and incomes during the financial crisis of 1997/1998, but overtaken by higher urban incomes between 1999 and 2002. The ratio between Bumiputera and Indian widened up to 1997 and narrowed afterwards, denoted by higher income growth among the Bumiputeras. The Gini Ratio also shows an increasing trend, except when it narrowed during the financial crisis of 1997-1999.

3 HARDCORE POVERTY ALLEVIATION

The shift of poverty alleviation programs towards addressing the HCP started towards the end of the New Economic Policy (NEP) era in 1985, when the HCP incidence was estimated at 6.9% of total households. The number of HCP was estimated to be at 137,100 in 1990, or 3.9% of total households. At the end of the NEP, the government implemented the PPRT, comprising a package of economic, social and housing assistance, and the provision of basic amenities for the HCP. The number of HCP households declined to 88,000 in 1995; 67,000 in 1997; 60,000 in 1999; and 56,000 in 2002. Correspondingly,

Table 4: Income Inequality Ratios, 1990-2002

Ratios	1990	1995	1997	1999	2002
Bumiputera/Chinese	1: 1.74	1: 1.80	1: 1.83	1:1.74	1:1.80
Bumiputera/Indian	1: 1.29	1: 1.33	1: 1.42	1: 1.36	1:1.28
Rural/Urban	1.1.70	1: 1.98	1:2.04	1:1.81	1:2.11
Gini Ratios	0.442	0.456	0.456	0. 4432	0.4607

Source: Malaysia. Various Malaysia Plans.

the incidence of HCP declined from 3.9% in 1990 to 2.1% in 1995 and 1.4% in 1997, but increased slightly to 1.6% in 1999 due to the impact of the financial crisis, and declined further to 0.5% in 2002.

The rate of decline was slower during the later years as it gets harder to eradicate the remaining HCP incidence. For example, the rate of decline in poverty incidence was faster at a rate of 1.8 percentage points per annum during 1970-1990, but was slower at 1.0 percentage points during 1990-2002 and was slower at 0.8 percentage points during 1999-2002. This implies that it is difficult for the growth process to 'trickle down' to the hardcore poor which explains the persistence of HCP and shows that is it getting more difficult to eradicate low levels of poverty. This probably explains why HCP is still a reality in Malaysia.

There is also the issue of the vulnerable – those who risk falling under poverty due to vulnerabilities in economic, financial, environmental, and labor market conditions. It is estimated that they constitute the lowest 10% of the income distribution. Then, there are the problems of the low income group, which is estimated to be in the bottom 25-30% of the income distribution.

Amanah Ikhtiar Malaysia (AIM) estimated that a large proportion of the poor are still not reached by normal poverty eradication programs. For example, AIM conducted a strategic household survey covering the rural areas in Seberang Prai and estimated that a total of 12,303 or 26% out of total households of the 46,351 households in rural Seberang Prai are likely to be poor. Most of these poor households are not currently under any assistance or development programs. In that study, PPRT and AIM programs only reached about 23.6% and 11.5% of the estimated poor, testifying to the poor reach of these programs. These poor households were classified as those staying in dilapidated houses (2,733 households), average (33,624 households) and modern (9,994 households). Of those staying in dilapidated houses, about 80% are poor. (Salma, 2004).

4 CHARACTERISTICS OF THE POOR AND HCP

The characteristics of the poor could be ascertained from several studies. A study by a group of researchers from Universiti Kebangsaan Malaysia (UKM) and the then

Socioeconomic Research Unit (SERU) of the Prime Minister's Department (Chamhuri, 1994), comparing the very poor, poor and non-poor revealed that the very poor and the poor invariably have larger average family size compared to the non-poor. In terms of age and education, the very poor are older and have a lower educational attainment as well as having a higher proportion of family members who only completed primary education. Regarding house ownership, although the majority of the very poor live in their own house, a large portion of the very poor also live in rented premises. Between 41.1% and 53.5% of total expenditure was for food which is consistent with Engel's theory that the poor spend a larger portion of their income on food.

4.1 Poverty and Occupation

In terms of occupation, the poor predominantly work in the agriculture sector, which includes forestry, fishing and livestock (see Table 5). This relates to the spatial distribution of poverty, which is higher in rural areas. The poverty incidence in the agricultural sector is still high at 20.1% in 1995, 16.4% in 1997 and trending upward to 16.6% in 1999 due to the financial crisis. The other occupations of the poor are distributed over a wide range of low paying jobs in the services sub-sectors like electricity, gas and water (3%), wholesale and retail trade, restaurants and hotels (2.9%), community, social and personal services (1.7%), transport, storage and communications (1.6%) and also in the construction (2.1%) and mining and quarrying sectors (2.0%).

4.2 Poverty and Age

There seems to be a direct relationship between poverty and age. Quite naturally, the younger populations, those not firmly entrenched in the labor market, and the older population, those no longer employed, are more susceptible to poverty.

The poor and the hardcore poor are mainly amongst the elderly. Among the poor, between 22.7% and 25.1% are more than 65 years. Among the hardcore poor, between 6% and 9.7% are more than 65 years (Table 6). They can be considered as the vulnerable (Ragayah, 2002) or those falling under 'welfare poverty' consisting of the economically inactive, elderly and handicapped who may be recipients of or wanting welfare assistance or occupants of old folk homes. Those between the ages of 45 and64 years also have a relatively higher incidence of poverty, that is, between 5.8% and 8% for the poor and 0.8% and 1.6% for the hardcore poor. They include also the pensioners, joining the economically inactive group if they are not economically employed.

Those under the age of 29 years also experience a relatively higher incidence of poverty, between 9.2% and 11.7% for the poor, and between 1% and 2.2% for the hardcore poor. The majority of them are economically inactive, consisting of students (students of higher learning institutions), school dropouts and those who may have just graduated but have not found jobs.

Table 5: Poverty Incidence by Category of Occupation

Industry	1995	1997	1999
Agriculture, Forestry, Livestock & Fishing	20.1	16.4	16.6
Mining and Quarrying	2.3	2.9	2.0
Electricity, Gas and Water	0.6	3.3	3.0
Manufacturing	5.3	0.8	0.5
Construction	4.0	2.2	2.1
Wholesale and Retail trade, Restaurants and Hotels	4.8	2.4	2.9
Transport, Storage and communications	1.9	1.0	1.6
Finance, Insurance, etc.	0.9	0.4	0.4
Community, Social and Personal Services	1.9	1.8	1.7
Total	**9.3**	**6.8**	**7.5**

Source: Ragayah, 2002.

Among the economically active, those between 30 and 44 years old, the incidence of poverty is relatively lower. They are economically or gainfully employed in various sectors of the economy, hence contributing to the lower incidence of poverty.

Table 6: Poverty Incidence by Age Groups

Age	Poor			Hardcore Poor		
	1995	1997	1999	1995	1997	1999
<29	11.7	7.1	9.2	2.2	0.9	1.7
30-34	6.6	4.4	4.4	0.7	0.3	0.6
35-39	5.7	4.1	4.4	0.4	0.2	0.5
40-44	4.6	3.1	3.9	0.7	0.3	0.3
45-64	8.0	5.8	5.8	1.6	1.0	0.8
>65	25.1	21.7	22.7	9.7	7.9	6.0
Total	**9.3**	**6.8**	**7.5**	**2.1**	**1.4**	**1.4**

Source: Ragayah, 2002.

4.3 Poverty and Education

The relationship between poverty and education could be viewed in a circular pattern of cause and effect. Poverty tends to contribute towards low educational achievements which, in turn, contribute towards the perpetuation of poverty through the lack of access to higher

education and skills training which lead to low paying jobs and slower vertical mobility up the occupational ladder (Chamhuri 2004a). Not surprisingly, an analysis of the Household Income Census of 1989 shows an inverse relationship between poverty and educational levels of head of households. Higher incidence of poverty was related to lower educational levels and higher levels of education were related to lower incidence of poverty. For example, 94.5% of poor households were headed by persons with less than 9 years of education. Table 7 shows the relationship between education and poverty quite clearly.

Table 7: Poverty Incidence by Levels of Education

Highest Certificate Obtained	Poor			Hardcore Poor		
	1995	1997	1999	1995	1997	1999
No schooling	26.7	24.6	25.2	8.8	7.3	6.9
No certificate	9.4	6.9	7.7	1.2	0.8	0.9
LCE/LSAE	4.0	1.7	3.3	0.6	0.3	0.4
MCE/MCVE	2.6	1.3	2.7	0.6	0.2	0.4
HSC	2.3	1.1	2.8	0.5	0.2	0.3
Diploma/Degree	0.9	0.9	0.5	0.2	0.0	0.0
Total	**9.3**	**6.8**	**7.5**	**2.1**	**1.4**	**1.4**

Source: EPU *in* Ragayah, 2002.

4.4 Poverty and Its Relation to the Number of Income Recipients and Number of Children

As poverty is measured by PLI based on household income, one would expect that the higher the number of income recipients, the lower is the incidence of poverty. Table 8 confirms this assertion.

The incidence of poverty is also expected to vary inversely with the number of children in a household. Households with more children are expected to be more prone to poverty as this implies a higher dependency ratio. Table 9 shows that households with no children have a higher incidence of poverty for both the poor and hardcore poor category. For example, the incidence of poverty among the poor ranges between 10.9% and 14.8%, while the incidence of hardcore poor ranges between 3.1% and 4.6%, the highest in the category. This implies that poor households tend to be among the elderly who have no children to support them. This category may also include school leavers and graduates who are looking for jobs and living on their own (Ragayah, 2002).

Table 9 also shows a relatively higher incidence of poverty among households with 5, 6, 7 or more children. Among the poor with children 7 or more, the incidence of poverty ranges between 5.5% and 8.3%, while for the hardcore poor, the incidence ranges between 0.2% and 0.6%. Similar higher incidences of poverty are reported for households with 5 or 6 children. These evidences support the higher age dependency ratio amongst household with larger number of children.

Table 8: Poverty Incidence by Number of Income Recipients

Number of Income Recipients	Poor			Hardcore Poor		
	1995	1997	1999	1995	1997	1999
1	16.3	12.4	13.7	4.0	2.7	2.7
2	3.7	2.3	2.7	0.4	0.2	0.2
3	1.0	0.4	0.8	0.1	0.1	0.1
4	0.3	0.3	0.3	0.1	0.2	0.1
5	0.3	0.0	0.9	0.0	0.0	0.1
6 and more	0.3	0.3	0.4	0.0	0.0	0.0
Total	**9.3**	**6.8**	**7.5**	**2.1**	**1.4**	**0.4**

Source: EPU *in* Ragayah, 2002.

Table 9: Poverty Incidence by Number of Children

Number of Children	Poor			Hardcore Poor		
	1995	1997	1999	1995	1997	1999
No child	14.8	10.9	12.8	4.6	3.1	3.1
1	6.5	4.8	4.4	0.8	0.5	0.4
2	5.4	4.0	3.4	0.5	0.2	0.3
3	5.4	3.5	3.7	0.5	0.2	0.2
4	5.9	3.9	5.0	0.5	0.2	0.4
5	7.7	4.3	4.9	0.8	0.3	0.1
6	7.1	5.9	6.5	0.5	0.3	0.5
7 and more	7.5	5.5	8.3	0.6	0.2	0.6
Total	**9.3**	**6.8**	**7.5**	**2.1**	**1.4**	**1.4**

Source: EPU *in* Ragayah 2002.

5 POVERTY ALLEVIATION PROGRAMS

The implementation of the NEP (1971-1990) specifically aimed at poverty alleviation and restructuring of society. Generally, poverty alleviation programs have benefited from macroeconomic policies on 'growth and redistribution'. The decline in the rate of poverty incidence during the NEP period from 49.3% in 1970 to 15% in 1990 was significantly contributed to by high and sustained economic growth during the period which averaged 6-7% annually which provided ample job opportunities and business creation. The poor

have benefited from changes in the sources of household income, to include an increasing portion of non-farm income and remittances from family members working in urban centers and industrial areas, signifying the role of growth factors in poverty alleviation.

However, the rate of poverty alleviation has slowed down after the NEP period, signifying that it is getting harder to rely on overall economic growth to eradicate poverty and that the poverty problem has become intractable amongst the hardcore or very poor. It was also recognized that general poverty alleviation programs experienced 'leakages' that were siphoned-off to non-poor and non-deserving areas and programs. Other than that, there was duplication of functions by various development agencies which rendered the poverty alleviation programs less effective (UKM, 1998).

The target of poverty eradication during the Second Outline Perspective Plan (1991- 2000) period was to reduce poverty to about 373,900 households and completely eradicating hardcore poverty by 2000 (Malaysia,. 1991). The strategy to achieve the target was to rely on growth and redistribution through:

- rapid and sustained economic growth and employment generation which provides opportunities for the poor to move from the low productivity traditional sectors to the modern high productivity sectors; and

- provision of basic services and amenities to enable the poor to enjoy the benefits of growth and to ensure equitable distribution.

While acknowledging the role of economic growth, the government is also aware of its limitations in alleviating the already low level of poverty. The PPRT program is a special delivery program created in 1988 to address the HCP. It was implemented after the NEP and aimed at eradicating absolute poverty while also reducing relative poverty. It focused on extending access of basic needs to the hardcore poor, as well as concentrating development in the poorest states, districts and remote villages.

The structure of the implementation and delivery mechanism of the PPRT is as shown in Figure 1, detailing the target groups, strategy, programs and projects. The target groups are identified as the hardcore poor, defined as households with incomes below RM175 per month in 1990, including the heads of households, spouse, children, and also the elderly without relatives and economically active family members. The programs and projects are classified under agriculture, village or rural industries/crafts and small-business, social and infrastructure. The projects are those that will yield fast returns, are low on technology and investments, utilize small land and could be managed individually. Examples of the programs and projects include agricultural training and extension, farm-family development and beehive projects, small industries, youth business development, house repairs, education, health and welfare assistance, water and electricity, rural roads and amenities.

6 Effectiveness of Poverty Alleviation Programs

A rigorous and comprehensive evaluation of poverty alleviation programs has never been attempted although it is generally acknowledged as being successful (UNDP, 2005). An attempt was made to assess the effectiveness and the enabling policy framework of poverty alleviation programs (Chamhuri, 2004b, 2004c).

6.1 Enabling Policy Framework for Poverty Alleviation

In the case of Malaysia, the enablers for effective poverty alleviation may include: the role of the state in poverty alleviation, good governance, effective delivery system and direct targeting and participation.

6.1.1 The role of the state

The state played a major role in poverty alleviation. Poverty alleviation has always been a major policy thrust in it development plans, as is evident in the NEP, (1970-1990), National Development Policy (NDP, 1991-2000) and National Vision Policy (NVP, 2001-2010). Poverty alleviation has been a major thrust in these policies, receiving strong policy, institutional and budgetary support at the federal, state and local levels. The implementation of these policies is detailed in the five year development plans.

Strong policy support is embedded in pragmatic policies the state has to make which include:

(a) Interventionist, affirmative action and positive discrimination policies and strategies to assist the indigenous population, to correct the economic imbalances between the different ethnic groups. This has been entrenched since the NEP, in the aftermath of a bloody racial riot which highlighted poverty amongst the indigenous population and economic imbalances as the root cause of the racial conflict.

(b) Balancing market driven and interventionist policies and strategies. In addition to the role of government as facilitator, this policy includes giving emphasis to the role of the private sector as partners in the development process and also to meet the distributional objective of government policies. In this way, the government has to balance growth and redistribution policies and strategies, so as to attain growth and poverty alleviation, in which Malaysia has achieved a reasonable degree of success (see Table 10).

Another feature of the role of the state may be seen in the budgetary support for poverty alleviation. In Malaysia, government expenditure for poverty alleviation has been high throughout its five year development plans, averaging between 24 and 37% (see Table 11). During the NEP era (1971-1990), expenditures for poverty alleviation, except for the period of the Fourth Malaysia Plan (1981-1985) which coincides with the recession years of 1980s, exceeded 30%. The Fifth Malaysia Plan period, which marked the end of the NEP era, saw the largest percentage of expenditure for poverty alleviation. The Sixth,

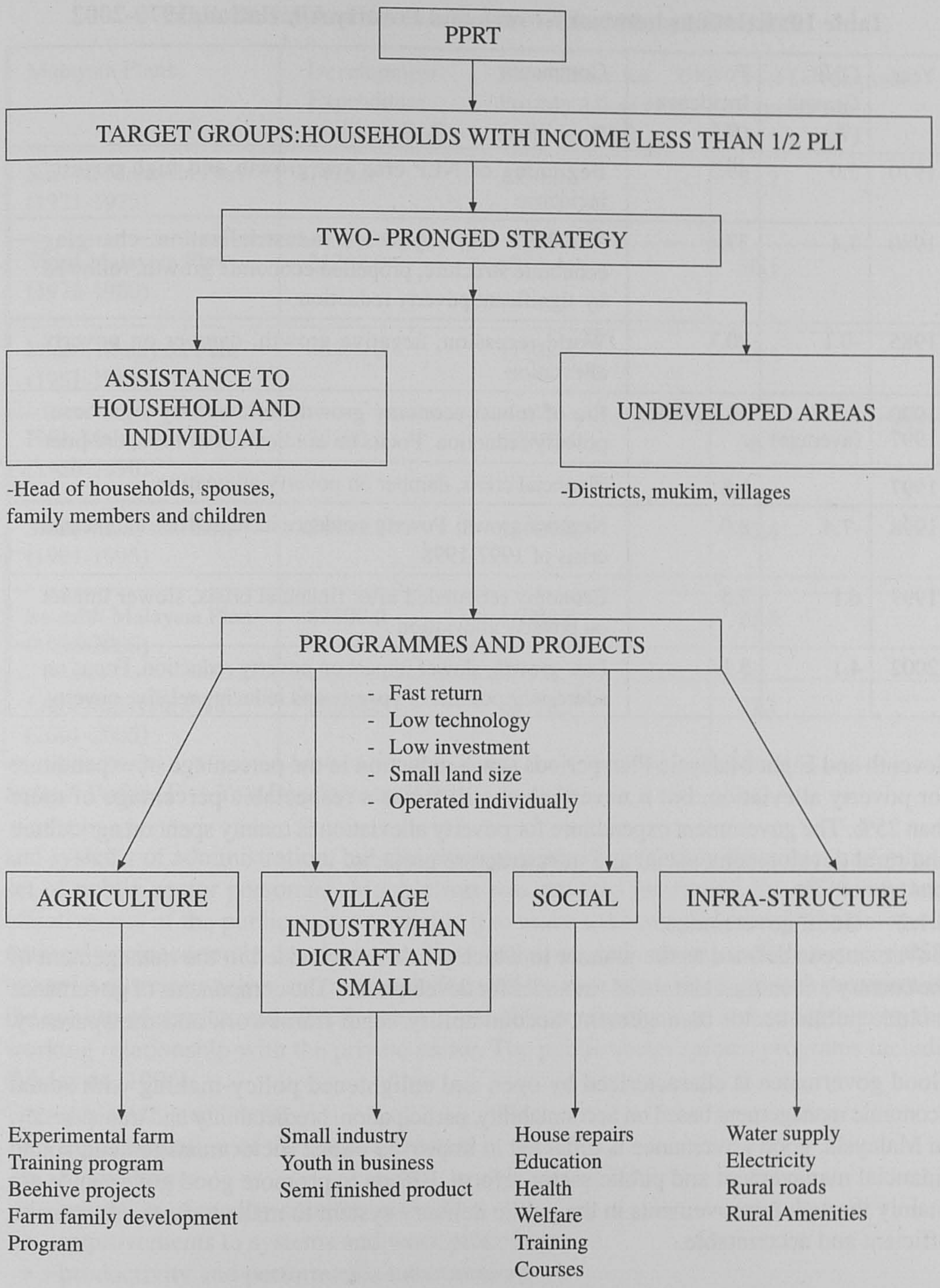


Figure 1 The Structure of the Implementation and Delivery Mechanism of the PPRT

Table 10: Relations between Growth and Poverty Alleviation, 1970-2002

Year	GNP Growth (%)	Poverty Incidence (%)	Comments
1970	5.0	49.3	Beginning of NEP era, low growth and high poverty incidence
1980	7.4	37.4	Mid NEP era, export-led industrialization, changing economic structure, propelled economic growth, followed by significant poverty reduction
1985	-0.1	20.7	World recession, negative growth, damper on poverty alleviation
1990-1997	9.1 (average)	16.5 (1990)	Era of robust economy growth followed by significant poverty reduction. Focus on eradication of hardcore poor
1997		6.8	Financial crisis, damper on poverty alleviation
1998	-7.4	8.0	Negative growth. Poverty incidence increased due to financial crisis of 1997-1998
1999	6.1	7.5	Economy rebounded after financial crisis, slower impact on poverty alleviation
2002	4.1	5.1	Low growth, slower impact on poverty reduction. Focus on addressing pockets of poverty and reducing relative poverty.

Seventh and Eight Malaysia Plan periods saw a reduction in the percentage of expenditure for poverty alleviation, but it nevertheless still forms a respectable percentage of more than 25%. The government expenditure for poverty alleviation is mainly spent on agriculture and rural development, social and infrastructure projects.

6.1.2 Good governance:

Governance is defined as the manner in which power is exercised in the management of the country's economic and social resources for development. The components of governance include public sector management, accountability, legal framework and transparency.

Good governance is characterized by open and enlightened policy-making with sound economic management based on accountability, participation, predictability and transparency. In Malaysia, good governance is reflected in improved public sector management, sound financial management and public sector reform. Efforts to promote good governance are mainly through improvements in the public delivery system to make it more transparent, efficient and accountable.

In Malaysia, good governance is reflected in improved public sector management, sound financial management and civil service or public sector reform, and attempts to enhance the efficiency and effectiveness of the administrative machinery. In the 1990s, major efforts were put into institutionalizing the culture of excellence, not only in the structure

Table 11: Expenditure on Poverty Alleviation, 1971-2005

Malaysia Plans	Development Expenditure (millions RM)	Expenditure for Poverty Alleviation (millions RM)	% of Development Expenditure
Second Malaysia Plan (1971-1975)	7415.0	2350.0	31.7
Third Malaysia Plan (1976-1980)	21202.0	6373.4	30.1
Fourth Malaysia Plan (1981-1985)	46320.0	11238.5	24.3
Fifth Malaysia Plan (1986-1990)	35300.0	12970.4	36.7
Sixth Malaysia Plan (1991-1995)	54705.0	13900.8	25.4
Seventh Malaysia Plan (1996-2000)	67500.0	16084.8	23.8
Eight Malaysia Plan (2001-2005)	232442.0	62918.2	27.1

Source: Various Five Year Development Plans.

and systems of administration, but also through a paradigm shift in the values and mind-set of public sector personnel. Much effort was put into improving the efficiency and effectiveness of the public sector to enable it to make a meaningful contribution towards national socioeconomic development. New initiatives and reforms include a major shift toward a more pro-active and customer-focused management paradigm, enhancement in the quality of service and effectiveness of the delivery mechanism and strengthening the working relationship with the private sector. The public sector reform programs include (Malaysia, 1996):

- quality management;
- implementation of the client's charter;
- innovations;
- provision of quality counter services;
- improvements to systems and work procedures;
- productivity and performance measurement;
- wider use of information technology;
- strengthening of institutional structures;
- improvements in public personnel management;
- inculcating positive values and work ethics;

- establishment of an inspectorate system; and
- implementation of the Malaysia Incorporated Policy.

In the 2000s continued efforts to improve service delivery and optimize resource utilization will be made, particularly through the extensive use of ICT, review of existing management structures, personnel policies and delivery systems to meet the requirements of a knowledge-based economy, strengthen management integrity to ensure greater accountability and transparency and to continue collaborating with the private sector and NGOs to enhance the process of governance (Malaysia 2001).

6.1.3 Effective delivery system

An effective delivery system for poverty alleviation is part of the good governance process. It includes sound planning and implementation capability and effective delivery system for poverty alleviation. An effective and efficient delivery system also entails efficient use of resources, constant monitoring, reviews and impact studies. The ability of the state to plan and implement development plans, programs and projects contributes to the success of poverty alleviation.

In Malaysia, an effective delivery mechanism in ensured through a sound and rigorous planning and implementation process involving the Economic Planning Unit (EPU) and the Implementation and Coordination Unit (ICU) as central agencies within the Prime Minister's Department. Development planning was accepted as a function of the government in the 1950s with the preparation of the First Five-Year Development Plan covering period from 1956 to 1960. This function was firmly institutionalized with the establishment of the EPU in 1961 as the central agency of the government for planning national economic development. At the federal level, the National Action Council (NAC) and the National Development Council (NDC) serve the Cabinet. Both these councils are chaired by the Prime Minister.

The NDC, which consists key ministers, is the highest policy-making body in planning and is responsible for planning and co-ordination of long-term socio-economic development policies such as the Five-Year Plans. For the purpose of detailed deliberations, there is the National Development Planning Committee (NDPC) which is a committee composed of senior governmental officials, including the Governor of the Central Bank. The NDPC is responsible for formulating and reviewing all plans for national development and making recommendations on the allocation of resources. The EPU acts as the secretariat to NDPC, NDC and their sub-committees and hence provides the necessary linkages for the ministries and line agencies. The respective ministries and agencies maintain a close connection with EPU through their Planning and Development Division, especially on sectoral planning, development programs and budgeting. The EPU is served by the Inter-Agency Planning Groups (IAPGs) and the Technical Working Groups (TWGs), as a forum of different ministries, departments and other central agencies for inter-agency consultation and collaboration. Strategic planning on poverty alleviation is coordinated by the EPU through IAPG and TWGs, and incurs the involvement of federal ministries, state

governments, NGOs, private sector, Malaysian Business Council, and academia. These plans need to be approved by the NDPC and the NDC and also has to be approved by the Cabinet, before being approved by the Parliament. This structure is not static but is changed according to the needs and situation at any given time. For example, since the financial crisis of 1997-1998, the National Economic Action Council (NEAC) was created with the main aim of putting the economy on the right track of recovery.

The planning and implementation mechanism is followed through to the state, district and local levels, involving the translation of macro policies and strategies into micro projects and programs. At the state level, the State Economic Planning Unit (SEPU) coordinates the planning and implementation machinery through the State Development Committee (SDC). At the district level a similar process takes place, involving the District Office and the District Development Committee (DDC). At the local or village level, inputs are provided by the Village Development and Security Committee (JKKK).

A participatory planning process involves both 'top-down' and 'bottom-up' processes and ensures the participation of key players, including government, the private sector, NGOs, and beneficiary groups.

The planning horizon covers the short-term (Annual Budgets), medium-term (Five Year Plans and Midterm Review of Five Year Plans) and long-term (10-20 years Outline Perspective Plans). Normally, a major planning exercise is conducted prior to the beginning of a Five Year Plan or an Outline Perspective Plan (OPP). So far, there have been eight Five Year Malaysia Plans, spread over three OPPs forming the thrust of the NEP, NDP and NVP respectively.

The effective and efficient implementation of development plans forms the crux of successful planning. The success of the plans and policies is evident in the effectiveness of the coordination and monitoring mechanism of project implementation at all levels. The ICU of the Prime Ministers Department was created in July 1971 to monitor the implementation of the five year development plans, and to oversee the implementation coordination and evaluation of development policies, programs and projects. In the overall project management concept, implementation involves mechanism how planned policies are translated into programs and projects. Another task involves evaluation, that is, the analytical assessment of public policies, organizations or programs that emphasize reliability and usefulness of findings to improve information and reduce uncertainty.

As the EPU, the ICU coordinates the implementation of programs and projects at the federal, state and local levels. At the federal level, the ICU coordinates the work of the National Working Committee on Development (NWCD), chaired by the Chief Secretary of the Government, and the NDC, chaired by the Prime Minister. At the state and district levels, a parallel mechanism is in place, linking with the State Development Council, the SDC on Development and also the District Working Committee on Development.

The main role of the NDC is to decide on the overall policies and implementation of development strategies, to ensure the successful implementation of the National Development Plan and policies and to evaluate the implementation strategies of development projects. Among others, the role of the NWCD is to ensure that the implementation of programs and projects implemented by various ministries and agencies is in accordance with the objectives of the national plans and policies, to identify and overcome the major constraints and limitations faced during the implementation stage of the development projects and to monitor, review and evaluate analytically development plans and policies.

The project monitoring system in Malaysia has a long history, related to the establishment of an information system. It started in the First Malaya Plan (1956-1960) with the RED (Rural Economic Development) Book System, where information on the progress of projects was kept and updated. The first computerized-centralised monitoring system, known as Project Monitoring System 1 (SPP1) was established in 1971, whereby all agencies sent project reports to the ICU through a special form where the information was captured and processed in the ICU computer system. In 1981 an integrated information system of the Central Agencies (EPU, Treasury, ICU and Accountant General's Department) known as SETIA was implemented, focusing on the financial progress/performance of projects and programs. In 1991, an integrated scheduling system, focusing on physical progress, known as SIAP was implemented. In 1996, an integrated information system of SETIA/SIAP, focusing on the financial and physical performance of projects (SMBSS) was implemented, linking the ICU, EPU, Ministries, States, Treasury and Accountant General's Department. Using this system, the financial performance of projects during the plan period can be monitored, matching the original, midterm and final allocations with actual expenditures. For example, as of 31 July 2004, out of 48,639 subprojects monitored, ICU determined that the status of subprojects as completed (67.3%), ahead of schedule(0.9%), on schedule (24.1%), delayed (1.7%), planning stage (5.6%) and unenergised (0.4%).

With regards to poverty alleviation, the monitoring of projects and programs include the *in-situ* development scheme, crop replanting subsidy, agricultural extension services, rural economic development program, housing assistance and rehabilitation program.

6.1.4 Targeting and participation

Effective and efficient delivery system also entails correct targeting to the poor. Identification of the poor and directing benefits toward the poor is considered as the best solution to the problem of poverty alleviation. There are several motivations for correct targeting of the poor, to ensure efficient use of resource, to avoid leakages, to reduce cost and to increase efficiency. In an era of budgetary deficits, with pressures to reduce expenditure, the need for correct targeting of the poor to increase efficiency of the delivery system is paramount.

In Malaysia, serious attempts to identify the poor started in the Third Malaysia Plan (1976-1980) with the clasification of the poor into rural and urban target groups. The rural target groups were classified into paddy farmers, rubber smallholders, coconut smallholders,

fishermen, and estate workers, while the urban poor were unofficially classified into squatters and low cost flat dwellers, petty traders, dwellers of urban traditional and new villages. Poverty data in official documents up to the Fifth Malaysia Plan period (1986-1990) were classified into rural and urban poor, with detailed classification for rural poverty.

With significant reduction of poverty at the end of the NEP era in 1990, the focus of poverty alleviation has shifted with emphasis on the eradication of hardcore(extreme) poverty, defined as individuals with household incomes less than half the PLI. The identification of the HCP involves a tedious exercise of establishing the Registry of the HCP, compiling appropriate lists, verifying with other agencies and local authorities, maintaining and frequently 'cleaning' the lists. The incidence of HCP was reduced from 4% in 1990 to 0.5% in 2000, and the government hopes to totally eradicate hardcore poverty by 2005.

In addition, direct identification and a specialized delivery mechanism for poverty alleviation was instituted via an NGO involving a microcredit program implemented through AIM. This replication of the Grameen microcredit scheme was implemented in 1986, and as of June 2001 had reached 75,000 beneficiaries in 61 branches with a total loan disbursement of RM582 million. Various impact studies of AIM's microcredit program has shown resounding success in terms of outreach, repayment rates, impact and sustainability (Chamhuri and Quinones, 2000).

The classification of poverty into poor and hardcore poor in rural and urban areas has been maintained up to the present Eighth Malaysia Plan period (2001-2005). In view of the success in eradicating poverty, in the Mid-term Review of the Eighth Malaysia Plan (2003-2005) a new category of the poor, known as the vulnerable was included, defined as those with household incomes between the PLI and RM1200 per month, who generally fall in the bottom 30% of income distribution. This act, although enlarging the target group of the poor, may affect the efficiency and effectiveness of poverty alleviation program, unless proper verification and monitoring is done.

Participatory development is a crucial component of good governance, and good governance is a pre-requisite for a successful participatory process. Genuine participation embodies some form of empowerment of the population and participation in the development process. People should be involved throughout the project or program cycle, involving the design, implementation, monitoring and evaluation aspects. Participation could involve the private sector, NGOs, and the beneficiaries of projects.

6.1.5 Pragmatic poverty eradication policies and strategies

Essentially, Malaysia has followed the "Growth with Distribution" policy since the 1970s. This policy has been the thrust of macro-perspective policies such as the NEP (1970-1990), NDP(1991-2000), and NVP(2001-2010). In Malaysia, the uniqueness of this policy is in the affirmative action strategies, giving priority and emphasis to the indigenous or

Bumiputra communities in terms of benefits of poverty alleviation and restructuring programs. Various socio-political and economic justifications may be given for this overriding strategy, which in the end benefits the nation in general in terms of creating a more balanced and just society. There was much debate on the possible trade-off between growth and equity, but Malaysia has shown that both growth and equity can be achieved with prudent and efficient management of financial, physical, economic and human resources. Herein lies the critical role of state, especially through public sector management in ensuring good governance and effective delivery mechanisms for poverty alleviation programs.

a) Growth Policies

Malaysia has always believed that growth is a pre-requisite for redistribution. Macro policies that have contributed to sustainable growth include

- Structural change and diversification policies that effected structural change of the economy from commodity production to manufacturing. Sectoral policies including
  (i) Agriculture and Rural Development Policy with respect to food security an sufficiency, land development, land rehabilitation, rural development, National Agriculture Policies 1 (NAP1, 1984-1991), 2 (1992-1997), 2 (1998-2010);
  (ii) Industrial Policy: Industrial Master Plan charting the growth of industries, incentives, infrastructures, industrial zones, finance and banking, telecommunications, ports, taxes and subsidies.
- Investment Policy
  Covering both foreign and domestic investment, incentives for investments, equity participation, etc.;
- Savings and fiscal policies, including savings rate as % of GDP, financial services, interest rates, microfinance, revenue and expenditure, fiscal allocation, tax burden, rebates;
- Employment and labor policies, including sectorial employment, foreign labor, wage policy, minimum wage and subsistence, training and human resource development.
- Price policy including inflation rates, control of prices of food, basic needs and essential services, expenditure burden, etc.

b) Distribution Policies

- Poverty Alleviation Policies, Strategies and Programs – economic programs, agriculture and rural development, urban and industrial development, entrepreneur and small business development etc.
- Affirmative-action Equity and Restructuring Polices and Program – pro-poor and pro-indigenous strategies, education and human resource development, wealth restructuring, equity participation, special share schemes, etc.
- Social Infrastructures – welfare, housing, health, education program for the poor, pension, old age, etc.
- Provision of basic Needs and Amenities – water, electricity, housing, food, clothing, infrastructures, services, etc.
- Access to Resources – land, water, credit, legal aid, etc.

7 IMPACT STUDY

A study on the Impact and Effectiveness of PPRT was conducted by UKM (1998). The study on 5,730 participants of the PPRT was conducted covering participants in Peninsular Malaysia (4,300), Sabah (750) and Sarawak (750). The respondents were purposively chosen mainly from rural areas consisting of farmers and livestock farmers (22.8%), fishermen (5.6%), agricultural labourers (6.6%), participants of land schemes (13.6%), the unemployed (30.6%), those without permanent occupations (20%) and petty traders (1.3%). The study aimed at assessing the effectiveness of PPRT and the extent its projects were able to uplift participants' income.

The study concluded that household incomes of participants increased by 182% after participating in PPRT programs. However, a significant portion of the increase (73%) was contributed by non-PPRT sources like remittances, wages, participation in AIM schemes, etc.

The impact of PPRT yielded mixed results. The direct impact could be gauged from changes in occupation, income and reduction in poverty status, while the indirect impacts could be gauged from changes in the quality of life, aspirations and motivations and accessibility to services and basic needs. The direct impact on occupation was not encouraging. A comparison on occupation of participants 'before' and 'after' PPRT indicates that there was not much change in the occupational changes of participants. In fact there was an increase amongst the unemployed by 2.8%, compounding the fact that most participants did not have supplementary occupation and that most housewives were not gainfully employed.

The direct impact on income was also mixed. Although household incomes increased by 182%, the contribution from PPRT sources was only 27%, mainly from dividends (ASB/ASN 36.4%), transfer payments (22.1%) and from non-cash imputations (value of own dwellings 29%). The increase in incomes among the hardcore poor managed to reduce the incidence of hardcore poverty significantly, ascending into the poor (15%) and non-poor categories (45%). However, since most of the income increases were from non-PPRT sources, the reduction of hardcore poverty was also due to non-PPRT sources signifying the role of economic growth in hardcore poverty alleviation.

The indirect impact of poverty alleviation programs has been positive, viewed from improvements in the quality of life and accessibility to basic services and amenities. The human poverty index (HPI) which measures relative deprivation of basic services and amenities, shows a relatively low score, implying low deprivation or high accessibility to basic services and amenities.

The study also identified the driving and constraining factors that contributed to the success and failures of PPRT programs. The driving factors include the capacity and capability of the poor/hardcore poor, ownership of productive assets, membership in associations,

piousness, education and contribution from family members. Positive attributes contribute as driving forces while negative attributes contribute as negating factors.

The study also showed that an effective delivery system can be a facilitating factor for the success of the PPRT. In this regard, the study found that the delivery system of PPRT still suffers from weaknesses, including (a) the lack of up to date and reliable data, (b) delays in receiving allocations for PPRT projects and programs at district levels, (c) lack of sustainability of PPRT projects and programs, and (d) that 86% of beneficiaries of PPRT still would depend on the government to overcome poverty.

Another study compares the effectiveness of AIM and PPRT programs. The study concluded that AIM and PPRT programs both had positive impact on income and quality of life. However, the impact of AIM loan scheme was higher than the PPRT program. For example, the incomes of AIM participants increased from RM 399 before the scheme to RM1067 after the scheme, an increase of 167%, while the increase for the PPRT participants was from RM326 to RM513, an increase of 57.4%. The increase in assets amongst AIM participants was 4.52 times, compared to 4.51 times for PPRT participants, whilst amongst the non-participants (control group) it was only 0.37 times (Salma, 2004).

8 CONCLUSION AND LESSONS

The paper attempts to discuss the issues, problems and challenges related to the HCP and its eradication. Generally, while poverty alleviation strategies and programs in Malaysia have been acclaimed as a success, many problems and challenges still exist, especially related to the effectiveness of implementation and coordination. Evidences and impact studies have shown that the 'trickling down' process has not been easy, and that there are problems with poverty eradication at the lowest levels, which may be compounded by the issues of the vulnerable groups. Some of these are related to the familiar issues of implementation, monitoring and coordination. Why do they still exist?

Observations from the success of the late Tun Razak's rural development programs may still be relevant. One observer concluded that the core of the success lies in the RED Book and its Operations Room which were found at the district, state and national levels, his briefing trips which put a tremendous sense of confidence in government officers and the local people, and the administrative decentralization and organization which subjected the bureaucracy to close scrutiny at weekly district and state meetings (Ness, February 2005).

The legacy of Tun Razak was to be continued in MERAH DUA in the 1990s

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Chapter 6

TRANSFORMING AGRICULTURE THROUGH SCIENCE AND TECHNOLOGY

Saharan Haji Anang

HISTORICAL PERSPECTIVE

Malaysian agricultural development has gone through several phases, from the colonial era to the current agricultural transformation era. In the colonial era, the emphasis in agricultural development was on the production of primary commodities for export. The focus was initially on coffee, and later on rubber. This had led to the establishment of agricultural estates focusing almost entirely on rubber. The other commodities, especially food commodities (paddy, fruits, and vegetables) were almost neglected and continued to be of a largely semi-subsistence in nature. Independence in 1957 brought significant changes, with the emphases shifted to production, rural infrastructure and raising the incomes of rural farmers with emphasis on crop diversification and modernization. The establishment of Felda (1956), FAMA (1965), and Felcra (1966) were the response to these needs. This continued until the 1970s, which marked the beginning of massive land development program especially for palm oil cultivation in both private estates and large-scale new land development schemes.

The period 1970-76, the Tun Razak era, was the period noted for the massive land development schemes, involving more than one million hectares, double the figures for the First and Second Malaysia Plans. The Green Book (Buku Hijau) concept as a strategy to mobilize rural resources toward enhancing the agricultural sector and rural income was also introduced. The focus on the overall attainment of rapid economic growth to consolidate the economic base resulted in strong growth (at about 6 percent annually) during the period. The growth, however, created larger disparities in terms of ethnic balance. This led to the formulation of the New Economic Policy with the main objective of achieving national integration and unity, through poverty eradication and restructuring of society.

Under the New Economic Policy, the social contract of 'growth with equity' was given emphasis. This was also the period of intense government intervention in terms of both the establishment of numerous agencies to handle land and regional development as well as the provision of agricultural support services such a research and development, marketing, credit and the organization of farmers. MARDI was operationalized in 1971 and Risda in 1973 while Felda and Felcra, the two most important land development agencies, were strengthened. It was also the period noted for the establishment of new universities, namely, USM (1970), UKM (1970), UPM (1971) and UTM (1972).

The introduction of the First National Agricultural Policy in 1984 reflected the next phase of agricultural development, with the shift in focus from the creation of a 'prosperous peasantry' to commercialization and the revitalization of agriculture where R&D was given the dominant role. The period also saw a rapid expansion of the manufacturing sector, thereby altering the relative importance of the agricultural sector. The agricultural sector itself was burdened with problems of labor shortages, rising wages, and increasing competition for land for other uses. Favorable policies towards industrialization also created conditions that were not attractive for agricultural investment. This led to the outflow of resources form agriculture.

The Second National Agricultural Policy was launched in 1993 to redress the situation. The emphasis was on productivity, efficiency and competitiveness in the context of sustainable development towards the creation of a dynamic agricultural sector to meet the challenges of increasing competitiveness and enhancing profitability in agriculture. This was followed by the Third National Agriculture Policy in 1999, focusing on the development of a resilient agricultural sector to meet the challenges of increasing competitiveness and enhancing profitability in the sector. The policy was given an additional boost when the government, especially under the current administration, decided that agriculture would be identified as the third engine of growth for the country, after the manufacturing and services sectors. These efforts have been instrumental in realizing the transformation of the agricultural sector, and have established a strong foundation in our current effort to revolutionize the sector in this country.

The consequences of all these development phases were that the agricultural sector continues to be a major pillar in the economic growth of the country. The sector is one of the main contributors to GDP, employment and export earnings. Although the manufacturing sector overtook the agriculture sector as the main contributor to economy in 1987, the fact remains that the current level of development has been made possible because of the great contribution of the agricultural sector in the past.

The emphasis given to agriculture was most prominent during the 1970s when the commitment of the government in supporting this sector was reflected by the high allocation given under the development budget for agricultural and rural development in the 5-year Development Plan, accounting to between 25% and 30% of total allocation for the period 1966-1980. Through these efforts, rural poverty declined from 21.3% in 1970 to 8.5%, in 1985. Indeed, the development agenda for the rural poor during the Tun Razak era was very significant in achieving these desirable changes.

In retrospect, many factors have contributed to the level of agricultural development in the country, and its subsequent impact on the income of the rural poor. Among the strategies adopted, the following deserves special mention:

- Programs for wealth creation, by making it possible for the resource poor farmers to own lands and to become involved in intensive agricultural production. The gigantic land development activity is one testimony to this successful endeavor

- Adequate and modern physical infrastructure, especially in the form of roads, basic amenities, ports etc to support the rural development process
- Enabling institutional framework and policies, in the form of new institutions and agencies to facilitate the development agenda
- Adequate funding and financing
- R&D support in agricultural and agri-based development

We now turn to the role of R&D in supporting the agricultural development in this country, its achievements so far and what it has to offer in the future.

R&D IN AGRICULTURAL DEVELOPMENT

The country is now at the threshold of transforming the agriculture sector into the third engine of growth for economic development. In this light, the sector had been accorded a high priority status in national development planning despite the decline in its relative contribution to the economy. Partly, this is because the incidence of relative and hardcore poverty among smallholder farmers, fishermen and other agricultural workers within the agricultural sector still remains an important issue. As poverty eradication constitutes an important overriding national objective, the agricultural sector thus becomes a targeted sector. Agriculture also continues to be an important source of income and livelihood for the majority of the rural population. Agricultural growth is thus seen as vital for rural development and for bridging the rural-urban divide. Agriculture is also considered a key or strategic sector for sustainable development. In this light, the R&D component will have to play an important role in realizing this transformations and the priority accorded to the sector.

Specifically, R&D must be tailored to address the following:

i. *The globalization issue*

The agricultural sector must remain competitive and continues to be relevant to the economy in the globalized world. The implementation of the various agreements either at the World Trade Organization or at the regional level has not only posed a serious challenge to our agricultural commodities, but has also opened up opportunities for the sector. The key to this is our degree of competitiveness, and R&D is recognized as one element that would be able to realize this goal. Of concern in the position of our main export commodities such a rubber and palm oil, as well as food commodities, which are faced with increasing competition from emerging as well as low cost producers.

ii. *The rural farmers issue*

The problems of low productivity that had impacted negatively on rural income and the standard of living of the rural poor must be addressed. Whilst may 'income-support' programs are already in place, including the establishment of many rural development institutions, the long-term goal of sustained productivity and comparable income from farming activities can be realized only through a sustained productivity improvement and efficiency gains. Productivity gains and the attainment of economic farm sizes (especially for food crops) are probably best the long term solutions to address this issue.

iii. *The food security issue*

There is a need to ensure adequate supply and accessibility to safe, nutritious and high quality food at affordable prices. This includes the need to address the high and increasing food import bill, currently amounting to about RM13 billion, the continued increase in food prices and the need to fulfill the changing tastes and preferences for food brought about by increases in income and greater awareness of diet and health issues among the populace.

iv. *The farm labour issue*

The acute shortage of farm labor and the high dependency on foreign workers in the plantation sector as well in labor intensive food crop production (vegetable, floriculture, selected fruits etc.) is a cause for concern. Partly, this is due to unavailability of appropriate mechanization and automation tools for these commodities. With labor productivity in the agriculture sector being only about sixty percent of the labor productivity in the manufacturing sector, the agriculture sector must move towards a higher level of mechanization and automation to become competitive with other economic sectors.

v. *The Environmental concerns*

There is the challenge to balance agricultural development with the need to protect and conserve the environment. This is the crux of sustainable agriculture development. This requires more innovative and efficient agricultural practices that are able to maintain ecological and the environmental balance in the country. Of relevance too is the issue of biodiversity, particularly with respect to the need to exploit the rich biodiversity that the country has whilst protecting it for future generations as well.

vi. *The agricultural resource management issue*

The management of the two key agriculture resources, land and water, are becoming increasingly difficult as their supplies are dwindling due to other competing uses, whilst the demand for the agricultural sector itself is expected to be increased in the future in line with the expected growth of the sector. The concern to ensure efficient and optimal use of these resources is indeed very critical for the sector.

vii. *The supplier of raw material issue*

The sector is expected to provide adequate and consistent supply of the required raw material for the processing industry. This is to support the development of value added resource based products as part of the industrialization initiative of the country.

TECHNOLOGY GENERATION AND TRANSFER – FULFILLING OUR MANDATE

It is a well established fact that technology is one of the key success factors in agricultural modernization. Realizing this important factor, the government took the step of establishing MARDI in 1971. MARDI is a statutory body and undertakes research and development (R&D) in food and tropical agriculture. Its R&D efforts for over more than three decades have contributed to the development of new crop varieties/clones and animals breeds, and their husbandry practices. Having introduced hundreds of technologies to the farmers and

small and medium entrepreneurs, it has strategically supported the development of agriculture and rural development.

Furthermore, technological headways have been made in food processing technologies and in post-harvest handling of horticultural and livestock produce. New techniques have been developed to better manage the environment and agricultural resources, in particular, the soil, water and genetic resources. Adoption of these findings by the farming community and entrepreneurs has contributed towards the development of the country's food and agricultural sector. The process is further enhanced by the hands-on participation of MARDI's expertise. This has helped sustain the agricultural sector as a contributor to the national economy.

To cite an example, with the introduction of MARDI's 31 high paddy yielding varieties over a period of 30 years, the nation has been able to maintain about 65-75 percent self-sufficiency through productivity improvement. The national average yield has improved from 2.5 ton per hectare to close to 4.5 ton per hectare. This shows that the advancement of rice technology developed by MARDI has helped sustain the nation's rice production and alleviation of poverty despite of the increase in the cost of production and other economic limitations such as labor, pest & diseases and water management. In downstream activities, MARDI is renowned for its post-harvest and food processing technologies especially the development of indigenous processed food. MARDI has developed many SMEs (Small and Medium Enterprises) in thirteen industry clusters and value-added products namely Bakery, Sauces, Dressings & Condiments, Beef (Frozen & Canning), Noodles and Pastry, Fish (Frozen & Canning), Confectionary (Sugar Conf.), Snacks, Chip & Crisps, Crops (Frozen & Canning), Juice (Fruit & Vegetable, Flavored) and Jam & Spread.

The contribution of MARDI in the development of the fruit industry is tremendous. With growing economic prosperity and urbanization, the per capita fruit consumption has steadily increased. The demand for tropical fruits, both domestic and for the export market, has increased in recent years especially for pineapple, papaya, banana and melon. This has had a direct impact on the growth of fruit industry. With the introduction of better varieties and post-harvest technology by MARDI, fruits such as Eksotika (papaya), star fruit, Melomas (pomelo) and Josaphine (pineapple) had contributed positively to the industry.

On the other hand, the introduction of new cattle breeds Brakmas and Charoke, Badorlin sheep and Boer goat has created new interest in the livestock industry. The commercialization through licensing of Omega-3 enriched poultry eggs technology has generated RM6 million annual sales to LTK Poultry Bhd. Large scale production of animal feed from oil palm fronds (OPF) is another success story of MARDI's R&D effort to ensure the availability of cheap animal feed supply.

The world economic landscape is now changing quite rapidly. Markets are being opened and the demand for high quality agriculture produce and products is increasing. The agribusiness sector is now more competitive and complex. Market orientation is shifting

gradually from quantity-oriented to quality-oriented market. Competitiveness in food production will increasingly become more dependent on food safety, and quality systems and the acceptability of production standards and processes than on quantity and price. Therefore, the role of technology is now more prominent to ensure the competitiveness of agriculture produce and products in both the domestic and export markets. To respond to this industry requirement, MARDI has established a well structured delivery system to accelerate the transfer and commercialization of technologies. The system is well coordinated to provide technology-based business opportunities to the various target groups such as farmers, SMEs and conglomerates.

Basically, the delivery systems are to provide technical input and support to the target groups. Managing the innovation process is the key to the success of any business venture. Innovation is essentially the introduction of new ideas, skills and products with the purpose of bringing about positive changes. Therefore, MARDI's task is to ensure that it will be able to transfer all technologies generated by the Institute in order to improve the socio-economic condition of rural farmers through the process of innovation and the application of technology, hence realizing the adoption of new and improved technologies by its clients. This process involved many steps.

The first step of the technology transfer process is the dissemination of technology generated by MARDI through various channels such as scheduled and non-scheduled training, expositions, seminars, conferences, technical publications, technology launchings, *business clinics* and dialogues with relevant clients. The next step is the development of a technology inventory and directory of experts based on technologies generated. The compilation of databases containing potential clients, available raw materials, packaging and machinery suppliers and market requirements are part of the exercise. In the process of technology transfer, the researchers are directly involved in advisory and expert services to fulfill clients' specific needs such as process and quality control to meet regulatory requirements, packaging materials and package design and product analysis in food products. To further strengthen MARDI's delivery system, the following mechanisms had been established:

i. Bilateral Cooperation with Other Agencies

To accelerate the process of transfer of technology, MARDI has bilateral cooperation with 18 major agricultural and development agencies such as the Department of Agriculture (DOA), the Department of Veterinary Services (DVS), the Department of Fisheries (DOF), the Federal Agricultural Marketing Authority (FAMA), the Rubber Industry Smallholders Development Authority (RISDA), the Farmers Organization Authority (LPP), the Department of Agriculture (Sarawak), the Department of Agriculture (Sabah), the Department of Veterinary & Livestock Services (Sabah), the Kemubu Agriculture Development Authority (KADA), the Muda Agriculture Development Authority (MADA), FELCRA Berhad, FELDA and MARA . Regular meetings are conducted to discuss the technology requirements and to identify joint projects and activities under the Technical Working Group (TWG) mechanism. The projects were initially implemented as models and later repeated and expanded as common practice. This approach has not only accelerated the process of

technology transfer but has also provided a training ground for extension staff and farmers. Currently there are 28 TWG's actively implementing more than 60 projects throughout Peninsular Malaysia, Sabah and Sarawak.

ii. Entrepreneur Development Program (EDP)

To strengthen the food industry further, MARDI has developed the Entrepreneur Development Program (EDP). This program was established since 1982 and efforts were intensified in 2002 under the Technology Transfer and Commercialization (TTC) plan to transform the food industry into a modern, commercial, innovative and competitive sector. The EDP focuses on both technological and business innovations approaches to further enhance the performance of current SMEs as well as nurturing new technology-based SMEs that can compete in both the domestic and global markets. The main objectives of the EDP are to enhance and accelerate the application of new technologies by target groups, to develop technology-based SMEs and to accelerate technology commercialization. The EDP program includes activities such as advisory, consultancy, laboratory and quality assurance services, technical training, attachment training, product and process development, and technology up-scaling.

Since 1982, the EDP program has benefited more than 10,000 entrepreneurs through training and advisory services. From 2001 till 2003 about 6,000 participants have attended and benefited from 244 training courses conducted. As a result, the knowledge and skills of participants have been upgraded and put to into practical use by the entrepreneurs. Extension Officers from various Government Agencies have also gained technical knowledge from this program. From 2001 to 2003 more than 1,000 technical advisory and *trouble shooting* services have been rendered to target groups all over the country involving researchers from Headquarters and Regional Centers. Many establishments have adopted MARDI's technology resulting in increased productivity, greater product diversification, process improvement and better factory layout. More than 11,000 laboratory analyses have been performed on 1,494 food samples sent by entrepreneurs. As a result, better quality products have reached the market and gained acceptance by consumers in the country. Through a special project under MPPB (Masyarakat Perdagangan dan Perindustrian Bumiputera), a number of successful technology-based entrepreneurs in thirteen industry clusters and value-added products have emerged. The project's main objective is to develop a commercial and industrial Bumiputera class comprising entrepreneurs, investors, managers and employees. The main focus of the project is to modernize, expand and diversify the business. Some of the activities focus on improving process control resulting in efficient production, high quality products that meet regulatory requirements (GMP, HACCP), improved hygiene and sanitation to ensure food safety, improved packaging and labeling and better promotion to get a wider market. To be more effective, two important agencies in developing SME's namely MARA and SMIDEC, are joining the program. They will support the SME's especially in providing loans and grants. Similar services are also offered by Marditech, the business arm of MARDI, to the industry.

iii. Other Modes of Technology Transfer

As an S&T organization, apart from developing the pool of required expertise, MARDI had also contributed tremendously to the world's stock of knowledge. The agricultural

and scientific information generated is disseminated through several in-house publications. To ensure the continued availability of MARDI's technology to the public, the Institute provides continuous quality technical support services. MARDI is continuously developing business linkages with industries based on the concept of client involvement and partnership under MARDI's innovation linkages scheme (*Rangkaian Inovasi*). To provide wider services to its clientele, MARDI has strengthened linkages with relevant service providers such as machine fabricators, suppliers of raw materials, ingredients and packaging materials and marketing channels. MARDI also encourages information sharing between technology generators and entrepreneurs.

THE FUTURE EXPECTATION OF AGRICULTURAL R&D

Research organizations/institutions have been identified as one of the major driving forces to realize the government's aspiration in transforming the agriculture sector into a dynamic and competitive industry. In fact, agricultural R&D has been identified as one of the key element to 'revolutionize' the agricultural sector in this country. In this regard, MARDI, being a premier R&D organization in food and agriculture, has been entrusted to develop, disseminate and commercialize leading edge technologies to relevant stakeholders. From the perspective of technological inputs, MARDI plays a significant role in contributing towards achieving a positive trade balance in food and agriculture by 2010 and to ensure its competitiveness in the global markets with the advent of globalization and trade liberalization. New sources of economic growth in identifying potential commodities and business opportunities in food and agriculture need to be put forward for consideration by the government.

In this regard, too, MARDI needs to provide the leadership role by supplying the road map in order to meet the national aspiration to modernize the agriculture sector and to contribute to the economy of the country. The key to this effort is to develop viable and sustainable technologies that are able to address issues and challenges as highlighted earlier on. To recollect, this includes issues such as the high food import bill, labor shortage and ever increasing agricultural wages as well as other production inputs. At the same time, the sector is expected to increase its productivity, be highly competitive in the liberalized economy, and be able to produce in a sustainable manner with concerns for environmental protection and conservation. The sector is also expected to be a new source of growth for the economy, and at the same time able to produce enough food for the population, food with high quality and high safety levels. All these must be derived within the context of ensuring a decent and competitive income structures for the poor rural farmers.

In facing these new challenges and inherent problems associated with the agricultural sector, R&D institutions especially MARDI would focus their future undertakings in the following areas:

i. Human Resource Development

Science, technology and innovation are central to success in today's modern and competitive economy. Recognizing the need for competent human resources in terms of capacity and

capability, MARDI is embarking on this program to ensure that the targeted number of 650 researchers including 200 with PhDs by the year 2010 is achieved. This initiative is vital to meet the need in key areas such as biotechnology, ICT, mechanization and automation, product development, post harvest and packaging, bio-diversity and environment bio-sciences, and economy and technology management. Additionally, the procurement of new researchers is highly needed to replace the increasing number of retired researches. The overall human resource plan of MARDI is in line with the S&T Policy aimed at achieving a competent workforce of at least 60 RSEs (researchers, scientists and engineers) per 10,000 labor force by 2010. This figure is however below the trend in most developed countries.

Is addition to investment in education in core competency areas, R&D training and skill acquisition for researches and technicians in specific fields are being continuously pursued. Continuous learning and knowledge acquisition are being gradually introduced at all levels of the work force.

The intensive human resource development plan calls for sufficient financial allocation, especially under the Ninth Malaysia Plan.

ii. Embark on Key Emerging Technologies

New and emerging technologies are required to meet the constantly changing market and consumer preferences. In this regard, MARDI is required to play a leading role in frontier research and development of leading edge technology in the food and agriculture sector. With constraints in human resource and budget allocation, MARDI's focus is devoted to specific areas that yield the highest economic return. Biotechnology has been identified as highly important in providing new business opportunities, as well as new sources of economic growth. The critical technologies needed are in biomolecular sciences from indigenous bioresources, beneficial enzymes for value-adde product development, especially halal enzymes, application of efficient microbes in fermentation technology, biodiagnostics and biosensors in product safety and quality, and 'omic' technologies and bioinformatics in K-agriculture. Advancement in mechanization and automation is necessary to increase efficiency and output, as well as to overcome the increasing need for manual labor prevalently encountered in the agriculture sector. Precision farming ensures efficient and economic usage of farm inputs, especially fertilizer, water and pesticides. Robotic systems and non-destructive evaluation are essential features in ensuring consistent quality of food products. New machinery systems have been developed to modernize traditional food products. Technology for development of new and novel products is critical in providing a competitive edge in the global markets. Over the years, MARDI has developed new techniques and products from local sources which exhibit high potential for commercialization. The application of Information and Communication Technology (ICT) in agriculture is considered an essential tool for enhancing the available technologies and sustaining the competitive advantage in key emerging industries.

The richness of flora and fauna depicted in our agriculture biodiversity has been identified as one of the new sources of economic growth. Herbal plant species and useful extractable compounds for food and human health offer tremendous potential for wealth creation and

national prosperity. There is also a need to explore the utilization of agricultural wastes into useful products, such as bio-pesticides and animal feeds. Techniques involved in the efficient uses of microorganisms for agro-waste utilization need further emphasis.

iii. Focus on New and Alternative Crops

In view of the increasing competition faced by Malaysia's palm oil industry from other producing countries, especially Indonesia, there is an urgent need to identify new alternative crops. Herbs and lately, *kenaf*, have been given priorities as possible alternatives to the established industrial crops. Herbs offer great potential for health and functional foods, pharmaceutical and herbal remedies, flavor and fragrance, and cosmetics and toiletries. *Kenaf* offers great potential for animal feed, and fiber and bio-based industrial uses. However, adequate emphasis should also be given to the established export oriented crops, such as fruits and orchids.

MARDI is currently undertaking a massive exercise in developing a comprehensive R&D plan in agriculture and food for the Ninth Malaysia Plan. This plan focuses on specific constraints facing the agriculture sectors and priority commodities that are of economic importance to the country. Additionally, the plan also focuses on new and emerging areas which are essential for the development of leading edge technologies.

In line with the national aspiration and vision for the agriculture sector, the plan is developed based on the key guiding documents, namely, Third National Agriculture Policy, New S&T Policy, Second Industrial Master Plan, Balance of Trade & Market Analyses, 'Halatuju Sektor Pertanian' (MOA-ABI), MTEN and other relevant acts (food Act, SPS, HACCP, EUREGAP etc.)

A holistic approach is adopted to define the key issues and technologies to be addressed for a particular commodity. This approach is highly effective in identifying the major issues in the value chain that are constraining the development of the industry. The value chain for a particular commodity is addressed from the identification of suitable variety to marketing and distribution ie. from farm to table. The approach of Cross Functional Teams or multi-disciplines is adopted to ensure that adequate expertise is harnessed so as to generate an R&D Plan that is holistic, futuristic and competitive as aspired by the country.

CONCLUSION

The agricultural sector is poised for greater challenges in the future. In the same breath, R&D institutions are expected to play a dominant role in transforming the sector into one that is modern, vibrant and dynamic, capable of contributing significantly to the nation's economy and the well being especially of the rural poor. However, advancement in technology alone is insufficient to transform the sector. It must be in tandem with similar advances and improvements in the policy framework, infrastructural development, financing and marketing, just to name a few. Indeed, this is our challenge now, to have all these 'foundations' in place in order to propel the agricultural sector to new heights, as envisaged by the government. Hence, much more needs to be done, and done fast.

Chapter 7

DIFFUSING SCIENCE AND TECHNOLOGY BENEFITS FOR RURAL DEVELOPMENT

Cheah Kooi Guan & Roshada Hashim

INTRODUCTION

Upon independence, Malaysia inherited from the British a largely rural and agriculture-based economy. More than 70% of the country's population was engaged in agricultural activities which included farming, plantation agriculture, livestock and fishing. Up till the 1980s, the economy largely depended on the rural sector for employment, income, and export earnings. Hence it was the rural sector that sustained the country's domestic as well as international economy. In addition, the urban-rural dichotomy in Malaysia is inextricably interwoven with specific economic, social, ethnic, and political characteristics, due mostly to historical factors. As a result, one of the major thrusts of Malaysian economic development since independence has been and continues to be the high priority given to rural development, which, to a considerable extent, is synonymous with agricultural development.

RURAL DEVELOPMENT POLICIES

Although a number of strategies have been deployed in bringing about development in the rural sector, the major policy strategy has been agrarian reform. This was regarded as an effective means of fostering structural and institutional changes in the agricultural sector, reducing rural poverty, and realising greater equity in rural and agricultural development (Fatimah Mohd Arshad & Mad Nasir Shamsudin, 1997). The strategy of agrarian reform involves a wide range of inputs and institutions, and aims at the transformation of rural life and activities in all their economic, social, cultural, institutional, environmental and human aspects (FAO, 1978). The major agrarian reforms implemented in Malaysia were land development and settlement, and *in situ* development. Spearheaded by FELDA, large and extensive land development schemes were undertaken to relieve employment and population pressures on the rural agricultural sector. *In situ* development involved replanting, rehabilitation and consolidating activities on existing agricultural areas, and was deployed to resolve problems of fragmented and uneconomic farm size, non-remunerative crops and low productivity among smallholders. Besides agrarian reforms, development policies in the 1960s and 1970s focused on building infrastructures and institutions. Social and economic infrastructures included rural roads, drainage and irrigation facilities, electricity and water, schools, and health services. A number of institutions, including research institutions, were established to facilitate and enhance production and marketing functions. It should be noted that the public sector played a direct, definitive, and pivotal role in organising and supporting these programmes.

In cognizance of the importance of the agricultural sector, three national agricultural policy plans have been introduced. The first National Agricultural Policy (NAP1) was promulgated in 1984 (Malaysia,1984). Agricultural development strategies continued to be public sector-led, and their focus remained on institutional and infrastructural development, with emphasis on agrarian reforms and acceleration of new land development. Attention was also given to in situ development to improve the lots of smallholders. Export crops were promoted in order to earn foreign exchange, create employment and income earning opportunities and reduce poverty. However, the NAP1 did not develop sufficient viable options to address emerging supply side constraints, which soon became policy concerns (Abdul Aziz, 1994). Urban migration led to labour shortages in the rural areas. As a result, wage rates rose for major farm operations. At the same time, the costs of new land development schemes escalated due to the shortage of large tracts of suitable land and increasing input costs. While oil palm began to be planted extensively, agricultural diversification programmes faced limited options with regard to other crops and commodities.

In 1992, the Second National Agricultural Policy (NAP2) was introduced. The over-riding objective remained the maximisation of income through optimal utilisation of resources. But significant policy shifts were made. The private sector was assigned an important role in providing the impetus for growth. Food production was targeted towards creating a dynamic industry capable of both substituting imports and exploiting export market potentials. In addition, agricultural downstream activities were encouraged to increase the linkages between the agricultural and manufacturing sectors. Nevertheless, the focus remained on agricultural activities. At the same time, however, the Malaysian economy experienced an unprecedented economic expansion in the early 1990s, leading to severe resource constraints for agricultural development.[1] Furthermore, at the international level, the establishment of the World Trade Organisation (WTO) and the rapid liberalisation of agricultural trade have opened the sector to increasing competition and new market opportunities. These developments posed new issues and challenges unanticipated by NAP2. They called for new policies and strategies, which led to the formulation and implementation of the Third National Agricultural Policy, 1998-2010 (NAP3).

Under the NAP3 new policy thrusts, strategies and implementing mechanisms have been put in place to address national concerns on agricultural development and the economy as a whole. These concerns are on food security, productivity, inflation, private sector investment in agriculture, conservation and sustainable use of natural resources, and enhancing exports and reducing unproductive imports. While agrarian reforms are continued, new land schemes are shifted to East Malaysia, where land is still relatively abundant. The NAP3 widens the range of agricultural products to be promoted. Greater attention is given to the production of major food products which are cost competitive such as fishery products, selected fruits, vegetable and livestock products as well as selective imported food products. Greater efforts are made to incorporate science and technology

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[1] New Dimensions in the Third National Agricultural Policy (1998 -2010) http://agrolink.moa.my/dpn/dpn3/nap_dimension.pdf

into the development of the products, such as the development of biotechnology products, extraction of specialty natural chemicals from biological resources, the utilisation of oil palm biomass, floricultural products and aquarium fish, so as to generate sources of future growth for agriculture and create new higher value industries.

SCIENCE AND TECHNOLOGY IN RURAL DEVELOPMENT

Although the role played by science and technology (S&T) in fostering agricultural growth is given greater highlight in the NAP3, applications of S&T have long been an integral part of previous plans and programmes. Under rural development programmes, a number of key rural-oriented research institutions (RIs) have been set up. These include the RRIM, PORIM, and MARDI. These RIs have made significant contributions to the modernisation of the agricultural sector and considerably transformed the rural landscape. Indeed, S&T has been instrumental in improving the quality and yield of Malaysian agricultural products and processes, enhancing productivity and efficiency, and seeking new uses and applications for the products.

In general, two observations can be made on the role of S&T in rural development. First, S&T benefits tend to accrue to the larger, established, modern, and highly commercialised agricultural enterprises. This is due to the fact that S&T for rural development, as for other aspects of development planning and implementation in Malaysia, adopts mainly a top-down approach. The technically competent management of modern large enterprises are more receptive of the role of S&T and commonly incorporate R&D activities in their operations. In a highly structured and less than efficiently organised society, the trickling down effect brings about unequal S&T development, whereby the unorganised sector which comprises small enterprises and poor households effectively receive little of the S&T benefits. In fact, the highly traditional and unorganised sub-sector has far more urgent need of technological inputs.

Second, R&D activities are mostly undertaken by public sector research institutions as mentioned above. Rubber and oil palm industries have benefited in no small measure from research activities undertaken by RRIM and PORIM, as they also have from the not inconsiderable R&D efforts of major plantation companies. Since its establishment, MARDI has developed new crop varieties/clones and animal breeds. It has also introduced farm management and husbandry practices. On the other hand, private sector R&D is mainly confined to the larger firms' laboratories to meet their own specific needs. Public-private sector collaboration in R&D has not occurred on a significantly large scale (Saharan Hj. Anang, undated).

THE NEED FOR RENEWED EMPHASIS ON SCIENCE AND TECHNOLOGY

Science and technology is a proven pivotal driver in enhancing agricultural production and uplifting the livelihood of the rural population in many countries. In the U.S., for example, the adoption of S&T in the agricultural sector has fundamentally transformed

the economic landscape of the country. The use of highly mechanized equipment, precision global positioning satellite technology, and grain storage and transportation systems meant less manpower was needed in the farms. Coupled with urban migration, U.S. population living on farms has fallen from 38.8% in 1900 to 1.7% in 1990, and the number of people engaged in farming was only 4.5 million or 1.8% of the 249 million people in 1990. In the same period, biotechnology and other S&T advances and applications led to dramatic increases in yield and productivity. Production of corn, for instance, rose from 28.1 bushels per acre in 1900 to 38.2 in 1950 and 118.5 bushels/acre in 1990.[2] Using 1987 as the base year, U.S. farm productivity increased from 0.460 in 1950 to 1.065 in 1990. All these achievements have been made possible by advances such as pest-resistant seeds, mechanisation, increased use of chemicals, more productive strains of plants and animals, and other innovations in the efficiency of techniques. Many of these changes were the result of mechanical and biological advancements. Indeed, biotechnology crop offerings have reduced the amount of pesticides used in U.S. production by 46 million pounds. Many of these crops also eliminate the need for tilling the soil, thereby preserving valuable topsoil and reducing runoff into rivers and streams.[3]

We have seen from our analysis of Malaysia's rural development that S&T have played a significant part in previous strategies and programmes too. Nevertheless, Malaysian rural development policies have been anchored on agragrian reforms and the creation of infrastructure and institutions. Agrarian reforms have considerably relieved pressures on land and led to relatively successful diversification of agricultural products. Infrastructural development, facilitated by the establishment of related institutions, has modernised the rural sector and, to a significant extent, improved the quality of life of the rural population. They have also brought about greater integration between the rural sector and the national economy. The whole approach, however, is essentially based on one important economic resource, namely land. While land reform may be a necessary condition for agricultural and rural development, it is not a sufficient condition, as its strategy affects only one of the factors of production, namely land (World Bank, 1975). Moreover, agricultural development alone cannot be relied upon to uplift the rural sector. As a result, despite various policies and programmes to improve the life in the rural sector, poverty and income equality still remain a grave concern. New policy thrusts, strategies and implementing mechanisms have to be devised to address national concerns on the rural sector and the economy as a whole.

It is within this context that this paper makes a case for a significant departure away from the present resource-based strategy to that of a focused science and technology-based strategy. While recognising the crucial role S&T has played so far, it is proposed that new, well-structured and clearly spelt-out mechanisms and strategies be put in place to enable S&T to function even more effectively to bring about modernised, commercialised and sustainable rural development. We shall discuss in some detail three strategies in the S&T

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2 USDA. http://www.usda.gov/nass/pubs/histdata.htm

3 The World of Corn 2003. http://www.ncga.com/WorldOfCorn/main/biotechnology.htm

approach, and conclude by offering an example of a project that can help to realise the approach.

SCIENCE AND TECHNOLOGY STRATEGIES

Broadening the S&T base for Rural Development

As a developing country, technological expertise is relatively scarce in Malaysia. Moreover, it is unevenly distributed and found in varying concentrations in specific private firms and other government research institutions. Mechanisms should be introduced to involve other research institutions, both public and private, so as to tap their S&T expertise, and put to greater use their R&D activities and outcomes. Dedicated RIs such as RRIM, MARDI have so far played pivotal roles in spearheading R&D for rural sector-based operations and activities. In addition, some of these institutions have initiated collaborations with research units of institutions of higher learning.[4] Equipped with the necessary expertise and infrastructure, universities represent the largest depository and concentrations of technological expertise and knowledge. On the whole, however, the contributions of higher learning institutions to agriculture are still largely confined to the provision of qualified manpower and the generation of basic scientific knowledge. Because of their broad-based research concerns and capabilities, they could be made to play greater and more effective R&D roles in rural development. The involvement of these and other research institutions in rural development should be made within new, well-structured and clearly spelt-out mechanisms and strategies.

S&T for Small Enterprises and Poor Households

As mentioned earlier, the trickling down effect of existing S&T approach in rural development has brought about uneven S&T development, much to the detriment of productive units at the lower end of the rural spectrum, particularly the unorganised and traditionally small enterprises as well as poor households seeking supplementary income. While S&T for rural development should provide for all scales of enterprises and all stages of production, greater efforts should be geared towards the generation of R&D innovations that can be economically, effectively and readily accepted and adopted by small enterprises and hard-core poor households.

Technology Transfer and Diffusion to the Rural Sector

Traditional and small scale farmers, fishermen, petty traders, and others involved in conventional agricultural pursuits represent the ultimate recipients/users to whom R&D innovations in products, processes, and productivity increases should be passed on to through technology diffusion. Technology should therefore be simple, comprehensible, acceptable, and readily applicable to this hitherto neglected group of people. However, adoption of new technology represents a change; and changes inevitably involve the use of already limited economic resources and the undertaking of some elements of risks.

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[4] e.g. MARDI's development of the sol-gel pesticide biosensor has been in collaboration with UKM and UiTM. See Saharan Hj. Anang, undated

Extension and education services are needed to create awareness and willingness on the part of the recipients. At the same time, studies can be conducted to identify the economic needs of the recipients. Those who are in greater need of new income and economic opportunities would be more willing to undertake the risks and to invest the time and other economic resources to learn the know-how necessary to implement the projects. Finally, the technology absorptive capability of the recipients has to be enhanced as the technology becomes more complicated.

APPLYING S & T OUTCOMES FROM AQUACULTURE RESEARCH TO RURAL DEVELOPMENT: A CASE STUDY

It has been observed that a common weakness of development efforts is not the lack of a consistent, aggregative planning framework. The weakness lies in the fact that 'not enough effort went into filling these frameworks with well-conceived, well-engineered projects and programs.' (Waterston, 1971, (p. 84) We would therefore like to put forward an aquaculture based R&D project that serves to exemplify the S&T-based strategy proposed in this paper.

Aquaculture and Rural Development

Aquaculture has an important role in rural development and can contribute significantly towards poverty alleviation, food security and the social well being of individuals and communities. However, the full impact of aquaculture has failed in reducing poverty and malnutrition particularly among the rural poor. This is because of the widening gap between capital investment required to startup an aquaculture facility and return on investment. Since success stories are so few and far between, farmers now have an unfavourable attitude towards fish farming; often regarding it as a high risk venture, and are unwilling to participate in such activities.

In Malaysia, the bulk of aquaculture production from rural areas originates from extensive and semi intensive culture in which freshwater fish are raised in earthen ponds. Typically, fish are maintained on low quality feeds such as trash fish, chicken innards and household waste which are detrimental to water quality as well as to the fish muscle, often giving it the characteristic muddy and fatty taste associated with freshwater fish. The productivity of this aquaculture practice is further jeopardised by poor management, lack of good quality fry, lack of credit facilities for poor farmers and lack of post-production facilities and marketing networks as well as conflict among farmers. Add the fact that there is a distinct lack of knowledge and skill among farmers to operate the fish ponds effectively and the situation is further worsened. The variables that affect fish production in pond culture are numerous. To operate profitably, a farmer requires an understanding about water quality management, pond dynamics, feeding management and marketing, to name a few. While training the farmers may be the answer in the long term but this would be time consuming with enormous financial implications for the government. Hence, abandoned ponds become a common sight and the already financially strapped farmer ends up with a hole in the land which requires more money to rehabilitate.

In view of the benefits of aquaculture to the nation's economy and the significant contribution if the outputs from rural farms are combined to meet the nation's agenda for food security as outlined in the NAP3, researchers from Universiti Sains Malaysia embarked on a research programme to develop a model for the integration of aquaculture in rural development. The strategy was to develop a fish production system that was low risk and easily adoptable so as to mobilize the vast numbers of rural farmers to participate in aquaculture.

For the fish production system to be relevant and adopted widely, the farmers' profile including their constraints were considered and identified as follows:

1. Limited land resource: *Land is typically in the form of small parcels on which stands a house with a perimeter compound.*
2. Limited financial capital.
3. Potential but untapped labor from family members.
4. Presence of a significant number of single mothers with a family to support.
5. Human resource with limited relevant knowledge and skills in fish farming.
6. Inadequate marketing network and support.
7. Limited physical infrastructure such as road and telecommunications facilities.

As a consequence, it was decided that the system to be developed should incorporate the following aspects:

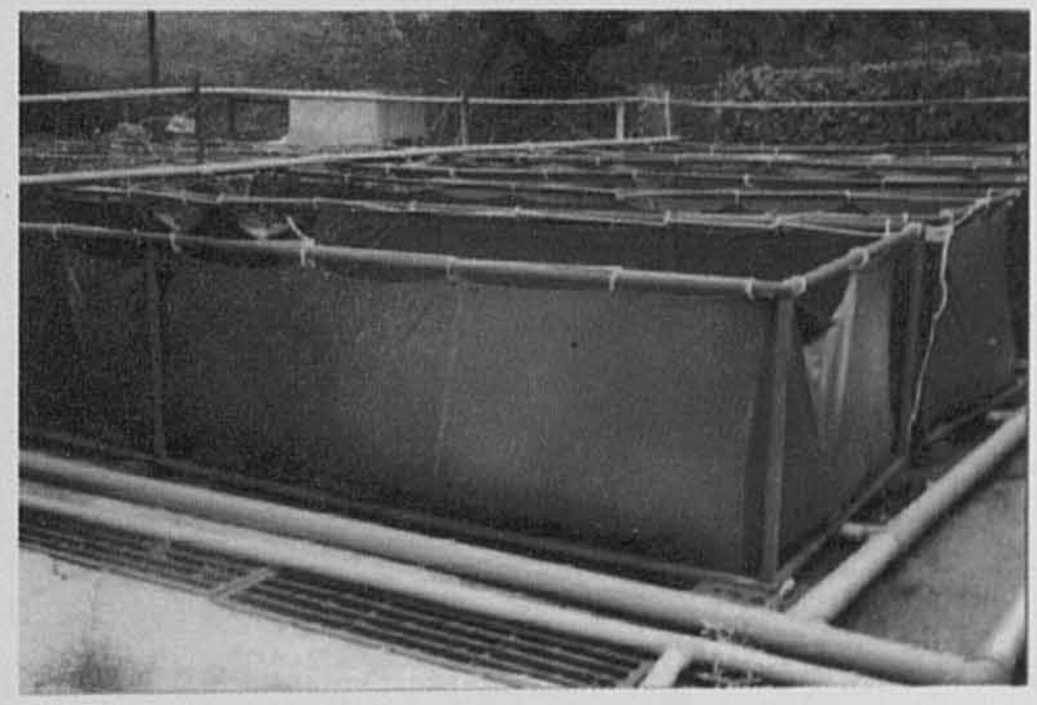
1. User-friendly to both genders, particularly the participation of womenfolk especially single mothers.
2. Simple to install, operate and maintain, so as to account for the lack of education among the farmers regardless of gender.
3. Portable in view of the poor road infrastructure.

The modular system: the portable canvas tank and fish culture system

After a series of pilot projects, a modular system for the culture of catfish and red tilapia was successfully developed by USM researchers by 2003 (Ahmad Fatan et al., 2003; Hashim et al., 2002; Hashim et al., 2001; Hashim et al., 1994, Hashim and Ali, 1994). The system with a production capacity of 120 kg of tilapia per tank incorporates the following features:

1. a portable canvas tank 15' x 4' x 3' (4.57 m x 1.22 m x 0.92 m)

2. a step-by-step guide for:
   a. stocking size
   b. stocking density
   c. water quality monitoring
   d. feeds to use
   e. feeding schedule



A. *The Technological Basis for the System*

Tank and Tank Design

The rectangular tank, sized 15' x 4' x 3' (4.57 m x 1.22 m x 0.92 m), is made of non-toxic canvas material and is mounted on an iron frame. The rectangular shape affords efficient use of the space available. The tank is lightweight, weighing only 10 kg and foldable into a small package, thus making transportation to remote areas possible in contrast to the problems associated with transporting bulky fiberglass tanks or constructing permanent cement tanks.

A tank system was chosen instead of the earthen pond for several reasons. Tanks present a more viable alternative to ponds when available land for fish culture is in small parcels or when sufficient land is unavailable. Furthermore, excavating the land would only reduce the area available for fish culture. Tanks are also more practical to operate in that feeding and harvesting require much less time. The time taken to feed a batch of 20 tanks at a rate of 2 feedings per day takes less than one hour. It also allows the farmer to exert control over the fish and water quality management hence reducing as many variables as possible.

Currently commercial tanks for large scale fish culture are usually circular as they tend to be self-cleaning versus rectangular tanks which have poor flow characteristics. However, this aspect is overcome here by incorporating a perforated pipe which runs along the length of tank and a valve at the end for the periodical removal of solid wastes and uneaten feeds. These features ensure a prospective farmer with a low risk option for growing fish.

Fish

Tilapia have many desirable traits that make them suitable for tank culture. They are suited to warm and tropical temperatures, are hardy and tolerate stress better than other fish. They tend to grow well even at high densities in tanks. Their fillet is white, tasty and well accepted by consumers.

Feed

One of the weaknesses of tank culture is the feed cost incurred which can amount to about 60% of operational costs. The situation is further worsened when fish are raised in tanks because of the limited access to food in tanks. Thus, feeds must be nutritionally complete including vitamins and minerals which inevitably leads to high feed costs. Under these circumstances, the farmer has the choice of either using the recommended commercial feed, or cutting feed costs by preparing his own fish feeds based on formulations developed by researchers in USM.

Research addressing issues pertaining to high feed costs has resulted in a novel feeding management programme which applies knowledge of the diurnal digestive patterns and variations of the tilapia and catfish respectively (Ahmad Fatan, et al., 2002). It was found that tank cultured tilapia maintained on a mixed feeding schedule of alternate high and low protein levels, saves protein and feed costs up to 13% per tank. In addition to protein and cost savings, the lower protein input has an added advantage in that it reduces

nitrogenous waste in the tank effluent. Fish raised on this feeding schedule also result in a more uniform harvestable size with a consistent muscle quality.

Water Management:
Tilapia grows well at high densities provided the water quality is maintained and this can be accomplished by aeration and frequent exchange of water. Here, the system with a tank water capacity of 90 cu ft (2.56 m^3) is fitted with a flow through water system to allow for a daily water exchange of approximately 35%.

B. *Benefits of the Canvas Tank System*
This fish culture system developed in USM presents the application of a simple technology which is beneficial to the farmer based on the following characteristics:

i. Easy to install: *The tanks can be installed in the vicinity of the house.*
ii. Long lasting durable tanks: *The lifetime of the tanks exceeds 16 years. Tanks set up in 1986 in USM are still operational.*
iii. Clean working environment.
iv. Predator problems are solved.
v. Minimum management involved: *The farmer follows a three step guide (stock, feed and harvest) and adheres to a specified feeding schedule which are available to them.*
vi. Not labour intensive: *Additional help is not required even during harvest. Daily involvement for feeding and occasional cleaning takes less than 1 hour for 18 tanks. Thus the task of feeding the fish can be undertaken by family members.*
vii. Easy to harvest: *The labour intensive aspect of pond culture is solved and the task can also be done by family members.*
viii. Immediate restocking and harvesting is done throughout the year. *The tanks do not need to undergo a lag period for cleaning and preparation after each harvest as sometimes deemed necessary for pond culture.*





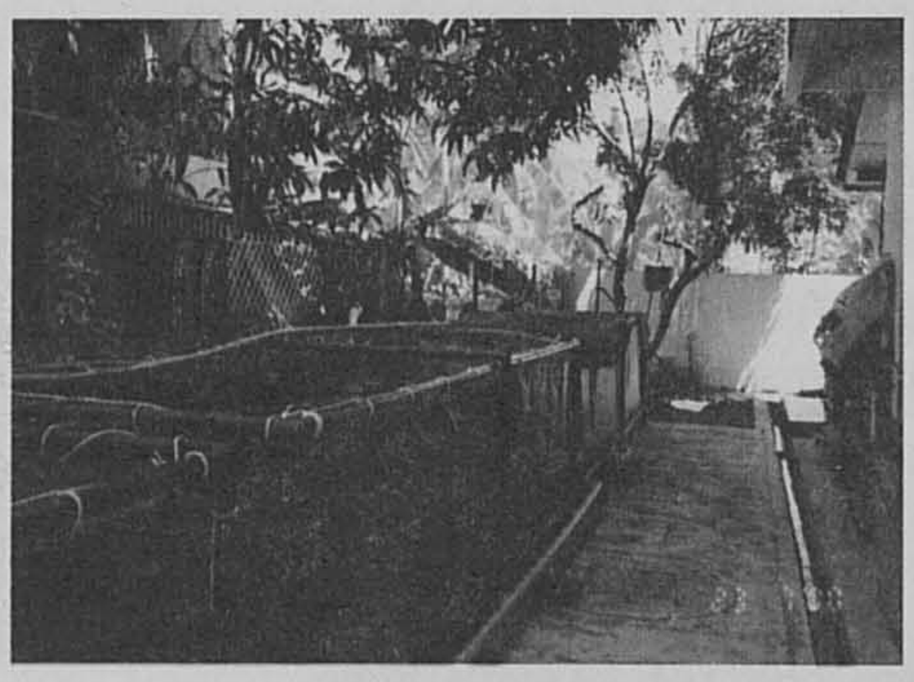


ix. Predictable yield: *Yields are consistent as long as the farmer abides strictly to the feeding guide*
x. Consistent and high quality yield: *The closed system and stringent management protocol including the control of the feeds used result in fish that are consistent in size. Fish quality is high without the characteristic muddy taste and fatty content.*
xi. Involvement of family members: *In addition to fostering family relationships, this affords an educational experience for the family members who are able to observe first hand the application of science in their daily lives*

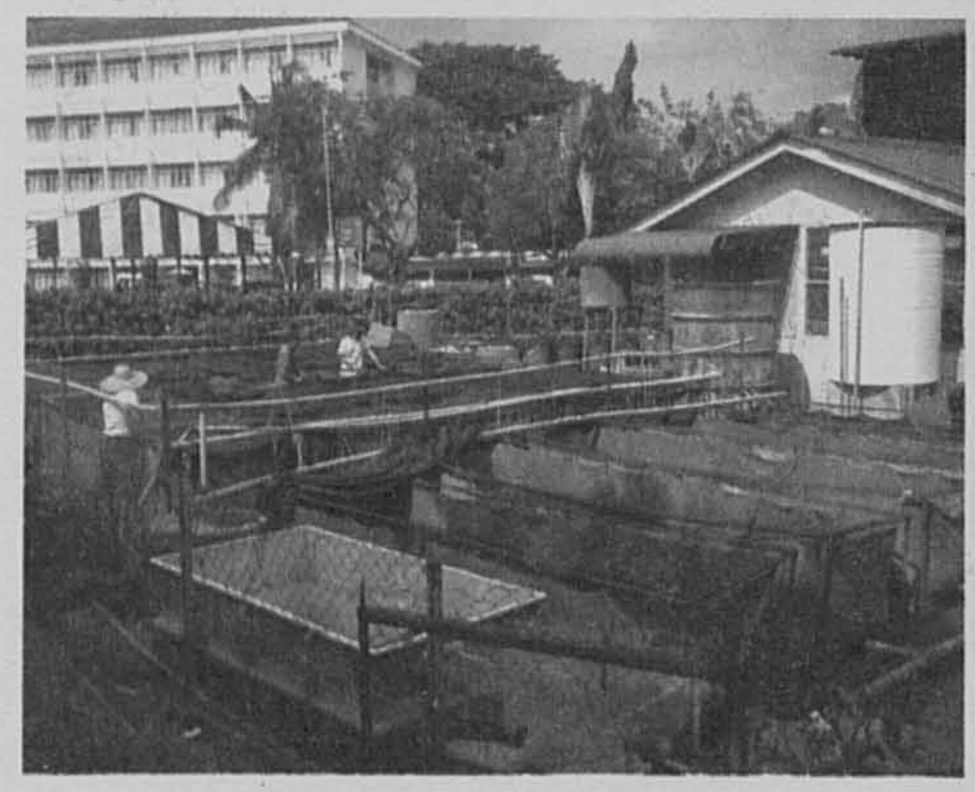
C. *System Application*

Since each tank functions as an individual module, it allows the farmer ample flexibility to expand operations according to his financial and land resources. The versatility and merits of the system are described below:

i. The maximum number of tanks set up is determined by the size of land.
ii. The tank configuration can be arranged to suit the shape of the land to optimize space.
iii. Regardless of the number of tanks set up, tank management, feeds, production, harvestable fish size and fish quality remain the same.
iv. Scaling up is done by multiplying the requirements per tank with the number of operational tanks.



Fish for Home Consumption



Pilot Project in USM



Large Scale Production

Modular fish culture system for rural development

The government is currently moving towards modernising the agriculture sector via the applications of appropriate technologies and creation of more small and medium scale industries for downstream activities in rural areas. The modular fish culture system described in this paper has the potential to complement and fill the existing gaps whereby S&T is utilized to support the initiatives outlined in previous agricultural programmes and policies.

This simple yet versatile system is an example of a research outcome which is not only easily adopted but can be implemented to match the different strata of the rural population which is described below.

i. *Stand Alone Farming*

A stand alone farmer operates a minimum number of tanks, one (for catfish) or three (for tilapia), with the main objective of providing protein for the family and supplementary income from the sale of surplus fish. To reduce feed costs, the farmer can be trained to prepare farm-made feeds using formulations already developed by researchers in USM. However, it is important to note that as a stand alone farmer the impact on rural development is not expected to be significant.

ii. *Cooperative Farming*

This type of farming involves the participation of a group of farmers whose products are pooled to meet a targeted production figure. Participants who have access to idle land can opt to culture fish as a side activity to supplement their incomes. Implementation in terms of the number of operational tanks can be in phases, to enable the farmers to expand in stages according to their financial capacity. Ideally, these farmers should be members of a government agency such as FELDA or the Farmers Association Board (LPP), who can provide the necessary financial assistance as well as the much needed marketing support.

Based on a model that was developed from several pilot projects carried out at the Aquaculture Research Facility in Universiti Sains Malaysia, the minimum number of operational tanks was determined as 18 per production cycle. This will result in a half yearly production of 4320 kg of catfish or 2160 kg of tilapia. The table below presents the cash flow (not inclusive of labour and utility costs) involved for the production of red tilapia from 18 tanks and based on the current ex-farm price of RM4.00/kg for tilapia.

According to the above calculations, the payback period for the farmer is expected to take 2 years. Alternatively government agencies can step in to defray the development costs or provide support in the form of a one-off grant or a soft loan for the development costs while the farmer will bear the operational costs.

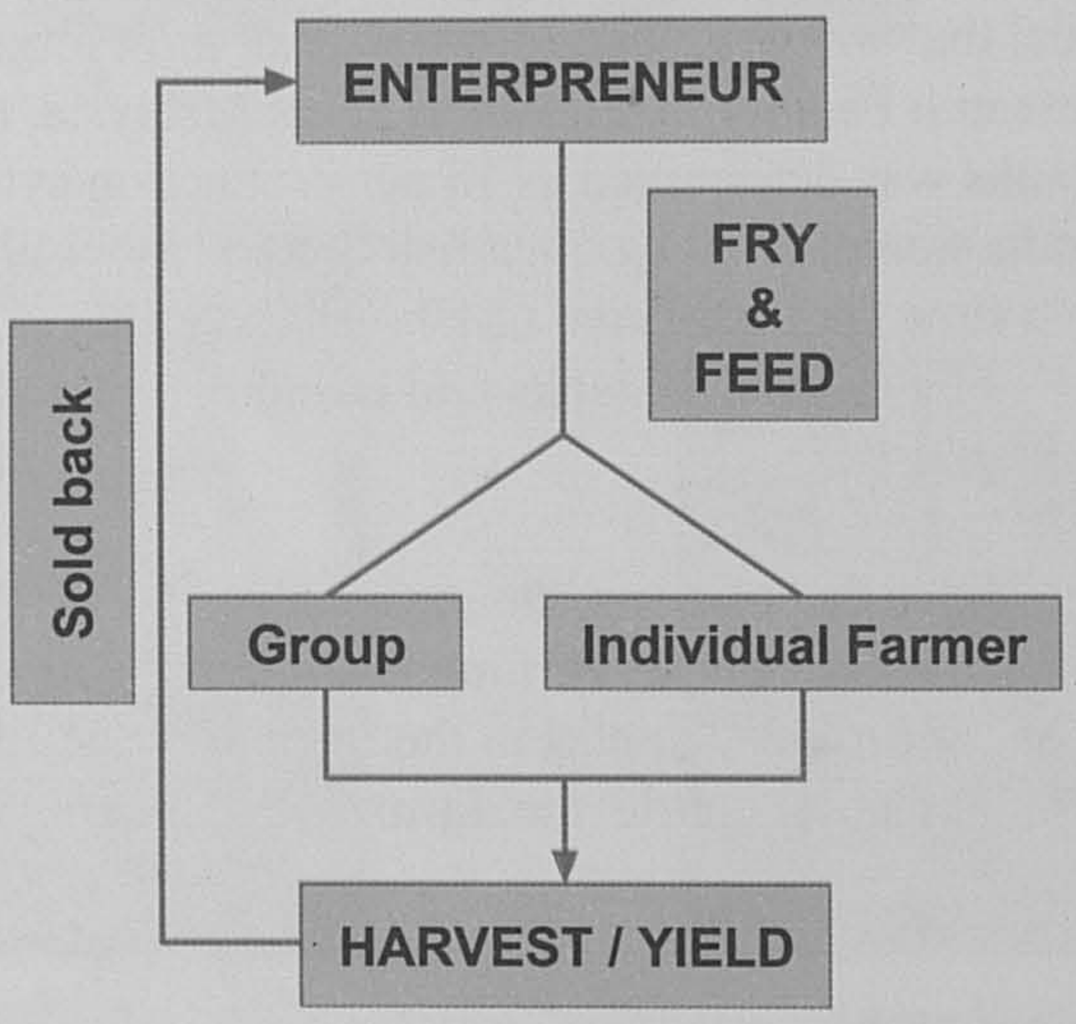
Item	No. of Units	Cost/Unit	Total (RM)
Development Costs			
Tank + Accessories	18	800	14,400
Tube Well + Pump	1	2,000	2,000
Reservoir	1	1,000	1,000
Blower	1	1,500	1,500
*Installation Services for 18 tanks			2,000
Total			**20,900**
Operational Costs			
Fish	18		864
Feeds	18		3,250
Total			**4,114**
Income		**Production/tank**	
Sales at RM4.00 /kg	18	120 kg	8,640

** not inclusive of travel and daily expenses for installation at site*

iii. *Contract Farming: Private Sector Involvement*

Contract farming is an effective mechanism that links the small scale farmer to sources of quality fry, suitable feeds and more significantly guarantees profitable markets for the fish produced (FAO, 2002). In exchange, the culture system proposed here assures the entrepreneur of a highly consistent quality and a steady supply of fish. The regular production obtained from the combined outputs from these small scale farmers will be the impetus to support more fish processing plants and create SMIs to meet the changing consumer habits for cleaned fresh fish and processed fish products in supermarkets and fast food outlets.

The diagram below shows the organization of the stakeholders involved.



In this case, the entrepreneur provides the initial investment for tanks, fry and feed. After a specified time, he will buy back the harvested fish at a pre-arranged price. The financial implications and the minimum number of operational tanks per farmer is as described earlier.

Extended Activities

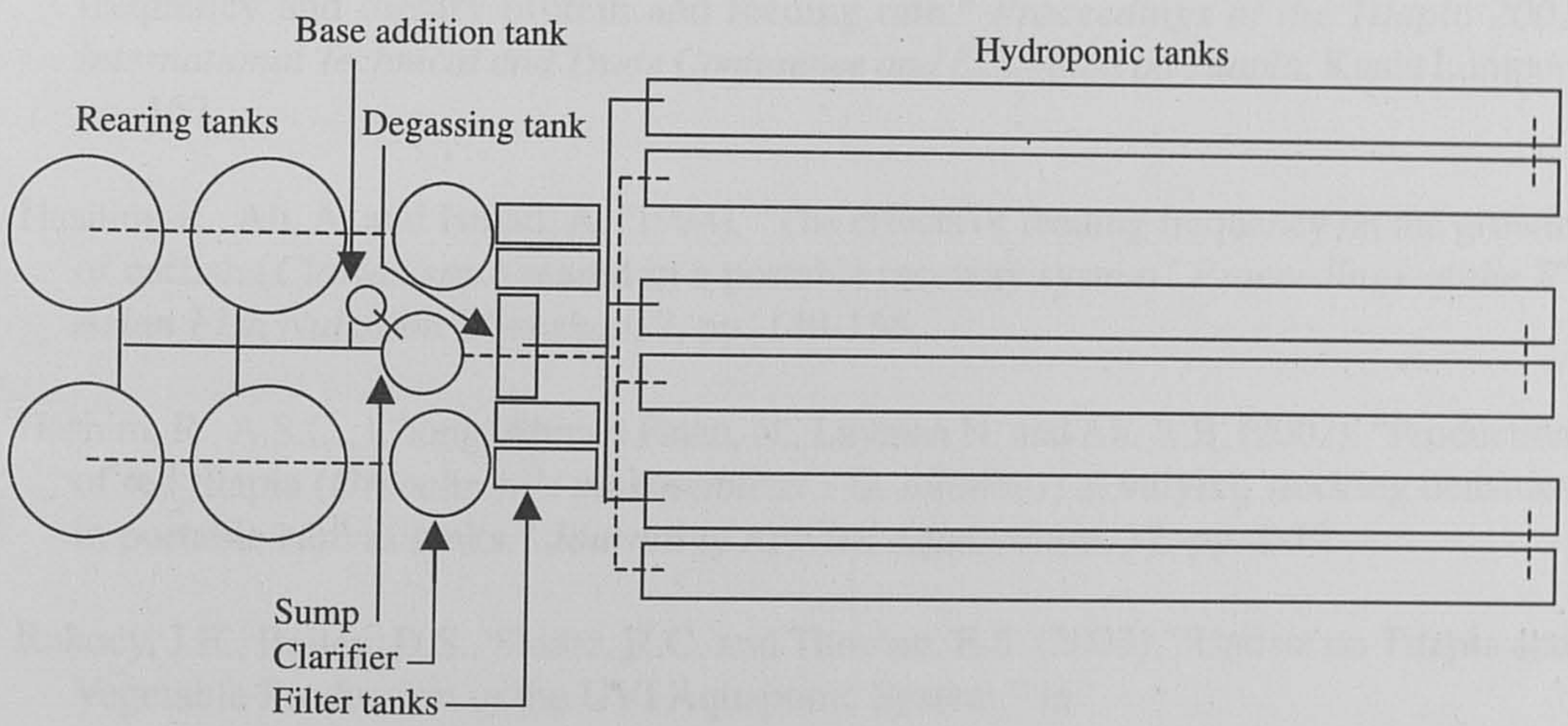
Cluster activities

As fish culture expands and regains the interest and participation of farmers, there will be a corresponding demand for quality fry and feeds. This need can be fulfilled by other sections of the community who can be trained to produce good quality fry and prepare the appropriate feeds. For example, Universiti Sains Malaysia is ready to transfer the technology already developed for feed formulation and preparation of farm made tilapia feeds. This augurs well with the one village one product concept.

Aquaponics: integrating fish production and plant production

In the current technology, effluent from the tanks are either channeled into drains or can be collected and to water plants and vegetable plots since aquaculture effluents are high in nutrients which are suitable for plant growth.

However, fish culture can be integrated with plant culture in a closed assemble of tanks to build an aquaponic system where the farmer benefits by getting two products on the same piece of land. Here, the effluent is filtered as it passes through the plant plots and the filtered water can be recycled into the tanks creating a modern and environment friendly aquaculture practice. The layout for a typical aquaponic system is shown below (Rackocy et al., 2003).



CONCLUSION

In efforts to modernize and facilitate the development of the aquaculture sector, the government has introduced aquaculture industry zones in designated areas that encompasses production, grading, processing and packaging activities. While this approach may benefit the large scale aquaculturists, the small scale rural farmers would still remain sidelined and their potential contributions untapped. Firstly, it would entail the relocation of these farmers who may be reluctant to do so. Secondly, the labour resources (i.e. family members) would remain unexploited and finally, vacant land in the rural areas would remain perpetually idle. More significantly, the formal participation of this critical group of farmers would be hindered and the nation will not benefit from their vital combined contributions.

The introduction of a modular system for fish culture thus presents a viable alternative technology to the traditional pond culture for the development of aquaculture in Malaysia. It allows both the affluent fish culturist and the underprivileged small scale farmers to work together towards fulfilling the nation's food security needs; in doing so, redefining large scale aquaculture from one where large ponds are operated by a single owner to an association of small scale stand alone farmers.

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Chapter 8

URBAN POVERTY IN MALAYSIA: MISSING THE FOREST FOR THE TREES

Goh Ban Lee

INTRODUCTION

There is a rumour that even if poverty does not exist, social scientists would invent it to keep themselves busy. However, lately it has become clear that politicians also need the poor so as to justify whatever they are doing. Unfortunately, poverty exists. As such, there is no need for social scientists to invent anything.

The existence of and concern for poverty, including urban poverty, are well reflected in the millions of words on this subject. Indeed, almost every aspect of poverty has been analysed and reanalysed and numerous proposals have been advanced to alleviate, if not eradicate, poverty. Even on urban poverty alone, the United Nations and its agencies such as UN-HABITAT, ESCAP and United Nations Urban Management Programmes, World Bank and Asian Development Bank have sponsored and generated a huge amount of literature on this issue. (UN-HABITAT, 2002; UNESCAP, 2000; Bernstein, 2002; UN, 2003; Navid Hamid and Villareal, 2001; Mitlin, undated; Iied, 2002). It is hard to think of any strategy or programme that is not already in the literature.

Even in Malaysia, despite the scant official attention to urban poverty until recently, a fair amount is known about this problem. For instance, Sulochana Nair (2000, 2001) has discussed extensively on the changing dimensions of poverty in Malaysia and the problems related to measuring urban poverty based on the Poverty Line Index. Tan Poo Chang and Ng Sor Tho (undated) have provided a very detailed 101 page single-spaced discussion on women in poverty in Malaysia. Henderson et al. (2002) have provided not only a detailed discussion on the anti-poverty policies and programmes of Malaysia, but also the economic governance in which poverty eradication strategies and policies were embedded. In the process, they also provided solid data on poverty and expenditures on its eradication. Roslan (2001) has pointed out that developmental policies that are articulated in the political rhetoric of ethnicity would be "incoherent" to solve the problems of inequality and poverty.

Indeed, there have been several conferences and workshops on reducing urban poverty in Malaysia. For instance, the Institute of Strategic and International Studies Malaysia had the ISIS First National Conference on Poverty in 1986. Then there was the National Conference on Urban Poverty - Advocacy, Empowerment and Poverty Alleviation in 2002. The Ministry of Housing and Local Government conducted a workshop on *Rancangan Strategik dan Pelan Tindakan Program Pembasmian Kemiskinan Bandar* in 2004.

Since April 2004, it has established a think tank to draw up "action plans and integrated programmes to wipe out urban poverty in five years' time" (*The Star*, 11 April 2004). Almost every week, there are reports of cases of poverty in Malaysia or commentaries calling for greater efforts to eradicate urban poverty.

The objective of the paper is, therefore, very modest. It does not propose new strategies or action plans to eradicate urban poverty. It is also not an account of new studies on urban poverty or of the hardships faced by the urban poor and presents no new data on the incidence of poverty. What is intended is a reminder that the towns and cities are themselves powerful institutions to alleviate urban poverty. But these have been rendered ineffective as a result of poor urban governance and ineffective town planning. In the process, the paper touches on the issue of non-compliance that has been touted as "weapons of the weak" to escape from urban poverty.

URBAN POVERTY

Officially, Malaysia appears to have done very well on the question of reducing poverty. The official poverty rate as of 2002 was only five per cent. This is very impressive by the standards of developing countries. At least it was impressive enough for the head of the United Nations Development Programme resident representative in Kuala Lumpur. In fact, according to Richard Leete, "Malaysia has a successful history of poverty eradication. It can be a role model for many countries" (*The Star*, 17 April 2004, p.16).

Leete, being a diplomat, might be diplomatic. Even academicians, who are generally quite blunt in their evaluation, have also praise for Malaysia. A comprehensive study by international scholars has also concluded that Malaysia has done relatively well. Quote:

> While Malaysia's record is not as successful as experiences in South Korea, Singapore and Hong Kong, Malaysia has been an admirable frontrunner in the effort to systematically integrate poverty reduction into an economic development strategy (Henderson et at., 2001:29).

Indeed, according to the scholars, Malaysia is an ideal case study to "trace the links between the operation and evolution of its institutions of economic governance on the one hand, and its poverty reduction efforts on the other" (p. 29). As a comparison, even Australia, popularly known as "The Lucky Country" and a magnet to the poor and those who want better life from all over the world, has a poverty rate of 22.6 per cent involving 4.1 million Australians, according to an Australian Senate report (Kelly, 2004).

The impressive official statistics were also not lost on Malaysian leaders. As Prime Minister Dato' Seri Abdullah Badawi proudly pointed out recently, Malaysia has achieved the United Nations Millennium Development Goal of eradicating extreme poverty and hunger. Indeed, out of eight development goals that are to be achieved by 2015, Malaysia has yet to achieve only one of these goals, that is, to combat HIV/AIDS, malaria and other diseases (*The Star*, 29 Jan. 05).

Malaysia's official records on poverty are even more impressive if viewed from the drastic reduction of poverty rate from 58.7 per cent in 1970, to 37.7 per cent in 1980 and 16.5 per cent a decade later and 5.1 per cent in 2002 (Ministry of Housing and Local Government, 2004). Henderson, et al. (2002), sourcing from Yusoff et al (2000), have a slightly different set of figures. According to them, the figures were: 1970:49.3%, 1980:29.2%, 1990:7.1% and 2000:5.5%).

However, despite all the impressive figures, there are reservations. Until recently, urban poverty has not been on the official radar screen. As pointed by Henderson et al. (2002), this was because the main institution entrusted to reduce poverty was the Ministry of Rural Development, which tended to project the idea that rural poverty was the principal, of not the exclusive, problem. Although there was an awareness of poor people in the towns and cities, the main orientation of the anti-poverty programmes was on small groups of hard-core poor. This, according to the researchers, further reinforced the idea that poverty was principally a rural issue.

As a result of the focus on rural poverty, poverty in the urban areas has also not attracted extensive research, at least compared to that in the rural areas. According to Sulochana Nair (2001):

> While there is extensive documentation on the profile and intervention programmes for the rural poor there is very little information on the urban poor despite the urban poor having been identified as a target group for poverty eradication programmes for the last fifteen years. There is a need for basic information on urban poverty, its characteristics and determinants (p.16).

Consequently, despite the occasional newspaper reports of poor families and the problems they face or their appeals for assistance, these were treated as welfare cases rather as manifestations of the failure of the poverty reduction programmes.

There is, therefore, a need for policy instruments to reduce urban poverty that are different from those for rural poverty. As stated by Ravallion (2002), who is concerned about the "urbanization of poverty":

> There may also be implications for understanding the political economy of anti-poverty policy. More spatially concentrated and visible forms of urban poverty are likely to generate new pressures on governments to respond, and in ways that may or may not be coincident with good policies for overall poverty reduction (p. 2).

Unfortunately, the wake-up calls for more attention on urban poverty were only heard when residents of Kampung Lindungan and Kampung Medan in Selangor clashed among themselves along ethnic lines in 2001. There is no doubt that there were and still are poor families in these areas, but it is doubtful that poverty was the main cause of the ethnic

conflicts. However, to the politicians and even some academics, it is less problematic to treat conflicts in Malaysia as poverty related than as a racial issue. While it is "good" that urban poverty has got some attention as a result of the incident, even though it might not be the main cause of conflicts, focusing on poverty as the culprit may lead to sweeping the racial problems under the carpet.

Officially, the incidence of urban poverty in urban Malaysia is almost negligible. Data from the Ministry of Housing and Local Government and the minister in-charge, Datuk Seri Ong Ka Ting, show that the urban poverty rate was only two per cent (*The Star*, 2 Feb. 2005). In numerical terms, the two per cent amounted to 69,600 households (Ministry of Housing and Local Government, 2004). However, as the incidence of urban poverty varies according to the states (Table 1) and most probably local authority areas, it is prudent to have poverty alleviating programmes that suit local environments. Nevertheless, by any standards, these are very impressive figures. Furthermore, according to the minister, the rate of urban poverty has been dropping drastically from 24.6 per cent in 1970 to 12.6 per cent in 1990 and 7.5 per cent in 1990 (*The Star*, 2 Feb. 2005).

Table 1: Number and Percentage of Poor Households in Malaysia by States, 2002.

States	No. in '000	%
Johore	3.9	0.8
Malacca	1.3	1.3
Negri Sembilan	0.9	0.8
Perak	14.4	4.0
Penang	3.2	1.1
Selangor	7.4	0.9
Kuala Lumpur	2.3	0.5
Kedah	5.7	3.4
Kelantan	5.8	6.5
Pahang	1.7	1.5
Perlis	0.9	6.9
Sabah	13.6	8.5
Sarawak	3.4	1.7
Terengganu	4.9	5.6

Source: Ministry of Housing and Local Government, 2004.

Indeed, if social scientists were to view poverty the way the economists view unemployment, Malaysia can officially declare that there is no urban poverty problem. After all, economists consider an unemployment rate of four per cent and below as "full employment". An urban poverty rate of only two per cent can be "legitimately" declared as no poverty.

In fact, Dato Seri Ong predicted that by 2009, there would be no more hard-core urban poor, defined as those earning half of the official poverty line (*The Star*, 2 Feb. 2004). Chamhuri Siwar, however, believes otherwise. According to him, Kuala Lumpur would face extreme urban poverty in the next five years as migrants from other states increased (*Utusan Malaysia*, 6 May 2004). It is useful to note that Sulochana Nair has also been quoted to say that:

> Poverty has become more complex, and income-distribution is worsening. We need new approaches because past ones have not had significant impact on poverty reduction (in Yeang Soo Ching, *New Sunday Times*, 20 Feb. 2005).

She might be right. The latest United Nations Human Development Report (UNHD, 2004) shows that income inequality of Malaysia has got worse. It shows that the richest 10 per cent control 38.4 of the total income while the poorest 10 per cent control only 1.7 per cent. Compared to other countries in Southeast Asia, Malaysia comes out the worst.

As some social scientists cautioned in the 1970s when poverty was one of the two important issues in developmental economics, (the other being restructuring of society), one could easily eradicate poverty statistically. It is, therefore, important to understand the definition used to provide the figures given by the minister.

The two per cent urban poverty rate in 2002 was based on households of five living under the official Poverty Line Income (PLI) of RM529 per month in Peninsular Malaysia, RM600 in Sarawak and RM690 in Sabah. Households living under a monthly income of RM265 or less, estimated to amount to about one per cent of the urban population, are considered as being in the hardcore poverty category. It is understood that the Economic Planning Unit of the Prime Minister's Department is in the midst of redefining the PLI.

The use of a single yardstick to define poverty, such as household income, though clear and simple, is prone to providing a poor picture of the situation. It is especially misleading in estimating the incidence of poverty in the urban areas. As pointed out by Sulochana Nair (2001):

> The PLI based on a single income level will underestimate the scale of poverty in the urban areas, and the urban population lives in poor quality, overcrowded and insecure accommodation with inadequate provision for basic services which is the only affordable accommodation given the high living costs (p.18).

It should be pointed out that Malaysia is not alone in using a single poverty line to define poverty. As Mitlin (2001) found out, most of the 23 countries she studied relied primarily on the same methodology, "with no attempt to take account of the higher monetary income needed to avoid poverty in some areas" (p. 1).

While statisticians and social scientists are busy trying to come up with a new PLI, most Malaysians already know the existing official figures are clearly not realistic. Under current prices, it is generally accepted that a household would need at leas RM1,000 per month to live adequately. Some would even go as high as RM1,200 per month, broken down into RM400 for rents or payments for low-cost houses, RM400 for food, RM200 for transportation and RM200 for other expenditures. Citing a newspaper report (*Sunday Star*, April 1997) of government servants in Kuala Lumpur, Johore Bahru and Penang taking second jobs or doing part time sales in the office, Sulochana Nair (2001) argued that:

> A monthly salary of RM1200 which is about average for this category of workers is barely enough given that house rentals alone cost about half this amount in these urban areas. Often both spouses have to take up second jobs, as supplementary income is needed for family survival (p.19).

Indeed, currently, the government has acknowledged that households with less than RM1,000 per month are eligible for financial assistance. School children whose families earn less than this figure are eligible for a RM600 financial assistance per year. Kuala Lumpur City Hall determines that households with less than RM1,500 per months are eligible to participate in its poverty alleviation programmes.

It is useful to note that in the survey of monthly expenditure undertaken by the Department of Statistics (DoS), it was found that in 1998/99, the average expenditure per urban household was RM1,943. It was RM1,406 in the 1993/94 study. Even for the rural areas, the 1998/99 study found that the average expenditure per household was RM1,270 (DoS, 2003. p. 253).

As such, even if the PLI is readjusted to RM1,000 or RM1,200 per month for a houshold of five, it is not too much. If the PLI were to be readjusted to RM1,000 per month per household of five, using the 1989/99 household income survey, the most recent available, about 25.0 per cent of the households would be considered to be living in poverty. If it were to be the more realistic figure of RM1,200 per month, the corresponding figure would be 33.1 per cent. (The writer wishes to acknowledge that the raw data on the household income survey were supplied by Dr. Andrew Tan Khee Guan of the School of Social Sciences, USM). Even if the household incomes were to be adjusted for increases since 1989/99, the incidence of urban poverty would surely be in the double-digit category.

But even without the statistics, only those who refuse to see realities are blind to the existence of urban poor. Every week there are reports of some poor families trying to make ends meet or pictures of some politicians handing goodies to some poor families, especially during general elections and festive occasions (see *The Star*, 13 April 2004; 25 Oct. 2004; 26 Oct. 2004; *NST* 10 June 2004; 25 Oct 2004).

The recent report on the quality of life of V. Ramah and his family of five is revealing. Ramah's household income of RM1,500 per month is from his daytime job as parking attendant and night job as security guard and his wife holding a job as security guard. The RM1,500 income would place his family far above the poverty line. But Ramah and his family are living in a makeshift zinc-roof shack, measuring two metre square, without electricity and piped water or toilet/bathing facilities. Toilet use and bathing are by the courtesy of the nearby petrol station. According to Ramah, a large part of the income is spent on food, amounting toRM900 to RM1,200 per month as the shack does not have proper cooking facilities (*Malay Mail*, 14 March 2005).

Individual cases of the urban poor as reported in the press are clear indications that the official statistics sometimes tend to obscure realities and could lull the nation into thinking that all is well. Here, it may be useful to recall that Prime Minister Abdullah also proclaimed that Malaysia had officially achieved the UN Millennium Development Goal of sustainable development. However, he might have changed his mind after his helicopter rides on 2nd March 2005 over Bukit Cahaya Seri Alam Agricultural Park in Selangor and saw the destruction there (*New Straits Times*, 3 March 2005).

Hopefully, the Economic Planning Unit of the Prime Minister's Department will quickly review the PLI so that a more realistic picture of urban poverty is given the official recognition. Still, despite the existing statistics, the Prime Minister has shown concern, especially since the Kampung Kindungan and Kampung Medan incidents in 2001. He has kept it on the radar screen since. For instance, in his Opening Speech at the Commonwealth Association of Planners Conference in 5 July 2005, he said:

> The growth of our cities will prove to be volatile and short-lived if we neglect the cities' poorest inhabitants or if we ignore the cities' environmental balance, with only the pursuit of pure economic gains as our focus.

Dato' Seri Abdullah's rationale for eradicating poverty was not only based on the fear of urban crime alone. For him, the eradication of poverty, including urban poverty, is also a moral issue if Malaysia is to be considered a developed society. Quote:

> Tackling urban poverty in a sustainable manner is crucial in order for Malaysia to attain our vision of becoming a developed country by 2020.

In response to criticisms of the absence of a government body to look after urban poverty and in order that it is treated as a separate concern from the overall poverty, on March 2004 the Cabinet decided that the Ministry of Housing and Local Government was to coordinate efforts in its eradication.

The current concern for urban poverty is not unique to Malaysia. The whole world seems to be similarly concerned. For example, in October 2004, World Bank Group President James Wolfensohn issued an urgent call to the governors of the World Bank and International

Monetary Fund that eradication of poverty was central to stability and peace. "It is the challenge of our time" (World Bank, 2004). On his appointment as the new president of the Asian Development Bank, Haruhiko Kuroda, in his first address to his staff, vowed that fighting poverty would be ADB's primary challenge (*Daily Express*, 2 Feb. 2005).

Only recently, despite the declaration of his retirement from public life, Nobel Prize laureate Nelson Mandela travelled to England to join in the campaign to "Make Poverty History". Mandela's reason to eradicate poverty is worth quoting:

> Like slavery and apartheid, poverty is not natural. It is man-made and it can be overcome and eradicated by the actions of human beings. And overcoming poverty is not a gesture of charity. It is an act of justice. It is the protection of a fundamental human right, the right to dignity and a decent life. While poverty persists, there is no true freedom (www.Guardian.co.uk, 3 Feb. 2005).

ROLES OF CITIES

While everyone is looking high and low for cures for urban poverty, it is so easy to ignore the forest for the trees. Despite the anti-urbanism sentiments of many social scientists, towns and cities are among the most successful creations of human societies in alleviating poverty. The rural poor and those who want to become rich have been aware of this for some time. This explains the massive urban migration in the 20th century.

The rapid urbanisation in the last century has been discussed elsewhere and need not be repeated here (see Douglass, 2000; UN-HABITAT, 2002). Suffice to note that by the end of the 20th century, 47 per cent of the world's population, or about 2,900 million people, were living in urban areas, compared to 14 per cent at the beginning of the century, and only five per cent at the beginning of the 19th century. In Asia, the number of people living in the urban areas by year 2000 was about one billion or half its total population. A hundred years ago, it was only ten per cent.

It is estimated that with the rate of urbanisation, by the second decade of the 21st century, the world will have 21 mega cities, each with ten million people or more. Out of these, 13 will be in Asia, including the biggest, Tokyo, which is expected to have a population of 26.4 million and Bombay 23.6 million (UN, World Urbanization Prospects, 1999).

The urbanisation trend is also seen in Malaysia. At the beginning of the 20th century, the urban population in what is now Peninsular Malaysia was about ten per cent of the total population. By 1957 when Malaya achieved independence, it was 27 per cent (Lee Boon Thong, undated). By 2000, about 60 per cent of Malaysians were living in the towns and cities, defined as human settlements with 10,000 or more inhabitants. Using figures from the National Statistics Department, it was reported that the urban population of Malaysia would be 16.5 million in 2005, or 62.9 per cent of the population (*The Sunday Star*, 21 Nov. 2004).

Malaysian urban areas are attractive not only to the rural poor, but also to nationals of neighbouring countries. As such, today, there are hundreds of thousands of nationals from Indonesia, Bangladesh, the Philippines, Nepal and even China working, legally or otherwise, in the factories, construction sites, homes, hawker centres and even entertainment centres not only in the major cities, but even the smaller towns like Kulim, Sungei Patani, Port Dickson, Puchong and Kampar.

The expectations of the migrants that they or at least their children would have better life and opportunities are not without basis. Urban areas have basic modern human necessities: electricity, piped water, housing, schools and hospitals. Then, there are the additional comforts and conveniences of cars, shops, entertainment centres and houses of worship.

Perhaps more importantly, towns and cities hold tremendous potential as engines of economic and social development by creating jobs and generating ideas through the economies of scale and creative cultures. For many, the sense of anonymity and tolerance in the cities, together with the facilities and complementing pool of expertise, means that there is relatively more freedom: freedom to choose, freedom to pursue cultural and religious expression, freedom of association and freedom to pursue one's potential. As Lewis Mumford, the well-known urban sociologist, once said, "The city is a place for multiplying happy chances and making the most of unplanned opportunities". Or as stated by Edward Banfield (1974), "The city, far from being a cause of poverty, has proved to be a remarkably efficient machine for transforming it into prosperity and even affluence" (p. 128).

Many people, including the poor from the rural areas and smaller towns both within Malaysia and from neighbouring countries, have "made it" in the Malaysian towns and cities. They are generally known as the "middle-class". They include government officers, teachers, office managers, technicians, professionals and businessmen. They have relatively secure jobs and income, adequate housing and food and in most cases motorised vehicles, holidays (even overseas), audio-visual equipment, telephones and Internet facilities.

Some, of course, have not just made it; they have become very wealthy. They not only have the basic necessities, but also the extras to enjoy the finer things in life, such as luxurious houses and condominiums, expensive cars, cruise holidays, exclusive club memberships, gourmet dining, state of the art audio-visual gadgets and specialist medical treatment for every ill, real or imagined.

Unfortunately, successful as they are in creating wealth and facilitating the poor to rise above the poverty line, the towns and cities just cannot cope with the sudden massive influx of people. Many migrants from the rural areas and small towns have been disillusioned by the siren calls of the bright lights. The cities can also be very cruel to those who do not make it or to the new comers. Many have to struggle to survive on the pavements, squatter settlements or urban slums. Worse, many are simply ignored and treated as children of the lesser gods. As such, they suffer from all kinds of adversities: hunger, disease, prejudice, and discrimination including bad treatment by government officers.

But like Hasari Pal, the main character in Dominique Lapierre's famous book *City of Joy*, in the slums of Calcutta or V. Ramah, living in the shack off Jalan Brickfields, there is no turning back. The new urban poor will continue to struggle in the isolated shacks, slums and squatter settlements. (Since the report in the newspapers, there was a follow-up report that some politicians would be helping Ramah to move into a Kuala Lumpur City Hall low-cost flat)(*Malay Mail*, 19 March 2005).

According to Banfield (1974), "A great many so-called urban problems are really conditions that we cannot eliminate or do not want to incur the disadvantages of eliminating" (p. 3). While it may not be possible to eliminate urban poverty altogether as it is not possible to have zero unemployment rate at any given time, there is no doubt that the incidence of urban poverty could be reduced to a small number, even if the PLI is at a realistic level. Those falling below the line could then be treated as welfare cases.

However, at present, no one really knows how much Malaysians are prepared to sacrifice in order that urban poverty is eliminated. It is, however, doubtful if many are willing to "give their right arms" to make sure that all Malaysians are above the poverty line. As such, "earth-shaking" proposals to eradicate poverty are only exercises in futility. For instance Henry George's call of more than a century ago for a single land tax by making land common property to remedy the existence of poverty in the midst of advancing wealth has largely fallen on deaf ears, or at least those that count.

Malaysian leaders have promised to eradicate hard-core poverty, if not urban poverty, altogether by 2009. Unfortunately, despite the promise of a master plan by September 2004, the ministry has not been able to make it public even after nine months. Either the minister was too optimistic or the plan, having been formulated, is still kept a secret, as in other plans of the ministry, such as the solid waste management plan and the new village development plan. Secret plans, unless they are for attacking enemies, are useless plans.

URBAN GOVERNANCE

While the country is waiting for the promised master plan, much can be done to improve the conditions of the urban poor and even facilitate them to rise up above the poverty line. There is an urgent need to improve the institutions that facilitate the cities to play a positive role in alleviating poverty, as they have not been effective in the past. Henderson et al. (2002) have voiced such concern when discussing poverty reduction as a whole. According to them, "While remaining an impressive developmental achievement, Malaysia's poverty record may also have been constrained by the bureaucratic effectiveness of its governing institutions more broadly" (p. 22). The weakness of the institutions in implementing poverty reduction programmes was also identified in the National Conference on Urban Poverty – Advocacy, Empowerment and Poverty Alleviation (Jayasooria, 2002).

Although many government institutions play important roles in the efforts to reduce urban poverty, the most important are the local authorities. They not only provide most of the

services that make or break the quality of urban living, but are also the main agencies to regulate and control land development that determines the accessibility of the poor to work and shelter. Their role in poverty reduction has become even more important now that the Cabinet has decided that the Ministry of Housing and Local Government is the body to coordinate programmes to eradicate urban poverty by 2009.

Even before being specifically charged with a leading role in poverty reduction, almost all local authorities had been sympathetic to the poor and have policies that are pro-poor. For instance, in the allocation of stalls and spaces in their wet-markets and hawker complexes, the policy is to give priority to existing illegal hawkers and those in the lower-income groups. The erstwhile City Council of George Town and the Kuala Lumpur City Hall spent a large amount of their budgets on low-cost houses for the poor. All local authorities require that housing developers build low-cost housing as part of the conditions for permission to undertake development.

Many also give direct grants to organisations catering to the poor. For instance, Kuala Lumpur City Hall supports Sang Kancil and similar projects that promote capacity building programmes for the poor (see DBKL, 2004). Penang Island Municipal Council makes annual donations to welfare-related organizations operating on the island.

More importantly, by the very act of fulfilling their responsibilities, the local authorities would have made living in the cities much better for all, especially the urban poor. In fact they would have facilitated the poor to have better access to jobs and opportunities. After all, those who benefit most from facilities like parks, walkways, sheltered bus-stops, wet markets, hawker complexes, public transportation, places of worship, street lighting, effective cleansing of public places and garbage management are the urban poor and those in the lower income groups.

Unfortunately, the local authorities have not been the epitome of effectiveness or efficiency. As a result, local councils' low-cost houses that were supposed to cater to the short-term needs of the poor have become the permanent homes of the residents, even though many of them have become rich or outgrown their poverty status. Many have even sublet such houses to others. Furthermore, the requirement of developers to build low-cost housing is sometimes not enforced effectively. Almost all local councils allow them to build the required number in areas not suitable for the poor. In some cases, the problem is made worse by improper allocation of such houses by the state housing departments.

Even in the provision of trading spaces, such as hawker stalls in complexes built by the local authorities, there have been allegations of misallocation. The problem is that it is not possible to confirm these, as allocations have not been done in a transparent manner. Furthermore, as a result of inefficiency, allocations of hawker stalls have become permanent even though they were supposed to be on a short-term basis. To make matters worse, most local councils are not able to prevent sub-letting. As such, even if the operators are too old or are not interested to operate them, the councils have been unwilling or unable to repossess them and re-allocate to those who are in need.

Furthermore, the local authorities have also largely failed to ensure that the living environment of the urban poor is clean, healthy and pleasant. Only during official visits by very important persons or after some form of disasters do such places get the attention of the local authorities. As one angry resident was quoted to have said after the ethnic conflicts in Kampung Lindungan-Kampung Medan:

> Suddenly, there are street lights in Kg. Medan and the garbage, which was hardly ever collected in the past, has been cleared. We have repeatedly asked for low-cost houses, bus-stops, piped water and electricity, but there has been no action till now (Emmanuel *et al.*, 2001).

There is, of course, no sinister effort by the local authorities or their officers to work against the poor. The failure to implement their pro-poor policies are part of the overall inefficiency and ineffectiveness of local government as a whole. Indeed, most local authorities cannot even keep their streets clean and drains cleared of rubbish. They are also not able to control illegal changes of building or land use or illegal building extensions. If they cannot even do these basic duties, what chance is there for them to implement programmes to reduce urban poverty successfully?

TOWN PLANNING

The terrible living conditions of the urban poor as a result of the sudden influx of migrants into the cities is not a new phenomenon. These conditions were clearly observed in the English and European cities during the late 19th century when people flocked to the industrial cities during the Industrial Revolution. These poor unhygienic living conditions were well depicted in novels, such as those of Charles Dickens.

In response, many local councils in England and Europe began to enact laws to regulate public health and housing. More importantly, the poor living conditions also spurred visionaries and even industrialists of that time to experiment on making cities more livable. For instance, some factory owners, whom historians termed as "industrial philanthropists", took it upon themselves to design and build new settlements outside the towns to provide their workers healthy and pleasant residential areas. Examples of these include the new towns of Port Sunlight by Lever Brothers, Bournville by Cadbury and Earswick by Rowntree (Cherry, 1974).

These early experiments to find better living conditions led to the birth of town planning. Perhaps the best known among these visionaries was Ebenezer Howard who wrote *Garden Cities of Tomorrow* in the early 1900s, a book that has become the required text in Town Planning 101. In Howard's garden cities, there are provisions for abundant opportunities for employment and prospects of advancement, creation of wealth, proper sanitary conditions and appreciation of nature. Equally important, Howard's visions spawned the formation of the Garden City Association which was instrumental in spreading the ideals and benefits of town planning all over the world.

Town planning quickly evolved into a distinct professional practice with clearly stated goals and principles. Here, it may be useful to reiterate the purpose and principles of town planning. Quote:

> The principles of town and country planning are to regulate in advance the orderly arrangement and use of land … so as to promote, for the greatest good of the greatest number, the improvement of community life and the environment in which our people live; to enable the people to enjoy the benefits of social security, good health, safety, education, recreation, employment and shelter, good communication, public utilities and amenities (quoted in Sandercock, 1976, p. 1).

Malaysia is one of the direct beneficiaries of the Garden City Association. Charles Reade, an ardent disciple of the Garden City Movement was invited to come to the Federated States of Malaya to be the town planner in 1920 (Goh Ban Lee, 1984).

Reade not only prepared development plans, but also laid the foundation of town planning in Malaysia.

Today, town planning is an accepted practice in Malaysia and is legally provided for under the Town and Country Planning Act of 1976. All land development projects must have town planning permission by the local authorities. Equally important, local authorities are required to prepare development plans, called structure plans and local plans to guide the development of the urban areas. All have spent millions of ringgit preparing these plans.

The question is: if town planning is a powerful tool to ensure that cities are for all, including the poor, why is there still urban poverty?

Apologists for the failures of town planning in Malaysia used to cite the shortage of town planners as one of the main reasons. Today, this reason is inapplicable as there are now many qualified town planners who are also members of the Malaysian Town Planners Institute, the professional body that certifies whether a person has the proper qualifications.

It is, of course, possible that the lack of success of town planning to achieve "the greatest good for the greatest number" has nothing to do with the unavailability or incompetence of Malaysian town planners. The failure could be the result of an inherent fault of town planning itself since not too long ago, it was seen basically as the tool of the capitalist state to ensure the continuous accumulation of capital by the rich at the expense of the poor. As Kerk (1980) puts it:

> One of the dilemmas for the state is that while facilitating the capital accumulation process, public intervention in a market-based economy, including land use-planning, is limited by the need not to encroach upon the profitability of the private sector (p.196).

Today the "Marxist" school of political economy is no more in vogue and such view of town planning has fallen into disuse. Unfortunately, loss of interest in debating the Marxist paradigm has led to no further progress in resolving issues of town planning popularized by the "Marxist" scholars, such as advocacy planning or the lack of integration of spatial design and social process.

For instance, the challenge voiced by David Harvey (1975) about integrating social and spatial elements in urban development has largely not been met. According to him, the only adequate conceptual framework for understanding the city is to encompass and build upon both the sociological and the geographical imaginations. The social behaviour of the urban residents must be related to the spatial form of the city. Quote:

> We must recognized that once a particular spatial form is created it tends to institutionalize and, in some respects, to determine the future development of social process. We need above all, to formulate concepts which will allow us to harmonize and integrate the strategies to deal with the intricacies of social process and the elements of spatial form (p. 27).

Unfortunately, in Malaysia, as in many countries, the integration and harmonisation of spatial design and social policies are still lacking. Therefore, on the one hand, there are those who possess sociological consciousness but seem to work in a spaceless world. The result is that their recommendations cannot be implemented because they are left standing on the head of a pin.

On the other hand, there are those who possess geographical imagination, meaning the town planners, but fail to recognise that the space that is designed can have profound effects upon the social process. For instance, the tendency to plan for monumentality and beauty often results in the failure to provide for those who are in the lower income groups.

The failure to coordinate between the social scientists and the town planners can be a major cause of the much touted micro-credit schemes, which have been very successful in the rural areas, becoming practically useless in the towns and cities. While the provision of a small amount of capital in the rural areas will enable a housewife to rear ducks or chickens or goats to earn some income, such a scheme will not work in the town if there are no provisions for the borrowers to find space to carry out their business activities. In all towns and cities, every business activity needs a proper place before a licence can be obtained. For example, nothing has been heard of Selangor Menteri Besar Dato' Seri Dr Khir Toyo's plan to provide 1,500 poor urban households with capital to set up small-scale business such as food stalls (*The Star* (Metro), 11 August 2001). Is it possible that the scheme has fallen victim to the lack of coordination between the social scientists and the town planners?

Unfortunately, there is still no attempt to integrate and harmonise spatial design and social process in town planning in Malaysia. The enactment of the Town Planning Act that

largely limits responsibility for town planning to those who are commonly known as "physical planners" has made such possibility even more remote and difficult.

Even in economic governance, Henderson et al. (2002) have also detected institutional changes that retard efforts to reduce poverty. According to them, the recruitment of operationally-oriented economists has resulted in the government devoid of "specialised skills needed to analyse development issues at a macro-level, let alone the very motivation to do so" (p. 19).

In Malaysia, the weakness of town planning theories is compounded by poor planning practice. More specifically, it is the unwillingness to gazette development plans, especially local plans, although structure plans are usually gazetted. Although the latter invariably include policies that take into account the existence of the poor, they are broad-brush policy statements indicating the general directions of development of the towns or cities. The policies are too general to hold the government and landowners to what the planners envisage. For instance, all structure plans contain statements like "there should be adequate low-cost housing for the lower-income people". Such and similar statements mean nothing until local plans, which translate the policies into spatial form, are drawn and gazetted.

Most local authorities have already prepared local plans for areas under development pressures. Unfortunately, only very few have been displayed for public objections and comments even though the local authorities are committed to Local Agenda 21. Without gazetting local plans as official documents, landowners and the local authorities, including the state authority, do not have to abide by them. As a result, the councillors can be pressured and tempted to approve applications for development that are at variance with the lofty objectives of the poor having a stake in the city.

WEAPONS OF THE WEAK?

There is a belief among some social scientists that the lack of provisions for the poor or the failure to implement policies catering to them could be compensated by acts of non-compliance with rules and regulations. This is based on the belief that the poor and the disenfranchised survive in an environment that is hostile to them and that ignores their needs by breaking rules and regulations and even social norms. James Scott (1985) has termed these self-help acts by the poor as "weapons of the weak".

Perhaps the best known act of non-compliance was that of Rosa Park, a black American seamstress, who refused to vacate her seat for a white man and move to the back of the bus. In 1955 Montgomery, Alabama, municipal rules required a black person to give his or her seat to a while, man or woman. Rosa Park was arrested and put in jail. This led to a series of protests that contributed to the eventual repeal of the unjust segregation laws in America.

In urban Malaysia, there is a general belief that acts of non-compliance with municipal rules and regulations, especially those governing hawking and land use and development, enable the poor and recent migrants from the rural areas to have a stake in the urban areas. This is also aided by the inability or unwillingness of the local authorities to enforce their laws. In fact, many local authorities have justified their lack of enforcement of municipal rules and regulations on concern for the welfare of the poor.

Unfortunately, too little is really known about the real beneficiaries or losers of non-compliance with rules and regulations. It is strongly suspected that the real poor and the disenfranchised do not really benefit from acts of non-compliance, or at least not as much as popularly believed. For instance, while there is no doubt that there are many hawkers who are trading illegally, it is not certain that they are all poor.

Since it takes courage, determination and cunning to survive as illegal operators, it is possible that those who are vulnerable just do not have what it takes to establish illegal stalls unless they are under the protection of someone whose service is not altogether free. Furthermore, only those who are familiar with the urban scene and urban politics would have known of trading spaces that are being planned. In other words, the illegal hawkers one commonly encounters in the towns and cities in Malaysia may not be the poorest people.

Even if it is accepted that some illegal hawkers are part of the urban poor, their operating costs are likely to be higher than those who are trading legally in government provided hawker centres. Too little is known about the use, letting and sub-letting of urban space, including space used by illegal hawkers. But there is no doubt that many new hawkers have to pay sub-letting charges for space already occupied by others, especially in established and popular areas.

The practice of the poor paying more for services and trading spaces is not unique to the hawking sector. In the quest for shelter, the poor, who are usually those with the least connection to the power holders, meaning they have inadequate "social capital", usually have to pay more than they should if rules and regulations are complied with. Even in illegal squatter settlements, the poor are too weak to be the first to occupy a place illegally. They have to rent space from those who are what are commonly known as "slumlords".

Even in the case of low-cost houses built by developers and allocated by government agencies, the people for whom low-cost houses are planned and built sometime have to pay a premium over the official price as the allocation of such houses is not done according to established rules. There have been many allegations of those who are not eligible, such as those who are above the poverty line and those who already have houses, being allocated such housing. They either let out these houses or resell them at a profit.

For instance, in Penang Island, there are cases of low-cost housing units priced at RM37,000 each being re-transacted for RM65,000. The "secondary" buyers are willing to pay the asking price because similar properties are selling for more. Furthermore, they are too

impatient to wait for their allocations, which may not come for a while, or they do not know important persons who are able to help them to hasten the process. The laws preventing those allocated low-cost housing from selling their units for three years mean nothing when there are lawyers who are willing to draw agreements that protect the interests of those who purchase the low-cost houses illegally until the day when such properties can be officially transferred.

This practice of the poor paying more is not limited to Malaysia. In a study of the cost of water for domestic use in developing countries, ADB (1997) has found that the poor pay almost 500 times higher to informal vendors compared to the cost of water supplied through house connections.

There is no need to reinvent the wheel when it comes to ensuring compliance with rules and regulations. United Nation agencies, such as UN-HABITAT and ESCAP have been urging developing countries to practice good urban governance. Indeed, the elements of good governance, such as public participation, rule of law, transparency and accountability, have been widely disseminated (UNESCAP, undated). Even local authority presidents and mayors have been presenting papers on these characteristics. The only problem is the lack of implementation.

A detailed discussion on non-compliance with municipal rules and regulations has been given in the book *Non-compliance – A Neglected Agenda in Urban Governance* (Goh Ban Lee, 2002) and need not be repeated here. Suffice to stress that it is the major cause of the lack of cleanliness in the towns and unpleasant living conditions in neighbourhoods. This is mainly due to what the Prime Minister termed as "the malaise of Third World mentality" of Malaysians (*New Straits Times*, 7 March 2003) and is compounded by the inability and unwillingness of the local authorities to enforce their laws.

There is no doubt that more time and money spent on gathering information about urban poverty in Malaysia and what constitutes living below the poverty line will be useful. But the more important agenda in the efforts to alleviate urban poverty, if not to eradicate it, is to ensure compliance with policies and programmes that are already in existence.

For instance, if the planned low-cost houses are built where they should be built and if the allocations of such houses are done according to the policies and established criteria, there is no doubt that the housing problems of the poor will be greatly reduced. If the stalls built by government agencies, particularly the local authorities, are allocated to those who are the intended beneficiaries, many urban poor would have better access to opportunities to make an adequate living. If the neighbourhoods of the urban poor are given the type of cleansing and garbage disposal services that the local authorities promised in their clients' charter, there would be healthier living conditions for the poor. If the 22 to 31 per cent of the overall development budget allocated to alleviate poverty is spent properly and effectively, the number of poor people will be much reduced.

CONCLUSION

There is no doubt that more research will generate new strategies and programmes to help alleviate urban poverty, especially in view of the fact that it was generally neglected until recently. There is also no doubt that the think tank established by the Ministry of Housing and Local Government will come up with action plans which if implemented, will go a long way to reduce urban poverty, or at least alleviate the sufferings of those who are poor.

The success of whatever policies and action plans, however, is largely dependent on whether Malaysian towns and cities, or like those characterised by Banfield as "remarkably efficient machines" for transforming poverty into prosperity, are able to play their roles properly. This, in turn, is largely dependent on efficient and effective local authorities.

It is more than just having more officers or more training of existing ones, although there is no doubt that this would be of help. What is needed is a total upgrading of urban governance, with special emphasis on effective public participation, rule of law, transparency and accountability. This is based on the simple notion that if the local authorities are able to carry out their responsibilities effectively and efficiently, the urban poor would be the main beneficiaries, even though the rich and wealthy will also have an even better quality of urban life. It is also useful to note that programmes supported by and beneficial to the elites will have a better chance of success and sustainability.

There is also an urgent need to bring back the lofty ideals and purpose of town planning to build towns and cities that cater to all the inhabitants, particularly the lower income groups. The present tendency to plan for beautiful and monumental cities, such as Putrajaya, is not what the early visionaries had in mind. Today the term "garden cities" is so misused that Ebenezer Howard, in whose name the planners base the legitimacy of their profession, would be very ashamed to be associated with it, if he were somehow able to come back from his grave.

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Chapter 9

THE ROLE OF EDUCATION AS THE 'GREAT EQUALIZER'

Ibrahim Ahmad Bajunid

"Education is society's great leveler, and any improvement in education goes towards equalizing opportunity."

Bill Gates.

"While they are often silent, hidden and under-appreciated, rural women represent probably our worlds' most powerful untapped natural resource, and they are surely more than ever before, a key to world stability and understanding. Unequal access to education consigns women to lives of low status and large families...Education is vital for the development of and sustainability of not only a country's economy but also civil society."

Collen Hefferan

"Technology is the great leveler, the powerful ingredient that can catapult a company, an industry, a country to the head of class almost overnight."

Kiyotake Fuji

INTRODUCTION: GLOBAL AND NATIONAL INEQUALITIES

The quest for an understanding of education as the leveler can be rationally framed within the context of global inequality and planned national social change. (Bajunid, 1995). Typically at the aggregate level, individuals in rich countries enjoy better health and higher standards of living and have the capability to engage in further personal educational enhancement and wealth creation. At the aggregate level, people in poorer countries are confronted with famine, hunger, malnutrition and poor health and remain at the lower ladders of education. As there are systematic differences in wealth and power between high income, middle income and low income countries, there are systematic wealth income, power and status differences between groups and individuals within a country (S, Husin Ali, 1984; Navaratnam, 1998; Kunio, 2001; Yeoh, 2002; Malaysian Business, 2005, February 16-28). Since Independence, Malaysia has brought about planned changes to eliminate the income, wealth and status differences between groups especially ethnic groups and urban and rural peoples. The framework for government initiatives in national development are the national policies of all kinds encompassing almost all the activities of life. The instruments for the implementations of these policies, into concrete practical and measurable terms have been the various Malaysia Plans. Within the framework of the Malaysia Plans, strategic programs, projects and activities have been the drivers of change. In all the Malaysia Plans, the education and training sector had received primary attention from the first years of Independence (Malaysia, 1988; 2003; Bajunid, 1999; 2004b). Today, almost all government ministries are involved in educating the public through formal,

non-formal and informal education. Five Ministries directly involved in educating the citizens across the life span are the Ministry of Education, the Ministry of Higher Education, the Ministry of Youth and Sports, the Ministry of Human Resources, and the Ministry of Women, Family and Community Development. Almost five decades after Independence, Malaysia is acknowledged as an economic success because of the active government roles in encouraging economic development and keeping labour costs low and investing in education (Hallak, 1990; Report on Seminar on Strengthening Educational research in Developing countries, 1991). Government initiatives to ensure balanced development encompass a wide range of actions pertaining to the fostering of integrity, the development of ICT and the focus on biodiversity (Abdullah Ahmad Badawi (2004a; 2004b; 2004c). The Malaysian story of investment in education is the story told repeatedly in world and national fora. In family conversations the importance of education as the leveler is the subject of generational Received Wisdom.

EDUCATIONAL TRADITIONS OF INQUIRY AND EDUCATIONAL CRITICISM

There is a strong oral tradition of criticism of educational policies and practices in the country, especially when criticisms are based on powerful emotions of obvious anger and outrage, personal preferences and sectarian agenda. There is, however, not as yet a strong research tradition in Malaysia focusing on critical educational issues. There is, however, the rare bold analysis of the desired state of development in the nation, not oddly enough, by some one who lives outside the country, quite independent financially and intellectually. The academic culture has yet to see works of societal and educational critique in the inquiry traditions of (Freire, 1970; Postman 1971; Apple, 2004)

The unfaltering faith in education as a leveler is evidenced by the hundreds of motivation, remedial, revision and advanced tuition classes given to students throughout the country through the initiatives of individuals, consultancies, and political, voluntary and philanthropic organizations (Yayasan Albukhary, 2004). Yet the very fact that so many motivation classes have to be given and there is evidence of a non reading culture points out towards some other as yet unclarified phenomena regarding the great leveler.

Undoubtedly there is celebration of three thousand years of mankind's educational wisdom in so many different ways (Ulich, 1961, Bajunid, 2000; Bloom, 1988). Notwithstanding the advances made in human civilizations, and the enlarged and prevalent opportunities, educational and human development reports indicate that the vast majority of over six and a half billion living humans do not and have not received adequate education (Coombs, 1968; Education International, 1998). At the global level, therefore the issues of the world educational crisis remain enormous and threatening. The contemporary concerns of terrorism world wide would at least indicate that the education of man has not developed nor achieved success regarding peaceful conflict management. At the heart of all change, including educational change, whether planned or unplanned is the question of values, doctrines, meaning and philosophies. (Rusk, 1965; Fullan, 1991; Sheridan, 1999; Swidler, 2003).

Schools throughout the country do not teach street wisdom or such popular and significant notions such as Emotional Intelligence (Goleman, 1995). When institutions or individuals other than schools or teachers teach students street wisdom or emotional intelligence, such other institutions and individuals rather than schools bring about a leveling of educational opportunities. The leveling of opportunities has to be looked at from different and multiple perspectives. The primary and dominant functions of schools cannot be ignored or minimized. However, at the same time the mistaken myth that schooling and certification are the all powerful levelers has to be reexamined. (Kementerian Pendidikan Malaysia, 2001; 2003; Konvensyen Pendidikan Guru Kebangsaan, 2003).

THE SPECIAL ROLE OF ITM/UiTM AS A LEVELER *PAR EXCELLENCE* FOR RURAL PEOPLE

It was Tun Abdul Razak who established the Rural and Industrial Development Authority (RIDA). RIDA then became ITM (Zainuddin Maidin, 1997). ITM offered bold opportunities to generations of Bumiputera students from rural areas to pursue relevant studies which will ensure them employment opportunities, especially in the business and related economic fields. During the years of the creation and sustaining of opportunities, bold special programmes for the teaching and learning of English were provided to the students. ITM enlarged the opportunities it could create for rural students by initiating strategic partnership with the University of Ohio, USA. This was one of the earliest strategic partnerships between a Malaysian educational institution and a foreign institution and the path charted out by ITM was later followed by other institutions (Interview with Arshad Ayub, March 2005). Today, for instance, there is a private college which has links with 400 foreign universities throughout the world. This attractive link between ITM and the University of Ohio, created new weltanschauung and self confidence for the rural Bumiputeras who later on became prepared to engage in global activities, beginning with the initial working experiences in Multinational Companies. With the mastery of English and relevant areas of knowledge and skills required by the growing economy ITM graduates became among the first and early generation of mainly rural students who understood the meaning of education as the equalizer. Today, a large number of ITM alumni are positioned strategically in the private sector, in the mass media sector and in other strategic sectors of economic growth in the country. ITM has today become a university. It is the largest university in the country with over 100,000 students, 6,000 staff, 14 campuses, and over 400 programmes. (Muhd Kamil Ibrahim and Nasrudin Mohamed, 2004). It must be noted too that besides ITM-UiTM, other institutions such as MARDI, Universiti Pertanian/Putra Malaysia and like institutions had contributed significantly and in their own areas of specialization, no less than ITM-UiTM in ensuring that education becomes the "great equalizer."

AFFIRMATIONS

Since various forms of affirmative action initiatives were instituted, many Bumiputra/Malays indeed have affirmed that they benefited from the opportunities for education created by the government in institutions in the country and abroad. Many schemes for special

tracking, scholarships, loans et cetera were created. Administrative challenges of tracking and taking action against defaulters of loans are underway. While private and public jokes are made regarding loan defaulters, the undertone of seriousness regarding the notion that character matters is evidenced by the establishment of the Institute of National Integrity. During the inaugural launch of the Alumni Association of North America, the Chairman of the Association while celebrating the success of the Alumni had not missed the opportunity to invite those who have not paid their loans to take steps to pay back their loan immediately (Abdullah Ahmad Badawi, 2004a).

In public and private spaces many have continued to express gratitude to the government for the opportunities which have made them the successful people they are in so many different fields. One of the opportunities referred to is placement in the elite residential schools (MCOBA, 2004). Notwithstanding the affirmations of gratitude, when the people with success stories have become middle and upper income families, the question of whether their children should be sent to residential schools and go through their very same processes has been raised. Usually, the reasons given for sending children to residential schools are that students will develop networks, they will be disciplined religiously, they will be disciplined in life, there will be the prevention of getting into bad company and also the reason that the children will get better opportunities for scholarships to go abroad or to be accepted in national universities. Evidently, there are many as yet sensitive unarticulated and undebated issues regarding the model of life success and family and societal upbringing desired in the complex and competitive world. The choice of whether to send children to residential schools is an ethnic Malay choice, for, typically, such schemes do not exist for non Malays/non Bumiputra except for a few limited places for access into residential schools or matriculation programmes. Academic success by the Chinese and Indians have to be achieved in day schools.

The pride and celebration, particularly by the Malay community of the success of Nur Amalina who achieved 17As in the Form Five examinations may also be because of her success despite not being in a residential school (*New Straits Times*, 2005, March 9; Anugerah Pelajar Cemerlang SPM 2004). Advocates who believe that families who can afford it and those who believe in the broader functions of education and the personal philosophy that children should stay at home as long as possible and socialize within the family than merely with peers, use Nur Amalina and others like her as examples to support their cases. The tensions between the choice to keep children at home for socialization in nuclear or extended families cultures, or to compete to enter residential schools to be socialized by peers and school institutional cultures of schools become significant choices for middle and upper income Bumiputra/Malay families. While there may be access to educational opportunities, little is known regarding the moral compass of young professionals socialized in residential schools and those socialized in homes and those socialized in a combination of the dominance of the two institutions, schools and homes. How the divided generation make moral decisions when confronted with moral dilemmas are interesting areas of research as yet undefined.

LEVELING OPPORTUNITIES IN TERMS OF THE SOCIOLOGY OF THE BODY: THE SILENT-LOUD REALITY

Educational development has occurred amidst contesting ideas of identities, cultures, beliefs, faiths and ideologies. In the midst of focus on academic achievement, not much has been debated on the sociology of the body. Besides academic education in classrooms, education in the sports field, etiquette in appropriate attire and education in wellness are actually unanalyzed social and psychological aspects of the leveling functions of education. This sociology of the body invites statements of religious positions, cultural autonomy and cultural revivalisms. The symbolic or iconic statements made by the donning of external garments or dresses considered permissible or not permissible in schools and public domains are yet another indication of acceptance, tolerance or promotion of cultural diversities. Sports and athletics wear, religious and cultural apparel are all symbols of the sociology of cultural expression and assertion. (Bengkel, 2005). A more profound and deeper analysis of the sociology of health and fitness as an aspect of education as a leveler is beyond the scope of this present paper.

Gender socialization is the learning of gender roles through socialization and interaction with others. Gender inequalities occur in social institutions such as the family, work place, and educational systems. Gender inequality is the inequality between men and women in terms of wealth, income and status. Gender typing occurs when women hold occupations of lower status and pay, and men hold jobs of higher status and pay. While there may be educational equality in the education sector, inequality between men and women may exist in the area of career advancements, where there are the glass ceiling and the prevention of upward mobility for women. Attempts to equalize the pay between men and women in gender dominated jobs are done by the concept of "comparable worth." The success of Malaysian education is noted because there is little gender inequality (Alison Wee Siu Hui, 1999). Girls have equal rights as boys to be in schools. Girls do perform better in schools and do get admitted to universities on merit without gender discrimination. Teaching is increasingly becoming a female gender dominated profession. Gender inequalities are presumed to exist more in the worlds of the work place and in the wider society, then in schools (Farida Habib Shah, Nik Safiah Karim and Anderson, 2001; Ruzy Suliza Hashim, 2003).

LANGUAGE IN EDUCATION

The discourses on education have always been more on language and culture rather than on the leveling effects of the enterprise. The definition of education as a leveler can be analyzed statistically with focus on statistical reality only at one level. It can also be analyzed at many other levels of reality. To conduct the analyses at other levels of reality and to invite others to be engaged in such reality definition requires thought and professional leadership as well as political leadership.

Underlying many of the ideas on education are the embedded ideas of whether nation-building is about assimilation or integration at different levels of reality. Individuals and pressure groups work themselves and others to defensive or aggressive psychological, political and cultural postures over educational issues. The quest of education as leveler is under the canopy of highly charged recurring issues of seeds of separatism, communalism, national agenda and international ideologies. Formal and non formal as well as informal education remains a subversive part of the formula of indoctrination and propaganda used by those who choose to control the minds, hearts and souls of others. The language nationalists, the cosmopolite, the religious activists all use education to differentiate. The demand is that everyone else should master the knowledge, values, norms and behaviours championed by the mind shapers. This is the process of social reproduction which requires compliance, group think and minimal or little differentiation between members of the in-group. The differentiation is then not within a group but will continue to be between the in-group and the out group. The process of social reproduction in the image of the dominant "cultural definer and shaper" is another interesting aspect of the phenomenon of education as leveler in the Malaysian context as yet unanalyzed.

The dominant issue in education is the issue of the national language (Bahasa Kebangsaan) as the sole or dominant medium of instruction. There are two fundamental arguments regarding the necessity for the mastery of the national language. The first position debated over the years and generally accepted and implemented successfully is that of Malay as a language of national unity, and in a sense, a national "leveler". This position argues that citizens of the country must master the national language which is the lingua franca and which promotes unity and the pride of every citizen. The use of the language is to be in all official contexts and will, of course, also be pervasive in the communication among citizens. The second argument is an extension of the first when Malay is to be acquired, developed and used as an "intellectual language" of all knowledge areas beginning with the sciences and covering usage and research in medical, engineering, technology and other scientific fields.

Some of the arguments pertaining to language which seem to be constitutional and legal are actually political. However, beyond constitutional, legal, political arguments are embedded arguments for the cultural agenda. To confound the matter, educational and cognitive arguments are also made to reaffirm that students learn best in their mother tongue. Reaction against the dominant position of English or other languages of former colonial powers in the world invite the resurgence of indigenous languages as official, national, intellectual and academic languages. These various languages are, of course, at different stages of development (Collins, 1996). While attractive these arguments are paradoxical and provide the motive, logic and substance for multilingualism especially in plural societies. An argument made that Science and Mathematics is best learned in the mother tongue and not in English brings together Malay language and Chinese language nationalists against the use of English for the Teaching of Mathematics and Science in National Schools and in Chinese and Tamil schools. The premise is accepted that learning is best in the mother tongue and that there is injustice when learning is in another language,

be it an international language or otherwise. The same argument can, will and has been used for the promotion of mother tongue education right up to the highest levels of education, especially when the mother tongue is a developed language like Chinese. The paradoxes, contradictions and confusion of using educational arguments for political decisions can lead to a web of perplexing and self defeating arguments, and counter arguments. In the final analysis language arguments regarding national linguistic profiles are about constitutional, legal and political and economic arguments. Educational arguments to cover the whole range of language policy decisions are not coherently tenable. Shaik Alam has expressed the dilemma of the language issue in relation to the "leveling" function, thus: "education for language development" or "language for national development." (Interview with Shaikh Md Noor Alam) In a multiracial, multilingual society like Malaysia, the arguments for the national language as the sole medium of instruction, or an international language as a complementary medium of instruction or the mother tongue as the medium of instruction, at all levels or any particular levels, in all subjects or any particular subjects would not essentially be educational arguments but would be politically inspired arguments. The language debate is highly charged with emotions and righteousness and all kinds of agenda and continues to engender potentially explosive controversy when ignited by individual and groups, political parties and language organizations. The richness of language mastery and acquisition and the possibilities are a plenty for those who embark on the language acquisition adventure. The argument that language is a leveler which will give advantage to those whose language is the mother tongue is a sensitive argument involving ideas of mother tongue education and medium of instruction. (Kua Kia Soong, 1999; 2002). It has been suggested that "either or thinking" can, in many instances be broadened to flexible and inclusive in its categories (Langer, 1989). For instance, the axiom "Language is the soul of the nation and knowledge is the soul of the race/nation" are not exclusive, binary features but can actually be complementary. The deliberately ambiguous use of "bangsa" (race or nation) as ethnic based and as nation based is good for nation building but irks some of the racial purists. Language acquisition, whether subordinate or super ordinate, is additive to the culture of the individual. Religious acquisition is about faith and belief systems and often uncompromising and is subtractive (International Conference, 2003; Pandian, 2003).

PRIVATE SECTOR EDUCATION

Private sector education has been entrepreneurial. Whatever the original drives of founding fathers of private educational institutions, private sector education has been one of the most important institutions in the nation which demonstrates that education is a great leveler. From its humble beginnings in the provision of revision courses, tuition classes, further education classes at Form Three, Form Five and Sixth form education, private sector education has come a long way. Besides institutions which provide academic courses, there were many which provided professional and vocational courses. Among these were Stamford College, Goon Institution, Maktab Adabi, Yayasan Anda et cetera. (Lee, 1999). Each of these institutions has its own institutional history closely entwined with the founder, teachers and students who had their "second chance" or alternative

chances for further education. From its humble beginnings, private sector education has now over 530 colleges, 26 university and university colleges catering for over 30,000 students and has the intellectual capital of the nation with over 15,000 academic staff (Malaysia, 2004).

The current trend in private sector education is to see education as a business enterprise. Although there is the profit motive of non profit organizations, the existence of private institutions has created opportunities which otherwise will not exist in the country. In this sense, private sector institutions constitute one of the most dynamic and significant contributors in ensuring the leveling and equalizing function of education as a social good. This function becomes effective when the government supports students by the provision of PTPTN loans or also when private financial institutions provide education loan facilities for the public. Educational institutions themselves together with Foundations do provide subsidies for fees or other facilities for students to fund their studies themselves, but also with financial aide from funding bodies, however minimally. The idea of positive affirmation resides not just in government policies but also in the policies of private educational institutions. One renowned private school emphasize that the founder wants to ensure that the poor who are academically good must be helped. Echoing the Founder owner of the institution, the Chairman of the Board of Governors of Kolej Yayasan Saad stated:

> If we bring the poor here to study they must do well. It is a crime on our part if the poor kids who are selected on merit and who are good do not do well. We would have failed in our affirmative action. Our policy is to ensure positive discrimination, affirmative action for the poor and disadvantaged, those from families in low socioeconomic status and those from remote and rural areas, from states where they do not get as much opportunities.
> (Interview with Rozalli Noordin, February 2005)

THE ROLE OF PROFESSIONAL ORGANIZATIONS

Over the last four decides, there has been the establishment of over 35,000 non governmental organizations. Most of these organizations conduct their functions focusing on seminars and forums, et cetera. Some of these organizations, especially, professional organizations, established formal courses which are certificated. These courses are industry recognized and do provide opportunities for a career advancements and opportunities for higher job positions. Malaysian Institute of Human Resource Management (MIHRM) has for over two decades offered certificate and diploma courses on Human Resources for those who require the skills set in the work place. Malaysian Institute of Management (MIM) has begun offering Master level Degrees for those in the work place. The examples of these organizations underline the opportunities created outside of the education system to ensure that those who require relevant skills continue to acquire them. Most of these organizations are, however, in the Klang Valley and urban centers like Kuala Lumpur, Penang, Ipoh, and Johor Bharu. In this respect, the geographical factors do limit the opportunity for education to be the leveler.

In the 1950s, Malaysians who would want to acquire knowledge and pursue studies at a higher level had to leave their villages, towns and states to study in institutions in other educationally more advanced states. Among those who took up studies in Georgetown Penang and left their states were Tengku Ahmad Rithauddin, Tan Sri Wan Mokhtar, Syed Jallaludin. On another level, when higher education opportunities were only provided in the University of Malaya, and even then in limited disciplines, Malaysians had gone abroad to pursue higher studies. Countries such as Great Britain, Egypt, Canada, the United States, Australia, New Zealand, India, and Pakistan were among the nations which contributed to educate Malaysians at the tertiary level. This opportunity was the opportunity created by foreign nations to help Malaysia ensure that education became the leveler.

THEORETICAL FOUNDATIONS

In discussing education as the great leveler, it is necessary to understand the factors that reflect student achievement. The student achievement factor is the factor after opportunities of access to educational institutions are created. Access to educational institutions does not guarantee academic success. Whatever the models of understanding student achievement, there have been three major trends and academic positions taken by researchers in the United States, with implications to Malaysia as well. One body of research argues that educational achievement correlates with out-of-school factors. The significant out-of-school factors are socio-economic status of parents and the educational function of families. Families are not simply involved in the process of socialization or enculturation but they are involved with education. Family background plays the decisive influence on students' educational achievements or performance. Education tends to express and reaffirm existing inequalities more than to change these inequalities (Coleman, 1966; Jencks, 1972; Jamilah Ariffin and Louis, 2001).

The counter argument that student achievement is influenced by in-school factors revolves around the notion of school effectiveness. Eight factors have been identified as being significant in positively influencing student achievement. The eight factors are as follows: a focus on student achievement; effective classroom instruction; a shared vision about educational purpose among school staff; an orderly and secure climate for learning; strong leadership (particularly from principals); a linkage between assessment and curricular package; high standards and expectations for students, and, finally, supportive home-school links. These eight factors are regarded as sound descriptive indicators of principal educational elements essential for good schooling. In sum the school effectiveness research are associative and not predictive of the conditions for student achievement. The 30 years of school effectiveness research has indicated, however, that there is a necessity to understand school system as a whole and to look at organizational factors that exist outside schools but within the school system, such as the public examination system and the management accountability system (Cheng, 1996a; 1996b; Caldwell and Hayward, 1996).

A third area of research pertaining to student achievement has to do with motivation, self-esteem, self worth, belonginess and generic competencies (Ritchhart, 2002; Malhi. 2004).

This third area which has been the subject of discussion is as yet not fully understood and not well researched. The out-of-school factors; the school effectiveness factors, and the motivation, attitude factors together constitute the complex web of factors which are intertwined in determinants of student achievement. After the provisions and the acceptance of opportunities of access, whether students really have the opportunities for acquiring educational good as a leveler requires a different category of analysis. The black-white test score gap in the United States has been the subject of studies and research and debates (Fraser, 1995). In the Malaysian context test scores analysis is always done between national schools and Chinese and Tamil schools and between the races. It is assumed that better academic results would create other opportunities in education and create work opportunities with higher income. Whether closing the gap between cognitive inequalities would reduce economic inequality in the short and long terms are not studied and not fully understood.

Even though it is claimed that schools provide equal educational opportunities for all citizens, it is evident that many poor students do not reap the same advantages from schools as those students from privileged homes. This is, of course, because of the cultural capital, and of cultural literacy and the overall preparedness and readiness for cognitive competition. Withinschool effects are differences among students in the same school. Practices of dividing students into honours or remedial classes lead to later disparities in educational attainment, occupational status and prestige and wealth. In many instances, student achievements vary much more within schools than between schools. Between school effects are inequalities among children who go to different schools. Typically, children who attend schools with more resources, for instance residential and selected schools, and later top universities, are assumed to end up ahead in the socio-economic systems. Cumulative strengths or weaknesses are evident in within–school as well as between–school effects.

In the United States there has been debates regarding race and intelligence. The conclusion of a controversial study was that racial inequalities in intelligence do exist. However, because the inequalities were socially created rather than biologically determined, social and educational policies could remedy the inequalities. In Malaysia, the sensitive question of racial or ethnic intelligence has seldom been raised in private or public. Because of the well entrenched practices of the civilizing cultures of the three major races, Malays, Chinese and Indians, it has always been respected that each of the races has its own exemplars of academic brilliance. The urban-rural factor has always been the factor considered to influence academic achievements, motivation and attitudes to academic life. Another assumption by Malaysian thought leaders is that intelligence is randomly distributed, in geographical areas, among races, cultures and families. It is considered the responsibility of the education system to search for the talented and to develop such talents through the aeducation system. The idea of the provisions of "leveling advantages" to deserving students on merit by offering scholarships or bursaries, by selection and admittance to residential schools, and by other meritocracy "rewards" are all facets of the idea that intelligence is randomly distributed and could be "discovered" by established criteria and

appropriate measures of excellence. Autobiographies and intimate histories, as well as serious studies on the nature of knowing and intelligence open up new frontiers of understanding. (Perkins, 1981; Hart, 1989; Beeby, 1992; Freiberg, 1999; Bloom, 2002; Ratey, 2002; Mason, 2003; Lim Goh Tong, 2004).

THE SOCIAL IDEAS OF EDUCATORS

In examining the role of education as the great leveler in Malaysia, it is useful to analyze the ideas of the leading educational figures and thought leaders regarding the matter. It is, however, not possible to include everyone who has contributed in some way or other to champion the provisions of education for all. The list of those who have contributed to educational development includes the leading members of the education elites who are visible and influential nationally and internationally. Some of the professional and practicing educators who have shared in the course of their career and profession to ensure that education is a leveler include the following persons with their unique ideas or values:

The early generations of researchers were concerned with the idea of national unity and with solving the problems of separatism in plural society. Ungku Aziz had from early on studied rural students and had attracted attention to their poor nutrition. In direct and indirect ways he influenced the policy of free food for poor students. Awang Had Salleh had contributed in many different ways towards effective language learning and teaching and national unity through education. Fatimah Hamid Don and Asiah Abu Samah had focused on the development of curriculum for national unity and for inclusiveness. Wan Mohd. Zahid Noordin had visited the ideas of affirmative action during politically turbulent times when ideas pertaining to the quota and politically shared responsibly were not settled. (Wan Zahid) Isahak Haron continues to study and explore the cumulative deficits and to offer solutions for flexible studies and liberal notions of the text books. Ibrahim Saad had made a significant, even seminal contribution, in analyzing Politics and Education in Malaysia. The younger generations of educational leaders are actively engaged in educational debates and continue to make contributions in their respective fields. In direct and indirect ways, these leaders have advocated the ideas of equal educational opportunities for all (Bajunid, 1991). There is to date, however, no seminal work or contribution on education as a leveler by Malaysian educators. An interesting contribution is from an enthusiastic concerned person whose ideas of an educational system worthy of Malaysia are analyzed in a book of the same title (M. Bakri, 2003).

CULTURE, SOCIETY AND SOCIALIZATION

Depending on the different stages of socialization, different agencies exercise different kinds of influence on motivation, behaviors and attitudes. Typically, the primary socialization agents of family begin during childhood; secondary socialization continues in schools during the teenage years, work place socialization occurs during the mature years of adulthood and other conventions of socialization occur in the old age. At each phase of life there are transitions and crises to overcome. Socialization is a lifelong process but

individuals develop their own self-identity and are capable of taking responsibility for their own learning and also responsibility in being mindful (Langer, 1989). While people are influenced by socialization, they have autonomy of thought and action and are their own agents, and not prisoners of socialization.

Aging, as a universal phenomenon, can be analyzed in terms of three processes, namely, biological aging, psychological aging and social aging. As people grow older it is observed that they withdraw and disengage from former roles and become preoccupied with their inner life. There are also those who are active and continue to serve society in different ways. As the number of the elderly increase there are various forms of inequalities among the elderly, in aggregate terms, the phenomenon is termed ageism. Ageism is prejudice and or discrimination based on age. This phenomenon of discrimination and inequality regarding the elderly is a new emerging phenomenon in Malaysia not quite well understood. It is likely that education again will be the great equalizer, but this time, non among pre schoolers of youths but among the elderly. When the elderly engage in the pursuit of life long education, they are likely to be more productive and to play an active role in determining their own mental and physical well being. The universities of the third age, for instance, can provide opportunities for the elderly to educate themselves as they choose and to develop their own interests in any fields of human activities (Asia Europe Institute, 2002).

SOCIAL STRATIFICATION, POVERTY AND SOCIAL MOBILITY

Besides the phenomena of aging, social inequalities are also created because of the systems of social stratification. One form of social stratification is class because of inequalities of possession and control of resources and lack of access to educational and social facilities. Caste stratification is not common in Malaysia. There is also social stratification by birth based on royal or non royal parentage. While there is this form of stratification, the number involved is small and the majority is not in competition with the royal households. It is well known that the basic dimensions of class are income, wealth, educational attainment, and occupational status. It is also common knowledge that the major classes in society are the upper class, the middle class, the working class, and the lower social economic group and the hardcore poor. The earnings gap between the top corporate officers and the richest and the average working person is indeed wide. The wealth gap among ethnic group is also of concern to the communities and the government. Power and inequality move around in the vicious circle of dispossession and disempowerment. While much has improved during the years of national development, there are still pockets of poverty in the rural areas. Typically, there are the notions of absolute and relative poverty and also the notion of the working poor. Working poor are those whose earnings are not high enough to lift them above the poverty line. Children are the principal victims of poverty as are unemployed women and single mothers. Poverty theories encompass the concepts of "blame the victim" or "blame the system" for dependency or for the culture of poverty. The underclass or hard core poor are those who live in disadvantaged conditions at the margin of society. The underclass may be excluded from full involvement in the society.

The exclusion may be because of poor housing, limited transportation, and inferior schools and are denied the opportunities of self betterment. A small number of the rural and urban poor without extended families are homeless. The extent to which education is the great leveler for such groups in Malaysia is not well studied/researched.

Although people are in different social classes, Malaysian society creates opportunities for intra-generational and inter-generational social mobility. In a dynamic and open economic system with educational opportunities, there can be vertical, upward or downward mobility. The study of poverty leads to the conclusion that cultural capital will help students to excel. Cultural capital is the cultural advantage that comes from good homes. As there is the hidden curriculum in the formal school system, there is the hidden curriculum in the culture of poverty. Values, attitudes and habits acquired from the hidden school or community curriculum will determine school success. Information poverty can be related to those who do not have the technological equipment or means to keep up with those who have the means. Those who have information as wealth go beyond local knowledge to acquire global knowledge. These various factors of social reproduction in homes or community or school help perpetuate social and economic inequalities across generations. Those who have sound cultural capital are able to engage in the world information order and therefore create more wealth. Everywhere, parents continue to play significant roles in making a difference (Poteet, 1973; Williams, 1974; Borba, 1999; 2003).

Industrialization and other related development agenda of economic growth and employment demands created a need for a literate and disciplined work-force. In Malaysia, until recently education was free but not compulsory at the primary level. All students follow national curriculum and sit for the same national public examinations. Through the use of ICT, and e-learning, education is increasingly accessible to more people. Through partnerships, universities pool their expertise and make their programmes available to more students and researchers. The ICT campaign and enculturation programmes are actually a part of the idea of education as the Leveler, the Equalizer. Technology itself is not the goal of education but is the means to education (Bajunid, 2001; 2003a; 2003b). Believers in the liberating and educational functions of technology have embarked in bold initiatives which have proven to be effective in many ways. Malaysia is now ready in many ways to be engaged in the Global technology enabled game. This means, for instance, that researchers in Malaysia will become global researchers in the global knowledge community.

Together with schools, the mass media has come to play a fundamental role in society and to influence society in different ways. The electronic media is creating a global village and a public sphere of public opinion and public debate. The mass media has become a powerful instrument of government and media moguls to enlighten or control the citizenry in subtle ways. Because the media is everywhere with its superimposition of fact and fiction, reality and imagination, and intermingling of people's behaviors and images, it has created a new kind of hyper reality. Through this hyper reality and public education, there is media imperialism, usually by the more technologically advanced nations. It is assumed that nations which are able to disseminate western values, dominate other nations

which are unable to resist the new forms of imperialism. There is now the current debate as to whether Internet technology enhances face-to-face interaction or increase social isolation because by the pervasive use of such technology, human contact is considerably reduced. The rise of the mass media is closely related to the rise of mass education. Both these secondary institutions of socializations provide some form of education, with the latter focusing on entertainment and infotainment or edutainment. Both mass education and the media create opportunities for the involvement of the citizenry in the fabric of social life and participation in the public sphere.

THE EDUCATION WARS

Those who are considered intellectuals or consider themselves intellectuals or those who are labeled positively by the in-groups and negatively by the out-group as chauvinist, fanatics, and ultra nationalists, or extremists are typically involved in the language, religion, political and cultural arenas. Typically, these individuals and groups do not focus on education as a leveler but focus rather on the curriculum, on the medium of instruction and on values. The focus on matters other then education per se is because it is taken for granted that there are educational opportunities for all irrespective of origins. The focus of the discourse is on how well or how badly the positive policies are implemented in the education sector. Also the focus of the policies is on attitudes and motivation in comparative, competitive and adaptive perspectives at the local, national and global levels. The Malaysian nation has hitherto steered away from extreme forms of group relations involving ethnic cleansing or genocide which have occurred elsewhere. There various models of segregation, ethnic relations include theories of assimilation, melting pot, pluralism, multiculturalism and integration. Whatever happens in other parts of the world do have direct or indirect, immediate or long-term effects on Malaysian society. For instance, world wide, especially in Africa, there is the battle to provide education to the dispossessed and overcome the obstacles of HIV/AIDS on family structure and economics. Current reports indicate that the disease related to drugs and drug traffickers is on the increase in Malaysia. Educational provision for this special group of people would also constitute the implementation of the "leveling" agenda. The education wars to ensure the extension of the benefits of education to women, minorities, aboriginal peoples, the physically handicapped and the disadvantaged, especially the disadvantaged rural pupils and the urban poor is a continuing war with faltering and uncertain wins.

THE CONTINUING DISCOURSE

While Education is accepted as the greatest leveler, there are really unclear issues regarding the real set of conditions in the case of every person. Only an intimate reflective history told by the person can capture the shaping of influences which sustained their educational and careers and life odyssey. At another level of reality, there is still the need to understand the ideas of influential Malaysian educators and other thought leaders and advocates for educational rights. The idea of children rights is part of a larger fabric of human rights. Typically, however, the human rights advocates do not champions children's rights, for

the focus is more on women's rights and the political rights of citizens and political activists. The agenda to ensure student rights has to be the agenda of those educators and thought leaders who are involved directly with students, parents and the educational community. Only when a society has thought leaders do these various ideas find expression in some sound, coherent form worthy of articulation.

Malaysia is actually one of the countries which adopted and implemented the Karachi Accord by the mid 1960s. Since independence, there has been the establishment and founding of schools and the upgrading and expansion of school facilities, equipment and teaching learning materials. Throughout the country there has been the development of physical infrastructure to ensure that every child has a place in school. From the simple standard design, Malaysian schools are now built with greater architecture imagination and colours. The Razak Report was the Report which founded the national education system. The Report gave impetus to the development of education as the great equalizer. Into the fifth decade of the Report, as Minister of Education, Mohd. Najib Tun Abdul Razak led the formulation of seven education Acts which mapped out the general trends of educational development in the next decades. If the Education Acts remain relatively stable for the next forty years of so, between, father and son, they would have shaped the direction of educational and national development in the country. The spirit of the Razak Reports and the Education Acts formulated in the 1990s is for education to be the great leveler.

As the nation moves forward into the 21st century to achieve its Vision 2020 and go beyond, many ideas, policies, and programmes are coming together. The idea of the community of listeners, readers and viewers has now been reframed to become the "smart community." The agenda of the Democratization of Higher Education where the Private Education together with the public sector contributes to provide education for the citizenry is being implemented. The work place is now recognized as the new frontier of learning and the distinction between education and training is being blurred within the context of the education of the knowledge workers in the K–economy. Hundreds of initiatives are being generated to make Malaysians literate in ICT with a passion for knowledge as lifelong learners. Distance Education, Adult Learning and E-Learning are becoming significant contributors to the idea of education as the great leveler (Cairncross, 1997; Caffarella, 2002; World Conference – 20th, 2001); NIER and UIE, 1997; Faure, 1972; Longworth and Davies, 1996; Field, 2001; IIEP/UNESCO-KRIVET International Policy Seminar, 2003).`

The policy of making Malaysia a center of Excellence will create opportunities for Malaysians to interact with students from all over the world. When in the past hundreds of thousands of Malaysian students went abroad to study, increasingly more foreigners are coming to Malaysia to study. This reverse movement of people for education is a kind exchange educational leveling leading to various forms of knowledge creation, generation and transfer. The creation of a knowledge society and a virtues-based society is to be achieved through the policy of lifelong learning. The lifelong learning policy articulates

that lifelong learning is the right of every citizen. The concept of the educational rights of every citizen, and, before that, the right of every child, is part of the universal concept of human rights cherished by the society. National development policies are being formulated to ensure the synergy of the powerful ideas of national development revolving around the nucleus or core notion of lifelong and life-wide learning encompassing formal, non formal and informal education (Bajunid, 1980; 1995; 1999a; 1999b; 1999c; 1999d; 2002a; 2004a; 2004b; 2004c; 2004d; 2004e). Whether education is really a great equalizer has to be examined in terms of the standard measures of access, equity, efficiency and quality. Beyond these factors, there are less tangible factors such as national and personal philosophies of education, institutional histories, and the overarching embedded postures taken by actors in educational contexts towards, children and their rights, the rights of girls and women, minorities of different definitions, the nature of rural and urban poverty and their effects of school and a host of other as yet undefined areas of concern. The necessity to build a research inquiry tradition that is open and objective in order for education to do what it must do is clear.

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Chapter 10

HUMAN CAPITAL DEVELOPMENT AND KNOWLEDGE FLOWS: THE EXPERIENCE OF THE ELECTRONICS INDUSTRY IN PENANG AND KELANG VALLEY

Rajah Rasiah

1 INTRODUCTION

Economies achieving rapid industrialization and structural change have been driven strongly by significant transition in the supply of human capital. Two strategies have dominated human capital development in industrialization. The first relates to policy governance where the focus has shifted from basic education to the supply of high tech human capital from formal institutions such as secondary and vocational schools, and universities (Lall, 1996; 2001). Demand-supply deficits in human capital – especially involving high tech – often led successful economies to complement local supply with immigration (e.g. Ireland, Singapore and the United States). The second strategy emphasizes the development of human capital from learning by performing (Arrow, 1962). Evolutionary and industrial economists have worked considerably on the pool of tacit and experiential knowledge embodied in human capital developed in firms (Penrose, 1959). This paper uses a framework that melds together both approaches with systemic coordination as the driver of knowledge accumulation.

The successful expansion of the Silicon Valley, re-emergence of Route 128 and the continued dynamism seen in Emilia Romagna are the product of both approaches working as one strategy (see Best, 2001; Sabel, 1995; Saxenian, 1999). Although the first is far more documented, the development of the second and mediation between the two has been instrumental in the development of human capital in Japan, Taiwan and South Korea, where local firms were the prime engines of growth. Ireland and Singapore are good examples of MNC-driven economies where the effective confluence of the two strategies drove the development and appropriation of knowledge embodied in human capital. While the effective fusion of the two strategies stimulated successful industrialization, it is important to examine an alternative example coordination failure restricted effective mediation. Malaysia is a good example where some aspects of systemic coordination succeeded while others failed.

Export-oriented MNCs began relocating on a large scale in Malaysia following the opening of Free Trade Zones and Licensed Manufacturing Warehouses since 1972. MNCs were targeted to generate investment and employment. Coming in the wake of an ethnic bloodshed in 1969, the government off-set the risks and uncertainty associated with generous tax holidays, tariff-free operations and controls on unionization (Rasiah, 1988). These efforts led to electric and electronics exports in manufactured exports to rise from 0.7 percent in 1968 to 71.0 percent in 1997 (Rasiah, 2002: Table 8).

The Malaysian electronics industry is a composite of three major regional agglomerations, and moribund operations in Sarawak and Sabah. Penang is the largest in terms of firms' numbers, employment and value added, followed by the Kelang Valley and the southern state of Johor. Penang's electronics industry employed over 90,000, followed by the Klang Valley with 85,000 in 1995 (MITI 1996: 38). Rapid expansion in Penang and the Kelang Valley extended the Northern cluster to Southern Kedah and Northern and Central Perak, and Melaka and Negeri Sembilan respectively. Johor's growth hinged considerably on growth in Singapore. Sarawak and Sabah received significant assembly operations only from the 1990s.

This paper attempts to examine human capital development by integrating the two dominant knowledge and skills acquisition modes, i.e. formal education and learning by performing. The first mode is studied by an assessment of primary, secondary and tertiary education, and the supply of R&D engineers and scientists respectively. The second assesses the production and diffusion of tacit knowledge embodied in labour. It controls for industry, infrastructure, timing of inception and overall national policy, to show that strong institutional support and network cohesion will produce greater cluster synergies.

2 ANALYTIC FRAMEWORK

This paper uses a framework that fuses together two broad approaches to examine the development of human capital in the MNC-driven electronics industrial districts in Penang and the Kelang Valley. The first refers to the supply of technical and managerial knowledge through formal institutions. The second refers to tacit and experiential knowledge embodied in human capital acquired from learning by performing. The first channel is coordinated at the institutional level – by government, and private and intermediary organizations. The second is developed in firms. However for the two channels to match and generate network synergies, systemic coordination becomes critical.

Modern industrialization requires the employment of human capital with at least communication skills so that the conception, organization, coordination and execution of tasks are carried out effectively. From basic and secondary schooling, the demand for technical and professional skills rises as firms move up the technology trajectory. Primary and secondary schools offer the initial mass of labor for large scale but low skill mass production operations. Export-oriented MNCs seeking low cost literate labor to perform simple assembly operations relocated in economies that offered large reserves of literate (trainable) labor. American, Japanese and European MNCs relocated in Jamaica, Barbados, Malaysia (e.g. the export processing zones of Bayan Lepas, Sungai Way and Prai), Singapore, China Taipei (e.g. the export processing zone of Kaoshiung) and Korea (e.g. the export processing zones of Masan and Inchon) in the late 1960s and 1970s to access cheap literate labor (Scibberas, 1977; Lim, 1978; Rasiah, 1987, 1988).[1] Political instability

[1] In fact the US customs items of 806.7 and 807 specifically offered generous exemptions to stimulate the relocation of low value added manufacturing activities to developing economies (see Scibberas, 1977).

and restrictive policies discouraged similar relocations in China and India in the 1970s. China only became a major manufacturing target of MNCs from the late 1980s (see Table 1). MNCs did not figure strongly in the economies of Korea and China Taipei. Singapore and Malaysia relied strongly on MNCs to generate assembly-type low skill employment in the late 1960s and 1970s.

However, as spillovers and upgrading occurs to transform manufacturing operations to higher value added operations, the demand for technical, tertiary and scientific and engineering education rises. Both local firms and MNCs seek high tech human capital to introduce higher value added operations. The demand for high tech human capital becomes most sophisticated when firms seek R&D operations. While institutional coordination is necessary to mediate demand-supply conditions effectively, formal education as well as tacit and experiential knowledge is critical to generate a critical mass of high tech human capital to drive new firm creation. Penrose (1959) and Polanyi (1997) made distinctive contributions to the understanding and significance of experiential and tacit knowledge respectively – which are specific to individuals and performing experiences. Given its public goods characteristics, knowledge and learning – directly or indirectly – governments have participated strongly in the supply of high tech human capital domestically. Where the supply of human capital domestically has fallen behind demand as in the Singapore, Ireland and United States, rapid growth and structural change have been continued through substitution from abroad. Firms either relocate or import human capital to overcome demand-supply constraints.

Schumpeter (1934) and Hirschman (1958) had discussed extensively the role of entrepreneurs in economic development. However, conventional economic theory tended to confine the term entrepreneurship to a black box – somewhat like how technology was conceived in neoclassical growth models. Critical elements of the theory of entrepreneurship could be traced to Mills (1844), Marshal (1890), Penrose (1959) and Chandler (1962), albeit without specific definitions and methodological instruments for empirical inquiry. Aspects of the application of theory to the creation and development of entrepreneurs systemically became more dynamic with the works of Saxenian (1996) and Best (2001).

For entrepreneurs to operate at the technology frontier, the embedding regions require high tech infrastructure to support innovations. A number of the necessary high tech institutions face collective action problems. Private agents are unlikely to participate in market-driven activities where the risks involved are not matched by commensurate returns. Arrow (1962) had argued that interventions in markets are necessary when the social returns exceed private returns. Schumpeter (1934) had argued that monopoly rents are necessary to motivate innovators. Abramovitz (1955) and Kaldor (1957) had contended that markets generate sub-optimal outcomes when involving investments that generate dynamic increasing returns.[2] Interventions become far more pervasive when involving

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[2] New growth economists such as Romer (1986) and Lucas (1988) merely demonstrated these ideas using technical models. See Scherer (1992; 1999) for a lucid historical account.

public goods, whose consumption by one does not exclude its consumption by others and without being affected in value. Knowledge-related goods qualify as public goods and institutions that are specifically targeted to generate knowledge goods enjoy public goods properties. Hence, learning institutions such as universities and technical schools that generate high tech human capital and R&D institutions fall under the public goods category. In especially regions where the demand for innovations rises with growth, governments play a critical role to engender the conditions to step up the supply of high tech infrastructure goods. South Korea and Taiwan merely replicated the experience of the Western economies and Japan (see Gerschenkron, 1962). While innovating regions continue to upgrade their high tech infrastructure, shortfalls in demand-supply are met by imports of high tech human capital from abroad. The United States, Israel, Ireland and Singapore are some examples of sophisticated economies that have relied extensively on human capital imports (Teubal, 1999; Rasiah, 2002; Best, 2001).

The second channel of human capital development occurs from performing – tacit and experiential. Tacit and experiential knowledge is best engendered in integrated cluster networks. The term clustering refers to a network of inter-connected firms, institutions and other organizations that enjoy systemic impetus from coordination relationships by being integrated together. The amount of synergies generated and appropriated in industrial districts depends on the strength of clustering and the presence of dynamic institutions to create new spurts of growth. Agglomerations of firms built on integrated connections between firms and institutions regionally are likely to offer greater flexibility, and generate technological and market synergies than those defined by truncated operations of individual firms.

The systemic effects of clustering have been important in the development of dynamic industrial districts. Inter-firm pecuniary relations through sales and purchases was only one channel of inter-firm interactions (Marshal, 1890). Knowledge flows – rubbing off effects from the interaction between workers, and the movement of tacit and experiential skills embodied in human capital - are more dynamic synergizers (Penrose, 1959). The critical elements of the movement of tacit and experiential skills embodied in human capital from one firm to another, distinguishes dynamic industrial clusters from others. Saxenian (1995; 2001) documented the movement of tacit and experiential skills embodied in human capital, which has supported strong new firm creation capabilities in the Silicon Valley.

Porter (1990) contended that firms compete on the basis of four factors; viz., factor conditions, demand conditions of products, supporting industries and firm strategy, structure and rivalry. Firms with effective strategies and located in clusters containing these features are likely to be competitive. Network cohesion – relations between firms, government institutions and intermediary organizations – as a driver of systems efficiency was well documented from the experience of European and American industrial districts (Brusco, 1976; Wilkinson and You, 1992; Piore and Sabel, 1984; Sabel, 1995; Sengenberger and Pyke, 1988; Hirst and Zeitlin, 1991). Best (2001) went further by distinguishing systematically

the key ingredients of systems integration, framing this model from the evolution of production historically, defining five critical features of development that drive dynamic clusters.[3] Best built a coherent theory that glued Smith's (1776) features of differentiation and division of labor, and specialization (see also Young, 1928), open systems networks where skilled, technical and managerial human capital interact or move freely between firms (Marshal, 1890; Penrose, 1959; Saxenian, 1994; 2001), and firm-level process and product conditions that drive innovation and efficiency. Innovations figure strongly as a critical driver of growth (see Schumpeter, 1934; 1941). The continuous supply of entrepreneurs for new firm creation is made possible by open firms where employees are easily transplanted to other firms.

Rasiah (2001) argued that entrepreneurs acquire and develop tacit and experiential skills from learning by performing in real business environments and in an organizational network – rather than in a vacuum or formal training institutions. Loose firm formations that encourage the entry and exit of human capital without compulsion are often critical for engendering the supply of entrepreneurs for new firm creation. New firms benefited from gaining managerial and technical personnel from older firms in the Silicon Valley. For example, Sun Micro Systems reported in 1995 to have absorbed technical and managerial personnel from older firms in the Silicon Valley.[4] The official even mentioned that the organizational framework they have introduced resembled the Silicon Valley with hardly any resemblance of the typical Kaisha system in Japan. The open systems properties of the Silicon Valley – dominated by a cluster of developmental firms – helped condition Japanese firms' employment practices typifying the open systems networks of the region rather than the closed live-long employment practices of firms in Japan. Advanced firms displacing old personnel with young ones benefit by gaining fresh new ideas, while the new benefit by gaining tacit and experiential knowledge. Mature firms gain new ideas and styles to ensure continuous organizational change as old employees are replaced with new ones, while new firms benefit from the entrepreneurial and technical – tacit and experiential – knowledge to ramp up and run firms instantly (Rasiah, 2001).[5]

While the prime drivers of cluster dynamics in the successful industrial districts of Emelia Romagna and Silicon Valley are local firms, four important developments have made the above analytic approach applicable even to the MNC-driven clusters in Malaysia. The strong emphasis placed by host governments to improve basic infrastructure and offer generous incentives, and bureaucratic coordination to resolve customs, security and labor problems (e.g. Singapore). The growing tendency of MNCs to integrate and re-integrate production at host-sites to increase specialization, and hence relocate close to supply and market chains (e.g. Ireland and Singapore). The increasing emphasis to minimize production

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[3] Best (2001) distinguished five critical features of dynamic clusters, viz., specialization and differentiation of capabilities, entrepreneurial and development firms, technological variation between firms, horizontal integration and reintegration processes and speciation capabilities.

[4] Interviews in Santa Cruz (author, 1994).

[5] Interviews in the Silicon Valley (author, 1994; 1999).

and product cycle times, which has led MNCs to subcontract out operations to contract manufacturers. Growing horizontal relations between MNCs that has increasingly driven synergies to several layers of firms (e.g. Israel). Increasing reliance of MNCs on host-site institutions to access human (e.g. software skills in India).

Given the complex nature of information required to apply the analytic framework developed here, firm level interviews formed the prime vehicle for gathering empirical information. The author's considerable information accumulated since beginning in-firm research in Monolithic Memories Incorporated (MMI)[6] and Advanced Micro Devices (AMD) in 1986 and 1989-1991 respectively, and detailed interviews with 324 electronics, machine tool, plastic and other ancillary firms in 1999-2001, which was completed after fresh interviews arried out in 2002. Interviews were also carried out with the training institutions, industry associations, State Economic Development Corporations (SEDCs) of Penang and Selangor and government departments in Penang and the Kelang Valley. Given the lack of information on unregistered firms from government lists, a snowballing research technique was used to trace firms – connections traced from firm-level interviews.

3 EXPLICIT, TACIT AND EXPERIENTIAL KNOWLEDGE

This section scrutinizes the two channels of human capital development in the two dominant electronics conurbation of Penang and Kelang Valley. The first examines the supply of basic and secondary schooling, tertiary and scientists and engineers. Since the formal institutions of learning throughout the country are governed by federal institutions situated in Kuala Lumpur, little coordination differences exist between Penang and Kelang Valley. The second refers to tacit and experiential knowledge embodied in human capital acquired from learning by performing. The differential strength of network coordination between the two clusters of Penang and Kelang Valley has produced significantly different results. Systemic coordination in regional clusters are coordinated at the institutional level by government, and private and intermediary organizations, between them and firms and between firms. Unlike Singapore, Israel and Ireland where complementary institutions of governance mediated both channels of human capital development, local state institutions in Penang lacked the authority to bypass federal institutions to coordinate educational institutions. Hence, while discontinuities were apparent in the coordination of both channels of human capital development in the Kelang Valley, Penang faced similar coordination problems with the first channel.

3.1 Formal Institutions of Human Capital Supply

Unlike general systemic coordination initiatives in Penang where cluster integration has stimulated strong synergies, formal education institutions in the country have been governed directly by the Federal Ministry of Education. Educational institutions in the Kelang Valley faced similar coordination problems. Little coordination efforts have taken place between

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[6] MMI was acquired by AMD in 1987 (Rasiah, 1989).

schools, technical institutes and universities to orient education to meet changing structure of firms' demand.

Both the regions of Penang and Kelang Valley enjoy the most advanced basic infrastructure and educational institutions in Malaysia. Enrolment in primary schools has always been above the global mean (see Table 1). The index of primary school enrolment – measured as a relative share of the global mean (see notes below Table 1 for formula used) – remained slightly above 1 between the years 1970-1995. This figure fell slightly in 1995 as the less developed economies strengthened their primary school endowments. Secondary school enrolment improved in the period 1970-1975 to above the global mean but has subsequently fallen slightly to 0.9 (see Table 1). The slight decline was a result of improvements shown by other developing economies as primary school enrolment in Malaysia is near universal and the rates for secondary school enrolment has improved strongly. Between 1970 and 1990 when the unemployment rates fluctuated between 6.0-8.1 percent (Rasiah, 2002: Figure 6), labor reserves ensured that labor-intensive assembly and test MNCs continued to relocate in Malaysia. Political stability, good basic infrastructure, financial incentives and controls on unionization helped make Malaysia as one of the more attractive sites.

However, the demand structure of human capital in Malaysia's manufacturing sector changed considerably in the 1990s following the exhaustion of labor reserves as unemployment rates fell from 6.1 percent in 1990 to 2.5 percent in 1997 (Rasiah, 2002: Figure 6). Rising wages and the emergence of cheaper cost sites such as China, Thailand, Cambodia and Philippines with improvements to their infrastructure and political stability has severely undermined the capacity of Penang and Kelang to retain low-wage and labor-intensive operations. With a similar primary and secondary schooling index but with a massive labor reserve China easily overtook other developing economies as the prime target for labor-intensive MNCs from the 1990s as the basic infrastructure improved and. government strategy became more focused. The Malaysian government sought a temporary alternative by seeking foreign labor imports – primarily from Indonesia and Bangladesh – which accounted for around 15-25 percent of the total national labor force in 1997.[7] Foreign labor imports failed to stem the decline in FDI levels in GFCF in Malaysia, which fell from its peak of 24.8 percent in 1992 to 8.8 percent in 1999 (UNCTAD, 2004).

Despite the financial crisis and subsequent industry-wide downswing in the electronics industry, unemployment rates only rose to 3.1 percent in 1998 (Rasiah, 2002: Figure 6). Component firms began to experience production changes that required the utilization of high technology. However, the human capital supply institutions failed to step up supply of technical skills in Penang and Kelang Valley, which was aggravated by severely widening deficits in the supply of science and engineering graduates. Malaysia's tertiary education enrolment was well below the global mean in the period 1975-1995, though trend

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[7] This figure has fallen significantly following the government's aggressive efforts to deport illegal workers from 1998. Over 350,000 workers were deported in the period 2000-2001.

improvements have taken place (see Table 2). The situation became even worse as the share of science and engineering graduates in total tertiary educational enrolment fell from 41.3 percent in 1980 to 28.1 percent in 1995 (see Table 3). The government embarked on an aggressive strategy to step up the supply of vocational and technical training and graduates with the building of several schools.

Severe labor shortages in the 1990s saw the government transform industrial strategy from one focused on employment generation to industrial deepening, clustering and the shift to higher value added activities. The Action Plan for Industrial Technology Development (APITD) of 1990 and the Second Industrial Master Plan (IMP2) of 1995 set the blueprints for the transformation. A series of institutions were created, which included the opening of the Human Resource Development (HRD) Council in 1993.[8] The HRD fund required manufacturing firms with an employment size of 50 and more to contribute 1 percent of their payroll to the HRD council, which the firms could then reclaim with bills from approved training. In addition to new public universities, the Private Universities Bill of 1995 opened the way for the introduction of private universities. To complement domestic human capabilities, the government offered exemptions for IT firms in the Multimedia Super Corridor (MSC) to import technical and professional human capital from abroad, which was launched in 1997.

However, despite massive physical emphasis on the development of infrastructure, the supply of high tech human capital remained limited. Anandakrishnan, Rasiah and Selvaratnam (1995) had projected severe widening of the demand-supply gaps as well as a structural mismatch caused by coordination problems. Rasiah and Osman (1996) also reported a serious mismatch in skills between supply and demand in the manufacturing sector. Malaysia's relative (to the global mean) R&D scientists and engineers index of 0.1 in 1995 was extremely low (see Table 3). The weak R&D human capital endowments has severely restricted firms capacity to drive innovations, which becomes increasingly necessary as a critical mass of firms in rapidly industrializing economies reach the technology frontier. It is little wonder that few electronics firms in Malaysia – whether foreign or local – undertake R&D activities in Malaysia (see Rasiah, 1996). Ineffective coordination has also offered little incentive for thousands of Malaysian scientists and engineers qualified abroad to return. The Republic of Korea and Singapore successfully raised their R&D scientists and engineers index from 0.4 and 0.3 respectively in 1981 to 1.5 and 1.6 respectively in 1995 (see Table 3). Singapore, Ireland and Israel have managed to keep strong high tech human capital endowments by both increased emphasis on higher education domestically, as well as selective immigration policies. The United States has off-set its gradual decline in the relative human capital supply from domestic institutions by attracting them from abroad.

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[8] This followed the Human Resource Development Act of 1992.

Table 1: Education Enrolment, 1970-1995

	1970	1975	1980	1985	1990	1995
Net Primary	n=60	n=57	n=78	n=78	n=72	n=89
Malaysia	1.2	na	1.2	na	1.2	1.1
Rep Korea	1.3	1.2	1.3	1.2	1.3	1.1
Singapore	1.3	1.2	1.3	na	na	1.1
Hong Kong	1.2	1.1	1.2	na	na	1.1
Japan	1.3	1.2	1.3	1.3	1.2	na
South Africa	0.9	na	na	na	na	na
China	na	na	na	na	1.2	1.2
Philippines	na	1.2	1.2	1.2	na	1.2
Indonesia	na	0.9	1.1	1.2	1.2	1.1
USA	na	na	na	1.2	1.2	1.1
Ireland	1.3	1.1	1.1	1.1	1.1	1.1
Thailand	na	na	na	na	na	na
Israel	na	na	na	na	na	na
Gross Secondary	n=132	n=137	n=153	n=156	n=152	n=145
Malaysia	1.1	1.2	0.9	1.0	1.0	0.9
Republic of Korea	1.3	1.5	1.5	1.7	1.6	1.6
Singapore	1.4	1.3	1.2	1.1	1.2	1.2
Hong Kong	1.1	1.3	1.2	1.3	1.4	1.1
Japan	2.7	2.4	1.8	1.7	1.7	1.6
South Africa	na	na	na	na	1.3	1.5
China	0.8	1.2	0.9	0.7	0.8	1.0
Philippines	1.4	1.4	1.2	1.2	1.3	1.2
Indonesia	0.5	0.5	0.6	0.8	0.8	0.8
USA	2.6	2.2	1.8	1.8	1.6	1.5
Ireland	2.3	2.3	1.7	1.8	1.7	1.8
Thailand	0.5	0.7	0.6	0.6	0.5	0.9
Israel	1.8	1.7	1.4	1.5	1.5	1.4
Gross Tertiary	n=118	n=120	n=144	n=141	n=129	n=110
Malaysia	na	na	0.3	0.4	0.4	0.5
Republic of Korea	1.1	1.0	1.1	2.4	2.2	2.3
Singapore	0.9	0.9	0.6	1.0	1.0	1.5
Hong Kong	1.1	1.1	0.8	na	na	Na
Japan	2.7	2.9	2.3	2.0	1.7	Na
South Africa	0.6	na	na	na	0.7	0.8
China	na	0.1	0.1	0.2	0.2	0.2
Philippines	2.6	1.8	1.8	1.8	1.6	1.3
Indonesia	0.4	0.3	0.3	na	0.5	0.5
USA	7.2	6.0	4.2	4.3	4.2	3.6
Ireland	1.8	1.8	1.4	1.6	1.6	1.8
Thailand	0.5	0.4	1.1	1.3	0.0	0.9
Israel	2.8	2.6	2.2	2.3	1.9	1.8

Note: Figures calculated using the formula $\chi_i[\Sigma(\chi_1..\chi_n)]n$ where χ_i refers to the % of enrolment of country *i* and *n* the number of countries reporting data.

Source: Computed from World Bank (2001).

Table 2: Tertiary Enrolment in Science and Engineering, 1970-1995 (%)

	1970	1975	1980	1985	1990	1995
Malaysia	na	na	41.3	32.3	28.1	na
Republic of Korea	51.5	43.1	60.7	na	na	57.8
Singapore	44.5	61.8	53.0	na	na	na
Hong Kong	74.8	71.1	53.2	na	na	na
Japan	20.9	20.6	20.0	20.7	19.8	20.7
South Africa	na	na	na	na	na	28.9
China	33.4	44.0	39.5	33.9	49.8	42.5
Philippines	48.4	77.7	24.8	na	20.3	22.3
Indonesia	na	na	na	na	na	39.0
USA	45.1	48.0	na	na	na	na
Ireland	na	47.5	34.9	30.9	38.5	29.4
Thailand	40.4	38.1	na	na	23.4	57.5
Israel	47.7	na	49.9	49.1	48.5	na

Source: Computed from World Bank (2001).

Hence, the formal institutions of human capital development have generally only managed to supply basic primary and secondary education, which was instrumental in attracting large scale MNC operations in export-oriented labor-intensive manufacturing activities from the early 1970s until 1992. However, when labor reserves was exhausted by the early 1990s the lack of high tech human capital failed to stimulate firms transition to higher value added activities. Despite aggressive government efforts, both Penang and the Kelang Valley failed to enjoy sufficient supplies of high tech human capital. Federal governance institutions neither produced sufficiently numbers of high tech human capital nor coordinated supply and demand conditions effectively. Immigration policies restricted electronics firms – both MNCs and local firms - from accessing high tech human capital developed from abroad to overcome the growing deficits.

3.2 Acquisition and Transfer of Tacit and Experiential Knowledge

Political stability and an excellent basic infrastructure with good bureaucratic coordination continue to strengthen Penang and the Kelang Valley as off shore bases for MNCs to relocate. Penang's and Kelang Valley's production platform is superior to many competing sites, though the emergence of China, Thailand and the Philippines is eroding this strength. Hence, while a saturated labor market will discourage future waves of labor-intensive relocations, Penang and Kelang Valley are likely to retain considerable electronics manufacturing operations.

Both Penang and Kelang Valley enjoy strong MNC operations in electronics manufacturing since the early 1970s. Foreign ownership accounted for 83.0 percent of fixed assets in the electronics industry in 1998 (Rasiah, 2002: Table 6). In addition, Penang has developed network cohesion and institutional coordination to support flexibility and technological

Table 3: R&D Scientists and Engineers per Million people, 1981-1997

	1981	1985	1990	1994-97
	n=31	n=36	41.3	32.3
Malaysia	na	na	60.7	na
Republic of Korea	0.4	0.8	53.0	na
Singapore	0.3	na	53.2	na
Hong Kong	na	na	20.0	20.7
Japan	2.8	3.5	na	na
South Africa	na	0.3	39.5	33.9
China	na	na	24.8	na
Philippines	0.1	na	na	na
Indonesia	na	0.1	na	na
USA	2.1	2.7	34.9	30.9
Ireland	0.6	0.8	na	na
Thailand	na	na		
Israel	na	na		

Note: Figures calculated using the formula $\chi_i[\Sigma(\chi_1..\chi_n)]n$ where χ_i refers to R&D scientists and engineers per million people in country i and n the number of countries reporting data.

Source: Computed from World Bank (2001).

interface between firms. However, the Kelang Valley suffers from truncated operations without much network cohesion. This difference has meant that MNCs have reproduced considerable features of dynamic industrial clustering in Penang with much less in the Kelang Valley, generating considerable ramifications for the development and movement of human capital for increasing differentiation and division of labor.

While MNCs continue to expand, the Penang and Kelang Valley clusters have evolved differently. MNCs in Penang tend to enjoy greater linkages with local firms and better co-ordination with support institutions. A number of the MNCs and local firms have moved to attain critical aspects of flexible and mass production capabilities. Penang's production linkages have spread to Southern Kedah, and Northern and Central Perak. Successful local firms in Penang enjoy strong linkages with MNCs in the state. MNCs in the Klang Valley have tended to evolve truncatedly, some substituting supplier requirements with own subsidiaries (e.g. Chungwa Picture Tubes). Local firms in the Kelang Valley do not enjoy strong production links with MNCs. A number of MNCs have flexible and mass production capabilities in-house, but their systemic potential has been low because of a lack of integration and diffusion of such production systems to the whole cluster. Large local firms in Kelang Valley demonstrate mainly single-product mass production operations without significant inter-firm links.

Penang: Strong systemic synergies

The Penang government established the Penang Development Corporation (PDC) in 1969 to "undertake and promote socio-economic development of Penang" (PDC 1974, p. 4). PDC worked extensively with the state government to attract export-oriented MNCs in the manufacturing sector. MNCs helped raise Penang's manufacturing share in GDP from 13 percent in 1971 to 46 percent in 2000 (Rasiah, 2001). Penang has developed the resemblance of an industrial cluster, but without significant participation in new product development. Strong inter-firm relations and systemic coordination effects have helped the cluster generate and appropriate considerable economic synergies. Fairly integrated business networks with PDC's pivotal intermediary role fuelling cohesion has helped expand the supply of human capital for tacit and experiential human capital for new firm creation, differentiation and division of labor.

Differentiation and Division of Labor

The Penang region has built high volume production capability in electronic components, consumer appliances, hard disk drives and a wide range of PC components (DCT, 1998). Many of these parts and components are elements in global production networks coordinated from MNCs' parent plants. Changes in the dynamics of production that was accompanied by improvements in systemic coordination stimulated the introduction of stronger inter-firm links that transformed Penang as a regional supply base since the late 1980s. Complementary but dissimilar product lines were relocated as new firm creation expanded. Entrepreneurs, technical and skilled human capital developed in MNCs moved to run many of these firms. Intel established Globetronics, Shinca, Shintel and Unico, while Motorola has done the same for BCM. Eng Technology, Metfab, Prodelcon and Choong Engineering grew strongly from technological diffusion from Intel. Wong Engineering very much grew with support interface involving Motorola. Loshta – which was founded in 1978 and sold in the mid-1990s, was founded by a engineer who gained his tacit and experiential knowledge working in Motorola. Polytool and Rapid Synergy absorbed considerable precision engineering technology from Intel and AMD. This has been accompanied by the emergence of a locally owned supplier base with increasing differentiation vertically.

Industrial upgrading in supplier firms helped deepen tacit and experiential knowledge in employees. Most supplier firms in Penang have passed through the third and fourthstages of technology absorption and diffusion (Rajah 1994; 1996; 1999). In the first stage, suppliers carried out simple grinding, machining, welding and stamping operations to supply trolleys, components and parts to MNCs, using imported machinery and designs and drawings supplied by the MNCs. This stage characterized the local machine tool firms in the 1970s. In the second stage, supplier firms upgraded to assemble semi-automated machinery and precision tools using imported machinery and designs and drawings from MNCs. In the third stage, supplier firms began adapting and reverse engineering imported machinery for their own use, and high precision foreign components and machinery for sale to MNCs in Malaysia and subsidiaries abroad. In the fourth stage, suppliers developed

their own original equipment manufacturing capabilities to supply MNCs in Malaysia and export using machinery manufactured in-house and imported. In the fifth stage, suppliers managed to introduce their own designs, though much of production is oriented towards subcontract demand operations.

The first-tier firms have evolved from simple backyard workshops to separate factories, to modern plants, to multi-divisional firms and some to MNCs with production operations spread to China, Philippines, Thailand and Indonesia. Eng Technology has subsidiaries in China, Philippines, Malaysia and Thailand, while Atlan has subsidiaries in Malaysia and Indonesia. The network of suppliers in Penang shows generally a vertical division of labor with firms confined to all the five stages of technology utilization. Nevertheless, a handful of firms (e.g. Eng Technology, BCM, Unico and SEM) show increasing shift towards horizontal integration. Strong technological interface between MNCs and these suppliers have resulted in the two-way flow and development of dissimilar technologies in the latter.

The development of strong supplier networks and institutional coordination to support their growth has increased localization of inputs by MNCs stimulating differentiation and division of labor. Local supporting firms in Penang sourced 46 percent of their inputs locally in 1996 (Narayanan 1997, p. 23). Strong localization by supplier firms intensified the opportunities for expanding further the development of tacit and experiential knowledge in the Penang cluster. In addition, the economic advantages of introducing flexible production systems encouraged lead suppliers to actively further differentiate and intensify the division of labor below them. Rasiah (1994) traced three tiers of suppliers in 1990, which by 2002 had spread to five tiers:[9]

> The first-tier vendors (those who had the first links with the electronics sector firms) have, in time, chosen to specialize in certain functions, and passed on some of their previous tasks to second-tier machine tool firms whom they now nurture. These second-tier firms have gone on to spawn their own third-tier subcontracting firms, giving them simply tasks like parts fabrications, which were no longer sufficiently profitable for the former.

Species New to the Region

Systemic coordination was also instrumental in the relocation of industrial species new to Penang. New industrial species helped generate new spurts of growth and extended the platform for furthering human capital development in firms. Aggressive personal approaches by the Penang government and PDC starting in the early 1970s attracted giant electronics MNCs from the Silicon Valley and Japan. Generous financial incentives from the federal government helped offset the risks associated with initial relocation. While Penang Electronics was the first to start operations in Penang in 1970, it was started primarily for

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[9] Interviews by author (2002).

symbolic reasons. Japanese controlled Clarion was the first electronics MNC to relocate operations in Penang in 1971, followed by American controlled National Semiconductor. Among these firms were some of the world's most entrepreneurial electronics firms that fit what Intel's Grove described as the 'new horizontal computer industry.'[10] Leading examples include Intel, Fairchild, Motorola, Hewlett Packard, AMD and Dell. These firms operate using quick turnaround JIT and rapid ramp up capabilities. Products are assembled, tested and shipped out from their plants, and production can be stepped up and down quickly to meet fluctuations in demand.

While lacking the capacity to create new industrial species of its own, Penang's state leaders and the PDC actively sought new species to create new spurts of growth in the region. Effective systemic coordination and network cohesion saw Penang's government leaders acquiring the knowledge necessary to attract maturing industrial species from parent locations abroad. From the late 1980s, the Penang government and PDC have improved their monitoring mechanism to seek new species of industries – especially from the Silicon Valley, Japan and Taiwan. From semiconductors and components in the early 1970s, consumer electronics became important from the late 1970s, but particularly since the late 1980s. Disk drive companies were actively wooed from 1989, followed by computer companies. The Chief Minister of Penang was actively trying to attract a critical mass of opto-electronics firms in the year 2000-2001. In addition to product transitions in old subsidiaries such as Komag and Osram,[11] the Penang government sought new opto-electronics firms from the Silicon Valley.

The development of synergies from the operations of firms such as Intel, Motorola and Hewlett Packard drew the early computer and peripherals assembly firms of Dell, Maxtor, Conner Peripherals, read-rite, Komag, Quantum and Seagate to Penang.[12] Dell reported its relocation in Penang as having been primarily driven by the need to integrate around its product chain as well as strategically customize product development to meet the Asia Pacific market. The movement of computer assemblers to Penang has attracted disk drive makers such as Seagate, Quantum and Komag, and other peripheral contract manufacturers such as Solectron there. Intel, AMD, Motorola and Fairchild have increasingly subcontracted out a number of their production lines to contract manufacturers such as Solectron, Globetronics, Unisem and Carsem in Malaysia. The diversification into product proliferation has enabled technological variation in the region. The early developments involving precision engineering and machining and later to disk drives and computers are examples of new sub-sectors to the region that have enhanced the potential for technological diversity. From semiconductors in the early 1970s, the sub-industries added from abroad include telecommunication component and equipment, audio, video equipment from the mid to late 1970s, integration of semiconductor testing from late 1970s to early 1980s, disk drives

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[10] Andrew Grove (1996, p. 42); Also known as systems integration (see Best, 2001), a business model associated with horizontal integration, collective learning, and community institutions.

[11] Osram was renamed from Siemens Litronix.

[12] Read-rite, Conner Pheripherals and Maxtor have since sold their operations.

and computer assemblies from the early 1990s. Interviews show that opto-electronics is likely to become Penang's latest sub-specie.[13]

Hence, while the Silicon Valley has managed to create species of industries that are new to the universe, Penang has successfully drawn species of industries from other locations. Speciating capabilities have helped the region sustain growth, and offer the building blocks for accelerating inter-firm linkages. While lacking the capacity to spawn species new to the universe, the "invitation" strategy has worked well for Penang as the demands for science and engineering capital have not been high for assembly, test and redesigning activities.

Sub-species of industries – not new to the universe – have also evolved domestically to stimulate differentiation and diversity in Penang. Machine tool and plastic molding firms were sub-species that evolved from technological constraints emerging in the production dynamics of MNCs operating in Penang. The development of several tiers of firms in these industries has enabled the workforce to expand further knowledge development and sharing in the Penang cluster.

These sub-sectors are not new to the universe. They evolved to meet dissimilar but complementary demand from changes in the production dynamics of MNCs operating in Penang, and relocation of sub-species of MNCs from abroad. Intel, Motorola and Dell are exceptional in their commitment to local innovation and opportunities for driving cluster dynamics. These open system firms have played a developmental role in Penang as employees gaining tacit and experiential skills made their way to start new or join other firms. The increased supply of such human capital has enhanced the skill and entrepreneurial base of the northern region. Technical and managerial human capital has moved extensively from these firms to start new firms. Former employees of Intel managed Shinca, Shintel, Sanmatech, Unico, Globetronics and Solectron in 1999. Former employees of Micro Machining (then a subsidiary of National Semiconductor which subsequently acquired Fairchild) started the local firms of Prodelcon, Polytool, Rapid Synergy and Metfab.

However, the lack of high tech human capital supply has restricted Penang's capacity to support high value added activities such as new product development. Industrial expansion has aggravated production costs with increasing competition coming from China and Philippines. In fact, in addition to the downswing in the electronics industry from 2001, Penang has faced considerable retrenchments following the relocation of MNCs to China.

MNCs as Training Grounds

Open firm formations have exploited the open systems and integrated business network of Penang to encourage the exit of entrepreneurial, technical and skilled human capital with tacit and experiential knowledge to start and support new firms. The increase in the

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[13] Interviews by author (2001).

creation of entrepreneurs, managerials, technical and skilled human capital has helped MNCs upgrade their own operations. The increased movement of human capital between firms has stimulated greater outsourcing of dissimilar activities while allowing MNCs to upgrade and specialize in higher value added operations. Penang's electronics industry has advanced with the development of these companies. Intel's progressive moves from assembly to continuous improvement capabilities made it possible for its parent plant to transfer technology to Penang, which helped the local plant to move to more complex higher value-added activities (Rasiah, 1987; Lim 1991). The dynamics of flexibility in process technology transformation in Penang's Intel operation has been managed completely by Malaysians from 1980. JIT and the shift towards flexible production systems took place from late 1984 (Rasiah, 1987). It is this flexibility that enabled semiconductor firms in Penang to avoid massive capacity restructuring whenever a downswing struck. Efforts to open new firms has helped MNCs such as Intel to function as a flexible market-driven assembly and test line with primarily process engineering efforts to enable organizational efficiency improvements. However, redesigning activities in MNCs in Penang are confined to adapting older technologies. Penang does not have a critical mass of high tech human capital and R&D labs to support rapid product innovation, and institutional support to outsource many of these activities.

Motorola Penang was completely run by Malaysians from the late 1980s. Motorola's R&D center, which started with four engineers, had nearly 120 in 1998 (Ngoh, 1994). Motorola Penang enjoys design leadership in Asia for the CT2 cordless telephone. The Center does new product design, product-process interfacing and advanced manufacturing processes (Rasiah, 1996). However, Penang's short supply of R&D scientists and engineers made similar expansion by other MNCs difficult. The 2000-2001 industry-wide crisis could even result in the contraction of designing activities in Penang.[14]

Dell's Asian headquarters are in Penang, where it has developed a mass customization system. Dell is attempting to reproduce in Penang its "produce to order" model that combines the Toyota production system (cellular manufacturing, JIT, Kanban, quick changeover, continuous improvement, self-directed work teams) with internet to integrate production and distribution into a single high-throughput process. Dell's factory is being geared to respond directly to the final customer so that all intermediary distribution links are eliminated. The Managing Director of Dell's Penang operations reported that Penang stood out not only because of the smooth coordinating approach of the state government and PDC, but also because of its cultural mix that offered regional customization potential for much of Asia (Rasiah, 1995). Dell's unique fusion of design, process flow and final demand facilitated by the internet has offered production and marketing flexibility. However, Dell does not yet have the high tech human capital to drive rapid product innovation and systems integration capabilities in Penang. These limitations may constrain its efforts to achieve integrated manufacturing operations linking customers to production.

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[14] Interviews by author (2001).

Malaysian employees subjected to learning by doing in dynamic MNCs have gained tacit and experiential knowledge - technical personnel and entrepreneurs - for new firm creation. A number of electronics MNCs have played a major role as training grounds for the hiring and nurturing of entrepreneurs who have stepped up the creation of new firms in Penang. The development of entrepreneurial skills in MNCs has created a large pool of potentially successful managers who could easily start new firms to stimulate further differentiation and horizontal integration in Penang. Globetronics, Shinca, Sanmatech, Unico, Prodelcon, Metfab and Rapid Synergy were started by local entrepreneurs who gained their experience working in MNCs in Penang. MNCs that relocated in Penang in the 1990s – e.g. Komag, Quantum and Solectron - also benefited from absorbing managers from developmental MNCs in Penang. Human capital deepening in local divisions of MNCs fostering technology transfer, particularly via skilled personnel moving to local firms has been documented extensively (Rasiah, 1995, chs. 6-7).

> Intel, AMD, Fairchild (National Semiconductor), Siemens, Hewlett Packard, Micro Components Technology and Motorola Malaysia reported that former personnel…had started up new firms, and have offered substantial technical support to local firms (Rasiah, 1998. p. 10).

Fairchild's subsidiary plants in Penang, Dynacraft and Micro Components Technology, trained many of the region's key personnel in precision engineering and metal working who now run successful local firms, including Prodelcon, Metfab and Rapid Synergy. The founders of these three firms also acquired their tacit and experiential knowledge from working in Micro Machining, which was a subsidiary of National Semiconductor until 1989. Motorola encouraged its managers to join BCM during its initial development stage.

R&D facilities were introduced in a handful of MNCs from the late 1980s to participate in process technology development and redesigning of old product technologies. Intel, Motorola, AMD, Hewlett Packard and Hitachi introduced specifically defined R&D activities in Penang whose prime focus did not include new product development. From the early 1990s, electronics MNCs began expanding R&D activities to some aspects of product design. Intel, AMD, Hitachi introduced re-engineering activities to widen the use of maturing products. Participation in R&D activities – albeit narrowly – that offered human capital development opportunities for raising tacit and experiential knowledge in Penang. Motorola's designing center developed the CT cordless phone in Penang. Two of Motorola's staff joined the R&D division of Sapura, which is a local firm located in Ulu Klang, the Kelang Valley. Two of Intel's R&D personnel left for AMD's NVD design center, which is an American MNC located in Penang.

Transfer of Embodied Knowledge

The spread of synergies generated by developmental firms in Penang to local firms could not have reached high levels without the active intermediary role of PDC and the Penang government. The PDC also actively participated – directly and indirectly – to match potentially capable local firms with the developmental firms. Also collective action

problems such as scale and scope involving training were resolved by PDC, which translated MNC demand into the formation of the Penang Skills Development Center (PSDC) in 1989 and in the 1990s the Penang Design Center. The PDC initiated the opening of the PSDC by offering a highly subsidized building – charging a symbolic rent of RM1 a year instead of the market rate estimated at RM1 million a year.[15] The PDC and Penang government also actively promoted the growth of local innovation. Trans Capital, UNICO and Globetronics are examples that have benefited from such thrusts. Its critical role was also instrumental in attracting capitalization of Globetronics from Malaysian Technology Development Corporation (MTDC).

The founding of Trans Capital, Unico and Globetronics in the 1990s added a new dimension to Penang. These firms raised local demand for skills needed for "front-end" operations like chip design, systems integration, and applications engineering in Penang. In addition to offering demand for the absorption of R&D personnel from MNCs, these firms helped to widen knowledge accumulation in local firms, though the lack of R&D scientists and engineers in the country has reduced the expansion to a much smaller scale.

Entrepreneurial and developmental firms strive to raise the skill levels of their employees to be state of the art – using a long term vision of human resource development to drive capability building and competitiveness. Employees acquiring knowledge and skills by doing in firms work at the frontier of skill levels. The importance of local skill development cannot be over emphasized. Company CEOs in electronics MNCs insist that the application of Total Quality Management (TQM) requires that they continuously strife to improve operations at all levels. While PDC and the government have recognized the size of this problem and thus have been trying to diversify their training activities vertically as well as horizontally, interviews show growing shortfalls in the supply of skilled and technical labor to broaden designing activities in Penang. Managing Directors of Intel, AMD and Motorola reported looking out for such Malaysian expertise in universities both locally and abroad.

The open integrated business networks in Penang have strengthened its capacity to stimulate the movement of human capital embodied with tacit and experiential knowledge from older firms for new firm creation. A major vehicle for the absorption of entrepreneurs, technical and skilled human capital has been through dissimilar product lines created in the production dynamics of developmental firms. Intel, Micro Machining (renamed as Micro Components Technology and sold in 1989 to Towam) and Motorola have been important training grounds for the creation of new entrepreneurs in Penang. Human capital with tacit and experiential knowledge acquired in MNCs has been critical in driving linkages and the transfer of knowledge in local firms. The continuous movement of personnel trained in the developmental firms has boosted the pool of entrepreneurs, technicians and skilled machinists to open new firms. The increasing outsourcing of

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[15] Interviews by the author (1999; 2001).

dissimilar products and technology transfer has also expanded demand for local suppliers in Penang, such that the number of ancillary firms linked to electronics MNCs and their suppliers expanded around three-fold in the period 1989-1993, and 1993-1998. Estimates from industry association officials show that it expanded from around 45 firms in 1989 to around 155 firms in 1993 and 455 in 2001.[16]

In addition, rapid process and product upgrades achieved by local suppliers such as Trans Capital, LKT and Eng Teknologi – through constant in-house process engineering improvements and smooth technology interfacing with MNCs - have also offered MNCs in Penang world class supplies. Especially disk drive and computer assembly firms in Penang have developed a strong supplier base that is driven by experienced entrepreneurs, technicians and skilled personnel. Hence, there are not only a larger number of local suppliers linked to electronics MNCs in Penang (see Rasiah, 2002: Table 5), they have also developed stronger technological capabilities than suppliers in the Kelang Valley (see Rasiah, 2002: Table 6). However, entrepreneurs in Penang are hardly involved in new product development, and the lack of a critical mass of high tech human capital has restricted its capacity to reach the technological dynamism achieved by the Silicon Valley. Supporting firms in Penang have to move towards greater R&D activities so that they participate equally with MNCs in the development of new products. Movement to new product development and systems integration activities will enable supplier firms to appropriate market opportunities better from the continuous technological synergies emanating from MNCs. Systems integration capabilities associated with strong inter-firm and institutional network cohesion will also offer the high tech support firms need for continuous integration and re-integration. Penang's deficiency in the supply of high tech human capital must be overcome – through expansion in high tech education and imports – to stimulate new product development.

The increased differentiation and division of labor helped raise slightly local sourcing by Penang's electronics industry from RM1.6 billion in 1996 to RM1.9 billion in 1997.[17] The average per-firm local sourcing figures show a slight rise from RM56.1 million in 1995 to RM57.9 million in 1997. The breakdown using 10 major companies in the respective categories for local sourcing of total purchases in 1998 were 40-50 percent for consumer electronics, 4-10 percent for semiconductor components, 20-40 percent for other electronics components and communication equipment and 13-60 percent for computers and peripherals in 1998.[18] The significance of production links in the Penang network is demonstrated more by the expansion of local suppliers rather than their supplies to MNCs. Value added recorded by Penang's electronics' ancillary firms rose from RM257.6 million in 1990 to RM736.2 million in 1996. Penang's machine tool supplier firms also show significantly higher technological deepening – using both human capital, process

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[16] Interviews by the author (1995; 2001).

[17] Based on 32 electronics companies that responded to the PDC Industrial Surveys for three consecutive years.

[18] Derived from PDC surveys.

technology and precision machinery indexes as proxies – than Kelang Valley firms (see Tables 4 and 5).

Increased differentiation and division of labor has encouraged greater specialization in Penang. However, the lack of human capital supply and R&D capabilities in the face of rising production costs and competition from cheap cost sites such as China and Philippines is threatening to stall further differentiation and division of labor. The lack of new product development and systems integration capabilities has impeded the evolution of high value added activities such as software development, TFT screens and high precision machinery – all of which are sourced by MNCs from abroad. Examples of such components include fabricated wafers, TFT-LCD, STN-TFT, aluminum and lead frames. Silterra – located in Kulim – might generate some local supplies of fabricated wafers, though MNCs are likely to import most of their demand from abroad.

Klang Valley: Uncoordinated and porous

Klang Valley was better endowed than Penang when the first major influx of electronics MNCs located in Malaysia in the early 1970s. Matsushita – Malaysia's first electric and electronics firm – relocated operations in the Kelang Valley in 1965. The administrative capital until 1998, the promotional agency of MIDA, and federal support were strongest in the Klang Valley. While Malaysia's capital changed to Putra Jaya in 1998, Kuala Lumpur has remained the commercial hub of the country. Negeri Sembilan and Melaka benefited from the spillover effects from expansion in the Klang Valley. Hence, the Klang Valley has achieved rapid industrialization. The concentration of electronics firms and institutions in the region offered considerable room for the development of entrepreneurs, technical and skilled human capital from new firm creation.

The Klang Valley has built high volume production capabilities in consumer electronics (e.g. television sets, video and audio equipment), semiconductors, disk drives and picture tubes. However, many of these parts and components have remained as elements in global production networks, which are coordinated from parent plants of MNCs.

The Kelang Valley lacks network cohesion and hence has developed much less knowledge spillovers to stimulate inter-firm links and new firm creation. While different sub-species exists, the region lacks well-connected species of firms so that the whole will exceed the sum of the parts. Hence, while the latent potential for in-firm development of tacit and experiential knowledge is strong, the lack of network cohesion has restricted deepening, appropriation and inter-firm flow in the Kelang Valley. The lack of network cohesion to stimulate movement of tacit and experiential knowledge embodied in entrepreneurs, professional, technical and skilled personnel has restricted new firm creation capabilities in the Kelang Valley.

Differentiation and Division of Labor

Despite enjoying a concentration of manufacturing firms, the Kelang Valley lacks strong inter-firm links. Electronics MNCs have supplanted supply requirements by either importing or sourcing from their own subsidiaries in Malaysia. For example, Taiwanese owned Chungwa Picture Tubes has a range of suppliers of its own in Shah Alam. A number of high value added components such as LCD displays and TFT screens are imported from their subsidiaries or suppliers located in at home-sites. Local firms such as Sapura and OYL electronics have not been able to penetrate significantly intermediate MNC markets in the Klang Valley. Japanese, Taiwanese and South Korean firms generally supply the critical components sourced domestically to their mother firms.

The low level of inter-firm division of labor has reduced the flow of knowledge between firms. A limited number of local suppliers in the same region supply MNCs, but are all confined to non-core components. The lack of differentiation has constrained supply networks to first-tier suppliers with no further layers below them. Procurement officers in four Japanese firms involved in the assembly of videos, CTVs and car air-conditioners in Bangi reported sourcing core components from either other Japanese suppliers or from their own sister subsidiaries in Malaysia. Capannelli (1999, p. 213) reported a similar finding:

> Although the strategy of intra-group sourcing varied among the assemblers, as a general rule, the parts involving core technologies were often procured from sister companies of the same group. In contrast, the lower-end technology parts were mainly supplied by "Malaysian" firms. In several cases these input makers were joint ventures with third country firms from Singapore and Taiwan.... Finally another category of suppliers consisted of firms whose ownership was entirely non-Malaysian Such firms included American, European, South Korean and Taiwanese...

Capannelli (1999, p. 233) also showed that only about a fourth of Japanese consumer electronics firms' sourcing in Kuala Lumpur were from Malaysian firms. Suppliers operating from Southeast Asia – primarily Japanese owned – accounted for 60 percent of the supplies.

Four other studies also reported weak production linkages between MNCs and local firms in the Klang Valley (Rasiah, 1996 & 1999; 2002; Narayanan, 1997). Supplier firms in these areas have hardly passed the first stage of technology transfer (adoption). Hence, human capital in supplier firms in the Kelang Valley has not been exposed to strong tacit and experiential knowledge beyond the second stage of absorption. Instead of local firms creating synergies from an extensive division of labor as in Penang, MNCs source minimally and directly from first-tier suppliers.

American and European firms source far less locally in the Klang Valley than in Penang. Motorola, Texas Instruments, Western Digital and Intersil reported sourcing between 2

to 20 percent of their purchases locally. Swedish owned Ericsson reported sourcing around 45 percent of its purchases from domestic firms, primarily from other foreign MNCs. Japanese, Taiwanese and South Korean firms source most of their supplies from firms of their own nationalities – a consequence of poor network cohesion rather than national idiosyncracies.[19] Given the weak technological capabilities of local suppliers, American and European firms either source directly from the foreign East Asian and Singaporean firms or import. Motorola in Sungai Way and Intersil in Ulu Klang reported sourcing higher value added supplies from local firms located in Penang (Rasiah, 1996). Texas Instruments reported accessing machinery supplies from its subsidiary in Singapore.

A study of linkages between four electronics companies and four local suppliers in the Klang Valley found that the latter has evolved little over the years (Rasiah, 2002). Only one of the four local suppliers had gained tacit and experiential knowledge from working as an employee of MNCs in the Kelang Valley. Interviews in 1999 showed that:

> The first-tier local vendors (those who had the first links with the electronics sector firms) still perform low-end activities outsourced by MNCs. Few second tier firms exist. When they do exist, the first-tier firms are either owned by Japanese firms, or both the first and second tiers are owned by Taiwanese, Singaporean and South Korean firms. Hence the division of labor between firms is very low, while within firms high.[20]

Not only are there fewer suppliers linked to electronics MNCs (see Table 1 for 1993 figures), these firms have also developed weak technological capabilities when compared to Penang firms (see Tables 4 and 5 for 1993 figures). JVC, Toshiba, Sony, NEC, Fujitsu and Hitachi reported attempting to increase local sourcing following promotional efforts by the government under the subcontract exchange program (SEP) and the vendor development program (VDP) instituted in the late 1980s. Each MNC has attempted to use three to four suppliers for low-end inputs, including plastic injection molding. However, local firms enjoying supply relationships with MNCs do not have a division of labor vertically below them. Suppliers reported obtaining low margins due to competition created between them by the MNC clients. MNCs reported that local firms were undermining their competitiveness because of costly and poor quality supplies offered by them. Such cut-throat business strategies have undermined systems integration potential.

Interviews with 16 firms in the central states in 1999 suggest that MNC electronics component firms source between 2 and 10 percent of their inputs locally.[21] The commensurate figures for MNC consumer, and MNC computer peripherals firms operating in the central states ranged between 40 and 60 percent and 20 and 70 percent respectively. These figures included inputs from foreign suppliers operating in Malaysia.

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19 Interviews by the author (2002).
20 Interviews conducted by author (1999; 2001).
21 Interviews conducted by author (1999; 2001) and Chang, Colin (1999).

In the absence of a coordinating body to stimulate the initial solutions related to information flow, connectivity and identification of latent capabilities, MNCs in the central states have operated essentially truncatedly with little linkages domestically. As a senior officer of Motorola put it:

> The risk of failure is just too high. Private firms generally do not individually search and canvas for greater inter-firm collaboration and sourcing when known suppliers do not exist. It was possible in Penang because of the dynamic role of PDC, which created deliberation councils and took on a proactive role of promoting and matching firms. We will be glad to assist if some reliable organization assumes such a role here. We are aware of these developments from the operations of our telecommunications components and products subsidiary in Penang.[22]

Hence, while MNCs are increasingly outsourcing manufacturing activities, the lack of systemic coordination in Kelang Valley has constrained inter-firm relations, which has seriously limited network synergies. MNCs generally source from abroad or internalize production of dissimilar activities, which explains why the intra-firm division of labor in the Kelang Valley has been high, while that between firms low. Most supplier firms in the Kelang Valley show no backward production linkages. The lack of connectivity and network cohesion has reduced the movement of tacit and experiential embodied in human capital to engender new firm creation, differentiation and specialization.

Little Movement of Embodied Knowledge

Open systems MNCs such as Motorola have their biggest Malaysian operations in Petaling Jaya, but the synergies generated in the Kelang Valley has not been appropriated effectively to support new firm creation on a large scale. Support organizations such the SEDC of Selangor have hardly played intermediary roles to gather and disseminate information, coordinate the matching of firms and appraise economic performance in such detailed areas as technology and skills development, R&D, linkages and clustering. The Selangor SEDC has not played a proactive role in the Kelang Valley.[23]

While a number of developmental firms in the Klang Valley have incorporated incremental engineering capabilities in-house, weak supplier support and the lack of firm-specific skills development and technical professionals has restricted headquarters ability to transfer sophisticated technologies to the central states. Where such transfers have occurred, it is confined largely to in-house developments as with Matsushita Air-conditioners. Nevertheless, the emphasis on redesigning older technologies in Klang Valley firms does demonstrate the potential for higher human capital synergies despite the lack of inter-firm linkages.[24] The lack of systemic relations between firms and support institutions and the community has restricted the movement of entrepreneurs, professionals, technicians and skilled

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[22] Interview by author (1999; 2001).
[23] Interviews by author in 1990 and 1999.
[24] Interviews by author (1999; 2002).

personnel developed in MNCs to start new firms in the region. Eight managers reported interest in starting their own firms after detecting considerable market potential for specialized capabilities, but have stuck with their MNCs owing to a lack of institutional support.[25]

The lower level of inter-firm human capital movement in the Klang Valley is also the result of a much lower proportion of outsourcing by local firms. In Penang, MNCs – especially Intel and Motorola – have actively developed local firms to meet their qualitative and quantitative requirements. Eng Technology, LKT, Prodelcon, Metfab and SEM are among the several firms who have directly benefited from such active developmental roles of MNCs. No MNC in the Klang Valley reported developing local firms, stating that state institutions have not stimulated such activities. Local supporting firms in the Klang Valley accounted for less than 13 percent of MNC purchases (Narayanan, 1997, p. 23).

The scale of transfer of entrepreneurs, professionals, technicians and skilled personnel to local firms from MNCs has been limited. The limited transfers have involved movement of personnel to new MNC start-ups. Human capital deepening has occurred in local divisions of MNCs fostering technology transfer, particularly via skilled personnel moving to local firms.

> Motorola, Texas Instruments, Intersil, Hitachi, Sony and Matsushita Electric reported that former personnel were hired by local firms such as Unisem, Carsem and OYL Electronics.[26]

Also, the extent of inter-firm training relationships involving MNC assistance to local firms has been quite limited. Much of it comes through the support of business councils representing the different foreign nationalities. Examples include JETRO and JACTIM and American Business Council. Because much of the drive has revolved around effective business-government relations to safeguard their own firms' activities, little efforts have gone beyond national interests. The Japanese, German and French have promoted their own training centers in the Kelang Valley, which lack cross-national coordination without significant spillovers to the local economy. Japanese cooperation has included training of tool and die makers, and the Germans on precision engineering. Japanese participation in the development of supplier firms involved in molds, tools, dies, jigs and fixtures in the Klang Valley have been important. However, much of the support has involved low-end supplier activities. Much of the high-end supplies are sourced from Japanese suppliers located in Malaysia and abroad.[27]

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[25] Interviews by author (1999; 2002).
[26] Interviews by author (1999; 2001-2002).
[27] Interviews by author (1999; 2001) and Chang, Colin (1999).

Uncoordinated Species

The Kelang Valley enjoys a range of sub-species of electronics industries transplanted from abroad. Unlike Penang, the closed and generally opaque business networks have restricted the capacity of developmental firms to generate spillovers of dissimilar activities to other firms. Dissimilar complementary products are either imported or produced in-house. The Kelang Valley lacks the capacity for engendering techno-diversity to strengthen cluster dynamics and new firm creation. Hence, the Kelang Valley has not developed speciation capabilities at all – including sub-species of industries not new to the universe.

The lack of systemic coordination in industrial promotion has meant that new species of firms are not attracted systematically to further clustering. The Kelang Valley either lacks a critical mass of firms (e.g. disk drives) or where sufficient numbers exist they are not connected to generate systemic synergies. While the relocation of sub-clusters of industrial species and the development of supporting industry species helped industries clustering achieve considerable network synergies in Penang, the lack of both has reduced the Kelang Valley to a porous conurbation.

While considerable technological and product diversity has emerged in the Kelang Valley, most firms do not show strong levels of connectivity between each other. The disconnected operations of firms and a lack of techno-diversity have seriously impeded the creation and appropriation of cluster synergies. The bigger and more successful local firms tend to operate without production links with MNCs. Hence market opportunities arising from technological constraints generated from the continuous reconstitution of production in MNCs have not been appropriated in the Kelang Valley. Where such MNC-local firms links exist they are generally confined to technology tie-ups as between Sapura and Nokia and OYL and York.

The emergence of Sapura and OYL Electronics benefited little from sourcing links with MNCs in the Klang Valley, though MNC-trained local personnel have been instrumental in their growth. Sapura and OYL have R&D capabilities and export extensively telecommunication products and air-conditioners respectively.

Despite limitations, MNCs in the Kelang Valley offer state-of-the-art manufacturing and rapid ramp-up to high performance capabilities, but confined largely to mass assembly and test and partially developed flexible production capabilities. However, unlike Penang, the Klang Valley firms do not offer strong market-led or design-led start up opportunities. However, unlike Penang where network cohesion and strong intermediation by the Penang government and PDC has helped the growth of new firms, the pool of managers from the Kelang Valley have generally either remained in their firms or left to join newly relocating MNCs.

Knowledge Upgrading

MNCs have developed world class in-house manufacturing capabilities in the Kelang Valley that use mass production capabilities including JIT, MRP2 and TQM systems.

These production practices enable participation in world-class performance standards in cost, quality, and time, though rising costs has made China, Thailand and Philippines more attractive from the mid-1990s. The shortage of scientists and engineers in Malaysia and restrictive immigration policies – with the exception of the MSC region where IT firms enjoy a waiver to import high tech human capital from abroad – has undermined the capacity of the region to make the transition to higher value added activities.

The in-house skill formation process is considerable in the Kelang Valley. Many of the large American and Japanese companies invest sizeable amounts, individually and collectively, in shop-floor skills. Although the region lacks institutional support, which has restricted the outflow of entrepreneurs from MNCs to new firms, the potential created can be utilized to spawn a critical mass of entrepreneurial firms if the right policy is adopted. However the lack of clustering and strong inter-firm relations has reduced the outflow of technical and managerial human capital for large-scale new firm creation. The lack of employee outflow to other firms, especially to start new ones irrespective of the ownership background of the MNCs suggest that systemic conditions are important in explaining inter-firm movement of managerial and technical personnel.

MNCs in the Klang Valley have concentrated their innovative activities more on process developments, but still face considerable problems. While human capital in these firms has acquired considerable tacit and experiential knowledge, the lack of strong network cohesion has restricted symmetric interface for horizontal integration. The lack of network cohesion has restricted their capacity to upgrade operations through continuous process engineering improvements. R&D is confined to adaptations and minor extensions. A few MNC exceptions include the development of split-level air-conditioners developed by Matsushita air-conditioners in Shah Alam. The latter emerged from a well-defined R&D department that focuses on product adaptation and development. Matsushita operates using a flexible production model, approximating the Toyota multi-flow system. Matsushita's marketing division is quite developed to handle customization.[28] Weak network cohesion has limited the room for personnel exposed to adaptation to carry their tacit and experiential knowledge to new firms. The Malaysian executive director of the firm reported that their product enhancement activities would be strongly magnified if more qualified R&D personnel were made available in the country. Serious shortfalls in the supply of technical and R&D personnel was reported as a major constraint in their efforts to expand innovative activities in the Kelang Valley.

Companies such as Texas Instruments, Intersil, Matsushita, Sony and Toshiba have not attracted or developed world-class first-tier suppliers including contract manufacturers, which has seriously affected clustering. Most MNCs use JIT, MRP2 and TQM practices, but continue to retain in-house a number of even dissimilar activities such as machine tool support. Where specialized components are needed, such as microchips and lead

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[28] Interviews by author (1999; 2001)

frames, they are primarily bought from firms in Penang, Singapore, Taiwan, South Korea and Japan. The lack of a developed computer and peripherals sub-sector in these states has restricted the purchase of microchips from semiconductor firms. The limited needs of the Klang Valley and Southern states are primarily purchased from Penang and Singapore. Meanwhile in addition to purchasing major machinery from abroad, Texas Instruments sources its machinery supplies from its subsidiary in Singapore.

Eight MNCs interviewed in the Klang Valley, Negeri Sembilan and Melaka contended that their operations will be enhanced if local suppliers develop to substitute imports. As Roger Bertelson of Motorola noted in 1995:

> We are for greater sourcing as that would raise our productive flexibility and lower costs. Our official contacts with government bodies has always been with MIDA and MITI. These two bodies only encourage local sourcing through formal investment guidelines but do not actively participate in building relationships. We don't see any other institutions even approaching us to stimulate local sourcing. (Rasiah, 1999, p. 14).

The lack of systemic coordination has reduced the capacity of Kelang Valley to raise raise the network cohesion necessary to stimulate differentiation and division of labor. Driven by similar capabilities and market structures as with the semiconductor and consumer electronics MNCs in Penang, MNCs in the Klang Valley reported having interest in assisting the development of local suppliers if the requisite coordinating framework is put in place.

A number of Japanese and Taiwanese firms act as anchor firms, which has helped create supplier links. In the Klang Valley, anchor firms include Matsushita group of air-conditioner companies, Sony Group of TV/Video companies, Motorola, Tamura Electronics, Chunghwa Picture Tube Component, Formosa Prosonic Technics and Quality Technologies Opto. Examples of local-entrepreneur-led anchors in the Klang Valley include Sapura, OYL, M-SMM Electronics and Jasa Kita. They usually license their technology from the market. These firms have been largely started by entrepreneurs with federal government support. The anchors offer markets and technological support for foreign and local firms. However, interviews show that most local suppliers are limited to low value-added non-core activities. Hence, the extensive localization of air-conditioner, television, video and refrigerator component supplies has largely been confined to low value-added activities. Key technologies such as LCD are still imported from Japan, South Korea and Taiwan. All development work on audio and video equipment, including Discman and Internet music players is done at headquarters abroad. Local firms such as OYL and Sapura are exceptions in that they have R&D operations, but they have yet to launch new products. Firms such as MEC have also entered production by building their knowledge of the domestic consumer market. These firms show little production linkages in the domestic economy. Not only is the production division of labor either non-existent or generally limited to one supplier firm, supplier firms hardly participate in any form of product designing or development.

The success of PSDC in Penang led to the modelling of the Selangor Human Resource Development Center (SHRDC) in the Kelang Valley. However, unlike effective coordination between firms and institutions achieved through the role of PDC, the SHRDC lacks similar coordination dynamism from intermediary organizations. There is also a lack of institutional coordination and cooperation to strengthen relationships between firms. Apart from uncoordinated assistance from intra-national organizations such as American Business Council, JACTIM, JETRO and German Malaysian Institute (GMI), the extent of inter-firm coordination in the development and distribution of human capital is limited. The participation of MNCs in deliberation councils has also be passive. Similarly, electronics firms enjoy little collaborative links on training and R&D with universities in the region. Yet, the Kelang Valley has more than eight public and private universities in 2000.[29] The lack of systemic coordination has also left collective action problems associated with actions related to scale, scope and learning externalities such as training and R&D unresolved. The SEDCs have not assumed such a role in the Kelang Valley. Hence, MNCs and local firms face considerable collective action problems from the lack of institutions to service continuous market development and technical training.

In short, despite the long history and presence of a critical mass of electronics MNCs, the Kelang Valley has lacked significant levels of upgrading and clustering. Kelang Valley has particularly lacked the development of entrepreneurs for new firm creation. While a myriad of industries exist, four fundamental problems have undermined the region's capacity to engender upgrading and clustering. First, low levels of connectivity and inter-firm links has reduced the capacity of the region to stimulate the movement of entrepreneurs, professionals, technicians and skilled personnel to support new firm creation. Second, the lack of a coherent institutional strategy to attract a critical mass of new species of firms to appropriate systemic synergies as well as to stimulate the creation of sub-species of industries that are new to the region (e.g. machine tools and plastics) has reduced the room for differentiation and division of labor. Third, the lack of differentiation and division of labor has constrained the capacity of the region to generate tacit and experiential knowledge embodied in human capital. Fourth, the lack of systemic coordination has constrained the ability of firms to resolve collective action problems associated with human capital development.

4 IMPLICATIONS FOR POLICY

The empirical evidence from Malaysia generates five important implications for theory and policy. First, a strong high technology infrastructure is critical to stimulate firms' participation in high value added activities such as in new product development. Penang's deficiency is apparent particularly R&D human capital to drive it - has reduced the capacity of entrepreneurs to innovate on a large scale. For firms to participate in high value added activities on a large scale, a critical mass of tertiary and R&D human capital supply is

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[29] Interviews by the author (2002).

necessary. Second, network cohesion is necessary for engendering systemic synergies for the development and movement of entrepreneurs, professional, technical and skilled personnel from one firm to another. Network cohesion is critical in inter-firm relations and links between intermediary organizations, government departments and firms. The lack of network cohesion has reduced the Kelang Valley conurbation of electronics firms to truncated operations with little inter-firm relations. Third, there must be sufficient numbers of open framework firms to condition particular clusters with properties of ease of entry and exit so that entrepreneurs developed will leave to start new firms. Fourth, where the active drivers of production and innovation – i.e. human capital – are lacking – immigration conditions must be open to imports to overcome demand-supply gaps from widening. Fifth and finally, where the specific systemic properties of superior regions that generate particular human capital attributes are difficult to be transplanted, firms should seek relocation initiatives to exploit the benefits of such host-sites.

Systemic Coordination and Network Cohesion

The implementation of efficient flexible production systems and re-engineering capabilities require strong supplier capabilities and systemic coordination. Strong systemic coordination and network cohesion has stimulated MNCs active participation to strengthen inter-firm links in Penang.

The government's role of being the provider and coordinator of basic infrastructure was similar between the two locations throughout the 30 years of MNC-driven electronics manufacturing operations in Penang and Kelang Valley. In addition to the development and installation of roads, drains, water, electricity, telecommunication lines and access to other basic needs such as hospitals and clinics, the Penang Development Corporation in Penang and the Malaysian Industrial Development Corporation in the Kelang Valley coordinate any blips in supply. Both locations have enjoyed similar systemic support involving basic infrastructure.

However, the coordination of the rest of the support services differ in the two locations. The Penang government and the PDC actively encouraged inter-firm links by initiating networks. A range of contacts – from past schooling connections to relationships cultivated in industry associations and chambers of commerce – helped forge a relatively cohesive community to build social capital and relationships.

From the coordination of basic infrastructure such as transport, the PDC acted as an intermediary to initiate several important developments in Penang. The PDC accelerated the development of local suppliers by initiating several dialogues between electronics MNCs and potential local suppliers. The initial growth of machine tool, plastic injection moulds firms such as Eng Hardware, Loh Kim Teow, Loshta, Sanda Plastics and Precico – themselves stimulated by considerable movement of knowhow through both human capital transfers and formal technical support – offered new entrepreneurs the confidence

to leave MNCs and start their own firms. Prodelcon, Polytool, Metfab and Rapid Synergy are some of the next batch of firms that were started by former employees of National Semiconductor.

The PDC was instrumental in the founding of the PSDC to support off firm training that is uneconomic for firms to internalize. This role becomes even more critical for underdeveloped structures where firms lack the maturity and critical mass to leave such functions wholly to markets. In fact the PDC subsidized heavily the premises of the PDC.

Working on the suggestions of industry-government coordination council, the PDC actively sought to establish stronger ties between Universiti Sains Malaysia scientists and engineers, and the firms. Similar initiatives took place between MIMOS and firms in the Kelang Valley. These initiatives generally failed to strengthen participation in firms' R&D operations by university personnel in Malaysia. University and schooling institutions are governed directly by the Ministry of Education headquartered in Kuala Lumpur. Participation exists on a limited scale, developed on the basis of intimate relationships established between particular academics and company officials.[30]

The Penang government also actively sought species of industries, which were not new to the universe but new to the region from the 1980s. Unlike the 1970s when the efforts had no technical focus, from the late 1980s the government approached targeted industries with the objective of stimulating industrial upgrading and adding greater differentiation to the region (Rasiah, 1995). The Kelang Valley did not enjoy similar selective promotional strategies and hence the synergies generated was much less than in Penang.

Better institutional coordination involving firms and institutions helped form a dynamic platform for systemic links, which ensured that the mechanisms of governance were connected and oiled smoothly. The Penang government diversified from confinement of their roles to the development and provision of basic infrastructure to participate more actively in developing the institutions to support inter-firm relations, training organizations and engage strongly in bargaining with the federal government to encourage investment incentives to a wider range of local firms and build high tech infrastructure. The Kelang Valley enjoyed these initiatives directly from the federal government, whose critical organizations were located there. Proactive Penang enjoyed far higher systemic synergies than the Kelang Valley, and hence enjoyed higher synergies.

Firms as Training Grounds

It can be seen that open systems formations of firms offer a dynamic channel for the entry of personnel to accumulate tacit and experiential knowledge, which is then carried to new firms when they exit. In regions where institutional and organizational innovations are

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[30] Samion Abdullah (Interviews, 1995-1997) reported similar findings from his research.

at the frontier, the entry of fresh personnel offers room for the infusion of new ideas. Young entrants bring new ideas and some more receptive to change in older firms while mature employees carry tacit and experiential knowledge to new firms. Both Malaysian electronics conurbation examined in this paper lack institutional and organizational innovation capabilities at the frontier. The lack of a critical mass of R&D human capital and R&D institutions has constrained the development of cutting edge capabilities on a large scale in the Kelang Valley. Hence, parent firms still dominate the supply of ideas and process knowhow used by mature subsidiaries at host-sites in Malaysia. Nevertheless, Penang has achieved greater adaptive capabilities to meet local conditions.

The need for efficient supplier networks to strengthen production flexibility drove several MNCs to support the development of local firms. The externalization of complementary but dissimilar product lines and the transmission of changes in input demands – both production inputs and machine tool support – required the participation of world class suppliers. Since production coordination required proximate spaces, a strong interface evolved between demand (market opportunities) constraints) and supply (technological constraints). Given the underdeveloped state of supplier firms initially, technical, managerial and other professional staff with tacit and experiential knowledge had to be created to support new firm creation. Hence, MNCs became an important vehicle for the creation and supply of entrepreneurs to start new firms, or professionals, technicians and skilled personnel to support emerging firms.

Technicians, engineers, managers and other skilled professionals easily moved from one firm to another and on numerous cases to start new firms. The precision engineering firms of Prodelcon, Metfab, Polytool and Rapid Synergy were began by engineers who gained their tacit and experiential knowledge from working in Micro Machining, which was then a subsidiary of National Semiconductor. Similar experiences involved the movement of personnel from Intel who started the local firms of Globetronics, Unico, Shinca, Shintel and Sanmatech. Newly relocating MNCs such as Komag, Quantum, read-rite, Conner Peripherals and Solectron also benefited from such entrepreneurial synergies. The lack of network cohesion restricted the movement of tacit and experiential knowledge embodied in human capital in the Kelang Valley. New firms not only lacked supply of entrepreneurs but also professional, technical and skilled personnel. The local firms of Sapura, OYL Electronics generally either trained fresh graduates, hired staff from employees with experience from other industries or from electronics MNCs in Penang.

Regional Innovation Capabilities

Entrepreneurs lead industrial dynamism in particular locations. However, for the progression of industrial dynamics from mere assembly and minor innovations operations to the frontiers of new product development, institutional mechanisms geared towards supporting R&D and innovation is critical. Unlike scientists and technologists, entrepreneurs by definition will be unwilling to face uncertainty. Entrepreneurs will not be attracted to investments when the potential returns are lower than the risks involved. R&D support

institutions are necessary to stimulate entrepreneurs' participation in innovative activities on a large scale. In addition to R&D human capital, regions also require high tech infrastructure such as university-industry links, R&D labs and complementing grants – all of involve serious collective action problems. The lessons generated from Penang and Kelang Valley is that strong systemic coordination – including the direct state support initially - is necessary to overcome shortcomings associated with the supply of R&D infrastructure. Interventions in markets to resolve collective action problems associated with R&D will be higher in underdeveloped regions given the scale of uncertainties. The technological trajectory of firms' metaphomosis includes new product development only when the requisite R&D support institutions exist. One way of ameliorating this problem is to integrate Penang's localized form of systemic coordination at the national level.

Two major pillars of R&D need state support, *viz.*, high tech human capital and support or protection to stimulate investment in uncertain research and scaling aspects. Given that rents (see Marshal, 1920) are involved when intervention to subsidize or protect occurs (e.g. patents and tariffs), such efforts could generate government failures. However, given that high tech human capital (e.g. scientists and engineers), and public financing of basic, and scaling and commercialization activities is critical to support innovations at the technology frontier, selective interventions are unavoidable. Selective interventions are necessary but not sufficient conditions for stimulating risky productive activities. Deficiencies exist with both Malaysian electronics conurbation. Whether driven by MNCs or local firms, institutions are necessary to produce the high tech human capital necessary to drive firms' participation and R&D institutions in innovation activities.

Hence, it is critical that regions build their high tech infrastructure – engendering requiring strong government support – to supply the innovative capabilities necessary to drive entrepreneurs to the technology frontier. Government participation becomes even stronger in infant regions whose demand for innovations begin to outstrip supply. Japan, Korea and Taiwan began with strong government funding of R&D operations. Although private funding of R&D has overtaken government funding, governments still support R&D operations in a number of critical areas.

Open National Systems

Regions characterized national innovation systems open to the inflow of foreign high tech human capital have managed to overcome shortcomings associated with widening demand-supply human capital deficits to drive innovative activities. The successful pursuit of open national systems framework to attract human capital from abroad – including entrepreneurs is exemplified by the growth of new firms in the Silicon Valley (Saxenian, 1999).

The Malaysian government restricted the immigration of professional human capital to drive firms – MNCs and local firms – transition from low to high value added activities. Firms with the most developed innovation capabilities in Penang reported serious shortcomings with available labor and have constantly called the government to relax

immigration controls involving high tech human capital. The Kelang valleya managed to extract these benefits from 1997, but only in locations classified under the Multimedia Super Corridor (MSC), and confined to IT companies. The demands are even higher in Malaysia where growing demand-supply human capital gaps have constrained the capacity of regions to support innovative activities. Social and political structures that inhibit the flow of tacit and experiential knowledge embodied in human capital are likely to generate sub-optimal synergies.

The lack of high tech human capital endowments has restricted Penang firms' participation in high value added activities. Some regions have overcome such deficiencies by importing foreign human capital. Small economies such as Ireland, Israel and Singapore have relied extensively on selective immigration policies to drive industrial upgrading and the development of innovation capabilities. Selective immigration policies have also been instrumental in the United States attracting large numbers of foreign human capital to drive production and innovation capabilities in such high tech industries as information technology. The Silicon Valley has also benefited considerably from numerous start-ups by foreigners (see Saxenian, 1999).

The second critical variable involving open systems networks relates to firms capacity to exploit different regional systems of innovation within national systems.[31] MNCs appropriate innovation capabilities by targeting particular locations to tap capabilities. Intel access as tremendous innovation synergies by having a key R&D plant in Israel. IBM and Microsoft have operations in Bangalore to tap software-engineering capabilities. While firms from Malaysia, especially from Penang (e.g. Eng Technology and Atlan) have multinational operations, they have not evolved to tap human capital capabilities abroad for new product development. These firms' relocation abroad have been driven by pressures to relocate close to its MNC buyers, and access low wage labor.

Given that innovation systems cannot easily be transplanted, domestic firms should seek to relocate operations in dynamic regional syatems to exploit their specific human capital endowments. In addition to long gestation periods, institutional gaps and cultural conditions often raise the transactions costs forcing firms to seek the relocation alternative than to canvass for its development domestically.

The upgrading seen in MNCs' operations has taken production processes and organizational structures to the technological frontier. MNCs and first-tier suppliers in Penang have absorbed and diffused state of the art inventory, organizational and quality control processes such as JIT, TPM, QCCs, SGA, ISO9000 series, MRP2 and TQM systems. These production practices enable participating companies to achieve world-class performance standards in cost, quality, and time, though they lack new product development capabilities.

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[31] Regional was preferred here because of wide variations in support for and strength of innovation networks within national boundaries.

Open electronics MNCs in Penang have engendered the entry and exit of technical and managerial personnel, which has offered substantial human capital to support new firms. Skill formation in MNCs is considerable in Penang. Many of the large American and Japanese companies invested sizeable amounts, individually and collectively, shopfloor training over the last 30 years. Electronics MNCs such as Intel, Motorola, Micro Machining, HP, AMD and Fairchild have produced entrepreneurs for new firms. Hence, new firms – both MNCs and local firms – have found it easy to ramp up and run firms easily. The tacit and experiential skills gained in MNCs have become critical to support new firm creation. This is a crucial aspect of clustering, which injects greater dynamism and ensures expansion and continuity. The range of companies, services and division of labor in Penang constitute an integrated industrial district in which virtually all of the activities required to rapidly set-up and ramp up high volume production on a JIT basis are virtually co-located .

The PDC have continued to improve its intermediary role in identifying and acting on collective needs of firms and institutions and facilitating local enterprises to seize development opportunities created by the presence of MNCs. While the MNCs were the first to complain about the lack of firm-oriented training in generic skills, the PDC took the initiative quickly to bring together the stakeholders and initiate the PSDC. The PSDC has been so successful in its role to train workers on generic off-formal vocational training skills that it has become a model for other states in Malaysia. Yet, the PDC took the first step by offering a highly subsidized center for its operations.

A few firms from the supplier chains – e.g., Trans Capital, Unico and Atlan – have developed to enhance horizontal integration though the incidence is still low. The capability for rapid horizontal integration and reintegration to supply new products takes time to develop, is not easily imitated, and is problematic in high wage regions. It offers a competitive advantage platform upon which Penang can advance to higher technology management capabilities. Obvious steps are the transition to computer integrated manufacturing (CIM) for smaller volume and higher mix outputs. Penang already has developed mass and flexible production and organizational capabilities. Some firms (e.g. Dell) have established regional contract manufacturing capabilities, and there are signs that it could evolve into a regional base to supply technology related services including design services, test engineering and equipment design, component qualification, failure analysis, value analysis/value engineering and prototyping (Kimmel, 1993, p. 156; Rasiah, 1996).

Penang has built considerable networking relationships through strong social ties. Indeed, inter-firm cooperation in Penang reveals some level of the features characteristic of the industrial districts of Italy. These ties are as important as other factors in the development of supplier firms in Penang (Rasiah, 1994). The competitiveness of the Penang region has risen with greater systemic synergies, which has been driven *inter alia* by a blend of competition and cooperation between firms.

While Penang has achieved considerable systemic synergies, the future of MNC-driven clustering is increasingly threatened by the emergence of cheap cost sites in China, Philippines and Thailand. Penang's incapacity to create the instruments necessary to facilitate a sea change to higher value added activities leaves further industrialization uncertain. Five major reasons explain this uncertainty. First, growing deficits in technical and engineering human capital has restricted the transition to higher value added activities. Although poaching has fallen as integrated business networks has helped co-ordinate salary scales and staff hiring involving professional and engineering staff in the 1990s, the lack of skill and technical manpower supply has constrained the expansion of firms critical for continuous differentiation and division of labor in the industry.

Rising demand-supply gaps involving innovations has limited MNCs to only redesigning activities. A few local firms – e.g. Eng Technology - participate in some designing activities – which is new to them but not new to the universe. The most sophisticated firms such as Intel and AMD engage in redesigning of mature technologies. Even Motorola's innovation of the C2 cordless telephone was an adaptation to meet Asian customers' requirements. Local firms lack a critical mass of engineers to R&D activities despite the successful development of innovative firms like Trans Capital, Unico and Globetronics. Some firms use Universiti Sains Malaysia (USM) staff to undertake process development activities. However, despite the success of USM's innovation center, the amount of such collaboration with electronics firms is highly limited, and unrelated to product development. This is aggravated by the lack of venture capital to underwrite risks associated with financing scientists work in universities.

The underdeveloped status of venture capital has also plagued the emergence of new innovators in the state. Penang lacks mechanisms to attract product innovators among entrepreneurs. Hence, Penang lacks a major instrument of financing innovations. Silicon Valley is the biggest recipient of venture capital, which grew from less than US$5 billion in 1995 to around US$25 billion in 1999 (see Zook, 1999; Saxenian, 1994). The San Francisco Bay area recorded a venture capital investment of US18.3 billion in the period 1995-1999 (Zook, 1999: Map 1). Given the importance of personal ties in the success of venture capital, Penang open system with strong networking relationships can make this viable if only the right framework is adopted. Penang has used its social capital far better than the other locations in Malaysia and that is part of the reason why it has managed to spawn substantially more local firms than elsewhere in the country. However, these numbers are far smaller than the success achieved by Taiwan and the Silicon Valley. The Internet revolution has made networking easier and more economic. The stream of new entrepreneurs created in the state must participate in new product development to sustain rapid industrialization.[32]

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[32] The innovative development of the virus buster by Dr. Looi in Penang could be magnified through such support mechanisms.

The lack of new product development capabilities has undermined the capacity of Penang to support horizontal integration. Unless supplier firms become world class process and product innovators, Penang will not be able to achieve the extent of differentiation and speciation achieved in the Silicon Valley and Taiwan, though, it has done very well so far. Trans Capital and Globetronics are poised to achieve horizontal integration, but the amount of participation in new product development to meet requirements of major markets is still limited.

Kelang Valley

The Kelang Valley continues to remain a major industrial conurbation in Malaysia. The region's prime attraction to MNCs is its excellent basic infrastructure, proximity of federal institutions, long experience of assembly and test operations. However, electronics firms in the region suffer from strong production chain leakage and growing deficits in engineering skills, the extent and density of value networks, and the amount of entrepreneurial firms. Hence, the region's electronic industry has evolved as a weakly networked cluster with limited inter-firm connections and institutional networks.

MNCs continue to relocate in the Kelang Valley because of its strong production platform. Good infrastructure, political stability and over 30 years of electronics production experience has made the Klang Valley suitable for assembly and test operations. The Kelang Valley is still sought for the relocation of labor-intensive assembly and test operations where efficiency improvements do not depend on clustering synergies. However, labor shortages and the growing strength of China has seriously undermined its attractiveness.

MNCs enjoy quick turnaround capabilities in the Klang Valley. Also, the federal administrative authorities deal with requests quickly and favorably, though it is limited to basic infrastructure and legal services. However, Selangor's SEDC lack an effective intermediary role to match firms, strengthen coordination to increase inter-firm networking and resolve collective action problems where scale, scope and learning effects are involved – e.g. training, R&D and university-firm collaboration. MIDA to a large extent has supplanted Selangor's SEDC to play these roles, but its activities are largely primarily promotional.

A few local firms in the Klang Valley firms have built high volume production capabilities, such as in air-conditioning technology (OYL) and telephone equipment (Sapura), audio and consumer electronics (Khind) (refer Appendix 7). The emergence of these locally owned firms with increasing R&D, technology acquisition, and capabilities in technology management has stimulated the growth of some large local firms, though technology absorption and diffusion are still at the early stages (Narayanan ,1997, p. 22).

The degree of differentiation and division of labor generated in the Kelang Valley is considerably less than even Penang. Within suppliers, the vertical chain does not stretch beyond two firms when compared to four in Penang. While a few large local firms exist

(e.g. Sapura, OYL and Khind), no local firm linked in supply relationships with MNCs have achieved horizontal integration in the region.

While a number of entrepreneurial MNCs have developed experienced managers, the lack of institutional support and network cohesion in the region has restricted the flow of such personnel into the formation of new firms. Hence, while the central states enjoy the capacity for rapid set-up and ramp up to high volume production capabilities on a JIT basis, much of the expertise created continue to remain in old firms. Only if mechanisms exist to stimulate managers from developmental to gradually start new firms to expand the division of labor can cluster dynamics be strengthened.

Intermediary organizations have not played a proactive role to identify and act collectively to seize development opportunities created by the presence of MNCs. The lack of such a critical intermediary role has restricted inter-firm links and network cohesion. Hence, the Kelang Valley has failed so far to create the institutional framework to coordinate its skills training institutions to meet the needs of firms. The Human Resource Development Fund (HRDF) and other complementary institutional support incentives have been important in stimulating training. The SHRDC and the Human Resource Ministry's CIAST was reported by firms to lack effective program selection and coordination. Hence few firms – primarily MNCs participate in the SHRDC's programs.

Despite having most of the universities in the country, the Kelang Valley faces a serious shortage in the supply of scientists and engineers and R&D research facilities for electronics firms. Much of the small amount of contract research activities involving university staff is limited to process development activities. With the exception of two local firms, none of the remaining 31 firms interviewed reported performing product development research using university staff (see also Rasiah, 1996b).

Local firms in the Kelang Valley seriously lack networking skills and access to venture capital. Interviews showed several managers from MNCs keen on moving out to start their own firms, but have not made the move due to a lack of funding and the lack of network help. Seventh, there is no example of local firms achieving horizontal integration from supplier operations in the Kelang Valley. The division of labor has remained vertical. The few suppliers remain heavily dependent on MNCs and lack backward supplier support. Suppliers to anchor firms reported being under cut-throat pricing relationships with MNCs. Anchor manufacturers in the Klang Valley include those centered around air-conditioning technology, including motors, compressors and heat exchangers; television technology, including cathode ray tubes, chassis; and telephone equipment. However, while the region has large semiconductor assembly and packaging plants, the firms are distributed without many connections.

5 CONCLUSIONS

This paper examined the supply of basic and high tech human capital, and the intensity and level of clustering, in the generation and appropriation of explicit and tacit knowledge in the electronics industry in Penang and Kelang Valley. While, Penang has a long way to go to rival the competitiveness and systemic synergy generating potential of the Silicon Valley, Route 128, Emelia Romagna, Kei Hin, Hsinchu Science Park, Ireland, Israel and Singapore, it has developed considerable cluster synergies. Penang has a semblance of a dynamic cluster with considerable network cohesion to support differentiation, specialization and new firm creation.

Rapid improvements in basic schooling and infrastructure helped attract labour-intensive electronics firms from the early 1970s. However, as labour surpluses declined sharply and wages rose, and the technological intensity levels of electronics firms rose, Malaysia began to face intense pressure from newly emerging low cost sites such as China, Philippines and Vietnam. The lack of high tech human capital has seriously restricted industrial upgrading in Penang and Kelang Valley.

Firms in Penang – enjoying network cohesion - have established strong inter-firm links and links with intermediary organizations. The initial role of the Penang government (and PDC) was instrumental in the development of the PSDC for industry-oriented skills development center for resolving collective action problems involving training. The open nature of networking and relations between firms has stimulated strong interface between supply-demand match-ups in the production chain. Technological constraints in one set of firms have easily been transformed into market opportunities in another set of firms as a consequence of smooth inter-firm networks.

However, for Penang to establish dynamic clustering, it needs substantial development of human capital and innovation capabilities. Only a handful of local firms have developed new product development and associated technology management capabilities. The Silicon Valley overcame skills and technical human capital shortages by making it easy to absorb foreigners with green cards. The Malaysian government still imposes restrictive conditions on the free import of professional labor. Initiatives to attract Malaysians back are not sufficient to ameliorate this problem. In addition, there is a clear to need to initiative R&D activities beyond incentives – by building related labs and offering complementing grants to offer the initial spur. Israel, Ireland, South Korea, Singapore and Taiwan stimulated the successful transition of firms to innovative activities with extensive government support (see Rasiah, 2002).

Electronics MNCs in the Klang valley enjoy world-class production operations for pre-designed products but suffer from weak inter-firm links and networking capabilities. Support institutions hardly play effective intermediary roles to strengthen inter-firm links in these states. The Kelang Valley has much to learn from the developmental intermediary

role played by PDC, but the dynamism achieved in Penang requires adapting to meet the specificities of the Kelang Valley.

While basic education from primary and secondary schooling can play an important role to attract MNCs in the initial phase as reflected in the massive influx of electronics MNCs to Malaysia in the early 1970s, industrial upgrading, rapid new firm creation and participation in risky R&D activities would require high tech human capital and network cohesion. The government should step up the supply of technical and engineering human capital, and build R&D labs with complementing grants to stimulate new product development. As a short-term measure, the government should classify the whole of the country rather than just the area under the MSC, as a base for high tech human capital to immigrate. The Silicon Valley, Israel, Ireland and Singapore have used this strategy effectively. These developments could reverse the growing gaps involving human capital and product innovation in Penang. In addition, the dynamics of clustering to strengthen inter-firm links and greater differentiation and division of labor require greater institutional coordination from intermediary organizations in the Kelang Valley.

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