Macroeconomics and Health Initiatives in Indonesia

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List of Abbreviations

APBD	Regional Government Development Budget
APBN	National Government Development Budget
CGI	Consultative Group of Indonesia
CMH	Commission on Macroeconomics and Health
DAK	Special Allocation Fund
DASK	Programme Budget Document
DAU	General Allocation Fund
DBH	Shared Government Fund
DHA	District Health Accounts
DHO	District Health Office
GIS	Geographic Information System
IHPB	Integrated Health Planning and Budgeting
MDGs	Millennium Development Goals
MoH	Ministry of Health
NGO	Non-Governmental Organization
NHA	National Health Accounts
OECD SHA	Organization for Economic Co-operation and Development System of Health Accounts
PHER	Public Health Expenditure Review
PHO	Provincial Health Office
PRS	Poverty Reduction Strategy
PTT	Contract Official's Scheme
RASK	Work Unit Based Budgeting
UGM	University of Gadjah Mada
UI	University of Indonesia

Introduction

In order to accelerate progress towards the achievement of the Millennium Development Goals and other development targets, the WHO Commission on Macroeconomics and Health (CMH) put forward a conceptual framework for increased and effective investments into health. Emphasizing the need for a robust policy commitment by all nations, the commission prioritised improving access to health for vulnerable and poor populations by scaling-up essential health interventions and reducing the financial burden of healthcare on individuals.

A prime task of national governments is to mobilize additional resources to finance priority interventions. Indonesia has developed a system whereby CMH issues are raised through existing stakeholder mechanisms, including the Partners for Health forum which is composed of Government and development partners. Macroeconomics and health issues have also been raised at meetings of the Consultative Group of Indonesia (CGI), a group formed through high-level Government engagement with various sectors and stakeholders in Indonesia such as donors, NGOs, academics, civil society and the private sector. CGI serves as the main forum for donor coordination and policy dialogue. Chaired by the World Bank and the Government of Indonesia, CGI meets twice a year to discuss policy and financing needs related to overall development and poverty reduction.

Improving the health of impoverished populations is fundamental to economic development. The mobilization of resources for health coverage has been emphasized by CMH as a priority task for national governments. The burden of disease falls heavily on the poor leading to an increase in avoidable deaths such as from HIV/AIDS, tuberculosis, infectious disease, maternal and perinatal conditions, micronutrient deficiencies and tobacco related illness. As stated by CMH, an estimated 8 million deaths per year from these illnesses could be averted with existing treatments and interventions. Increased health coverage of the poor requires greater health financial investments in specific areas of the health sector and a properly structured health delivery system accessible to the poor.

Disease burden can slow economic growth in turn decreasing the ability of nations to solve health problems. Often, a small number of health interventions can improve overall health, especially among the poor. While sometimes a weak public sector and mismanagement are to blame, inadequate financial resources for essential interventions are often lacking. CMH estimates that $30 to $40 per person is needed per year to cover essential interventions. Health spending in Indonesia is approximately $16 person, 63% of which originates from out-of-pocket expenditures.

Success requires strong political leadership and cooperation among resource-rich countries as well as developing countries and civil society. Creating partnership between high income countries and low and middle income countries can contribute to ensuring health systems are adequately financed. Enhanced donor funding can complement the responsibilities of recipient countries to provide strong health financing mechanisms, political leadership, effective health policy and accountability. Within the CGI, the Health Working Group comprised of the Government and all major health sector donors has proposed areas of collaboration for developing and implementing pro-poor health policies and strategies. Through the Health Working Group, the Ministry of Health (MoH) and international health sector donors have

developed a shared plan of work. The overall goal of this plan is to fulfil Healthy Indonesia 2010 (the national health development programme) and the health-related MDGs by making decentralized health systems work in Indonesia. The stated purpose is to mainstream health into the national development agenda and significantly increase the amount and effectiveness of funding for health through the following objectives:

1. Reduce financial vulnerability to major medical expenses and protect the interests of the poor;
2. Optimise the participation of private and NGO health providers in contributing to implementation of national health priorities including services to the poor;
3. Improve governance and ensure an effective institutional environment under decentralization to support pro-poor health programmes;
4. Ensure resource allocation and sufficient resources for priority health programmes;
5. Ensuring access to affordable quality services for the poor; and
6. Ensuring accountability by local government for health systems at all levels by engaging a broad range of stake holders.

CMH initiatives in Indonesia have focused on advocacy, training and research. Information sharing and research activities in Indonesia have been carried out since 2003 to raise political commitment to health among policy-makers, government and the public. With an emphasis on health, economic development and poverty, initiatives have been supported on a variety of topics including investments in health and poverty reduction strategies (PRS). Research teams in Indonesia have completed several focused projects in the areas of public health financing, delivery of health care services and poverty and health. The following summary of activities have been undertaken within the framework of the CMH and with funds provided by the WHO CMH initiative.

1. Research on Pro-Poor Health Policy

1.1 Poverty and Health

The MoH Centre for Health Development and Policy together with WHO has prepared a comprehensive report on poverty and health in Indonesia in order to further the development of a health system that is oriented towards poor communities *(1)*. Per capita income in Indonesia fell from US$ 1,120 to US$ 600 following the economic crisis in 1997. Poverty rates increased to 18% of the population placing Indonesia 112th among 175 countries in the UNDP Human Development Index.

Priority Problems in the Health Sector

In 2004, 38 out of every 1000 children under 5 in Indonesia died, often from preventable causes. Infant mortality is largely attributable to the quality of health care during prenatal, delivery and postnatal periods. The major causes of infant mortality are infections, perinatal conditions and diarrhoea – all amenable to quality health care. Under five child mortality is the result of a greater complexity of issues including poor sanitation, poor water quality, poor nutrition and infectious disease. An estimated one in three Indonesian children under five is stunted in growth, which is associated with higher rates of illness and poor cognitive ability later in life.

Indonesia has the highest maternal mortality rates in Southeast Asia with an estimated 1 in 65 women dying for reasons related to pregnancy and childbirth. Often the education and health of the household is dependent on the mother, the loss of whom comes at an enormous cost to the household.

Although access to adequate water and sanitation facilities has improved in the past decade, over 50 million Indonesians remain without access to clean water and over 71 million without access to sanitation. Access to adequate water and sanitation facilities is crucial for human development and poverty alleviation.

HIV/AIDS in Indonesia directly affects the most productive members of society and infection rates are rapidly rising in Indonesia. An estimated US$ 40,000 in individual lifetime earnings is lost to HIV/AIDS infection, equalling a total loss of US$ 3 - US$ 4 billion in the next few years for Indonesia alone. The number of Indonesian children orphaned by the disease has increased 10 times between 1999 and 2001.

An estimated 15 million cases of malaria occur with a rate of 30,000 deaths annually. Individual loss of income resulting from malaria is believed to be US$ 190.8 million annually. Ongoing problems include: inadequate treatment compliance, inappropriate medication and high population mobility.

Indonesia is ranked 3rd highest in the global burden of tuberculosis with nearly 600,000 new cases each year. On average patients loose 3 to 4 months of work. Cases resulting in death internationally are often women of reproductive age and family breadwinners.

As many jobs in Indonesia are in the industrial sector, labour-related accidents are on the rise. In 2001 there were 66,367 labour related accidents in Indonesia with an increase to 103,804 incidents in 2002. Traffic accidents are the 6th leading cause of

death in Indonesia with more than a 50% rate of occurrence among productive age groups.

Cigarette smoking is increasing in Indonesia from already high rates. Most Indonesian men 15 years or older smoke regularly (62.2%) with rates higher in rural areas (67%). An average of 4% of per capita income is spent on tobacco and about one-half of long term smokers die 20 to 25 years prematurely, decreasing potential lifetime and household income.

Health Efforts and Poverty Reduction

The Government of Indonesia clearly states poverty reduction efforts as a development priority. The Poverty Reduction Strategy (PRS) is implemented through (1) increasing income of the poor and (2) reducing expenditures of the poor on access to basic needs. These efforts are conducted through four strategies: creating opportunities for the poor, community empowerment, increasing human capital and capacity and increasing financial security.

Not everyone has benefited equally from health improvements made in Indonesia since 1960. The possibility of a child in Nusa Tengara Barat reaching the age of 40 was 68.2% in 1999 while a child in Yogyakarta, Java has a 91.5% chance of reaching 40. One way to address this inadequacy is to focus resources on poor provinces. Although there is currently no system for directing funds to poor areas, the General Allocation Fund and the Specific Allocation Fund could be directed to assist in health problems and poverty alleviation. Government funding for public goods or clinical interventions with high externalities remains a key priority, but allocations of health funds in many regions remain inadequate. Private sector providers can be more active partners in the provision of health services and increase the reach of basic services. In addition, National level legislations and regulations in areas such as health insurance, immunization and seat belt use are necessary to minimize health risks.

Poor populations require assets and capacity at the individual and collective level in order to solve problems and overcome poverty. Information necessary to make choices and decisions is often not easily accessible. Involving the poor and vulnerable in decision making will ensure limited government funds are allocated according to needs. Greater involvement of beneficiary population will additionally ensure government authorities and staff are made accountable for the policies and actions that impact health.

The poor suffer disproportionately from many health problems including tuberculosis, malaria, infant and maternal mortality and malnutrition. Utilization of health facilities is very much influenced by user fees. User fees are collected within health facilities, but later the revenue is returned to the local treasury where the fees are not used to expand health sector resources. Up front user fees also burden people when they have fallen ill and may have taken time of work resulting in financial vulnerability.

Approximately 56% of Indonesians live on less than US$ 2 dollars per day. Most Indonesian families insure themselves informally via savings, credit markets or borrowing from friends and family. However, the financial loss that results from severe illness is inadequately offset from such options. Often individuals facing excessive health costs must forgo education, household or business assets effectively reducing the

potential for future income. Effective health financing systems are required to protect from the unpredictability of health shocks – particularly from paying at the point of use.

Health Systems Oriented to Poor Communities

Health policies oriented to the poor should be marked by the following characteristics: decreasing the burden of treatment, prioritising control of diseases mostly suffered by the poor, improving non-personal community health services, increasing access and quality of health services used by the poor, reallocating health resources to prioritise poor areas and increasing participation and consultation with the poor.

The main obstacle to achieving adequate health services is low financing of the health sector. While health expenditure in Indonesia is only around 1.6%-2.6% of GDP, it is far below the 4.5% average health expenditure of developing countries. Health expenditure of Indonesian people is around US$ 8 – US$ 18 per person per year, more than 50% of which is out of pocket. Foreign aid to Indonesia averages around US$ 2.3 billion per year, but only 6% is distributed to the health sector. For effective use of funds it is necessary to identify obstacles in the absorption of funds and improve efforts to evenly distribute funds. Increased funds will additionally be of little use without improvements in governance such as transparency.

In rural areas populations are very much dependent on government provision of health services. The minimum standard of infrastructure and health personnel investment should be determined for such areas. 67% of the doctors in Indonesia are in the Java-Bali region. Such uneven distribution of human resources requires a comprehensive re-evaluation of required health personnel under decentralization. Providing adequate incentives to health personnel to relocate to remote areas remains a challenge.

Only 16% of Indonesians are in possession of at least one form of health insurance, a much smaller percentage than that of the population covered in other Southeast Asian countries. Two main insurance companies, Askes and Jamsostek cover 10% of the population, while commercial insurance covers 3%. Draft regulations are in ongoing development to form a legal foundation for health insurance as part of the National Social Insurance System under which the government would subsidize the premium for the poor. If completed, national social health insurance will be implemented in phases, the first of which would cover all poor communities.

Those in higher economic strata are generally interested in receiving health services from private practitioners and health personnel practices. Lower economic strata generally tend to use health centres, sub-health centres and health paramedic practices. Better utilization of basic health services in private facilities can improve efficiency and productivity of the public as well as the private sector. This shift in utilization requires appropriate institutional policies and arrangements to ensure even distribution, efficiency, optimal health status and financial control.
Decentralization has raised concern that handing over financial responsibilities to the regions may lead to negligence of health services for the poor. Public health facilities are often viewed as sources of income and inadequate methods of costing are consequently employed. Allocation of funds for the health sector requires political commitment to ensure the availability of essential information systems and the provision of public goods.

Decentralization does however bring the decision maker closer to the location of the problem, but systems to ensure decision makers will be accountable to the community need to be strengthened. There will be an increase in demand at the local level and adequate provision of information can help develop community participation in planning health activities and priorities.

1.2 Poverty Reduction Strategy and Health in North Sulawesi

The Public Health Study Programme of the Faculty of Medicine, Sam Ratulangi University in Indonesia worked collaboratively with WHO to create a framework to formulate a strategic health planning vision *(2)*. University researchers worked in five districts in North Sulawesi in order to describe health programmes focusing on poverty reduction strategies applicable to a specific local area. Additional objectives included the synchronization of health planning targets, implementation strategies for poverty alleviation and formulation of methods of health care provision that reach the poor.

Results of the study suggested that district level health sector activities are unable to provide minimum care for the poor. Problems contributing to this inability include:

- health is not a priority sector, is not mainstreamed into provincial and district development and does not receive a large budget allocation;
- there is low community participation that creates a gap between the poor and health providers
- health data and information is not centralized

There is very little effort on the part of top administration to advocate for greater health budget allocations. It is recommended that a provincial consultative group is needed to trigger pro-poor policy making. The role of the group would be providing technical assistance in strengthening management, training and advocacy. Empowering district staff through greater information exchange is also needed.

The current health care provision system focuses primarily on curative aspects and health infrastructure while there was little evidence that preventive care is offered, especially to the poor. Human resources in health promotion and advocacy are lacking and a new health paradigm with a greater focus on preventive measures has not been fully accepted. Health promotion and disease prevention activities should be supported among poor populations. Such activities must be supported by increasing the medical staff capacity in health planning and budgeting for health promotion.

There is little link between existing health care delivery systems and the users of that system. The organization of the District Health Office (DHO) does not adequately fulfil the needs of health programmes at the public health centre level. As there is inadequate registration of poor families and benefits available to those living under the poverty line are difficult to claim. The creation of a new division that directly takes the responsibility of poverty alleviation administration in DHOs is needed. Supporting health interventions for the poor, the division would coordinate working mechanisms and link with other relevant district offices.

There are many unmet needs among the poor in relation to existing health services. As poverty is influenced by numerous factors such as the environment, society, culture, economics and demographics, health behaviour is the result of many competing forces.

Special attention should be paid to remote areas such as small islands and coastal areas where a lack of available and reliable infrastructure makes reaching poor populations difficult.

1.3 Poverty Reduction Strategy and Health in South Sulawesi

WHO supported the School of Public Health of Hasanuddin University in Makassar to conduct research and develop a poverty reduction strategy process framework for formulating a strategic vision for health planning *(3).* The study was conducted in 2005 in all 30 districts in South Sulawesi Province.[1]

Before beginning the study, a workshop was convened for problem identification in cooperation with university staff, WHO, the Head of the Provincial Health Office (PHO) and Heads of DHOs. Group discussion followed in order to address specific geographical areas such as urban, mountainous, coastal and island. Poverty reduction was determined to be of lowest priority in South Sulawesi and participants reported there was no specific programme on poverty reduction. A research plan was formulated that would assess local government performance in developing a poverty reduction strategy. The primary questions were determined as:

- How does the government develop policy for poverty reduction and health?
- Hoe does government develop planning for poverty reduction?
- Does current policy meet the needs of the poor?
- How do the poor utilize available policy to meet their needs?

Data collection was focused on four districts as they had special budgeting practices for health and poverty. Bantaeng District, which allocates 10% of the district budget for health, had developed a separate program for poor populations that provided an additional Rp. 1 million to each public health centre to reach those unable to come to health facilities, but as no data is kept on this programme the actual expenditure is unknown. Bantaeng further reports that instances of severe malnutrition have decreased and officials suggested this is the result of pro-poor programmes.

North Luwu District had developed a board to address poverty reduction comprised of people from all sectors. In addition to compiling lists of poor families, the district has implemented health insurance coverage for all poor in the district.

Parepare District allocates 17% of the district budget to the health sector, the largest percentage in South Sulawesi. Improving health facilities is a priority programme and the health information system is already the best in the area. Local surveillance programmes were implemented and have improved overall health performance in the district. The degree to which the health services reach the poor could not be determined.

Some districts had implemented national programmes such as food supplementation for pregnant and lactating mothers and under five children. This programme is specifically for the impoverished. Some districts are sill continuing incentive programmes for midwifes willing to help poor families, although the programme has been suspended at the national level. Sanitation programmes are generally focused on poorer areas and

[1] The study was conducted prior to the creation of West Sulawesi Province

often provide community toilets. Health insurance cards are distributed in some areas to the poor. School feedings at primary schools continues in some districts.

While budget allocation in the health sector is stated as being inclusive of benefits for the poor, identifying pro-poor health programmes in practice was more difficult. Although some districts prioritised programmes for the poor both in health and non-health sectors, there was significant variation between districts. While it seems programmes that were specifically for the poor did indeed reach the poor, there is little documentation of supporting data.

Recommendations included: separating health data between poor and non-poor, advocacy of the national PRS, raising the district budget allocation for programmes for the poor and further workshops at the district level to enhance capacities for strategic planning.

1.4 Poverty Reduction Strategy and Health in Yogyakarta, Java

In order to assess the view of policy makers and current pro-poor policy documents, promote awareness of pro-poor policy among local government and developed pro-poor policy recommendations, the Centre for Health Service Management of the Faculty of Medicine, Gadjah Mada University and WHO conducted a study on poverty reduction and health in the Yogyakarta Special Region Province of Central Java *(4)*.

Joint Health Council Meeting

Primary activities of the study included a Joint Health Council meeting in July 2004 that comprised the Heads of Districts and Municipalities, civil society representatives and Provincial Government. The meeting was conducted in order to align health strategy and policy at the district and municipality level, improve synergy and promote poverty awareness.

A questionnaire was administered in order to determine the overall values of the stakeholders in relation to health care equity. Participants were asked to indicate the importance of the following issues in relation to health care: income generating, quality, universal coverage, access, equity, reducing cost, efficiency and traditional medicine. 100% of participants agreed that access in important, 90% that quality and efficiency are important and 55% that equity was important. Other issues were ranked as important by 25% of participants or less.

Assessing Pro-Poor Policy

In order to determine views of policy makers on the importance of pro-poor health policy and improving access to health care for the poor, interviews were arranged with policy makers and current policies were collected and analysed. The interviews provided an opportunity to share with stakeholders methods of health simulation and inter-municipality comparison models. Local government was made more aware of loss in earnings that can result from illness. Health strategies were developed that could be used to reduce poverty among farmers as 60% of the area workforce are agricultural workers.

2. Research on Health Financing

2.1 Public Health Expenditure Review

Carried out by the Institute of Policy Studies-Health Policy Programme (IPS-HPP) in Sri Lanka with support from WHO and UNDP, the Public Health Expenditure Review (PHER) sought to (1) analyse public expenditure allocation and management, health service personnel management and decentralization issues in the health sector and (2) to assess the extent to which public health financing and provision are efficient and equitable in improving service delivery outcomes and effective in meeting the poverty reduction goals of the government *(5)*. Jointly supported by the University of Gadjah Mada (UGM) and the University of Indonesia (UI), data was collected from the Ministry of Health, Ministry of Finance, Ministry of Home Affairs and the World Bank. Systematic measurement of the level of composition and distribution of health spending was however difficult as expenditure tracking has been fragmented and reporting procedures weakened by decentralization in 2000. Data used to estimate national health expenditures during 2001-2002 was analysed and compiled in November 2004, the main findings of which are summarized below.

Expenditure level and composition

In general there are three major health sector financing sources: government revenues, external resources and private expenditures. Private expenditures consist primarily of out-of-pocket expenditures by households, contributions from employers and contributions from non-governmental organizations (NGOs). The focus of PHER was on public sector outlays for health that are financed through the government and donor sources.

Government funding for the health sector is primarily conducted through budgetary allocations to the Ministry of Health and central government transfers to regional governments. Prior to decentralization resources were transferred to regions through earmarked grants. After decentralization transfers are no longer earmarked and over 90% of regional funding is from the Balancing Fund that includes a general grant (DAU). The share of the DAU allocated to the health sector is determined by regional governments. Special allocation grants (DAK) for health are allocated after regional proposals meet with central government requirements and are specifically for the district level rehabilitation of the public health centre infrastructure. District and provincial government expenditures accounted for 74% of spending in 2001/2002, up from 25% prior to 2001. There is very little information available on the composition of the development budget making functional analysis of public health expenditures difficult. There is additionally an absence of programme based budgeting and national health accounts (NHA) that meet the standards of the OECD system of health accounts (SHA). Over half of routine spending is on personnel, three fourths of which is financed through district government budgets.

The central government budget expenditures are more prominently for goods, supplies and operations. A review of drug availability and management in 24 districts in 5 provinces found that district spending on drugs was higher than before decentralization. A large share of the development budget is allocated to hospitals, especially for drugs and supplies. Provinces with higher population density and higher per capita income

allocate a larger proportion of government resources to hospital care. Results additionally showed that beds and health centres are statistically significant and positively associated with health spending while health providers are not.

Per capita government spending increased by 28% between 2000 and 2002; however, public health spending as a percentage of GDP and government budgets remains relatively the same. In comparison, health spending in Indonesia is lower than in some of the poorest Asian countries such as Bangladesh and Nepal. The rise in health spending was driven largely by increased spending of regional governments as spending by central government fell after decentralization. Per capita provincial health spending was found to be poorly correlated to health outcomes, as measured by infant mortality rates. Health expenditures financed by foreign aid fell substantially from 27% of total public spending in 1999/2000 to 6% in 2002.

Multiple and conflicting user fee data sources made construction of a trend for revenues raised at government health facilities difficult. While little is known about the magnitude of user fees retained by health facilities, less is known about unofficial charges. Evidence does however indicate that revenues retained have increased since decentralization and unofficial charges are considerable. International evidence is substantial that user fees discourage use of medical services by poor people and should be reduced as a matter of national policy.

Indonesia is in need of a comprehensive health accounting system that can track trends in local governments. Considerable investment by WHO and other donors in NHA has not yielded substantive results. Challenges in improving the NHA system include: prioritising the synthesis of a large number of data collection exercises already commissioned and concluded; expanding the current strategy of analysing budget allocations to the include an analysis of actual expenditures; building capacity for meeting international standards; a need for greater innovation and adaptive design.

Health Sector Public Expenditure Management

Decentralization devolved responsibility for budgeting and management of most public expenditures to districts, but it was not accompanied by mechanisms to monitor spending. Dutch colonial legacy has contributed to poor public service notation and institutional change is a substantial challenge. New legislation, the State Finances Law, calls for the development of a national financial reporting system that would track district spending, but it is not yet established. There are indications however that there is greater emphasis on the provision of basic services and an increased allocation to health in district budgets.

DHOs receive considerable guidance in planning and budget preparation. The Integrated Health Planning and Budgeting (IPHB) process developed by the MoH Bureau for Planning calls for an 11 step modular approach. The 11 modules consist of identifying problems, determining priority problems, determining objectives, exploring the most effective interventions, making operational plans for the selected interventions and preparing a performance budget. Once budgets are authorized, the District Finance Office issues warrants for the routine and development budgets to the DHOs. Health spending is not inherently favoured as it is viewed as consumptive spending, however local allocations for health are increasing and may reflect come positive impact of democratisation and decentralization.

Health Service Personnel Management

The Indonesian Health sector continues to suffer from shortages in personnel, inequitable distribution of health professionals, inappropriate skills, a poor work environment and inadequate information systems. There are very low levels of staff density by global standards and unequal geographic distribution. In the early 1990s a government policy of zero growth for civil servants was put in place and resulted in a reduced number of public sector health workers. Contracted doctors such as recently graduated doctors contracted to work in underserved areas have only had minimal impact because of the limitations of the programme and weak strategies for retaining personnel. Discrepancies in health workforce financing under decentralization may have worsened the situation.

Increased access to health workers in terms of number and distribution and improvements in worker competency are required to improve the health workforce system. Financial and non-financial incentives should be used. In addition, greater coordination between production side and the system demand side is necessary with increased multi sector involvement. Regional capacity in health workforce administration and management must be developed as should the monitoring and evaluation role of the central government.

Health Statistics

Systems for tracking underlying mortality and morbidity as well as health care utilization trends are not well established and constitute a systemic weakness in the MoH health statistics infrastructure. There is no comprehensive vital registration system and poor performance of the public sector in expanding use of modern health care.

Health Care Financing

Benefit incidence studies have shown quite consistently that public subsidies for healthcare in Indonesia are pro-rich, particularly for hospital in-patient care. Despite numerous government policy documents, equitable access to health services remains problematic. User fees create substantial barriers for the poor and fee waivers have proved ineffective. Although analysis shows that the poor are less likely to incur catastrophic health care payments (payments that are in excess of 10% or more of their household consumption), they are also more likely to forgo high cost treatment.

A full scale assessment of the level, composition and distribution of public health expenditures was impeded by several factors: there is no one source of consolidated data on health spending; the transfer of health spending responsibilities to regional governments has not significantly improved financial reporting mechanisms; and existing expenditure data at all levels are not adequately detailed. It is not yet possible to assess the links between expenditures and service delivery outcomes or the extent to which increased health spending will substantially raise levels of service production. There is a low level of use of public sector health services among the poor.

Recommendations for Pro-poor Spending

- It is evident that both inadequate access and a failure to achieve zero price services contribute to low levels of utilization by the poor. As it is unrealistic to assume that reallocation of funds alone is enough to redress disparities in access, substantially improving inadequate levels of public financing will be required. Low wages among health service staff should also be addressed with increased budget allocations offsetting the lack of a public sector ethos among service providers. MoH and international donors must cooperate to advocate for lifting the civil service freeze in the health sector to ensure better needs provision. Programmes such as the PTT contract for doctors in remote areas are not enough to place adequate staff in under-served areas. Measures to ensure rotation may be more effective. Efforts to reduce abuse of rules allowing for dual practice should also be handled carefully.

- Strengthening transparency in budgetary reporting would allow for public debate and greater attention to funding decisions. A functional NHA system would improve information on actual expenditure trends at the regional level and better monitor the public private mix in health spending. Countries such as Thailand and Malaysia have achieved universal access by not only reducing barriers to the poor, but also relying on differentials in consumer quality to voluntarily persuade rich patients to self select private services.

2.2 Synthesis and Review of District Health Accounts

In support of the research conducted for the Public Health Expenditure Review (PHER), a study on District Health Accounts was conducted by the Centre for Health Research, University of Indonesia in collaboration with WHO to review district public health expenditures *(6)*.

The government at all levels must be aware of the potential adverse effects of decentralization. Anticipating the possibility of shortfalls, MoH has begun to advocate for adequate funding at provincial and district levels for essential health programs. In August 2000, MoH met with all district heads to address the challenges of decentralization. The participants reached a preliminary agreement to allocate at least 15% of the local budget to the health sector. In practice, this target allocation was rarely met.

Although DHO has autonomy in proposing specific health programs, guidance remains the responsibility of central government. Healthy Indonesia 2010 is being accepted across the country with local health planning being supported by a National Strategic Long Term Plan (Propenas) and a Strategic Local Long Term Plan (Propeda). The annual planning process is conducted for implementation at DHOs using the Integrated Health Planning and Budgeting (IHPB) method for practical guidance. The process follows step-by-step guidance using modules developed by the MoH Bureau of Planning.

There are certain health problems that are included in the global and national guidelines. District health planners must consider these health problems as priorities, unless it is proven that the problems do not exist in the respective district. National

guidelines include the following health problems: (1) immunizable diseases, (2) HIV/AIDS, (3) malaria, (4) tuberculosis, (5) reproductive health and (6) child health problems.

District health budgets are integrated using each estimated program cost and the information generated from the DHA process. IHPB explains how certain costs can be shared by different programs, especially indirect or overhead costs such as for health promotion and supervision activities. A master budget form is provided as part of the IHPB to assist the trainee in integrating the district health budget. Recently, the MoH Bureau of Finance developed guidelines for coded accounts to be used by all levels.

Most of planners commented that they use the IHPB method, but still have to compete with other sectors to obtain a health budget. Although they may be able to propose local health programs and gain sufficient funding from the local government, some constraints occur. First, capacity of the local planners to find evidence and determine the magnitude of the problem has been an impediment to planning. Secondly, it is difficult to identify adequate funding required to overcome the district's health problem. Lastly, stakeholders may not perceive the health sector as a priority sector.

2.3 Costing Options for Health Personnel Deployment in Remote Areas

Regional variations in the status of community health and access to health services are considerable in Indonesia. In 1999 the Indonesian Central Bureau for Statistics estimated that only 2% of Jakarta did not have access to qualified health care, but in remote areas such as Manokwari, 71% of the population does not have access. Under decentralization, inequalities will likely increase with regional variations in financial capacity and government attention to the health sector.

The Government of Indonesia and CGI agreed to cooperate and aim allocation of resources towards initiatives expected to overcome the greatest disease burden. One initiative is the effective placement of qualified health personnel to increase access to health services for the poor in remote areas as there is a greater dependence on the government for the provision of basic health services in these areas.

A study conducted in collaboration with the MoH Centre for Health Development and Policy aimed to develop a concrete recommendation, with funding details, to fulfil the demand of placing qualified health personnel in remote and very remote areas *(7)*. Population size, population density, levels of family income and number of people in vulnerable age groups within the population determine the workload of the provider. Difficult geographical conditions, topography, electricity, clean water, transportation and adequate working facilities affect the willingness of health providers to stay in certain areas. Such conditions can be offset by salary incentives and insurance of family welfare.

There is still no national agreement in determining remoteness of an area. Certain Ministerial Decrees define "remote" and "very remote" based on geographical situation, social and cultural aspects. However, this is conducted without clear and measurable criteria. The Indonesian Survey in Village Potential defines remoteness through accessibility criteria such as transportation between government offices and availability of food at all times.

For the purposes of this study, the criteria to determine the remoteness of an area was determined with variables such as transportation availability, public facilities, basic utilities (electricity and clean water) and availability of staple food in the market at all times. Based on those criteria, 49 districts, located in 4 regions, were identified as remote. Statistical results show that there is a meaningful correlation between the number of poor and the number of remote villages. These areas will incur greater placement costs for health professionals and health services and should be provided by the regional and central government.

Formulation of policy will consider financial capacity of the region, particularly related to the capability to allocate the budget to bear the cost of placing health professionals in the region. The district fiscal capacity should be divided by the population in order to arrive at a median per capita portion of the district budget and determine a cut-off point for poor districts.

Budget components included investment costs such as: rehabilitation of health centres, sub health centres and official housing; provision of electric facilities and clean water; procurement of medical equipment; communication equipment; and recruitment and placement costs. Routine costs consisted of: technical and functional trainings; monthly remuneration; medical coverage; disposable medical equipment; and operational transportation. Total investment costs in staffing remote areas were estimated to amount to Rp. 829,288,400,000 (approximately US$ 800 million).

The target national ratio of health professionals to the population as set by Healthy Indonesia 2010 is one doctor per 2,500, one dentist per 9,000, one nurse per 850 and one midwife per 1,000. As these targets will be difficult to reach in remote areas, an ideal ratio should be determined for the 49 remote districts that is the mid value between the national ratio of population and the existing ratio at present. The ideal ratio for doctors in 49 remote districts is 1:12,000, dentists 1:47,000, nurses 1:1,400, and midwives 1:2,000.

Incomplete data, particularly on the availability of health professionals coming from different sources and different years, may have caused an inaccurate analysis of health professionals in the study, and may not reflect present conditions. Unavailable data on the condition of the health facilities led to the assumption that all existing health facilities should be rehabilitated to included basic facilities.

3. Research/Training on Planning, Costing and Delivery of Health Care Services

3.1 Planning and Budgeting Assessment of District Health Offices in Bali

As highlighted by the above, District Health Offices, as the technical function of regional autonomy in the health sector, are required to be more pro-active in programme planning, budgeting and allocation of funds under decentralization. Research was conducted by the Community Epidemiology Research and Training Unit (UPLEK) of the Faculty of Medicine, University of Udayana with support from WHO

that sought to document how DHOs in Bali plan and process the health budget, allocate funds and maintain accountability *(8)*.

All assessed districts had a similar vision which followed the national goals of Healthy Indonesia 2010. Each district had a strategic planning document, RENSTRA, which integrated the annual performance report, main tasks and functions, potential resources, mission, work values, health system characteristics, objectives and strategies. RENSTRA is set for a five year period and updated annually. A separate document, LAKIP, translates the targets of RENSTRA into performance indicators. LAKIP also includes a performance evaluation which is a comparison of the outcome measurement of the previous year with the achievements of the current year.

Based on in depth interviews, the planning mechanisms were determined to be rather weak in the DHOs. Key administrative figures have poor skills in strategic planning. Formulation of project goals is not based on current or anticipated public health problems or data analysis and there is poor coordination between programmes. Community health centres had no valid data to report to DHOs and there was a low awareness that such data was crucial in strategic planning.

In planning for strategic budgeting, all departments within the DHO must propose a programme budget plan, RASK. The planning department then assesses the documents, checks for errors, compiles them and provides final authorization. The budget is then submitted to the District Budgeting Team for discussion and final approval by Mayoral decree. Based on the approved RASK, departments then propose a program budget document (DASK). The DASK then proceeds through the same process as the RASK. Final authorization results in an approval of a portion of the district budget (APBD). The process takes about six months which does not correspond with the proposed budgeting time frame as funds are generally only available by the first quarter of the start of the new year instead of the last quarter of the previous year. Timing of funding approval overlapped with planning for the next year proving to be an additional obstacle in quality planning.

There is no system for joint programme budgeting. The head of the planning department does not assess program planning in order to avoid duplication and save funds. There is additionally poor coordination among sectors. Similar programmes with similar target populations are rarely combined.

Controlling mechanisms do in fact exist as DHOs in Bali must justify budgets to parliaments and adhere to external control from audit authorities. However, overall performance is rarely assessed. Decree 29/2002 requires broader external control of government entities, but is not yet implemented. Internal controlling mechanisms within the DHOs were equally weak.

Recommendations included:

- New regulations must be properly socialized within the DHO in order to improve staff capacity.
- Trainings on planning and budgeting mechanisms are needed for program officers.
- Financial and planning departments are in need of training in managerial tasks.
- The Head of the DHO should be responsible for coordination between programmes.

- The schedule for filing the RASK budget plan should be moved up so funds are available at the start of the year.
- A larger portion of the district budget should be available for health spending.
- District government should conduct regular assessments.
- Parliaments should be more proactive in socializing the use of public funds with the public.

3.2 Training for Improving Skills and Managing Change

In order to carry out the responsibilities of new roles imposed on districts under decentralization, it is important that district health authorities follow the ideals of good governance. Local government must be a fair judge in the provision of health services and ensure fair implementation it the region. Five training modules were developed by the Centre for Health Service Management of the Faculty of Medicine, Gadjah Mada University in collaboration with WHO with the objective to train master trainers in strategic planning, leadership, management in times of change and technical planning and budgeting *(9)*.

The first module covered changes in government functions, laws and regulations that pertained to hospital regulations, inter office relations and health financing as well as organizational structure. Strategic planning was addressed in the second module for the benefit of Chiefs of Provincial, District and City Health Offices. Modules three through five addressed political issues in health planning and budgeting, the current capacity situation among DHOs and planning and budgeting for Chiefs and relevant staff.

The training was implemented for Chiefs in Bali Province in March 2005. Participants agreed there was currently a lack of coordination among the central, provincial and district levels of government. There was also agreement on the value of good governance principles, but there is currently no systematic approach for ensuring that such principles are followed. A second training which covered planning and budgeting was conducted in April 2005 for the staff of DHOs and planning and financing departments. The trainings were evaluated as a successful method for improving skills and management under decentralization.

3.3 Workshops for a National Health Investment Plan and Essential Health Interventions

Over the past few decades Indonesia has made progress in health development, but current indicators show that the health status of women, children and male adults of productive age remain a public health concern. In order to accelerate the attainment of better public health, there is a need in Indonesia to scale up essential health interventions. The effort required in filling the gap between present levels of health coverage in Indonesia and near-universal coverage will be substantial as health systems are relatively less developed and resources are lacking.

WHO and the Centre of Health Service Management, Faculty of Medicine of Gadjah Mada University in Indonesia conducted a collaborative project on scaling up essential health services *(10)*. Objectives included: working towards a consensus among four participating provinces on determining priority health problems and criteria for

selecting essential health interventions; identifying priority health problems for health investment; determining priority health interventions and estimating the costs of delivery; providing evidence on the variation in empirical unit costs of delivery of essential health interventions at selected locations; and integrating cost information into routine budgeting systems.

Scarcity of Health Resources

Identifying the best health interventions for Indonesia is complicated by an overall scarcity of health resources. Priority interventions must be chosen among alternatives in order to maximize net benefits to society. Within the selected priority interventions, the best methods of combining inputs into producing and delivering interventions must be determined to achieve the intended health improvement. Indonesia continues to invest in tertiary level hospitals at the expense of cost effective interventions that would yield increased results at the primary level.

Identified Priority Health Problems

The identification of priority health problems was the first step in developing a National Health Investment plan and identifying essential health interventions. Indonesia ranks the highest in Southeast Asia for maternal mortality, infant and under five mortality rates. Health problems were identified and used as the basis from which to begin further action.[2] Increasing prevalence of chronic lifestyle disease such as stroke, myocardial infraction, cancer and diabetes mellitus in tandem with a high incidence of infectious disease, such as HIV/AIDS and TB are major causes of dual disease burden among adults. Other contributing environmental factors in poor health include poor nutritional status, poverty, high rates of smoking, increased violence, traffic accidents, air and water pollution, poor sewage disposal and natural disasters.

Communicable diseases are a major cause of morbidity and mortality in Indonesia. Tuberculosis ranks as the second highest cause of death and the primary killer among infectious diseases. There are 600,000 new cases of tuberculosis each year with a mortality rate of 67 per 100,000 in 2002. Case finding is only 10% of the expected incident cases. 78% of deaths are accountable to perinatal complications and communicable diseases such as TB, lower respiratory infection, diarrhoeal diseases and measles.

Financing Health Interventions

Act number 22/1999 decentralized authority from central to provincial and district governments while act 25/1999 regulated the financial transfer along the same lines. Provincial and district governments have new financial resources in the form of the equalization fund. This fund is a block grant determined formulaically and given by the central government to provincial and district governments who then have the authority to use the budget according to local needs. The fund consists of (1) a share of revenue from land and property taxes, taxes on the acquisition of land and building rights, forestry, public mining, fishing, oil and gas; (2) the general allocation fund; and (3) the special allocation fund.

[2] Health indicators have been updated since the inception of the initiative; however, data quoted here reflect the original working data.

Other provincial and district financial resources in addition to the equalization fund include (1) local income, including local tax, local retribution, local government corporation profits and other asset management, cash management and asset selling; and (2) loans and other legal revenues. Decentralization increases the equalization fund for provinces rich in natural resources and several reports indicate that this may contribute to widening the gap between rich and poor provinces.

Workshops and Future Initiatives

In light of the need to scale up effective essential health interventions, a series of coordination workshops were organized to support development of the National Health Investment Plan. A workshop was held in June 2005 that hosted participants from WHO, MoH, Provincial Health Officials, District Health Officials, donor agencies and universities. The aim of the workshop was to reach a consensus on approaches for determining priority health problems and selecting essential health interventions. It was agreed to adopt a combined approach for selecting priority problems including disease burdens, health risk factors, the goals of Healthy Indonesia 2010 and minimal service standards with special emphasis on a commitment to realising MDGs. As a result researchers were recruited to help identify priority problems and essential health interventions in five provinces.

After conducting the suggested research, DHOs found the top four priority problems by district were: childhood under nutrition, dengue haemorrhagic fever, maternal mortality and infant mortality. Top six priority problems by municipality were: HIV/AIDS, diarrhoea, leprosy, dengue haemorrhagic fever, childhood under nutrition and pulmonary tuberculosis. Identified interventions to address the top five common health priorities included: Expanded Programme on Immunization (EPI Plus), Integrated Management for Childhood Illnesses (IMCI), complementary feeding with growth monitoring, mother-baby package during pregnancy, care during and after delivery, DOTS, diagnosis and treatment of malaria, chemoprophylaxis/presumptive treatment during pregnancy, insecticide treated mosquito nets (ITNs), residual household spraying, HIV primary intervention and complementary intervention, palliative care and treatment of opportunistic illnesses of HIV/AIDS, support activities for HIV/AIDS and treatment of HIV/AIDS.

Estimating the cost of scaling up current health interventions as well as the cost of ideal and innovative health initiatives must be conducted at the district level under the new regulations of decentralization in Indonesia. Training in the assignment of costs for activities based on resources consumed, was provided for health staff at the end of August 2005. In order to train participants in costing methods and link strategic planning with the use of cost information for health budgeting, the workshop included reaching a consensus on costing methods and feasibility of use at the district level. Ten participants from five provinces were provided with training modules in the ‘work unit based budgeting’ (RASK) costing method.

Further workshops are being considered to review the results of costing and budgeting activities. The proposed workshops would help to build partnerships between stakeholders and improve information exchange to develop common objectives. Activities would include:

- Partnership building between health stakeholders, local health planners, local development planners, representatives of parliament, donors, researchers and academics
- Facilitation of budgeting for interventions that reach out to poor populations and remote areas
- Advocacy for the integration of costing of essential health interventions in routine budgeting and planning systems

Technical manuals will be published and disseminated that contain practical techniques for undertaking strategic planning, costing, budgeting and financing using RASK. The manual will be compiled by university academics for use by health professionals and people involved in costing, budgeting and financing health interventions.

Health Planning and Budgeting Coordination Teams are planned for establishment in five districts and will be chaired by the leader of the Local Development Planning Agency and vice chaired by the District/Municipality Health Agency. The team will consist of members representing local level offices including local parliament, the Public Works Agency and universities. The team will work to determine local health priorities, select essential health interventions, utilize costing information for health sector budgeting and establish consistent use of the RASK plan.

3.4 Health Referral Systems and Public Health

The presence or absence of referral systems and the degree to which they are effective are among the indicators of a strong health system. As diseases presented to health professionals range in complexity, a spectrum of skills, facilities and health care professionals at different hierarchical levels of care is necessary to best serve the needs of a given population. An investigation by a WHO consultant was undertaken in various districts of Java to examine the current public health referral system and determine efficacy *(11).* The functioning of the referral system was examined in urban and rural settings and between primary, secondary and tertiary levels within the public sector.

Health Care Facilities

Health service delivery in Indonesia is hampered by uneven achievements in the health sector across the archipelago, differences between urban and rural availability of care and varying access to care among poor populations. The number of health facilities is still inadequate and unevenly distributed. Primary health care, when available, includes basic health services and are provided at the village and sub-district level through health posts, village medical posts, village maternity huts, and community health fund groups, although not always permanently staffed. Care that should be provided by such facilities includes: health promotion, maternal health, child health and family planning, nutrition improvement, environmental health, control of communicable diseases and basic treatment.

Secondary health care is provided at the provincial and district level. Class ‘C’ and ‘D’ public hospitals are found along with private hospitals. Class ‘D’ hospitals provide limited inpatient care while class ‘C’ hospitals provide basic specialties such as surgery, internal medicine, paediatrics and OBGYN services plus supporting specialties

such as anaesthesia, radiology and pathology. At the provincial level, class 'B' hospitals provide more specialist services such as pulmonary and eye clinics.

Tertiary care consists of 'Centres of Excellence' with state-of-the-art facilities such as a Maternal and Child Hospital, Cancer Hospital, Coronary Hospital and equipment referral hospital. Class 'A' hospitals found at the central level in Jakarta, Medan, Surabaya and Makassar are also considered tertiary care as they have advanced medical knowledge and technology.

National Strategy for Referral Mechanisms

Under decentralization the DHO is responsible for planning services at the local level and for service provision at the primary care level. Hospitals now report directly to the Regent and are seen to be the primary focus of the government 'Referral Health Service Programme', which seems to go against the idea of a district level referral system. The obligatory function 'Referral and supporting health service provision' set forward by the MoH clearly specifies only two services: basic and comprehensive obstetric and neonatal services and emergency services.

The 'Health Development Plan towards a Healthy Indonesia 2010' outlines referral as a part of the 'Curative disease and rehabilitation programme'. Targets for a 'Referral Health Service Programme' include:

- That all hospitals have the ability to offer holistic comprehensive services in line with their respective class, hence they can face regional and global demands.
- The realization that hospitals are places for human resource development in the health sector
- The development of ability and the consolidation of hospitals' autonomy in referral health services, including medical referral, health referral and management of referral.
- The view of hospitals as motivators of society so that they can protect, maintain and improve the health of individuals, families and society

Activities to achieve these targets include: the revision of the basic concept of referral efforts and management of referral health service programmes to support hospital autonomy and decentralization; development of a quality assurance programme and rational treatment in hospitals; increased coverage of services to poor people; education and training of health manpower; research and screening of medical technology; health promotion; and monitoring and evaluation.

Districts included in the study felt they had some additional leeway under decentralization to address the specific needs of the population, but such feelings were primarily with regard to funding and manpower rather than the referral system. Provincial Health Officers felt it was not easy to obtain data for monitoring and coordinating provincial health activities.

Current Status of Referral Systems

Users of the current Indonesian health system can enter at any level, primary, secondary or tertiary. There is no standardized mechanism for referral. Hospital personnel are aware of the referral route between levels, but not if referrals actually

take place. Transport for emergencies is not part of the referral system. Holders of Askes cards, provided by the state owned insurance company, reported having a specific referral process to secondary and tertiary levels.

There is a two-way referral system for women following delivery in a hospital to midwives for post-natal care and family planning advice. There was evidence of maternal perinatal audit to monitor the quality of maternal and neonatal health services. There is no system for feedback on treatment or outcome from the hospital to the referring health centre in any instance. The onus of information sharing is on the patient.

For communicable diseases or malaria the hospital may send a letter of feedback to the health centre, but not in all cases. TB patients require specific referral forms although they occasionally are referred back to health centres. Some health centres do not have the necessary equipment for testing sputum and must refer patients to the closest centre with laboratory facilities. The recommended DOTS regime is being followed in public facilities and the University of Gadjah Mada has devised a referral system that incorporates private clinics in order to keep the current cure rate of 80%. The system calls for referral from private doctors to health centres by way of phone, text message or post card. Private doctors enthusiastically embraced the system in the pilot project.

Hospitals visited in the study used a simple referral form for referrals to the provincial hospital or private hospitals (according to the income of the patient). One hospital reported having standard operational procedures to guide patients unable to be treated at the district level. Typical referral cases include technical examinations and in-patient care, heart attacks, etc. The status of a hospital as not suitable for referral is often related to a lack of trained professionals. Most hospital referrals were self-referrals. For poor families who have been referred to a private hospital for treatment, depending on the type of insurance, the treatment can be subsidized or provided free of charge at the provincial level.

In Indonesia where treatment is preceded by user fees, providers are more likely to retain patients for treatment rather than refer them. There is the possibility that lower level health facilities may be tempted to over-refer poor patients (holders of Askes cards) in order not to incur the cost of treatment. Higher-level facilities may refer back for the same reason.

Recommendations for Strengthening of Referral Systems

One question that arose in analysis of the current situation was whether referral system strengthening should focus on selected programmes or on appropriate referral for any patient presented at a given facility level. An argument for the selective approach is that with current low overall rates of referral, initial efforts should be concentrated on those programmes whose life saving potential is directly related to the occurrence of referrals. The generic approach however realizes that there are many patients whose conditions fall outside the scope of specific programmes, but who nevertheless are in need of diagnostic and treatment resources.

A generic approach could be strengthened in conjunction with strengthening referrals in specific programmes. Current training and monitoring activities by provincial health

staff can incorporate a component on referral systems between levels. Referral between facilities can be strengthened by taking the following measures:

- Assuring that drugs and equipment are available at the primary care level in adequate quantities so patients feel more confident about receiving care at the primary level.
- The provision of laboratory facilities in proportion to the needs of the community.
- The availability of appropriate equipment at all levels – this applies to all health centres including basic obstetric emergency care at midwifery posts.
- Upgrading facilities at the primary health care level in remote areas.
- Informing patients of available services at each level in their home district.

It should be noted that services for the 'near poor' who make up a substantial part of the informal sector workforce are not included in budget allocations for health services of the poor. A sudden major illness can cause such individuals and households to fall quickly into poverty. The functioning of local committees who determine allocations for the poor should be transparent. One method of countering a lack of transparency in the determination of individuals who qualify for subsidized care is to post the names of Askes card holders in the health centre, although such practice can have the negative effect of some individuals forgoing treatment so as not to be identified as poor. Monitoring of service utilization by the poor should be undertaken to ensure patients are receiving service and proper referral.

DHOs should plan strengthening of the referral system with support from local parliaments in three phases: (1) preparation and agreements between all stakeholders, mapping of facilities and formation of a working group for the implementation of the referral systems; (2) development of a financial plan for the system and manual for implementation and (3) the implementation phase with periodic evaluation and refinement.

All employees of health centres and hospitals should be given orientation and training in the operationalization of the comprehensive system. Clearly written policies and guidelines should be available at all levels. A two-way system should be instituted which includes a form to accompany the patient to the next level of care. Transport should be mobilized in emergencies.

A district wide referral system driven by DHOs is essential. Appropriate upward referral will ensure that the system is more cost effective as higher level care will have less of a burden and primary care services will receive optimal utilization. Greater cooperation between health professionals will help to ensure the system operates efficiently. While taking into consideration the needs of the poor and vulnerable, the District Head will be responsible for ensuring appropriate allocation of resources for health and referral systems. Monitoring and evaluation will ensure proper long term functioning through period audits, random review and field visits for validation.

3.5 Web-Based GIS for Health Facilities

Geographic Information Systems (GIS) are increasingly used in public health to communicate problems and concerns, discover meaningful patterns and explore access and utilization of health facilities. GIS can be useful in describing availability and

accessibility of health services by linking diverse layers of population and environmental data and organizing spatial information. Routine reports, hospital discharge data sets and data obtained from household surveys can be linked and geo-coded to specific areas. Spatial analysis of pathogens and their relationship to the environment can help identify links between hazards and outcomes.

A project conducted in cooperation with the Centre for Health Informatics and Learning in the Faculty of Medicine, Gadjah Mada University sought to stimulate awareness and insight into availability, access and equity of health services by providing web-based geo-referenced information on health care provision in Yogykarta Special Region Province in Java *(12)*. The web-based model that was developed consists of maps and additional layers that will help in the identification and resolution of health problems.

A base map of Yogyakarta was constructed using Personal Home Page (PHP), an open source software for web design and information display purposes. *Mysql*, also an open source software, was used as the database management software. The base map displays Yogyakarta Province with the boundaries of all four districts, one municipality and major streets. The districts can be selected to display sub-districts and the boundaries of all villages. Population size, population density and proportion of poor can be displayed for each district or municipality. The ratios of doctors, dentists, nurses and midwives to total population can also be generated at the district level. The map can be used to display cases of TB and DHF discharged from area hospitals.

The GIS initiative can help facilitate public health activities of DHOs, community health centres and health practitioners. The system can be used to download maps and plot locations of health facilities, health personnel, disease risk or health outcomes for certain populations. GIS development uses freeware, open source web programming and database management. DHOs with internet infrastructure may implement similar projects at low cost.

4. Increasing Political Commitment through Advocacy

4.1 Framework Convention on Tobacco Control

Tobacco consumption in Indonesia increased 57% between 1990 and 2000, more rapidly than any country in the world during this period[3]. There was an increase in smoking among males from 53.9% in 1995 to 62.9% in 2001. The average age of uptake in 2001 was 18.4. 57% of households have at least one smoker exposing 65.6 million women and 43 million children to environmental tobacco smoke.[4] The economic loss from lung cancer to the Indonesian economy is an estimated US$ 1.8 billion and the death toll is substantial. Clove cigarettes, or kretek, are preferred by 85% of Indonesian smokers.[5] Kretek have substantially higher tar and nicotine yields when compared to traditional cigarettes. The active ingredient in clove is *eugenol* which numbs the throat and allows for deeper inhalation. Kretek also have hundreds of additives none of which are disclosed to regulatory agencies.

[3] World Bank, 2003
[4] SUSENAS data analysis, Demographic Institute University of Indonesia 2000
[5] Sampoerna Intelligence Report, 2003

In order to increase understanding and awareness among members of the parliament on the Framework Convention on Tobacco Control, a round table discussion was held in the parliament in September 2003 and attended by members of Commission VII, the policy makers on the impact of tobacco consumption, as well as other stakeholders *(13)*.

During the discussion the government emphasized that an alternative commodity for tobacco farmers must be provided if a law on tobacco control is to come into action. Such an action has been given 10 years time to come to fruition in amendment PP38/2000, but the Ministry of Agriculture has not committed support. Such disjointed efforts exemplify the need for greater cross sectoral government cooperation in designing regulations. Religious leaders and the Drug and Food control board should also be included in order to strengthen tobacco control initiatives.

In January 2004, a follow up seminar was held with the objective of gaining a commitment from members of parliament on the importance of action in tobacco control. Members of parliament, ministerial staff, tobacco companies, NGOs, universities and health professionals were in attendance. The seminar emphasized that tobacco control efforts would protect the vulnerable from the effects of tobacco consumption. A focus of concern during the seminar was the unintentional adverse effects on tobacco farmers. A Tobacco Tax would be a strategic tool to improve public health as it would reduce cigarette consumption among young people, occasional smokers and low income groups.

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