Center for Economic Policy Research

Tracking Country Resource Flows For Health Research and Development (R&D)

A Comparative Report on Malaysia, the Philippines, and Thailand with
A Manual on Tracking Country Resource Flows for Health Research and Development

Bienvenido P. Alano, Jr. and Emelina S. Almario

Based on Country Findings of Institute for Medical Research,
Ministry of Health (Malaysia), Center for Economic Policy Research (Philippines),
and College of Public Health, Chulalongkorn University (Thailand)

With Funding Support from the Council on Health Research for Development (COHRED)

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INTRODUCTION

This publication consists of two parts:

- Resource Flows for Health Research and Development: A Comparative Study of Malaysia, the Philippines, and Thailand; and
- A Manual on Tracking Country Resource Flows for Health Research and Development

It is the result of a two-year multi-country study that responded to various moves in the health sector environment: the early 1990s call of the Commission on Health Research and Development recommending that all countries should vigorously undertake essential national health research (ENHR) to accelerate health action in diverse national and community settings, and to ensure that resources available for the health sector, achieve maximum results; the 1996 World Health Organization (WHO) declaration for the need for a mechanism for exchanging ideas about progress and priorities in health R&D, and for tracking flows of funding as well as identifying important gaps; and a subsequent paper at the First Global Forum for Health Research pointing out the need to collect, analyze, and disseminate information on health resource flows to better address health problems of low and middle income countries.

The first part is the integrated report that culls from the parallel efforts of the participating countries of Malaysia, the Philippines, and Thailand. It draws from the individual, more detailed country studies and highlights the data that can be compared across them. Findings on the tracking of health R&D resource flows of the three countries are presented. The multicountry report takes off from a Philippine report on health R&D flows funded by the Department of Health.

The second part is the manual that presents the method used by the three countries to track their respective health R&D resource. It is addressed to other countries that would like to embark on a similar effort. As such, it explains the different steps involved. Every attempt is made to simplify and make the steps as straightforward as possible. Whenever needed, potential areas of difficulty are identified; and whenever applicable, solutions of the three countries to these difficulties are discussed.

PART ONE :

RESOURCE FLOWS FOR HEALTH RESEARCH AND DEVELOPMENT

A Comparative Study of Malaysia, the Philippines, and Thailand

BACKGROUND

In the early 1990s, the Commission for Health Research and Development (Commission) published a report recommending that all countries should vigorously undertake essential national health research (ENHR) to accelerate health action in diverse national and community settings, and to ensure that resources available for the health sector, achieve maximum results. The recommendation was particularly directed to developing countries where ENHR could, among other things, enhance the impact of limited resources.

Within the decade the World Health Organization (WHO) published the report, *Investing in Health* (1996) which noted related findings: the need for a mechanism for exchanging ideas about progress and priorities in health research and development (R&D), and for tracking flows of funding and identifying important gaps. The following year, a paper presented at the First Global Forum for Health Research pointed out the need to collect, analyze, and disseminate information on health resource flows to better address health problems of low and middle income countries.

OBJECTIVES

This study is a first attempt at responding to the concerns raised so far about the tracking of health R&D funds as it looks at these resource flows in three middle income countries: Malaysia, the Philippines, and Thailand. Its overall objective is to develop a basic methodology for tracing and measuring health R&D funds in a country as a tool to streamline and finetune the allocation of health R&D funds.

The specific objectives, at the country level, are:

- To identify the sources, users, and uses of health R&D funds
- To estimate the amount and nature of health R&D expenditures
- To undertake a qualitative analysis of research outputs resulting from these resources, to the extent possible
- To assess if health R&D expenditures are aligned with the priorities of the research agenda
- To catalog indicators for monitoring health R&D expenditures across time

This report presents an integrated view of the resulting work carried out in the three countries. As such, it highlights the data that can be compared across them. Through their experiences, it also shows how such a methodology is of use and can be applied to other countries.

APPROACH and METHODOLOGY

To track the flow of funds for health R&D, an accounting framework which traces the flow of funds from fund sources to fund users is used, the latter referring mainly to funding recipients tasked to undertake the R&D activity.

Several constructs underpin this flow of funds framework.

First is the definition of health R&D, a critical construct, since such a definition not only determines the scope of the proposed project effort but also guides the task of tracing the flow of funds, particularly in cases where the funds take a rather convoluted track (e.g. when multilateral funding goes through the government budgetary process before a research institution is allowed access to it.) For purposes of the project, a modified version of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) definition of R&D is used. Health R&D is defined as "any systematic and creative work undertaken in order to increase the stock of knowledge of health, and the use of such knowledge to devise new applications." Thus, the definition covers all R&D work falling within the domain of the medical and natural sciences, studies on health financing and economics, as well as sociological studies such as studies on knowledge, attitudes, and practices (KAP) of people towards health programs and interventions.

Second are the categories used to capture fund sources and fund users in the framework. The major fund sources are the three categories of public funds (emanating from government budgets, user fees, and social insurance), private funds (sourced from pharmaceutical companies, health care providers, and non-government organizations (NGOs)/foundations), and foreign funds from bilateral and multilateral agencies. The institutional breakdown of fund sources is guided as much by their source of financing (e.g. government budget versus user fee) as their functional role (e.g. public vs. private, providers vs. pharmaceutical firms). On the other hand, the major fund users are government agencies, academic institutions, research institutions, NGOs/foundations, pharmaceutical companies, and health care providers. Although these institutions are viewed as the main players and stakeholders in the health research arena of the three countries considered, they break out differently for each country at the firm and agency level with the possibility of some overlapping. The issue of double counting should therefore not be viewed as trivial.

Third is the structure within a country that theoretically brings together health R&D sources with health R&D users so that funding is efficiently brought to bear on the most critical health research priority areas. This structure usually consists of both public and private organizations with relevant mandates, stakeholders, and the larger community. Within this structure have evolved both informal and formal linkages that shape the process of formulating policies related to the country's health research agenda. The project sheds light on whether the funding of health R&D is in any way responsive to the policies formulated.

Fourth are the techniques for data generation and statistical analysis. Data generation is country-specific and is guided by the funds flow framework. The strategy for carrying this out consists of four elements:

- A systematic and comprehensive review of existing relevant data sets in order to determine their utility as a source of information for the project and to identify information gaps.

- Building a respondent base in the absence of a comprehensive or universal list of sources and users of health R&D funds through a purposive sampling approach

- A survey of pertinent respondents through a mail questionnaire supported by telephone and/or personal interviews in order to fill up the information gaps, plus statistical analysis of survey data using Excel spreadsheets and uniform templates.

- Coordination mechanism of project meetings, timed with key deliverable milestones to bring together key members of the country project teams in order to discuss and decide on common plans of action for the project, share respective country findings, and enhance networking.

COUNTRY FINDINGS

This section presents an integrated view of the results of the study carried out in each of the three countries. The results shown therefore lean towards those which would yield a meaningful comparison across countries, although mention is made of some country-specific findings. A full account of all results is presented in the individual country reports submitted to the Council on Health Research for Development (COHRED).

Flow of Funds Framework

All three countries tracked the flow of funds for health R&D by tracing the flow from the fund sources to fund users. The users are mainly funding recipients tasked to undertake the R&D activity.

Table 1 presents the categories used to capture fund sources and fund users in the framework. Sources of funds are classified into three types: government budget; private sector; and foreign funding agencies (bilateral or multilateral). There are only two categories for fund users: government sector and private sector.

Table 1. Framework and Categories for Flow of Funds

	MALAYSIA	PHILIPPINES	THAILAND
SOURCES	**Government Budget**	**Government Budget**	**Government Budget**
	Private Sector • Corporate R&D Funds • Foundations • Financial Institution (1) • NGOs • Others	**Private Sector** • Corporate R&D Funds • Foundations • Others	**Private Sector** • Corporate R&D Funds • Foundations • NGOs • Others
	Bilateral/Multilateral Funding Agencies ***UN System*** COHRED UNFPA UNICEF WHO ***Multilateral Agencies*** IAEA ILSI SEAMEO TROPMED	**Bilateral/ Multilateral Funding Agencies** ***UN System*** COHRED UHNP UNESCO UNFPA UNICEF WHO ***Development Banks*** ADB World Bank	**Bilateral/Multilateral Funding Agencies** ***UN System*** COHRED UNICEF WHO ***Development Banks*** ADB World Bank

Table 1. Framework and Categories for Flow of Funds (continued)

	MALAYSIA	PHILIPPINES	THAILAND
SOURCES (continued)	***Bilateral Agencies*** CIDA	***Bilateral Agencies*** AusAID EU German Development Cooperation IDRC Israeli Government JICA Royal Netherlands Embassy SNV USAID	***Bilateral Agencies*** AusAID EU JICA USAID
USERS	**Government Sector** • Ministry of Health • Ministry of Science, Technology & Environment • Ministry of Primary Industry • Ministry of Agriculture • Academic/Research Institutions	**Government Sector** • Department of Health • Department of Science and Technology • Department of Education, Culture and Sports • Academic/ Research Institutions • Hospitals	**Government Sector** • Ministry of Public Health • Ministry of Science • Ministry of Education • Ministry of University Affairs • Academic/Research Institutions • Hospitals • Others
	Private Sector • Pharmaceutical Firms • Academic/Research Institutions • Hospitals/Health Care Providers	**Private Sector** • Pharmaceutical Firms • Academic/Research Institutions • Hospitals/Health Care Providers • NGOs	**Private Sector** • Pharmaceutical Firms • Academic/Research Institutions • Hospitals/Health Care Providers • NGOs

Sources: COHRED-MOH Health Research Resource Flows Survey, Malaysia, 2000.
COHRED-CEPR Health Research Resource Flows Survey, Philippines, 2000.
COHRED-Chulalongkorn University Health Research Resource Flows Survey, Thailand, 2000.

The table brings out the following patterns in source and user categories for health R&D in the three countries:

- The government budget is a source of funds in all three countries.
- Only Malaysia cites a single financial institution as a private sector funder. In the Philippines, private sector funds are sourced both from local and foreign institutions.
- Local non-government organizations emerged as a major fund source in Malaysia and Thailand, while they are merely a funding recipient in the Philippines.
- Government sector users consist of the main government line agencies for public health, science and technology, education, academic/research institutions, and hospitals. The research institutions under the Ministries of Primary Industry and Agriculture are also fund users in Malaysia.
- Private sector users consist mainly of pharmaceutical firms, academic/research institutions, and hospitals or health care providers.

Respondent Base

The relative absence of secondary data on health R&D financing mandated the collection of primary data. A common survey instrument using as a basis the UNESCO definition for R&D was formulated and agreed upon to ensure comparability of data across countries.

The pioneering nature of the effort coupled by the time and resource constraints imposed on it made it necessary to adopt innovative strategies in building a respondent base. In the absence of a comprehensive or universal list of sources and users of health R&D funds, all three country teams used a purposive sampling approach. The respondents in each country were identified with the help of lists compiled by major stakeholders such as the Ministry/Department of Health and Science and Technology. For the private sector, most of the target respondents were those identified by government line agencies as grant recipients. Another method used in targeting respondents was to look at the top players of private sector groups such as pharmaceutical industry associations. In the Philippines, for instance, thirty pharmaceutical firm-respondents were culled from the list of the top 7000 corporations in the country for the first funds flow study. These approaches may have failed to pick up institutions without linkages with the government agencies, as well as organizations that are not top listed in industry groupings.

Questionnaires were sent by mail and followed up with telephone calls. Whenever time and resources permitted, some respondents were also visited, particularly those who accounted for large amounts of health research funding. In Thailand, a workshop was held among key players in health research. During this workshop, participants identified potential respondents.

The relatively high response rates in

the government sector can mainly be attributed to the government support which the research effort received. This invariably led to increased access to and a higher level of cooperation from potential government respondents. For instance, in Malaysia and the Philippines, the covering letter for the survey was signed by a high ranking official of the Ministry of Health.

Table 2 below summarizes the number of institutions surveyed and the response rates across countries. The Philippines had the highest response rate for the government sector at 91 percent while Malaysia in turn had the highest for the private sector at 88 percent. Thailand reported a 100 percent response rate for bilateral/multilateral funders.

Table 2. Respondent Base and Response Rates, 1998 Survey on Health Research Resource Flows

	MALAYSIA			PHILIPPINES			THAILAND		
	No. of Institutions Surveyed	No. of Respondents	Response Rate (%)	No. of Institutions Surveyed	No. of Respondents	Response Rate (%)	No. of Institutions Surveyed	No. of Respondents	Response Rate (%)
GOVERNMENT	145	91	63	131	119	91	46	31	67
PRIVATE	59	52	88	30	13	43	160	55	34
BILATERAL/ MULTILATERAL FUNDERS	-	-	-	3	2	67	9	9	100
TOTAL	**204**	**143**	**70**	**164**	**134**	**82**	**215**	**95**	**44**

Sources: COHRED-MOH Health Research Resource Flows Survey, Malaysia, 2000.
COHRED-CEPR Health Research Resource Flows Survey, Philippines, 2000.
COHRED-Chulalongkorn University Health Research Resource Flows Survey, Thailand, 2000.

Sources of Health R&D Funds

The survey questionnaire asked the respondents to indicate whether they were fund sources, users, or both. The responses of those who identified themselves as fund sources are summarized in Table 3.

The government sector was consistently the largest contributor to health R&D

Table 3. Sources of Health R&d Funds, 1997 - 1998 (in thousand US$)

	MALAYSIA				PHILIPPINES				THAILAND			
	1997		1998		1997		1998		1997		1998	
	Health R&D	%	Health R&D	%	Health R&D	%	Health R&D	%	Health R&D	%	Health R&D	%
Government Sector	7,126	80	4,998	72	6,924	66	4,852	65	10,123	73	11,486	73
Ministry/Department of Health	1,384	15	624	9	2,753	26	1,738	23	5,988	43	7,483	48
Ministry/Department of Science and Technology	5,754	65	4,251	61	3,474	33	2,735	37	-	-	-	-
Ministry of Education	18	0.2	120	2	-	-	-	-	-	-	-	-
Academic/Research Institutions	-	-	-	-	541	5	296	4	2,506	18	2,107	13
Hospitals	-	-	-	-	74	0.7	4	0.05	-	-	-	-
State Government	-	-	3	0.04	-	-	-	-	-	-	-	-
Others	-	-	-	-	82	0.8	79	1	1,629	12	1,896	12
Private Institutions	1,571	18	1,717	25	363	3	480	7	2,270	16	2,704	17
Pharmaceutical Firms	1,535	17	1,526	22	177	2	423	6	808	6	531	3
Academic Research Institutions	-	-	-	-	74	0.7	3	0.04	557	4	930	6
Hospitals/Laboratories	-	-	-	-	26	0.2	30	0.4	-	-	5	0.03
NGOs	-	-	-	-	50	0.5	0.3	<0.01	905	7	1,194	8
Others	157	2	191	3	36	0.3	36	0.3	-	-	44	0.03
Multilateral/Bilateral Funding Institutions	157	2	217	3	3,280	31	2,076	28	1,532	11	1,407	9
TOTAL	8,854	100	6,932	100	10,567	100	7,408	100	13,925	100	16,682	100

Sources: COHRED-MOH Health Research Resource Flows Survey, Malaysia, 2000.
COHRED-CEPR Health Research Resource Flows Survey, Philippines, 2000.
COHRED-Chulalongkorn University Health Research Resource Flows Survey, Thailand, 2000.

funding in 1997 and 1998 for all three countries. The Ministry/Department of Science and Technology was the largest fund source in both Malaysia and the Philippines; for Thailand, it was the Ministry of Health. Private institutions provided less than 20 percent of funds although the relative size of their contribution may partly be attributed to the sampling design. Thus, one should interpret the results with caution as the purposive sampling approach used may have resulted in a bias for the government sector, thus decreasing the reliability of making extrapolations to the universe of players and stakeholders.

The share of government funding in Thailand remained constant for 1997 and 1998 at 73 percent. But in terms of absolute amount, total research funding (especially Government) actually increased. In the two other countries, this share decreased slightly from 1997 to 1998, with the pharmaceutical sector largely taking up the slack.

The importance attached to health R&D is put in proper perspective by looking at government resources devoted to health R&D as a proportion of the health budget, the total government budget, and the country's gross domestic product. These figures are presented in Table 4.

Table 4. Government Health R & D Resources as a Percentage of Government Budget, Health Budget, and Gross Domestic Product (GDP)

	MALAYSIA[1]		PHILIPPINES		THAILAND	
	1997	1998	1997	1998	1997	1998
As a % of Total Governent Budget	0.05%	0.04%	0.13%	0.11%	0.05%	0.06%
As a % of Health Budget	0.87%	0.60%	0.67%	0.61%	0.71%	0.90%
As a % of GDP	0.01%	0.01%	0.05%	0.049%	0.011%	0.012%

Sources: COHRED-MOH Health Research Resource Flows Survey, Malaysia, 2000.
General Appropriations Act, Philippines, 1997 and 1998.
National Survey on R&D Expenditure and Personnel of Thailand, Thai Research Council, 1996-98.
Seventh and Eighth National Economic and Social Development Plan, Thailand.
Ministry of Public Health Annual Report, Thailand, 1996-98.
COHRED-Chulalongkorn University Health Research Resource Flows Survey, Thailand, 2000.

1/ Health R&D resources based on amount spent and not amount given

The figures reveal that despite the fact that for all three countries, the government sector is the highest contributor to health R&D funds, health R&D in fact does not appear to enjoy a very high priority in resource and budget allocation. As a percentage of total government budget, it ranges from only 0.04 percent to 0.11 percent while as a percentage of the health budget, it ranges from only 0.60 percent to 0.90 percent. As a percentage of GDP, the corresponding range is from 0.01 percent to 0.05 percent.

Users and Their Use Allocation of Health R&D Funds

The above analysis of fund sources and the relative amounts that they provide make it important to look at fund users and the areas to which the funds are applied. Table 5, summarizes the responses of those who categorized themselves as users of health R&D funds. In the same manner that it emerged as the dominant provider of funds, the government sector also came out as the dominant user. Among the government users, academic and research institutions were the largest in Malaysia and the Philippines while the Ministry of Health occupied a similar slot in Thailand.

Government users in Malaysia and Thailand were generally confined to the Ministry/Department of Health and academic/research institutions. The Philippines, on the other hand, had more diverse government users, including the Department of Science and Technology and government hospitals.

In Thailand, the government sector accounted for the same usage share of health R&D funds in 1997 and 1998 at 78 percent. For Malaysia and the Philippines, on the other hand, government share decreased slightly from higher shares of 88 percent and 86 percent, respectively, in 1997 to 1998 figures of 85 percent for the two countries.

Table 5. Users of Health R & D Funds, 1997-1998 (in thousand US$)

	MALAYSIA				PHILIPPINES				THAILAND			
	1997		1998		1997		1998		1997		1998	
	Health R&D	%	Health R&D	%	Health R&D	%	Health R&D	%	Health R&D	%	Health R&D	%
Government Sector	7,448	88	5,396	85	5,873	86	4,497	86	10,808	78	12,221	78
Ministry/Department of Health	2,450	29	1,503	24	1,169	17	447	9	6,908	50	8,472	54
Ministry/Department of Science and Technology	-	-	-	-	1,743	26	1,316	25	-	-	-	-
Academic/Research Institutions	4,998	59	3,893	61	2,456	36	2,199	41	3,685	26	3,591	23
Hospitals	-	-	-	-	434	6	480	9	-	-	-	-
Others	-	-	-	-	71	1	55	1	215	2	158	1
Private Sector	1,008	12	989	15	915	13	819	15	3,117	22	3,461	22
Pharmaceutical Firms	1,007	12	965	15	-	-	150	3	322	2	259	1
Academic Research Institutions	-	-	-	-	286	4	237	4	2,074	15	2,166	14
Hospitals/Laboratories	1	0.01	24	0.38	29	0.4	148	3	-	-	-	-
NGOs	-	-	-	-	593	9	284	5	721	5	907	6
Others	-	-	-	-	7	0.1	.08	<0.01	-	-	-	-
Foreign Institutions	-	-	-	-	79	1	-	-	-	-	-	-
TOTAL	8,456	100	6,385	100	6,867	100	5,316	100	13,925	100	15,682	100

Sources: COHRED-MOH Health Research Resource Flows Survey, Malaysia, 2000.
COHRED-CEPR Health Research Resource Flows Survey, Philippines, 2000.
COHRED-Chulalongkorn University Health Research Resource Flows Survey, Thailand, 2000.

In Table 6, fund uses in 1998 are presented by type of research and by aggregate health areas. R&D by type of research is classified into three:

- basic or fundamental research: any experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations or phenomena and observable facts, without any particular or specific application in view
- applied research: any original investigation undertaken in order to acquire new knowledge, but directed primarily towards a specific practical aim or objective, and
- experimental development: any systematic work that draws on existing knowledge gained from research and/or practical experience and is directed to producing new materials, products and devices; installing new processes, systems and services; and substantially improving those already produced or installed.

R&D by aggregate health areas is classified into:

- natural sciences: involves the treatment of natural phenomenon like biology, botany, chemistry, physics, and other related fields as related to health
- medical sciences: includes epidemiological, clinical, and biomedical research in the following fields of study: anatomy, dentistry, medicine, nursing, obstetrics, optometry, osteopathy, pharmacy, physiotherapy, public health, and other allied subjects, and
- health economics/social sciences: includes health-related research in the social sciences such as health economics, research on knowledge, attitudes, and practices of people towards health programs and interventions, etc.

For all three countries, Table 6 shows that applied research and research in the medical sciences received the highest funding levels in 1998. For Malaysia, the shares were 63 percent and 94 percent respectively; for the Philippines, 70 percent and 80 percent; and for Thailand, 72 percent and 62 percent.

Table 6. Health R & D Expenditure by Type of R&D Activity and Field of Activity, 1998 (in thousand US$)

	MALAYSIA					PHILIPPINES					THAILAND				
	Basic Research	Applied Research	Experimental Development	TOTAL	As a % of Total Health R&D Expenditures	Basic Research	Applied Research	Experimental Development	TOTAL	As a % of Total Health R&D Expenditures	Basic Research	Applied Research	Experimental Development	TOTAL	As a % of Total Health R&D Expenditures
Medical Sciences	1,122	3,677	1,231	6,030	94	279	2,852	1,128	4,259	80	923	4,794	920	6,637	62
Health Economics/Social Sciences	0	284	0	284	5	98	624	-	722	14	428	2,222	426	3,076	29
Natural Sciences	16	55	0	71	1	85	230	20	335	6	145	754	144	1,043	10
TOTAL	1,138	4,016	1,231	6,385	100	462	3,706	1,148	5,316	100	1,496	7,770	1,490	10,756	100
As a % of Total Health R&D Expenditure	18	63	19	100		9	70	21	100		14	72	14	100	

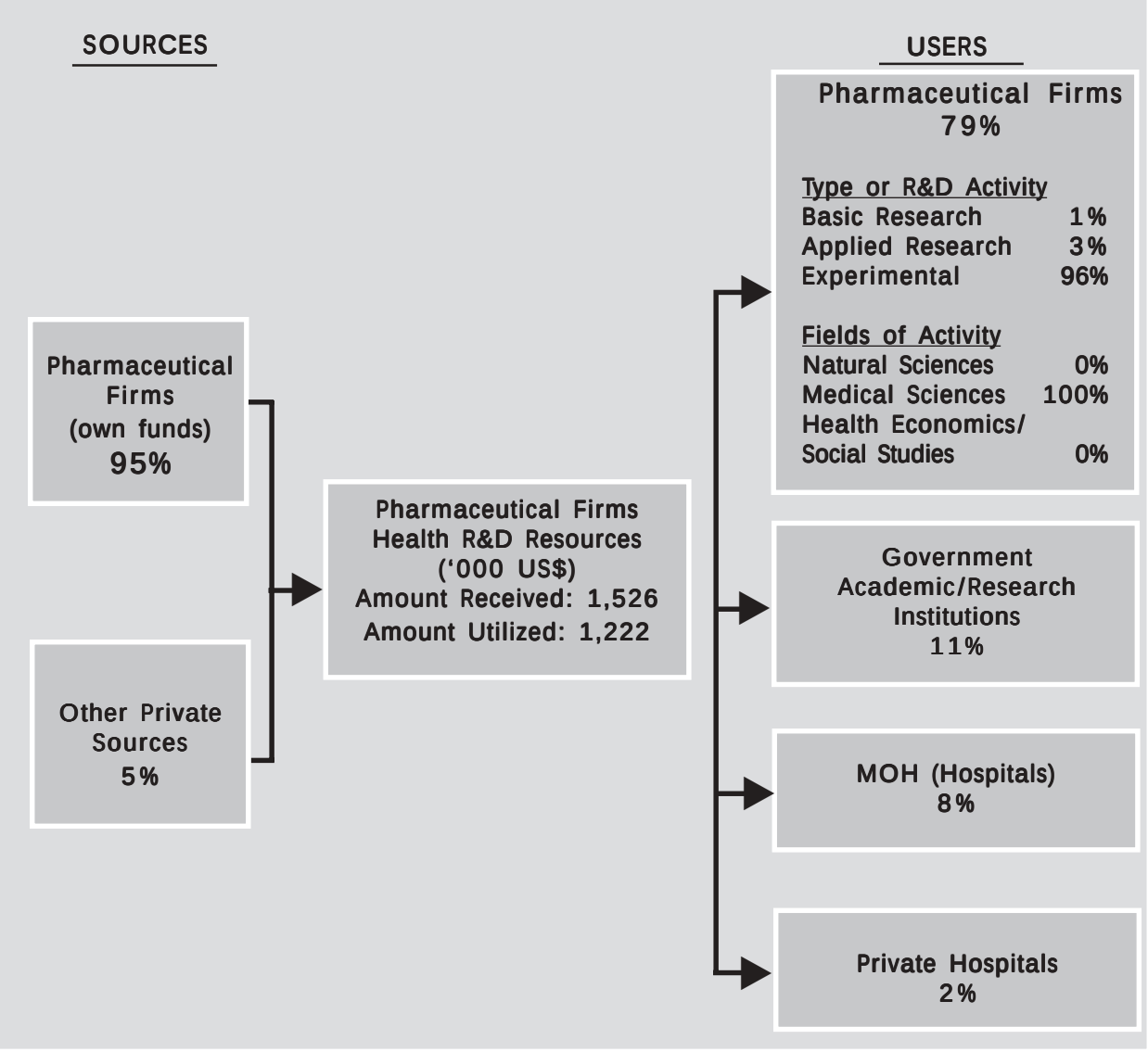
Sources: COHRED-MOH Health Research Resource Flows Survey, Malaysia, 2000.
COHRED-CEPR Health Research Resource Flows Survey, Philippines, 2000.
COHRED-Chulalongkorn University Health Research Resource Flows Survey, Thailand, 2000.

Health Research Resource Flows

One advantage of the fund accounting framework used in this study is that it permits the tracking of the flow of funds from the source, through the conduit agency (if any) and finally to the user. Three funds flow diagrams are presented to give a flavor of the information which such an exercise yields.

Figure 1.1

Resource Flow for Health R&D
Pharmaceutical Firms, Malaysia, 1998
n=14



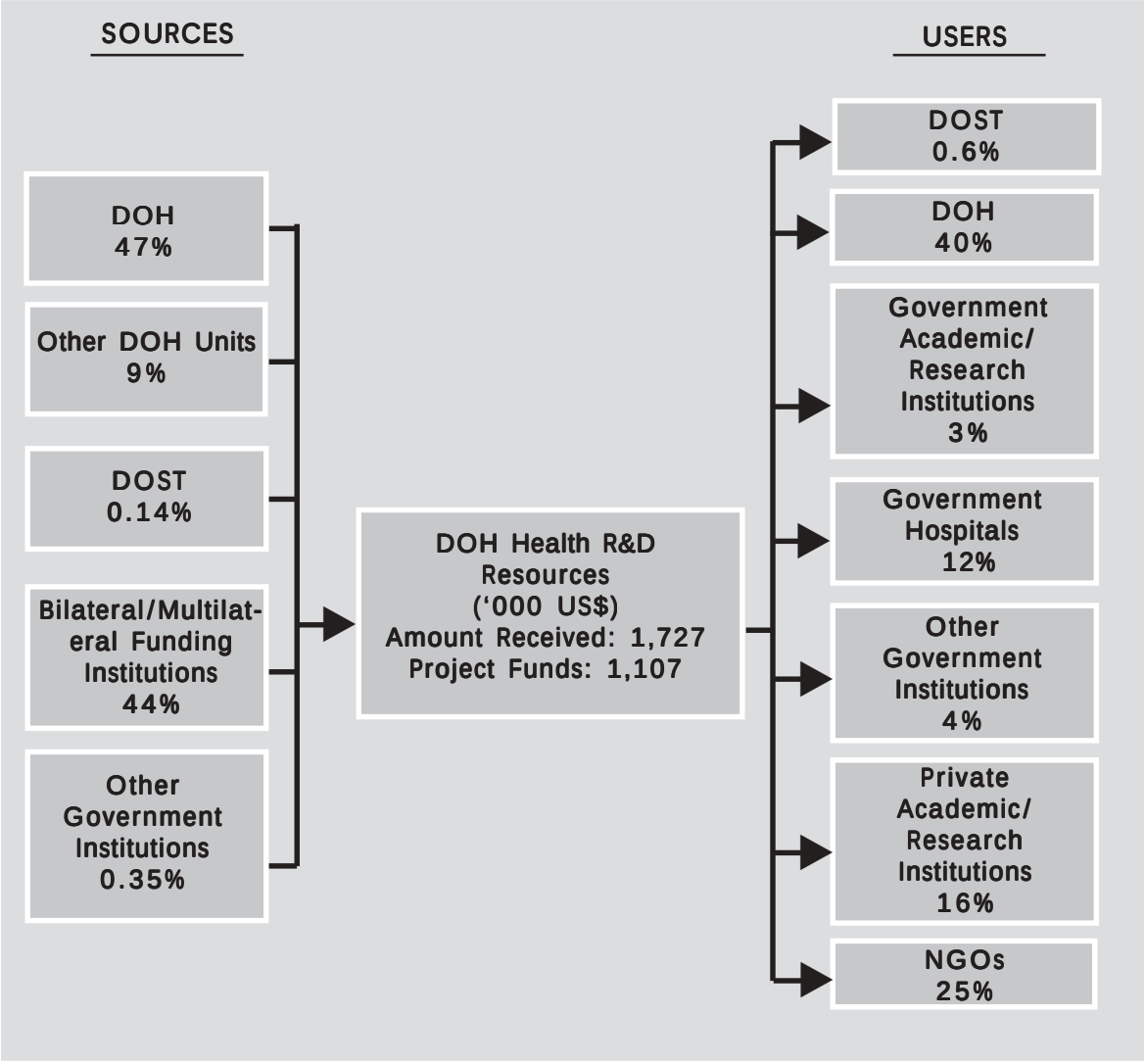
Source: COHRED-MOH Health Research Resource Flows Survey, Malaysia, 2000.

Figure 1.1 shows that in 1998, the pharmaceutical sector in Malaysia sourced its funds for health R&D internally, accounting for 95 percent of the total. The remaining 5 percent came from the foreign-based headquarters of surveyed pharmaceutical firms. However, the list of users was more diverse. Although pharmaceutical firms again received the lion's share at 79 percent, some funds were also directed to government academic/research institutions (11 percent), Ministry of Health hospitals (8 percent) and private hospitals (2 percent). Research is performed by various types of institutions. Market competition and bottomline concerns may have led pharmaceutical firms in Malaysia to use their own funds to perform experimental development research in the medical sciences. These are essentially the local pharmaceutical companies that carry out research on product and formulation development. However, the multinational pharmaceutical companies mostly subcontract their research to hospitals and government academic and research institutions, primarily for the conduct of clinical trials.

On the other hand, the Department of Health (DOH) in the Philippines obtained research funding from different sources in 1998. As shown in Figure 1.2, the DOH and bilateral/multilateral agencies contributed close to equal shares at 47 percent and 44 percent respectively. The other funds were brought in by other DOH units at 9 percent. This refers to DOH units that provided health R&D funds to surveyed DOH units. Smaller contributions were made by Department of Science and Technology and other government institutions. In terms of use, the DOH got the biggest share at 40 percent. It then proceeded to subcontract to other sectors/institutions, as evidenced by the NGO share of 25 percent, private academic/research institutions' share of 16 percent, and government hospitals' share of 12 percent.

Figure 1.2

Resource Flow for Health R&D
Department of Health (DOH), Philippines, 19 8
n=36

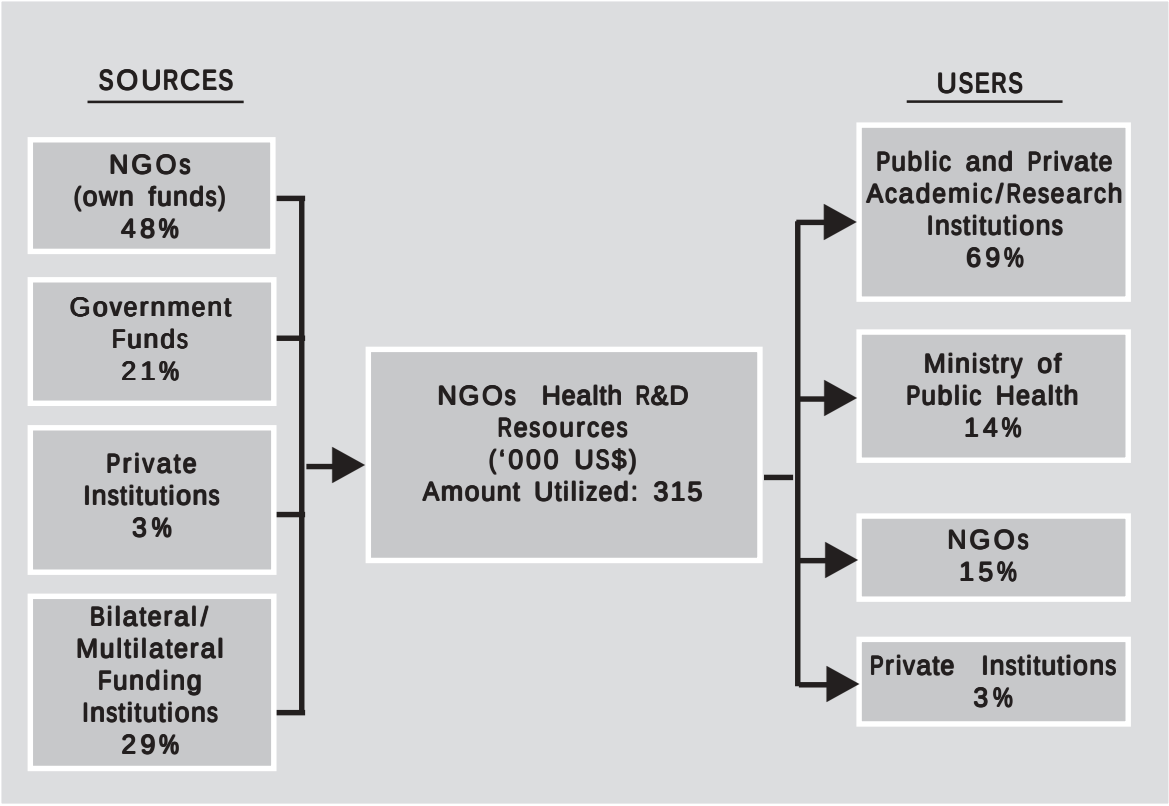


Source: COHRED-CEPR Health Research Resource Flows Survey, Philippines, 2000.

In Thailand's NGO sector for 1998, NGOs were a major source of health R&D funds, accounting for 48 percent of total sources. Bilateral/multilateral funds provided another 29 percent followed by government funds at 21 percent. In terms of users, public and private academic/research institutions were a major recipient, getting 69 percent of funds while NGOs and the Ministry of Public Health enjoyed almost equal shares at 15 percent and 14 percent respectively.

Figure 1.3

Resource Flow for Health R&D
Non-Government Organizations (NGOs)
Thailand, 1998
n=21



Source: COHRED-Chulalongkorn University Health Research Resource Flows Survey, Thailand, 2000.

Alignment of Health Research Funding with Health Priorities

A major objective of the study is to compare the resulting allocation of health R&D funds with national health research priorities. To put the results of this exercise in proper perspective, a brief description of the priority-setting process in each of the countries is discussed.

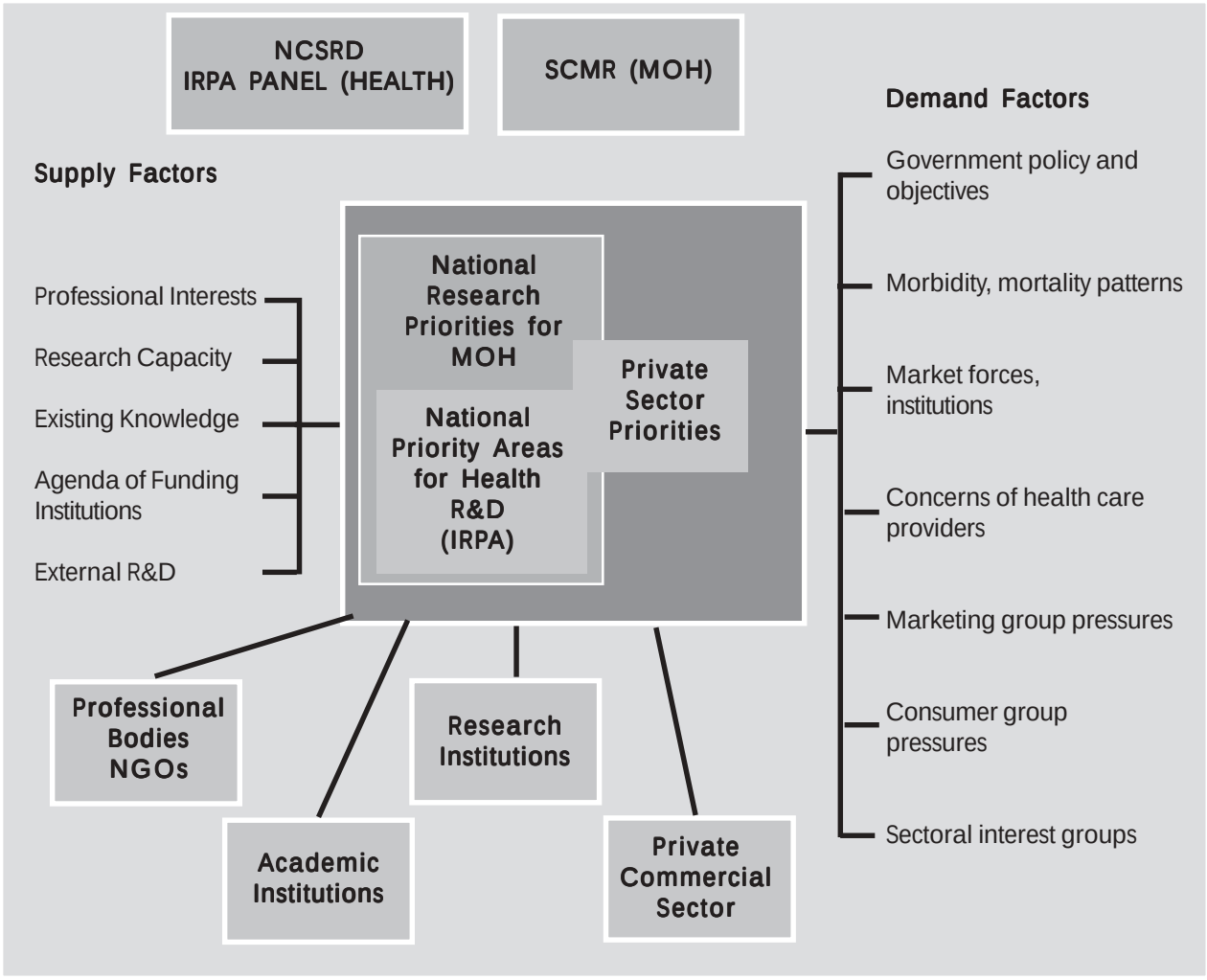
Health research priorities are de-

Institutional Framework and Research Priority Setting Process

MALAYSIA

Figure 2.1

Institutional Framework for the Malaysian Health R&D Agenda



Source: COHRED-MOH Health Research Resource Flows Survey, Malaysia, 2000.

fined by two government bodies: the National Council for Scientific Research and Development (NCSRD) and the Standing Committee for Medical Research (SCMR) of the Ministry of Health (MOH). Both bodies formulate their respective research agendas through similar consultative processes with direct and indirect inputs from public research institutions, academic institutions, and private organizations. The private sector, while undertaking a substantial amount of research, generally follows the priorities set by their respective institutions. Figure 2.1 illustrates the institutional framework for the health R&D agenda-setting process in Malaysia.

National Council for Scientific Research and Development

The NCSRD was set up by the Malaysian Government in 1975 as an advisory council specifically to oversee public sector research so that research resources are directed at enhancing the national development objectives. The Council is chaired by the Chief Secretary to the Government and its members comprise of eminent science and technology (S&T) experts from industry, academe, public research institutes, universities, and key government agencies. The Council advises the government specifically the Minister of Science, Technology and the Environment on all matters relating to S&T, including the formulation of S&T policies; identification of S&T priorities; and the coordination, implementation, and evaluation of S&T programmes. The Council is assisted by two committees: the Standing Committee on Science and Technology Development and Management, and the Coordinating Committee on Intensification of Research in Priority Areas (IRPA) for its effective functioning. These two committees are further assisted by eight Working Groups and 11 IRPA Panels, one of which is the IRPA Panel for the Health Sector.

Standing Committee for Medical Research, Ministry of Health

The Standing Committee for Medical Research (SCMR) chaired by the Director-General of Health Malaysia is charged with the responsibility of managing the research activity and programs of the Ministry of Health. The members of the SCMR comprise of the Deputy Secretary-General of Health (Finance), the three Deputy Director-Generals of Health, and senior Program Directors of the MOH. It has the mandate to plan, organize, and monitor the development of research facilities and research expertise; assist in obtaining research funds; and ensure the proper dissemination and utilization of research findings. The Standing Committee also serves as liaison between the Ministry of Health and other national as well as international agencies in matters pertaining to health research.

Priority setting in health is institutionalized as part of the planning process leading to the formulation of five-year national plans. This started with the Fifth Malaysia Plan (1986-1990) which initiated the integration of technology and science planning into the national planning process. This was accompanied by the creation of the Intensification of Research in Priority Areas (IRPA) fund, which is a central fund specifically for Research and Development. Efforts to establish priorities in health research in Malaysia have since been made through the framework of the National Council for Scientific Research and Development (NCSRD) and the IRPA Panel for the Health Sector.

A comprehensive guideline for priority setting in health research was formulated

by the IRPA panel for health research and is embodied in a document titled, "Priority Areas for Medical/Health Research". This document was circulated for use commencing with the 1991 IRPA funding exercise. It specifies that each area for research be evaluated and ranked according to the following parameters:

- Its socio-economic implications - the extent of the problem
- Lack of information on the subject
- Operational weaknesses
- Cost and time needed for research

A third revision of the priority listing was carried out in 1995 in preparation for the Seventh Malaysia Plan (1996-2000). The revised document was the product of a "National Conference on the Setting of Research Priorities for the Medical Sector for the Seventh Malaysia Plan". Inputs for this conference were invited from as wide a representation as possible of organizations which had an interest and/or are working in health research in Malaysia. This list of priorities is not meant to be static and will evolve with changing national needs and aspirations. The national priority setting exercise is conducted for each of the five-year development plans.

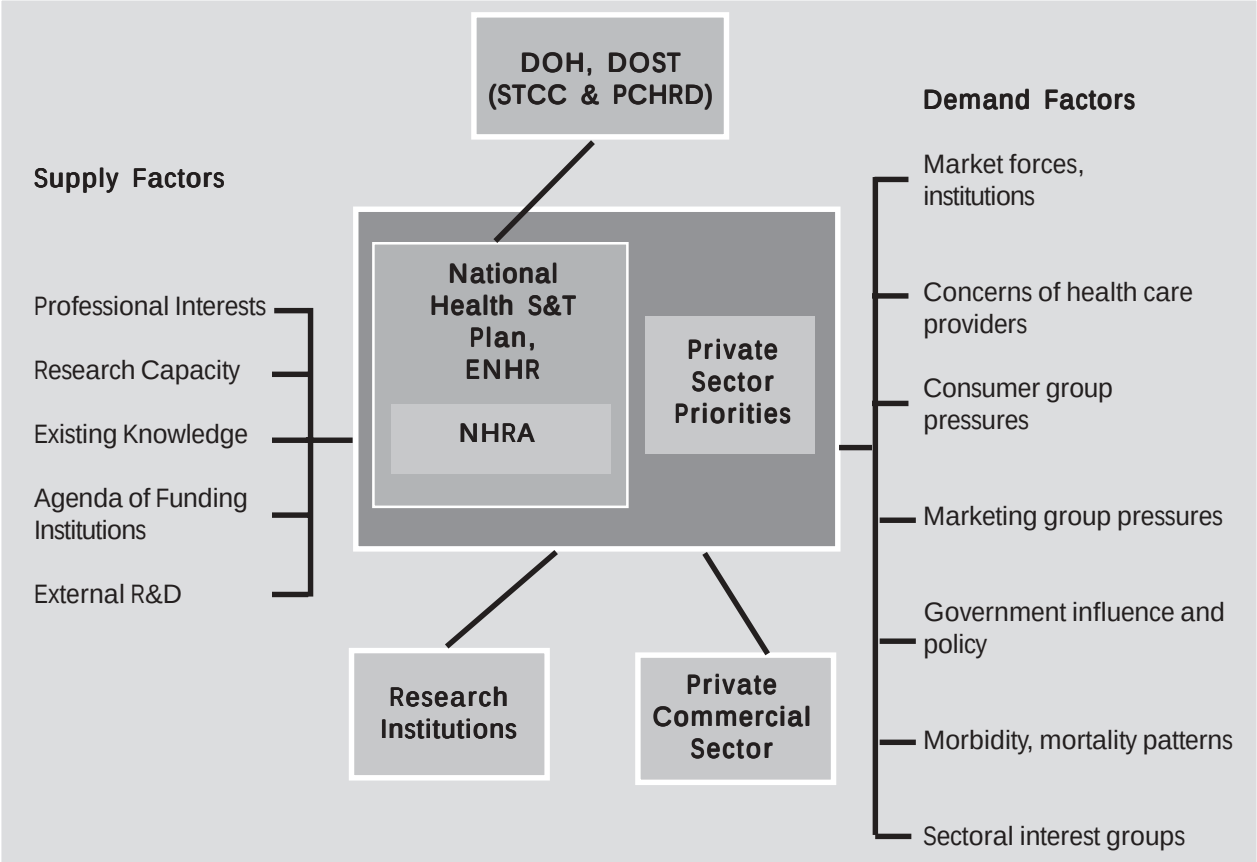
In addition to the national research priority areas, research needs in the Ministry of Health are also identified from the research dialogue sessions held annually between researchers and the Ministry of Health's policy makers, planners, and managers. The dialogue sessions provide a forum where researchers are told of the latter's research needs and expectations. Research needs are also identified through monitoring of the health data obtained from the National Health and Morbidity Survey conducted every ten years and from the Health Management Information System.

PHILIPPINES

In general, government-funded health research in the Philippines attempts to address priority issues confronting the local health sector. In the case of the public health sub-sector, research priorities are defined by two government institutions: the Philippine Council for Health Research and Development (PCHRD) of the Department of Science and Technology (DOST), and the Essential National Health Research (ENHR) unit of the Department of Health (DOH). Both institutions formulate their respective health research agendas through similar but distinct consultative processes. A substantial amount of research is also funded by the private sector, which may not necessarily follow the priorities set by ENHR or PCHRD. Taken together, the private and government sector priorities for research constitute the country's research agenda for any given time period. The following figure illustrates the institutional framework for the health R & D agenda-setting process in the Philippines:

Figure 2.2

Institutional Framework for the Philippine Health R&D Agenda



Source: DOH-CEPR 1998 Survey.

Philippine Council for Health Research and Development

The PCHRD is one of five sectoral councils of the Department of Science and Technology (DOST) and is the highest policy-making body in health research. One of its many roles is to provide leadership and direction in health-related research and development activities and to rationalize investment in science and technology relating to health. It undertakes these functions through a system of review of ongoing and pipeline projects in the government sector and by exerting its influence on the private sector, to ensure that implemented projects are in consonance with the National Health Research Agenda (NHRA).

The NHRA is embodied in the National Health S & T Plan (NHSTP), which is drawn up every five years through a nationwide multi-sectoral consultation process spearheaded by the PCHRD. The process employs the bottom-up approach, and consultation is done at three levels: regional, zonal and national. With the NHRA in place, the PCHRD then reviews and evaluates health projects to determine the extent to which these are aligned with NHRA priorities, and to ensure that projects are complementary and do not duplicate each other.

Essential National Health Research Unit

The Essential National Health Research Unit of the DOH was created in 1990 to manage the ENHR program of the DOH. This unit works closely with DOH regional R&D coordinators in organizing ENHR promotional activities in the provinces and regions through the local health networks.

The goal of the ENHR program is to promote a scientific and data-based culture within the health sector as a means of elevating the health status and quality of life of Filipinos. Part of its guiding policies is to build up, support, coordinate and sustain health research activities, whose results serve as an input to the national public health plans and programs. Its health research priorities are defined through a process that involves consultations and workshops with researchers, policymakers, program managers, health service providers, and users. The research agenda addresses the five main areas of responsibility of the DOH, namely:

- Health sector organization
- Disease control and public health
- Personal health care
- Health care financing, and
- Health product development.

These priorities were arrived at using criteria which included burden of illness, perceived demand, urgency, feasibility, and impact.

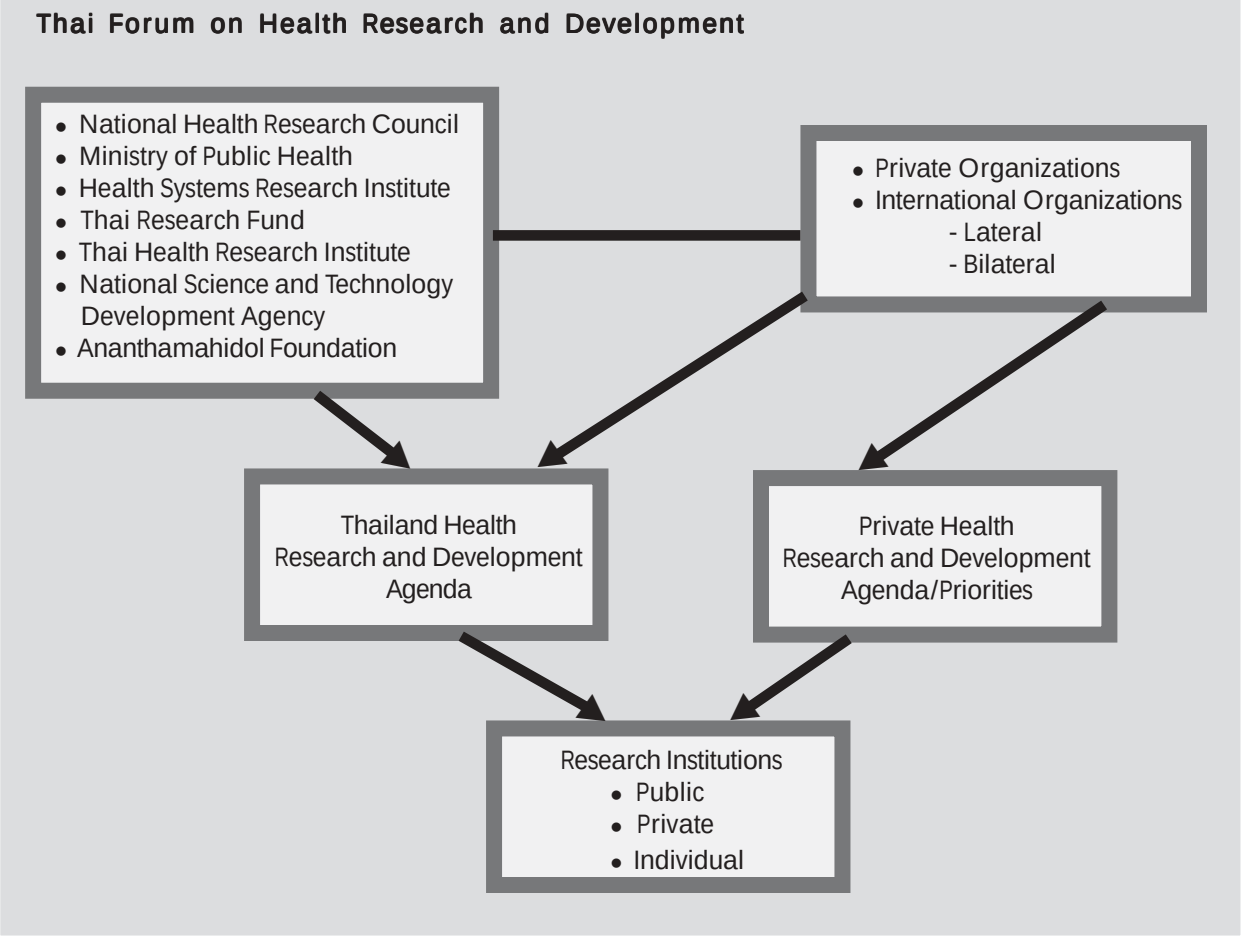
THAILAND

Three government institutions (National Research Council of Thailand (NRCT), Ministry of Public Health (MOPH) and National Science and Technology Development Agency (NSTDA)) and four autonomous research funding organizations (Health System Research Institute (HSRI), Thai Research Fund (TRF), Thai Health Research Institute (THRI) and Ananthamahidol Foundation) act as a core group to define health research priorities for the country. These institutions and organizations formulate their health research agendas based upon the National Health Plan which is a sub-plan of the National Economic and Social Development Plan and through meetings which take place once a year at the Thai Forum on Health Research and Development.

Research funded by the private sector (manufacturers of drugs, etc.) or international organizations (WHO, UNDP, etc.) may

Figure 2.3

Institutional Framework for Thailand Health R&D Agenda



Source: COHRED-Chulalongkorn University Health Research Resource Flows Survey, Thailand, 2000.

not necessarily follow the same agenda as the government. The research priorities for this group reflect the needs of each organization but occasionally coincide with the nation's health research agenda since some members of this group are participants in the Thai Forum on Health Research and Development.

The figure illustrates the institutional framework for the health research and development agenda in Thailand.

Although seven health and health related research institutions play major roles in setting priorities for health research and development in Thailand, the process is led by the National Research Council. It is the highest policymaking body in research and development and consists of ten departments. The Medical Science Department is responsible for formulating the National Health Plan and Development activities in health related research, including setting priorities in health research and development. The Prime Minister is titular head of this council while the committee members are Ministers, as well as representatives from other government offices and the private sector.

Fund Allocation Analysis

The survey results allow an analysis of the fund allocation pattern for the year 1998 in each country vis-à-vis the national health research priorities formulated through the priority-setting processes described earlier. Tables 7a-7c support this analysis.

MALAYSIA

- Table 7a shows good alignment of Malaysia's 1998 health R&D funds with national health research priorities with 96 percent of funds going to the eight national research priority areas for the medical sector in the Seventh Malaysia Plan. A third of R&D expenditures supported research on health problems associated with lifestyles while four other priorities enjoyed double digit shares of the funds: new technologies in health/medical biotechnology (17 percent), health care system and industries (15 percent), vector-borne and other communicable diseases (14 percent), and health problems associated with demographic changes (10 percent.) The concentration of health research efforts on the first area arose from concerns on consequences of industrialization, affluence, and influx of migrant workers. On the other hand, the interest in new technologies in health/ medical biotechnology, can be partly explained by the government's increasing emphasis on commercial application and values of research outputs, which is a criterion of IRPA funding.

- Two other priority areas received less support: occupational and environmental health at five percent and epidemiological database at one percent. A possible reason for these low support levels is that research capacity in terms of human resources and infrastructure in these fields is comparatively limited, and only a few such projects were put up for funding.

Table 7a: Health R&D Expenditures by Target Area of the Health Research Priorities for Seventh Malaysian Plan, 1998

TARGET AREA	Amount ('000 US$)	Percentage (%)
Health problems associated with lifestyles	2,128	33
New Technologies in Health/ Medical Biotechnology	1,090	17
Health care system and industries	955	15
Vector-born and other communicable diseases	909	14
Health problems associated with demographic changes	654	10
Occupational and environmental health	323	5
Epidemiological database	56	1
Others	270	4
TOTAL	**5,316**	**100**

Source: COHRED-MOH Health Research Resource Flows Survey, Malaysia, 2000.

- In the Philippines, eight of the top ten fields that garnered the most funding were among the research agenda of the Essential National Health Research in 1998. Only two fields, fundamental research and health systems, which received substantial funding did not belong to the ENHR agenda.

- As Table 7b shows, the ENHR list actually consisted of 17 priority areas.

Table 7b: Health R&D Expenditures by ENHR Priorities, Philippines 1998

ENHR Agenda	Rank in ENHR Agenda	Total Project-based Funding ('000 US$)	%
Nutrition	15	1,027	19
Non-communicable diseases	3	703	13
Fundamental research	-	627	12
Communicable diseases	2	512	10
Health systems	-	448	8
Environmental health	11	442	8
Disease control and prevention	7	436	8
Rational drug use	13	255	5
Traditional medicine	5	186	4
Reproductive health	10	122	2
Rational use of high technology	17	73	1
Child abuse	-	70	1
Primary health care	14	53	1
Ecology	12	38	0.7
Elderly	6	35	0.7
Devolution	1	24	0.5
Mental health	16	19	0.4
Occupational health	9	17	0.3
Violence	-	14	0.3
Culture and health	8	9	0.2
Illicit drug use	-	3	0.1
Injuries	-	.13	< 0.1
Health policy	-	.03	< 0.1
Dermatology	-	-	0
Peditaric health	-	-	0
Unclassified	-	200	4
TOTAL		5,136	100

Source: COHRED-MOH Health Research Resource Flows Survey, Philippines, 2000.

Only four of the top ten priorities made it to the top ten most funded areas. In fact, 9 of the 17 priority areas received less than 10 percent of research expenditures. Moreover, devolution, the highest priority area, had a share of less than half percent. The Philippine Health Insurance Program or health care financing did not generate any research interest.

THAILAND

The Thailand study captured the specific fields of study for only about US$3 million worth of research in the Ministry of Public Health (MOPH). In table 7c, it can be seen that of the US$3 million subset of MOPH

Table 7c: Health R&D Expenditures by Field of Activity by MOPH Priorities, Thailand, 1998

TARGET AREA	MOPH Priority	Amount ('000 US$)	Percentage (%)
Health economics, social sciences	/	3,078	97
Accident and poisoning	/	16	0.5
Malignant neoplasm, all forms	/	13	0.4
Disease of the heart	/	11	0.3
Hypertension and cerebrovascular disease	/	9	0.3
Diseases of the liver and Pancreas	/	7	0.2
Pneumonia and other lung diseases	/	6	0.2
Tuberculosis, all forms	/	6	0.2
Paralysis, all types	/	4	0.1
Suicide, homicide, and other injuries		4	0.1
Nephrities, nephrotic syndrome, and neprosis		3	0.1
Others		2	0.1
TOTAL			100

Source: COHRED-Chulalongkorn University Health Research Resource Flows Survey, Thailand, 2000.

research activities, almost all (97 percent) was devoted to Health Economics/Social Sciences. Each of the other MOPH priority areas had a share of only less than 0.5 percent. If this is representative of the whole picture of research funding allocation in the MOPH, there clearly is a need to look into processes of funding to support research priorities particularly in MOPH which is an active participant in setting national research priorities and which, according to Table 5, is the largest user of health research funding in Thailand.

THREE COUNTRIES

Among the three countries, Malaysia emerges as the most successful in aligning financial resources with health research priority areas. This may be attributed to the fact that the government was both the main source and the main user of health R&D funds. As such, it could wield considerable control in directing funding into priority areas. On the other hand, the diverse sources and users of health research funds in the Philippines resulted in health R&D finding their way into diverse areas of research as well, not necessarily chosen to support national priorities.

Fund Allocation According to Classification of Global Forum for Health Research[1]

The Philippine study also looked into the fund allocation pattern according to aggregate disease categories and risk factors as classified by the Global Forum on Health Research. The results are in Table 8 with the number of identified research titles per category shown in the second column. The results indicate that research in Health Systems and Non-communicable diseases have been allotted about 50 percent of total funding and emerge as the first two categories when these are ranked in descending order of funding. This reveals a significant shift in funding emphasis away from Group I diseases (communicable/maternal/perinatal and nutritional conditions) which occupies the third category.

[1] The Global Forum for Health Research is a WHO-based international foundation tasked with improving the allocation of health research resources to reflect the global burden of disease, with a focus on efforts to alleviate the health problems of the poor.

Table 8: Health R&D Funding and Activity by Aggregate Disease Categories and Risk Factors, Philippines, 1998

Global Forum Classification	Number of Research Identified	Total Funding ('000 PhP)	Total Funding ('000 US$)	Percent of Total Funding (%)
Health systems	182	63,903	1,563	29%
Group II: Non-communicable diseases	191	43,724	1,069	20%
Group I: Communicable/ maternal/perinatal and nutritional conditions	181	39,724	972	18%
Fundamental research	129	34,934	854	16%
Risk Factors II: Distal determinants of ill health	38	22,415	548	10%
Group III: Injuries	23	3,464	85	2%
Risk factors I: Proximate determinants of ill health	22	1,026	25	0.5%
Unclassified	100	8,190	200	4%
TOTAL	866	217,380	5,316	100%

Source: COHRED-CEPR Health Research Resource Flows Survey, Philippines, 2000.

Future Strategies

The three-country experience in initiating the collection and analysis of funds flow data for health research has generated some initial findings which other researchers, particularly those from developing countries, may want to give attention to when embarking on the same effort. These findings may also prove useful in formulating strategies for optimizing the policy impact of the research and for encouraging a sustained data gathering effort. They are summarized in what follows.

Measurement of Health R&D Flows

- On building a respondent base: despite the pioneering nature of the research effort, all three country teams were able to build a respondent base which generated a relatively high response rate. This was attained mainly through purposive sampling, initial screening out by telephone, and leveraging, mainly through workshops where the questionnaire was discussed. Senior researchers in each team also brought their own network into the respondent base, and they proved to be very useful for leveraging purposes.

- A number of follow up phone calls were made to respondents not only to follow up on responses but also to answer queries on the questionnaire. Most of the questions involved clarifying definitions and categorizing research titles. Therefore, use of widely accepted definitions and categories cannot be overemphasized. However, even if the definition is widely accepted internationally, it may not be as widely known to developing country respondents, given the pioneering nature of the survey. In such cases, it may be best to give a definition that could be clearly understood by putting it, as much as possible, in the context of local practices and norms.

- A common problem that has to be confronted by a research effort of this nature is double-counting. The experience in this project shows that the effects of such a problem could be minimized by adopting a flow accounting approach where flows through "projects" are identified by asking respondents to indicate the 1) funds that they received, 2) funds that they used and 3) funds that they suballotted to other institutions. This enables one to compare responses and, in the process, detect inconsistencies, thereby allowing for a fairly accurate trace of the flow of funds.

- A common problem faced by respondents is in digging up the data needed to be responsive to the questionnaire. This is compounded if multi-year data is required. One way to minimize this problem is to ask for data on the most recent year.

- The lag time involved in the transmittal of the questionnaire and in receiving the response can become critical especially in the face of time constraints.

The problem becomes more serious in developing countries where mail service could be spotty in some areas. The option of using the internet to allow the electronic transmission of responses should therefore be explored whenever possible.

Coordinating Mechanisms for Matching Funds with Priorities

One of the more powerful policy messages which this research effort delivers lies in the comparison between the funding allocation pattern revealed by the survey with national health research priorities. Even just a one-year comparison yields several findings.

- Clearly coordination cannot take place without communication. In the same way that stakeholders and key players must somehow be provided opportunities to come together and be "stewarded" by a high level oversight committee to set national health research priorities with all voices held, results of such priority-setting must also be disseminated to research funders. They in turn will be encouraged to support research work on the priority areas because of their potential national implications. Research funders can play a big role in linking and aligning the thinking of health research policymakers and the efforts of health researchers.

- In developing priority areas, it is better to identify a few rather than too many, especially when resources are limited. A few priority areas at least ensures that a fairly substantial level of resources can be devoted to each.

- Some priority areas are not given due research attention not because of lack of funding but due to the lack of resources required to support the needed research, in terms of both human resources as well as physical facilities. Policymakers and research funders should realize this and provide resources not only to conduct the research but also to build up the research capability.

Sustained Monitoring

Ideally, the initial research effort should serve to encourage main stakeholders to undertake a sustained monitoring of resource flows on a regular basis. It would be best if some government ministry such as the Department/Ministry of Health or Science and Technology would agree to allocate funds for undertaking a periodic survey. However, if this is not possible, the next best thing would be to try to identify an existing survey or a potential survey on which resource flow questions could piggyback.

The survey that feeds into the National Health Accounts (NHA) is one such survey. A study of the Philippine and Thai situation - where NHA data is already being collected - reveals that incorporating resource flow questions would be feasible. The next step would be to estimate the cost of doing so and present the case before government policy makers. In the case of Malaysia which is just developing a framework for its NHA, the potential to include the requirements for tracking health R&D flows is even more promising.

Annexes for Part One

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LIST OF ACRONYMNS

ADB	Asian Development Bank
AusAID	Australian Agency for International Development
CEPR	Center for Economic Policy Research
COHRED	Council on Health Research for Development
DOH	Department of Health
DOST	Department of Science and Technology
ENHR	Essential National Health Research
EU	European Union
GDP	Gross Domestic Product
HSRI	Health System Research Institute
IAEA	International Atomic Energy Agency
IDRC	International Development Research Centre
ILSI	International Life Sciences Institute
IRPA	Intensification of Research in Priority Areas
JICA	Japan International Cooperation Agency
KAP	Knowledge, Attitudes and Practices
MOH	Ministry of Health
MOPH	Ministry of Public Health
NCSRD	National Council for Scientific Research and Development
NGO	Non-Government Organization
NHA	National Health Account
NHRA	National Health Research Agenda
NHSTP	National Health Science and Technology Plan
NRCT	National Research Council of Thailand
NSTDA	National Science and Technology Development Agency
PCHRD	Philippine Council for Health Research and Development
R&D	Research and Development
S&T	Science and Technology
SCMR	Standing Committee for Medical Research
SEAMEO TROPMED	Southeast Asian Ministers of Education Organization Tropical Medicine

SNV	Netherlands Development Agency
STTC	Science and Technology Coordinating Council
THRI	Thai Health Research Institute
TRF	Thai Research Fund
UHNP	Urban Health Nutrition Program
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

PART TWO :

A Manual on Tracking Resource Flows for Health Research and Development

OBJECTIVES

This manual is addressed to countries that would like to:

- Identify the sources and uses of health R&D funds
- Estimate the amount and nature of health R&D expenditures
- Capture health R&D funds flow of major players in health care sector
- Perform a qualitative analysis of research outputs resulting from these resources
- Assess if health R&D are aligned with national research priorities
- Compare their results with those of other countries that have conducted a similar survey

The manual is largely based on the collective experience of Malaysia, the Philippines, and Thailand in conducting their respective country studies. The manual offers at best a basic approach that will have to be customized to meet the needs and situations of other countries interested in tracking their resource flows for health R&D.

FRAMEWORK

The underlying quantitative framework of the study uses an accounting approach. It very simply traces the flow of health R&D funds from fund sources to fund users. *Fund users* refers mainly to funding recipients tasked to undertake the R&D activity.

The quantitative framework works within a qualitative framework that the study tries to capture as well. This is the structure that theoretically brings together health R&D sources with health R&D users so that funding is efficiently brought to bear on the most critical health research priority areas. This structure usually consists of both public and private organizations with relevant mandates, stakeholders, and the larger community. Within this structure exist both formal and informal linkages that shape the process of formulating policies related to the country's health research agenda.

DATA GATHERING METHODS

Three main data-gathering methods are used. This table shows the expected findings for each method.

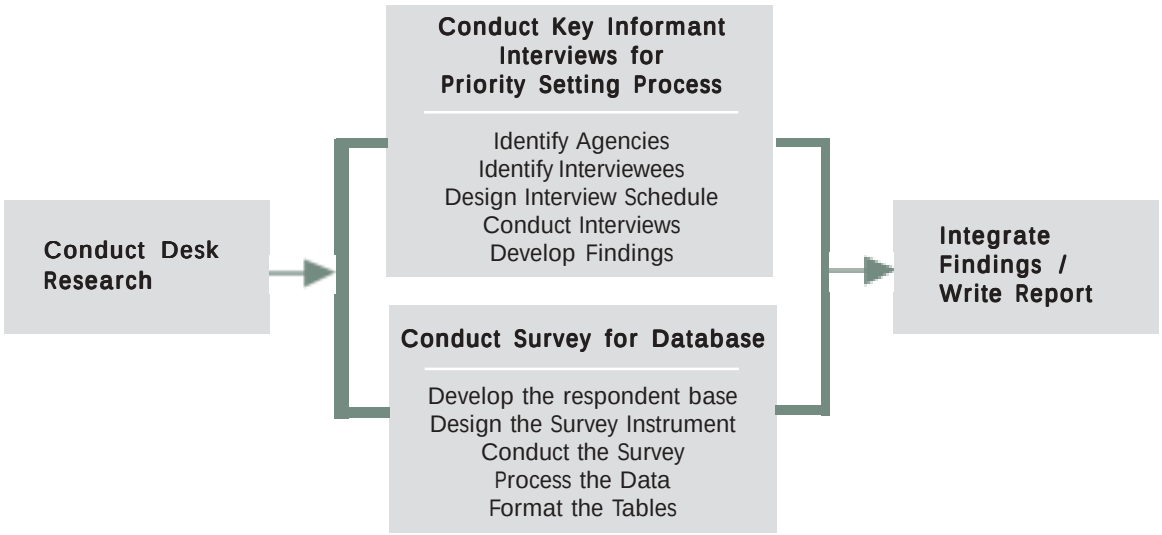
DATA GATHERING METHOD	FINDINGS
Desk Research	Respondent Base Sources, Users, and Uses of Health R&D Funds Amount and Nature of Health R&D Expenditures National Health Research Agenda and Priorities Health Research Outputs
Structured Survey Questionnaire supplemented with telephone/personal interviews	Sources, Users, and Uses of Health R&D Funds Amount and Nature of Health R&D Expenditures Health R&D Funds Flow Alignment of Health R&D Expenditures with Priorities of National Research Agenda Health Research Outputs
Key Informant Interviews with officials of relevant organizations	Institutions Involved in National Priority Setting Process for National Priority Setting National Health Research Agenda and Priorities

STEPS

To undertake the study, the steps to take are:

1. Understand Study Components

The diagram below illustrates how the study components relate to each other.



2. Translate Study Components into an Activity/Delivery Timetable for Scheduling and Monitoring Purposes

Adjust this generic timetable to your country's needs and situations. Use it as a worksheet to flesh out the project workplan. Some cells have been filled out as illustration.

ACTIVITY	TASKS	TIME PERIOD (broken down into months or quarters)			DELIVERABLES	RESPONSIBILITY
		Month 1	Month 2	Month 3		
Conduct Desk Research						
Conduct Key Informant Interviews for Priority Setting Process						
- Identify Agencies						
- Identify Interviewees						
- Design Interview Schedule						
- Conduct Interviews						
- Develop Findings						
Conduct Survey/ Database						
- Develop the Respondent Base						
- Design the Survey Instrument						
- Conduct the Survey	1. Send out questionnaires - by mail - by messenger 2. Follow up responses through phone - Ensure that target respondents received questionnaire - Clarify repsondent's questions which can be answered through phone				Monitoring table on delivery status Monitoring table on status of feedback from respondents	Research Asst. (RA) 1, messenger RA 2, RA 3

ACTIVITY	TASKS	TIME PERIOD (broken down into months or quarters)			DELIVERABLES	RESPONSIBILITY
		Month 1	Month 2	Month 3		
Conduct the Survey (continued)	3. Visit/interview respondents who need assistance in answering questionnaires				Accomplished questionnaires of visited/interviewed respondents	RA 2, RA 3
	4. Receive accomplished questionnaires - by mail - by messenger				Monitoring table on status of collection/ retrieval of questionnaires	RA 1, messenger
	5. Check completeness and consistency of retrieved questionnaires				Questionnaires with marks on unclear responses.	Senior Researcher RA 2, RA 3
	6. Call respondents by phone to clarify unclear responses				Clean, consistent questionnaires ready for encoding	Senior Researcher RA 2, RA 3
	7. Send out thank you letter to respondents					RA 1, messenger
- Design the Database						
- Process the Data						
- Format the Tables						
Develop Findings						
Integrate Findings/ Write Report						

3. Conduct Desk Research

As a first step, do desk research on all available data and statistics about health R&D flows in your country. Some sources that may be useful are:

- government budgets (national and specific departments)
- annual reports of research institutions
- academic and research journals
- development plans from the economic planning office, and
- statistical databases.

You can use secondary data from the above sources to estimate the proportion of health research and development against aggregate figures such as gross domestic product (GDP), government budget, resources for health, and resources for R&D, to come up with the following table:

Summary of Government Sources for Health, R&D, and Health R&D (Currency), (survey year/s)

BUDGET ITEM	YEAR 1	YEAR 2
Total Budget		
Resources for Health		
As a % of total budget		
Resources for Research and Development		
As a % of total budget		
Resources for Health Research and Development		
As a % of total budget		
As a % of resources for health		
As a % of resources for R&D		

You can also identify the government offices that were given budget items for health research and the relative magnitudes of these. A sample table for the Philippines follows:

Summary of Government Health R&D Allocations (Currency), (survey year/s)

BUDGET ITEM	YEAR 1	YEAR 2
Total Health R&D Resources		
I. Department of Health (DOH)		
As a % of Total Health R&D Resources		
As a % of Total DOH Budget		
Total DOH Budget		
Office of the Secretary		
A. Programs		
1. Research Institute for Tropical Medicine		
2. Essential National Health Research		
3. Bureau of Research and Laboratories		
B. Projects		
- Health Status Survey		
Lung Center of the Philippines - Comprehensive Research and Development, Management, Training and Education for the Prevention and Treatment of Lung Diseases		

continued

BUDGET ITEM	YEAR 1	YEAR 2
National Kidney and Transplant Instiute - Prevention and Treatment of and Research on Kidney Diseases Particularly Those Requiring Dialysis and Transplant		
Philippine Children's Medical Center - Comprehensive Research and Development, Management, Training and Education for the Prevention and Treatment of Children's Diseases		
II. Department of Science and Technology (DOST) As a percent of Total Health R&D Resources		
As a percent of Total DOST Budget		
Total DOST Budget		
Food and Nutrition Research Institute		
Philippine Council for Health Research and Development		
III. Department of Education, Culture, and Sports (DECS) As a percent of Total Health R&D Resources		
As a percent of Total DECS Budget		
Total DECS Budget		
Office of the Secretary - Research and Promotion of School Health and Nutrition		

The data you collect will be in your country's currency. However, if you intend to compare your country results with those of other countries, then convert your currency into US Dollars using the pertinent foreign exchange rate.

As a second step and on the basis of the desk research, list your country's fund sources and fund users, using the following table as a guide. Usually the major fund sources and fund users are those specified in the table but in reality, the final list will

Categories for Flow of Funds

SOURCES	USERS
Public Funds **Government Budget** **Social Insurance** **Private Funds** **Pharmaceutical Companies** **Health Care Providers** **Nongovernment Organizations (NGOs)/Foundations** **Academic Institutions** **Foreign Agencies** **Bilateral Agencies** **Multilateral Agencies**	**Government Agencies** **Academic Research Institutions** **NGOs/Foundations** **Pharmaceutical Companies** **Health Care Providers**

differ from country to country. Collapsing and/or further delineation of categories is the country's prerogative. For example, if pertinent to your country situation, private funds can be divided into those sourced locally and those sourced from abroad.

The table will help you identify the categories to be used first, in designing the survey and second, in processing the data to be generated by the study. From the categories, you can proceed to identify the respondents for both the key informant interviews and the survey.

4. Conduct Key Informant Interviews

IDENTIFY AGENCIES

Make a list of all agencies that are involved in research priority setting in the country.

These may include

- government offices
- non-government organizations
- academic and research institutions, and
- selected private sector groups such as industry associations for doctors, drug manufacturers, and hospitals.

Within the government sector, offices may range from the ministry /department of health, the national health care insurance company, the economic planning group, and public hospitals to local government units. You can start out with a short list of these agencies/groups. As you make inquiries with them, you will identify additional agencies to add to the list.

In the three-country study, for instance, each country started out with the following lists of institutions likely to be involved in priority-setting for health research. For some of the institutions listed, specific sub-units were involved in the agenda-setting process. On the other hand, some turned out not to be part of the priority-setting process. Many other institutions, groups, and councils were subsequently identified to have key roles in the health research agenda-setting process.

MALAYSIA	PHILIPPINES	THAILAND
Government Offices: Ministry of Science, Technology and the Environment Ministry of Health - Standing Committee for Medical Research	**Government Offices:** Department of Science and Technology - Philippine Council for Health Research and Development National Economic Development Authority Academic/ Research Institutions: University of the Philippines **Government Hospitals**: Philippine General Hospital	**Government Offices:** National Research Council of Thailand Ministry of Public Health National Science and Technology Development Agency **Autonomous Research Funding Organizations**: Health System Research Institute Thai Research Fund Thai Health Research Institute Ananthamahidol Foundation

IDENTIFY INTERVIEWEES

From each agency/group identified in the listing, find out who the best person is to interview about the national health research priority-setting process. These are the people who will serve as respondents for the Key Informant Interviews.

DESIGN INTERVIEW SCHEDULE

Use the suggested interview schedule found below simply as a guide. Adjust it according to the requirements of your country situation.

Name of Respondent: _____
Institution: _____
Position: _____

1. What is your institution's mandate?

2. Please describe the existing set-up for health re search priority-setting in which your organization is involved in.

   a. Institutional set-up
      - different organizations included and their respective mandates
   b. Other stakeholders and the role of each
   c. Processes involved
   d. Linkages among all stakeholders
   e. Criteria for prioritization

3. From the processes described above, what are the current priorities for health research?

4. Is there any mechanism for:
   a. disseminating health research priorities?
   b. channeling resources into the priority areas?

5. a. What problems are encountered in the priority-setting and other related processes for health research?
   b. What recommendations can you give to address problems identified in (a)?

CONDUCT INTERVIEWS

Be sure to take down notes when you conduct the interview. You can also bring a tape recorder. Use this only if the respondent agrees to having the interview tape-recorded. Before you conduct the interview, identify the most important pieces of information you need so that you can devote most of your questions to these.

DEVELOP FINDINGS

In developing the findings for this section, keep in mind that the overarching questions you want answered are:

- Is there a priority setting process in place for health research?
- Do all the agencies/officials who should be involved in the process take part in it?
- What are the channels and mechanisms for taking part?

- How are the results of the process disseminated to interested and concerned parties?
- How often does the process take place?

Use diagrams and charts, as needed, when you present the findings for this section.

5. Conduct Survey for Database

DEVELOP THE RESPONDENT BASE

If this study is being conducted for the first time in your country, chances are high that you have no idea of the universe of respondents. You can start by collating lists compiled by main stakeholders. These include government agencies such as the Ministry/Department of Health or the Ministry/Department of Science and Technology. You can ask them for a list of their research partners or a list of all the organizations to whom they have given research funds/projects. You can also look into lists of private sector groups such as the industry associations for pharmaceutical companies, or umbrella groups of research institutions. Keep an open mind in developing a long list of respondents. The list can also expand while you are already conducting the survey. As you make inquiries with your first set of respondents, ask them to link you up with other names and organizations in their research network.

When the list gets too long, conduct some telephone interviews to find out which respondents are worth reaching and getting into your respondent base.

DESIGN THE SURVEY INSTRUMENT

This is the survey instrument used by the first multi-country study. You do not have to follow it completely. You can adjust some sections to suit your country situation. However, if you want to compare your research findings with other countries, then it is best to stay as close as possible to this survey instrument.

In using this survey instrument, the country teams of Malaysia, the Philippines, and Thailand have learned many lessons. The more important ones are reflected in the questionnaire presentation.

The questionnaire consists of three sections: General Information, Research Agenda, and Financing and Expenditures for Health R&D. In asking for data, ask for the data on the more recent year. Components of each section, as well as a sample introductory letter and cover page are presented in the succeeding pages.

Introductory Letter. Print the introductory letter in the letterhead stationery of the ministry/department endorsing the study. The sample letter shown here was used for the Department of Health target respondents in the Philippine survey.

[Letterhead of the Department of Health]

[Date]

DEPARTMENT MEMORANDUM
No. _____s. [year]

TO: ALL SERVICE DIRECTORS/ PROGRAM MANAGERS, REGIONAL HEALTH OFFICE DIRECTORS AND COORDINATORS OF FOREIGN-ASSISTED PROJECTS

SUBJECT: Survey on Funds Flow for Health Research and Development

The Philippines, together with Malaysia and Thailand, is participating in a multi-country study that aims to track resource flows for health research and development, with the end in view of developing a basic methodology for tracing and measuring health R&D funds as a tool to fine-tune the allocation of health R&D funds in a country. To carry out the project, country teams have been formed from the Ministry of Health for Malaysia, the College of Public Health of the Chulalongkorn University for Thailand, and the Center for Economic Policy Research (CEPR) for the Philippines. The Philippine study is carried out by the CEPR in cooperation with the Essential National Health Research (ENHR) unit of this Department.

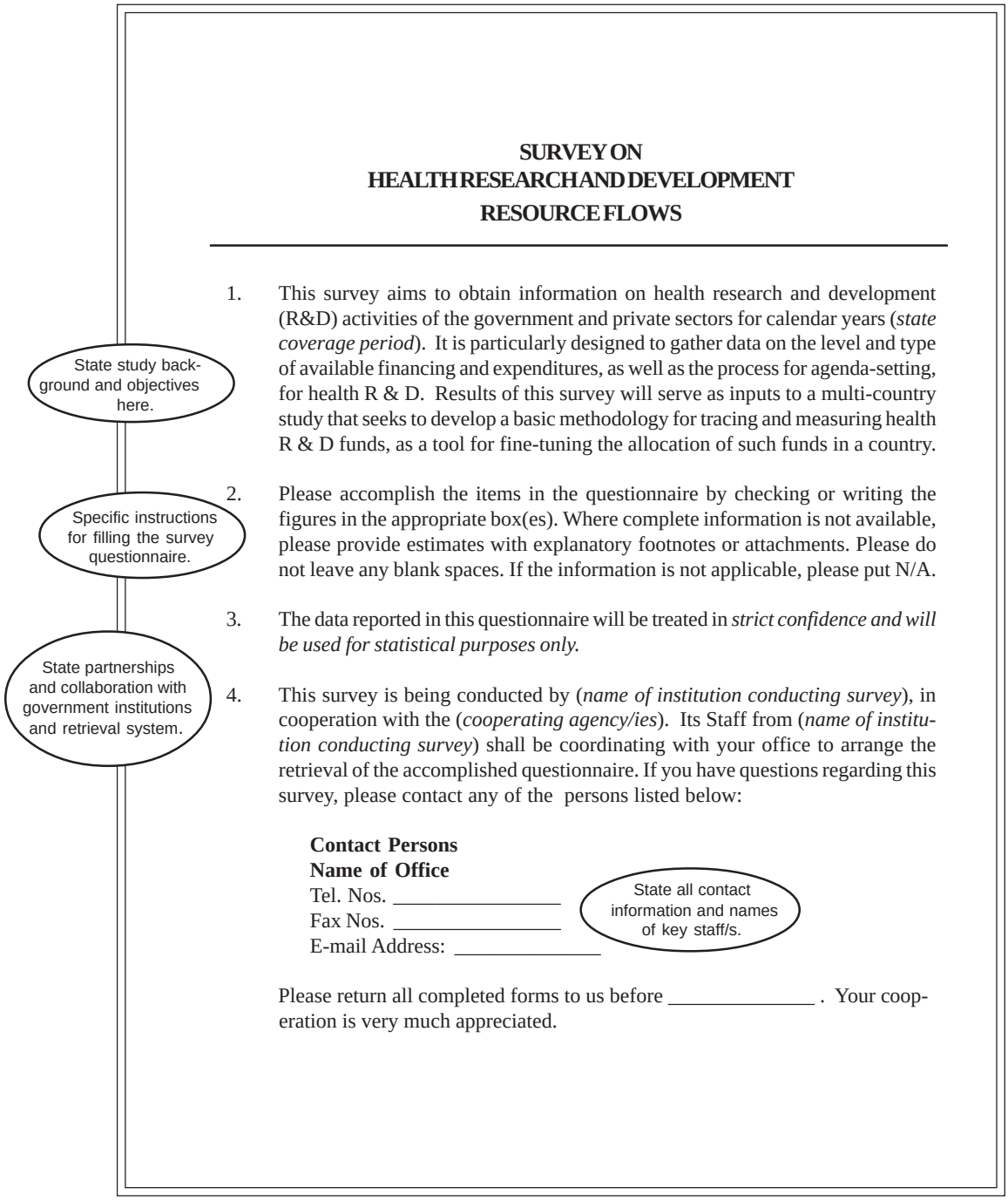
As part of the study, a survey is being conducted to collect data on the present level of funding and flow of funds for health research in the public sector for the years 1997 and 1998. This replicates a segment of a first survey conducted in 1998, which established parallel but more extensive data set for 1996.

In this regard, you are enjoined to accomplish the attached questionnaire for your respective units, and return the same to CEPR, [address], on or before [dd-month-yyyy]. Arrangements for submission to CEPR are indicated in the questionnaire.

For compliance.

[*Signature*]
[**NAME**]
Undersecretary of Health and
Chief of Staff

Cover Page. The cover page should contain a short note on the study's objectives, details of the organization/ partners involved in the study, as well as specific instructions for the accomplishment and submission of the questionnaire.



General Information. This section facilitates an initial classification of respondent institutions, so that you can identify if a respondent institution belongs to the government or private sector, if it is a user or source of health R&D funds, or if it does not conduct health R&D.

Name of Institution/Department: _____

Address: _____

Mailing Address: _____

_____

Telephone No: _____ Fax No.: _____

Person(s) Completing This Form:

Part	Printed Name	Signature	Job Title	Tel. No.
I	_____	_____	_____	_____
II	_____	_____	_____	_____
III	_____	_____	_____	_____

I. GENERAL INFORMATION

Item 1. Type of Institution

- ◯ Government
- ◯ Private
- ◯ Others (please specify) _____

Item 2. Type of Health Research and Experimental Development (R&D) Undertaken by This Institution

- ◯ Internal (type of R & D that is performed within the particular institution/ department/unit)
  - ◯ Basic Research
  - ◯ Applied Research
  - ◯ Experimental Development
- ◯ External (commissions another institution/department/unit to perform health R & D)
- ◯ Both Internal and External
- ◯ None of the above (Survey ends. Please return questionnaire)

*** if answer is internal, external, or both, proceed to the next item.**

DEFINITIONS

R&D ñ any systematic and creative work undertaken in order to increase the stock of knowledge, and the use of such knowledge to devise new applications.

Basic Research ñ any experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular or specific application or use in view.

Applied Research ñ any original investigation undertaken in order to acquire new knowledge that is directed primarily towards a specific practical aim.

Experimental Development ñ any systematic work, drawing on existing knowledge gained from research and/or practical experience that is directed to producing new materials, products and devices to installing new processes, systems and services, and to improving substantially those already produced or installed.

Research Agenda. The objectives of this section are to find out whether the respondent institution follows an agenda for health research, whether the national research agenda for health research was consulted in its own agenda-setting, and to identify other factors that influence its agenda-setting.

II. RESEARCH AGENDA

Item 3. Is there an agenda for health research for your institution for [*state period*]?

◯ Yes. ◯ No.

Item 4. a. Do you undertake R&D in fields other than health?

◯ Yes. ◯ No.

b. If yes, what are these other fields?

_____

_____

Item 5. Did you consider the national health research agenda (see box below) in formulating your own agenda?

◯ Yes. ◯ No

Item 6. What are the other factors you considered in the formulation of your institution's health research agenda?

◯ National Health Research Agenda
◯ Institution/Department's own objectives
◯ Degree of necessity/requirement
Others, please specify _____

NATIONAL HEALTH RESEARCH AGENDA
(Period Covered, e.g. 1996-2000)

For your respondent's reference, it may be useful to enumerate here your country's national health research agenda which you gathered from:

- *official statements*
- *official publications*
- *key informant interviews*

Financing and Health R&D Expenditures. This section traces the sources, users, and uses of health R&D funds. Presented below and in the succeeding tables are parts of the questionnaire addressing the main objectives of the study.

IIIA.1. Financing Health R&D, (survey year).

Item 7. **Source of funds** for Health R&D Expenditures **by Agency/Institution**, (for internal R&D, external R&D or both)

SOURCES OF FUNDS by Agency/Institution	AMOUNT RECEIVED	AMOUNT UTILIZED
ALL SOURCES		
A. INSTITUTION'S OWN FUNDS		
B. OTHER SOURCES		
1. GOVERNMENT (TOTAL)		
DOH		
DOST		
Academic/ Research Institutions (pls. specify) _____		
Hospitals (pls. specify) _____		
Other Gov't Inst'ns (pls. specify) _____		
2. PRIVATE (TOTAL)		
Pharmaceutical Firms (pls. specify) _____		
Academic/Research Institutions (pls. specify) _____ _____		
Hospitals (pls. specify) _____ _____		
NGOs (pls. specify) _____ _____		
Other Private Sources (pls. specify)		
3. FOREIGN FUNDS (pls. specify) _____		
4. OTHER SOURCES (pls. specify) _____		

The respondent institution identifies its sources of funds in the first column; while the corresponding amount received and utilized for the year are indicated in the second and third columns.

Figures under ìamount receivedî and ìamount utilizedî, may or may not tally depending on the expenditure patterns of an institution.

INSTRUCTIONS

For Internal R&D, proceed to Section III.A.2.
For External R&D, proceed to Section III.A.3.
For both answer all following sections

Health R&D funds utilized refer to funds that were either expended for internal research (within the institution) or commissioned out to other research institutions. Thus, the total figure under "Amount Utilized" should also be equal to the sum of total internal expenditure and total external expenditure.

III.A. Internal Expenditure for Health R & D, (survey year).

Item 8. Total Internal Expenditure for the performance of Health R & D by Field of Activity and by Type of R&D Activity (only if applicable), (survey year)

TYPE OF R&D ACTIVITY / FIELD OF ACTIVITY	TOTAL (in local currency)	BASIC RESEARCH	APPLIED RESEARCH	EXPT'L DEV'T.
TOTAL INTERNAL HEALTH R & D EXPENDITURE				
1. Natural Science Research (that has benefits for Health) pls. specify research title: _____				
2. Epidemiological Research pls. specify research title: _____				
3. Clinical Research Pls. specify research title: _____				
4. Biomedical Research Pls. specify research title: _____				
5. Social Sciences Research Pls. specify research title: _____				
6. Others , pls. specify titles: _____				

In the multi-country study, the country teams of Malaysia, Thailand and the Philippines decided to collapse their ìfield of activityî into Natural Sciences, Medical Sciences, and Health Economics/Social Sciences. You may adopt whichever of the two is more suited to your country setting or you may tailor a more appropriate classification system.

In the case of the Philippines, there were quite a number of respondents who had difficulty answering this section because there was not enough space provided for project titles. Some respondents attached sheets itemizing research projects, while others just included the subtotals. For the studyís purposes, it is best to list project titles to ensure no double counting occurs and to provide flexibility for further classification.

To address the above problems, you may opt for the proposed alternative format (presented in p. 57), which provides a more straightforward layout. All information is tagged on a project basis, to simplify encoding, tallying, as well as filling out the questionnaire. It also provides a check for double counting and leaves room for further classifications of project titles.

DEFINITIONS

Natural Sciences - concerns the treatment of Natural Phenomenon like Biology, Botany, Chemistry, Physics, etc. as applied to health (e.g. studies on bacteriology)

Epidemiology - study of distribution and determinants of health-related states and events in specified populations and applications of this study to the control of health problems. (e.g. India-Long-term effects of exposure to methyl Isocyanade)

Clinical Research - studies, trials, and/or experiments regarding different illnesses and diseases conducted for the benefit and with the use of specific patients. (e.g. Pressure lowering effect of Lathanoprost versus Timulol in glaucomatous and ocular hypertensive patients.)

Biomedical Research - studies in living organism with a medical purpose which include diagnosis, therapy, and rehabilitation like Chemistry, Pharmacology, Biochemistry, etc. (e.g. Therapeutic properties of Herbal Medicine)

Social Sciences - studies that are concerned with behavioral patterns or changes in a population as subject to certain conditions, situations or phenomena. (e.g. Effects of Religion on Family Planning Practices)

Item 9. Internal Expenditure for the Performance of Health R&D Activities by **Type of Expenditure,** (survey year/s)

AMOUNT	TOTAL	CURRENT				CAPITAL			
			Labor Costs					Major Equipment	
		Subtotal	Local	Foreign	Other Costs	Subtotal	Land	Locally Sourced	Imported

NOTE: Breakdown of expenditures by expenditure type proved too difficult for respondents to answer. You may or may not want to include this analysis.

NOTE:
LABOR COSTS are measured in terms of the level of effort, interpreted as the proportion of working hours actually devoted to the conduct of Health R&D as against the nominal wage (e.g. Employee is commissioned 10,000 currency units a month and is expected to work 8 hours a day on health R&D. However, he/she only works 4 hours a day. Therefore, his/her nominal wage is halved according to actual work performed, i.e.5,000 currency units. This will be recorded as the labor cost.)

III.A.3. External Expenditure for Health R & D, (survey year/s).

Item 10. Please give the name and type of the institutions/entities/individuals given financial grant for performance of Health R&D activities, contact person/number of the institution/s, and the specific amount given.

NAME OF INSTITUTION	TYPE OF INSITUTION	CONTACT PERSON/NUMBER	BASIS FOR SELECTING INSTITUTION	PURPOSE OF THE FINANCIAL GRANT

If you keep to this format, you should emphasize in your survey instruction that the sum of total external health R&D and total internal health R&D should balance with ìtotal amount utilizedî.

Item 11. Please give the details on the funded projects/studies performed by the institution/s mentioned in Item 10.

INSTITUTION	TITLE OF PROJECT/STUDY	AMOUNT GRANTED (currency)	TYPE OF R&D ACTIVITY			FIELD OF ACTIVITY (see categories in item 8)
			BA	AR	ED	

NOTE: BA Basic Research
AR Applied Research
ED Experimental Development

Based on the experience of the first multi-country study, an alternative format to the section on Financing and Health R&D Expenditures is proposed. The alternative format provides a more straightforward accounting. All information is tagged on a project basis, thus simplifying the processes of filling up the questionnaire, as well as encoding and tallying. It also helps eliminate double counting and allows the further classification of project titles.

Alternative Format for Determining Internal Health R&D

PROJECT TITLE	PROJECT DURATION (mm-yy to mm-yy)	SOURCE OF FUNDS*		TOTAL PROJECT BUDGET	AMOUNT RECEIVED TO DATE	AMOUNT UTILIZED TO DATE	AMOUNT RECEIVED IN SURVEY YEAR	AMOUNT UTILIZED IN SURVEY YEAR	TYPE OF R&D**	FIELD OF R&D***
		Name	Category							

In this format, it is better to ask for more comprehensive information on each project/ research. These include data on duration of project, source of funds, total project budget as well as current receipts and disbursements.

In applying this format, better confidence on the collected data is gained in terms of consistency and reliability.

Alternative Format for Determining External Health R&D

PROJECT TITLE	COMMISSIONED AGENCY	TYPE OF INSTITUTION	CONTACT PERSON/ NUMBER	PROJECT DURATION (mm-yy to mm-yy)	SOURCE OF FUNDS*		TOTAL PROJECT BUDGET	AMOUNT RECEIVED TO DATE	AMOUNT DISBURSED TO DATE	AMOUNT RECEIVED IN SURVEY YEAR	AMOUNT DISBURSED IN SURVEY YEAR	TYPE OF R&D**	FIELD OF R&D***
					Name	Category							

For determining both internal and external health R&D it is better to keep an open-ended table which can be filled up in no particular order.

This is most appropriate if you assess that most of your respondents do not have good recording systems of their health research funds flow.

* Source of Funds
1- Institution's own funds
2- Department of Health
3- Department of Science and Technology
4- Government academic/research institutions
5- Government Hospitals
6- Other Government Institutions
7- Pharmaceutical firms
8- Private academic/research institutions
9- Private hospitals
10- NGOs
11- Other private sources
12- Foreign funds
13- Other sources (pls. specify)

**Type of R&D
1- Basic Research
2- Applied Research
3- Experimental Development

***Field of R&D
1- Natural Sciences
2- Medical Sciences
3- Health Economics/ Social Studies

CONDUCT THE SURVEY

Your success indicator for this part of the study is the response rate you will get for your survey. You can use different techniques to get a high response rate.

- Getting a high level official to "champion" your work, sign your introductory letter, and attend your workshops/meetings.
- Providing incentives to enlist the participation of the private sector.
- Holding meetings to explain the project and questionnaire.
- Mailing out questionnaires followed by telephone call.
- Whenever time and resource will permit, conducting personal interviews with those who account for large amounts of health research funding .

Once your survey is ongoing, you can use monitoring tables to assess its status.

Projected Schedule of Activities

ACTIVITY	RESPONSIBILITY	MONTH 1				MONTH 2				. . . . .				MONTH n			
		W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4

A summary table of the respondent base is one of the tools you will need to keep track of the progress of the survey. A sample table is presented below:

Summary of Questionnaire Collection
As of October 1999
n=131

There should be a periodic update of the survey status. Information presented should be set against the respondent base.

	RESPONDENT BASE			COLLECTED AS OF 10/19/1999		
Total No. of Respondents			131			111
I. Department of Health		69			60	
a. Central Office	32			30		
b. Special Projects	3			0		
c. Specialty Hospitals	3			3		
d. Special Hospitals	5			5		
e. Medical Centers	6			6		
f. District Hospitals	3			2		
g. Research Hospitals	1			1		
h. Regional Health Offices	16			13		
II. Department of Science and Technology		5			5	
III. Department of Education Culture and Sports		1			0	
IV. Academic Research Institutions		27			25	
a. University of the Philippines, Manila	13			12		
b. University of the Philippines, Diliman	14			13		
V. Hospitals		21			14	
a. Philippine General Hospital	20			14		
b. Veterans Memorial Medical Hospital	1			0		
VI. Others		8			7	

While the above summary table provides an overall status of the survey, you need to supplement this with a more detailed monitoring tool. A more detailed table is needed to keep track of all the institutions included in your respondent base. All institutions surveyed should be systematically listed in this table following the categories indicated in your framework (Framework and Categories for Flow of Funds). Once a questionnaire is submitted, it should immediately be given an ID. This results in more efficient tracking, processing, and management of both the physical and electronic databases. Assigning IDs is also a must for confidentiality purposes.

Aside from a listing of all institutions surveyed, the detailed monitoring tool should contain (1) the name of the person to whom the questionnaire was addressed; (2) date of delivery; (3) name of person who

received the questionnaire (if data is available); (4) name and number of contact person for follow-up; and (5) dates of activities/events pertaining to the status of the survey, e.g. stated date for pick-up, date of receipt of accomplished questionnaire, date when responses have been encoded or double-checked, etc. You can devise a detailed monitoring tool similar to that indicated below.

Respondent Monitoring Table

Institution	Head	Delivery date	Contact person/ number	For pick up	Date Collected	Date Encoded	Date Double checked
101. Department of Health (68)							
A. Central Office (32)							
1. Biological Production Service	Dr. _____	7/19/99 via courier					
2. Bureau of Food and Drugs	Dr. _____	7/13/99	Tess Santos 123-2312	As of 7/19/99	7/23/99	7/25/99	7/28/99
.							
.							
.							
102. Department of Science and Technology (5)							
1. Food and Nutrition Research Institute	Dr. _____	7/13/99					

This table may be utilized for monitoring the progress of different phases of a survey, i.e., questionnaire distribution and collection, data processing.

DESIGN THE DATABASE

In designing the database, two things are planned out: the contents and the container. Here, you have to make sure that a systematic housing of the data is achieved. In order to do this, data need to be properly labeled and cleaned. Likewise, inside the house data should be systematically assigned appropriate places. A discussion on how to design the contents and container of the database follows.

Assign alphanumeric codes to the contents. Before processing the data, it is advisable to assign numeric codes to respondents, variables and responses. In general, numeric codes are utilized in databases because they provide greater efficiency, in terms of data retrieval, minimizing encoding time and errors, as well as disk space utilization. They also facilitate a systematic and efficient way of storing, processing, and managing data.

■ ***Respondents***. As discussed earlier, the IDs assigned to respondents should follow the categories in your framework. For example, your categories consist of the government and private sector, under which several institutions have been identified. In assigning IDs make sure that the ID will systematically classify an institution. You could make an alphanumeric code to incorporate all classification: for example all institutions under the government sector are given IDs beginning with "1"; if the institution is under the DOH, it is assigned "01"; since there are several divisions within the DOH, Central Office institutions are assigned "A"; all institutions are then alphabetically arranged under each subgroup; thus, in the above table the ID assigned to the Bureau of Food and Drugs is 101.A.02.

This system is crucial in aggregating data. It allows you to take one look at the ID and immediately identify its grouping.

■ ***Variables***. Each question in the survey form is considered a variable. Codes should also be assigned to each variable. Alphanumeric variable codes allow you to store questionnaire data in a more systematic and efficient way, particularly in cases where a question is quite long. For example, if you want to store data for the question: "Is there a health research agenda for 1997?" instead of encoding the entire question as a variable, you could label it as "V5" instead (following the sequence of questions).

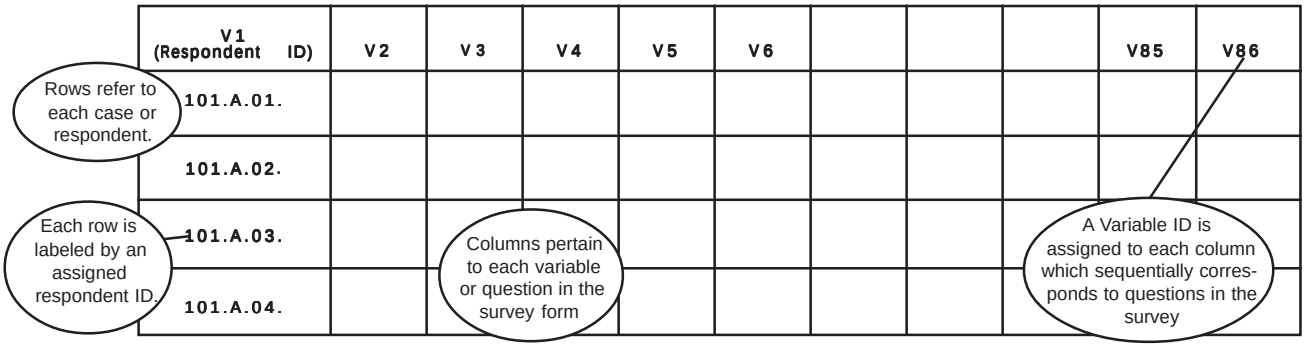
■ ***Responses***. In the same way that questions need to be translated into alphanumeric codes, responses to questions in the survey should be coded, specifically categorical responses. To illustrate, in the previous example, the question: "Is there a health research agenda for 1997?" can be answered by a "yes", "no" or "not applicable", however, instead of encoding these, you could assign the following codes thus: "0 = No"; "1 = Yes"; "88 = NA". This minimizes database space consumption to two digits, which translates in less encoding time and is less prone to encoding errors. The value of coding responses becomes more evident as responses become more complex. A sample coding system follows.

VARIABLE NUMBER	COLUMN NUMBER	ITEM NUMBER	DESCRIPTION	CODES
v1			Respondent ID	
v2		1	Type of Institution	1 - Government 2 - Private 3 - Others
v3		2.1	Type of Health R&D undertaken	1 - Internal 2 - External 3 - Both internal & external 4 - None of the above 81- No information
v4		2.2	Type of internal health R&D	1 - Basic Research

VARIABLE NUMBER	COLUMN NUMBER	ITEM NUMBER	DESCRIPTION	CODES
v4 (continued)				2 - Applied Research 3 - Experimental Development 4 - 1 & 2 5 - 2 & 3 6 - 1 & 3 7 - 1, 2 & 3 81 - No information 88 - NA
v5		3	Is there health research agenda for 1997, 1998 and in the next 3 to 5 years?	0 - No 1 - Yes 81 - No information 88 - NA

Build the container. The container of your data can be built in any spreadsheet software. Rows and columns comprise the database container. Rows refer to each case or respondent, with each particular row containing the responses of a particular institution. Thus, each row is labeled by the assigned respondent's ID. Columns pertain to each variable or question in the survey form. Each column contains all the responses of all surveyed institutions to a particular question. A variable ID is assigned to each column. These variable IDs sequentially correspond to the questions in the survey.

Sample Database Table



Encoding. Once codes are assigned to respondents, variables, and responses, you can proceed with encoding. Data can be encoded in any spreadsheet or database software, depending on the capabilities of your research staff. In the case of Thailand, data was encoded and processed using MS Excel; for the Philippines, a combination of MS Excel and MS Access was utilized; while Malaysia supplemented their spreadsheet sofware with SPSS-Teleforn, which has the capability of scanning responses and automatically encoding data.

Sample Database Table with Alphanumeric Codes

V1 (Respondent ID)	V2	V3	V4	V5	V6				V85	V86
101.A.01.	1	1								
101.A.02.	1	2	88							
101.A.03.	1	3								
101.A.04.	1	4								

Alphanumeric codes are encoded to represent categorical variables

PROCESS THE DATA

In terms of minimum software requirements, MS Excel is sufficient to process the survey data, especially since the bulk of the analysis requires the check and balance tools available in such a spreadsheet solution. In aggregating institutions, as well as getting the subtotals of categories, the filter function of MS Excel is sufficient, albeit a bit slow since each category for each grouping would have to be filtered. An alternative to this is to use MS Access to get subtotals for each category for each grouping. However, this needs familiarity with MS Access in order to be able to manipulate the necessary commands. If your research staff are not knowledgeable in MS Access or SPSS, it is best to keep to MS Excel, especially since MS Excel features can do the task.

For the analysis, a listing of data processing procedures follows, vis-à-vis variables needed and target output. The reference variables based on the survey instrument are given in the next table.

Target Output	Variables Needed	Data Processing Procedure
Sources of Health R&D	V11-V24	1. Get the subtotal of the amount received (V11-V24) by all respondents from each institution category.
Users of Health R&D	V40, V84	1. Assign all institutions commissioned by respondents to do R&D (external R&D) to their respective institution category, using your existing alphanumeric codes. In effect, institutions tallied as "users" are those conducting the actual research. 2. Filter respondents by institution category (based on your framework), i.e., in MS Excel, using the filter command, select one institution at a time, DOH, then DOST, etc. 3. Get the subtotal of the internal health R&D expenditure of all respondents under a particular institution category. Note that outsourced projects are tagged as internal health R&D of commissioned agencies.
Uses of Health R&D	Database of health research projeacts	1. Check the different classification of health R&D (type, field, Global Forum) by reviewing project titles against given definitions. 2. Correct or re-classify project titles. For additional classification systems, such as the Global Forum, each project title needs to be reviewed and classified accordingly.

Uses of Health R&D (continued)		3. Compute the subtotals for each category of each classification system.
Funds Flow	V11 - V24	1. Filter respondents by institution category. 2. To trace the fund sources of a particular institution category, get the subtotals of the amount received (V11-V24) by the filtered institution category from each institution category. Sum all funds received by filtered institutions and get percentage distribution of funding received from each institution category. Repeat for all institution categories. 3. To trace the fund users of a particular institution category, get the subtotal of health R&D expended internally by the filtered institution category. This figure represents funds used by this category. Tally all the outsourced projects of this filtered category by institution category. Add the two figures to get the total health R&D expenditure of the filtered category. Get percentage distribution of health R&D funds expended both internally and externally.
Alignment of Health R&D Expenditures with National Health Research Agenda	Database of of Health Research Projects	1. Classify project titles according to national health research agenda categories. If a project does not fall under any of the set agendas, create a category that defines its theme. 2. Compute the subtotals for each category. 3. Sort the subtotals in descending order. Get percentages. 4. Indicate the ranking of categories included in the national health agenda.

Reference Variables

SOURCES OF FUNDS by agency/institution V10	AMOUNT RECEIVED	AMOUNT UTILIZED
ALL SOURCES	V11	V25
A. INSTITUTION'S OWN FUNDS	V12	V26
B. OTHER SOURCES		
1. GOVERNMENT (TOTAL)		
DOH	V13	V27
DOST	V14	V28
Academic/ Research Institutions (pls. specify) _____	V15	V29
Hospitals (pls. specify) _____	V16	V30
Other Gov't Inst'ns (pls. specify) _____	V17	V31
2. PRIVATE (TOTAL) Pharmaceutical Firms (pls. Specify) _____ _____	V18	V32
Academic/Research Institutions (pls. specify) _____	V19	V33

continued

SOURCES OF FUNDS by agency/institution V10	AMOUNT RECEIVED	AMOUNT UTILIZED
Hospitals (pls. specify) _____ _____	V20	V34
NGOs (pls. specify) _____ _____	V21	V35
Other Private Sources (pls. specify)	V22	V36
3. FOREIGN FUNDS (pls. specify) _____ _____	V23	V37
4. OTHER SOURCES (pls. specify) _____ _____	V24	V38

FORMAT THE TABLES

Once you have processed the data and computed the subtotals and totals, you can already input these in tabular format. You can use these dummy tables as a guide.

Respondent Base and Respondent Rate of Health R&D Survey, (survey year/s)

TYPE OF INSTITUTION	Number of questionnaires sent		Number of responses		Response Rate %	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
TOTAL						
Government Sector						
Department of Health						
Department of Science and Technology						
Department of Education, Culture, and Sports						
Academic Institutions						
Hospitals						
Others						
Private Sector						
Pharmaceutical Firms						
Academic Institutions						
Hospitals						
Non-government Organizations						
Others						
Foreign Sector						
Bilateral/ Multilateral						
Development Banks						
UN System						
Private Foundations						
Academic/ Research Institutions						
Pharmaceutical Firms						
Non-government Organizations/ Private Voluntary Organizations						
Others						

Number of Respondents With and Without R&D Expenditure, (survey year/s)

INSTITUTIONS	No. of Respondents		With Health R&D Expenditure w/ Data		w/o Data		Without Health R&D Expenditure	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
TOTAL								
Government Sector								
Department of Health								
Department of Science and Technology								
Department of Education, Culture, and Sports								
Academic Institutions								
Hospitals								
Others								
Private Sector								
Pharmaceutical Firms								
Academic Institutions								
Hospitals								
NGOs								
Others								
Foreign Sector								
UN System								
Development Banks								
Bilateral/ Multilateral								
Private Foundations								
NGOs/PVOs								
Academic/ Research Institutions								
Pharmaceuticals								
Others								

Sources of Health R&D Funds, (survey year/s) (currency)

SECTOR	Year 1	Year 2
I. Government Sector Department of Health Department of Science and Technology Department of Education, Culture, and Sports Academic and Research Institutions Hospitals Others		
II. Private Sector Pharmaceutical Firms Academic and Research Institutions Hospitals NGOs Others		
III. Foreign Sector UN System Development Banks Bilateral Agencies Private Foundations NGO /PVO Academic / Research Institutes Pharmaceuticals Others		

Users of Health R&D Funds, (survey year/s) (currency)

SECTOR	Year 1	Year 2
I. Government Sector Department of Health Department of Science and Technology Department of Education, Culture, and Sports Academic and Research Institutions Hospitals Others		
II. Private Sector Pharmaceutical Firms Academic and Research Institutions Hospitals NGOs Others		
III. Foreign Sector		
TOTAL HEALTH R&D FUNDS		

Health R&D Expenditure by Type of Activity and Field Activity, (survey year/s), (currency)

Type of R&D Activity / Field of R&D	Basic Research		Applied Research		Experimental Development		Total Health R&D Expenditure			
							Year 1		Year 2	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Amount	%	Amount	%
Biomedical Research										
Clinical Research										
Epidemiology										
Natural Sciences										
Sociological Science										
Others (pls. specify)										
Totals										

6. Develop Findings

SOURCES, USES, USERS

Develop findings from the output tables generated. You may present the results in charts to emphasize percentage contributions.

For the sources table, some findings you may be interested to look at are:

- Comparisons between government and private sectors,
- Comparisons between local sources and foreign sources,
- Comparisons among institutions within each of the government and private sectors,
- Trends across years.

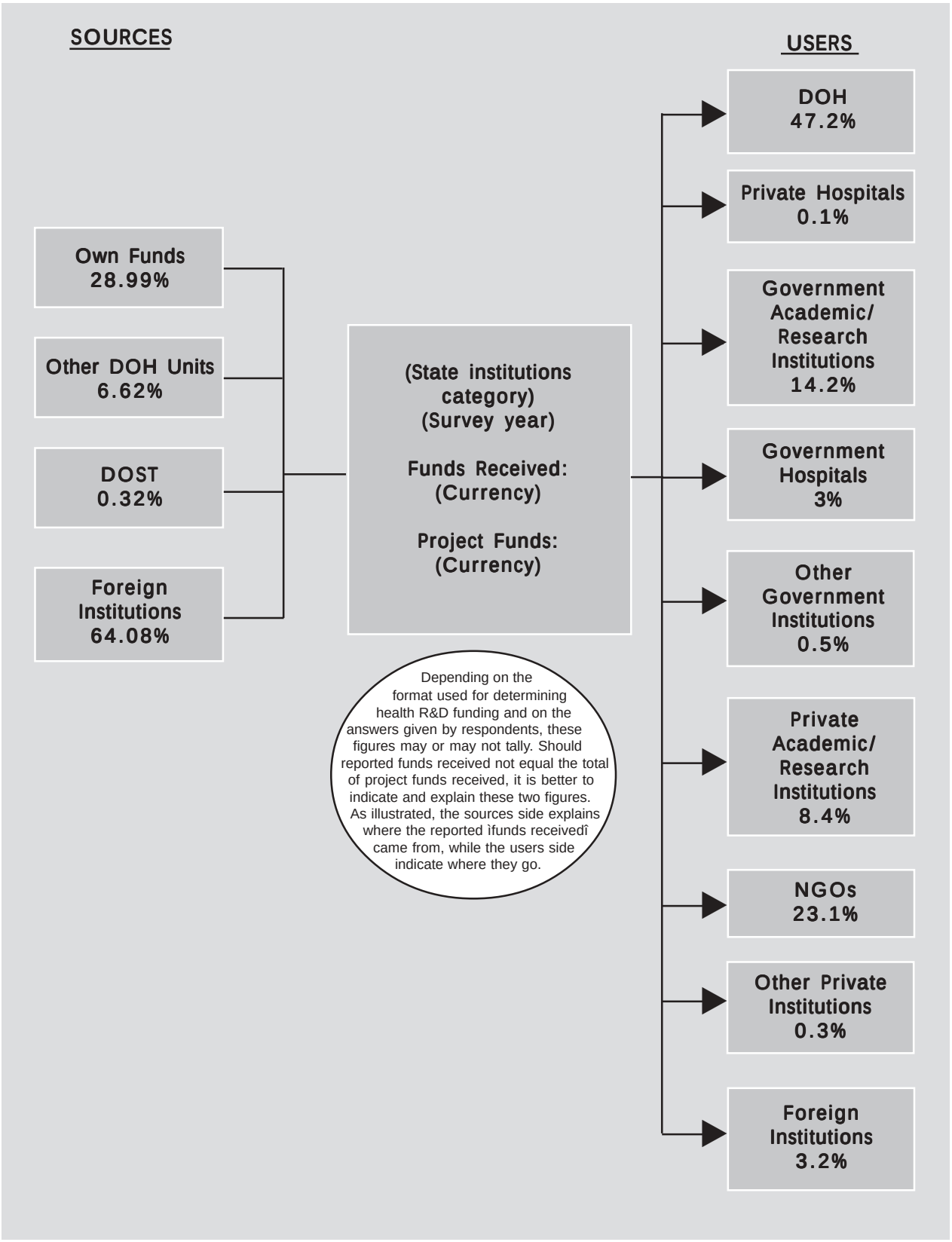
You can analyze the users table in a similar manner.

For the uses table, you can make comparisons among the fields of activities, types of research activities, and other classifications. Trendsetting across time may also reveal important findings.

FUNDS FLOW

The data you generate can also be processed to determine flow of funds at the institution level. On one end, this flow shows the sources broken down by institution of health R&D funds going to the institution. On the other end, it gives the breakdown of who used the funds that the institution declared as having utilized, whether by itself or by channeling it to other users.

This type of funds flow accounting usually results in some discrepancies since fund use is accounted for on a project basis whereas fund source is accounted for in more aggregate terms. However, it still provides enough information to be useful.


SOURCES
USERS
Own Funds
28.99%
Other DOH Units
6.62%
DOST
0.32%
Foreign
Institutions
64.08%
(State institutions
category)
(Survey year)
Funds Received:
(Currency)
Project Funds:
(Currency)
Depending on the format used for determining health R&D funding and on the answers given by respondents, these figures may or may not tally. Should reported funds received not equal the total of project funds received, it is better to indicate and explain these two figures. As illustrated, the sources side explains where the reported ìfunds receivedî came from, while the users side indicate where they go.
DOH
47.2%
Private Hospitals
0.1%
Government
Academic/
Research
Institutions
14.2%
Government
Hospitals
3%
Other
Government
Institutions
0.5%
Private
Academic/
Research
Institutions
8.4%
NGOs
23.1%
Other Private
Institutions
0.3%
Foreign
Institutions
3.2%

7. Integrate Findings/Write Report

To best appreciate the results of the study, you can relate the findings of one section to the other so that overall patterns can emerge. You will be able to answer questions such as:

- Who are the main health R&D sources?
- Who are the main health R&D users?
- What kind of health R&D is undertaken, in terms of type as well as field of activity?
- What are the magnitudes involved in health R&D?
- How do health R&D funds move from source to user in the major health R&D institutions?

You can also see the value put on health R&D as you assess it as a proportion of selected macroeconomic variables such as gross domestic product, government budget for health, and government budget for research and development.

Finally you can find out if health R&D is informed by the national health research priorities through the following table.

Ranking of Health R&D Expenditures by ENHR Priority, (survey year)

National Health Research Agenda	Rank in National Health Research Agenda	Percentage %	Health R&D Expenditures (local currency)	Health R&D Expenditures (foreign currency)	Number of Projects Identified	Number of Projects with Funding Data
Totals						

Another benchmark you may want to use is the Global Forum Classification.

Health R&D Expenditure by Global Forum Classification, (survey year)

Global Forum Classification	Percentage (%)	Total Project-based Funding (local currency)	Total Project-based Funding (US$)	No. of Projects Identified	No. of Projects with Funding Data
Group I: Communicable/ maternal/perinatal and nutritional conditions					
Group II: Non-communicable diseases					
Group III: Injuries					
Risk factors I: Proximate determinants of ill health					
Risk factors II: Distal determinants of ill health					
Health Systems					
Fundamental Research					
Totals					

OTHER ISSUES

Sustaining the Effort

You will gain a better understanding of your country's health R&D flows if you see its behavior through the years. Thus, the interest in finding an organization or mechanism within a country that can house and sustain the effort to track these flows.

In most countries, the mechanism that may work best is the National Health Accounts (NHA). This is usually in the form of a matrix that shows how much was spent for health care, who paid for health care, and what was paid for. It may be spearheaded by the Department of Health, the National Statistics Office, or some other government agency.

Find out whether your country does prepare a National Health Accounts. If yes, find out whether the data gathered include categories for health R&D. These may be stand alone categories or may be part of other categories. For example, in the first phase of the 1994 Thai National Health Accounts, health research and training were lumped together with all other health expenditures. Some categories may not be available. In the Philippine National Health Accounts, no accounting is made of health research spending of private and non-profit institutions.

In both cases adjustments need only be made. These adjustments may include some or all of the following:

- Identifying additional data requirements (be sure that the use and understanding of definitions are clear)
- Sourcing additional data requirements (you can explore the possibility of including riders in existing survey efforts or mounting surveys dedicated to tracking health R&D flows)
- Collecting additional data requirements (compliance of the respondents will differ depending on who is administering the survey)
- Analyzing the data as standalone health R&D flows, as well as in the context of the country's overall health sector statistics and other macroeconomic data
- Putting the data in information sets for easy use of policymakers.

If your country does not prepare a National Health Accounts, then you may have the opportunity of defining ENHR funds flow tracking requirements when a framework for such is developed.

Disseminating the Findings

Make sure that the results of your study are accessible to policymakers, stakeholders, and relevant players in your country's health care sector.

Some steps you can take to ensure this follow:

- Conduct of workshops at various levels (top level, middle level, frontline) and with different sectors (legislators, academic and research institutions, government policymakers, health care professionals, pharmaceutical industry) to discuss study findings

- Publication of study findings/ study abstracts in print and electronic media for distribution

- Inclusion of study and selected findings in Internet-based databases on health research

You may also want to create a formal Steering Committee for the study that can steward it from start to finish. As the study comes to a close, the Steering Committee can organize the workshops and see to it that they are attended by people who can bring the findings to appropriate action.