

---

## List of abbreviations

AG	Auditor General
CFMU	Central Financial Monitoring Unit (Health)
CG	Comptroller General
COHI	Central Office for Healthcare Information
CPH-CU	College of Public Health - Chulalongkorn University
CSMBS	Civil Servants' Medical Benefit Scheme
DCR	Department of Commercial Registration (MoC)
EU	European Union
FDA	Food and Drug Administration
FPO	Fiscal Policy Office (Ministry of Finance)
GDP	Gross Domestic Product
GFMIS	Government Financial Management Information System
GFSM	Government Finance Statistics Manual
GPP	Gross Provincial Product
HWS	Health and Welfare Survey
HISO	Health Information System Development Office
IHPP	International Health Policy Programme
HSRI	Health Systems Research Institute
ICD	International Classification of Diseases
ICAAT	Institute of Certified Accountants and Auditors of Thailand
ILO	International Labour Organization or International Labour Office
INFIMO	Integrated Financial Monitoring System (Health)
IPS-CU	Institute of Population Study - Chulalongkorn University
ISIC	International Standard Industrial Classification of Economic Activities
MCRD	Medical Coordination and Rehabilitation Division (SSO)
MIS	Management information system
MoC	Ministry of Commerce

---

MoD	Ministry of Defence
MoF	Ministry of Finance
MoPH	Ministry of Health (also: MoPH = Ministry of Public Health)
MoI	Ministry of the Interior
NHA	National Health Accounts
NHSO	National Health Security Office
NPISH	Non-Profit Institutions Serving Households
NSO	National Statistical Office
PI	Private Insurance
PID	Personal Identification Number
RoW	Rest of the World
SECSOC	Social Security Department (ILO)
SNA	UN System of National Accounts (various revisions; latest: 1993)
SSO	Social Security Office
SSS	Social Security Scheme
SET	Stock Exchange of Thailand
UC	Universal Health Care Scheme
WCS	Workmen's Compensation Scheme
WHO	World Health Organization

---

## Foreword

Since May 2003 the European Union (EU) has been supporting the health care reform in Thailand through the project “Health Care Reform - THA/AIDCO/2002/0411”. This support is to be seen in connection with Thailand’s bold step, undertaken in 2001, towards achieving full population coverage in health care through legislation of the Universal Health Care Scheme, generally known as the “30 Baht” scheme. The scheme offers to all Thai citizens not otherwise mandatory covered full access to health services.

Since late spring 2006 the component “Financial management of the Health Care System, Thailand” has been activated under the above project. The component stretches until 2008/2009 and is being executed by the Social Security Department of the International Labour Office, Geneva. (ILO-SECSOC)

Under the ILO component various reports have to be delivered; among these, at the onset, a review of “present financial procedures” has to be undertaken. This review will be delivered by way of two separate reports on

- 1) the present state of the statistical reporting system, and
- 2) the calculation of capitation fees and payment systems in Thailand’s health system.

(Further specification of tasks can be found under ILO 2005, p. 8)

*This report addresses the above item (1), i.e. the statistical reporting of the Thai health system, its structures, methodologies, data and outputs.*

In March 2006 the ILO fielded a three weeks mission of Mr. Wolfgang Scholz, senior economist at ILO-SECSOC, to Bangkok, Thailand. This draft report is based on the findings of that mission which was substantially supported by the project implementation team, located at NHSO headquarters, Nonthaburi, headed by their international and national directors, Messrs. Tenambergen and Joungudonsuk. I am especially grateful to Mr. Samrit Srithamrongsawat who patiently listened and provided answers to my questions, and to Ms. Kanjana Tisayaticom, non-tiring mission assistant.

Further, this report draws substance from the discussions held with Ms. Taweesri Greetong and Mr. Thaworn Sakunphanit, both NHSO officials and during 2005/6 students at the Social Protection Financing (SPF) masters course at the Graduate School of Governance in Maastricht, Netherlands. They helped to clarify many open issues during their visit to ILO headquarters, Geneva, from 31 July to 4 August 2006 and kindly gave permission to use for the purposes of this report information contained in their recently finalized Master Theses (see list of references).

It should be mentioned that this report is deliberately labelled “draft”. This is due to the fact that, given the complexity of the tasks to be fulfilled under the ILO component, already at its beginning many items need to be addressed that require further in-depth research and clarification during the later course of the overall project. According to the project design, this report (and other initial [draft] reports) will be re-considered, re-written and most probably extended later during the project, aiming, among other things, at a fully fledged design proposal for a financial monitoring system of Thailand’s health sector.

The attentive reader will realize that this report contains a number of “unresolved” issues that require further clarification. This clarification can only be achieved with project progress.

---

Despite the above: the contents of this draft was checked and counterchecked several times and, thus, we assume that the factual information contained in this draft is correct and can serve as a solid platform from which to start further investigations and recommendations. All remaining flaws, of course, are to be allocated to its author.

*Note:*

This report has been finalized after a second mission of Mr. Wolfgang Scholz to Thailand, from 9 to 24 October 2006. During this mission the design and concrete tasks to be carried out under the ILO component of the overall project were slightly re-shaped. This project re-shape triggered discussion as to whether this report should be re-written in order to better comply with the revised project orientation. It was decided not to change the substance of the report, which by October 2006, prior to the October 2006 mission to Thailand, was almost finished; we believe that this report, despite its slight bias towards a more macro-analytical approach (which is no longer in the focus of the project) is sufficiently technical to serve as useful reference for later steps in the project.

# 1. Introduction

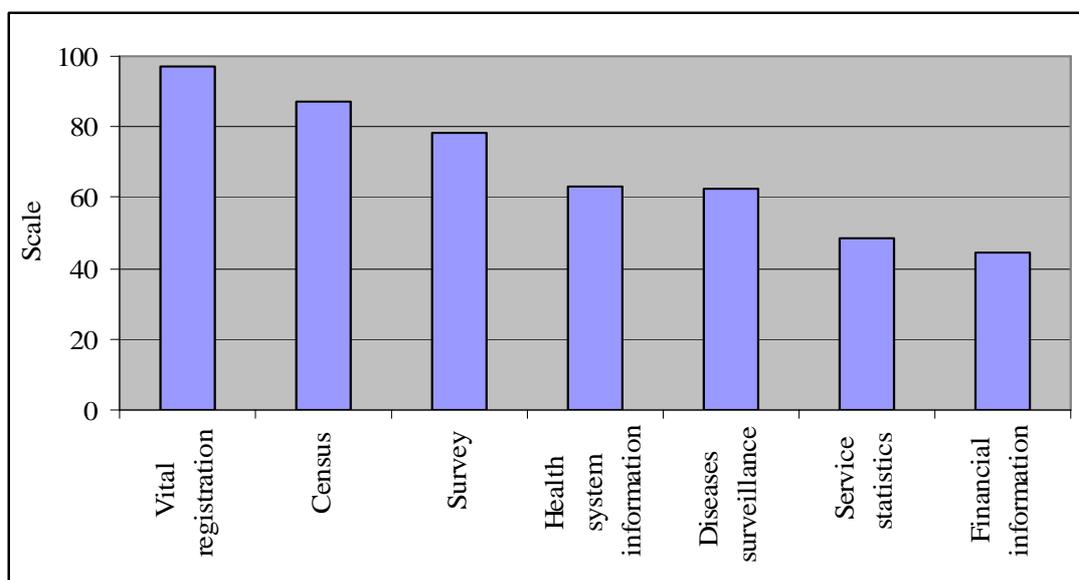
Factual information on Thailand’s health system is scattered. Generally speaking, this assessment is shared by most professional observers; it is equally true with respect to information on the system’s finances.

For reasons of quality assessment the HISO recently undertook a Delphi-type study (small groups consensus methodology) among experts and users of available information on the Thai health system. In this survey, interviewees were asked to rank between 0 and 100 different existing data platforms (Thai statistical programmes) according to their

- 1) information contents,
- 2) capacity of available resources,
- 3) turning theory (methodology) into practice,
- 4) dissemination of information, and
- 5) integration with other statistics / methods.

The above five items were given equal weight, i.e. overall assessment was calculated as their arithmetic average (Chart 1).

**Chart 1. Quality assessment of various health statistics programmes**

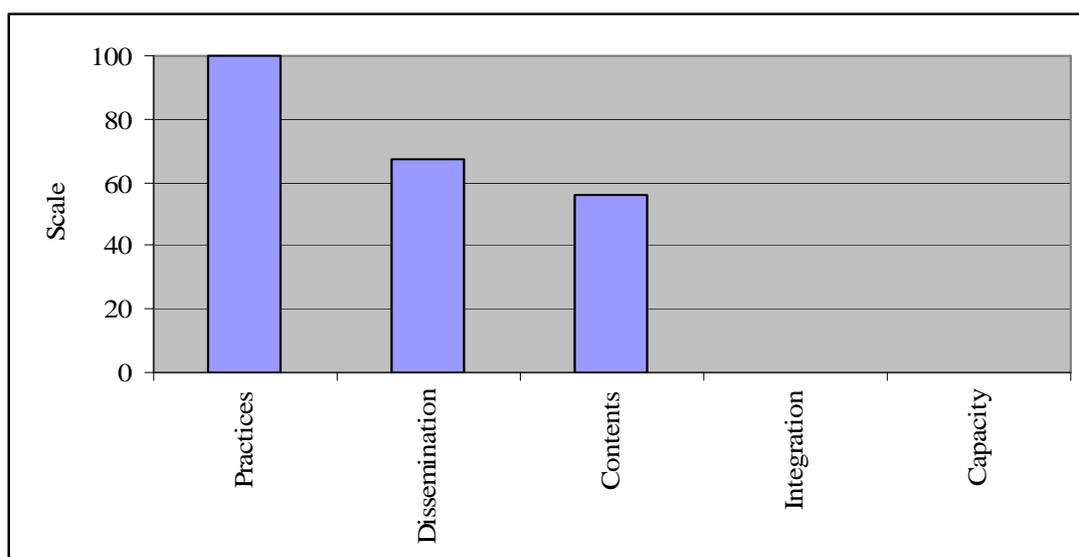


Source: HISO communication, March 2006

While the information on the health system in general ranks average, it is the programmes related to population statistics that rank higher, with vital statistics (births, deaths by place, cause, etc) scoring top.

By contrast, financial information ranks lowest. For better understanding of this result it is interesting to look at the above five criteria (Chart 2).

Chart 2. Quality assessment of health financial information by criterium



Source: HISO communication, March 2006

Obviously, turning method into practice, to the extent it happens, is satisfying: the administration knows to handle its accounts. But dissemination and contents are being judged, *cum granu salis*, only average. The reason for the overall low(est) ranking of financial information is to be seen, however, in the fact that interviewees ranked integration with other statistical programmes, and available capacities for the compiling of information sufficiently *zero*.

This result is confirmed and bolstered by other, objective facts regarding Thailand's overall statistical fabric, and its health statistics especially, which will be addressed in this report.

The existing wide gaps with respect to financial statistics, including information on physical, monetary (cost) and further, structural, variables must be thoroughly closed, and as fast as possible. After Thailand's stark move towards full health coverage of the population close and informed financial monitoring is now vital for medium-term adjustments of the established new structure of the health system, as well as for its further improvement according to emerging future needs and circumstances over the medium and long run.

Some consideration should be given to whether such statistics improvements can be achieved without a substantial amendment of the Statistics Act, B.E. 2508 (1965).

It seems that the "scatteredness" of Thailand's statistical landscape can only be overcome by way of a substantial institutional (administrative) reform. In this respect the report later addresses a number of problems.

---

## 2. Financial management versus financial monitoring – management data versus statistical data

Distinction has to be made between financial management and financial monitoring. Financial management is based on management data, financial monitoring on statistical data.

In practice, there are obvious overlaps between the two, but for a profound understanding of the purpose of this report (and the goal of the ILO component under the overall project) it is considered helpful to carve out a clear distinction: the ILO component is about financial monitoring and, thus, statistical data, not about financial management.

*Management* is here understood as the system of operations, *within* the health system, required in order to comply with the law. This comprises daily interaction, as required, with the health system's beneficiaries and providers, including their registration and de-registration, maintenance of medical records, the administering of claims, complaints etc. The efficiency and effectiveness of these activities have implications on the system's finances, thus they are part of financial management in a wider sense. In a more narrow sense, financial management is (only) about the periodic (daily, monthly, occasional) collection of revenue, including its enforcement, the re-imburement (pay-out) of claims, the payment of staff salaries, the purchase of goods and services, of investments and the like - including the registration of all those activities in financial accounts. Financial management includes regulated application of standard accounting rules. These are activities equally to be executed (more or less, details depending on legislation) under any health administration system.

By contrast to management, which serves the main purpose of running an institution according to pre-defined rules, monitoring follows significantly different purposes, usually on a higher level of abstractness, often model-based.

*Monitoring* of the health system is about preparing political decisions of strategic nature, for example with respect to changing the administrative operations of the system or shaping the future legal design of a system. One might think of many other subject matters that are open to be monitored. Monitoring goes *beyond* the health system: it is being carried out not only within the health system (like management) but also by actors outside who, however, do have an interest (political, financial, scientific, etc) in the overall operations of the system.

Health system decisions can be prepared through informed public debate (based on monitoring results), through informing decision makers in governments and in other societal institutions, and / or otherwise. Implicitely or explicitely, all such information, including the debate about it, is based on models; these may be sophisticated complex and interdependent models, of a pure mathematical or a pure heuristic nature (to mention two extremes), developed by experts with substantial expertise; or discussants / decision makers use information according to only small linear mental models ("back-of-the-envelope" models). It is the complexity of the subject matter, questions of practicability and many other reasons that might determine the complexity of models used in a concrete case.

In health systems, a most obvious model against which systems could be monitored would be, for example, a target ("model") health status of the population (of the system's addressees/beneficiaries). Monitoring would mean to compare the actual health status with the target. Only theoretically one could rely on judgement by appearances in order to find out whether a health system complies with, or deviates from, the set targets. In practice, health systems are too complex in order to allow for such an approach to be satisfying. Thus, in practice, one needs measurement, which is the moment where statistics enters the

---

scene. It is immediately obvious that statistics / measurement is theory based. For example, answering the question which statistic is needed in order to measure the health status of a population requires highly complex considerations: How does one design such a statistic in detail? Which activities have to be carried out in order to actually, and objectively, receive the required information? How does one make sure that one measures the right variable (providing the intended answer), and not a variable which only seemingly provides an answer?

With respect to financial statistics, i.e. statistics measuring financial flows and stocks, sufficient theory is available according to which statistical practice must be organized. For example, the UN System of National Accounts (SNA) provides consistent and practical rules for the set-up of accounts of institutional revenue and expenditure, including public health institutions like, for example, the NHSO. The IMF has published methodology, broadly consistent with the SNA, stipulating in great detail the structure and contents of public accounts. Most governments around the world follow those rules, with variations usually only in detail.

With respect to health it is the OECD, which has provided detailed methodological guidance with respect to the set-up of National Health Accounts (NHA), which aim at comprehensive mapping of all, i.e. not only public, health expenditure, and its financing.

There are accounting rules and methods developed by international associations of accountants and other "certified" professional groups. These, also, are widely accepted by private business.

There are only limited possibilities (although some seem to exist) of imposing such accounting rules on countries. The fact that they, nevertheless, are widely accepted and applied is mainly due to their "making sense": when it comes to accounting not many theoretical possibilities do exist that can reasonably be turned into practice. The reason for this is that the questions one wants to be answered by financial accounting show in practice considerable convergence: is there a deficit?, what are the reserves?, what is the dynamics and structure of expenditure?, of revenue?, and the like.

In practice, most statistical programmes, published or not, publicly accessible or not, including maintaining financial information, around the world have evolved, at various degrees, according to the "knowledge needs" of enterprises, governments, central banks, households, science and possibly other entities<sup>1</sup>. Subject matters that are not wished to be known about, will not be statistically measured and registered. This situation also complies with the statistics situation in Thailand, including with respect to its health system.

Like in many other countries, the historical development of Thailand's health system, its stakeholders' knowledge needs, its financial problems, its performance, ad-hoc type reasons and many others, have shaped the reality of Thailand's health statistics. This includes the state of financial information about the system's finances.

The main purpose of this report is to describe and assess the information, and information sources, at present available for financial monitoring, including obvious deficiencies.

In a later report, to be written during the course of the project, the findings of the present report will be "confronted" with an operational (applicable) *ideal* reporting structure

<sup>1</sup> See Wolfgang Bonss: Die Einübung des Tatsachenblicks. Zur Struktur und Veränderung empirischer Sozialforschung, Suhrkamp, Frankfurt/M. Germany, 1982. [In German only; non-authorized translation of title: Exercising the view on reality. Structure and changes in empirical social research.]

---

deemed necessary for sound financial monitoring of the system. In that report, means and ways will be sounded out that might allow for a possibly year-long transformation, in practice, of the present sub-optimal state into the ideal structure.

In other words, we start with "accepting" the present state of financial reporting in Thailand's health sector; we will then investigate, to what extent, based on the existing situation, reporting can be improved in the direction of an ideal system within reasonable periods of time. Finally, later in the overall project, we will stipulate in detail those statistical measures deemed necessary to fill any remaining gaps. In other words, we will then, finally, design a statistics programme, which Thailand's health system stakeholders "must" want to know.

It should be noted here already that for purposes of financial monitoring Thailand's health system it is not sufficient to be knowledgeable just about pure financial statistics. Correct interpretation of financial statistics is usually only possible if additional information is available about the driving forces behind the financial developments, i.e. financial monitoring implicitly means equally detailed and intense monitoring of physical variables (numbers of hospitals, cases, beneficiaries, etc), of cost variables (health price index, DRGs, etc), of macro-economic variables and others. One might summarize the totality of statistics necessary for proper monitoring of health finances under the notion "health satellite system" – details of a possible health satellite system for Thailand will be described in a later report (as indicated above).



---

### 3. Sources of health statistics<sup>2</sup>

#### 3.1. Demography

The primary sources of demographic information / statistics are the NSO and the MoI. The NSO is responsible for the population and housing census, which is being carried out, along UN recommendations, every 10 years (see also chapter 3.2). Another important source is the administrative statistics on registered UC members and on SSO members.

#### 3.2. Surveys

The MoPH carries out, on a regular basis, the Health Resources Survey, which inquires into:

- human resources,
- buildings,
- medical equipment, and
- covers public health care facilities and private hospitals. Its major deficiency is that it excludes information on ambulatory clinics.

The NSO regularly carries out the following censi and surveys, with periodicity varying by programme, some of them only *ad-hoc*:

<sup>2</sup> This chapter draws substantial information from Thaworn THESIS. ...

---

<b>Number</b>	<b>Title / Programme 2004 to 2010</b>
	<b>Censi</b>
1	Population census
2	Agricultural census
3	Trade and services census
4	Industrial census
	Surveys
5	Survey of population change
6	Intercensal agricultural survey
7	Household survey on basic information
8	Household survey on socio-economic characteristics
9	Household survey on energy consumption
10	Labour force survey
11	Migration survey
12	Home work survey
13	Survey on informal labour
14	Survey on seeking work and requirements for the development of competency skills
15	Household survey on information and communication technology
16	Survey on social security needs
17	Survey on time usage
18	Children and youth survey
19	Sports and sports watching behaviour survey
20	Health and welfare survey
21	Survey on smoking cigarettes and dinking alcohol
22	Survey on reading behaviour
23	Survey on the congested areas in the vicinity of BKK
24	Fertility survey
25	Disability survey
26	Elderly survey
27	Mass media survey: newspapers
28	Mass media survey: radio
29	Mass media survey: television
30	Civil servants' living conditions survey
31	Small manufacturing survey
32	Survey on private non-profit organizations
33	Trade and services survey
34	Private hospitals survey
35	Hotels and guest houses survey
36	Fixed-route bus operations survey
37	Construction industry survey
38	Quarterly retail survey
39	Establishment survey on information and communication technology
40	Basic bus transport information survey
41	Pay survey
42	Community level statistics survey
43	Public opinion poll
	Source: NSO.

---

---

Once structure and procedures of the CFMU are clarified, which will be the case later during the project, censi and surveys will be checked with respect to the data support they might be able to provide within the INFIMO.

- At first glance the following censi / surveys seem to be promising candidates for further investigations in these respects:
- Population census
- Industrial census (ISIC Rev. 3, especially D33)
- Survey of population change
- Household survey on socio-economic characteristics
- Labour force survey
- Health and welfare survey
- Survey on smoking cigarettes and dinking alcohol
- Civil servants' living conditions survey
- Quarterly retail survey

The type and structure of information assembled in these programmes is summarized in **table nnn**, below.

At the present stage of the project, information on the following surveys is not yet available; they will be checked with respect to their relevance for the CFMU / INFIMO in due course:

- Fertility survey
- Disability survey
- Elderly survey
- Survey on private non-profit organizations
- Private hospitals survey

**Table nnn. Structure and contents of censi and surveys**

Descriptor	Census		Survey				
	Population	Industry (ISIC Rev. 3)	Population change	Household socio-economic characteristics	Labour force	Health and welfare (H W S)	Smoking and alcohol
First reference year	1909	1964	1964	1957	1963	1974	1976
Periodicity	Decennial		Continuous	Biennial	Monthly	Biennial	Triennial
Reference time	01 April	Previous year	Revolving	Previous 12 months	Survey week	Previous 12 months	
Enumeration period	01 to 30 April	June to July					
Coverage	All persons & housing units	All establishments ISIC Rev.3	All households				
Sample size			82,000 households	70,000 households		26,500 households	
Method	Interview						
Items covered	Age				Age		
	Sex				Sex		
	Relationship to household head		Relationship to household head		Relationship to household head		
	Marital status	Type of industry			Marital status		
		Type of product			Occupation		
	Education level	Economic activities			Education level		
		Legal form	Residency status		Income		Income
	Number of children born	Number of employed	Work status	Expenditure	Fringe benefits	Diseases	Age when began smoking
	Number of children living	Income	Number of children born	Type of dwelling	Search for job	Source of diagnose	Type of cigarettes
	Number of children died	Hours worked	Event of birth:		Unemployed	Type of initial treatment	Number of cigarettes
	Work status	Production cost	Date of birth		Work status	Choice of initial treatment	Expenses on tobacco products
		Expenses	Place of birth		Last occupation	Type of last treatment	Knowledge on dangers of smoking
	Type of dwelling	Revenue	Birth registration		Desired occupationob	Drugs or medicines	Married women smoking
	Occupancy and tenure of dwelling		Baby identification			Choice of medicine	Abstinence from smoking
	Ownership of land	Depreciations	Number of children living	Ownership of land	Industry	Injury / accident	Number of unsuccessful attempts to quit smoking
		Output	Number of children died		Hours worked	Cause of injury / accident	Cause for quitting
	Durable goods	Inventory	Contraceptive method			Hospital admission	
	Source of drinking water	Fixed assets	Duration of pregnancy	Durable goods		Health expenditure	
	Water supply system		Event of death:	Fixed assets		Health insurance	
	Religion		Date of death				
		Place of death					
Migration		Cause of death					
Literacy		Death registration					
		Migration		Migration			
		Literacy					
Data presentation	Province, Region, Kingdom						

Source: Own compilation based on information received by the NSO.

The frequency of the HWS, i.e. the survey with most immediate relevance for the envisaged purpose, was recently increased in order to satisfy “increased demand for quality information on the actual number of people with the right to obtain .. health insurance – identified by possession of a ‘golden card’.” (Opanapunt / Porapakkhram 2005)

Most of the addressed additional demand came from the MoPH (and NHSO), which wished to solve a number of uncertainties that had emerged since the onset of the UC scheme. Especially, higher accuracy and actuality of the number of persons eligible under the UC scheme was crucial as it influenced the calculations with respect to the correct amount of capitation of competing institutions (NHSO, BoB, others). Also, aiming at correct numbers was necessary in order to get a better base to start from for budget projections.

---

Initially, it was planned to execute the HWS on an annual basis (Opanapunt / Porapakkham 2005). This would have enabled analysts to create time series of consistently structured data, which is necessary as information base in case of time series based application of budget projections. Meanwhile, however, the HWS is being executed (only) on a biannual basis, leading to and leaving unresolved some of the problems as discussed earlier in this report.

Another problem of using the HWS for budgeting purposes lies within the intrinsic statistical problems of samples, i.e. their design, in general. It is not purpose of this report to review the survey practice of the NSO. It is assumed that the NSO carries out its surveys according to best statistical practice. However, the problems of sample design comprise questions of coverage, sample size, sampling (probability sampling, quota sampling), stratification, response rates, substitution of non-respondents, the questionnaires, checking and weighing of data, treatment of missing data, and the like (EUROSTAT 2003) – which all pose specific problems to be solved in order to guarantee representativeness with respect to the whole population, and accuracy<sup>3</sup>.

Nevertheless, despite those problems, the HWS, and possibly others of the above mentioned surveys, will be element of INFIMO, a blueprint of which will be developed later in the course of this project.

### 3.3. Fiscal statistics - the Government Financial Management Information System

Thailand's GFMIS<sup>4</sup>, sometimes called *treasury system*, is a networked payment, accounting, and financial management information system to which the MoF, the BoB, the line ministries and spending agencies have access.

The rules of access to, and the content of, GFMIS are defined and supervised by the CG, which implemented the real-time, centralized, integrated on-line computer system, and runs it since 1 October 2004. The system is an application of the SAP commercial package "Enterprise Resource Planning (ERP)". It covers core functions of the government's fiscal process, including budget planning and monitoring, procurement and payment, financial accounting on accrual basis, cost accounting, human resource management, and management reporting.

Every public agency has to use the same chart of accounts, accounting principles and procedures, i.e. all agencies have to record financial activities of identical type under identical codes (accounts). Each account is identified by a unique code. The CG is responsible for the design and maintenance of the accounting framework.

In practice, the CG only controls the "primary account code", which has 10 digits; an example is shown in **table nnn** (below).

<sup>3</sup> See report *The calculation of capitation fees and the estimation of provider payment in the Thai health system – initial review (Draft report)*. ILO component: Financial Management of the Thai Health Care System (THA/05/01/EEC) Under the Health Care Reform Project between the EU and the Kingdom of Thailand (THA/AIDCO/2002/0411) Draft 1, September 2006

<sup>4</sup> On the following see Potter, Barry H. and Jack Diamond: *Building Treasury Systems*. In: Finance and Development, A quarterly magazine of the IMF. Volume 37, Number 3, 2000. For a fuller treatment see: Potter, Barry H. and Jack Diamond: *Guidelines for Public Expenditure Management*. Washington: International Monetary Fund, 1999.

**Table nnn. Account coding system (Chart of Accounts; example)**

Account code						Account name
5	0	00	00	00	00	Expense
5	1	00	00	00	00	Operational expense
5	1	01	00	00	00	Personal expenditure
5	1	01	01	00	00	Wages and salaries
5	1	01	02	00	00	Other expenditure
5	1	01	02	01	06	Social security contributions
5	1	01	02	01	09	Health insurance premia
5	1	01	03	00	00	Compensation for education and health
5	1	01	03	02	05	Outpatient services for beneficiaries except pensioners - public health care facilities
5	1	01	03	02	06	Inpatient services for beneficiaries except pensioners - public health care facilities
5	1	01	03	02	07	Outpatient services for beneficiaries except pensioners - private health care facilities
5	1	01	03	02	08	Inpatient services for beneficiaries except pensioners - private health care facilities
5	1	04	01	00	00	Supplies
5	1	04	01	01	02	Supplies from the private sector
5	1	04	01	01	03	Supplies from the government sector

Source: CG (2005).

The CG has authorized public agencies to create independently ("freely") "secondary account codes", reflecting those agencies' specific activities in detail.

In due course of the project Thailand's GFMIS will be checked for its relevance for INFIMO, in detail.

### 3.4. Price statistics

**Table nn** contains the structure of the medical CPI, the base data of which are being collected by the MoC. The medical CPI, item number 98 of the CPI, is broken down into the two items no. 99 and no. 111. No. 99 consists of the components 100, 104 and 109. No. 100 is broken down into 101 to 103; no. 104 into 105 to 108; and no. 109 is equivalent to 110. No. 111 is broken down into the two components 112 and 113.

**Table nn. Composition of the medical CPI**

No.	Description
<b>98</b>	<b>MEDICAL AND PERSONAL CARE</b>
<b>99</b>	<b>MEDICAL CARE</b>
100	DRUGS AND MEDICAL CARE COMMODITIES
101	DRUGS
102	MEDICAL CARE COMMODITIES
103	MEDICAL CARE SERVICES
104	OUT-PATIENT EXPENDITURE
105	EXAMINATION FEES
106	DENTAL FEE
107	EYE CHECKUP FEES
108	OTHERS
109	IN-PATIENT EXPENDITURE
110	EXPENDITURE ON HOSPITAL SERVICES
<b>111</b>	<b>PERSONAL CARE</b>
112	PERSONAL CARE ITEMS
113	PERSONAL CARE SERVICES

Item no. 98 has a weight within the overall CPI of around 6 per cent over the last three “baskets” (2537/1994, 2541/1998, 2545/2002 – Annex, table 2).

Item no. 100 is consistent to a large extent with group 06.1 *Medical Products, Appliances and Equipment* of the COICOP (UN 2004).

Group 06.1 covers medicaments and equipment and other health related products “purchased by individuals or households, either with or without a prescription, usually from dispensing chemists, pharmacists or medical equipment suppliers. They are intended for consumption or use outside a health facility or institution<sup>5</sup>.” (UN 2004, p. 473)

#### Item

No. 101 is presumably consistent with group 06.1.1 *Non-durable pharmaceutical products* and group 06.1.2 *Non-durable other medical products*;

no. 102 should be consistent with group 06.1.3 *Durable therapeutic appliances and equipment*; and

no. 103 relates with group 06.2.1 *Medical services*, which include services of orthodontic specialists.

#### Item

<sup>5</sup> Products directly supplied to out-patients by practitioners or to in-patients by hospitals and the like are included in out-patient services or hospital services. (UN 2004, p. 473)

---

no. 104 (containing items no. 105 to 108) should be consistent with *Group 06.2 Outpatient services* which “covers medical, dental and paramedical services delivered to outpatients by medical, dental and paramedical practitioners and auxiliaries. The services may be delivered at home, in individual or group consulting facilities, dispensaries or the outpatient clinics of hospitals and the like. Outpatient services include the medicaments, prostheses, medical appliances and equipment and other health-related products supplied directly to outpatients by medical, dental and paramedical practitioners and auxiliaries.” To which extent consistency exists has still to be clarified.

Item

no. 109, which is identical with item no. 110, is the equivalent to *group 06.3 Hospital services*. They include

Basic services: administration; accommodation; food and drink; ambulance transport; provision of medicines and other pharmaceutical products, etc., and

Medical services: Services of physicians, surgeons, dentists; medical analyses; physiotherapists, speech therapists, etc.

For further details on products included in all mentioned groups see: UN 2004, p. 473.

A complete breakdown of the medical CPI is provided in the following **table nnn**.

**Table nnn. CONSUMER PRICE INDEX ( 2002=100) - Medical goods and services ("Medical CPI")**

Region	Good / service	2002	2003	2004	2005	2006 (Jan to Sep)
<b>THAILAND</b>	DOCTOR FEE	100.0	102.7	106.0	107.8	111.3
	EXAMINATION FEE (GOV.)	100.0	101.2	102.8	103.1	103.8
	EXAMINATION FEE (PRIV.)	100.0	101.6	106.0	110.6	110.7
	DENTIST FEE	100.0	104.1	107.0	109.1	110.5
	FEET MASSAGE	100.0	102.4	105.0	106.2	104.3
	HOSPITAL CLINIC	100.0	100.3	100.6	101.0	102.0
	HOSPITAL CLINIC (PRIV.)	100.0	100.0	100.3	101.7	102.0
	PLASTER	100.0	100.8	102.1	103.1	103.1
	CARMINATIVE	100.0	100.0	102.3	105.0	109.8
	CONTRACEPTIVES	100.0	100.1	100.3	102.7	104.2
	ANTIFUNGALS	100.0	100.5	101.1	102.0	102.9
	ANTI INFLAMAT	100.0	101.5	103.2	106.1	106.9
	ANTIBIOTICS	100.0	99.8	100.3	101.0	103.2
	ANTACIDS	100.0	101.4	102.1	103.2	105.1
	VITAMIN B-COMPLEX	100.0	100.4	101.0	101.2	101.9
	BALM	100.0	100.1	99.5	99.9	100.2
	BITTER PILL	100.0	100.3	100.0	100.1	100.3
	PAIN RELIEF	100.0	100.6	101.0	101.6	102.5
	ANALGESIC	100.0	100.8	100.6	101.5	104.1
COUGH MEDICINE	100.0	100.1	99.8	100.0	101.1	
<b>BANGKOK METROPOLIS</b>	DOCTOR FEE	100.0	101.8	107.0	107.0	109.5
	EXAMINATION FEE (GOV.)	100.0	101.8	104.1	104.1	105.0
	EXAMINATION FEE (PRIV.)	100.0	101.1	106.0	111.2	111.2
	DENTIST FEE	100.0	103.8	107.0	107.0	107.0
	FEET MASSAGE	100.0	101.6	105.6	107.5	103.0
	HOSPITAL CLINIC	100.0	100.0	100.0	100.0	100.0
	HOSPITAL CLINIC (PRIV.)	100.0	100.0	100.4	102.1	102.5
	CONTRACEPTIVES	100.0	99.7	100.1	103.6	105.3
	ANTIFUNGALS	100.0	100.5	101.9	102.7	104.4
	ANTI INFLAMAT	100.0	101.6	103.0	107.3	108.1
	ANTIBIOTICS	100.0	100.2	101.4	101.9	105.7
	ANTACIDS	100.0	101.4	102.5	103.5	106.0
	VITAMIN B-COMPLEX	100.0	100.3	100.2	100.2	102.0
	BITTER PILL	100.0	100.1	100.2	100.1	100.1
	PAIN RELIEF	100.0	101.0	101.4	102.4	103.6
	ANALGESIC	100.0	101.4	101.2	102.6	106.4
	COUGH MEDICINE	100.0	100.2	99.9	99.7	101.1
<b>CENTRAL</b>	DOCTOR FEE	100.0	104.8	105.7	107.6	108.8
	EXAMINATION FEE (GOV.)	100.0	101.8	103.1	103.1	103.1
	EXAMINATION FEE (PRIV.)	100.0	105.9	107.8	109.3	109.3
	DENTIST FEE	100.0	102.4	104.1	106.5	106.5
	FEET MASSAGE	100.0	104.0	105.4	106.6	106.6
	HOSPITAL CLINIC	100.0	101.8	103.3	103.3	105.2
	HOSPITAL CLINIC (PRIV.)	100.0	100.0	100.0	100.0	100.0
	PLASTER	100.0	100.0	100.0	100.0	100.0
	CONTRACEPTIVES	100.0	102.4	101.5	102.0	103.5
	ANTIFUNGALS	100.0	100.2	100.1	100.8	100.8
	ANTI INFLAMAT	100.0	101.6	104.0	106.0	106.8
	ANTIBIOTICS	100.0	100.0	100.2	101.3	101.3
	ANTACIDS	100.0	101.6	101.1	102.2	102.9
	VITAMIN B-COMPLEX	100.0	100.0	100.0	100.0	100.0
	BALM	100.0	100.3	99.1	99.3	100.1
	BITTER PILL	100.0	100.2	99.8	100.4	101.2
	PAIN RELIEF	100.0	100.1	100.1	100.1	99.9
ANALGESIC	100.0	99.8	97.8	98.7	100.2	
COUGH MEDICINE	100.0	101.1	101.0	101.6	102.4	

Region	Good / service	2002	2003	2004	2005	2006 (Jan to Sep)
<b>NORTHEAST</b>	DOCTOR FEE	100.0	100.0	100.0	101.1	105.1
	EXAMINATION FEE (GOV.)	100.0	100.0	100.0	100.0	100.0
	EXAMINATION FEE (PRIV.)	100.0	100.0	100.0	100.0	100.0
	DENTIST FEE	100.0	104.8	106.8	125.2	135.3
	FEET MASSAGE	100.0	100.2	100.3	100.5	100.5
	HOSPITAL CLINIC	100.0	100.0	100.0	100.0	104.9
	HOSPITAL CLINIC (PRIV.)	100.0	100.0	100.0	100.0	101.7
	CONTRACEPTIVES	100.0	100.6	99.7	99.9	100.2
	ANTIFUNGALS	100.0	100.4	100.6	101.0	101.8
	ANTI INFLAMAT	100.0	100.6	103.5	105.0	105.3
	ANTIBIOTICS	100.0	100.0	98.9	98.9	98.9
	ANTACIDS	100.0	101.1	101.1	102.4	103.5
	VITAMIN B-COMPLEX	100.0	100.6	102.3	102.3	102.3
	BALM	100.0	100.0	100.2	101.1	100.6
	BITTER PILL	100.0	100.0	100.0	100.0	100.0
	PAIN RELIEF	100.0	99.8	99.0	99.2	100.2
ANALGESIC	100.0	101.5	106.0	105.9	104.9	
COUGH MEDICINE	100.0	99.3	98.1	98.2	98.6	
<b>NORTH</b>	DOCTOR FEE	100.0	109.3	113.9	118.0	120.1
	EXAMINATION FEE (GOV.)	100.0	100.0	100.0	100.0	100.0
	EXAMINATION FEE (PRIV.)	100.0	100.7	100.8	100.8	101.1
	DENTIST FEE	100.0	108.4	112.0	112.0	112.0
	FEET MASSAGE	100.0	104.6	106.9	107.8	107.8
	HOSPITAL CLINIC	100.0	100.0	100.4	104.2	104.2
	HOSPITAL CLINIC (PRIV.)	100.0	100.0	100.2	101.9	101.9
	PLASTER	100.0	103.7	103.7	103.7	103.7
	CONTRACEPTIVES	100.0	99.9	99.9	100.4	101.1
	ANTI INFLAMAT	100.0	101.4	102.4	103.1	103.6
	ANTIBIOTICS	100.0	99.0	98.7	97.7	98.7
	ANTACIDS	100.0	101.1	101.3	102.8	103.0
	VITAMIN B-COMPLEX	100.0	101.3	102.1	102.7	103.2
	BALM	100.0	99.6	99.6	99.6	99.8
	BITTER PILL	100.0	101.9	101.4	101.4	101.4
	PAIN RELIEF	100.0	100.4	102.2	102.7	103.0
ANALGESIC	100.0	100.4	99.6	98.4	100.7	
COUGH MEDICINE	100.0	100.0	100.0	101.3	102.9	
<b>SOUTH</b>	DOCTOR FEE	100.0	100.7	104.2	112.8	123.7
	EXAMINATION FEE (GOV.)	100.0	100.0	101.1	105.0	106.6
	EXAMINATION FEE (PRIV.)	100.0	108.0	115.3	118.8	122.1
	DENTIST FEE	100.0	100.0	100.5	107.7	117.2
	FEET MASSAGE	100.0	101.2	103.8	105.1	105.1
	HOSPITAL CLINIC	100.0	100.0	100.0	100.0	100.0
	HOSPITAL CLINIC (PRIV.)	100.0	100.2	100.2	100.2	100.2
	PLASTER	100.0	100.0	106.1	110.5	110.5
	CARMINATIVE	100.0	100.0	102.3	105.0	109.8
	CONTRACEPTIVES	100.0	99.3	100.6	103.0	104.2
	ANTIFUNGALS	100.0	101.9	103.1	105.2	105.9
	ANTI INFLAMAT	100.0	102.3	103.6	104.3	105.9
	ANTIBIOTICS	100.0	97.6	96.3	99.1	99.4
	VITAMIN B-COMPLEX	100.0	100.0	104.0	104.4	104.7
	BITTER PILL	100.0	100.0	98.8	99.2	99.2
	PAIN RELIEF	100.0	100.0	100.1	99.9	100.6
ANALGESIC	100.0	98.6	98.5	100.6	102.5	
COUGH MEDICINE	100.0	99.8	100.4	100.4	100.1	

Source: MoC.

In summarising, the above medical CPI can be characterized as follows:

---

It mainly measures a limited, relatively small set of daily drugs and services that can be bought / are being bought over the counter by the private households, as represented in the household survey(s). Although the basket also contains drugs that are accessible to households most probably only together with a doctoral prescription it does not, by nature of its construction, contain high powered (possibly poisonous, fatal, etc) drugs, which are only being accessible within the hospital system.

By construction, the index measures market prices – may these be subsidized or not. It does not measure the development of costs of goods and services within the health provider system (hospitals). It, thus, is not adequate for use as a cost driver of non-labour costs of hospitals (under the annual budget / capitation estimation process).

For the purpose of annual budgeting / capitation further investigation is necessary with respect to an adequate cost driver for the non-labour cost elements of hospital expenses.

Independent of the adequacy of the construction of a medical price index the problem arises as to whether an INFIMO, in order to become a satisfyingly working health policy instrument, must include a substantial observatory of prices of medical products, including implicit cost structures, in a more general way, i.e. going well beyond the list of products included in the medical CPI.

### **3.5. Public and private system administrations**

The MoPH oversees Thailand's health care activities. It is responsible to implement and execute many health laws, e.g. the laws on

- food and drugs,
- medical equipment,
- health care providers, and
- medical professional registration.

Much of the execution of these laws is related to registration and licensing activities, which (meanwhile) are being recorded in electronic format and can, thus, be compiled in the form of health, or health related, statistics.

Most of the data bases maintained in public institutions are, however, not directly compatible with each other. Data base incompatibilities exist to some extent within the administration-based data systems but also, and especially, between administrative data, on the one hand, and surveys, on the other.

For example,

- the MoPH's regular *Health Resources Survey* only covers public health care facilities and private hospitals: it excludes ambulatory clinics;
- the MoPH's regular *Mortality and Morbidity Report*, input to Thailand's annual health statistics (also used for international comparison), uses summary information from the health care providers and combines it with information based on the death certificates compiled by the MoI;
- private health care facilities, before starting their activities, have to register with and be licensed by the MoPH - licenses to be annually renewed. Under current practice, the licensing procedure, however, only demands information (data) with respect to

---

the facilities' standards of medical practice and infrastructure; from the MoPH's point of interest those facilities' financial status is irrelevant for their being licensed.

Private health care institutions follow the policies and guidelines as specified by the ICAAT and must get approval from the DCR. Private hospitals are supervised by the Bureau of Business Supervision (under the DCR), and have to prepare and submit annual financial reports. Small clinics are exempted from these obligations.

Stock-listed private hospitals have to submit financial reports to the SET.

Private insurance firms are supervised by the Department of Insurance of the MoC; they submit annual financial reports and undertake actuarial reviews on a regular basis.

For purposes of fixing the annual income tax all private health care institutions regularly send documents to the Revenue Department of the MoF. Income statements require only limited information in the cases of independent health care professionals and small clinics.

The SSO holds individual records of health service utilization of in- and outpatients, including clinical and financial data.

The Workmen compensation scheme maintains documentation only in manual format.

CSMBS and UC dispose of computerized inpatient utilization data but only of incomplete outpatient data.

Private health insurance and the Traffic Accident Insurance scheme have detailed clients data, to which access is restricted.

### **3.6. Data from other sources**

Data documenting health spending (and financing) of private households, private employers, NPISHs, and the RoW can only be generated by way of surveys (chapter 3.2).

## 4. The System of National Accounts

The NESDB is responsible for preparation of macroeconomic information. It collects financial and physical data from all economic sectors, including information on operations with the rest of the world, to compile the SNA.

The following table provides an overview of the standard tables regularly published:

**Table nnn: NESDB - program of regularly published tables**

<b>Main Accounts</b>		<b>A</b>	<b>Q</b>
1	Domestic product	X	
2	National income	X	
3	Domestic capital formation	X	
4	Household and private non-profit institutions	X	
5	General government	X	
6	External transactions	X	
<b>Summary tables</b>			
1 / 2	GDP at current market / 1988 prices	X	X
3 / 4	GNP at current market / 1988 prices by activity	X	X
5	GDP at current factor costs	X	
6 / 7	Consumption at current market / 1988 prices	X	X
8 / 9	Gross fixed capital formation at current market / 1988 prices	X	X
10	Distribution of national income at current market prices	X	
11	Savings and gross capital formation	X	
<b>Supporting tables</b>			
12 - 37	GDP by sectors at current market / 1988 prices	X	
38 - 41	Private consumption by type / durability at current market / 1988 prices	X	X
42 / 43	Government consumption at current market / 1988 prices	X	X
44 / 45	Gross fixed capital formation at current market / 1988 prices	X	
46 / 47	Imported gross fixed capital formation at current market / 1988 prices	X	
51	Compensation of employees	X	
52	Household income received from unincorporated enterprises	X	
53	Household property income	X	
54	Savings of corporations	X	
55	Household income received from corporations	X	
56	General government current revenue	X	
57	Interest on consumer debt	X	
58	Disposable income of private households	X	
A: Annual; Q: quarterly, the quarterly publications include seasonally adjusted data.			

Also, the NESDB calculates and publishes estimates of Thailand's national capital stock at replacement cost and at 1988 prices.

Conceptually, national accounting is in Thailand still based on the 1953 SNA, which is outdated latest since the 1968 revision. In order to compensate to some extent for this deficiency, the NESDB have however adapted and added elements such as an input-output-table according to the SNA 1968.

---

Thus, current state of national accounting can in practice be regarded a mixture of 1953 and 1968 SNA-elements. There are six standard accounts, eleven summary tables and forty-seven supplementary tables, some few of them being of an analytical nature (percentages; ratios).

GDP is presented in the SNA 1953 format. On the expenditure side, a number of items have been adapted to conform better with the 1968 version, e.g. with respect to military hospitals, residential buildings for military personnel and military airports. Also, some of the economic transactions have been included in the national income accounts according to the recommendations of the SNA 1968.

In its calculations of national income according to the 1953 SNA the NESDB uses three approaches, i.e. production, income and expenditure side approaches, in order to be able to mutually cross-check results.

Since 1997 the NESDB has been planning the implementation of the 1993 SNA. Progress was soon made with respect to government accounts and financial sector accounts:

The government sector account was the first readily developed in 1999. Conditions for data compilation have meanwhile significantly improved after the implementation of the GFMIS (see above, chapter 3.3). In addition, finalization and distribution of the GFSM, version 2001, by the FPO (MoF) has had synergistic effects on the realization of the 1993 SNA.

The financial sector account was compiled in 2000. In this sector, commercial banks forming the dominant part while accounting for more than 80 per cent of the total, the full sequence of accounts was constructed first (except balance sheet). Simultaneously, indirect output of the financial intermediators was developed<sup>6</sup>. Advantage was taken from the construction of supply-and-use-tables, which allow to investigate the causes of differences of estimates between total demand, total supply and their respective components.

With respect to the other SNA 1993-tables a number of obstacles remain (also see further below):

Household accounts and accounts for non-profit institutions serving households are being planned, and will be gradually developed. One main problem preventing easy compilation is the fact that directly applicable household data are missing and, thus, the NESDB has to perform transformations of the information contained in NSO surveys in order to make it compatible with the 1993 SNA.

A problem of similar nature is the lack of companies' adequately categorized profit and loss statements and balance sheets: the MoC, which indeed compiles this information, uses a classification system that does not comply with ISIC, which is one core basis of the 1993 SNA. Again, the NESDB needs to transform data.

<sup>6</sup> Output of financial intermediaries in banking, insurance services and pension fund services cannot be directly measured, since these institutions do not normally charge their customers for their services except for some services. Their output has to be measured indirectly. The 1993 SNA recommends using an indirect measure of the value of the services for which the intermediaries do not charge explicitly. This imputation is called "financial intermediation services indirectly measured (FISIM)". The total value of FISIM is measured as the total property income receivable by financial intermediaries minus their total interest payable, excluding the value of any property income receivable from the investment of their own funds (SNA para 6.125). This total implicit output of financial intermediaries has to be allocated among user in other economic sectors.

## 5. The National Health Accounts

The first attempt to compile NHAs was made in 1997 by a joint effort of HSRI, CPH-CU, NESDB, MoPH, NSO and IPS-CU. The research objectives were: the NHA methodology, a manual, comparison of the results with those of the NESDB (under the Thai SNA) and with those of other countries.

The task to be carried out included identification of the health financing sources and institutions, of the flows of funds, of data collection techniques, adequate breakdown of health expenditure data and others. A detailed description of methods used to overcome encountered problems, including a discussion of existing problems, can be found in Sakunphanit 2006.

At the beginning of the works on Thai NHAs the following two generic table structures were developed:

**Table nnn. Allocation of resources to financing agencies**

Financing agencies	Ultimate source of financing					Total
	MoF	State enterprises	Employers	Households	Donors	
1	MoH					
2	Other ministries					
3	CSMBS					
4	Municipalities					
5	State enterprises					
6	SSO					
7	WCS					
8	Private insurance					
9	Employer benefits					
10	Traffic accidents insurance					
11	Private households					
12	Non-profit organizations					
TOTAL						

Source: Viroj 1999.

This table had a strong institutional bias: the ultimate sources of financing were defined along the lines of, but not identical with, SNA sectoral classification of economies, which comprises government sector, enterprises, private households and the rest of the world. This table answers the question: Which are the ultimate sources (head line of table) that provide the financial resources to the existing financing agencies (front column)?

The second generic table, at that time of development of Thailand's NHAs, was a logical consequence of the first:

**Table nnn. Spending of allocated resources**

Type of expenditure		Administra- tion	Public institution	Private institutions	Public health programmes	Capital formation	Total available resources	Balance
Financing agencies	Public sources	MoH						
		Other ministries						
		CSMBS						
		Municipalities						
		State enterpr.						
		SSO						
		WCS						
	Private sources	Private insurance						
		Employer benefits						
		Traffic insurance						
		Private households						
Non-profit org								
Total								
Source: Thangcharoensatien, Viroj; ... (1999).								

This table contains information on the amount of allocated resources actually spent by the different financing agencies. In other words, this table allows for a comparison between resources available and resources spent, i.e. the calculation of a financial balance.

Meanwhile, the classification of the expenditure side has been significantly improved as follows (excludes capital formation):

**Table nnn. Current health expenditure by function, provider and source of funding**

<b>Expenditure category</b>	<b>ICHA-HC (health care function)</b>	<b>ICHA-HP (provider industry)</b>
In-patient care		
Curative and rehabilitative care		
General hospitals		
Public		
Private		
Speciality hospitals (public)		
Nursing and residential care facilities (private)		
All other providers		
Long-term nursing care		
General hospitals		
Speciality hospitals		
Nursing and residential care facilities (private)		
All other providers		
Out-patient curative and rehabilitative care		
Hospitals		
Public		
Private		
Speciality hospitals (public)		
Offices of physicians		
Offices of dentists		
Offices of other practitioners		
Out-patient care centres		
All other providers		
Home health care		
Services ancillary to health care		
Medical goods dispensed to out-patients		
Pharmaceuticals, etc.		
Prescribed medicine		
Overt-the-counter medicines		
Other medical non-durables		
Therapeutical applications, etc		
Glasses and other vision products		
Orthopedic appliances; other prosthetics		
All other misc. durable medical goods		
Prevention and public health services		
Health administration and insurance		
<b>TOTAL</b>		
Source: IHPP (communication 2006).		

---

At various levels of accuracy and detailedness the above expenditure categories can be shown for all institutions (financing agencies). The group of agencies will have to be expanded by the UC, which has not yet been included in the published Thai NHAs.

Main problems that remain to be solved are as follows:

The methodological and statistical basis for information on the private household sector's health consumption has to be improved. Such improvements must address issues like:

- The sampling errors in the household surveys (see above);
- the technical accuracy of the accounts;
- like GDP (with NESDB) the NHAs have to be institutionalized (at this time they are still a research project), this includes improving and standardizing the exchange of information between the institution (to be defined) and the financing agencies;
- regular, comprehensive and timely publication of NHAs has to be implemented, publication has to be synchronised with annual GDP, this includes NHAs' regular publication in the form of time series by financing agencies;
- expenditure should be further disaggregated, e.g. by groups of beneficiaries, including by age-groups;
- contents of the revenue (financing) side of the NHAs has to be improved, e.g. with respect to legal types of revenue (taxation, contributions, subsidies, capital income, etc).

## 6. Differences between the SNA (health) and the NHAs

The following table provides a rough overview on the differences between Thailand's SNA application and the NHAs.

**Table nnn. SNA and NHA in comparison**

Criteria	SNA	NHAs
Comprehensive	Yes, covers full economy	Yes, covers all health
Time consistent	Yes, calendar year, accrual basis	No
Timely	Regular publication on routine basis	Irregular publications
Synchronized	No synchronization of work routines, publication, etc	
Compatible	Yes, however outdated SNA version; move to SNA 1993 pending	Yes, however, heavy reliance on allocation techniques
Precise	Yes, established routines	No, no established routines
Internationally comparable	Yes, however only at level of aggregates; health system information is limited	Yes
Policy sensitive	Yes, adequate indicator for growth policy formulation; inadequate with respect to income and wealth distribution	Yes, when improved adequate for strong decisions in health policy
Institutionalized	Yes, executing agency: NESDB	No, executing agency not yet decided
Sufficient data	No	

Source: Sakunphanit 2006

It should be noted that apart from the above formal differences health care expenditure as incorporated in the SNA and in the NHAs is different for a deeper reason: The "satellite account style" of the NHA uses conceptually a boundary for functional health care that is systemically different from the "ISIC oriented style" of the central SNA framework. Further, the issue attracts complications by way of the different compilation methods used. The current SNA uses the commodity flow approach whereas the NHAs approach may be better characterized as an integrated account approach. It should, finally, be mentioned that the quality and accuracy of both systems suffers from the notorious lack of data.

It is important to note that in the SNA is still missing a comprehensive sequence of complete government accounts by government (public) institutions, i.e. by general government, federal government, provinces, municipalities, and social security – comprising SSO, NHSO, WCF and others, each of these accounts comprising total revenue and total expenditure by types and / or functions.

With respect to the envisaged INFIMO the establishment of such a table sequence is of high importance as it, despite of its obvious limitations, provides thorough institutional information on the financing of health within the overall governments institutional set-up. In the concrete of Thailand the generic set of tables could take shape as shown below

---

**(table nnn)**. The idea would be to set up this new table structure identically for the following institutions, from “bottom to top”, of Thailand’s public sector:

Unemployment fund

- + Welfare fund for teachers
- + Workmen compensation fund
- + Social security fund (SSO)
- + Health card revolving funds
- + UC funds (NHSO)
- = Social Security (consolidated for transfers between institutions)

Municipalities

- + Central government
- = State (consolidated for transfers between state levels)

Social Security (consolidated for transfers between institutions)

- + State (consolidated for transfers between state levels)
- = General government (consolidated for transfers between state and social seecurity)

---

**Table nnn. Government accounts - blueprint**

---

<b>General government</b>	<b>T</b>	<b>T+1</b>	<b>T+2</b>	<b>T+...</b>
<b>Revenue</b>				
Entrepreneurial and property income				
Indirect taxes				
Direct taxes				
From corporations				
From private households				
Social security contributions				
Employer contributions				
Actual contributions				
Imputed contributions				
Employee contributions				
Other contributions				
Current received transfers				
From corporations				
From households				
From the rest of the world				
Received subsidies				
Depreciations on public capital stock				
<b>Expenditure</b>				
Government consumption				
Health				
Other consumptive expenses				
Wages and salaries of employees				
Employer social security contrib.				
Actual contributions				
Imputed contributions				
Other labour costs				
Further consumptive expenses				
Social benefits				
Social security benefits				
Health				
Pensions				
Other social security benefits				
Other benefits				
Health				
Pensions				
Other social benefits				
Paid subsidies				
Current paid transfers				
To corporations				
To households				
To the rest of the world				
Public fixed capital formation (gross)				
Balance (Revenue minus Expenditure)				

---

According to the background information provided it seems that the NSO should (close to) be able to provide the above table structure, possibly after some modifications.

---

This issue is being addressed in more detail, in a separate report, in the context of discussing the structure of INFIMO.

---

## 7. Selected problems of Thai health statistics

### 7.1. Treatment of the health sector in the SNA

While dividing health goods and services into (only) two groups, drugs and non-drugs (other medical services), the NESDB uses the commodity flow technique to calculate private consumption of health services as follows:

- (1) The estimate of consumption of domestically produced drugs is based on total domestic production less exports. The FDA is responsible for data compilation on the value of imported and domestic production at wholesale prices. Drug consumption by end users at retail prices is computed by assuming mark-ups of wholesale price at private pharmacies (between plus 184% and plus 320%). On basis of the findings of a small-scale survey, indicating that 5.5% of drugs are being damaged during transportation, this amount is being subtracted from the above in order to make the final estimate of the consumption of domestic drugs.
- (2) The estimate of consumption of imported drugs is based on data from the Customs Department as follows. Total costs of imported drugs, including freight and import duties, are marked-up according to the standard profit margins as set by the MoC.
- (3) In order to calculate private households' total effective expenditure on drugs consumption the estimate of consumption of drugs that are made available free of charge to low income households (subsidized by the government) is being deducted.
- (4) Thus: estimate of private households drug consumption = (1)+(2)-(3)
- (5) Estimate of private households consumption of goods and services provided by private pharmacies and private clinics and hospitals = [(1) + (2)] \* 0.21;<sup>7</sup>
- (6) Estimate of government's drug consumption = (1) + (2) - (5);
- (7) Estimate of government's non-drug consumption = (6) \* 3/7;<sup>8</sup>
- (8) Estimate of private households non-drug health (services) consumption;
- (9) Government consumption expenditure other than drug and medical services (e.g. public health programs) was estimated on the basis of MoF budgetary reports
- (10) Total expenditure in health goods and service = (4) + (6) + (7) + (8) + (9)

**[The above deduction is preliminary (inconsistent) and needs revision.]**

The estimate of households' expenditure on non-drug medical services in the private sector (item (8)) is based on a small sample of private hospitals and clinics concerning revenue generated from non-drug services, dating back to 1979/1980. The 1980 basis has since been adjusted by the medical care consumer price index (CPI).

<sup>7</sup> This 21% come from the estimation of WHO's statistics.

<sup>8</sup>

---

## 7.2. Demography

The MoI maintains Thailand's population registration system. The system is centralized and entries are made online. Every newborn child is registered by way of a PID, which, technically, is generated with the issuance of the birth certificate. An analogous method is used in case of death (death certificates).

The registration data base, together with the results of the continuously revolving survey on population change (see above), is being used for interim updates (estimates) of the population, i.e. for those years where census data, collected on decennial basis, are not available. The basic mechanism for the updates between two Censi, is described by the fundamental population equation:

$$P_t = P_{t-1} + N_t - D_t + I_{mt} - E_{mt}$$

where

$P_t$  := Population at the end of year t

$N_t$  := Newborn children in year t

$D_t$  := Deaths in year t

$I_{mt}$  := Immigrants in year t

$E_{mt}$  := Emigrants in year t

The information (estimates) on the total population and its changes (i.e. births / deaths) is being transferred to the MoPH for the preparation of its vital statistics.

The NESDB, together with academic institutes, uses the information from those sources for population projections.

## 7.3. Institutional problems

### 7.3.1. NESDB

The NESDB lacks personnel in comparison to the scope of its tasks. Complications were recently added when the government prioritized the compilation of quarterly GDP results and the estimation of GPPs. As the National Accounts Division had to allocate priorities to these tasks the SNA revision became secondary priority.

The NESDB is challenged by the statistical methods and the related statistical practice required for the adequate application of the SNA 1993. Methods and practice substantially differ from those connected to the 1953 version as the 1993 version is a *comprehensive* and *consistent* accounting framework dwarfing the 1953 version. Establishing, and making continuously work, the 1993 SNA needs administrative adjustment, including time and resources for theoretical and practical training, at various extent, of staff and those institutions / sources reporting the basic raw data. Budgetary resources required to implement such an adequate infrastructure seem to be limited.

Data restrictions, however, seem to be the most important obstacle hindering the NESDB from moving towards the SNA 1993. Required raw data input is much higher than under SNA 1953. Especially, data are missing for the distribution of income accounts, which – also – has significant impacts on the quality of representing health adequately within the

---

accounts. With respect to the (limited set of) data available, data collection and data analysis is scattered among different institutions. Often, data with respect to (seemingly) identical transactions, but from different sources, substantially diverge, as institutions tend to use own definitions of subject matters in non-coordinated ways.

Such inconsistencies, and others, require data transformation in order to make information compatible with the SNA 1993. In principle this does not pose severe problems to statistical offices – around the world such operations are national accountants’ “daily bread and butter” – however it requires stable statistical reporting and compilation structures and sufficient number of trained staff.

Limited capacities make it also difficult for the NESDB to assume a lead role in improving and standardizing, in terms of operations, the NHAs. Actually, an ideal solution could be (would have been) to maintain the NHAs over an extended period under the roof of a research project, with substantial regular and timely inputs from the national accountants of the NESDB – and to transfer the tasks under the NHAs fully to the NESDB once routines are fully checked, counterchecked and established. A period of two to three years should be sufficient for such a solution.

### **7.3.2. NSO**

It was insinuated in the introduction that systemic improvements in statistics Thailand might only be achievable through a substantial amendment of the Statistics Act, B.E. 2508 (1965). It is not known, at the present state of the project, to what extent amendments of the law have taken place in the meantime. Anyway, the main reason for this consideration is that the Act explicitly allows for many public statistical agencies, with respect to which the NSO, mainly, plays a supervisory and advisory role.

Core competencies of the NSO with respect to “own” execution of statistical programs are concentrated in the field of censi and surveys. These are important statistical tools and their execution adequately attributed to the NSO.

However, in the context of this report those fields of statistics are of greater interest that are not executed by the NSO. Among these are, most prominently, the SNA, the price statistics, compilation of exports and imports, statistics on the education system, social (security) statistics, health statistics, international statistics, other statistics.

While the NSO is not executing the above it is involved in forecasting. It may have been reasonable at the time of the formulation of the statistics law (2008 / 1965) to endow the NSO with such tasks. However, meanwhile, there seems to be good reason for reconsideration. Not only are there systematic objections of scientific and political nature speaking against a practice that allows the producers of statistics simultaneously to be their users (as it is in case of forecasts). But also, forecasting techniques are no longer a field of extreme professional specialization as it was the case 40 or 50 years ago – at least is it not to the same extent. In other words: many Thai institutions meanwhile have their own expertise and hard- and software equipment that allows them to perform forecasts “under own responsibility”.

“Freeing” the NSO from this task, and directing freed resources onto other statistical work could help to improve, even though only to small extents, Thailand’s statistical situation.

The above has also to be seen under the aspect that the staffing of the NSO, compared to the country’s population and socio-economic development dynamics, is “meagre”: the NSO seems to be understaffed. The central administration of the NSO, located in Bangkok, is complemented by regional statistical offices in the 75 provinces of the country. However, total staff, including temporary employees, comprises (only) around 2,500

---

persons. Furthermore, this number seems to be varying substantially with respect to temporary employees, probably according to work load: On 31st March 2004, the NSO employed a total staff of 3,150 persons whereas at 5th August 2005 total number of staff was only 2,467 persons. (NSO Without Date; (p.3), and NSO 2005; p 9) Staff is allocated at a ratio of round about 60 : 40 to the regional and central offices, respectively.

Such high fluctuations of personnel indicate instability in institutional knowledge. Stability of institutional knowledge is, however, one of the prime assets of statistical offices. Maintaining and augmenting institutional knowledge is one of a statistical office's prime obligations.

Supervision of and advice on statistics, the legal obligations of the NSO, can only be effective if the NSO has own hands-on experience in all relevant areas of statistics.

At central level the NSO is divided into eight centres / bureaus / divisions which undertake the office's operational work according to revolving statistical plans and master plans. Among those, it is the Economics and Social Statistics Bureau, divided into six Statistics Groups, which is responsible for conducting censuses and surveys on economic and social issues, including the HWS (NSO 2005).

### **7.3.3. MoPH**

The MoPH's regular Mortality and Morbidity Report is core input to Thailand's annual health statistics, and also used for international comparisons. It uses summary information from the health care providers and combines it with information based on the death certificates compiled by the MoI.

### **7.3.4. Private and public health care facilities**

Both private and public health care facilities have well established processes and documentation with respect to client registration, service provision and billing (revenue collection). Nevertheless, it will remain difficult to make use of this information in the context of the envisaged INFIMO. Reasons:

The administrations of private health care facilities are mainly focusing on financial success. Therefore, private hospital accountants usually have higher degrees in accounting, i.e. good education and experience, and the use of accounting software is standard. At the same time, private clinics (their administration / accountants) may have a tendency to pay less attention to clinical data (e.g. diagnosis, operation, etc.). These data are usually only maintained in patients' medical records (files), not systematically in computerized systems, and not for statistical (analytical) purposes.

By contrast, public health care facilities, usually not under the same pressure of short-term financial success, tend to pay more attention on clinical data, for example in order to serve ministerial information needs during the annual budgeting process. Most public hospitals dispose of trained personal able to compile required statistics. Other than in private hospitals, most accountants in public hospitals have only lower degrees of certification (if at all), higher degree certified (and accordingly experienced) accountants are only available to large hospitals<sup>9</sup>.

<sup>9</sup> The deficiencies of this situation became obvious during the period of change from cash accounting to accrual basis accounting in 2004: it was found that staff at hospitals and provincial health offices lacked understanding in this respect. As a result, the MoPH was transitorily reluctant

---

Also coverage of health care providers with respect to data collection is still problematic. For example, clinics / private hospitals are not requested to report on services that are paid directly out of clients' pockets.

Clinical and financial data of public and private health care facilities are stored under their own respective format. There is no national standard classification / format applied, except for the ICD of the WHO.

This situation may improve after both, public and private health insurance schemes have started asking for clinical and financial data from health care providers. Private hospitals provide clinical data to some private insurers, including diagnoses according to ICD10, and also send details of clinical data to the SSO, [the CSMBS ?] and other public schemes. For public health care providers, the GFMIS is the first step for guaranteeing better financial information.

For its budgetary operations and allocation of monies to providers the NHSO heavily relies on the so-called report #5.

Report #5 is monthly routine information of public hospitals on utilization of services and on financial developments according to the following table structures: Table nnn and table nnn.

in the fulfilment of its reporting requirements to the AG and the CG. Meanwhile, training and education programs for management and accounting staff have been carried out, providing basic knowledge on the compilation of financial statements, thus far however only on basis of a manual system. This means, that most of the more detailed charts in the chart of accounts, as prescribed by the MoPH, are not yet in use.

**Table nnn. Utilization of hospital services – monthly report of public hospitals (Report #5)**

Monthly report of hospital utilization

Hospital name..... Service catchment area Code..... District..... Province.....

..... Year.....

Insurance scheme	OP seek Outdoor PCU of hospital				OP seek hospital				Total IP					
	New cases in current year		Visits		New cases in current year		Visits		Discharges in current month		Sum of admission days		Sum of case days	
	Catchment area				Catchment area				Catchment area					
	Within	Outside	Within	Outside	Within	Outside	Within	Outside	Within	Outside	Within	Outside	Within	Outside
UC with 30 baht copay														
UC without copay														
Other scheme														
<b>total</b>														

Insurance scheme	HT/DM		Alternative medicine	Death		ANC (absolute neutrophile count)	PNC		Normal Labour case	Normal live birth case	Dental promotive Visit	Dental treatment Visit
	Cases	Visit		Visit	OPD		IPD	Cases				
	Cases	Visit	Visit	Cases	Visit	Cases	Visit	case	case	Visit	Visit	
UC within catchment area												
UC outside catchment area												
Other scheme												
<b>total</b>												

Insurance scheme	age 0-5y						age 6-24 y				age >24 y		
	Physical cheakups	Vaccine			Nutrition		Physical cheakups	MMR/Rubella vaccine	Nutrition		Physical cheakups	Nutrition	
		DPT	BCG	MMR	Mal-nutrition	Obesity			Mal-nutrition	Obesity		Mal-nutrition	Obesity
	New cases current year	Visits			New cases current year		Visit	New cases in current year					
UC within catchment area													
UC outside catchment area													
Other scheme													
<b>total</b>													

Insurance scheme	Family planning	Pap Smear	Breast Cancer Screening	Rehabilitation	Consultation		Home visits		School health care		Other (health promotion)	
					Time	Cases	Number of household visits	Cases	Number of school visits	Cases	Number of community visits	Cases
	Visits	Cases		Visits	Time	Cases	Number of household visits	Cases	Number of school visits	Cases	Number of community visits	Cases
UC within catchment area												
UC outside catchment area												
Other scheme												
<b>total</b>												

**Table nnn. Current revenue and expenditure of hospitals – monthly report of public hospitals (Report #5)**

Monthly financial position report of hospital

Hospital name..... Month..... Year.....

Item	Month	Year
Operating income		
Income from government for	S	S
Personnel	X	X
Operations	X	X
Capital investment	X	X
Subsidization	X	X
Other expenses	X	X
Special budget	X	X
Income from health service	S	S
UC scheme	X	X
Other sources	X	X
30 Baht co-payment	X	X
Income from health insurance scheme	S	S
UC scheme	X	X
Other	X	X
Cross income	X	X
Other income	X	X
<b>Total operating income</b>	<b>S</b>	<b>S</b>
Non-operating income	X	X
Government revenue (tax) income	X	X
<b>Total Income</b>	<b>S</b>	<b>S</b>
<b>Surplus / deficit</b>	<b>X</b>	<b>X</b>
Extraordinary items	(X)	(X)
<b>Net surplus / deficit</b>	<b>S</b>	<b>S</b>

Monthly financial position report of hospital

Hospital name..... Month..... Year.....

Item	Month	Year
Operating expense		
Personal expense	S	S
Salary and wages		
Salary	X	X
Wages	X	X
Temporary wages	X	X
Other salary and wages	X	X
Other personal expense	X	X
Operating expense		
Compensation	X	X
Sundries	X	X
Cost of goods sold		
Drugs	X	X
Medical material	X	X
Supplies		
Equipment	X	X
Other	X	X
Public utility	X	X
Depreciation and amortization		
Depreciation	X	X
Amortization	X	X
Other operating expense		
Bad debt	X	X
Doubtful accounts	X	X
Cross expense	X	X
Reimbursement to other hospitals	X	X
Other expense	X	X
<b>Total operating expense</b>	<b>S</b>	<b>S</b>
Non-operating expense	X	X
Government revenue (tax) expense	X	X
<b>Total expense</b>	<b>S</b>	<b>S</b>

Table nnn: Cash flow of hospitals – monthly report of public hospitals (Report #5)

Item	Month	Year
Cash inflow from		
Operating activities	X	X
Investment activities	X	X
Financing activities	X	X
<b>Total cash inflow</b>	<b>S</b>	<b>S</b>

Item	Month	Year
Cash outflow from		
Operating activities	X	X
Investment activities	X	X
Financing activities	X	X
<b>Total cash outflow</b>	<b>S</b>	<b>S</b>
cash and cash equivalents increed (decreed)	<b>X</b>	<b>X</b>
cash and cash equivalents as at last month	<b>X</b>	<b>X</b>
cash and cash equivalents as at the end of this month	<b>X</b>	<b>X</b>

Table nnn. Assets and liabilities of hospitals – monthly report of public hospitals (Report #5)

Item	Month	Year
Assets		
Current assets		
Cash and cash equivalent	X	X
Account receivable	S	S
Account receivable from health service		
UC scheme	X	X
Other acheme	X	X
Other account receivable	X	X
Allowance for doubtful account receivable	X	X
Inventories	S	S
Drugs	X	X
Non-drug material	X	X
Medical inventories	X	X
Other inventories	X	X
Prepaid expense	X	X
Accrued income	X	X
Other current assets	X	X
<b>Total current assets</b>	<b>S</b>	<b>S</b>
Fixed assets	X	X
<b>Total assets</b>	<b>S</b>	<b>S</b>

Item	Month	Year
Liabilities		
Current liabilities		
Forward income	S	S
UC scheme	X	X
Other scheme	X	X
Account payable	S	S
Goods		
Drug	X	X
Non-drug material	X	X
Other materials	X	X
Reimbursement from other hospital	X	X
Other account payable	X	X
Accrued expense	X	X
Other current liabilities	X	X
<b>Total current liabilities</b>	<b>S</b>	<b>S</b>
Non-current liabilities	X	X
<b>Total liabilities</b>	<b>S</b>	<b>S</b>
Owners' equity		
Capital	X	X
Accumulated income as at September	X	X
Net (Loss) income	X	X
<b>Total owners' equity</b>	<b>S</b>	<b>S</b>

---

During project progress we will make special proposals on the improvement of the reporting routine under Report #5. One of the main deficiencies of the present structure is that it does not allow, on the current expenditure side, for differentiation according to scheme members: expenses occurred because of treatment of members of which of the schemes: NHSO, SSO, CSMBS, other (small) public schemes, private insurance, private payers (out of pocket).

### **7.3.5. Hospital information system**

The government approved projects to invest in a hospital information system. For example, the cabinet has approved MoPH's proposal to develop a computerized financial information system for all hospitals. There is no answer yet, however, with respect to human resource problems and a national standard classification for clinical and financial data.

### **7.3.6. GFMIS**

Reporting on government finance has improved considerably since the implementation of the GFMIS in October 2004. With respect to the reporting quality one exception has to be made, though: municipalities do not yet have the capacity to report at required minimum levels of effectiveness and accuracy. This is one major reason why government sector reporting on the NHA still requires improvement.

As the CG has authorized public agencies to create independently "secondary account codes", reflecting those agencies' specific activities in detail (see above), the financial accounting system of MoPH-(public)-hospitals follows the accounting principles and the chart of accounts as defined by the MoPH; military hospitals follow those of the MoD. Although both ministries use the same primary code they make ample use of the above authorization of defining more detailed charts of accounts, in order to record adequately (separately) their specific health service activities, which could, for example, be medical supplies, drugs supplies, and laboratory supplies. Obviously, as the primary codes (see table nnn, above) only distinguish public from private supplies both ministries have to develop their own secondary account codes, enabling hospitals to adequately using the system. Not only do secondary codes, by their construction, differ from the primary codes but, also, the probability is very high that secondary codes differ between ministries.

Such differences, and others, make it very difficult to consolidate secondary accounts on a national basis. The secondary accounts, however, are the "interesting" ones when it comes to the financial monitoring of Thailand's health system.



---

## 8. Tentative conclusions

This report tries to take stock of the availability of statistical information on Thailand's health system. Its findings are based on information collected during a three weeks mission to Bangkok in March 2006. In addition, we took advantage of the expertise of two professionals from the NHSO who participated in the Master Course on Social Protection Financing (SPF) at the University of Maastricht / Graduate School of Governance: their master theses covered issues of this report (among others).

Despite the fact that care was taken to interpret correctly the findings of the mentioned mission, and to incorporate correctly the findings of the relevant paragraphs of the mentioned master theses – the general feeling prevails that a full systematic and comprehensive understanding of the possibilities and deficiencies, the structures and capacities, the “white spots” and the areas promising effective sustainable improvements of Thailand's statistical system, even if confined to health statistics, is still lacking.

A number of questions have deliberately been left open in this report. These questions will have to be answered during the progress of the overall project. After the basis has been laid (with this report) future collaboration with statistical counterparts will be much more focused and, thus, effective than it could have been during the mentioned mission.

One core problem to be solved during the project remains: the formulation of a realistic INFIMO, realistic in the sense that transition from the present status of Thailand's health statistic's fabric to INFIMO is realistic and manageable within overseable time limits. In other words, we will try to aim at an INFIMO, which indeed clearly goes beyond the present statistical “design” of Thailand's health statistics, which is a result of historical developments – not of a rational architectural approach, but which realistically takes into account, on the one hand, given administrative procedures, limitations of resources and the like, and, on the other, areas where new developments can be expected with potentially fruitful and effective impacts on the future practice of Thailand's health statistics.



---

## 9. Annex

### 9.1. Thai statistical and statistics-related publications

Health Information System Development Office: *Thailand Health Situation*. Volume 1, Number 1. Flyer. Nonthaburi, June 2005.

Health Information System Development Office: *Thailand. Health INFO*. Flyer. Nonthaburi, without date.

International Health Policy Programme (IHPP), Ministry of Public Health (MoPH), National Economic and Social Development Board (NESDB) and National Statistical Office (NSO): *National Health Account in Thailand 1994–2001*. Mimeo, 9 pages plus 8 tables. Without place and date.

National Statistical Office, Ministry of Information and Communication Technology: *NSO Vision*. Booklet. Bangkok, Thailand, 2005.

National Statistical Office, Ministry of Information and Communication Technology: *The Labour Force Survey. Whole Kingdom. Quarter 4: October - December 2005 (2548)*. Bangkok, Thailand, 2005. Including CD.

National Statistical Office, Ministry of Information and Communication Technology: *The 2005 (2548) Health and Welfare Survey*. Bangkok, Thailand, 2005.

National Statistical Office: *The Labour Force Survey*. Questionnaire. Parts 1 to 7. Without place and date.

National Statistical Office: *NSO Vision*. Flyer. Bangkok, Thailand, without date.

Office of the National Economic and Social Development Board: *National Income of Thailand*. Bangkok, Thailand, 2004 (2547)

Office of the National Economic and Social Development Board, Office of the Prime Minister: *Capital Stock of Thailand*. Bangkok, Thailand, 2004 (2547)

Office of the National Economic and Social Development Board, National Accounts Office: *Gross Domestic Product: Q3/2005 (3/2548)*. Bangkok, Thailand, December 2005 (2548).

Office of the National Economic and Social Development Board, National Accounts Office: *Gross Domestic Product: Q4/2005 (4/2548)*. Bangkok, Thailand, March 2006 (2549).

Opnanpunt, Navarat and Yawarat Porapakham: *Health and Welfare Survey*. Mimeo, 12 pages. Without place, 2005.

Social Security Office, Ministry of Labour: *Social Security Statistics 2004 (2547)*. Nonthaburi, Thailand, July 2005.

Social Security Office, Ministry of Labour: *Social Security Statistics 2003 (2546)*. Nonthaburi, Thailand, July 2004.

Social Security Office, Ministry of Labour: *Annual Report 2004 (2547)*. Nonthaburi, Thailand, without date.

- 
- Social Security Office, Ministry of Labour: *Annual Report 2003 (2546)*. Nonthaburi, Thailand, without date.
- Social Security Office, Ministry of Labour: *Annual Report 2002 (2545)*. Nonthaburi, Thailand, without date.
- Social Security Office, Ministry of Labour: *Annual Report 2001 (2544)*. Nonthaburi, Thailand, without date.
- Tangcharoensathien, Viroj, Adit Laixuthai, Jitpranee Vasavit, Nuan-Anan Tantigate, Wiphant PrajuabMOPH-Ruffolo, Duangkamol Vimolkit and Jongkol Lertiendumrong: *National Health Accounts development: lessons from Thailand*. Health Policy and Planning, 14(4). Oxford University Press, 1999.
- Wibulpolprasert, Suwit, Suvaij Siasiriwattana, Panvbaudee Ekachampaka, Suthisarn Wattanamano and Rujira Taverat: *Thailand Health Profile 2001-2004*. Supported by the Ministry of Health and the Thai Health Promotion Foundation. Without place and date. [http://www.moph.go.th/ops/health\\_48](http://www.moph.go.th/ops/health_48)

## 9.2. Other statistical information

- Health Information System Development Office: *Thailand Health Information System Profile. Data collection platform description*. Handout on the occasion of a visit of WS to the Health Information System Development Office, on 10 March 2006. Mimeo, 11 pages. Without place and date.
- Nongsang Hospital (District Hospital 10810): *Account accrual report of fiscal year of Hospital*. Handout on the occasion of a visit of WS to the Hospital, on 7 March 2006. Mimeo, 4+ pages. Without place and date.
- Sakunphanit, Thaworn: Information on diverse aspects of statistical / financial reporting of Thailand's health sector. Mimeo, transmitted by email in February 2006, 6 pages. Without date.
- Sakunphanit, Thaworn: A system of macro-economic, structural and financial statistical information for the health sector of Thailand. Master thesis, University of Maastricht – Graduate School of Governance, Maastricht 2006.
- Social Security Office: *Utilization rates and unit medical costs of SSO hospitals*. Handout on the occasion of a visit of WS to the Social Security Office, on 2 March 2006. Mimeo, 1 page (table). Without place and date..
- Tangcharoensathien, Viroj: *Interview*. Handout on the occasion of a visit of WS to the International Health Policy Program Thailand, on 1 March 2006. Mimeo, 2 pages. Without place and date.

## 9.3. Other sources

- Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, The World Bank: *System of National Accounts 1993*. Brussels/Luxembourg, New York, Paris, Washington, D.C., 1993.
- German Federal Government, Federal Statistical Office: *The Information System of Federal Health Monitoring*. <http://www.gbe-bund.de/> (in ENGLISH)

- 
- German Federal Government, Federal Statistical Office: *Gesundheit. Ausgaben 1992 bis 2000*. [HEALTH. EXPENDITURE 1992 TO 2000.] Wiesbaden, Germany, 2002. [in GERMAN]
- German Federal Government, Federal Statistical Office: *Gesundheitswesen. Neue Gesundheitsausgabenrechnung*. [HEALTH SYSTEM. REVISED CALCULATION OF EXPENDITURE.] Wiesbaden, Germany, 2001. [in GERMAN]
- Health Systems International: *DRGs. Diagnosis Related Groups. Fourth Revision. Definitions manual*. Without place and date.
- International Labour Office, International Monetary Fund, Organisation for Economic Co-operation and Development, Statistical Office of the European Communities (Eurostat), United Nations, The World Bank: *Consumer price index manual. Theory and practice*. Geneva, International Labour Office, 2004.
- Newbrander, William and Elizabeth Lewis: *Hospical. A Tool for Allocating Hospital Costs. User's Guide, Version 3.1*. Management Sciences for Health. Boston, USA. 2001.
- Organisation for Economic Co-operation and Development: *A System of health Accounts. Version 1.0*. OECD, Paris, 2000.