External assistance to the health sector in developing countries: a detailed analysis, 1972–90

C. Michaud[1] & C.J.L. Murray[2]

This study, which was conducted for the World Bank's World development report 1993: investing in health, *provides an objective analysis of the external assistance to the health sector by quantifying in detail the sources and recipients of such assistance in 1990, by analysing time trends for external assistance to the health sector over the last two decades, and, to the extent possible, by describing the allocation of resources to specific activities in the health sector. The main findings of the study are that total external assistance to the health sector in 1990 was US$ 4800 million, or only 2.9% of total health expenditures in developing countries. After stagnation in real terms during the first half of the 1980s, health sector assistance has been increasing since 1986. Despite their small volume, external assistance at the margins may play a critical role in capital investment, research and strategic planning. The study confirms prior findings that health status variables* per se *are not related to the amount of aid received. Comparing investments to the burden of disease shows tremendous differences in the funding for different health problems. A number of conditions are comparatively under-financed, particularly noncommunicable diseases and injuries.*

Introduction

Discussions of international health priorities and responses often focus on external assistance to the health sector. Although such assistance accounts for only a small share (less than 3%) of health sector expenditures in developing countries (*1*), its impact could be critical in the areas of capital investment, research and strategic planning in these countries. Donor agencies, using minimal resources, have sometimes influenced government health sector policies by drawing attention to special problems or interventions. The success of UNICEF, WHO, and several bilateral donor agencies on the Expanded Programme of Immunization due to their influence on the developing countries' health agendas. Considering its potential importance in determining policy, external assistance to the health sector has been poorly quantified.

The objectives of the present study were specifically to: (1) quantify in detail the sources and recipients of external assistance to the health sector in 1990; (2) analyse time trends for external assistance to the health sector over the last two decades in as much detail as possible; and, (3) to the extent possible, describe the allocation of resources to specific activities in the health sector.

This study is not the first attempt to measure external assistance to the health sector. Two general databases on development assistance are maintained by the OECD (Organization for Economic Cooperation and Development) and are described more fully below. A number of *ad hoc* studies have used these databases, supplemented with other sources, to examine external assistance to the health sector or a component of the health sector (*2–9*).[a, b] Taken together, these studies have defined the rough order of magnitude of such external assistance but the likely government sources, the channels, recipients and activities funded remain poorly delineated.

Definitions, materials and methods

There are no clear boundaries defining the components that should be included in estimates of external assistance to the health sector. In previous studies,

[1] Research Associate, Center for Population and Development Studies, Cambridge, MA, USA.

[2] Associate Professor of International Health Economics, Centre for Population and Development Studies, Harvard University, 9 Bow Street, Cambridge MA 02138, USA. Requests for reprints should be sent to this author.

Reprint No. **5511**

[a] **Howard L.** *A new look at development cooperation for health: a study of official donor policies, programmes and perspectives in support of Health for All by the Year 2000.* Unpublished WHO document No. COR/HRG/INF.1, 1981.

[b] **Orivel F et al.** *L'aide extérieure publique à la santé en Afrique sub-Saharienne.* Paper presented at Journées d'Economie Sociale, Caen, 28–29 September 1989 (in French).

Howard included all water and sanitation investments while the OECD did not (*3*).[a] In the present analysis, the health sector was narrowly defined and included two major components — health and population. *Health* activities include promotive, preventive, curative and rehabilitative interventions to improve the health status of individuals and population groups; programme food aid; vector control, training of health manpower and health research. *Population* activities pertain to family planning programmes, and the collection and analysis of demographic survey data. Water and sanitation, emergency food aid, and general education activities were excluded. We believe it is useful to analyse expenditures whose primary purpose is health improvement as distinct from all expenditures that contribute to health. Our definition is also consistent with the components included in the parallel study on national health expenditures (*1*) and facilitates comparison of the two results.

Total external assistance to the health sector has three main parts: official development assistance (ODA), multilateral loans, and nongovernmental flows. ODA is defined as those resources provided to developing countries and multilateral institutions by official agencies. Such resources must be administered with promotion of economic development as their main objective, and must be concessional in character, containing a grant element of at least 25%. Official contribution to private voluntary organizations are recorded as ODA, but private contributions are not. ODA excludes any kind of military assistance.

Governments and private households from the established market economies and some oil-exporting countries are the ultimate sources of external assistance for health. This assistance is then channelled to the developing countries through three main types of institutions — bilateral and multilateral agencies and nongovernmental organizations. For the purpose of this paper, bilateral agencies are the aid arms of OECD governments, often attached to the ministry of foreign affairs. Multilateral agencies include members of the United Nations system, the major development banks (MDBs), the European Community, and the Organization of Petroleum-Exporting Countries (OPEC). International, national and local nongovernmental organizations (NGOs) utilize a combination of publicly-provided funds and privately-contributed resources for health.

External assistance can be measured in terms of commitments or disbursements. Commitments show the intention of the donor agency at the time of agreement. They are a useful indicator of future disbursements and funding trends. Disbursements capture the amount of funds actually expended in any given year and provide the best information to assess time trends and to make comparisons. The estimates reported in our study are for disbursements exclusively.

Data sources and quality

Unfortunately no single database yet exists that provides a comprehensive view of health sector external assistance. The primary means of data collection was through a questionnaire and follow-up visits or telephone contacts to all major bilaterals, multilaterals and large nongovernmental agencies. For reasons of space, the citations for the extremely extensive set of annual reports and other budgetary documents are not provided but can be obtained on request. Where direct responses were not received or were insufficient, we resorted to using the three major databases on development assistance: the OECD Development Assistance Committee (DAC) annual tables, the Creditor Reporting System (CRS) from OECD, and the Register of Development Activities of the United Nations system compiled by the Advisory Committee for the Co-ordination of Information Systems (ACCIS) (*10–13*).

The two OECD databases — DAC and the CRS — are extensively used and form the basis for most sectoral studies. DAC is based on annual reports sent by each OECD government. CRS is based on project-specific reports forwarded to the OECD. Because information is collected on each project by donor, recipient and content, the CRS has greater potential in analysing health sector external assistance in detail.

Unfortunately, careful comparison of DAC and CRS commitment data reveal major discrepancies. In aggregate for all OECD countries, commitments recorded over the last decade in the CRS cover only 38% to 61% of those recorded by DAC. The variation in CRS coverage compared to DAC is from 0% to over 200% if individual donor reports for specific years are examined. Reporting in the CRS was even worse for population activities (39% on average) than for the health sector (47% on average). While the extent of discrepancies between CRS and DAC remain difficult to understand, it is clear that without major adjustments the CRS data are unreliable for estimating the level of health sector external assistance and, given the variation in coverage from one year to another, even more unreliable for assessing time trends.

Based on the comparison of DAC and CRS, it appears that DAC has better coverage. Since the DAC information is the basis on which donor's performances are assessed by the OECD, it is important to validate the DAC figures with commitments reported directly through bilateral accounts. Three countries (USA, Japan and Netherlands) provided direct information on commitments in addition to

disbursement data that could be compared to DAC commitments. With the exception of the Netherlands in 1989, the concordance for each country ranged from 93% to 99% in 1990, indicating a much better fit between data reported to DAC and national consolidated accounts than those we observed between CRS and DAC. As mentioned, however, DAC does not provide more than a sector total for bilateral ODA.

Commitments and disbursements differ by the time at which they occur. In addition, the total amounts for a given project may differ because funds which were initially committed may be cancelled, reduced or increased during the project's lifetime. Based on detailed project reports, the budget execution was 82% for the World Bank IDA (International Development Association) health sector loans for 1975–90 and 72% for IBRD (International Bank for Reconstruction and Development) health sector loans for the same period. Both the Asian and Inter-American Development Banks disbursed 82% of commitments in closed loans. Budget execution data for the only bilateral, the Canadian International Development Agency (CIDA), that could provide such detailed information was 93% for the period 1975–90. When disbursement data were not directly available, disbursements were estimated using these observed budget execution rates. The formula for estimating disbursements from commitments also incorporated phased implementation of most projects during their life-cycle and the average duration of projects for different types of institutions.

All estimated commitments and disbursements for the health sector have been converted into 1990 US dollars. For time trends we have used a two-stage procedure. First we have converted commitments or disbursements reported in local currency to current US dollars, using official exchange rates. Second, total amounts disbursed from all sources combined, expressed in current dollars, were converted into 1990 US dollars using the United States GDP deflator (*14*).

Direct information provided by NGOs, as well as information from bilaterals have been used to estimate the total disbursements of NGOs to the health sector. Not all NGO disbursements are new funds; bilateral agencies channel funds through NGOs. Where information on NGO income was not available, direct information provided by donor countries on the amount of bilateral assistance to the health sector channelled through NGOs in 1990 was used.

Some bilaterals and multilaterals provided detailed information on recipient countries and/or specific health sector activities. For those agencies not providing detail, we have developed a method to estimate the allocation by recipient or health sector activity. Although the CRS has low overall coverage of external assistance, we have assumed that the recipient and activity allocations for those funds included in the CRS are representative of all assistance for a specific donor. Thus, distributions of external assistance by topical area have been applied to corrected total external assistance by donor.

Results

External assistance to the health sector, 1990

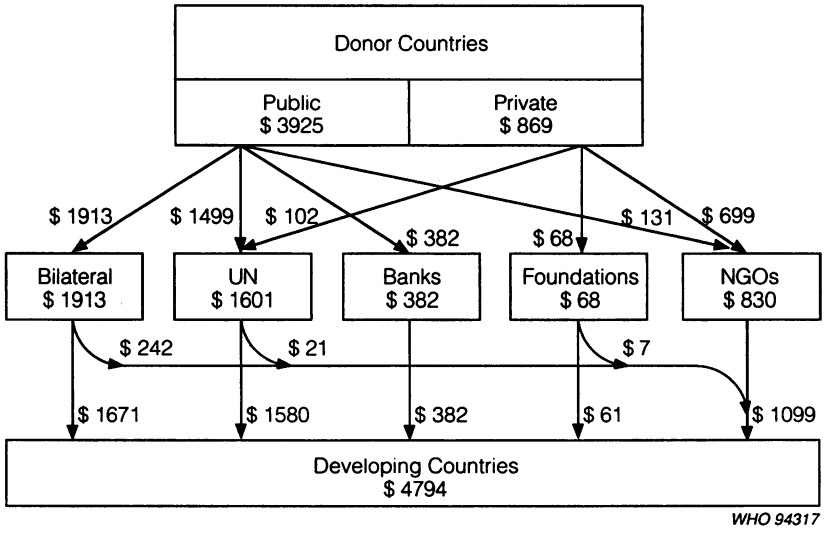
A cross-sectional picture of external assistance to the health sector in developing countries is summarized in Fig. 1. Health external assistance totalled $4800 million, 82% of which originated from public coffers in developed countries and 18% from private households. The middle row in the figure indicates the institutional mechanism through which resources flow to the health sectors of developing countries: 40% is through bilateral development agencies, 33% through United Nations agencies (most notably WHO, UNICEF and the United Nations Population Fund (UNFPA)), and 8% through the World Bank and the regional development banks such as the Asian Development Bank. NGOs account for 17% and a small share (1.5%) flows through foundations.

The overall share of external assistance going to the health sector was 8.8% in 1990. This amount ($4800 million), however, represented only 2.8% of total health expenditures in the developing world ($170 000 million).

The allocation of aid for health, by recipient region (Table 1), shows that Africa receives the largest share of donor support (38.5%) and has the highest per capita allocation ($2.45 per person), while China receives the least (6% and $0.07, respectively). The importance of aid flows for health in Africa is particularly striking: $1200 million, or 10% of all health expenditures in Africa, comes from external sources. In Sub-Saharan Africa excluding South Africa, 20% of health expenditure is from external assistance. While Latin America and Other Asian countries also receive substantial external assistance for health, these funds account for less than 2% of health expenditure.

Total external assistance for population was $936 million in 1990, almost 20% of the total health sector external assistance. All bilaterals combined contributed 60%, United Nations agencies (mostly UNFPA) 22%, the development banks 13%, and private sources 5%. The amount allocated from private sources is probably an underestimate, but sufficient information was not available to allocate total NGO health sector expenditure between health and population.

Fig. 1. **External assistance to the health sector, 1990 (in millions of $).**



External assistance to the health sector, 1972–90

Time trends in total health sector external assistance are difficult to assess because of the lack of documentation of time trends in private flows through nongovernmental organizations over the last two decades. Data on bilateral and multilateral disbursements, however, were successfully obtained for the period 1972–90. The following discussion of time trends is, therefore, restricted to external assistance from public sources. Fig. 2 and Table 2 summarize the aggregate trends for nearly two decades in 1990 US dollars.

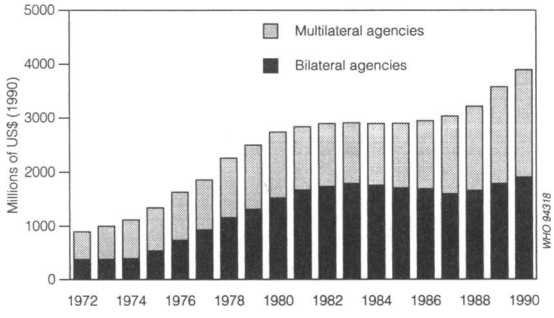
Three periods of external assistance can be identified. From 1972 to 1980, there was a sustained increase in external assistance to the health sector, increasing over 305% or 14% per year. With the onset of the global recession, external assistance remained constant in real terms from 1980 to 1985. Beginning in 1986, we have again entered a period of sustained growth in real terms to the health sector. The pace of increase is lower than in the 1970s but has averaged 7% per year. The increase is present in both bilateral and multilateral agencies.

The share of the total official development assistance (ODA) going to the health sector was 8% for the period of 1981–85, and decreased to 6.5% on average for the period 1986–90. The share of bilateral ODA going to the health sector has declined the most, from an average of 7% during 1980–85 to 5% in 1986–90, while the share of multilateral ODA going to the health sector increased from 10% to 12% on average during the same period. In other words, much of the increase in real assistance to the health sector beginning in 1986 has been due not to a

Table 1: **Official development assistance to the health sector by region, 1990**

Region	Health aid		
	Total (millions of $)	Per capita ($)	As % of health expenditures
Sub-Saharan Africa (SSA)	1251	2.45	10.4
SSA excluding South Africa	1251	2.66	19.5
Other Asia and islands (OAI)	594	0.87	1.4
Latin America and the Caribbean (LAC)	591	1.33	1.3
Middle Eastern Crescent (MEC)	453	1.31	1.3
India	286	0.34	1.6
China	77	0.07	0.6
Total	3252	0.81	1.9

Fig. 2. **Disbursements by bilateral and multilateral agencies to the health sector, 1972–1990.**



re-allocation of aid to health from other sectors, but instead to an increase in total ODA accompanied by a decrease in the relative share claimed by the health sector.

External assistance should also be assessed in comparison with the number of recipients. Health sector external assistance per person in the developing world indicates that external assistance has barely kept pace with population growth during most of the 1980s. Per capita health sector assistance was $0.84 in 1981 and $0.82 in 1988. In 1989 and 1990 the per capita health sector assistance outpaced population growth, reaching $0.95 in 1990.

Time trends for bilateral and multilateral agencies differ substantially. Bilateral health ODA fluctuated from year to year during the 1980s, but increased very little in real terms, growing from $1800 million in 1983 to $1900 million in 1990 (Fig. 2). A large part of the year-to-year fluctuations can be attributed to changes in the real exchange rates for the US dollar. Multilateral health ODA remained stationary during the early 1980s, but grew in the second part of the decade to $2000 million in 1990 (Fig. 2). As a result, the multilateral share of total health ODA grew from about 44% at the beginning of the 1980s to around 51% in 1990.

External assistance for population activities increased only slowly during the 1970s from $400 million in 1972 to $540 million in 1980, stagnated at $550 million on average until 1987, and then increased to $860 million in 1990, despite the withdrawal of the United States from UNFPA.

Examination of the time trends for each agency shows three patterns. (1) Australia, Austria, Belgium, Canada, Finland, Italy, Japan, Norway, Switzerland, and the United Kingdom increased their assistance through bilateral channels to the health sector in real terms. (2) Denmark, France, Netherlands, and New Zealand recorded major declines in their bilateral health sector external assistance. (3) The remainder, Germany, Sweden and the United States showed no clear trend in bilateral disbursements.

Of the multilateral agencies for which data were available, all have demonstrated growth. UNICEF's health expenditure increased 120% over the period 1981–83 to 1988–90 and WHO's by 36% over the same period. UNDP increased but its total health sector budget is extremely small, totalling only $14 million in 1990 or 0.2% of total health sector external assistance. United Nations agencies have increased their contributions from $1100 million in 1980 to $1500 million in 1990. Their total share of health sector official development assistance remained constant at around 40% during that period.

Disbursements from the multilateral development banks grew rapidly, from $79 million in 1981 to nearly $400 million in 1990. Most of the increase came from the World Bank, whose disbursements for health rose from about $33 million to $263 million during the same period. In this case, disbursements do not tell the whole story. New commitments by the World Bank for health and population amounted to $933 million in 1990 and $1500 million in 1991, implying that by the mid-1990s, Bank disbursements for health are likely to be four or five times the $263 million spent in 1990. A trend towards an expanded role for the multilateral agencies in external assistance for health thus appears to be emerging.

Table 2: **Disbursements by bilateral and multilateral agencies to the health sector, 1972–1990**

Year	Disbursements (in million of 1990 $)		
	Bilaterals	Multilaterals	Total
1972	372	527	899
1973	378	623	1 001
1974	389	732	1 122
1975	540	801	1 341
1976	736	899	1 635
1977	936	924	1 860
1978	1 167	1 088	2 255
1979	1 315	1 182	2 496
1980	1 525	1 214	2 739
1981	1 669	1 167	2 837
1982	1 735	1 159	2 893
1983	1 790	1 120	2 909
1984	1 760	1 132	2 892
1985	1 710	1 187	2 897
1986	1 690	1 259	2 949
1987	1 599	1 437	3 036
1988	1 662	1 551	3 213
1989	1 786	1 790	3 577
1990	1 907	1 983	3 890

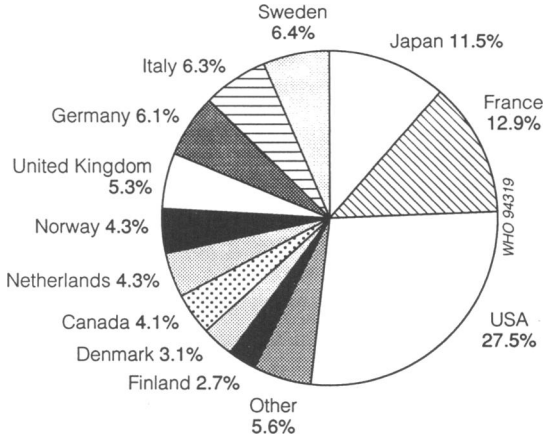
Expanded external assistance can be expected from a number of United Nations agencies. And the momentum of fresh lending for health from the development banks will lead to larger disbursements in the coming years.

In absolute terms, the USA was and still remains the single largest bilateral donor to population activities. USAID disbursed $350 million, on average, each year from 1972 to 1986. These contributions decreased by 30% to $270 million, on average, for the period 1987–90. With increasing direct contributions from other bilateral agencies during the 1980s, the share of total population assistance provided by USAID decreased from 88% in 1972 to 55% in 1980, and was only 32% in 1990.

Sources and recipients of health sector external assistance, 1990

Developed country governments are able to channel external assistance to the health sector through bilateral and multilateral channels. In terms of total contributions, three donors account for more than half of all assistance: the USA (27.5%), France (12.9%), and Japan (11.5%) (Fig. 3). The figures for France include assistance given to French territories overseas, so they are not comparable with the contributions of other countries. One quarter of all health sector assistance is paid for by Sweden, Italy, Germany and the United Kingdom.

Fig. 3. **Official development assistance from OECD countries to the health sector, 1990.**



Contributions to health sector external assistance by developed country governments should be assessed relative to the size of each country's economy. Table 3 provides estimates of the share of GDP devoted to health sector assistance. Norway, Swe-

Table 3: **OECD countries' disbursements to the health sector channelled through multilaterals and bilaterals, 1990**

	Disbursements to multilaterals (in millions of $)	Disbursements to bilaterals (in millions of $)	Total (in millions of $)	Total (as % GDP)
Norway	103 (61)[a]	66	169	0.159
Sweden	174 (70)	75	249	0.109
Denmark	79 (65)	42	121	0.093
Finland	70 (68)	33	103	0.075
Netherlands	110 (66)	56	166	0.059
France	152 (30)	350	502	0.042
Belgium	31 (40)	47	78	0.041
Canada	102 (64)	57	159	0.028
Switzerland	42 (69)	18	60	0.027
Ireland	8 (77)	2	10	0.023
Italy	114 (47)	129	243	0.022
United Kingdom	124 (60)	82	206	0.021
USA	445 (41)	629	1074	0.020
Australia	29 (54)	25	54	0.018
Germany	145 (61)	91	237	0.016
Japan	248 (55)	202	450	0.015
Austria	8 (65)	4	13	0.008
New Zealand	2 (69)	1	3	0.006

[a] Figures in parentheses are percentages of total.

den, Denmark, Finland and the Netherlands (in that order) provide the largest shares of GDP to health sector assistance. New Zealand, Austria, Japan and Germany provide the least. Norway contributes over 25 times more, in terms of the share of GDP, than New Zealand. Italy, the United Kingdom and the USA all contribute similar shares (0.02% of GDP).

As mentioned, the proportions of external assistance for health channelled through bilateral and multilateral agencies vary enormously among the OECD countries. The USA, Italy, France and Belgium disburse the majority of funds primarily through direct bilateral channels. Most other countries contribute about two-thirds through multilateral agencies and one-third through direct bilateral projects.

Country-specific estimates of external assistance in total dollars, dollars per capita, and in terms of percent GDP and percent health expenditure are provided in the Annex. Per capita assistance in 1990 ranges from $0.10 in Algeria, Malaysia, Qatar, Saudi Arabia and Venezuela to $63 in Seychelles. The impact of external assistance can also be assessed in terms of the share it represents of the total health sector expenditure. Estimates have been developed of total health sector expenditure for nearly every country in 1990 (*1*). In 23 sub-Saharan African countries, Guyana, Bhutan and Nepal, health assistance represents greater than 25% of the health sector expenditure. Donor agencies in eight countries — Burkina-Faso, Cape Verde, Gambia, Liberia, Mozambique, São Tome & Principe, Somalia and United Republic of Tanzania — are more important funders of the health sector than all domestic sources, both public and private.

Health sector external assistance directed to specific activities

Although more tentative than other results in this study, we present the known allocation of health sector external assistance by health sector activity in Table 4. These are minimum estimates, as there is always the potential for omission in the analysis of detailed budgets. Disbursements can be classified into general programmes or infrastructure and activities targeted to specific health problems. The health problems have been classified into three groups along the lines of the Global Burden of Disease system: communicable, maternal and perinatal; noncommunicable; and injuries (*15*). According to our data, almost half (44.5%) of all external assistance is spent on hospitals and health services; of the other half, 18.8% is allocated to specific health problems, 9.4% to nutrition programmes, 7.6% to maternal and child health programmes, and 19.6% to population activities. The allocation, however, is not proportionate to the burden of each of these conditions.

Some health problems get a disproportionate share of external assistance compared to their contribution to the burden of disease (Table 4). With the results of the Global Burden of Disease study (*16*), we can compare health sector external assistance for particular problems per disability-adjusted life year (DALY) caused by that problem. Leprosy receives $75 per DALY, followed by onchocerciasis ($55), blinding conditions ($6.90), and sexually transmitted diseases and HIV combined ($4). A glaring imbalance is the paltry $0.15 per DALY spent on acute respiratory infections. Perhaps reflecting an outdated view about the epidemiological profile of developing countries, virtually all noncommunicable diseases and injuries receive less than $0.05 per DALY. As noncommunicable diseases and injuries now account for 49.6% of the burden of disease in developing countries, this is a startling distribution of resources. Further evidence of the neglect of noncommunicable disease and injuries in developing countries is the relative importance given by WHO, where no programme is specifically devoted to chronic respiratory, digestive or genitourinary diseases.

Discussion

In aggregate, external assistance forms only 2.8% of the total health sector expenditure in developing countries. Given its small size, what is the appropriate role for external assistance? In some regions, its share of total health expenditure is higher, but only in a few countries does external assistance play a major financing role. If resource transfers or general financing of health services is not the primary role of external assistance, where can such aid have the biggest impact? At the very least, external assistance is likely to have a bigger role in altering the priorities or policies of institutions in developing countries rather than paying for programmes in their entirety. A marginal view of the role of external assistance would probably put more of a premium on research, operational research, capacity building and policy analysis. In addition, there probably is a role for external assistance to finance capital investments. Unfortunately, the degree of detail for both national health expenditures and external assistance was not sufficient to allow for a direct analysis of the proportion of capital investments financed in each country by external assistance.

Considering all donors together, what factors determine the allocation of external assistance to the health sector? Is external assistance donor- or need-driven? Drager has argued that health assistance is

Table 4: **Disbursements from all sources by groups and components, and their relationship to DALYs**

	Sources of funds (in $ x 1000):				Total	Share of external	DALYs (hundreds of	
	Bilaterals	Multilaterals	NGOs	Foundations	funding	funding (%)	thousands lost)	$ / DALY
Communicable diseases (Gr. I)								
Tuberculosis	11 694	4 165			15 859	0.3	459.4	0.35
STD and HIV infection	64 043	120 006	622	90	184 761	3.9	474.7	3.89
Diarrhoea	31 604	23 402			55 006	1.2	986.6	0.56
Vaccine-preventable childhood infection	39 654	160 109			199 763	4.2	674.8	2.96
Malaria	36 745	10 087			46 832	1.0	357.3	1.31
Worm infection							179.7	
Respiratory infection	7 986	4 525			12 511	0.3	1 188.8	0.11
Other:	69 530	31 970			101 500	2.1		
Hepatitis	990				990	0.0	18.2	0.54
Tropical cluster:	4 831	58 848		10 815	74 494	1.6	127.1	5.86
Trypanosomiasis	471				471	0.0	17.8	0.26
Chagas disease							27.4	
Schistosomiasis	4 360			199	4 559	0.1	45.3	1.01
Leishmaniasis							28.1	
Lymphatic filariasis							8.4	
Onchocerciasis	4 835	22 720	4 518	3 041	35 114	0.7	6.4	54.67
Leprosy	2 770	3 108	71 000		76 878	1.6	10.2	75.56
Trachoma	453			3 150	3 603	0.1	33.0	1.09
Subtotal	275 135	438 939	76 140	17 096	807 310	17.0	6 105.7	1.32
Noncommunicable diseases (Gr. II)								
Malignant neoplasms	1 737		725		2 462	0.1	533.3	0.05
Blindness	2 080	22 720	30 661		55 461	1.2	81.0	6.85
Neuropsychiatric diseases	2 838	2 838			5 676	0.1	604.0	0.09
Cerebrovascular diseases							330.8	
Cardiovascular disease	961				961	0.0	757.2	0.01
Pulmonary obstruction							157.8	
Drug/alcohol dependence	6 950	2 785	7		9 742	0.2	120.6	0.81
Other	391							
Subtotal	14 957	28 343	31 393		74 693	1.6	4 576.0	0.16
Injuries (Gr. III)								
Unintentional		984			984	0.0	983.2	0.01
Intentional	8 024	546			8 570	0.2	436.2	0.20
Subtotal	8 024	546			8 570	0.2	1 419.3	0.06
Other								
Nutrition	39 910	406 533			446 443	9,4		
Maternal and child health	199 863	159 606	4 149	5 800	369 418	7.8		
Population activities	558 000	332 000	22 000	24 000	936 000	19.7		
Hospitals	178 905	44 546			223 451	4.7		
Health services	396 034	547 904	938 378	13 959	1 896 275	39.8		
Subtotal	1 372 712	1 490 589	964 527	43 759	3 871 587			
Total	1 670 828	1 958 417	1 072 060	60 855	4 762 160			

essentially unrelated to need and thus entirely political (2). In an ideal world, one might hope that health assistance is targeted to poor countries and those with the worst health problems. Using our more refined dataset on bilateral and multilateral assistance to the health sector by recipient country, we have examined the relationship between health sector assistance and various socioeconomic determinants in the recipient country using regression analysis. The following variables were included in the analysis: population, GDP per capita in US dollars and International dollars, domestic health expenditures per capita and in percentage GDP terms, under-five (0–4 years) mortality, and adult (15–59 years) mortality by sex.

There is no clear relationship between external assistance per capita and GDP per capita or measures of health status including child and adult mortality levels. There is a relationship with population size where the elasticity is close to −0.5 (depending on precise functional form). In other words, smaller countries get more aid, with a 10% increase in population aid per capita decreases 5%.

Various models relating external assistance per capita and socioeconomic variables were tested. The best fit multivariate equation (log-log) has an adjusted R^2 of 0.48, and coefficients of −0.49 for the natural log of population and −0.75 for the natural log of GDP per capita. Both coefficients are significant at the P=0.0005 level. Dummy variables were also included for all regions; only two (Middle Eastern Crescent and Other Asia and Islands) were negative and significant.

External assistance measured as a share of GDP was examined in relation to various socioeconomic variables. The proportion of variance explained in the regression models for external assistance as a share of GDP was much higher than for external assistance per capita. The best fit equation gave an adjusted R^2 of 0.76. The above equation indicates that with a 10% increase in population, external assistance as a share of GDP decreases 5.2%; likewise, a 10% increase in GDP per capita leads to a 14.5% decline in external assistance as a share of GDP per capita. No health status variables were statistically related to external assistance per capita. In other words, donors appear to give more assistance to poor small countries but simultaneously take into account the relative cost of operating in each country.

The regression equations identified here are at odds with previous analyses of the determinants of health aid allocation by country (2).[c] Three-quarters of variation in the allocation of external assistance by country can be explained by population size and income per capita. We confirm earlier findings that health status variables *per se* are not related to the amount of aid received. When population size and income per capita are taken into account, patterns of external assistance do not differ very significantly among different regions. The data show more aid to sub-Saharan Africa than to any other region, whether expressed in absolute amounts, or per capita, or as a percentage of total disbursements to the health sector, but this appears to be fully explained by the tendency of donors to allocate assistance preferentially to smaller, poorer countries.

Conclusions

The main findings of this study can be summarized in the following points.

(1) Studies on health sector external assistance, disaggregated by recipient or activity, have to date depended on the creditor reporting system (CRS). This system is only 63% complete for health and less than 50% for the health sector (i.e., combination of health and population). CRS coverage is variable across donors and years. Further improvements in the information system monitoring external assistance to the health sector will have to address the poor coverage of the CRS. Despite its current limitations, CRS is probably the best hope for a better system because of the detail that can be gained in such a project-based information system.

(2) Total external assistance to the health sector was $4800 million in 1990. This is only 2.9% of the total health expenditure in developing countries. The role of external assistance must be viewed at the margin, in terms of its impact on capital formation and policy formulation.

(3) Health sector assistance, after stagnating in real terms during the first half of the 1980s, has been increasing since 1986 through both bilateral and multilateral channels. The increase from 1986 to 1990 only offset the population growth until 1988; in 1989–90, external assistance slightly outpaced population growth. Future directions will depend on the balance of increasing multilateral expenditure and potentially declining bilateral flows, given the recent political developments in the USA and Scandinavia.

(4) During the 1980s multilateral institutions, particularly UNICEF and the World Bank, played a larger role in financing health sector assistance than previously. This pattern of growth is expected to accelerate in the 1990s as the World Bank emerges

[c] See footnote *b* on page 639.

as the single largest donor agency in the health sector, probably outstripping USAID in bilateral assistance in the near future.

(5) While in absolute terms, the USA, France and Japan are the largest donor countries, the Nordic countries and the Netherlands give the largest share of GDP to health sector external assistance.

(6) Almost half of health assistance is spent on development of infrastructure through grants for health services and hospitals. The other half is allocated to specific health programmes. Comparing investments to the burden of disease, there are striking differences in the funding for different health problems. The best funded health problems are leprosy, onchocerciasis, other tropical diseases, STDs and HIV infection, and blinding conditions; all these receive more than $4 per DALY. EPI, malaria and trachoma receive more than $1 per DALY. A number of important conditions are comparatively underfinanced: acute respiratory infections, nearly all noncommunicable diseases, and all injuries receive less than $0.10 per DALY.

(7) Smaller and poorer countries receive more health sector assistance than larger and richer countries measured in terms of per capita or the share of GDP. Despite widespread perception to the contrary, sub-Saharan Africa does not receive more aid than other regions, after taking into consideration income and population size.

Résumé

Aide extérieure au secteur de santé dans les pays en développement: analyse détaillée, 1972–1990

Cette étude a pour but d'examiner quantitativement en détail les sources et les bénéficiaires de l'aide extérieure apportée au secteur de santé en 1990, d'analyser dans le temps l'évolution de cette aide à ce secteur sur les vingt dernières années de façon aussi détaillée que possible, et, dans la mesure du possible, de décrire l'allocation de ressources à des activités spécifiques du secteur de santé.

Les principaux résultats sont les suivants:

1) Les études sur l'aide extérieure au secteur de santé, ventilée par bénéficiaire ou par activité, sont jusqu'à présent dépendantes du *creditor reporting system* (CRS). Ce système couvre la santé qu'à 63% seulement et le secteur de santé (c'est-à-dire une association entre santé et population) à moins de 50%. La couverture du CRS varie avec le donateur et l'année. Le système d'information utilisé pour contrôler l'aide extérieure apportée au système de santé aura besoin d'être amélioré pour remédier à la faiblesse de la couverture par le CRS. Malgré ses limites actuelles, et grâce aux données détaillées que permet d'obtenir un système d'information basé sur un projet tel que le CRS, ce système est probablement celui qui offre le maximum de possibilités d'amélioration.

2) L'aide extérieure totale au secteur de santé s'est élevée à US$4,8 milliards en 1990. Cette somme ne représente que 2,9% du total des dépenses de santé dans les pays en développement. Le rôle de l'aide extérieure doit être considéré marginalement, en fonction de son impact sur la formation de capital et la formulation de politiques.

3) Après avoir stagné en valeur réelle pendant la première moitié des années 1980, l'aide au secteur de santé augmente depuis 1986, à la fois bilatéralement et multilatéralement. L'augmentation de 1986 à 1990 n'a fait que compenser l'accroissement de la population jusqu'en 1988; en 1989–1990, l'aide extérieure a légèrement dépassé la croissance de la population. L'orientation future dépendra de l'équilibre entre les dépenses multilatérales croissantes et la diminution potentielle des flux bilatéraux, étant donné l'évolution politique récente aux Etats-Unis d'Amérique et en Scandinavie.

4) Pendant les années 1980, les institutions multilatérales, particulièrement l'UNICEF et la Banque mondiale, ont joué un rôle plus important dans le financement de l'aide au secteur de santé que précédemment. Cette tendance à la croissance devrait s'accélérer dans les années 1990, dans la mesure où la Banque mondiale apparaît comme l'institution la plus importante dans le secteur de santé, et qui probablement surpassera bientôt l'US/AID en matière d'assistance bilatérale.

5) Si en valeur absolue, les Etats-Unis d'Amérique, la France et le Japon sont les plus gros pays donateurs, les pays nordiques et les Pays-Bas sont ceux qui, en proportion du PIB, contribuent le plus à l'aide extérieure au secteur de santé.

6) Près de la moitié de l'aide à la santé est dépensée pour le développement des infrastructures, par le biais de subventions aux services de santé et aux hôpitaux. L'autre moitié est affectée à des programmes de santé spécifiques. Si l'on compare les investissements au poids de la mor-

bidité, on observe des différences considérables de financement en fonction de la pathologie. Les pathologies qui bénéficient le plus du financement sont la lèpre, l'onchocercose, diverses autres maladies tropicales, les MST, l'infection à VIH et les affections cécitantes; toutes reçoivent plus de US$4 par DALY (*disability adjusted life years*: années de vie ajustées sur l'incapacité). Le PEV, le paludisme et le trachome reçoivent plus d'un dollar par DALY. Un certain nombre d'affections importantes sont comparativement sous-financées: les infections respiratoires aiguës, la presque totalité des maladies non transmissibles et l'ensemble des traumatismes reçoivent moins de US$0,10 par DALY.

7) Les pays les plus petits et les plus pauvres reçoivent une aide au secteur de santé plus importante que les pays ou grands ou riches, évaluée par habitant ou en proportion du PIB. Contrairement à une impression répandue, l'Afrique subsaharienne n'est pas bénéficiaire d'une aide plus importante que les autres régions, si l'on tient compte du revenu et de la taille de la population.

References

1. **Murray CJL, Govindaraj R, Musgrove P.** National health expenditures: a global analysis. *Bulletin of the World Health Organization*, 1994, **72**(4): 623–637.
2. **Drager N et al.** What determines aid for health: an empirical analysis of bilateral aid flows. *International Conference on Macroeconomics and Health in Countries in Greatest Need.* Document WHO/ICO/ME.CONF, 1992: 149–178.
3. **Howard L.** The evolution of bilateral and multilateral cooperation for health in developing countries. In: Reich M, Marui E, eds. *International cooperation for health: problems, prospects and priorities.* Dover, MA, Auburn House, 1989: 332–357.
4. **Jesperson E.** Social spending: how bilateral donors could do more. *Development journal*, 1991, **3**: 26–36.
5. **Parker D.** *The effectiveness of health aid: a literature review and research framework.* Princeton, NJ, Woodrow Wilson School of Public and International Affairs, Princeton University, 1990.
6. **United Nations. Administrative Committee on Coordination — Subcommittee on Nutrition.** Estimation of flows of external resources in relation to nutrition. *SCN news*, 1990, **5**: 22–36.
7. **United Nations Development Programme.** *The widening gap in global opportunities: human development report 1992.* Oxford, Oxford University Press, 1992.
8. **Murray CJL et al.** A study of financial resources devoted to research on health problems of developing countries. *Journal of tropical medicine and hygiene*, 1990, **93**: 229–255.
9. **United Nations Population Fund.** *Global population assistance report 1982–90.* New York, 1992.
10. **United Nations. Advisory Committee for Co-ordination of Information Systems.** *Register of development activities of the United Nations system 1990.* Geneva, United Nations, 1991.
11. **Organization for Economic Cooperation and Development.** *Creditor Reporting System database of bilateral ODA commitments.* Paris, 1992.
12. **Organization for Economic Cooperation and Development.** *Development cooperation report.* Paris, 1992.
13. **Organization for Economic Cooperation and Development.** *Consolidated version of the DAC sectoral breakdown of bilateral ODA commitments 1971–1990.* Paris, OECD (unpublished database).
14. **International Monetary Fund.** *International financial statistics yearbook, 1992.* Washington DC, 1993.
15. **Murray CJL.** Quantifying the burden of disease: the technical basis for disability-adjusted life years. *Bulletin of the World Health Organization*, 1994, **72**(3): 429–445.
16. **Murray CJL, Lopez AD, Jamison DT.** The global burden of disease in 1990: summary results, sensitivity analysis and future directions. *Bulletin of the World Health Organization*, 1994, **72**(3): 495–509.

Annex

Total flows from external assistance

Demographic region and country	External assistance: To the health sector (in millions US$)	Per capita (US$)	As % of GDP	As % of total health expenditures
Sub-Saharan Africa	1251	2.5	0.45	10.4
Benin	33	7.0	1.61	37.3
Bostwana	29	22.9	1.02	16.5
Burkina Faso	42	4.7	6.12	72.3
Burundi	15	2.8	0.30	9.3
Cameroon	38	3.3	0.31	11.9

(Annex: continued)

Demographic region and country	External assistance			
	To the health sector (in millions US$)	Per capita (US$)	As % of GDP	As % of total health expenditures
Cape Verde	13	34.3	3.40	53.7
Central African Republic	20	6.5	1.51	36.0
Chad	33	5.8	2.97	47.7
Comoros	3	6.9	1.32	24.5
Congo	14	6.1	0.48	12.1
Côte d'Ivoire	11	0.9	0.11	3.4
Equatorial Guinea	5	11.8	3.25	42.7
Ethiopia	43	0.8	0.71	18.8
Gabon	12	10.5	0.26	6.4
Gambia	10	11.4	3.84	51.0
Ghana	29	2.0	0.46	13.2
Guinea	20	3.5	0.78	20.0
Guinea-Bissau	8	8.1	4.06	49.8
Kenya	84	3.5	0.96	22.1
Lesotho	16	9.1	2.93	35.2
Liberia	6	2.4	5.63	68.3
Madagascar	17	1.5	0.55	21.4
Malawi	22	2.5	1.16	23.3
Mali	36	4.3	1.47	28.4
Mauritania	11	5.5	1.14	30.0
Mauritius	14	13.3	0.58	13.3
Mozambique	45	2.9	3.12	53.3
Namibia	9	4.9	0.43	10.9
Niger	43	5.6	1.70	34.1
Nigeria	58	0.6	0.17	6.1
Rwanda	29	4.1	1.37	39.8
São Tome and Principe	2	20.6	4.99	54.2
Senegal	36	4.9	0.62	16.9
Seychelles	4	63.2	1.32	21.9
Sierra Leone	7	1.7	1.20	49.5
Somalia	31	4.0	0.78	51.6
South Africa	2	0.0	0.00	0.0
Sudan	39	1.5	0.15	4.5
Swaziland	17	21.8	2.47	34.2
Tanzania	53	2.1	2.55	54.0
Togo	14	3.9	0.87	7.0
Uganda	46	2.8	1.15	33.7
Zaire	48	1.3	0.63	26.7
Zambia	6	0.7	0.13	4.1
Zimbabwe	42	4.2	0.69	11.0
India	286	0.3	0.10	1.6
China	77	0.1	0.02	0.6
Other Asia and Islands	594	0.9	0.07	1.4
Bangladesh	128	1.2	0.59	18.5
Bhutan	4	2.9	1.44	28.5
Fiji	4	4.8	0.26	6.9
Indonesia	159	0.9	0.15	7.7
Laos	5	1.2	0.56	21.9
Malaysia	3	0.1	0.01	0.2
Mongolia	2	1.1	0.13	1.9
Nepal	33	1.8	1.15	25.4
Papua New Guinea	7	1.8	0.21	4.8
Philippines	69	1.1	0.15	7.4
Singapore	1	0.2	0.00	0.1
Solomon Islands	2	7.3	0.14	6.3

(Annex: continued)

Demographic region and country	External assistance: To the health sector (in millions US$)	Per capita (US$)	As % of GDP	As % of total health expenditures
South Korea	32	0.7	0.01	0.2
Sri Lanka	26	1.5	0.32	8.6
Thailand	36	0.7	0.05	0.9
Tonga	1	9.3	0.95	14.8
Vanuatu	2	15.3	1.29	22.8
VietNam	25	0.4	0.28	13.3
Western Somoa	1	8.0	1.17	39.7
Latin America and the Caribbean	591	1.3	0.05	1.3
Antigua and Barbuda	1	8.7	0.16	3.6
Argentina	11	0.3	0.01	0.2
Barbados	2	6.1	0.10	1.9
Belize	2	12.8	0.63	10.7
Bolivia	37	5.1	0.82	20.5
Brazil	84	0.6	0.02	0.4
Chile	10	0.7	0.03	0.7
Colombia	26	0.8	0.06	1.6
Costa Rica	4	1.6	0.08	1.2
Dominica	2	27.9	1.17	14.5
Dominican Republic	11	1.5	0.15	4.0
Ecuador	31	3.0	0.28	6.8
El Salvador	44	8.5	0.86	14.7
Guatemala	32	3.4	0.46	12.6
Guyana	15	18.4	4.58	44.2
Haiti	33	5.1	1.33	19.0
Honduras	20	4.0	0.35	7.7
Jamaica	19	7.8	0.48	9.5
Mexico	65	0.8	0.03	0.9
Nicaragua	27	6.9	1.77	20.6
Panama	15	6.1	0.31	4.3
Paraguay	10	2.4	0.19	6.7
Peru	29	1.4	0.07	2.2
St. Kitts and Nevis	1	29.9	0.85	14.1
Suriname	2	3.8	0.12	4.1
Trindad and Tobago	1	1.1	0.03	0.6
Uruguay	5	1.7	0.06	1.4
Venezuela	2	0.1	0.01	0.1
Middle Eastern crescent	453	0.9	0.04	1.2
Algeria	2	0.1	0.00	0.1
Cyprus	5	6.6	0.41	10.3
Egypt	111	2.1	0.20	7.7
Iran	2	0.0	0.00	0.0
Israel	3	0.6	0.01	0.1
Jordan (E. Bank)	18	5.9	0.41	10.8
Kuwait	2	0.8	0.01	0.1
Morocco	20	0.8	0.08	3.1
Oman	1	0.9	0.02	0.5
Pakistan	76	0.7	0.19	5.5
Qatar	0	0.1	0.00	0.0
Saudi Arabia	1	0.1	0.00	0.0
Syria	20	1.6	0.08	4.0
Tunisia	18	2.3	0.15	3.0
Turkey	23	0.4	0.02	0.5
Turkmenistan	2	0.5	0.02	0.4
United Arab Emirates	0	0.3	0.00	0.1
Yemen	25	2.2	0.36	11.3