

# Global Fund investments in human resources for health: innovation and missed opportunities for health systems strengthening

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<b>Background</b>	Since the early 2000s, there have been large increases in donor financing of human resources for health (HRH), yet few studies have examined their effects on health systems.
<b>Objective</b>	To determine the scope and impact of investments in HRH by the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), the largest investor in HRH outside national governments.
<b>Methods</b>	We used mixed research methodology to analyse budget allocations and expenditures for HRH, including training, for 138 countries receiving money from the Global Fund during funding rounds 1–7. From these aggregate figures, we then identified 27 countries with the largest funding for human resources and training and examined all HRH-related performance indicators tracked in Global Fund grant reports. We used the results of these quantitative analyses to select six countries with substantial funding and varied characteristics—representing different regions and income levels for further in-depth study: Bangladesh (South and West Asia, low income), Ethiopia (Eastern Africa, low income), Honduras (Latin America, lower-middle income), Indonesia (South and West Asia, lower-middle income), Malawi (Southern Africa, low income) and Ukraine (Eastern Europe and Central Asia, upper-middle income). We used qualitative methods to gather information in each of the six countries through 159 interviews with key informants from 83 organizations. Using comparative case-study analysis, we examined Global Fund’s interactions with other donors, as well as its HRH support and co-ordination within national health systems.
<b>Results</b>	Around US\$1.4 billion (23% of total US\$5.1 billion) of grant funding was allocated to HRH by the 138 Global Fund recipient countries. In funding rounds 1–7, the six countries we studied in detail were awarded a total of 47 grants amounting to US\$1.2 billion and HRH budgets of US\$276 million, of which approximately half were invested in disease-focused in-service and short-term training activities. Countries employed a variety of mechanisms including salary top-ups, performance incentives, extra compensation and contracting of workers for part-time work, to pay health workers using Global Fund financing. Global Fund support for training and salary support was not co-ordinated with national strategic plans and there were major deficiencies in the data collected by the

Global Fund to track HRH financing and to provide meaningful assessments of health system performance.

**Conclusion** The narrow disease focus and lack of co-ordination with national governments call into question the efficiency of funding and sustainability of Global Fund investments in HRH and their effectiveness in strengthening recipient countries' health systems. The lessons that emerge from this analysis can be used by both the Global Fund and other donors to improve co-ordination of investments and the effectiveness of programmes in recipient countries.

**Keywords:** Health systems, human resources for health, Global Fund

## KEY MESSAGES

- This is the first study to analyze in detail the scope and impact of investments in Human Resources for Health (HRH) by the Global Fund to Fight AIDS, Tuberculosis and Malaria, the largest external investor in HRH, which had invested US\$1.3 billion for human resources in low- and middle-income countries between 2002 and 2010.
- Countries employed a variety of mechanisms including salary top-ups, performance incentives, extra compensation and contracting of workers for part-time work, to pay health workers using Global Fund financing.
- Global Fund support for training and salary support was not co-ordinated with national strategic plans.
- The narrow disease focus and lack of co-ordination with national governments call into question the efficiency of funding and sustainability of Global Fund investments in HRH and their effectiveness in strengthening recipient countries' health systems.

## Introduction

Human resources for health (HRH) have been a major focus of global health investments since the early 2000s, coinciding with large-scale expansion of Global Health Initiatives (GHIs) (Chen *et al.* 2004; Ravishankar *et al.* 2009; World Health Organization Maximizing Positive Synergies Collaborative Group 2009; Atun *et al.* 2010; Murray *et al.* 2011). By 2011, the Global Fund to Fight AIDS, Tuberculosis and Malaria (The Global Fund), the largest external funder of human resources, had approved approximately US\$4.34 billion (20% of US\$21.7 billion in approved budgets) for HRH activities (Atun and Lansang 2009).

The global health workforce crisis has prompted calls to strengthen HRH to build sustainable health systems and improve population health (Chen *et al.* 2004; Joint Learning Initiative 2004; Crisp *et al.* 2008; Frenk *et al.* 2010). Several studies have examined how financing from large GHIs has been used to strengthen the health workforce in countries where they were active. For instance, Vujicic *et al.* (2012) showed that the World Bank, GAVI Alliance and the Global Fund investments for HRH in low- and middle-income countries (LMICs) included remunerating health workers and funding short-term and in-service trainings. Dräger *et al.* (2006), in a study of Global Fund investments for HRH purposes, reached similar conclusions. In comparing concurrent investments in both HRH and HIV in Malawi and Zambia, Brugha *et al.* (2010) found that targeted investments in the health workforce in Malawi were more effective in addressing the HIV crisis in rural areas, as compared with interventions in Zambia that did not include provisions to improve the health workforce concurrently. Hanfield and

Musheke (2009) showed that in Zambia, investments in HIV control by GHIs led to displacement of health workers toward HIV programmes, threatening the availability of staffing in other health programmes.

This article examines the specific role of the Global Fund in the area of health workforce strengthening. Specifically, we set out to answer the questions: (1) What are the levels and composition of Global Fund investments in HRH?; (2) How are these investments measured and monitored?; (3) What types of HRH activities are supported by Global Fund grants?; (4) How are these activities co-ordinated with national HRH policies? and (5) How do investments in HRH contribute to the overall goal of strengthening national health systems?

To accomplish these objectives, we examine Global Fund financing for HRH, as well as performance metrics used to monitor programme implementation across Global Fund recipient countries. We then focus on Global Fund investments in HRH in six countries to provide in-depth understanding of the mechanisms used to support training and remuneration of health workers, the alignment of investments with national strategies, and the contribution of these investments for health systems strengthening (HSS) in each country. Through comparative case studies of the six countries, we examine HRH investments in activities within each country and across the six countries, how these activities interact with the rest of the health system, and whether these investments have achieved HRH-related goals and strengthened health systems. This comparative case-study analysis is used to identify best practices and areas that need improving as the Global Fund continues to invest in HRH. This is the first mixed-methods

study using the Global Fund’s quantitative budget and performance data, combined with qualitative country-level analysis to examine in detail Global Fund HRH investment trends and performance against HRH targets set across a range of countries.

### Analytical framework

To approach our research questions, we developed an analytical framework to guide our analysis that took a phased approach to examining how Global Fund investments can be ultimately tied to the strengthening of the overall health system. These phases and linkages are shown in Figure 1 and include: (1) Global Fund investments in HRH, along with government and private and other donor HRH financing; (2) HRH activities; (3) HRH outcomes that are also affected by each country context and other health systems factors and (4) health systems strengthening. HRH activities include strengthening the production and skills of health workers, increasing recruitment, creating an equitable geographical distribution of health professionals by specialization, retention initiatives and productivity improvements. HRH outcomes include the percentage of health facilities with staffing levels that meet the national requirements, numbers of patients to professional staff ratio, bed utilization to number of staff ratio, vacancy rate, turnover rate,

retention rate, absenteeism, rural/urban distribution, staff satisfaction and the percentage of total budget spent on staff salaries and allowances.

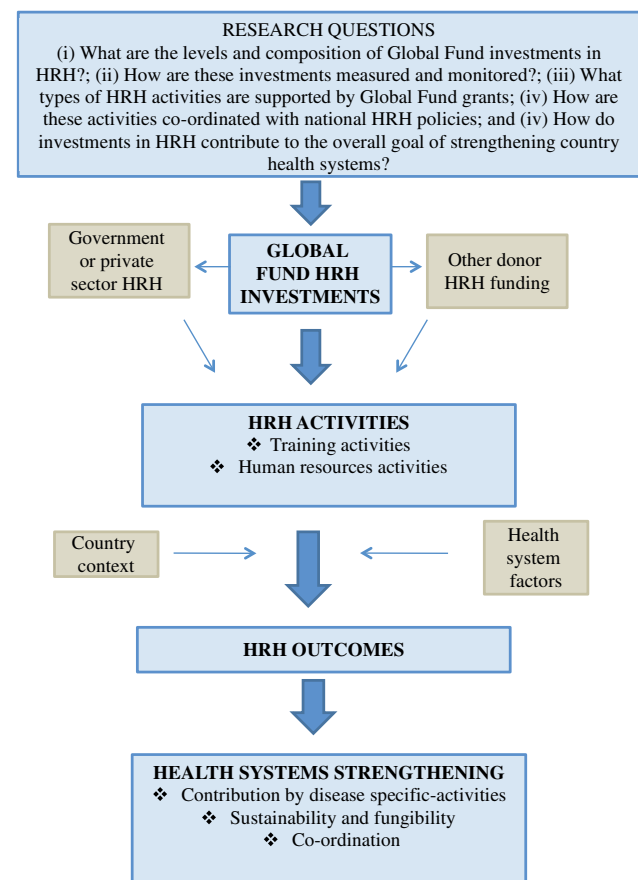
Our analytical framework (see Figure 1) attempts to follow Global Fund financing through a sequence of the HRH activities it funded that then join activities funded by other sources (government, private sector, donors), to produce HRH outcomes, and ultimately contribute to strengthening the broader national health system. In only some cases are we able to disentangle the activities and outcomes to attribute the impacts to Global Fund contributions directly. The Global Fund channels all of its financing through national governments, private sector groups, other donors or non-governmental organizations (NGOs) and is not itself an implementing agency. The four boxes on the left and right in Figure 1 highlight important areas that factor into our analysis indirectly, but are not the primary focal point of this study. Our analysis focuses specifically on HRH activities that are directly financed by the Global Fund, and not on HRH investments made by other sources. Similarly, specifics on country context and national health system factors that are pivotal in translating Global Fund investments in HRH activities into actual HRH outcomes are outside of the scope of this study.

### Methods

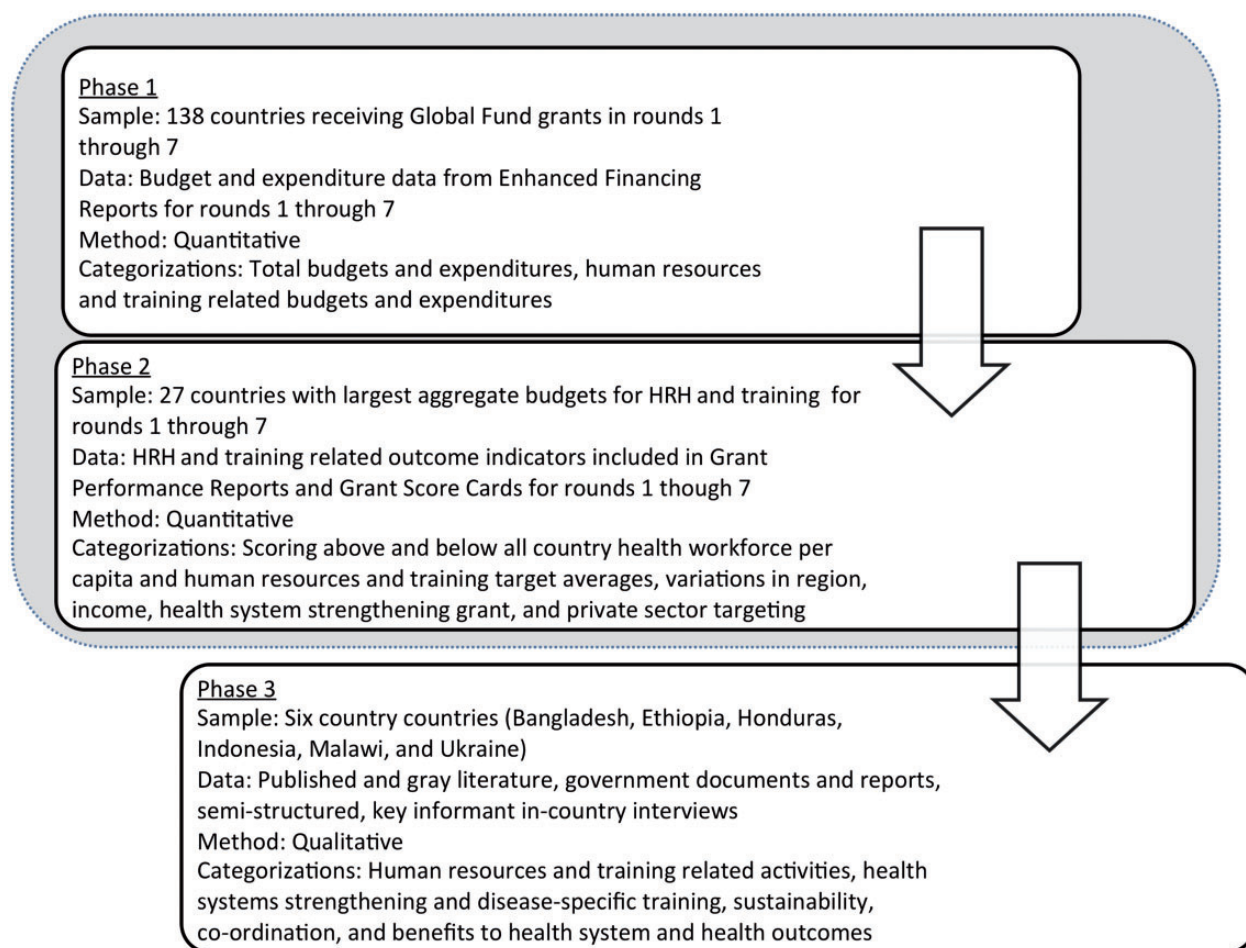
We used a mixed research methodology with quantitative and qualitative analysis that took place in three phases (Creswell and Clark 2011). Figure 2 shows the sample sizes, the data, the methods used and data categorizations made at each stage of the analysis. Phases 1 and 2 utilize quantitative methods to examine cross-country trends in HRH investments. These quantitative classifications are then complemented with qualitative case-study analysis in Phase 3.

In the first phase, we used data from Global Fund Enhanced Financial Reporting System, to analyse budgetary and expenditure data for the 138 Global Fund recipient countries that received at least one Global Fund grant in funding rounds 1 (2002) through 7 (2007). This analysis examined the total aggregate Global Fund investments in each country, as well as more specific investments in human resources and training activities (that include salaries, wages and related costs concerning all employees, and employee recruitment, training expenditures including workshops, training publications, meetings and training-related travel) (The Global Fund to Fight AIDS 2007). The categorization of human resources and training investments was based on Global Fund reporting requirements and guidelines. One of the results of the budgetary and expenditure analysis was the identification of the 27 countries with the largest aggregate amounts of funds dedicated to human resources and training activities in their funding rounds 1 to 7 grant budgets (see Results section). These 27 countries became the basis for the analysis in Phase 2 (reported in Web Appendix 2).

In Phase 2, we extracted data and indicators related to training activities and human resources investments from country Grant Performance Reports and Grant Score Cards for each of the 27 countries identified in Phase 1. Grant Score Cards and Grant Performance Reports are meant to provide a



HRH = human resources for health  
**Figure 1** Analytical framework.



**Figure 2** Phases of analysis.

transparent reporting mechanism, by which grant progress against long-term goals, specific objectives and indicator targets can be tracked. Grantees are required to submit grant performance at each grant milestone. Therefore, progress is tracked against established targets on a regular basis, with the information publicly available through each grant's Global Fund website.

The purpose of this second phase of the quantitative analysis was to carefully examine HRH-related performance indicators capturing the actual number of people trained in different areas, as well as their skills areas, private vs public sector focus and institutional setting. The main indicators used to examine trends in these areas for all 27 countries were the amount of budgetary resources dedicated to HRH activities, the number of providers trained relative to the total HRH workforce, regional and country-income differences, the presence of a so-called HSS grant (described subsequently), the role of the private sector and the number of total personnel trained in comparison to the number targeted to be trained (Table 1).

Global Fund HSS grants, one of the indicators used in the analysis of the 27 countries, include 'activities and initiatives that improve the underlying health systems of countries and/or manage interactions between them in ways that achieve more equitable and sustainable health services and health outcomes

related to the three diseases' (The Global Fund to Fight AIDS 2012). Funding round 5 was the only round in which the Global Fund invited specific applications for HSS grants. In all other rounds HSS activities were incorporated into disease-specific grant activities.

Variations in these indicators across the 27 focus countries were examined to select countries for case-study analysis to represent the heterogeneity of Global Fund investments in HRH. We chose the six case-study countries to better understand Global Fund investments in human resources and training-related activities, and examine differences in implementation across rounds, geographic regions and income classifications.

We selected six countries as case studies for further in-depth analysis in Phase 3: Bangladesh, Ethiopia, Honduras, Indonesia, Malawi and Ukraine. The countries were chosen because they demonstrated heterogeneity with respect to each of the nine indicators which emerged from quantitative analysis: scoring above and below all country health workforce per capita and HRH and training target averages, as well as variation in region, income, HSS grant and private sector targeting, providing, hence, the most insight into the qualitative research questions (Table 1). These indicators were developed in consultation with the Global Fund and based on HRH categorizations, Global

**Table 1** Analysis of Global Fund investments in human resources and baseline human resource density data for case-study countries

Country	Baseline level of HRH per 1000 pop. (year) <sup>a</sup>	HRH/training investment as percentage of total expenditures <sup>b</sup>	Ratio health providers trained: HRH workforce <sup>c</sup>	Region <sup>d</sup>	Income <sup>e</sup>	HSS grant <sup>f</sup>	Ratio all trained: all targeted <sup>g</sup>	Ratio health providers trained: health providers targeted <sup>h</sup>	Private sector targeted?
Bangladesh	0.47 (2001)	Above average (48%)	Above average (3.74)	South and West Asia	Low-income	No	Below average (0.98)	Below average (1.09)	Yes
Ethiopia	0.23 (2002)	Low (10%)	Above average (1.50)	Eastern Africa	Low-income	No	Average (1.23)	Above average (3.82)	No
Indonesia	0.65 (2000)	Below average (24%)	Below average (0.07)	South and West Asia	Lower-middle income	No	Below average (0.97)	Below average (0.95)	No
Malawi	0.31 (2003)	Below average (26%)	Above average (1.64)	Southern Africa	Low-income	Yes	Above-average (2.65)	Above average (2.47)	No
Ukraine	11.16 (2001)	Below average (21%)	Below average (0.01)	Eastern Europe and Central Asia	Upper-middle income	No	Above average (1.76)	Above average (1.96)	Yes
Honduras	1.09 (1997)	Above average (47%)	Below average (1.07)	Latin America	Lower-middle income	No	Below average (1.09)	Below average (1.06)	No
Average (range) for cohort of 27 countries	2.4 (0.23 to 12.51)	29.6%	1.35	-	-	-	1.23	1.33	-

<sup>a</sup>Total number of health-care providers per 1000 population from World Health Organization HRH workforce database.

<sup>b</sup>Expenditures on HR and training activities as a share of total expenditures under Global Fund grants rounds 1–7 as categorized by the Global Fund’s Enhanced Reporting Framework.

<sup>c</sup>Health providers trained under Global Fund grant activities including physicians, nurses, community health workers, excluding volunteer workers as a share of the total country health workforce from WHO HRH workforce database.

<sup>d</sup>World Bank regional classification (2010).

<sup>e</sup>World Bank income-level classification (2010).

<sup>f</sup>HSS grant awarded by the Global Fund from rounds 1–7.

<sup>g</sup>The ratio of all health providers plus non-health providers (teachers, medical workers in other Ministries, non-health sector volunteers) trained under Global Fund grant activities to all health providers plus non-health providers targeted to be trained under Global Fund grant activities as set out in the Grant Performance Reports and Grant Score Cards.

<sup>h</sup>The ratio of all health providers trained under Global Fund grant activities to all health providers targeted to be trained under Global Fund grant activities as set out in the Grant Performance Reports and Grant Score Cards.

<sup>i</sup>Private-sector health workers targeted under grant activities.

Fund grant categorizations and World Bank income and geographic categorizations, and emerged out of the quantitative analysis framework used by the team. For example, Malawi was chosen because it was one of the 27 countries with the largest aggregate amounts of funds dedicated to human resources and training activities in its grant budgets that also received a HSS grant. Ethiopia was chosen because it had one of the lowest human resources and training investments as a percentage of total expenditures and yet still had an above average ratio of health providers trained to health providers that were targeted to be trained.

The purpose of the country case analyses was 2-fold. First, the case studies were used to assess the quality of the quantitative data for addressing the research questions. Through the quantitative analysis we were able to get an aggregate sense of overall budgets and the general focus of HRH and training activities. However, the quantitative analysis revealed that Global Fund budgetary and performance reporting requirements do not provide insight as to how the human resources and training-related components of Global Fund grants are implemented in recipient countries. We also wanted to see how these budgetary and performance indicators were measured and compiled at the country level. Second, the case studies sought to clarify some of the potential causal relationships between HRH investments and health outcomes, and to examine some operational dynamics in implementation. Qualitative and quantitative data were gathered on specific activities related to HRH, training and salary support within each country's health system, overall country and donor strategies as well as alignment with national HRH plans and use of comparative cross-case analysis to identify key trends and differences.

In Phase 3, qualitative methods were used to systematically gather information for each country case study, comprising: a desktop review of the official, published and grey literature on the health system in each country; analysis of recent reforms related to HRH and national health strategies and plans; and one-week country visits occurring between August 2010 and March 2011 that included in-depth interviews with key informants in each country. We purposefully selected 159 key informants from 83 organizations with close working ties with the Global Fund or with related national leadership roles. (Web Appendix 1 summarizes the list of organizations.) These organizations were chosen in concert with local Global Fund representatives, as well as World Health Organization colleagues working on HRH issues in each country, due to their experience with Global Fund grant implementation and HRH issues. We conducted in-depth interviews using a semi-structured open-ended questionnaire constructed to explore particular themes regarding Global Fund investments in HRH at the national level: training of HRH, salary support for and recruitment of HRH, HRH and health systems, the presence of other donors and linkages between HRH investment and health outcomes. Interviewees were selected in advance of arriving in each country in co-ordination with World Health Organization country representatives. By working with World Health Organization officials and grantee officials, we were able to compile a complete list of Global Fund human resources and training activities in each country. Due to time constraints,

interviews were only conducted at the national level. Interviews were held with all relevant stakeholders in the country at the national level, and were captured verbatim. We identified repeating ideas and theoretical constructs by analysing data from the interviews. Through this process we were able to identify trends, patterns and outliers in each of the key HRH-related areas explored using integration and triangulation to provide context to the results. Data from the case studies were expanded to also include funding rounds 8 and 9, as more recent country data had become available during the study. We used comparative cross-case analysis, using results from the six case studies, to synthesize the findings into key conclusions based on HRH investment patterns that emerged in the analyses. Global Fund investments in HRH activities were divided between those targeting training activities and those related to recruiting and paying for HRH.

## Results

### Quantitative

Results for Phase 1 of the quantitative analysis that included 138 Global Fund recipient countries showed that around US\$1.4 billion (23% of total US\$6.2 billion) of grant funding to these countries was allocated to HRH countries (see Web Appendix 2). In Phase 2, we found that of the 138 countries, the 27 countries with the largest budgeted aggregate amounts of funds dedicated to human resources and training activities in funding rounds 1–7 grant budgets had on average a total budget of US\$190 million and US\$50 million allocated to human resources and training (Web Appendix 2 lists the 27 countries and HRH funding for each). The total budgeted amount for the 27 countries ranged from US\$660 million in India to US\$48 million in Romania (see Web Appendix 2). The sum of the human resources and training line items as a share of total grant budgets ranged from 10% in Ethiopia (US\$49 million) to 49% in Bangladesh (US\$43 million). As is shown in Table 1, on average the 27 countries allocated 29.6% of their total Global Fund expenditures to human resources and training activities, had a ratio of 1.35 health-care workers trained through the Global Fund in comparison with the total national health workforce, had a ratio of 1.23 for all workers trained to those targeted and a ratio of 1.33 for health providers trained vs those targeted. The regional and country funding allocation differences across the 27 countries are summarized in Figures 3 and 4 demonstrating that the majority of Global Fund dollars are allocated to sub-Saharan Africa (37% of human resources/training budgets) and LMICs (51% of human resources/training budgets). For this reason, we included two case studies from Africa (Ethiopia and Malawi) and two LMICs (Honduras and Ukraine).

From these 27 countries, we then were able to select the six country case studies. Table 2 presents a detailed summary of Global Fund grant activities in these countries. As of August 2011, a total of 66 grants had been awarded to the six countries, spanning funding rounds 1 through 9, with total budget allocations of approximately US\$3.1 billion and disbursements of approximately US\$2.3 billion. Of the 66 grants awarded in rounds 1 through 9 (47 grants awarded in rounds 1 through 7), 31 were HIV, 18 were tuberculosis, 16 were malaria and 1 was HSS.

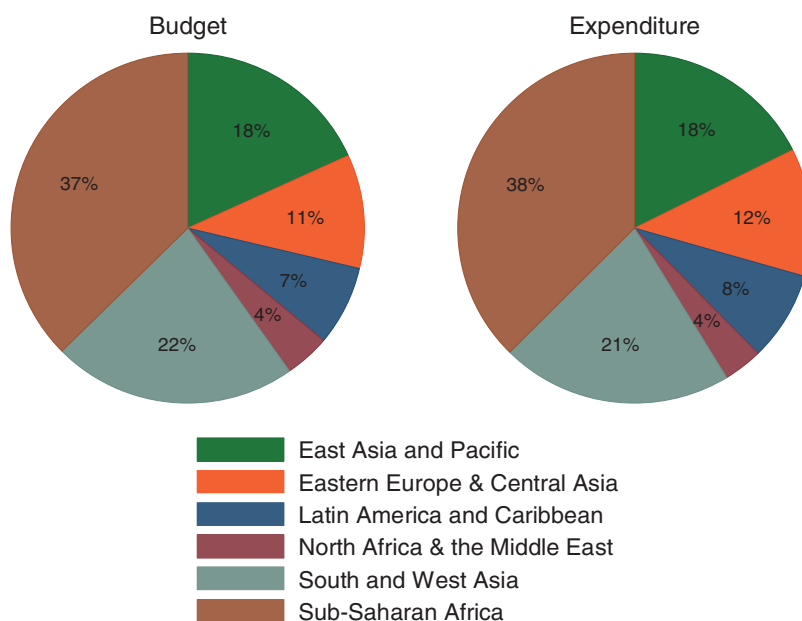


Figure 3 Human resource/training funding as share of total allocation to human resource/training for 27 focus countries, by Global Fund region.

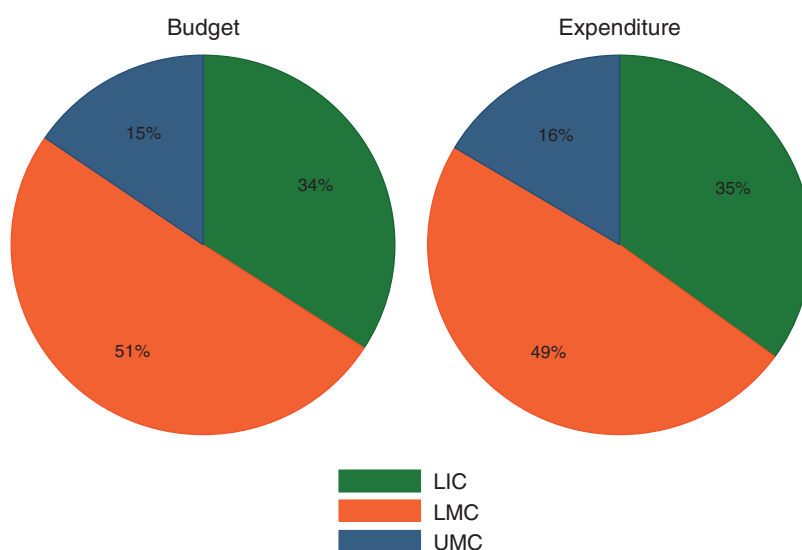


Figure 4 Human resource/training as share of total allocation to human resource/training for 27 focus countries, by income classification.

The principal recipients in 38 grants were government organizations and in 28 were private or NGO entities.

**Qualitative**

Global Fund-supported training investments are synthesized in Table 3 as (1) pre- and in-service activities; (2) disease-specific and HSS activities and (3) trainings targeted at public and private health workers. Global Fund HRH investments in direct salary support, incentives, hiring and recruitment of both health and non-health workers for all six case studies, are organized in Table 3 by (1) the type of innovative financing used to supplement salaries and (2) hiring, contracting and recruitment. Examples

are given from select country case studies to illustrate these findings. Following the results of the qualitative case-study analysis summarized for each of the case studies in Table 3, specific examples for both training and human resources are provided in the sections following the table.

The majority of Global Fund-supported trainings were targeted at in-service, short-term activities. For example, in Bangladesh, there was no HIV, malaria or tuberculosis curriculum offered for government health workers in their pre-service trainings. In Malawi, Bangladesh and Ethiopia, pre-service training related to the three diseases primarily targeted lower cadres of health workers, such as the community health

**Table 2** Summary of Global Fund financed grants in six case-study countries

	Bangladesh	Ethiopia	Honduras	Indonesia	Malawi	Ukraine
<b>Grants</b>						
Rounds of funding	2, 3, 5, 6, 8	1, 2, 4, 6, 7, 8, 9	1	1, 4, 5, 6, 8, 9	1, 2, 5, 7, 9	1, 6, 9
Number of HIV grants	5	5	3	8	3	7
Number of malaria grants	4	3	2	4	3	0
Number of TB grants	6	3	2	5	1	1
Number of HSS grants	0	0	0	0	1	0
Total number of grants	15	11	7	17	8	8
<b>Budgets (in millions US\$)</b>						
HIV	82	904	99	139	390	327
Malaria	43	348	13	135	119	0
TB	97	101	13	225	9	35
HSS	0	0	0	0	52	0
<b>Total</b>	<b>221</b>	<b>1352</b>	<b>125</b>	<b>499</b>	<b>571</b>	<b>361</b>
<b>Disbursements (In millions US\$)</b>						
HIV	58	626	56	105	294	204
Malaria	37	309	11	123	49	0
TB	76	58	6	113	3	13
HSS	0	0	0	0	39	0
<b>Total</b>	<b>171</b>	<b>992</b>	<b>73</b>	<b>339</b>	<b>402</b>	<b>217</b>
<b>Type of principal recipients</b>						
Government	8	9	1	12	8	0
NGO/private	7	2	6	5	0	8

Source: Global Fund Grant Portfolio Website, August 2011. <http://portfolio.theglobalfund.org/en/Home/Index>; accessed August 2011.

TB = tuberculosis; HIV = Human Immunodeficiency Virus; HSS = Health systems strengthening; NGO = Non-governmental organization.

workers requiring relatively fewer training hours than physicians and nurses. While Global Fund support was used for training health workers on HIV-, malaria- and tuberculosis-specific competencies, Malawi and Ethiopia used Global Fund financing to train health workers in broader health system capacities, such as funding general medical studies. In Malawi, the one country with an HSS grant, Global Fund support was used to train approximately one-half of the 10 000 salaried health surveillance assistants (HSAs) working in the country on immunizations, family planning, well-child visits and disease surveillance.

The majority of trainings were targeted at public sector workers, even in those countries where the principal recipient is an NGO or a private entity. For example, in Ukraine, a country in which all grants were awarded to NGO entities, clinical trainings for HIV and tuberculosis were for Ministry of Health physicians and multi-disciplinary teams only. Conversely, in Bangladesh, which had both an NGO and public-sector principal recipient, the NGO principal recipients worked in a co-ordinated manner with the public sector to ensure NGO-affiliated health workers were trained in the three disease areas.

In most countries, it was difficult to use Global Fund grants for direct salary support, as national policies prohibited donors from paying government health-worker salaries in part because countries were concerned with predictability and sustainability of Global Fund financing. Due to restrictions in country policies and difficulties associated with the relatively unpredictable and

short-term nature of Global Fund support, HRH-related activities involved top-ups, performance incentives, extra compensation and contracting of workers for part-time work, some of which were linked to targeted incentives. In Indonesia, health workers supported through Global Fund tuberculosis grants were provided 'case finding' incentives of approximately US\$0.50 for each case detected. A similar programme was in place for community health workers hired by the NGO BRAC in Bangladesh. To address low salary levels and retention problems, the Government of Malawi used Global Fund support to pay a 26% salary top-up for HSAs and a 52% salary top-up for all professional cadre health workers. In Ukraine, where only the government could hire and fire physicians and nurses, Global Fund support was used to provide 'additional compensation' to these cadres of health workers to work additional hours, beyond their regular workload, at NGO facilities. The different financing innovations are shown in Table 3.

In some instances, Global Fund financing was effectively used to recruit health workers (Table 3). In particular, non-professional and community health workers, such as those recruited in Ethiopia and Malawi to address extreme health workforce crises, were employed to fulfil basic duties. These community health workers were rapidly trained and deployed, and therefore could immediately provide basic services to the population. However, in Ukraine, Honduras and Bangladesh, physicians and nurses were given short-term contracts due to general government civil service restrictions.



**Table 3** Summary of Global Fund-supported HRH activities

	Bangladesh	Ethiopia	Indonesia	Malawi	Ukraine	Honduras
Training						
Type of training	In-service, pre-service TB and malaria	In-service, pre-service HIV, TB and malaria	In-service HIV and TB	In-service and pre-service HIV, TB, malaria, immunization, family planning, well-child visits, disease surveillance	In-service HIV and TB	In-service HIV and TB
Disease/HSS focus	Public sector and NGO Sector	Public sector	Public sector	Public sector	Public sector	Public sector
Human resources activities						
Innovative financing used to supplement salaries	Payment per tuberculosis patient identified for community health worker	None	Monetary incentive for each TB detected	Top-ups for all health professionals including HSAs	Extra compensation in NGO facilities	Salary support as NGO employees
Hiring/contracting/recruitment	Physicians, community health workers, medical officers (tuberculosis) laboratory technicians and paramedics, community volunteers	TB programme staff, malaria programme co-ordinators, HIV data clerks	TB-related health workers	HSA and other higher health professionals	Physicians, nurses, psychologists and social workers	Physicians
Innovative financing used to supplement salaries	Payment per tuberculosis patient identified for community health worker	None	Monetary incentive for each TB detected	Top-ups for all health professionals including HSAs	Extra compensation in NGO facilities	Salary support as NGO employees

TB = tuberculosis, NGO = non-governmental organization, HSA = Health Surveillance Assistants, HSS = health systems strengthening.

Co-ordination of Global Fund-supported activities with national governments and programmes varied greatly by country and across three administrative levels: (1) co-ordination of training activities with country training departments; (2) co-ordination of human resource strengthening activities with country level HRH or financing departments; and (3) general co-ordination of all Global Fund activities with national HRH programmes and strategies.

In Indonesia, Global Fund-supported trainings were well co-ordinated and took place in one of Indonesia's seven regional training centres run by of the Ministry of Health. Additionally, Indonesia had a relatively well-developed training-related information system, which facilitated both tracking of public sector trainees and identifying national training needs. The training activities of the NGOs and public sectors in Bangladesh, Honduras and Ukraine were also well co-ordinated with some level of tracking and reporting to the governments the number of health-care workers who had been trained. However, co-ordination of disease-specific training activities with broader training programmes was generally poor, especially in Ethiopia, Bangladesh and Malawi.

In general, there was limited co-ordination with national governments with respect to Global Fund-supported HRH financing. Honduras and Malawi had developed plans for absorbing the salaries of a certain percentage of health workers whose salaries had been previously covered through Global Fund grants. In Honduras, from 2001 to 2008, the proportion of salaries absorbed by the Ministry of Health increased from 41% to 88% of the physicians hired through Global Fund-supported programmes. In Ukraine, Bangladesh and Indonesia, there were no formal mechanism or plans in place to cover any of the salaries that were funded by the Global Fund. As a result, respondents expressed concern about the sustainability of these investments in the (likely) case that Global Fund financing receded.

The level of co-ordination between Global Fund HRH activities and national HRH programmes and strategies was minimal in all but one of the case studies, Malawi, leading to additional concerns about the sustainability of Global Fund investments in HRH. In Malawi, all principal recipients have been government entities, but the Global Fund had worked in concert with the national HRH strategy and other donor programmes both through its funding of the Emergency Human Resources Programme, and as part of the Sector Wide Approach and 'AIDS Pool'. In both Honduras and Ukraine there were multiple HRH offices in the Ministries of Health; however, there was minimal co-ordination between these offices and the HRH activities carried out through Global Fund investments. In Bangladesh and Ethiopia, activities were not well co-ordinated or geared towards strengthening the overall health system.

The assessment of the impact of HRH investments on health outcomes was difficult due to limited data as well as no systematic ex-post assessment of HRH strategies that have been implemented since 2002. While those countries with more investments in general HSS and health workforce activities (i.e. Ethiopia and Malawi) have experienced more positive trends in maternal and child health outcomes, in addition to HIV-, tuberculosis- and malaria-related outcomes, due to a lack of grant information of how expenditures on HRH influenced

processes, outputs and outcomes in health programmes, it was not possible to assess contribution of Global Fund investments in HRH to improvements in health systems or health outcomes.

## Discussion

We use a mixed-method design that combined quantitative and qualitative analysis, including detailed country case studies, to examine Global Fund HRH investment trends and performance indicator tracking across recipient countries. This analytical approach provides in-depth examination and insight into innovations and the limits to the Global Fund's investments HRH-related activities. This section discusses how the results of our research impact policy in three main areas: (1) the relationship between HSS and short-term disease-specific training; (2) sustainability and fungibility and (3) co-ordination. These categorizations were made based on common themes identified in the six Global Fund case-study countries. The end of the discussion highlights several limitations in our ability to demonstrate benefits of investments in HSS on health outcomes and additional data that could help future analyses. These limitations show the need for future research in this area.

Large investments provided by the Global Fund in HRH of its recipient countries for training, salary support and recruitment activities made it an influential actor in global health governance, with the potential to impact on both HRH and health systems. However, the disease-specific mandate of the Global Fund, when combined with the policies and regulations of each recipient country, created tensions and placed boundaries on the use of financing to support HRH, which predominantly focused on in-service, disease-specific activities for public sector employees—findings consistent with earlier studies (Dräger *et al.* 2006; Vujcic *et al.* 2012). The strain between HSS and disease-specific mandates of international and bilateral organizations has been previously documented (Bärmighausen *et al.* 2011, 2012).

Countries studied used different innovative financing mechanisms to support and increase the number of available health workers, including top-ups (Malawi), performance incentives (Indonesia, Bangladesh), additional compensation (Ukraine, Honduras) and contracting (Bangladesh, Ethiopia). Others have documented different types of financing HRH remuneration; our results show that varying approaches were pursued in many instances as a result of national policies that prohibited donors from directly paying salaries of government health workers (Vujcic *et al.* 2012). While the financing approaches are creative and the in-service, disease-specific training responds to short-term needs, sustainability is of concern. In-service training may increase sustainability in that once these health workers are trained they have skills they can use for a longer period of time, although it may be necessary to retrain these workers. A more sustainable longer-term investment, such as pre-service training, was targeted at lower-level cadres of health workers in three out of the six case studies. Only two of the six countries studied had plans to sustain the financial salary support established through the Global Fund contributions with national resources in the long run.

The sustainability of progress made with regard to building the numbers and capacity of the health workforce as a result of

Global Fund investments was questioned by several of the key informants in the countries included in the comparative case studies. Due to the minimal integration and co-ordination of these investments with overall national HRH strategies, the continuation of these programmes is threatened in the case that Global Fund moneys are reduced or no longer available. The lack of sustainability, integration and co-ordination were the primary reasons that many countries prohibited use of donor funds to pay for permanent government health-worker salaries. Malawi openly acknowledged these sustainability issues, however, due to extreme health workforce shortages, chose to use these funds on an 'emergency' basis. In this case, the long-term funding concerns were secondary to addressing immediate and critical HRH shortages in the system. Conversely, Honduras as of 2008 had absorbed 88% of the salaries of those physicians originally funded through Global Fund-supported activities and planned to increase this level of absorption in the future. Malawi also began a similar process of transferring the contracts of HSAs hired using Global Fund investments to regular civil service contracts. While sustainability is clearly related to fungibility, in Honduras and Malawi there is evidence that Global Fund investments in HRH have stimulated investments in HRH by other sources, through absorption into national budgets. In the other four case-study countries, Global Fund investments in HRH have not led to any subsequent government investments, supporting the finding of others who show that donor funding can displace government funding for certain activities (Shiffman 2008; Farag *et al.* 2009).

The lack of co-ordination between Global Fund investments in HRH and broader HRH departments and programmes emerged as a persistent concern. Global Fund investments in training were relatively better co-ordinated with national-level training departments and programmes, as compared with the level of co-ordination of the salary support mechanisms with HRH departments. In general, there was less co-ordination with respect to Global Fund-supported HRH financing, with the exception of Malawi. Often the lack of co-ordination with regard to financing was complicated by the fact that absorbing the salaries of these personnel would require additional financing from the Ministry of Health as well as the integration of staff employed through Global Fund financing into national HRH plans. In many instances these issues involved a political process and had fiscal space implications for ministries of finance.

The low level of co-ordination with national HRH programmes was problematic for at least three reasons. First, the minimal co-ordination with respect to training led to duplication, excessive spending on in-service training, and inefficiency in HRH planning and activities. Global Fund principal recipients did not systematically track who had been trained or co-ordinate with the ministry of health on the nature and the content of the training offered—therefore allowing for duplicate trainings and 'per diem hunting' (Elzinga *et al.* 2010). In these instances, health workers could attend multiple donor-funded trainings to maximize their income through daily allowances received for training—an unacceptable practice, which reduced health-workers' time spent attending to patients in facilities. Second, the capacities of national training programmes were often not improved because the Global Fund-supported

disease-specific training programmes were not co-ordinated with national ministries. Third, sustainability was repeatedly called into question, as many of these short-term in-service trainings were unlikely to persist in the case that Global Fund financing was reduced or no longer available.

As the largest external funder of HRH activities globally, substantial investments provided by the Global Fund for HRH made it an influential actor with considerable potential to impact HRH and health systems. However, it was not possible to ascertain from analysing grant performance targets and indicators whether any of the HRH activities in the Global Fund sponsored programmes strengthened health systems or improved health outcomes—which is concerning, given the repeated calls for strengthening health systems through investments in HRH (Chen *et al.* 2004; Frenk *et al.* 2010; Samb *et al.* 2010; Anand and Bärnighausen 2012).

Three key limitations that highlight the need for further research have been illuminated through our study. First, there is a need to systematically assess investments in health systems, despite the methodological complexity associated with such assessments. This would include a more systematic monitoring of financial investments in HRH, the type of health-care worker recruited and trained using funds from the Global Fund and the ability to link these indicators to health outcomes at the national level, and also at a lower level that would allow for causal attributions of investments and outcomes. The Global Fund and other donors interested in HRH should require grantees to demonstrate how HRH investments will strengthen the health system and improve health outcomes.

Second, through mixed-method research design using six in-depth country case studies and comparative cross-case analysis, we have shown that systematic assessment carries with it challenges due to varying country contexts related to underlying stages of country development, features of health-system governance, the type and scale of investments, and the unavailability of data and information. In particular, variations in country context can impact the mechanisms through which Global Fund grants are implemented and their resulting impact. For example, the extreme health workforce crisis and HIV epidemic provided much of the backdrop for Global Fund HRH investments in Malawi, whereas in Ukraine, there was not a shortage of health workers; however, there was a need for specialist training in HIV/AIDS and tuberculosis. Therefore, to assess investments over an even larger cohort of countries would require substantial analytical capacity and financial resources for research.

Third, our findings support the need for novel mixed-method designs, as was used in our analysis, in future studies of this nature (Leeuw and Vaessen 2009). A larger cohort of countries and additional tracking of the actual number of health staff trained and financed using Global Fund investments would be needed to systematically assess the interaction between national disease programmes and health systems, how these interactions influence health system efficiency, equity, access and quality, and how synergies are created to bring broader health benefits than just the diseases targeted (Atun and Lansang 2009).

Finally, in addition to the three limitations highlighted above, our analysis demonstrated major deficiencies in the ability to

use data collected by the Global Fund to track HRH financing and other performance measures of health systems. While broad categories for financing and number of health workers trained could be tracked and compared across countries, the details on the content of country HRH programmes and types of training and salary support for additional health workers could only be identified through in-depth country case studies. Such a lack of readily available data on the use of Global Fund moneys implies a significant deficit in transparency and accountability at the national level (Bärnighausen *et al.* 2013). Quantifying HRH investments would benefit from strengthened and co-ordinated health management information systems.

## Conclusions

While our research and results focused specifically on the Global Fund, the lessons learned can be extended to donor activities in varying country contexts. Donors should work with governments to understand how national and donor policies could impact programme sustainability, integration and co-ordination in order to maximize HRH investments and improve health outcomes. Innovative financing mechanisms should be put into place in a manner that works with the health system and the overall health workforce. Better co-ordinated financing of HRH training and activities will lead to less duplication, lower costs for training programmes and strengthened national training programmes that focus on long-term, pre-service trainings rather than short-term, in-service trainings. Quantifying the impact of donor activities on health systems and health outcomes will require a co-ordinated effort with current tracking, monitoring and health management information systems. Achieving sustainability and effectiveness are predicated on a fundamental shift from the funding model championed by the Global Fund that fosters a project approach to managing disease-focused grants at the expense of remarkable synergies that could be realized from joined-up investments in HIV, tuberculosis and malaria.

## Supplementary data

Supplementary data are available at *Health Policy and Planning* online.

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