Evaluation of a decade of DFID and World Bank supported HIV and AIDS programmes in Vietnam from 2003 to 2012

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Role of investigators

This report is a joint product for the United Kingdom Department for International Development (Vietnam office) and the World Bank.

The research of this report was conducted by a team of investigators.

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Abbreviations

ART	Antiretroviral therapy
BCC	Behavioural change communication
CPMU	Central project management unit
CI	Confidence interval
DALY	Disability-adjusted life year
DFID	United Kingdom Department for International Development
EE	Entertainment establishments
FSW	Female sex workers
GFATM	Global Fund to fight AIDS, Tuberculosis and Malaria
HCMC	Ho Chi Minh City
IBBS	Integrated Biological Behavioural Surveillance
ICER	Incremental cost-effectiveness ratio
MARPs	Most-at-risk population
MMT	Methadone maintenance therapy
MOH	Ministry of Health
MOLISA	Ministry of Labour, War Invalids and Social Affairs
MSM	Men who have sex with men
NIHE	National Institute of Hygiene and Epidemiology
NS	Needles/syringes
NSP	Needles/syringes exchange programmes
PAC	Provincial AIDS centre
PEPFAR	United States President's Emergency Plan for AIDS Relief
PLHIV	People living with HIV
PMTCT	Preventing mother-to-child transmission of HIV
PPMU	Provincial project management unit
PWID	People who inject drugs
STI	Sexually transmitted infections
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNODC	United Nations Office on Drugs and Crime
VAAC	Vietnam Authority of HIV/AIDS Control
VCT	Voluntary counselling and testing
WB	World Bank
WHO	World Health Organization

Executive summary

INTRODUCTION

The HIV epidemic in Vietnam is a concentrated epidemic with recent declines in the rate of new infections. In 2012, an estimated 190,795 people were living with HIV (PLHIV), 74,401 (39%) of whom are receiving antiretroviral therapy (ART) (3, 4). The prevalence of HIV in the overall adult population was 0.33% in 2012 (3), but the epidemic comprises many sub-epidemics across the country and remains concentrated primarily among people who inject drugs (PWID) (predominantly men), female sex workers (FSW) and men who have sex with men (MSM). According to sentinel surveillance data, HIV prevalence among PWID decreased from 29.0% to 11.6% during 2002-2012 (5). Prevalence among FSW decreased from 6.0% to 2.7% in the same period. Integrated Biological Behavioural Surveillance (IBBS) 2009 data indicate that prevalence among MSM was 16.7% (6). HIV cases reported in women accounted for 34% of new diagnoses in 2012 (4), reflecting a slow but steady increase of HIV transmission from highly at-risk men, such as married male PWID and MSM, to the general female population.

HIV prevention programmes have been implemented mostly in high HIV prevalence provinces with specific focuses on most-at-risk populations. These interventions were initiated at a limited scale in the first few years post-2001 but substantially scaled-up within a more enabling policy environment after 2006. Domestic and international spending on HIV prevention to mitigate the epidemics has grown considerably in recent years, from around US $5 million in 2000 to over US $139 million in 2010 (7). The majority of financial resources to support the HIV/AIDS response in Vietnam have been provided by the PEPFAR, WB, DFID, and GFATM. International funding accounts for approximately 73% of the total investment on HIV/AIDS programme in Vietnam. However, funding from DFID/WB ended in 2012; it is expected that PEPFAR will withdraw by 2015, and the GFATM in 2016. The Vietnamese government will need to fill these funding gaps in order to sustain effective HIV programmes, particularly for primary prevention programmes.

The DFID initially funded the £17 million "Preventing HIV in Vietnam Project" in 2003 with the purpose of reducing vulnerability to HIV infection in Vietnam, primarily through harm reduction programmes to provide clean needles/syringes and condoms to PWID and FSW. The project covered 21 provinces. This project ended in 2009 and was demonstrated to be highly successful. In parallel, the WB launched its own "HIV/AIDS Prevention Project for Vietnam" in 2005 with an investment of US $38.5 million. This provided comprehensive support for a range of prevention and treatment activities in 18 provinces, some of which overlapped with the DFID provinces, as well as national components on policy studies and research, training, and innovation. In 2009, DFID and WB decided to combine resources to focus on the existing WB project, replacing the existing DFID project. Since then, DFID allocated an additional £18.3 million to the WB project, which was further extended to the end of 2012. The combined efforts have covered 32 Vietnamese provinces. Over 60% of the resources were allocated to harm reduction activities.

This report provides the findings of a comprehensive evaluation on the implementation, management, estimated population impacts, and cost-effectiveness of the DFID and the World Bank funded harm reduction programmes in Vietnam. It mainly included three major components: (1) an extensive literature review of legal and policy documents to understand key changes in the legal and policy environment in Vietnam; (2) a qualitative study utilising focus groups with key stakeholders and programme participants to provide background and context for understanding the implementation, management and effectiveness of the DFID/WB programmes; (3) a quantitative assessment of population impacts and cost-effectiveness of DFID/WB programmes based on a mathematical model.

KEY FINDINGS

Impact on policy and capacity for HIV prevention

The DFID/WB programmes were significant in demonstrating the value of harm reduction to the Vietnamese government and contributed to changes in the legal and policy frameworks for harm reduction interventions in Vietnam. This is exemplified through recent laws which enable HIV/AIDS prevention and ongoing implementation of harm reduction activities (specifically 64/2006/QH11 and associated decree 108/2007 ND-CP) (Section 3.1.3).

DFID/WB programmes have contributed to alleviating stigma and discrimination against key affected populations and people living with HIV (PLHIV). Harm reduction interventions delivered by the programmes were well-aligned with intensive advocacy activities in Vietnam during the past 10 years, challenging the use of the 'social evils' approach to drug use and sex work. The project established credibility with key stakeholders at all levels of the government and health system. Collaboration with local communities and authorities was essential to successful programme implementation (Section 3.1.3).

DFID/WB programmes significantly increased organizational capacity and human resources ability. Health workers appreciated new skills they obtained from attending training activities and on-the job application of these skills in planning, project management and coordination, report writing and monitoring and evaluation (Section 3.1.3). Despite the training of local implementers, there was general consensus among service providers who participated in focus groups that the breadth of activities funded by the DFID/WB project would be impossible to sustain without on-going donor funding. It was reported that the national HIV/AIDS programme could only cover a limited number of HIV prevention activities for the most easily accessible PWID and FSW. Sexually transmitted infections (STI) prevention programs for FSW and educational information funded nationally have been influenced by DFID/WB projects. However, there were concerns in relation to sustainability and, in particular, the lack of a clear pathway or transitional strategy to secure domestic funding for harm reduction interventions after DFID/WB supported projects phased out (Section 3.1.3).

DFID/WB programmes were appropriately designed with reasonable coverage

DFID/WB HIV prevention programmes have been appropriated designed and the resources available have focussed geographically on the provinces with the greatest HIV burden or numbers of people at greatest risk of HIV, namely, PWID, FSW, and MSM. Historically, DFID/WB programmes have largely targeted PWID and FSW but not MSM and have been implemented in 32 Vietnamese provinces, covering all five geographical regions and the two major Vietnamese cities, Hanoi and HCMC. The 32 project provinces include an estimated 167,541 PWID and 51,844 FSW, accounting for over 80% of the estimated numbers of FSW and PWID in Vietnam (Section 3.4.1). At the inception of DFID/WB programmes, MSM were not identified as a high risk group in Vietnam due to lack of surveillance data and underestimate of risk. As a result, MSM programmes have not received adequate funding from any source.

From the perspective of service providers who participated in focus groups, the design and planning of the project appears to have been systematic and efficient. Staff training provided by the project was perceived as having facilitated effective programme design and service providers reported that project-funded training had helped implement provincial HIV prevention interventions. Service providers also reported that training offered by the project had increased organizational capacity and resulted in a more skilled and professional prevention workforce. They reported acquiring new skills through project training activities in planning, project management and coordination, report writing and monitoring and evaluation. The programmes were designed in an attempt to be efficient by applying a standard generic format, designed centrally and implemented by each province during the first phase of the DFID project (2004-June/2009). A separate and more flexible programme design approach was initiated at the commencement of WB funding (2005). This provided ownership to provinces and allowed them to choose their own plans for implementation (Section 3.4.1).

Good coverage of harm reduction among FSW and PWID at acceptable cost

It is estimated that PWID in the targeted DFID/WB provinces received an average of 152 clean needle/syringes per year from needle and syringe programmes (NSP) funded by DFID/WB, at an annual per-capita investment of US $25.40 per PWID. This is considered to be mid-level coverage according to technical guidelines of the World Health Organization (WHO), United Nations Office on Drugs and Crime (UNODC), and Joint United Nations Programme on HIV/AIDS (UNAIDS) and although very good compared to most countries in the region, and around the world, it falls short of the high threshold target of 200 needle-syringes per PWID per year. It is estimated that FSW received an average of 326 free condoms each year under the 100% condom use programmes funded by DFID/WB, at an annual per-capita investment on FSW of US $34.50. Condom distribution among FSW achieved the WB target of 240 condoms per year per FSW (Section 3.4.2). DFID/WB programmes did not target the high-risk population of MSM (Section 3.4.1). The unit costs of reaching each PWID or FSW, at these levels of commodity distribution, are deemed to be acceptable when benchmarked against costs of programmes in other settings. Programme coverage appears to have been adequate and implemented relatively efficiently.

Innovative programme implementation increased harm reduction coverage

The DFID/WB funded activities consisted primarily of harm reduction programmes (NSPs for PWID and condom distribution programmes for FSW). These programmes have been implemented effectively through a range of mechanisms including the use of peer-based distribution relying on peer educators. Innovative approaches were also employed to improve commodity distribution. PWID also obtained free sterile needle-syringes through fixed boxes at 'secret' venues, tea stalls and by redeeming vouchers distributed by peer educators at pharmacies incentivised by the project. FSWs sourced condoms through a variety of mechanisms including peer educators and social marketing outlets at guest houses/hotels, cafes and pharmacies and at some entertainment venues. These mechanisms resulted in substantial increases in the coverage of key commodities over the programme period and relatively good coverage levels. Estimated NSP coverage among PWID increased from 22.5% in 2006 to 70.4% in 2011 then declined slightly to 59% in 2012. Estimated condom coverage among FSWs increased from 58.2% in 2006 to 89.2% in 2012 (Section 3.4.2, 3.4.3).

Prevention focus has been complementary to other international efforts

Overall, DFID/WB programmes did not have substantial overlaps with other domestic and international programmes and avoided significant duplication. Based on a matrix developed when planning HIV/AIDS provincial prevention activities, provincial authorities were able to clearly identify activities funded by various agencies. This coordinating mechanism provided them with insights into existing programme coverage and prevented duplication of services (Section 3.4.2). Out of the 32 provinces targeted by DFID/WB funded programmes, most relied exclusively on this source to provide harm reduction interventions. Other HIV programmes implemented in these provinces funded by other international sources such as PEPFAR and GFATM had different interventions that targeted different groups such as provision of care and treatment for people living with HIV/AIDS, prevention of mother-to-child transmission, and prevention among youth and adolescents. Therefore, there was good complementarity between different organisations investing in HIV responses in Vietnam.

Non-optimal coordination with implementers and programme interruptions

The projects were generally well-managed by the Central/Provincial Project Management Units (CPMU/PPMU). The programme management and administration costs amounted to US $24.8 million, accounting for 28% of the total DFID/WB investment. The financial management of this money was independent of the government-run provincial AIDS centres (PACs) (Section 3.2). Through this funding, DFID/WB developed an efficient and flexible management framework. DFID/WB established a wide collaborative network with all levels of government bodies and

research institutions in Vietnam, as well as with international health organisations (Section 3.3). DFID/WB programme management was flexible and allowed annual project planning to be adjusted to suit actual local needs. This was identified as one of the project's strengths. While overseen by VAAC at the central level, project provinces were allowed to design their own approaches and activities for harm reduction programmes that were feasible and responsive to local needs (Section 3.3). However, coordination of DFID/WB and the implementing bodies has appeared not optimal, affecting the overall programme efficiency. Occasional discontinuities in the dispersal of funding from central to provincial to district levels led to interruptions to project activities, including disruptions to funding for project peer educators, requiring them to cease work for several months, only to start again when funding was re-established (Section 3.3). In addition, regular routine communication across project levels through regular monitoring and evaluation improved project intervention quality and project management (Section 3.3).

DFID/WB programmes were associated with decreased HIV disease burden in FSW and PWID

Twenty-six out of 32 project provinces showed a declining trend in HIV prevalence among PWID, six had stabilized prevalence, and, importantly, none experienced an increasing trend. NSPs appeared to be more effective than condom programmes in averting new infections. In eight out of 32 project provinces, there was an increasing trend in HIV prevalence among FSW, a decreasing trend in 16 provinces and stable prevalence in the remaining eight provinces.

Overall, DFID/WB funded programmes in Vietnam were estimated to have had a significant impact on preventing HIV infections. If DFID/WB programmes had not been implemented, significant increases in HIV incidence and prevalence would likely have been observed. Through modelling, it was estimated that in the absence of DFID/WB funded harm reduction programmes, HIV prevalence would have increased ~18.1% among PWID and ~3.4% among FSW by 2012 (Section 3.1.2). We estimated that between 2003 and 2012 the DFID/WB programmes have reduced the disease burden of HIV/AIDS by preventing ~33,000 HIV infections, 924 HIV-related deaths, and 17,392 disability adjusted life years (DALYs). The vast majority of these health benefits were attributed to NSPs for PWID (Section 3.1.2). NSPs alone averted an estimated 31,000 infections, 872 HIV-related deaths and 16,395 DALYs during the period 2003-2012. Condom distribution programmes for FSW averted an estimated 1,585 infections, 42 HIV-related deaths, 788 DALYs (Section 3.1.2). Further, the benefits derived to date will accrue to greater benefits in the longer term (Section 3.1.2). If prevention programmes established by DFID/WB funding are not sustained into the future then there could be a significant increase in the number of new infections by 2020 (4,698 extra infections), mostly attributable to PWID (4,061), FSW (59) and their clients (327) (Section 3.1.2).

DFID/WB programmes for PWID were cost-effective in the short-term and programmes for FSWs may yield long-term benefits

DFID/WB funded programmes, especially NSPs for PWID, were deemed to have been cost-effective. Overall, programme costs amounted to an estimated US $1,007 per HIV infection averted during the period 2003-2102. The costs for averting one HIV-related death and one DALY were US $36,020 and US $1,914 respectively. The life-time cost per DALY averted was estimated to be US $522 (Section 3.6). According to standard willingness to pay thresholds, these values indicate that the programmes are good value for money.

For every dollar spent on NSPs, the estimated rate of return in healthcare costs saved (not required to be expended for treating infections) was US $1.93. Thus, every dollar spent was returned and provided close to an additional US dollar not required to be spent in the future. The cost of averting one DALY was US $917. If the life-time impacts of NSPs are considered, the return-on-investment ratio was 42.82 and the cost required for one DALY aversion was US $270 (Section 3.6). In comparison to NSPs in other international contexts, NSPs implemented by DFID/WB in Vietnam were typical. The estimated required cost of US $486 to avert one new infection through NSPs is comparable to findings reported in developing country settings, such as China (US $560-810) and

Belarus (US $359, $234-1054). Notably, this cost amount is much lower than the amount in developed country settings (typical cost of US $ 3,000-20,000 per infection averted) (Section 3.6).

The epidemic benefits derived from condom distribution programmes for FSW were unlikely to have been cost-effective during the implementation period (2003-2012). However, when the life-time impacts of the condom distribution programme are considered, the return-on-investment ratio was 4.53 and the cost required to avert on DALY was US $425, demonstrating good long-term cost-effectiveness (Section 3.6). The STI prevention programme also demonstrated moderate cost-effectiveness in the long-term (Section 3.6). Behaviour change communication was deemed not to be cost-effective (Section 3.6).

LESSON LEARNT AND RECOMMENDATIONS

Policy environment

The experiences of more than a decade of DFID/WB HIV prevention programmes in Vietnam indicate that a supportive legal and policy environment is essential for the effective implementation of harm reduction programmes. Although a direct association between implementation of DFID/WB programmes and policy changes in Vietnam cannot be investigated in this study, DFID/WB piloted the first harm reduction programmes that facilitated the development of an enabling policy environment in Vietnam. However, the continued use of the compulsory detention approach to drug use will substantially limit the full potential of these programmes.

Establishing commodity distribution models

DFID/WB programmes have been the largest suppliers of condoms for FSW and clean needle-syringes for PWID and other preventive services across all regions of Vietnam, contributing to the large reduction in risk behaviours and HIV prevalence in FSW and PWID. DFID/WB programmes set up the first innovative models for commodity distribution through multiple channels including social marketing, peer-educators, fixed-boxes at hotspots/venues and the pharmacy sector. Assurance of ongoing programme funding is essential for successful implementation of harm reduction programmes.

Current models of needle-syringe distribution programmes delivery are not innovative or adaptive enough. The almost exclusive reliance on the peer educator distribution model is unnecessarily narrow and restrictive in scope. However, secret spots/hidden locations as a strategy for NSPs were viewed by service providers and PWID as complementary and part of a range of strategies designed to maximise access and availability of needles and syringes. Close collaboration of local communities and authorities was identified as key to the success of this model.

Social marketing may increase condom distribution to FSW. The targeting of venues where sex work occurs was prioritised at the provincial level as a way to increase condom availability. The development of programmes which increase condom use in an environment where sex work remains illegal has required multi-sectoral collaborations which have been driven by provincial-level AIDS committees. Cooperation between government health staff, private providers and venue owners may be an effective means of increasing uptake of HIV and STI screening by venue-based FSW.

Programme management

DFID/WB programmes have invested US$24.8 million for setting up an efficient management framework for project implementation at both national and local levels in the past decade. During this process, DFID/WB programmes have actively involved the Vietnamese government and relevant HIV prevention bodies to ensure a transferrable and sustainable management model after the withdrawal of the programmes. Without overlapping other international/domestic players' efforts in HIV prevention, DFID/WB programmes coordinated with other funders to provide timely and sustained harm reduction interventions in Vietnam.

With substantial investment (US$89.5 million), DFID/WB has set up an administrative framework that is extensive, flexible, efficient and sustainable for the future. These were reflected by (1) the wide collaborative network it established with all levels of national and international organisations; (2) flexible implementation strategies at the local level; (3) effective coordination between DFID/WB and the implementing bodies and (4) regular communication and feedbacks, and on-going monitoring and evaluation mechanisms. However, the costs of management and administration were considered excessive. It is important that this established programme framework is fully utilized and sustained in the future and could likely be done at reduced on-going costs.

Programme effectiveness and cost-effectiveness

DFID/WB programmes have demonstrated moderate/good cost-effectiveness and value for money in rolling-out harm reduction programs among FSW and PWID. This is consistent with international findings and adds to the accumulating evidence on the cost-effectiveness of harm reduction programmes.

HIV prevention interventions need to be aligned with current trends in HIV epidemiology. The delay in instituting HIV surveillance among MSM meant that there have been very few DFID/WB, or other, programmes which targeted this group. The absence of targeted prevention efforts for this group has likely contributed to the emergence of new HIV epidemics. Future programmes should specifically target MSM.

Sustainability?

Sustainable financing is essential. If current programmes are not maintained in the future, then it can be expected that HIV epidemics will increase substantially, particularly among PWID, with the potential for further spread beyond the populations most at risk. HIV epidemics are already increasing substantially among MSM where there has been little prevention effort. Vietnam's current HIV response is highly dependent on foreign aid. Only about 15% of the total HIV/AIDS funding in Vietnam was contributed by domestic sources. With the gradual withdrawal of foreign investment, increased domestic support from the Vietnamese government is essential. Mathematical modelling indicates the potential for a severe future epidemic if current support from DFID/WB programmes is withdrawn without replacement. Sustaining harm reduction programmes is expected to have a long-term population impact on the HIV epidemics in Vietnam. In contrast, the withdrawal of DFID/WB programmes without replacement would be expected to lead to substantial increase of new HIV cases (~4,000) during 2013-2020.

HIV prevention is particularly vulnerable to changes in international funding. DFID/WB were the key sources of prevention funding and it is not determined how domestic funding may now fill this gap. Similarly, the infrastructure and capacity built by the DFID/WB programmes may dissipate without a transference and long-term sustainability plan. This is one the largest current problems for the HIV response in Vietnam.

1. Background

Asia-Pacific is the second-most HIV-affected region in the world and is now home to an estimated 4.9 million people living with HIV (8). An estimated 370,000 are newly infected with HIV and 310,000 die of AIDS every year (8). HIV epidemics in Asian Pacific countries are heterogeneous, but the majority of infections have occurred in the MARPs, such as PWID and FSW, through sharing of injecting equipment and unprotected sex. In response to the epidemic, a drastic scale–up of HIV prevention programmes for these groups (e.g., promotion of 100% condom use and needles and syringes exchange programmes) have been implemented across the region in the past two decades. These efforts have contributed to the remarkably declining trend of HIV prevalence in PWID and FSW (8, 9).

In Vietnam, the first HIV case was reported in HCMC in 1990 (1) and HIV sentinel surveillance system was established in 1994 (2). By 2013, HIV cases had been reported in all 63 Vietnamese provinces. There have been a cumulative total of 213,413 reported HIV cases, an estimated 190,795 PLHIV, and 74,401 of whom are currently receiving ART (3, 4). HIV prevalence among pregnant women attending antenatal care is 0.19% (5), and prevalence among adults (ages 15-49 years) is 0.33% in 2012 (3).

Vietnam's HIV epidemic comprises many sub-epidemics across the country and remains concentrated primarily among PWID (predominantly men), FSW and MSM. HIV prevalence is highest in Vietnam's two economic hubs, the Haiphong – Hanoi corridor of the Red River delta and the Mekong River delta (which includes HCMC). Injecting drug use is central to these epidemics, accounting directly for about 60% of reported cases and contributing indirectly to an even higher percentage, through the nexus between PWID, FSW, and MSM. According to 2012 sentinel surveillance data, HIV prevalence among PWID has decreased to 11.6% in 2012 from 29% in 2001-2002 (5). Prevalence among FSW was 2.7%, down from 6% in 2002. Epidemic data for MSM is limited in the absence of sentinel surveillance for this population. However, IBBS 2009 data indicate that prevalence among MSM in urban Vietnam was 16.7% (6), although only four major cities were surveyed. New HIV cases reported in women represent 34% of newly reported cases (4), reflecting a slow but steady increase of HIV transmission from highly at-risk men, such as married male PWID and MSM, to their female partners.

In response to the epidemic, HIV prevention programmes were initiated in the early 1990's with the establishment of the National AIDS Standing Bureau – a government agency responsible for coordinating and implementing HIV prevention activities in the country. Although commercial sex work and intravenous injecting drug use have been identified as the key drivers of the HIV epidemic

in Vietnam, for more than a decade since the inception of the epidemic, both activities were considered illegal and labelled as “social evils”. Not until the law for HIV prevention and treatment was promulgated in 2006, the punitive/repressive control measures to drug and commercial sex work control have been the major barriers for the implementation of effective HIV prevention and harm reduction programmes in Vietnam.

Harm reduction and other HIV prevention programmes have been implemented largely in high HIV prevalence provinces targeting most-at-risk populations since 2004. These interventions were in place at limited scale in some provinces since 2001 but were more substantially rolled out when policy environment become more feasible after 2006. Domestic and international spending on HIV prevention to mitigate the epidemics has grown considerably in recent years, from around US $5 million in 2000 to over US $139 million in 2010 (7). The majority of financial resources to support the HIV/AIDS response in Vietnam have been donated by the PEPFAR, WB, DFID, and GFATM. International funding accounts for approximately 73% of the total investment on HIV/AIDS programme in Vietnam. However, funding from DFID/WB will end by 2012, followed by the PEPFAR in 2015, and the GFATM in 2016. The Vietnamese government will need to fill these funding gaps in order to sustain effective HIV programmes.

The DFID initially funded the £17 million “Preventing HIV in Vietnam Project” in 2003 with the purpose of reducing vulnerability to HIV infection in Vietnam primarily through harm reduction programmes involving increased availability of NS and condoms to PWID and FSW, coupled with behaviour change communication and advocacy work. The project covered 21 Vietnamese provinces and operated till 2009. Independent end-of-project evaluation has shown it to be highly successful. In parallel, the WB launched its own “HIV/AIDS Prevention Project for Vietnam” in 2005 with a investment of US $38.5 million. This provided comprehensive support to a wide range of prevention and treatment activities in 18 provinces, some of which overlapped with the DFID projects. WB project also supported national components on policy studies and research, training, and innovation. In 2009, DFID decided to pool resources with the existing WB project. It allocated an additional £18.3 million to the WB project and extended its activities until the end of 2012. The combined WB/DFID project covered 32 Vietnamese provinces and dedicated that least 60% of its resources to harm reduction activities. Vietnam also currently receives significant funding for HIV and AIDS programmes from the PEPFAR and from the GFATM Round 9, and less amounts from the Australian Agency for International Development and Asian Development Bank. Domestic funding for HIV and AIDS is low, at around 13% of total funding, less than half of which is provided by the central Vietnamese government.

Objectives

The current study aimed to evaluate the implementation, impact, and cost-effectiveness of the DFID/WB funded harm reduction programmes. Specific objectives included:

1. To examine coverage of harm reduction interventions in Vietnam among PWID, FSW, and MSM from 2003 – 2012;

2. To understand the dynamics of HIV transmission in Vietnam and to estimate the extent to which harm reduction interventions among core groups have contributed to epidemiological trends and reduced HIV transmission in Vietnam during the period 2003-2012;

3. To explore the plausibility of intervention impact on epidemic trajectories by estimating the likely number of infections averted compared with coverage levels and using these data to predict the expected impact of expanding current programmes and introducing new programmes;

4. To assess whether these DFID/WB-funded interventions were cost-effective, and thereby to inform DFID/WB of the value of money in their investment, and inform decisions on future allocation of domestic resources;

5. To document whether the programmes had any best practice lessons that could benefit future implementation in Vietnam and also other countries with similar concentrated epidemics;

6. To demonstrate to the UK Government, Parliament and the public whether the use of UK funds has had a significant developmental impact.

The outcomes would contribute to improving the effectiveness and efficiency of HIV prevention responses in Vietnam's concentrated HIV epidemic settings. The study intended to achieve this through the provision of evidence on the epidemiological and transmission impact of HIV prevention programmes and their cost-effectiveness, based on the systematic collection of data, modelling, health economic analyses and assessment of potential mismatches that exist between investment in targeted preventions and HIV epidemiology. Rigorous analysis and synthesis of the target groups and drivers of the epidemics, reinforced by an equally rigorous review of the evidence-base for various HIV interventions and the respective indicators were conducted. These analyses were based on existing summary surveillance data and costing data and performed as computer/desk analyses at the University of New South Wales.

To complement the quantitative analyses, we also conducted in-country qualitative work with a small sample of target groups and key stakeholders in this programme, notably PWID, FSW and service providers at the local level.

Evaluation questions

The study was designed following the five Development Assistance Committee evaluation criteria: relevance, effectiveness, efficiency, impact and sustainability. According to these criteria, the above objectives were translated into the following specific questions:

1 Have the DFID/WB funded programmes in Vietnam been appropriately designed and reached suitable geographical areas and sub-populations to maximise the effective use of the available resources in reducing HIV transmission in Vietnam? Have the projects balanced the attention to different target groups appropriately? Are the programme indicators and targets used appropriate?

2 Have the DFID/WB funded activities in Vietnam been the right ones and implemented in an effective way to maximise the impact on the epidemic without duplicating work that others are doing or wasting resources on unnecessary or ineffective activities? Areas for particular focus include: approaches to controlling the epidemic among PWID; the changing approaches to condom social marketing; and the different treatment and care activities implemented in some provinces (HIV and STI) and the balance between prevention and treatment.

3 Have the management arrangements been appropriate at both national and provincial levels, including both institutional location and arrangements, and staffing modalities?

4 Have the DFID/WB funded programmes in Vietnam had a measurable impact on HIV prevention? What would have been the likely scenario without such support?

5 Have the DFID/WB funded programmes in Vietnam provided good value for money as compared to other HIV prevention interventions in Vietnam and globally? What benefits have the programmes delivered at what cost and how does this compare with the counter-factual of providing no support?

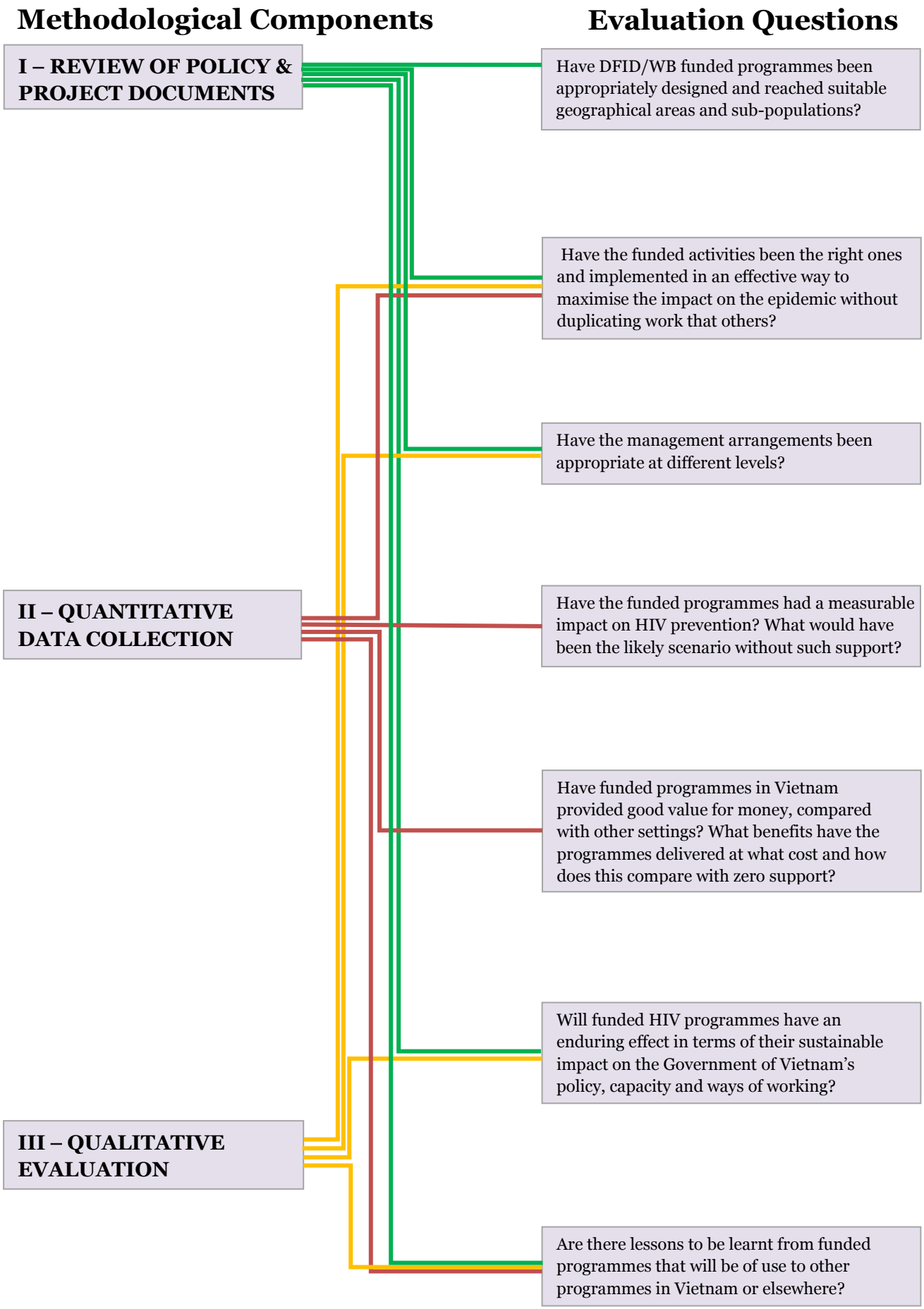
6 Will the DFID/WB funded HIV programmes in Vietnam have an enduring effect in terms of their sustainable impact on the Government of Vietnam's policy, capacity and ways of working at both national and local levels?

7 Are there lessons to be learnt from the DFID/WB funded programmes that will be of use to other programmes in Vietnam or elsewhere in the world?

2. Methods

To answer these questions, the evaluation included three major components: (1) an extensive literature review of legal and policy documents to understand key changes in the legal and policy environment in Vietnam; (2) a qualitative study utilising focus groups with key stakeholders and programme participants to provide background and context for understanding the implementation, management and effectiveness of the DFID/WB programmes; (3) a quantitative assessment of population impacts and cost-effectiveness of DFID/WB programmes based on a mathematical model (Figure 1).

FIGURE 1. The evaluation plan and methodological structures

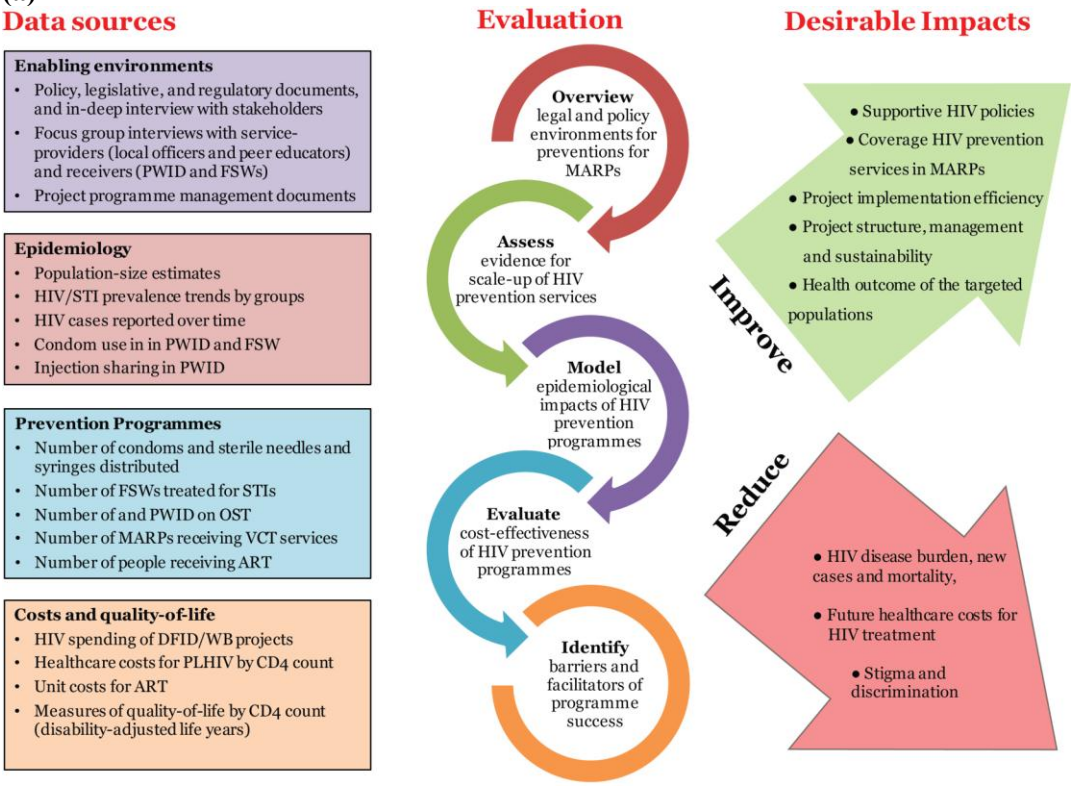

Methodological Components
Evaluation Questions
I – REVIEW OF POLICY & PROJECT DOCUMENTS
II – QUANTITATIVE DATA COLLECTION
III – QUALITATIVE EVALUATION
Have DFID/WB funded programmes been appropriately designed and reached suitable geographical areas and sub-populations?
Have the funded activities been the right ones and implemented in an effective way to maximise the impact on the epidemic without duplicating work that others?
Have the management arrangements been appropriate at different levels?
Have the funded programmes had a measurable impact on HIV prevention? What would have been the likely scenario without such support?
Have funded programmes in Vietnam provided good value for money, compared with other settings? What benefits have the programmes delivered at what cost and how does this compare with zero support?
Will funded HIV programmes have an enduring effect in terms of their sustainable impact on the Government of Vietnam's policy, capacity and ways of working?
Are there lessons to be learnt from funded programmes that will be of use to other programmes in Vietnam or elsewhere?

2.1 Framework of evaluation

The evaluation framework consists of three main stages: identification of data indicators, programme evaluation and facilitation of policy changes for desired outcomes. Four types of indicators are essential for our evaluation, including enabling environment, epidemiological, programme and costing indicators. Based on these indicators, a five-step evaluation procedure is then carried out. Following a qualitative overview of policy environments and programme management, we investigate the evidence for scale-up of HIV prevention services during the study period. An epidemiological model is then established to assess the population impacts of the prevention programmes, which leads to a cost-effectiveness analysis of the programmes. The last step of evaluation is to identify barriers and facilitators for successful implementation of programmes. The purpose of evaluation is to inform health policies and best practises for future programmes. Specific focuses were emphasised in drawing recommendations from this evaluation exercise. Recommendations to facilitate positive improvements in enabling supportive policy environment, programme coverage, implementation and management efficiencies and population health outcomes will be made. Practices that reduce HIV disease burden and mortality and social stigma and discrimination against the target population is also encouraged (Figure 2).

FIGURE 2. (a) Conceptual study evaluation framework; **(b)** Impact evaluation design (Model)

(a)



(b)

2.2 Review of policy and project documents

This review was to provide an overview and non-systematic synthesis of major legal and policy documents relating to HIV prevention and harm reduction interventions in Vietnam during the period 2003-2013. Relevant documents were identified in consultation with key responsible personnel at the VAAC, Health Strategy Policy Institute – MOH. Only documents that reflected fundamental changes in the HIV policy, legislative, and regulatory environment were reviewed. Additionally, literature

search of published and unpublished research reports was also conducted (see Appendix I for further details).

2.3 Qualitative data collection

The qualitative research component (including nine focus groups with 74 participants in three selected provinces of Bac Giang, Hanoi, and HCMC) aimed to identify barriers and facilitators of programme success with a focus on lesson learned in relation to programme design, delivery mechanisms, environmental determinants, including legal/regulatory frameworks, and the sustainability of the project based on the experiences and perspectives of programme providers and beneficiaries. During January 2013, nine focus groups with 74 participants in three Vietnamese provinces were conduced. Participants included stakeholders for project administration and service provision, including PAC officers, peer educators, as well as PWID and FSW. We employed a purposive sampling framework in order to facilitate the inclusion of focus group participants from a range of backgrounds and experiences. All nine focus groups interviews were recorded and transcribed to bed verbatim in Vietnamese with the transcripts checked against audio files for accuracy. Identifying information was removed from the transcripts and pseudonyms assigned to all participants. Vietnamese transcripts were then translated into English for analysis. A list of initial codes was generated from the data and guided by the literature and the interview guides. Transcripts were read and re-read in order to identify and code categories, concepts and properties and their interrelationships. The first step in this process involved open coding in order to identify and categorize phenomena present in the transcripts. This was followed by the process of exploring the relationships between codes and assigning new codes to describe the connections between them. Identification of final themes and interpretation of results were performed by consensusEthical approval for the project was provided by Human Research Ethics Committee of the University of New South Wales (HREC Ref: **# HC 12660**). Details of the selection of study provinces, participants, recruitment, data collection and analysis are presented in Appendix II.

2.4 Quantitative evaluation of programme effectiveness and cost-effectiveness

The quantitative component relied heavily on collation of existing data from available documents, reports, and data files. Some of the key data sources included results from sentinel surveillance sites, integrated biological and/or behavioural surveys conducted among PWID, FSW, and MSM in the 40 DFID/WB funded provinces, population size estimates of PWID and FSW provided by VAAC, and programme monitoring and costing data from harm reduction programmes. Extensive data triangulation consensus exercise was conducted to ensure data integrity. A mathematical epidemic model was developed to investigate the impact of HIV prevention programmes at a national level in Vietnam. This model was specifically designed to simulate the dynamic HIV epidemic in Vietnam

using best-practice HIV epidemic modelling techniques and incorporating realistic biological transmission processes, detailed infection progression, and sexual mixing patterns and drug injection behaviours. The model was constructed in a way that is flexible to adapt Vietnamese-specific characteristics and data and was amenable to analyses directly relevant to the current research questions including evaluation of effectiveness of past interventions, full health economic analyses, production of uncertainty bounds, and resource optimization. The cost-effectiveness of each programme was be assessed by comparing the spending of each programme, as well as estimated annual healthcare costs incurred/saved, with the estimated effectiveness of the programmes. An estimate of the incremental cost-effectiveness ratio (ICER) of each programme was calculated based on the counterfactual scenarios used in the modelling analyses. Two time horizons were used: 2003-2012 and 2003-lifetime. The timeline from 2000-2011 was investigated to estimate the number of HIV infections averted due to implementation of the prevention programmes in the past. The model was then used to project long-term health outcomes and healthcare costs incurred in the future (with discounting) in order to estimate the future benefits of the past programmes. The cost-effectiveness of the programmes was assessed by calculating the cost per DALY gained, over the period 2003-2012. Finally, a return on investment analysis considered the future healthcare costs saved that are attributable to the past financial investment in HIV/AIDS programmes.

3. Results

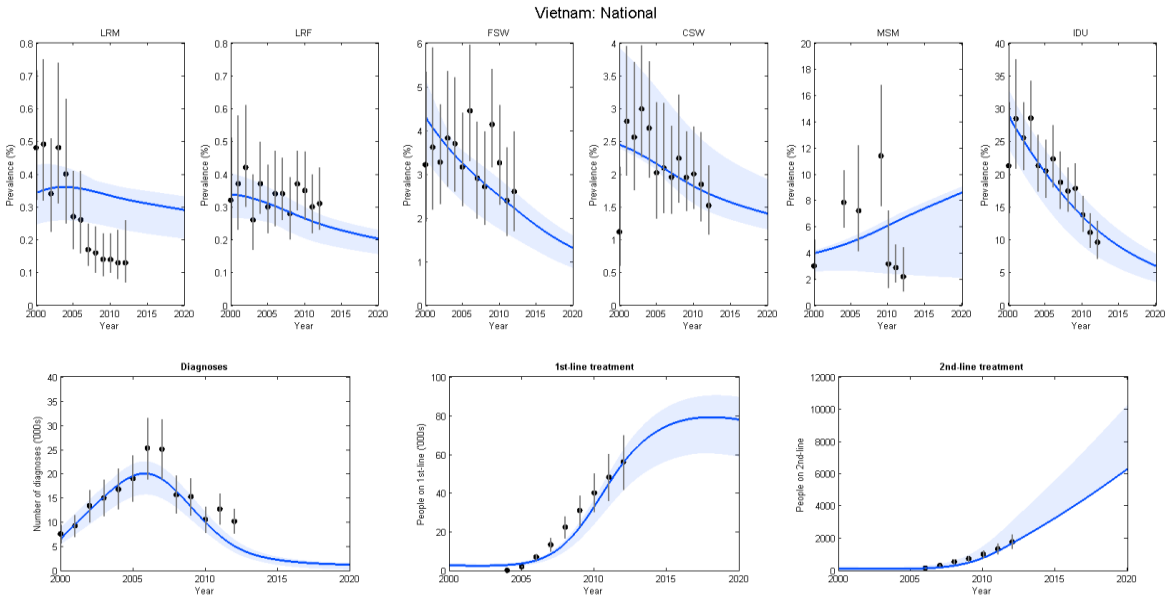
3.1 Key impacts of the DFID/WB programmes

3.1.1 HIV epidemic trends 2000-2012

HIV prevalence is declining in all populations except in MSM

Overall HIV prevalence in Vietnam decreased between 2000 and 2012 after reaching its peak in early 2000s (Figure 3). The HIV epidemic in Vietnam has remained concentrated in PWID, FSW, and MSM. HIV prevalence among PWID at the national level declined from 21.3% in 2003 to 9.6% in 2012 and HIV prevalence among FSW declined from 3.7% to 2.6% in the same period (Figure 3). HIV prevalence data in MSM in Vietnam are scarce as sentinel surveillance for MSM was only established in 2009. Based on limited data, the estimated HIV prevalence in MSM increased from 4.1% in 2003 to 6.5% in 2012 (Figure 3). The rising trend is consistent with other findings. The Vietnam's MOH reported that HIV prevalence among MSM increased markedly from 5.3% to 16.7% in HCMC and from 9.4% to 17.4% in Hanoi between 2006 and 2009 (6, 10). Additionally, a recent review indicated increasing HIV prevalence among MSM in urban Vietnam (11). HIV prevalence among the general Vietnamese population remained at ~0.3%. This trend is expected to be maintained until 2020, with HIV prevalence in FSW and PWID stabilizing at low (1.3% and 6.2% respectively) levels.

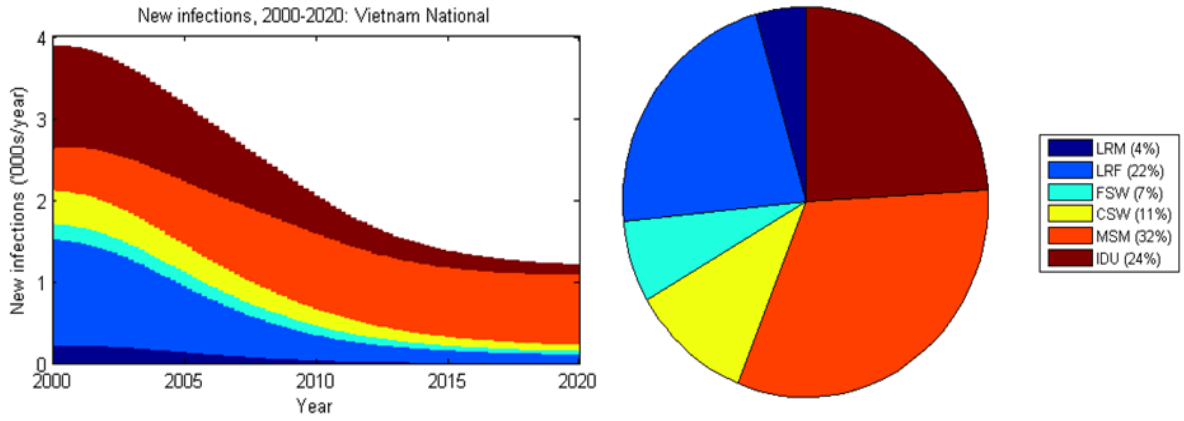
FIGURE 3. Expected trends in HIV prevalence, diagnoses and number of people on ART in 32 provinces supported by DFID/WB by 2020



LRM stands for low-risk males; LRF: low-risk females; FSW: female sex workers; CSWs: clients of sex workers; MSM: men who have sex with men; PWID: people who injecting drugs.

HIV epidemics attributable to heterosexual transmission and sharing of injection equipment are decreasing, whereas new infections attributable to homosexual transmission are increasing (Figure 4). In the early 2000s, sharing of injection equipment among PWID and heterosexual exposure were the leading routes of HIV transmission in Vietnam, but the mode of HIV transmission has shifted to sex between men, which is rapidly increasing (Figure 4). By 2020, up to two-thirds of new infections could be attributable to sex between men. An estimated 50% of new infections are now due to sex between men.

FIGURE 4. The number of new HIV infections over the period 2000-2020



Number of people eligible for, and on, ART expected to increase

In the 32 project provinces, a total of 195,926 individuals were diagnosed with HIV and 64,329 died of AIDS during 2000-2012. In addition, 55,939 PLHIV were on first-line ART in 2012 and 1,799 were on second-line treatment. Current coverage of ART is relatively low. However, even continuing with the current relative rates of access to treatment for people who are diagnosed and access care would lead to a large increase in the numbers of people on first- and second-line ART. Around 116,569 people will be on ART by 2020 according to current rates of uptake with available funding sources. An additional 20,355 will be diagnosed and eligible for ART (CD4 count less than 350 cells per μL) by 2020.

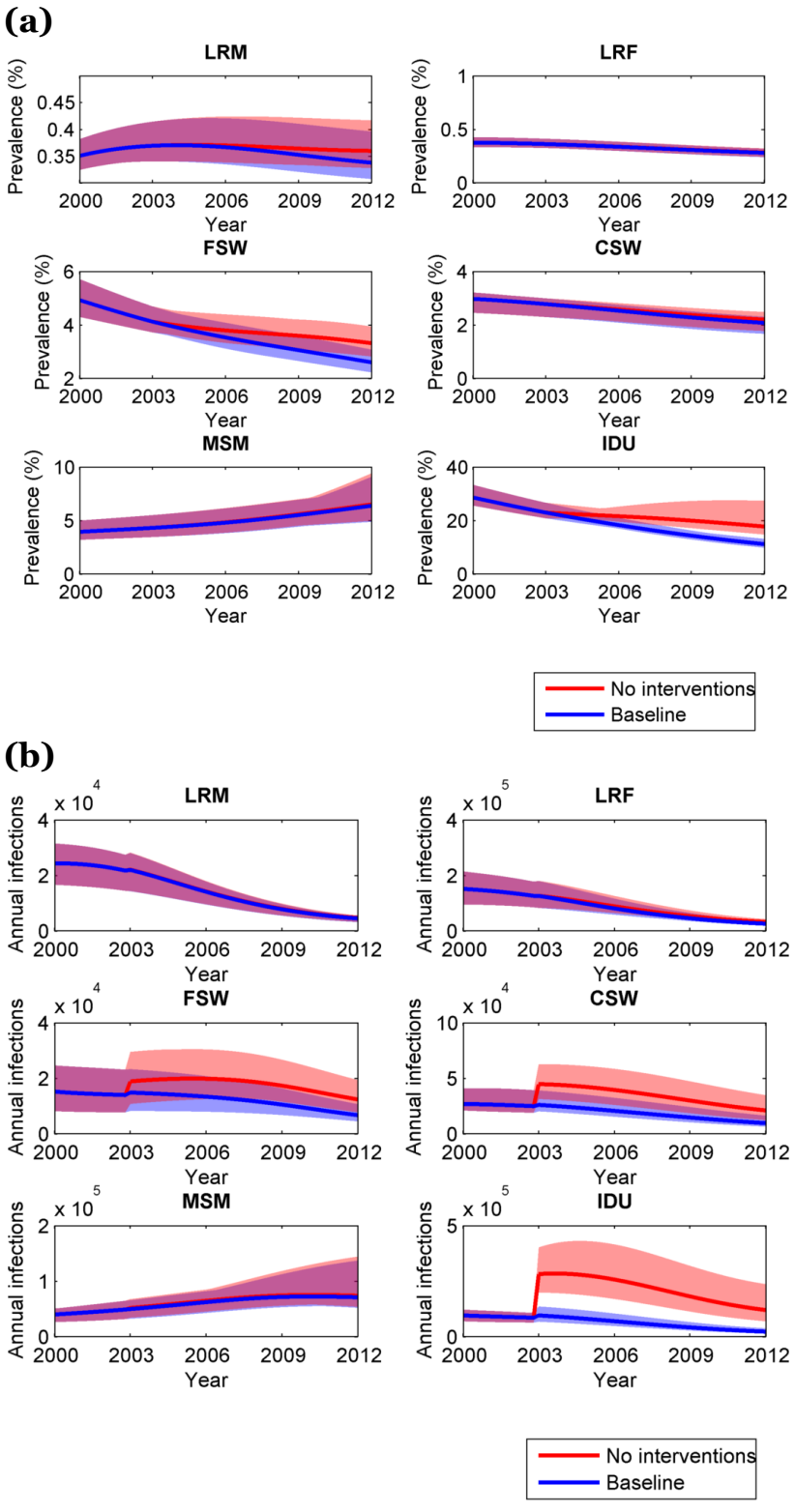
3.1.2 Impacts of DFID/WB programmes on the HIV epidemics

DFID/WB programmes have had significant impacts on containing HIV spread in Vietnam

Our model indicates that if DFID/WB programmes had not be implemented, significant increases in HIV incidence and prevalence would likely have been observed. The greatest increase would have been among PWID and FSW with elevated prevalences of 18.1% and 3.4% in 2012, respectively (Figure 5). HIV prevalence among MSM did not change substantially as DFID/WB programmes were

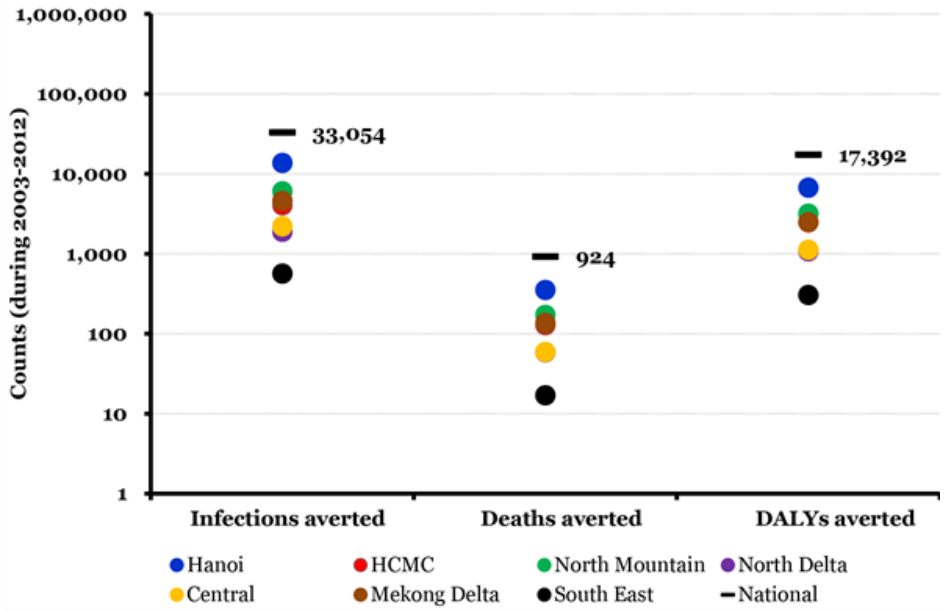
not implemented among MSM. The changes in HIV prevalence among low-risk populations and male clients were small as the secondary impacts of the interventions on these large populations were limited.

FIGURE 5. Model-based comparison of HIV epidemics in various populations with and without DFID/WB programmes



Overall, during the period 2003-2012, the DFID/WB projects have averted an estimated 33,054 (95% CI, 18,345, 48,269) HIV infections, 924 (548, 1,161) HIV-related deaths and 17,392 (10,505, 24,556) DALYs (Figure 6, Table 4). The majority of these benefits were due to NSPs among PWID. NSPs alone have averted 30,957 (95% CI, 17,471, 47,137) infections, 872 (524, 1,136) HIV-related deaths and 16,395 (10,054, 24,018) DALYs. Condom distribution programmes among FSW have averted 1,585 (95% CI, 500, 1,585) infections, 42 (12, 42) HIV-related deaths and 788 (249, 798) DALYs (Table 4).

FIGURE 6. Impacts of DFID/WB programmes over 2003-2012



3.1.3 Impacts of DFID/WB programmes on policy, capacity and ways of working

DFID/WB programme and the Vietnamese policy framework

Over the decade of DFID/WB supported HIV/AIDS programmes (2003-2013), Vietnam has seen a shift in HIV prevention policies and legislations from repressive and punitive control measures to a more pragmatic approach to HIV prevention and control, in line with internationally recognized legislative and policy reform. The promulgation of the National HIV Prevention and Control Strategy 2004, the HIV Law 2006, and the amendment of the Drug Law 2008 are significant benchmarks of this evolution. These strategies and legislative changes have provided a strong legal foundation for the implementation of harm reduction interventions: needle, syringe and condom distribution, peer education, and MMT that were previously prohibited in Vietnam. As a result, there has been a rapid expansion of harm reduction interventions throughout the country. By the end of 2011, provision of sterile needles and syringes had been implemented in 60 provinces and cities, and condom distribution was being conducted in all 63 provinces and cities. Additionally, following the success of the pilot MMT programme in HCMC and Hai Phong in 2009, the government decided to expand this initiative to other provinces, with the goal of providing MMT to 80,000 drug users by 2015**.** By the end of 2011, there were 41 centres in 11 provinces and cities providing MMT for 13,838 PWID (4).

TABLE 1. Evolution of HIV/harm reduction legislation and policies - 2003 – 2013

	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12
The directive 02/2003/CT-TTg										
National Strategy on HIV/AIDS										
Directive No. 54 of the Communist Party										
HIV Law										
The decree 108 on implementing HIV Law										
Amendment of Drug Law										
MMT piloted										
Amendment of Panel Code on drug user										
Decision to expand MMT										
End of detaining sex workers										

DFID/WB programmes were the first to implement harm reduction interventions on a large scale in Vietnam before fundamental policy changes occurred. Harm reduction interventions implemented under the DFID/WB programmes appeared to be well-aligned with intensive advocacy activities in the country over the programme period. Although it is difficult to determine to what extent the DFID/WB programmes have contributed to the policy evolvement, it is reasonable to expect that to a minimum extent the DFID/WB programmes would have provided the first ever evidence on the feasibility and impacts of harm reduction interventions to support advocacy for the policy change.

DFID/WB programmes reduced stigma and discrimination

DFID/WB programmes have helped to reduce stigma and discrimination by improving advocacy for harm reduction interventions and challenging perceptions of drug use and sex work as 'social evils'. Focus group data also suggest that the DFID/WB programmes established credibility with key stakeholders at all levels. Collaboration with local communities and authorities was essential to successful implementation.

> *In the future this project will be remembered. The project brought in international innovations to harm reduction. Before the DFID/WB project, negative perspectives of the target groups were popular in the community - they were thought of as social evils. The project helped in policy advocacy which could not be implemented with the limited funding from government alone... The projects changed the thoughts of the community* (Service Provider, HCMC).

DFID/WB programmes increased organizational capacity

DFID/WB programmes significantly increased organizational capacity and resulted in a more skilled and professional prevention workforce. Health workers reported acquiring new skills through project training activities in planning, project management and coordination, report writing and monitoring and evaluation.

> *The first is that knowledge of staff has improved. The second is that their capacities and skills were also enhanced* (Service Provider, Bac Giang).

> *I appreciate that the project has helped build capacity for staff. I myself have benefited much from this project. I have grown a lot since working on this project. I and other project staff have learned about planning, reporting and project coordination* (Service Provider, HCMC).

> *It is the only project to date that has provided training for the Masters programme. In the surveillance section in 2007, there were only 15 staff from HIV/AIDS prevention and control sector with a Masters qualification... I have heard that when returning those staff work very well and contribute to capacity building in their provinces. The capacity of provincial staff has been much improved. That makes our system sustainable. That's a good point* (VAAC representative).

Challenges

The translation of these policies and legislations into practice has been facing a number of challenges: (1) inconsistencies between legal documents; (2) reluctance and scepticism of the government authorities and law enforcement sectors; (3) continued reliance on compulsory incarceration of drug users; and (4) shortage of skilled human resources (Appendix I, Section 3.2).

3.2 How has the money been spent?

DFID and WB play a major role in HIV prevention in Vietnam

DFID/WB has significantly contribute to HIV prevention programmes in Vietnam. DFID/WB committed to the implementation of HIV prevention programmes in Vietnam in 2003 and the actual implmentation of the programme took place in 2005. The last year of funding covered by the evaluation was in 2012 (Table 2). A total of US $89.5 million was invested by DFID/WB in Vietnam's HIV/AIDS response during 2005-2012, corresponding to an average annual investment of US $11.2 million (Table 2, Figure 7). This investment accounted for 18% of the total HIV funding from international donors, and 13% of total HIV spending in Vietnam during this period. In particular, investments on health institutions and central adminstration at the national level acounted for 36.2% of total investment. The spending on each geographical region varied between 5-15%. The two major cities Hanoi and HCMC were allocated 3.6% and 5.7% of the total funding.

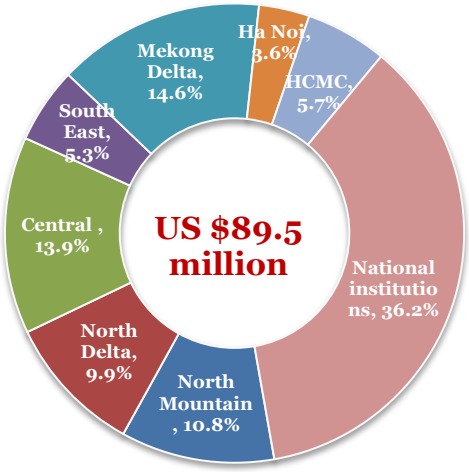


FIGURE 7. DFID/WB spending on AIDS stratified by regions in Vietnam, 2005-2010

Breakdown of DFID/WB investment funds

Out of the total fund of US $89.5 million during 2005-2012, the majority (55.7%) of all HIV/AIDS spending has been on indirect and supporting costs, whereas direct spending on HIV prevention accounted for 40.9% (Figure 8). Among the indirect costs, spending on programme management and administration accounted for 49.7% (27.7% of the total spending), followed by monitoring and evaluation (21.6%), capacity building (17.5%) and programme facility maintenance (10.2%) (Figure 8). A total of US $36.6 million was spent on HIV prevention programmes. These programmes mostly focused on NSPs for PWID (41.1%) and condom distribution programmes for FSW and their clients (21.5%). A substantial amount was spent on mass information, education and behavioural change communication (BCC) for all populations (17.4%) and prevention and treatment of STI (7.7%). A relatively small amount was spent on condom and other prevention programmes for groups at lower risk (4.5%), HIV voluntary counseling and testing (2.1%), programmes for MSM (0.9%) and PMTCT (0.4%). Expenditure on HIV care and treatment was only 2.5% of the total budget and slightly decreased between 2005 and 2012.

The average cost for distributing one sterile needle-syringe (including the base cost of the new NS) was US $0.16, whereas the unit cost for distributing one condom (to an FSW) was US $0.10. However, relatively higher costs were incurred during 2005/06 in the early phase of the programmes due to intital one-off spending and set-up costs (Figure 9).

TABLE 2. Estimated HIV spending in 32 DFID/WB supported provinces, 2005-2012

	Cost (US $)							
Funding allocations	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Total	**1,832,064**	**12,165,849**	**13,932,889**	**13,750,431**	**10,790,355**	**11,639,927**	**13,058,589**	**12,334,054**
Programmatic spending								
Direct costs for prevention	934,189	4,127,448	5,541,745	5,979,996	4,336,304	5,861,920	5,832,436	3,986,319
Direct costs for care and treatment	-	430,323	344,966	512,691	705,991	226,185	57,623	-
Indirect costs	867,511	7,556,388	7,622,013	7,109,211	5,715,970	5,537,112	7,104,916	8,313,428
Unclassified/ not disaggregated costs	30,364	51,690	424,165	148,533	32,090	14,710	63,614	34,307
HIV prevention costs								
Mass information, education and communication	204,254	1,657,833	1,839,559	1,183,045	654,804	628,621	144,114	48,224
Needle and syringes programme for PWID	216,210	829,177	1,616,979	2,323,506	1,938,900	2,822,661	2,859,388	2,432,512
Methadone maintenance therapy programme for PWID	-	-	-	-	-	-	147,846	112,462
100% condom promotion								
For FSW and their clients	317,005	657,751	954,745	1,208,064	687,763	1,425,728	1,692,953	933,075
For PWID	-	69,599	97,568	103,593	201,385	268,144	265,355	183,086
For other low-risk groups	-	8,995	92,580	56,532	67,876	18,352	26,693	88,670
Programmes for MSM	-	4,755	8,661	-	-	55,830	95,121	177,276
HIV voluntary counselling and testing	-	147,128	75,443	76,402	88,241	215,760	149,088	-
Sexually transmitted infection programme	147,193	487,198	507,229	616,641	253,352	366,027	428,436	-
Preventing mother-to-child transmission of HIV	-	6,087	90,835	12,565	18,271	11,764	9,685	-
Blood safety	1,741	-	5,647	-	-	-	-	-
Prevention for low-risk populations	47,786	236,077	225,122	363,419	368,626	4,183	9,850	8,476
Unclassified/not disaggregated	-	22,848	27,377	36,229	57,086	44,850	3,907	2,538
HIV care and treatment costs	-	430,323	344,966	512,691	705,991	226,185	57,623	-
Indirect costs								
Programme management-administration strengthening	799,452	3,832,770	3,084,677	3,356,145	2,110,570	2,059,686	4,189,050	5,318,336
Capacity building	42,368	1,061,315	1,426,665	1,421,557	1,351,955	1,558,342	1,056,961	778,251
Enabling environment	24,190	261,401	82,891	120,931	33,485	2,178	-	40,007
Monitoring and evaluation	-	1,549,382	1,201,295	1,538,741	1,328,927	1,579,181	1,594,836	1,947,695
Maintenance	1,501	851,520	1,826,485	671,837	891,033	337,725	264,069	229,139
Unclassified/not disaggregated costs	30,364	51,690	424,165	148,533	32,090	14,710	63,614	34,307

FIGURE 8. Budget allocation in 32 DFID/WB supported provinces, 2005-2012

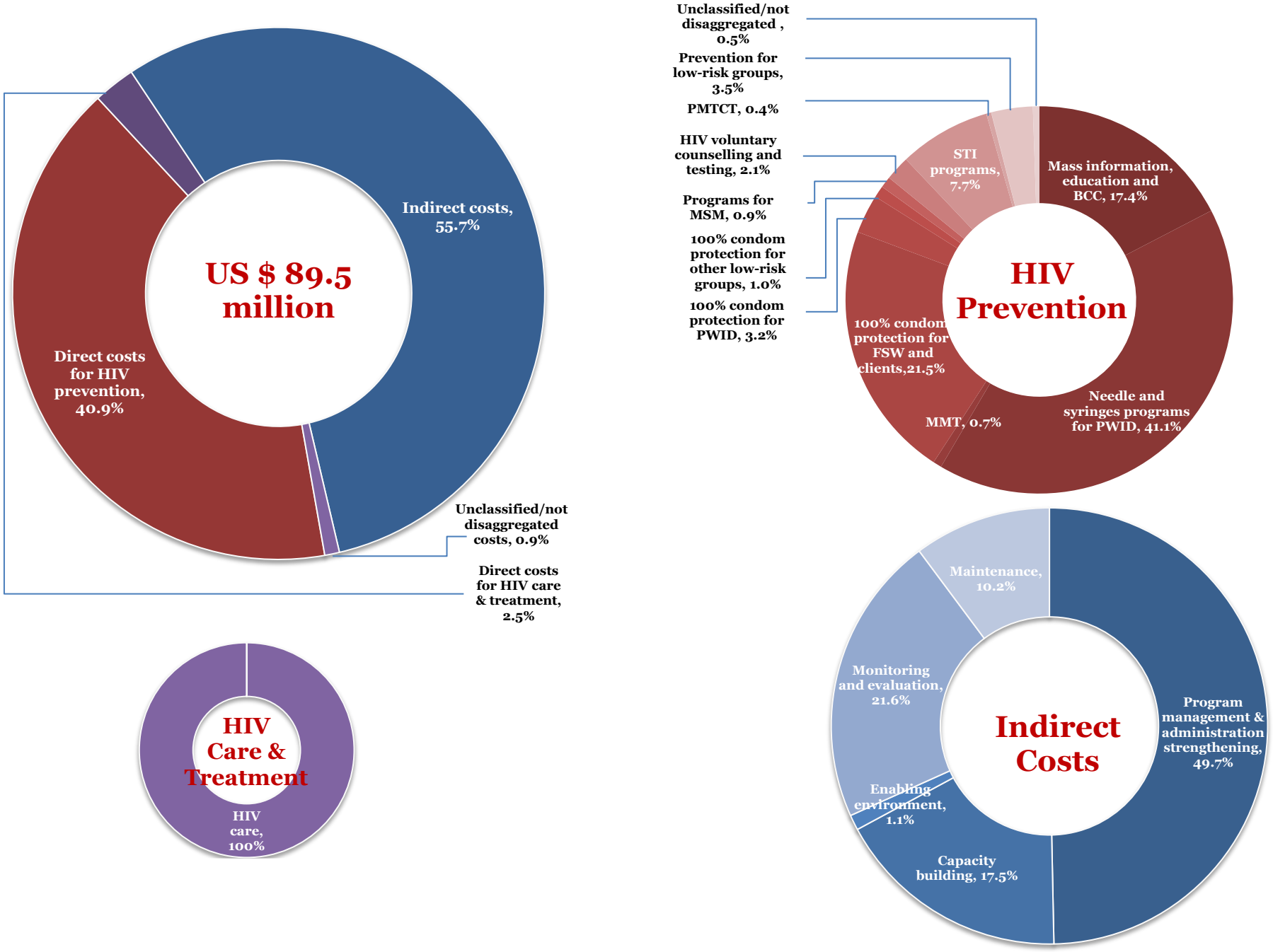
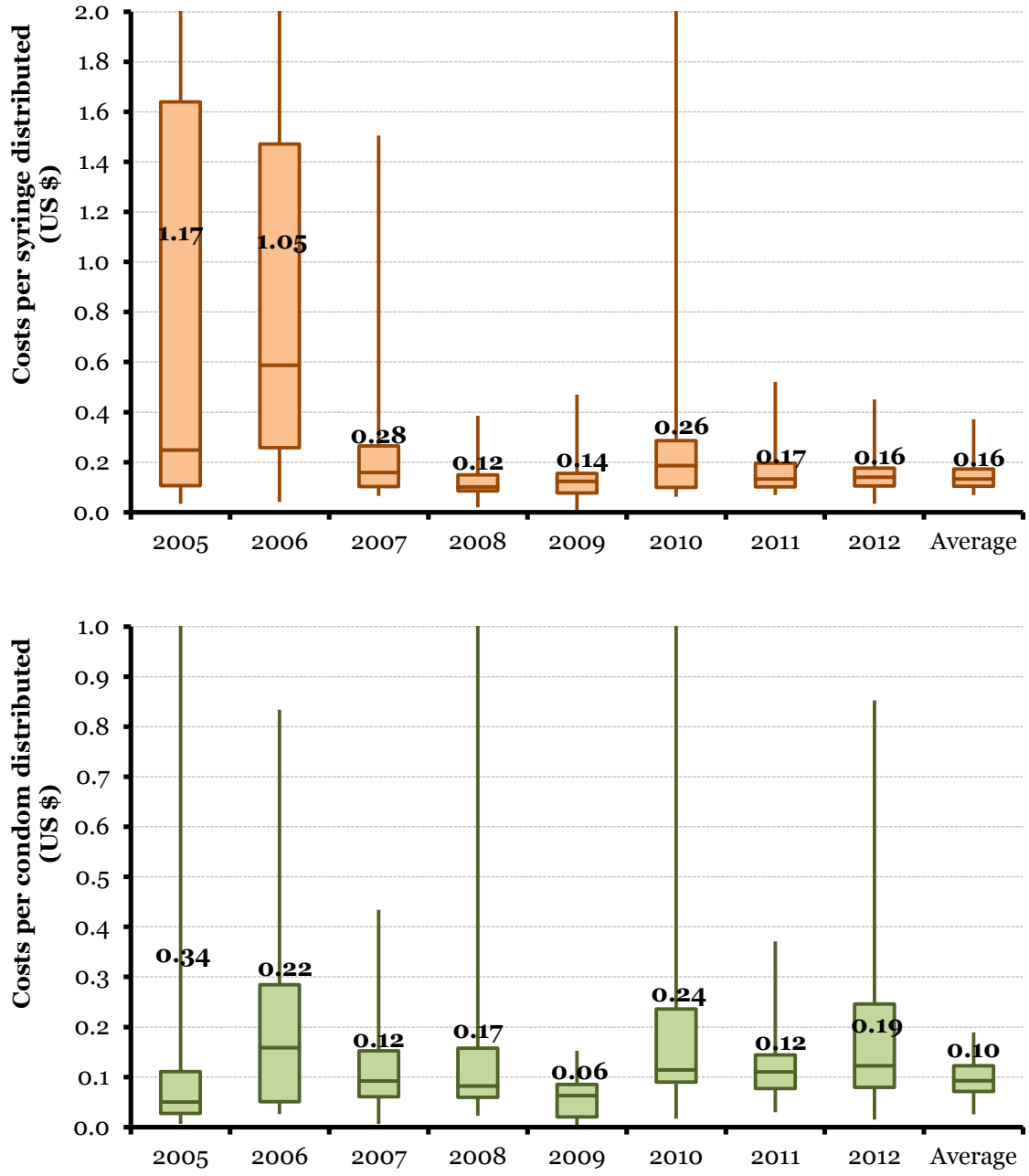


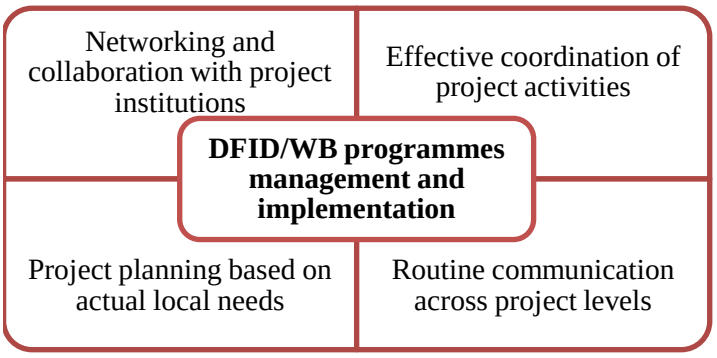
FIGURE 9. Costs per needle/syringe and condom distributed for PWID and FSW, 2005-2012



3.3 Have DFID/WB projects been appropriately designed and applied good procedures and practices?

Prior-to the implementation of DFID/WB prevention activities for PWID and FSW, the VAAC, DFID/WB, and other sectors of government, including the Ministry of Labour, War Invalids and Social Affairs (MOLISA) and Ministry of Finance jointly developed an intervention strategy design and project management and implementation structure to ensure feasibility and smooth cooperation from all involved parties and sectors over the period 2003-2013.

FIGURE 10. DFID/WB programmes management.



The DFID/WB programme management structure is illustrated in Figure 10 and consists of four key components. Overall, the implementation of the DFID/WB programmes involved three levels of stakeholders: (1) central, such as project steering committee, CPMU, and national institutions; (2) provincial, such as PAC and PPMU; (3) and district level stakeholders, such as district working teams, peer educators, and collaborators. For most project locations, this management structure was reported to have been adaptable to local contexts and no adjustment was required during a decade of programmes. Notably, DFID has successfully integrated these programmes under the existing framework of the healthcare system in Vietnam. This substantially strengthens the healthcare system and builds the capacity of existing personnel. However, as the DFID programmes did not permit extra full-time employment within the framework of the Vietnamese governmental structure (12), this led to overloading and reduction in interest among some healthcare employees. In contrast, The WB projects have a separate and well-operating management unit outside the healthcare system. However, as the senior administration of the unit was made up mostly by retired health officials, the transmission of experience and new personnel capacity building remain an outstanding issue.

The first major component of DFID/WB programme management component was the establishment of networks and collaborations with key stakeholders and institutions. At the central level, the DFID/WB programmes were operated and managed by the Vietnamese Ministry of Health through VAAC, which led the national effort to roll-out HIV prevention for PWID and FSW in 40 of the 63 provinces in Vietnam. In addition, DFID/WB also worked with other government departments, such as the MOLISA, the Ministry of Public Security, the Ministry of Finance, the Ministry of Planning and Investment and the Ministry of Foreign Affairs, in order to advocate for the creation of a

favourable legal and policy environment for harm reduction programmes for populations most at-risk. DFID/WB further received substantial technical support from the WHO, UNAIDS, and national research institutions (the National Institute of Dermatology and Venereology, the National Institute of Hygiene and Epidemiology (NIHE), and the Pasteur Institute). At the local level, project partnerships were established with PACs and district preventive health centres. While the projects were well-managed by the CPMUs/PPMUs, the programme management and administration costs amounted to US$24.8m, accounting for over one-quarter of the total DFID/WB investment during 2005-2012. The financial management of this amount was independent of the government-run PACs. Each PPMU was allowed to employ 9-10 full-time staff members who received relatively high salaries (an average income of US $450 per month in 2011) in comparison with the corresponding level in government bodies (of ~US $150 per month) (13-16). These employees appeared to be well-trained, experienced and capable of assisting the provinces to develop and implement specific HIV prevention plans and projects (17).

The second major component of DFID/WB programme management relates to the effective coordination of project activities. DFID/WB project activities followed the guidelines of the National Strategy on HIV/AIDS Prevention. Programme coordination meetings were conducted regularly by both central and provincial project steering committees chaired by the Vice Minister of MOH and Provincial People Committee's leader, respectively. These key persons executed the DFID/WB projects at central and provincial levels, respectively and were able to coordinate activities of relevant sectors of central or local government (12, 15, 17). This ensured the timely and swift implementation of the programmes activities. Despite this coordination, discontinuities in the dispersal of funding from central level to provincial to district levels were identified to be problematic. Participants in several focus groups provided examples of how this caused interruptions to project activities, including disruptions to funding for project peer educators, requiring them to stop work for several months, only to start again when funding was re-established. Reductions in the numbers of needle-syringes provided to PWID and condoms provided to FSW were identified as further consequences of interruptions to project funding. It was also suggested by some focus group participants that, relative to other projects, the DFID/WB funded programmes failed to provide sufficient incentives to motivate staff on the ground and that this may have impeded implementation in some contexts. Coordination was also used to alert project leaders to overlaps in investment or to maximize the use of commodities among projects. For example, it was reported that in HCMC a mechanism was developed to combine all sources of international funding for the benefits of all NSPs participants across the city. Pooling resources in this way was reported to enable providers to better cope with the constraints and fluctuations of international funding. In this way HCMC project staff believed that they were better able to respond to the needs of vulnerable communities

The third major component of DFID/WB programme management involved the annual project planning based on actual local needs. This was identified by several focus group participants as one of the project strengths. Although overseen by VAAC at the central level, project provinces were allowed to design their own approach and activities for harm reduction programmes, enhancing feasibility by enabling them to be responsive to local needs. Local authorities reported this as a preferable and desirable way to conduct project design and planning:

> *The overall plan was designed centrally then sent to us. It was here that we could develop our detailed plan. We were active in both the technical activities and funding the implementation of the activities* (Service Provider, Bac Giang).

Most WB-supported provinces conducted baseline and follow-up IBBS among targeted populations, based on which, provincial officials developed implementation plans and provided clear instructions to local offices. However, behavioural surveillance surveys were not conducted as part of DFID projects.

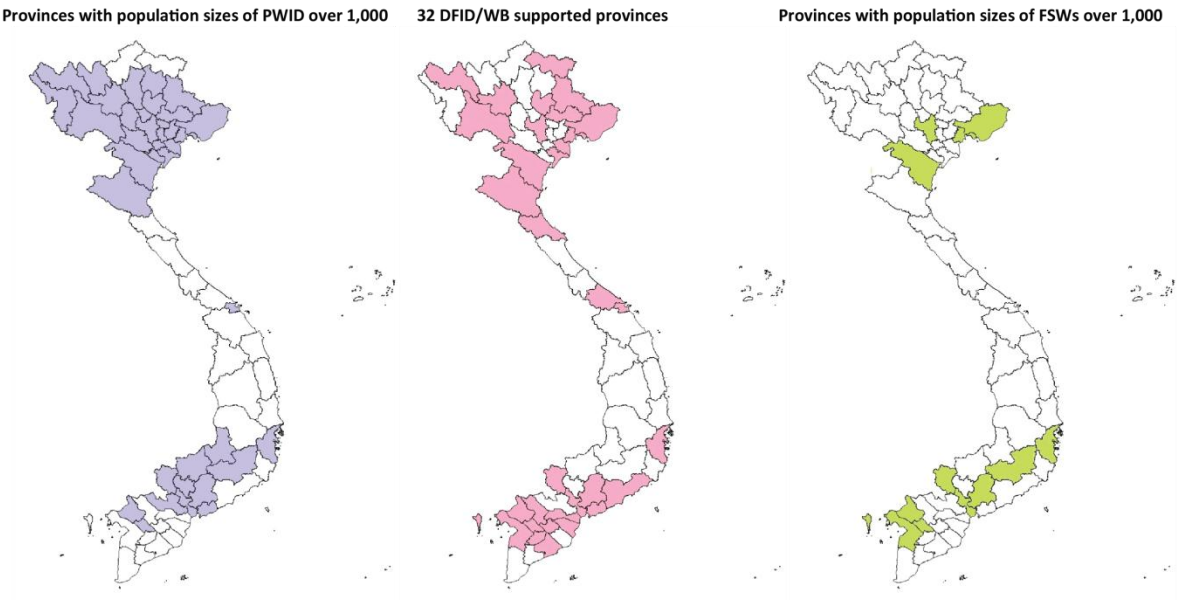
The last major component of DFID/WB programme management involved regular routine communication across project levels through regular monitoring and evaluation. Routine M&E data on HIV prevention activities for PWID and FSW were collected and reported monthly in all project areas. For example, nine key indicators were routinely collected for harm reduction programmes for PWID included: (1) number of sterile needle-syringes distributed to PWID, (2) number of PWID receiving sterile needles and syringes, (3) number of times sterile needle-syringes were distributed to PWID annually, (4) number of condoms distributed to PWID, (5) number of PWID receiving condoms, (6) number of PWID having STI examination after being referred, (7) number of PWID attending HIV Voluntary Counselling and Testing after being referred, (8) number of PWID receiving direct behavioural change communication material, (9) number of rounds of PWID approaching face-to-face communication. These indicators provided comprehensive information on the performance and progress of each of the project activities at all levels. Moreover, CPMU and regional research institutions (such as NIHE and the Pasteur Institute) regularly supervised community-based prevention activities in 32 project provinces.

3.4 How effective were DFID/WB HIV prevention programmes?

3.4.1 Design of DFID/WB programmes

The groups at highest risk of HIV infection in Vietnam are PWID, FSW and MSM. Overall, and within available resources, the DFID/WB programmes have been appropriately designed to cover the prevention needs of most PWID and FSW. During 2005-2012 the DFID/WB programmes were implemented in 32 Vietnamese provinces, covering all five geographical regions and the two major Vietnamese cities, Hanoi and HCMC. The 32 project provinces contain an estimated 167,541 PWID and 51,844 FSW, accounting for over 80% of PWID and FSW in Vietnam (Figure 11). However, the selection of broad target groups has a number of shortcomings: (1) HIV-positive PWID and FSW were not identified as priority target groups for HIV prevention efforts; (2) Interventions for certain high-risk sub-populations of FSW were unbalanced. Venue-based sex workers, who arguably could generally afford to purchase condoms out-of-pocket, were the recipients of extensive outreach and eligible for free condom distribution programmes in most of the project provinces during the implementation period. In contrast street-based sex workers, who typically engaged in higher volumes of sex work and are more likely to inject drugs and who often have relatively lower ability to purchase condoms, were restricted by some service providers in their access to free condom distribution programmes; (3) DFID/WB programmes did not target the high-risk population of MSM (sentinel surveillance of HIV among MSM was only implemented in 2009 but revealed high and increasing HIV burdens).

FIGURE 11. Map of provinces with sizeable populations of PWID and FSW and provinces supported by DFID/WB, 2003-2012



From the perspective of service providers who participated in the focus groups, the design and planning of the project appears to have been systematic and efficient. Staff training provided by the project was perceived as having facilitated effective programme design and service providers reported that project-funded training had helped to implement provincial HIV prevention interventions. Service providers also reported that training offered by the project had increased organizational capacity and resulted in a more skilled and professional prevention workforce. They reported acquiring new skills through project training activities in planning, project management and coordination, report writing and monitoring and evaluation. It was reported that in HCMC a mechanism had been developed to utilize the resources of all sources of international funding for the benefits of all programme participants across the city. Pooling resources in this way was reported to enable providers to better cope with the constraints and fluctuations of international funding (Appendix II, Section 3.4).

> *In the past, only the DFID/WB project provided condoms for our city, but recently CDC also provides condoms. We received condoms from all projects and put them in our inventory, and then we divided them for the 20 districts. Of those, only two districts are covered by the national HIV/AIDS programme. Sometimes projects have delays with supplies and in providing commodities and we have had to utilize the resources of Government. When the project's products finally come we would use them to compensate the Government* (Service Provider, HCMC).

This sharing of resources was also a process health service providers in Bac Giang described as part of their planning for provincial level activities.

> *Regarding planning, each project has its own individual plan. When developing the specific plan for each project, we need to carefully work with other institutes and departments because everything relates to the overall plan of the province. For example, the Global Fund project and FHI project are both on treatment, so we have to avoid the overlap between OPCs and who will acquire the medication* (Service Provider, Bac Giang).

3.4.2 Coverage of DFID/WB programmes

Needle-syringe coverage among PWID and condom distribution coverage among FSW were mid-to-high. NSP coverage among PWID increased from 22.5% in 2006 to 70.4% in 2011 then declined slightly to 59% in 2012. Condom coverage among FSW increased from 58.2% in 2006 to 89.2% in 2012.

Needle-syringe distribution varied substantially across the provinces. The number of sterile needle-syringes each PWID received annually varied from 16 in Son La to 669 in Ha Tinh. In the 32 DFID/WB provinces, each PWID received an average of 152 sterile needle-syringes per year from

NSPs funded by DFID/WB. Guidance from UNAIDS/UNODC/WHO on target setting for prevention interventions for PWID suggests that a threshold of 200 needle-syringes per PWID per year is considered high coverage (18). Only 12 out of 32 provinces reached the WHO target suggesting that NSP coverage was insufficient. However, of the 32 DFID/WB project provinces, 26 demonstrated a declining trend in HIV prevalence and prevalence in a further six provinces stabilized. Importantly, none of the provinces shifted to a higher prevalence category during the life of the project (Figure 12). At the national level, the average annual per-capita investment on PWID was US $25.40 (Table 3).

Coverage of the condom distribution programme among FSW was also variable. The average number of free condoms per annum received by FSW varied from 37 in Lai Chau to 951 Nam Dinh. On average FSW received 326 free condoms each year under the condom distribution programmes funded by DFID/WB, and the annual per-capita investment on FSW was US $34.5 (Table 3). According to the current standard for condom used by the WB harm reduction programmes (240 condoms per year per FSW) (19), 21/32 project provinces had achieved this standard. Out of the 32 provinces, 15 demonstrated a declining trend in HIV prevalence, eight stabilized and nine increased during 2004-2012 (Figure 12).

Project delivery and implementation was framed primarily around the needs of PWID and FSW. Opportunities to integrate project-funded interventions within the national health system are constrained by available financial resources. There was general consensus in the service provider focus groups that the breadth of activities funded by the DFID/WB project would be impossible to sustain without ongoing donor funding. It was reported that the national HIV programme could only cover a limited number of HIV prevention activities for the most accessible PWID and FSW within each province. However, we were informed that mainstream generic HIV and drug education information and awareness raising campaigns funded through the national HIV programme now incorporates messages that were developed for DFID/WB projects.

3.4.3 Effectiveness of needle-syringe and condom distribution programmes

Ecological analysis on the provincial level indicated that a total of 26,822 and 2,122 HIV infections were likely prevented due to needle-syringe and condom distribution programmes, respectively. The median cost to avert one infection among PWID was US $1,255 and US $5,712 for FSW (Table 3). DFID/WB harm reduction programmes have lead to reductions in risk behaviour among PWID but not FSW. The total investment in NSPs is significantly associated with the percentage of self-reported receptive syringe sharing among PWID (p = 0.035) and the estimated number of new infections averted during 2004-2012 (p = 0.002) (Figure 13). The total investment in condom distribution programmes was not associated with self-reported condom usage among FSW and their male clients at last sex episode nor the estimated number of new infections averted during 2004-2012 (Figure 13).

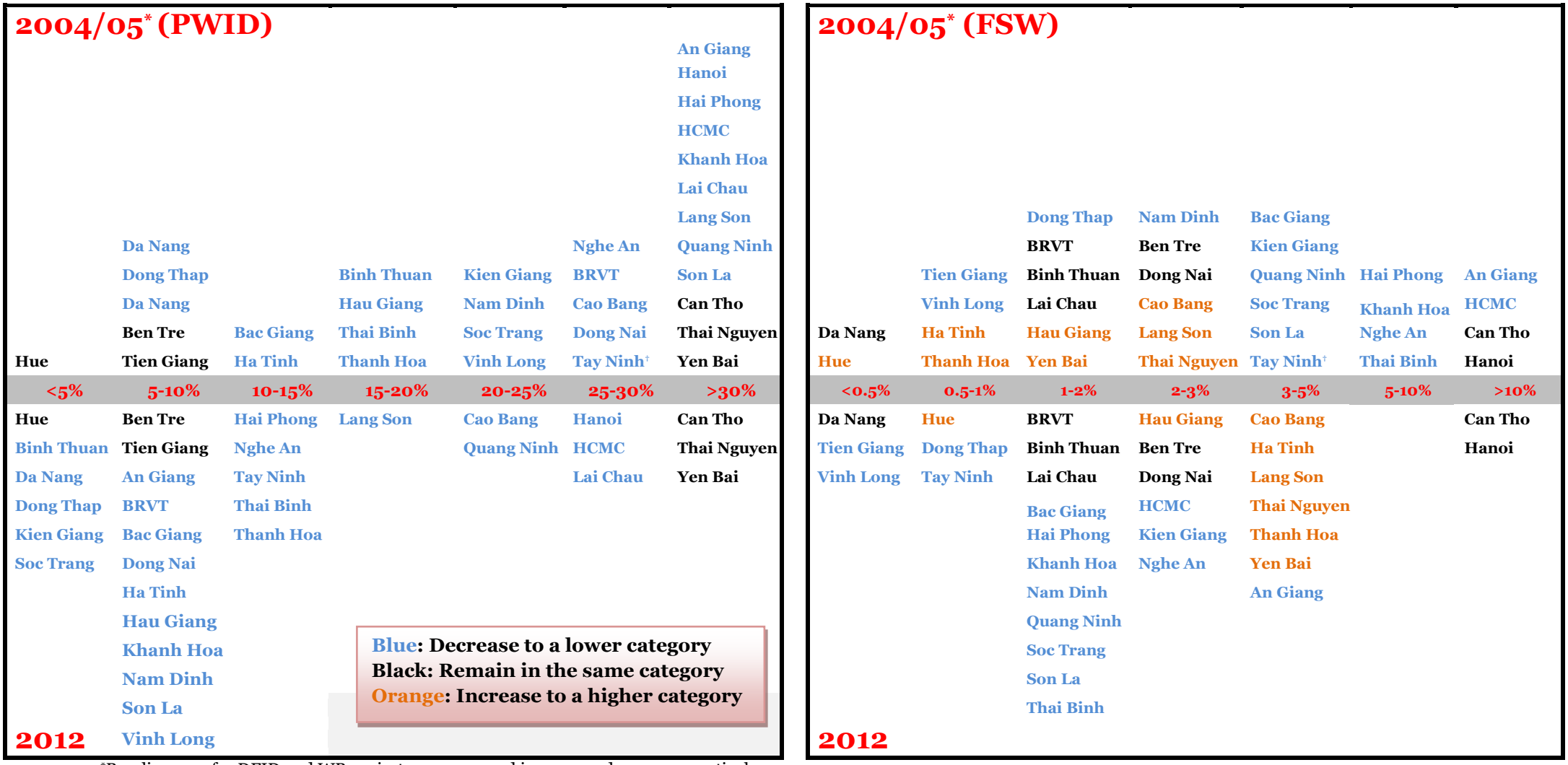
TABLE 3. Summary of effectiveness and cost-effectiveness of needle-syringe and condom distribution programmes for PWID and FSW, 2005-2012

	Population size		Investment ($)		Investment per person-year ($)		Commodity received per person-year		Estimated new infections averted		Cost to avert one infection ($)	
Settings	**PWID**	**FSW**	**PWID**	**FSW**	**PWID**	**FSW**	**PWID**	**FSW**	**PWID**	**FSW**	**PWID**	**FSW**
North Delta												
Hai Phong	8,461	2,000	1,436,320	222,939	21.2	13.9	184	185	4,146	92	346	2,417
Nam Dinh	2,854	499	986,469	221,839	43.2	55.5	385	951	479	4	2,057	49,324
Quang Ninh	4,873	2,336	639,773	229,089	18.8	14	151	142	1,983	47	323	4,891
Thai Binh	6,593	554	430,745	95,781	9.3	24.6	93	316	435	23	990	4,206
North Mountain												
Bac Giang	2,256	552	639, 199	33,680	40.5	9.7	338	327	16	13	40,476	2,520
Cao Bang	1,762	240	369,683	8,816	30	5	149	87	69	-4	5,381	–
Lai Chau	5 580	200	432,174	1,211	11.1	1.9	65	37	803	1	538	959
Lang Son	2,851	200	458,974	89,570	23	60.8	184	674	436	-8	1,052	–
Son La	21,754	732	382,472	65,599	2.5	12.2	16	100	7,244	23	53	2,746
Thai Nguyen	8,155	600	503,997	87,555	8.8	23.1	109	135	-448	-6	–	–
Yen Bai	4,166	300	316,765	69,143	10.9	36.5	131	511	158	-19	2,001	–
Central												
Binh Thuan	706	620	139,878	223,309	24.8	57.1	166	319	111	-1	1,255	–
Da Nang	1,197	791	124,162	156,715	14.8	31.4	121	326	72	2	1,729	62,792
Ha Tinh	913	805	357,058	271,275	55.9	45.8	669	405	11	-24	32,608	--
Khanh Hoa	1,717	2,208	489,429	500,005	35.6	26.9	249	254	527	79	929	5,981
Nghe An	7,922	934	770,536	259,825	13.9	37.8	105	480	1,228	37	628	6,612
Thanh Hoa	6,372	1,000	1,504,405	284,476	29.5	33.8	286	522	376	-34	4,002	–
Hue	272	810	93,036	243,466	42.8	40.8	212	590	-5	-6	–	–
South East												
BRVT	2,582	880	263,029	118,695	12.7	19.4	56	159	522	-6	504	–
Dong Nai	2,127	1,361	680,025	380,487	40	35.1	407	666	417	-3	1,632	–
Tay Ninh	1,038	2,000	186,913	242,297	25.7	17.4	129	181	0	82	--	2,968
Mekong Delta												
An Giang	1,379	1,600	249,641	594,075	22.6	45.3	100	335	431	166	579	3,484
Ben Tre	430	955	88,272	311,111	29.3	45.4	285	349	7	0	12,830	-
Can Tho	2,263	1,416	397,969	216,101	25.1	29.8	226	203	310	31	1,284	6,770
Dong Thap	599	800	164,890	220,188	34.4	38.4	246	430	13	3	13,119	67,154
Hau Giang	374	569	129,588	148,081	49.5	36.3	152	248	34	-5	3,850	--
Kien Giang	570	1,000	135,950	330,898	29.8	40.4	290	214	128	10	1,061	32,294
Soc Trang	708	945	170,349	293,921	30.1	43.4	248	598	134	24	1,274	12,148
Tien Giang	414	800	110,643	282,886	38.2	49.3	103	402	14	6	7,645	49,301
Vinh Long	937	625	170,661	191,548	26	42.7	105	374	178	6	959	29,911
Hanoi	46,213	3,514	1,144,672	601,808	3.1	19.4	52	495	2,311	-88	495	5,443
HCMC	19,513	20,000	1,071,656	852,187	6.9	5.3	65	50	4,683	1,500	229	568
Total	167,541	51,844	15,039,333	7,848,576	–	–	–	–	26,822	2,122	–	–

Median	–	–	–	–	25.4	34.45	152	326	–	–	1,255	5,712

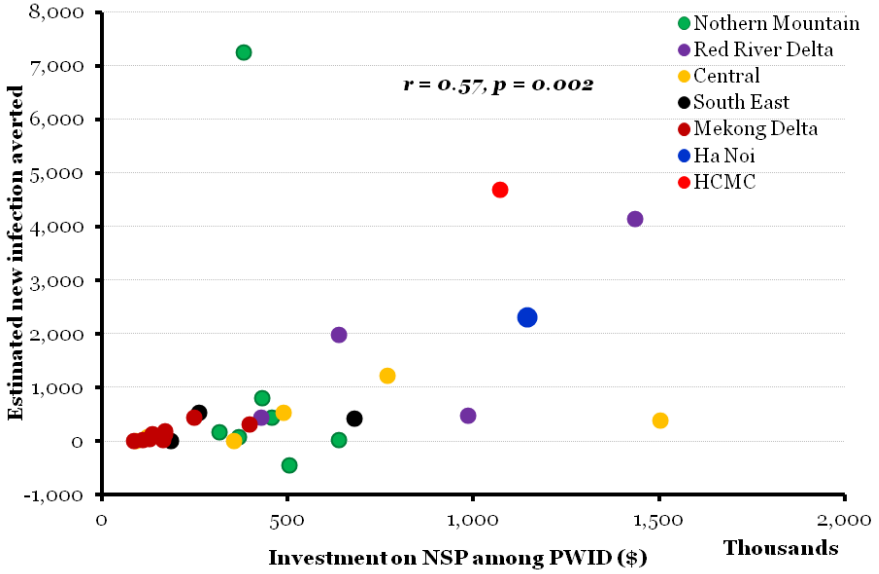
Note: Investment assessed was needle-syringes programmes for PWID and 100% condom promotion for FSW; Commodity assessed was syringes for PWID and condoms for FSW.

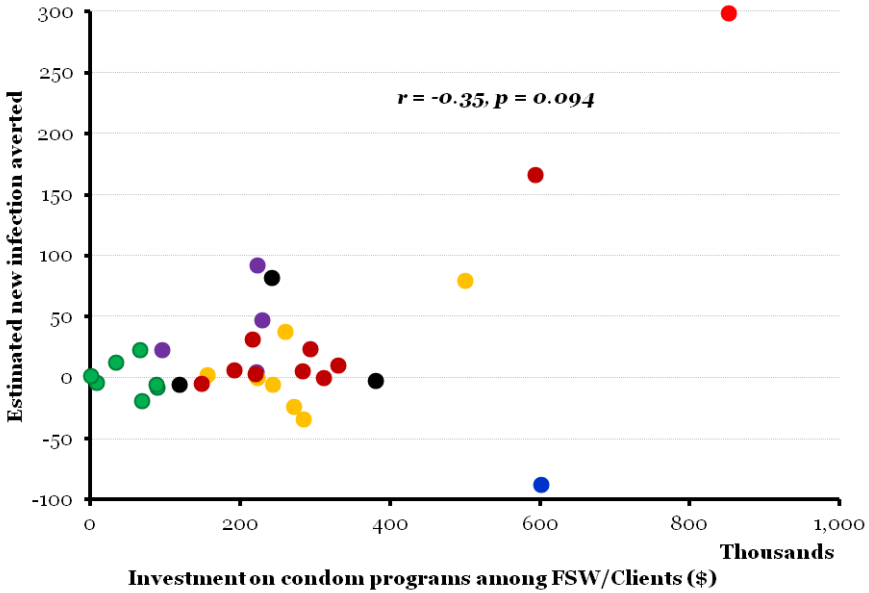
FIGURE 12. HIV prevalence categories among PWID and FSW during baseline and endpoint of DFID/WB projects

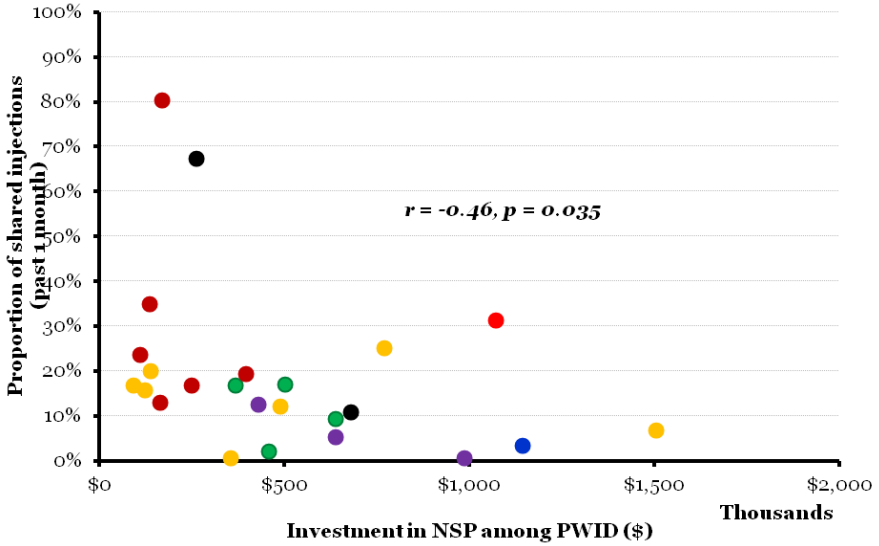


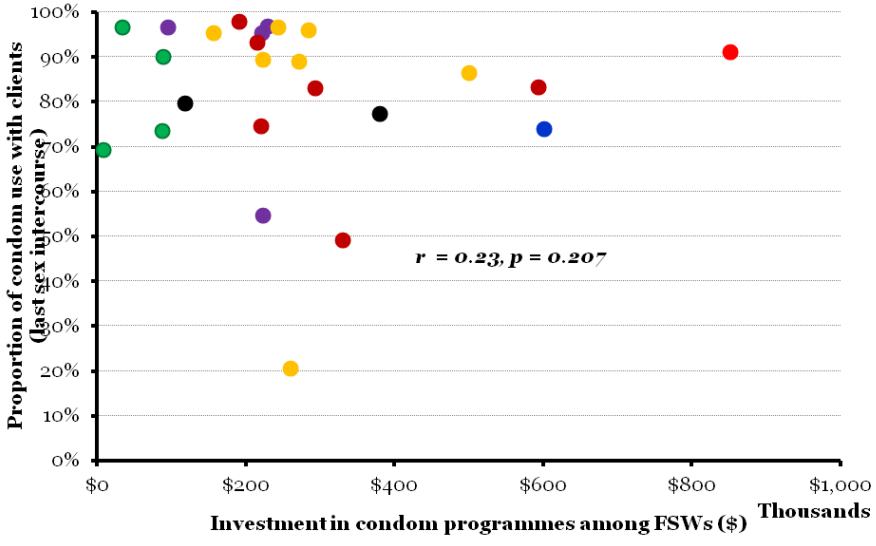
*Baseline year for DFID and WB projects was assumed in 2004 and 2005, respectively.
†This data was obtained from an average prevalence (from sentinel surveillance) among PWID/FSW in a region from which the province is located.
Note: Available prevalence estimates in a particular year that was closed to 2004/2005 and 2012 was assumed to be baseline and endpoint estimates, respectively

FIGURE 13. Relationship between investments in prevention programmes and model-estimated number of new HIV infections averted and behaviour change among PWID and FSW


Nothern Mountain
Red River Delta
Central
South East
Mekong Delta
Ha Noi
HCMC
r = 0.57, p = 0.002
Estimated new infection averted
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-1,000
0
500
1,000
1,500
2,000
Thousands
Investment on NSP among PWID ($)


r = -0.35, p = 0.094
Estimated new infection averted
300
250
200
150
100
50
0
-50
-100
0
200
400
600
800
1,000
Thousands
Investment on condom programs among FSW/Clients ($)


r = -0.46, p = 0.035
Proportion of shared injections (past 1 month)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
$0
$500
$1,000
$1,500
$2,000
Thousands
Investment in NSP among PWID ($)


r = 0.23, p = 0.207
Proportion of condom use with clients (last sex intercourse)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
$0
$200
$400
$600
$800
$1,000
Thousands
Investment in condom programmes among FSWs ($)

Effective multiple channels of commodity distribution

Peer-based distribution of needles and syringes and condoms were the key mechanisms by which PWID and FSW described accessing project prevention commodities. Needle-syringes and condoms were also available through private pharmacies. In particular. the pharmacy sector in Vietnam clearly responds to an unmet need with participants in all three provinces reporting inadequate distribution of free needle-syringes. Service provider focus group participants provided a number of examples of how they had tried to facilitate and increase access to needle-syringes within their respective provinces. The variety of mechanisms reported, including peer-based distribution, fixed site boxes and secret sites/hidden locations, exemplifies the energy with which the project has embraced the importance of needle-syringe distribution. The secret spot strategy was identified by PWID focus group participants as particularly important at night when peer educators were not available and a method which enabled them to access equipment discreetly and without the need to engage service providers. It was also the case that these locations could be changed in response to the needs of local PWID. Distributing needle-syringes through a series of sites known only to peer-educators and PWID was also perceived of by PWID as reducing their risk of detection by the police and the public.

> *Peer educators cannot see clients 24 hours per day. They base these secret points on the maps and mobile routines of PWID on the roads in the hot spots areas. Previously, the project had supported collaborators at the districts but this activity finished one or two years ago. Collaborators were assisting peer educators in providing needles and syringes* (Service Provider, HCMC).

Secret spots were viewed by service providers and PWID as complementary and part of a range of strategies designed to maximize access and availability of needles and syringes. However, as illustrated by the HCMC experience, the agreement and support of local communities and authorities was key to the success of this model. This activity is an example of innovation and adaptation supported by the DFID/WB project and should be maintained in the future (Appendix II, Section 3.3).

Incentivizing multi-sectoral collaborations and social marketing improve condom availability to FSW

Incentivizing collaborators was a common way in which support was sought for a range of HIV prevention activities across the spectrum of DFID/World Bank interventions. Condoms are socially marketed at a subsidized price for FSW mainly through peer educators who sell them to the owners of guesthouses, hotels and other entertainment establishments (EE). The social marketing of condoms was supported by targeted education related to condom use and included instructions on use and basic knowledge on HIV prevention. Free or subsidized condoms are now widely available in guesthouses and hotels where sex work occurs.

Now we are marketing the condoms but in the past we distributed them for free. We went to sex work hotspots like entertainment facilities and guesthouses to give condoms for free every month (Service Provider, Bac Giang).

The targeting of venues where sex work occurs was prioritized at the provincial level as a way to increase condom availability. The development of programmes which increase condom use in an environment where sex work remains illegal has required multi-sectoral collaborations which have been driven by provincial level AIDS committees. While utilizing peer educators as sales representatives was effective in increasing sales of condoms to EEs in Bac Giang and HCMC, there is a need for greater involvement of FSW peers in peer education. While peer-based strategies which encourage venue owners to target FSW are important in developing and maintaining relations with owners and managers, this should not be at the expense of targeting potentially vulnerable sub-groups of FSW. This may be particularly important in increasing access to condoms for marginalized groups such as mobile, seasonal and street-based sex workers (Appendix II, Section 3.8).

3.5 Barriers to effective implementation of HIV prevention programmes

Mandatory detention of PWID

Continued reliance on mandatory detention and compulsory incarceration of PWID appears to be the biggest barrier to the effective implementation of prevention programmes for this population. The use of this repressive approach to drug control has produced a situation in which harm reduction is unevenly and inadequately supported by different government agencies. In particular, support for harm reduction competes with motivations and incentives associated with maintaining compulsory detoxification and rehabilitation centres. At the local level, the police are tasked with responsibilities to enforce drug law with performance assessment based around quotas to identify and send drug users to rehabilitation centres in order to fill the centres to capacity. Periodic crackdowns again drug users tend to decline in some Vietnamese provinces, but still remain common and local police also take advantage of needle and syringe distribution and MMT programmes as opportunities to identify and track drug user. This markedly reduced drug users' ability to access to clean needle and syringes since 2007/2008. Peer educators who distribute sterile needles-syringes remain at risk of being arrested if they are carrying injecting equipment. This practice continues to limit PWID access to needles-syringes and other harm reduction services. Moreover, mandatory detention of drug users reinforces stigma and discrimination towards drug users, which remains widespread due to the previous "social evils" approach to drug control and HIV prevention. Mandatory detention also means that drug users are still perceived of as criminals and many remain marginalized, avoiding contact with people from the community and access to health services. In particular, drug users who are discharged from rehabilitation centres are often ostracized by communities and unable to find employment which hinders their attempts to reintegrate into mainstream society. Persistent concerns about relapse and criminal activities among drug users also cause strong resistance among local police and community members to needle-syringe distribution who consider that only forced detoxification can eliminate drug use, save the life of drug users, and safeguard community order and security (Appendix I, Section 3.2.2).

Needle-syringe distribution delivery and implementation models

Qualitative data from the focus group component suggest that current models of needle-syringe distribution programme delivery are not innovative or adaptive enough. The almost exclusive reliance on the peer educator distribution model is unnecessarily narrow and restrictive in scope. As indicated above, needle-syringe coverage remains sub-optimal in most provinces. Peer educators who participated in the focus groups reported not always having sufficient supplies of needle-syringes to meet the needs of their clients. Costs of peer-based needle-syringe distribution were also relatively high.

The project only applied the model of peer educators. It did not expand to other more relevant models (Service Provider, HCMC).

According to the project, the peer educators only distribute for the fixed number of people (PWID, Bac Giang)

We only meet peer educators once and then meet in some following days with 10-15 syringes each time. This number is only sufficient for one to two days (PWID, Hanoi)

Currently free needles and syringes only cover… just ten percent of people who inject drugs (Service Provider, HCMC).

The primary objective of needle-syringe distribution programmes should be to maximize access to sterile injecting equipment. Consideration should be given to remove restrictions on the number of needles-syringes provided by peer educators to clients. As noted in Section 3.4.2, while UNAIDS/UNODC/WHO guidance suggests that a threshold of 200 needle-syringes per PWID per year - less than one syringe a day - is considered high coverage (18), DFID/WB programme participants received an average of 152 sterile needle-syringes per year. However, providing PWID with the number of needles-syringes they request (and are able to distribute onwards to friends and acquaintances) is more likely to achieve the goal of reducing transmission of HIV and other blood-borne infections and to achieve the recommendation of a sterile needle for each injection(Appendix II, Section 3.5.1)

PWID focus group participants were also aware of and utilized peer education and referrals to HIV testing. While peer education is a key component of any harm reduction strategy targeting PWID, it should not be a compulsory component of needle-syringe distribution. Separating needle-syringe distribution from peer education may be necessary in order to diversify distribution networks and increase coverage. Within the Vietnamese setting, the peer educator distribution model appears particularly vulnerable to interruptions in service delivery due to interruptions in funding which result in problems with commodity procurement and staff attrition. Consideration should be given to identify the most efficient distribution models across a range of settings. Alternative strategies for increasing access to sterile injecting equipment that do not rely on timely and regular access to peer educators should be explored and determined in consultation with PWID (Appendix II, Section 3.5.3).

Fear of arrest, unmet demand for free condoms and sexual health services among FSW

The illegality of sex work in Vietnam continued to constitute a barrier to the distribution of condoms and venue-based condom social marketing. FSW focus group participants expressed concerns about carrying condoms (Appendix II, Section 3.6.2).

Yesterday when I went to restaurants to sell condoms they were very scared and didn't want to buy condoms from the programme (Service, provider, Bac Giang).

Sometimes the peer educators give them [condoms] to me but I don't dare to carry them around because it's easy to be arrested for just having condoms (FSW, Hanoi).

Qualitative data suggested that not all FSW currently receive enough free condoms to meet their needs. Street-based FSW were identified as particularly unlikely to purchase condoms if they were not available free of charge.

Street based FSW are very poor. If there are no international projects, the government will have to cover this programme. If not, they will not use condom (Service Provider, HCMC).

They [street-based FSW] earn 50-70,000 VND for each job but each condom costs 3000-5000 VND. It's too much for them. (Service Provider, HCMC).

Targeting venues where sex work occurs was prioritised at the provincial level as a way to increase condom availability. Developing programmes which increase condom use in an environment where sex work remains illegal has required multi-sectoral collaborations which have been driven by PACs. While utilising peer educators as sales representatives was effective in increasing sales of condoms to EEs in Bac Giang and HCMC, there is a need for greater involvement of FSW peers in peer education. While peer-based strategies which use venue owners to target their peers are important in developing and maintaining relations with owners and managers, this should not be at the expense of targeting potentially vulnerable sub-groups of FSW. This may be particularly important in increasing access to condoms for marginalized groups such as mobile, seasonal and street-based sex workers. Service providers stated that project coverage for venue-based FSW was more extensive than for those who were not known by the local authorities or for those who remain more hidden. The qualitative data collected as part of this evaluation suggest the need for a policy that balances the needs of the different sub-populations of FSW and prioritizes those who are street-based and/or injecting drugs and likely to be more vulnerable to HIV.

While the sexual and reproductive health needs of FSW were also highlighted as important services in both service provider and FSW focus groups, programmatic responses to date have been limited and indeed, discontinued since 2011.

We want to take gynaecological examination more and be taught about gynaecological diseases' and their symptoms. Usually we just have examination and go home without understanding what's happening (FSW, Hanoi).

As for STI examination and HIV testing, all sex workers are able to receive these services for free. But the clinics are often far away and sex workers don't have transport to get there. (Service Provider, Bac Giang).

As viewed by most participants, the public health sector was not an appropriate setting from which to provide these services, and collaborations with the private sector to date, while promising, do not appear to have increased access to screening. One project-initiated strategy for increasing access to STI screening was to use peer educators and venue owners in collaboration with the government health sector to promote 'campaign days' for mobile testing and treatment in private sector sex work venues. Focus group data indicate that examination and testing collaborations between government health staff, project peer workers and venue owners may be an effective means of increasing uptake of STI screening by venue-based FSW. The development of future STI initiatives requires an assessment of the effectiveness of collaborations with the private sector to screen and treat both venue and street-based FSW.

Social marketing of condoms targeting entertainment establishments and sex work venues and ready availability through pharmacies and non-traditional outlets suggest the availability of condoms for venue-based FSW. However, as highlighted by focus group participants there is a need to prioritise the needs of street-based FSW, as well as attempting to increase access to condoms through non-traditional outlets to ensure that they are available at the point of need. Condom distribution and safe sex promotion should also be integrated within existing harm reduction initiatives targeting PWID and their sexual partners.

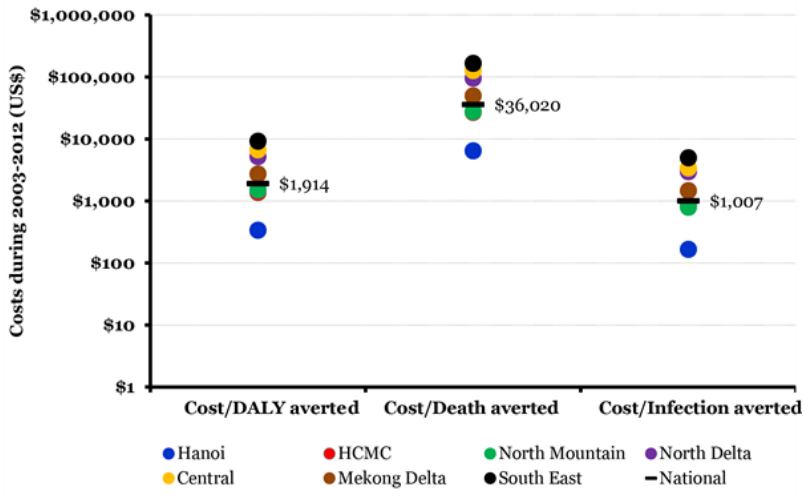
3.6 Were DFID/WB HIV programmes good value for money?

The investment resulted in fewer HIV infections and was deemed to be of average value for money

DFID/WB programmes have had significant impacts on containing the spread of HIV in Vietnam. As described in Section 4.4.2, during the period 2003-2012, DFID/WB prevention projects have averted an estimated 33,054 (95% CI, 18,345, 48,269) infections, 924 (548, 1,161) HIV-related deaths and 17,392 (10,505, 24,556) disability adjusted life years (DALYs) (Figure 6, Table 4). The majority of these benefits were due to NSPs among PWID.

As a result of the direct investment of US$ 34.9 million in HIV prevention programmes (excluding indirect costs), the cumulative amount of spending saved on HIV treatment and care is US $30.8 million. For every dollar spent on HIV prevention, the estimated return was US $0.88 (0.52, 1.16). Needle-syringe distribution was the most effective programme with an estimated return of US $1.93 (1.14, 2.94) for every dollar spent (Table 4). Overall, it cost an average of US $1,007 (690, 1,815) to avert one HIV new infection. During the period 2003-2012, the costs of averting one HIV-related death and one DALY were US $36,020 (28,663, 60,780) and US $1,914 (1,356, 3,169) respectively (Figure 14). Among the seven regions investigated (Hanoi, HCMC, Red River delta area, Northern midlands and mountain area, North central and central costal area, Southeast and Mekong River delta area), DFID/WB programmes in Hanoi were estimated to have the largest population impacts and were deemed the most cost-effective. The cost of averting one HIV infection, one DALY and HIV-related death are US $166, $339 and $6,462 respectively (Table 4).

FIGURE 14. Cost-effectiveness of DFID/WB HIV prevention programmes, 2003-2012



DFID/WB programmes, particularly NSPs, were cost-effective and are comparable to needle-syringe programmes in other contexts. The estimated required cost of US $486 (95% CI: $319-861) to avert one new HIV infection through NSPs is comparable to findings reported in developing country

settings, such as China (US $560-810) (20) and Belarus (US $359, 95% CI $234-1054) (21). Notably, WFID/WB's NSPs are considered to be incredibly cost-effective compared with those in developed country settings (typical cost of US $3,000-20,000 per infection averted) (22-25).

DFID/WB programmes had a long-term economic impact

Preventing HIV infections in the past has lasting long-term health, economic and social impacts. If the life-time impacts of DFID/WB programmes are considered, a total of 300,183 (154,709-676,849) DALYs and 63,778 (28,693-158,127) HIV-related deaths were potentially averted (Figure 15a, Table 4). The cumulative amount of future health care expenditure saved due to prevention of infections is US $700.2 million. For every dollar spent on HIV prevention, the estimated life-long return was US $21.03 (10.78-41.41). NSPs among PWID has a return-on-investment ratio of 42.82 (22.42-88.72), whereas the ratios for FSW condom distribution and STI programmes are 4.53 (1.53-4.53) and 1.39 (0.49-1.39) respectively (Table 4). Over the life-time, the costs required to avert one new HIV infection and one HIV death are US $111 (49-215) and US $522 (211-1,160). Thus, the NSPs and FSW condom distribution programmes have likely had a long-term impact on the health of targeted populations and future HIV expenditures in Vietnam.

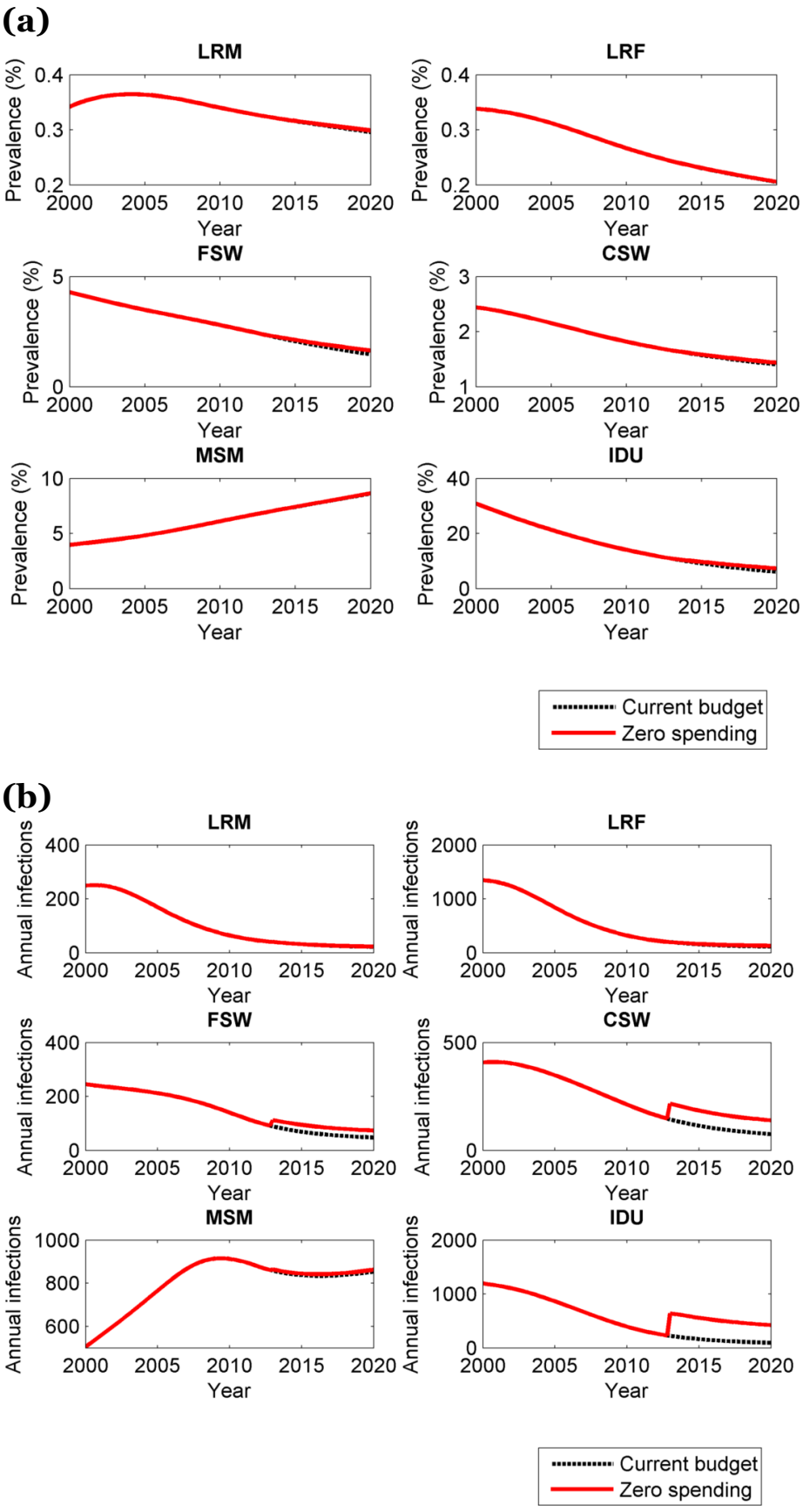
Potential impacts of DFID/WB withdrawal

If the prevention programmes established by DFID/WB funding are not sustained in an appropriate form then there could be a significant increase in the number of new HIV infections by 2020 (4,698 [2,805-7,729] extra infections), mostly attributable to PWID (4,061 [2,729-6,207]) and FSW (59 [0-123]) and their clients (327 [0-996]) (Figure 15).

TABLE 4. Effectiveness and cost-effectiveness of DFID/WB programmes, 2003-2012

	NSP	PWID condom programme	FSW condom programme	BCC programme	STI programme	Total
Total investment (US $ million)	$15.04	$1.19	$7.88	$7.98	$2.81	$34.89
Project period (2003-2012)						
Effectiveness measures						
Infection averted	30,957 (17,471, 47,137)	13 (4, 14)	1,585 (500, 1,585)	71 (53, 106)	168 (55, 169)	33,054 (18,345, 48,269)
Number of deaths averted	872 (524, 1,136)	0 (0, 0)	42 (12, 42)	2 (1, 4)	4 (1, 4)	924 (548, 1,161)
Number of DALYs averted	16,395 (10,054, 24,018)	6 (2, 6)	788 (249, 798)	39 (28, 58)	80 (26, 81)	17,392 (10,505, 24,556)
Cost-effectiveness measures						
HIV-related costs saved (US$ million)	$29.04 (17.21, 39.74)	$0.01 (0.00, 0.01)	$1.40 (0.41, 1.40)	$0.07 (0.04, 0.09)	$0.14 (0.04, 0.15)	$30.82 (17.99, 40.62)
Cost/infection averted	$486 (319, 861)	$88,448 (88,052, 286,254)	$4,953 (4,952, 15,689)	$90,675 (60,567, 120,734)	$16,748 (16,748, 50,622)	$1,007 (690, 1,815)
Cost/death averted	$17,250 (13,240, 28,675)	$3,669,961 (3,545,302, 13,954,636)	$188,946 (188,946, 675,244)	$3,012,120 (1,793,187, 4,831,052)	$658,336 (658,336, 2,254,015)	$36,020 (28,663, 60,780)
Cost/DALY averted	$917 (626, 1,496)	$190,098 (188,857, 638,865)	$9,964 (9,964, 31,543)	$165,898 (110,316, 232,951)	$35,215 (35,215, 106,800)	$1,914 (1,356, 3,169)
Return on investment	1.93 (1.14, 2.94)	0.01 (0.01, 0.01)	0.18 (0.05, 0.18)	0.01 (0.01, 0.01)	0.05 (0.05, 0.49)	0.88 (0.52, 1.16)
Life-time						
Effectiveness measures						
Number of deaths averted	55,755 (25,674, 146,468)	26 (9, 29)	4,715 (1,624, 4,948)	179 (164, 268)	467 (155, 467)	63,778 (28,693, 158,127)
Number of DALYs averted	269,950 (142,169, 640,833)	122 (44, 129)	18,898 (6,893, 18,977)	744 (690, 1,089)	1,979 (722, 1,979)	300,183 (154,709, 676,849)
Cost-effectiveness measures						
HIV-related costs saved (US$ million)	$644.00 (337,14, 1,334.25)	$0.22 (0.07, 0.22)	$35.57 (11.98, 35.57)	$1.29 (1.07, 1.89)	$3.90 (1.36, 3.90)	$700.23 (358.94-1,378.66)
Cost/DALY averted	$56 (23, 106)	$9,414 (8,932, 25,861)	$415 (414, 1,139)	$8,661 (5,917, 9,347)	$1,418 (1,418, 3,886)	$111 (49, 215)
Cost/death averted	$270 (103, 586)	$43,636 (39,347, 123,046)	$1,665 (1,586, 4,834)	$35,928 (24,026, 39,227)	$6,006 (6,006-18,132)	$522 (211, 1,160)
Return on investment	42.82 (22.42, 88.72)	0.19 (0.06, 0.19)	4.53 (1.53, 4.53)	0.20 (0.17, 0.29)	1.39 (0.49, 1.39)	21.03 (10.78, 41.41)

Figure 15: Epidemic trajectories of (a) HIV prevalence and (b) HIV incidence by population group according to no HIV programmes, funding according to the status quo, and optimized resource allocation of currently available amount, 2015-2020.



4. Discussion and conclusions

4.1 Study limitations

Firstly, the qualitative data are subject to a number of imitations, including a lack of generalizability due to the small and non-randomly selected nature of the sample and the potential for social desirability bias (26, 27). We conducted nine focus groups with 74 participants in three provinces in a little over one week. While a breakdown of the characteristics of focus group participants is presented in Tables 3-5 in Appendix II, we had no control over sample selection (apart from identifying eligibility criteria) and are unable to determine how representative our participants were of the broader population of DFID/WB HIV prevention programme stakeholders. Moreover, the three provinces where the data were collected may not be representative of the other 29 provinces where the DFID/WB project was implemented (see Appendix II).

Secondly, the influence and impact of other interventions cannot be completely ruled out. Among the 32 DFID/WB provinces, 25 were 'DFID/WB only' provinces with little or no risk of confounding by other interventions or programmes. In the remaining seven provinces, PEPFAR was either the sole or major funding body operating in parallel to DFID/WB. In Vietnam, PEPFAR funds 26 organisations and research institutes for HIV/AIDS interventions including : (1) Family Health International for condom distribution among FSW and their clients, MMT and health promotion for PWID and ART among people living with HIV (PLHIV); (2) PACT for condom promotion among FSW and their clients; and (3) ABt for health promotion among youth. While PEPFAR has a strong focus on treating PLHIV and AIDS patients, with ~80% of funding spent on ART and PMTCT, DFID/WB primarily supports HIV prevention programmes (such as needle-syringe and condom distribution). Therefore, the overlap between these programmes is likely to be small. However, we acknowledge this as a potential limitation with some epidemiological indicators (such as HIV incidence) likely affected by both programmes. Our analysis will likely over-estimate the impacts of the DFID/WB intervention programmes. In order to best control this, we compared the results from 'DFID/WB only' and 'mixed' provinces at similar intervention levels to identify any potential biases as a result of the presence of other prevention programmes.

Thirdly, the findings of the modelling exercise are very sensitive to the quality of the epidemiological and behavioural data collected. In the current study, we conducted a comprehensive integration of both official sentinel surveillance data and data from published literature based on a meta-analysis approach. As studies have been collected from different sources and employ different recruitment and study methodologies, heterogeneities in epidemiological and behavioural indicators are likely significant. Also, due to limited availability and the nature of self-reporting of high-risk behavioural

data, we often detect large variations in behavioural indicators. We have accounted for these variations by including sensitivity analysis in each step of our modelling exercise.

Finally, in most project provinces, DFID/WB programmes overlapped. This means that the impacts of the programmes, whether they were on the high-risk behaviours of at-risk populations or the HIV epidemic trend, cannot be distinguished between DFID/WB programmes. Any observed behavioural changes in PWID and FSW and associatedHIV prevalence are due to the mixed effects of both programmes, which cannot be separately identified. We therefore grouped these programmes together and evaluated their overall/combined impact.

4.2 Lessons learnt

Policy environment

The experiences of more than a decade of DFID/WB HIV prevention programmes in Vietnam indicate that a supportive legal and policy environment is essential for the effective implementation of harm reduction programmes. Although a direct association between implementation of DFID/WB programmes and policy changes in Vietnam cannot be investigated in this study, DFID/WB piloted the first harm reduction programmes that facilitated the enabling policy environment in Vietnam. However, social stigma, police harassment and incarceration continue to limit the full potential of these programmes.

Efficient commodity distribution models

DFID/WB programmes are the biggest suppliers of condoms for FSW and clean needle-syringes for PWID and other preventive services across all regions of Vietnam, contributing to the large reduction in risk behaviours and HIV prevalence in FSW and PWID. DFID/WB programmes set up the first innovative models for commodity distribution through multiple channels including social marketing, peer-educators, fixed-boxes at hotspots/venues and the pharmacy sector. This has substantially improved the efficiency of commodity distribution and helped to involve the MARPs in harm reduction and facilitated the cooperation of multiple health and community sectors.

- Focus group participants reported interruptions in needle-syringe distribution due to interruptions in funding which resulted in problems with commodity procurement and staff attrition.
- Current models of needle-syringe distribution programmes delivery are not innovative or adaptive enough. The almost exclusive reliance on the peer educator distribution model is unnecessarily narrow and restrictive in scope.

- Secret spots/hidden locations as a strategy for NSPs were viewed by service providers and PWID as complementary and part of a range of strategies designed to maximise access and availability of needle-syringes. However, the close collaboration of local communities and authorities was key to the success of this model.
- The pharmacy sector in Vietnam has a potentially important role in the distribution of sterile injecting equipment. There are a number of models internationally and include incentivizing pharmacies to distribute needle-syringes to PWID which should be explored as a means of increasing needle-syringe coverage for PWID.
- Social marketing may increase condom distribution to FSW. The targeting of venues where sex work occurs was prioritised at the provincial level as a way to increase condom availability. The development of programmes which increase condom use in an environment where sex work remains illegal has required multi-sectoral collaborations which have been driven by provincial-level AIDS committees.
- Examination and testing collaborations between government health staff, project peer workers and venue owners may be an effective means of increasing uptake of STI screening by venue-based FSW. The development of future STI initiatives requires an assessment of the effectiveness of collaborations with the private sector to screen and treat both venue and street-based FSW.

Programme management

DFID/WB programmes have invested US $24.8 million for setting up an efficient management framework for project implementation at both national and local levels in the past decade. During this process DFID/WB programmes have actively involved the Vietnamese government and relevant HIV prevention bodies to ensure a transferrable and sustainable management model after the withdrawal of the programmes. Without overlapping other international/domestic players' efforts in HIV prevention, DFID/WB programmes coordinate with other donors to provide timely and sustained harm reduction interventions in Vietnam.

- DFID/WB programmes were generally well managed by CPMUs/PPMUs, however programme management and administration costs were high and amounted to US $24.8 million, accounting for more than a quarter of the total DFID/WB investment during 2005-2012.

- DFID/WB has established a wide collaborative network with all levels of government departments, Vietnamese research institutions and multilateral organisations.

- DFID/WB programme management involves annual project planning based on local needs. This was identified as one of the programme's strengths. Although overseen by VAAC at the central level, project provinces were allowed to design their own approach and activities for harm reduction programmes that were feasible and responsive to local needs.

- Effective coordination of DFID/WB and the implementing bodies affects programme efficiency. Discontinuities in the dispersal of funding from central to provincial to district levels led to interruptions to project activities, including disruptions to funding for project peer educators, requiring them to stop work for several months only to start again when funding was re-established.

Programme effectiveness and cost-effectiveness

DFID/WB programmes have demonstrated moderate/good cost-effectiveness and value for money in rolling-out harm reduction programs among FSW and PWID. This is consistent with international findings and adds to the accumulating evidence on the cost-effectiveness of harm reduction programmes. Mathematical modelling strongly indicates a severe future epidemic adversity if current support from DFID/WB programmes is withdrawn without replacement.

- Over half (55.7%) of the total US $89.5 million DFID/WB investment was spent on indirect costs including programme management, maintenance, monitoring and evaluation and capacity building. This represents a substantial investment and is considered to be excessive, beyond what was necessary to support direct prevention and treatment programmes. It is important that the established frameworks are fully utilized and sustained, in an efficient way, in the future so that the investment in capacity and systems yields longer term benefits.

- DFID/WB programmes in Vietnam, particularly needle-syringe distribution programmes, have been highly effective and resulted in good value for money. A number of key findings are applicable to other programmes in Vietnam and other settings:

    - Consistent with numerous other international settings, NSPs in Vietnam have been shown to be a very effective and cost-effective intervention. However, condom distribution programmes for FSW have only shown moderate impacts on high-risk sexual behaviours and HIV prevalence. There is not strong evidence of epidemiological impact associated with condom distribution programmes.

    - DFID/WB programmes have generated both short-term and long-term health and financial benefits among populations of PWID and FSW in Vietnam. Sustaining

these harm reduction programmes is expected to have accumulative population impacts on the HIV epidemic in Vietnam.

- The withdrawal of DFID/WB programmes would be expected to result in a substantial increase of new HIV cases (~4,000) during 2013-2020. Vietnam's current HIV response is highly dependent on foreign aid. With the gradual withdraw of foreign investment, domestic support from the Vietnamese government will be increasingly important to cover the gap.

- HIV prevention interventions need to be aligned with epidemic trends. The delay in instituting HIV surveillance among MSM meant that there was no evidence on whether there was a need for MSM-focussed HIV prevention programmes or where they should be implemented. Limited prevention efforts focussed on MSM to date have likely contributed to the emergence of new HIV epidemics. Future programmes must specifically target groups of MSM at higher risk.

4.3 Recommendations

Maintain pragmatic health policies

1. DFID/WB programmes have facilitated some changes in the Vietnamese legal and health policy environment. However, further reduction of stigma and discrimination against at-risk groups and HIV-positive individuals are required. Police arrest and incarceration continue to constitute a major barrier to accessibility and scale-up of harm reduction programmes. Despite the completion of projects, DFID/WB could potentially continue their influence by maintaining an advisory and technical support role to the Vietnamese government in enacting evidence-based HIV policies in the future.

Sustain effective programmes and strategic investment

2. Our findings indicate that DFID/WB harm reduction programmes in Vietnam are highly effective and cost-effective in both the short and long-term. These programmes should be continued. It is imperative that the Vietnamese government assume responsibility for continuing these programmes. Given that the DFID/WB programmes have already established the necessary infrastructure, capacity building, monitoring and evaluation systems, there are significant advantages for the Vietnamese government to continue these programmes through strategic investment.
3. The Vietnamese government will need to re-focus current DFID/WB HIV prevention programmes by location, prioritizing selected provinces where greatest impact is likely to occur. This should be

based on current epidemiology as well as infrastructure and ability for community mobilization. Future programmes should also focus on MSM and high-risk subgroups of PWID and FSW, including HIV-positive PWID and FSW.

4. Vietnam's current HIV response is highly dependent on foreign aid. With the gradual withdraw of DFID/WB projects, domestic support from the Vietnamese government is increasingly important. This also implies that sustaining the current level of response or increasing the response may be unlikely in the near future. There is a need to identify optimal resource allocations that maximize the potential benefits of these programmes.

Facilitate innovative programme implementation and management

- The DFID/WB programmes have employed a number of innovative approaches for commodity distribution. Secret spots were viewed by focus group service providers and PWID as complementary and part of a range of strategies designed to maximise access to, and availability of, sterile needle-syringes. Incentivizing pharmacies to distribute needle-syringes to PWID and social marketing for condom distribution to FSW are also effective models of commodity distribution. Close public-private sector collaboration is essential in STI screening and management for FSW. DFID/WB's experience in facilitating collaborations with national and international health organisations, flexible target-driven management at the local level, effective coordination, and regular communication are valuable and are recommended for future programmes.

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6. Appendixes

Appendix I: Policy and legal environments

See attached 15-page document

Appendix II: Qualitative data collection and analysis

See attached 74-page document

Appendix III: Modelling methodology and region-specific results

See attached 110-page document

Appendix IV: Term of reference

See attached 11-page document

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7. Management Response

Recommendations	Response	Action	Responsibility	Deadline
Maintain pragmatic health policies DFID/WB programmes have facilitated some changes in the Vietnamese legal and health policy environment. However, further reduction of stigma and discrimination against at-risk groups and HIV-positive individuals are required. Police arrest and incarceration continue to constitute a major barrier to accessibility and scale-up of harm reduction programmes. Despite the completion of projects, DFID/WB could potentially continue their influence by maintaining an advisory and technical support role to the Vietnamese government in enacting evidence-based HIV policies in the future.	Agreed	DFID will maintain advisory inputs to the Vietnamese government and partners until June 2014. World Bank will stay in the sector through health strengthening programme support. DFID will share the finding and recommendations of this report with all key actors and partners on HIV to take the message forward	DFID	June 2014
Sustain effective programmes and strategic investment DFID/WB harm reduction programmes in Vietnam are highly effective and cost-effective in both the short and long-term. These programmes should be continued. It is imperative that the Vietnamese government assume responsibility for continuing these programmes. Given that the DFID/WB programmes have already established the necessary infrastructure, capacity building, monitoring and evaluation systems, there are significant advantages for the Vietnamese government to continue these programmes through strategic investment.	Agreed	DFID/WB has agreed with the Government on a transtion plan towards a self-financing mechanism for harm reduction	DFID/WB	6/2014

The Vietnamese government will need to re-focus current DFID/WB HIV prevention programmes by location, prioritizing selected provinces where greatest impact is likely to occur. This should be based on current epidemiology as well as infrastructure and ability for community mobilization. Future programmes should also focus on MSM and high-risk subgroups of PWID and FSW, including HIV-positive PWID and FSW.	Agreed	The DFID/WB programme has ended. But the Government has started planning based on epidemiology analysis a couple of years ago and will continue. Work on MSM and subgroups of PWID has started in the last months of the DFID-WB programme.		
Vietnam's current HIV response is highly dependent on foreign aid. With the gradual withdraw of DFID/WB projects, domestic support from the Vietnamese government is increasingly important. This also implies that sustaining the current level of response or increasing the response may be unlikely in the near future. There is a need to identify optimal resource allocations that maximize the potential benefits of these programmes	Agreed	DFID and WB discussed with Government on putting a plan in place on mobilising new resources for HIV. The Government has developed a resource mobilisation plan.		
Facilitate innovative programme implementation and management The DFID/WB programmes have employed a number of innovative approaches for commodity distribution. Secret spots were viewed by focus group service providers and PWID as complementary and part of a range of strategies designed to maximise access to, and availability of, sterile needle-syringes. Incentivizing pharmacies to distribute needle-syringes to PWID and social marketing for condom distribution to FSW are also effective models of commodity distribution. Close public-private sector collaboration is essential in	Agreed	DFID has shared with Government and all intersted partners about lessons learnt of this programme to inform future interevention	DFID	6/2014

STI screening and management for FSW. DFID/WB's experience in facilitating collaborations with national and international health organisations, flexible target-driven management at the local level, effective coordination, and regular communication are valuable and are recommended for future programmes.				