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Investing in the Elimination of HIV & AIDS in Indonesia: What is the Impact on HIV Epidemic After 10 Years of the Investment?

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***Abstract*—Indonesia has committed to respond to HIV and AIDS over the last 15 years with significant domestic and international funding has been secured to support a greatly expanded national response. HIV transmission has stabilized and begun to decline among all Key Affected Populations (KAPs) but excluded Men who have Sex with Men (MSM). However, reaching Fast-Track objectives required fast and sustained scale-up of programs. The objectives of this Investment Case Analysis study were to determine how is the best way to proceed with regards to the national "fast-track" strategy, planning the transition of international financing of HIV/AIDS to be reduced significantly and making the case for increased HIV funding under the Universal Health Coverage (UHC) scheme which targeted to reach by 2019. AIDS Epidemic Model (AEM) software was used to analyze the case investment on this study. The results showed that the trend of investment was increasing together with decreasing of new cases. Thus, the greater HIV funding invested will give greater impact on reducing HIV epidemic.**

Keywords—HIV/AIDS, Indonesia, Epidemic

I. INTRODUCTION

In 2019, there were an estimated 640,000 persons living with HIV (PLHIV) in Indonesia[1]. As in other Asia-Pacific countries, HIV and AIDS in Indonesia remains concentrated in sub-populations exposed to elevated risk of HIV transmission due to their behaviours. These are commonly referred to as "Key Affected Populations" (KAPs) which included sex workers and their clients, persons who inject drug (PWID), men who have sex with men (MSM) and transgender. Papua is an exception to the regional norm, with an estimated HIV prevalence 2.3% of general population in 2013.

TABLE I. SUMMARY HIV STATISTICS (2019)

Number of People Living with HIV (PLHIV)	645,000
Number of New Infection Cases	44,000
Number of HIV-related Deaths	38,000
HIV Prevalence (general population)	0.3%
HIV Prevalence (Female Sex Workers / FSW with high risk)	8%
HIV Prevalence (Female Sex Workers / FSW with lower risk)	2.2%
HIV Prevalence (Men who have Sex with Men / MSM)	25.8%
HIV Prevalence (Transgender)	24.8%
HIV Prevalence (People with Injecting Drug / PWID Users)	28.8%

The national HIV prevalence rate among people aged 15 years and above was estimated to be 0.33% in 2019. Provincial estimates of HIV prevalence range from 0.1% to over 2.0%. In 2016, the absolute numbers of Persons Living with HIV (PLHIV) were the highest in Jakarta and in the highly populated provinces of Java, as well as in Papua and West Papua although driven in earlier years by needle sharing among Persons who Injecting Drugs (PWID) and sexual transmission[2].

The most recent bio-behavioural surveillance survey (IBBS) data available suggested that progress has been made in stabilizing the sub-epidemics among most KAPs and general population in Papua. It can be seen by comparing the estimated and projected numbers of annual new HIV infections in the 2014 and 2016 Ministry of Health Epidemic Report shown below (see Figure 1 and 2)[1]. There were only 141 out of 502 cities and districts in Indonesia which have been took HIV interventions to be prioritized. In 2012, Indonesia's AIDS expenditure reached US$ 87.5 million which 27% was spent on prevention and 36% on care and treatment. Around 75% of spending on care and treatment was domestically funded while the most prevention spending were from international sources[3].

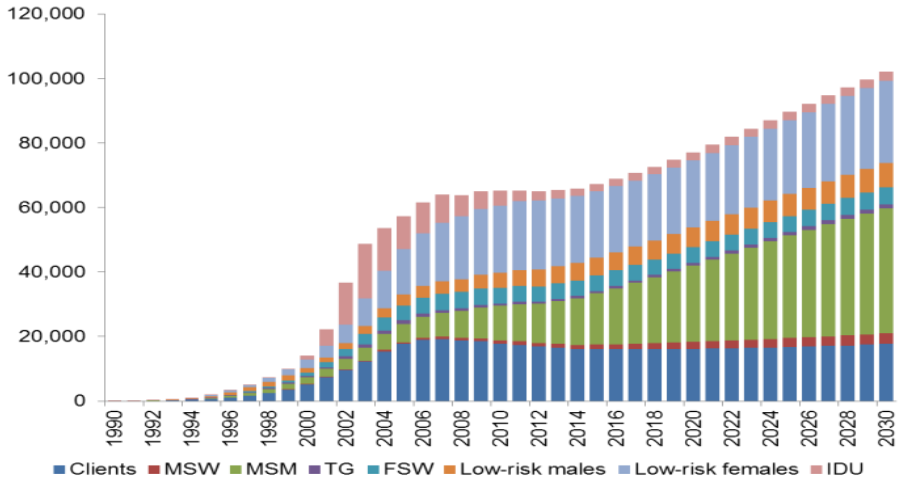

Fig. 1. Comparison of New HIV Infections from 2014 HIV Mathematical Modelling (1990-2030)

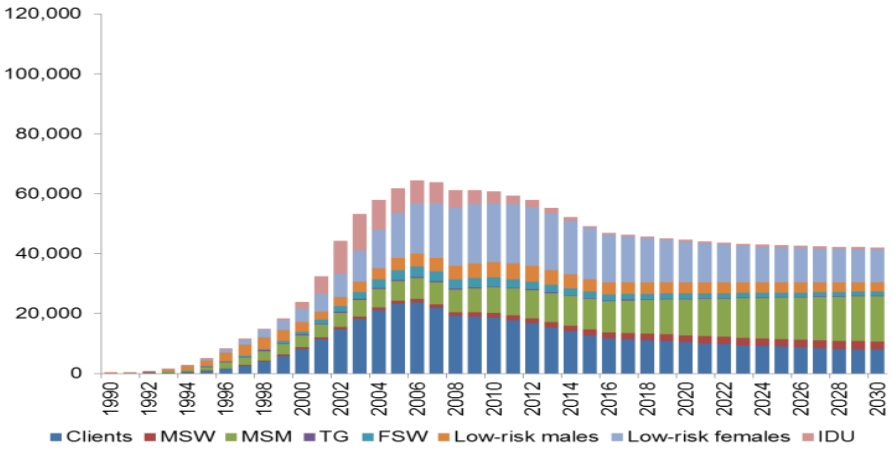

Fig.2. Comparison of New HIV Infections from 2016 HIV Mathematical Modelling (1990-2030)

However, there remains to concern about the expanding of sub-epidemic among MSM which continues to expand, although they grow with lower rate than what it previously projected. The HIV testing coverage among KAP has increased from 33,577 in 2010 to 1,435,112 in 2016 but still remains low related to the numbers needed for the Ministry of Health target on treatment as prevention (i.e., Scaling up the Strategic Use of ART / SUFA) to be successful[2]. Anti-Retroviral Therapy (ART) treatment coverage can not be meaningfully expanded, unless the number of persons being tested for HIV increased significantly. The number of persons who received ART increased from 15,442 in 2009 to 63,000 at the end of 2016 but still being the lowest in Asia[2]. If the current pace of national HIV program implementation performance remains low, they will not achieve 2019 National Strategic Plan or Fast-Track Target for 2020/2030 can not be realized.

The Global Fund's New Funding Model emphasized on increasing the domestic share of investment in HIV/AIDS program to maintain sustainable funding. By strengthen the mobilization and increasing effectiveness use of domestic resources, countries can reduce their dependency on external funding which help them pass through sustainable development[4]. In 2012, UNAIDS have launched the HIV strategic investment framework guidelines for countries in order to get maximum impacts in allocating limited resources. This framework focused on development of an investment case which based on a robust analysis of the epidemiology, the current response and recent science evidence-based. The investment tool was made to guide countries developing strong investment cases by identifying cost-effective methods, high-impact interventions or program' enablers followed by a prioritized scale-up plan that will put them to reach the target by 2030. Investment cases also help countries to identify the opportunities of sustainable funding and decrease inefficiency[3],[5].

This study analysed the case investment on decreasing of HIV impact of high-risk populations by scenario-based approach. The scenario-based approach included many items of AIDS budgets to determine which item can give impact on reducing incidence or death such as critical enablers, mitigation, program support and synergy of development (education, health and social services). Formal optimization is not used because the unit data costs are weak, and cost-effectiveness is not the only one we consider on resources allocation. This kind of approach needs to integrate through larger health system costs and effects[6].

II. METHODOLOGY

This study was used the secondary data from Population Census and Integrated Bio-Behavioural Survey (IBBS) for HIV prevalence and the data from program monitoring to measure the program coverage. The Investment Case Analysis (ICA)[5] was used mathematical modelling methodology by the AIDS Epidemic Model (AEM)[7] software to generate the results. Four scenarios leading to near elimination of HIV and AIDS in Indonesia were evaluated in the ICA along with a "Business-as-Usual" scenario. These scenarios vary in terms of the rate and timing of scale up. They come from the recent HIV Epidemic Update. In these scenarios, it is assumed that intervention coverage and effectiveness would remain constant until 2030 at observed 2015 levels.

The first is Fast-Track Scenario by 2020 through all populations. The scenario have targeted that 90% of all HIV-infected persons will know their HIV status, 90% of HIV positive persons will be on treatment, and 90% of persons on treatment having suppressed viral loads (i.e., 90-90-90) by 2020 and 95% will be achieved all these criterias by 2030. The second is Fast-Track Scenario by 2027, also through all populations which assume that the "90-90-90" target will be reached by 2027 instead of 2020. Next, there is Fast-Track Scenario by 2027 through the KAPs. It is also the same with previous scenario but will achieve the KAPs as the population target by the end of 2020. Moreover, there is also National Strategic and Action Plan Scenario which assumes that all 2019 goals from the Indonesia Long and Medium Range Development Plan 2015-2019 Program by The National AIDS Commission will be reached at 2020. After 2020, it was expected to slightly increase to reach the Fast Track 95-95-95% target by 2030[8].

The population study were Female Sex workers, Injecting Drug Users (IDU), Transgender, Men who have Sex with Men (MSM), low risk female and low risk male. This study used data from Population Census and Integrated Bio Behavioral Survey (IBBS) for HIV prevalence and behavior data, while others were data from program monitoring to measure the program coverage.

III. RESULTS

The key data inputs of this AEM investment case analysis were HIV estimates and projections; KAPs size estimates; results from the behaviour sentinel surveillance, HIV sentinel surveillance and HIV-integrated bio-behavioural surveillance. Figures 2 and 3 showed the projected impact on the number of annual new HIV infections and HIV-related deaths from 2016 to 2030. Both were reduced more rapidly in scenarios that featured early and aggressive scale up. Without any further actions, the annual number of new HIV infections will decline very slowly, and will still be around 44,000 per year in 2030 while the number of annual HIV-related deaths will continue to increase until 2025 or so, before stable at around 45,000 per year.

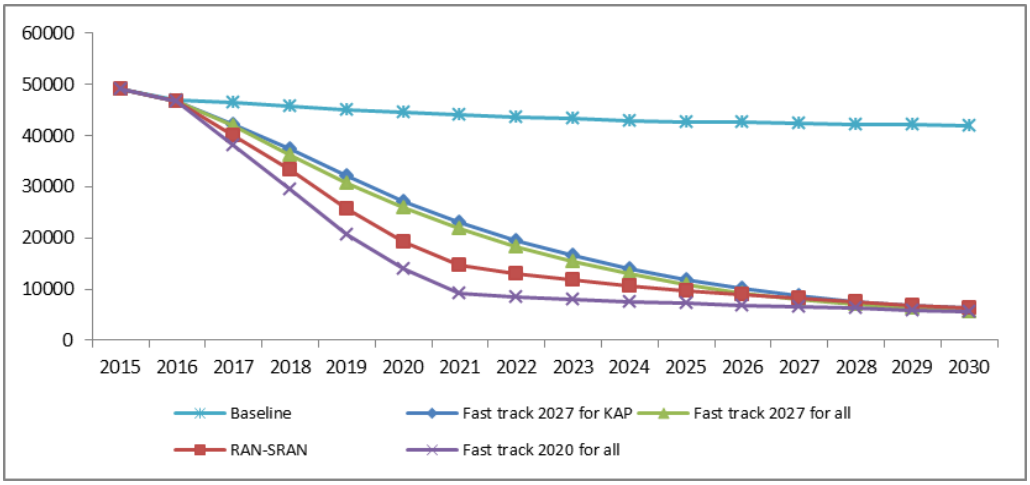

Fig. 3. Projected Annual Number of New HIV Infections, by Scenario (2016-2030)

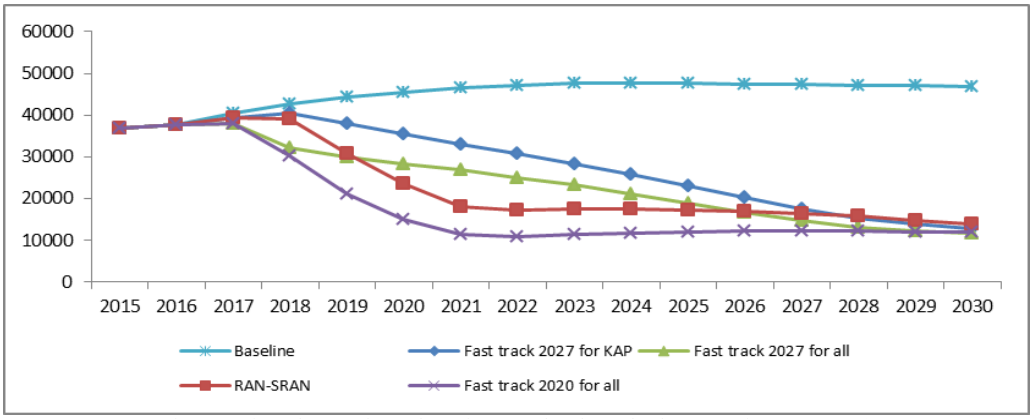

Fig. 4. Projected Annual Number of HIV-Related Deaths, by Scenario (2016-2030)

The projected annual total resource needs are shown in Figure 4. In the case of the most aggressive scenario which is the Fast Track 2020 through-all scenario, annual total resource increases up to 607 million USD in 2029 before it began to decrease. The growth line of resource needs in the other scenarios reflected the slower, less aggressive scale up. While aggressive scale-up stabilizes resource needs by 2030, the annual resource needs of the less aggressive scenarios continue to rise and were projected to continue doing so until peaking in the mid-2030s before it become stable and begin to decrease.

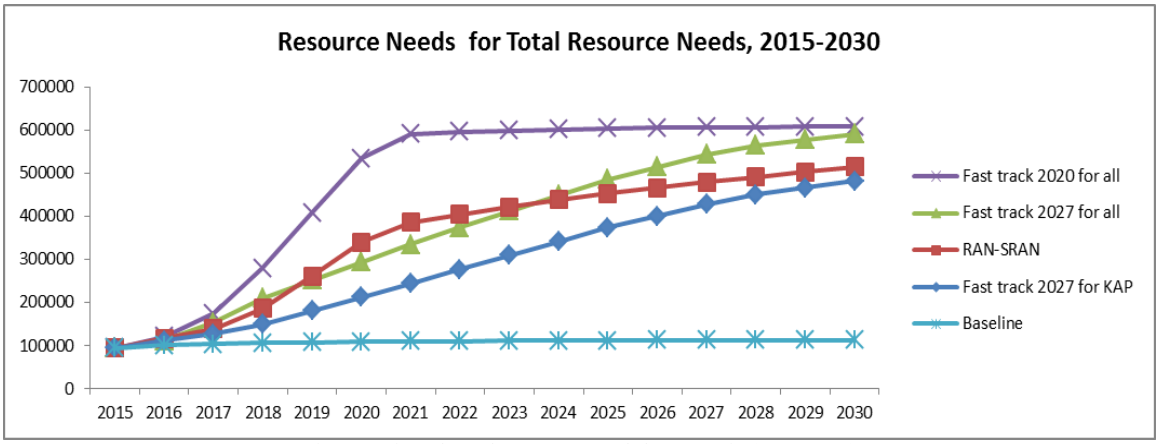

Fig. 5. Projected Total Resource Needs by Scenario (2015-2030)

What is the potential magnitude of investment returns if Indonesia were to invest more heavily in HIV elimination? Relevant data were provided in Table 2 below for each of the scenarios. All scenarios produce returns on investment in the USD 2.65-3.00 range per USD. However, the scenarios differ widely regarding to the absolute level of investment returns. The largest returns on an absolute basis come from scenarios that feature earlier, more aggressive scale up which is the Fast-Track by 2020 through all populations and the National Action Strategist scenarios. Analysis of the cost per Daily Adjusted Life Years (DALYs) which ranged from USD 561 to USD 747 in these four scenarios, indicates that investment in HIV elimination is highly cost-effective given a nominal Gross National Product (GDP) per capita of 3,345 in 2015.

TABLE II. PROJECTED RETURN ON INVESTMENT BY SCENARIO THROUGH 2016 – 2030
(ASSUME 3% ANNUAL DISCOUNT RATE)

Parameters	Fast-Track 2020 (All)	Fast Track 2027 (All)	Fast Track 2027 (KAPs)	National Action Strategies
Non-ART prevention	1,409,083	1,189,162	1,189,162	1,294,330
Treatment	4,379,956	2,247,550	3,250,587	2,971,374
Total	5,789,039	3,436,712	4,439,749	4,265,704
Lives saved	423,117	271,143	333,126	347,027
Life-years gained from averted deaths	2,768,970	1,418,034	1,969,402	2,119,694
Contribution to GDP (‘000s USD) – persons whose deaths were averted	9,267,744	4,746,159	6,591,588	7,094,614
Total HIV infections averted	436,158	346,932	359,420	394,245
Future treatment costs saved (‘000s USD)	6,260,145	4,976,582	5,154,832	5,656,820

Parameters	Fast-Track 2020 (All)	Fast Track 2027 (All)	Fast Track 2027 (KAPs)	National Action Strategies
Future treatment costs saved plus contribution to GDP ('000s USD)	15,527,889	9,722,742	11,746,420	12,751,434
Return on investment to 2030 – absolute ('000s USD)	9,738,850	6,286,029	7,306,671	8,485,730
Total return per USD 1 of investment in HIV programming to 2030	2.68	2.83	2.65	2.99

IV. DISCUSSION

The investment case analysis (ICA) was designed to assist countries by using investment approach which essentially focused for effectiveness and efficiency, estimating or projecting the response impact, mapping the resource requirements and preparing for financial sustainability[5].

Based on the results, potential impacts of the main strategic priorities of the response (such as health continually services and SUFA) at different coverage levels and the effectiveness of implementation were assessed. Significant impact is projected for the current initiatives at a "high" level of implementation performance. The priority should be made immediately to increase number of people tested and get the treatment. The results from this investment case analysis have found on five main things to be prioritized: focusing approach towards high risk population, providing ART for people living with HIV and treating the opportunistic infections (not only receive ART but to maintain the therapy continually), prevention treatment (such as HIV testing and provide pre-exposure prophylaxis towards people with high risk and pregnant women), behavioral change (include condom use) and male circumcision (in Indonesia, this is reliable because there is a low-level generalized epidemic in Papua and West-Papua, even though it has not yet being recommended as priority)[4].

The following actions and achievements are needed in order to end HIV and AIDS in Indonesia such as: decentralize and improve the integration of services within health facilities or between health facilities, social organizations and other groups working with KAPs in community settings; getting key interventions implemented in an integrated; efficient manner on wider geographic scale to increase service access and aggressively implement Strategic Use For ARV (SUFA)[8]. The Ministry of Health has prioritized taking greater advantage of the preventive benefits of ART. However, as this approach to be effective, significant improvements are required to cover HIV testing among KAPs and other priority sub-group population (e.g., TB patient, Hepatitis B & C patient, discordant couples) by strengthen the linkages between testing and Care, Support and Treatment (CST) services; and the retention of patients on ART. To increase HIV testing, Strategic Use for ARV (SUFA) cannot be successful unless the number of persons tested for HIV in Indonesia increases significantly[9]. Thus, increasing of coverage and effectiveness of community-based outreach is important. Several studies said that community-based and behavioral interventions can reduce risky sexual behavior and the incidence of sexually transmitted diseases among high-risk populations; increasing contraceptive use and the knowledge of HIV transmission; also introduce infected-people to anti-retroviral therapy[10]. The community-based approach should be focused on social behavioral interventions which is important to help people living with HIV (PLHIV) receive adequate anti-retroviral therapy continually and prevent about the social stigma[11]. Recent program reviews have highlighted the weaknesses in community outreach in the national HIV and AIDS program. The data showed limited differences in risk-taking and health-seeking behaviors among those reached and not reached[7]. Indonesia also has identified an opportunity to include private health sector for greater roles. Many KAPs (such as female sex workers and their clients) were part of Indonesia's rapidly growing middle class and can access HIV services through private health facilities. Addressing HIV test-kit and drugs through the private health facilities might be cost-effective and can increase the coverage[3].

During several years, Indonesia National AIDS Commission has pursued strategy to increase funding at province and district-levels. The cities or district-level investment takes important role in resource mobilization and provides an assessment of what they need to do for implementing the programs[3]. The new outreach approaches being implemented must be tested, refined and scaled up. Besides, the program should create more enabling environment for effectively addressing HIV and AIDS, release the stigma and discrimination which can pressure the efforts to effectively engage KAPS with behavioral and health service interventions. An advocacy strategy needed to increasing funding support on HIV programming and recommend for doing provincial and district-level investment analysis[3].

This study has limitations such as, there is the need to differ program coverage and intensity for sub-populations with any risk different levels. However, not every data disaggregated into sub-populations. Also, this study was not consider about reducing social stigma/discrimination and policy barriers to effective service delivery which happened mostly among PWID.

V. CONCLUSION

Indonesia was a bit slow to respond to the HIV/AIDS epidemic, so it was expanded among Key-Affected Populations (KAPs) and the general population in Papua. The efforts by the last 10 years or so seemed to have stabilized the situation, with continued sub-epidemic growth only happened among men who have sex with men (MSM). However, unless further action is taken, the National Strategic Plan and all Fast-Track scenarios are unlikely to be reached and the prospects for ending HIV and AIDS in Indonesia by 2030 may not good. The

roadmap for achieving the main goals is clear that Indonesia is already doing most of the right things but needs to more rapidly scale-up and improve intervention effectiveness. Ending HIV and AIDS in Indonesia will require significant investment far higher than what has been previously made. However, the results showed that the returns to investing early and aggressively are substantial indeed.

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