DRAFT

Does it help to see a National AIDS Commission as a common pool resource?

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Abstract: Many countries have responded to the epidemic of Human Immunodeficiency Virus (HIV) by establishing a National AIDS Commission (NAC). Although the circumstances, including the main drivers of the epidemic, vary across countries, there are also similarities, many of which derive from the initial international emphasis on the need for an inter-sectoral response. Thus, an important aspect of the establishment of NACs was involvement of a range of sectors which usually included health, home affairs, justice, police, finance/treasury. In more populous countries this structure was replicated at sub-national levels such as state, province and district. The role of non-government organizations varied from minimal to major. Funding was usually a mix from government and donor sources with the importance of government funds often increasing over time.In this presentation I argue that a NAC is a common-pool-resource, that it can profitably be assessed using the Institutional Assessment and Development framework, and report on use of the framework to assess functioning of the NAC in Indonesia.

In this paper I use the IAD approach to assess the Indonesian HIV/AIDS Control Program. This work has been done in conjunction with Dr Meiwita Budiharsana of the Faculty of Public Health at the University of Indonesia. At first glance this assessment seems like it is completely at odds with the IAD approach. The IAD approach derives from a deep and illuminating analysis of the ways in which small common property resources (CPRs) function and evolve; it is built from the bottom up, based on detailed observations of how these CPRs operate and do or do not succeed. In contrast, I want to use the IAD approach to assess the functioning of a resource that was built by the Government of Indonesia under considerable pressure and input from the international community and, consistent with that provenance and the way governments operate, was built from the top down, in this case to serve a population of 250 million people. To do this I want to try and achieve six things in this paper – present background information on HIV; describe the HIV/AIDS control system in Indonesia; show that this system can be seen as a CPR; show that the CPR faces social dilemmas; then go on to assess the system using the IAD framework, and finally to make some suggestions as to how the system could be improved based on the results of the assessment.

I. Background on HIV

In the late 1980s cases of a condition that subsequently came to be called AIDS (Acquired Immune Deficiency Syndrome) were detected in many countries, including Indonesia. The causal agent is a slowly replicating virus known as Human Immunodeficiency Virus (HIV). Without specific treatment the average time from infection to death is approximately 10 years (Jaffar et al. 2004, 82:462-469). In the USA, where treatment is widely available, the average time from infection to death is 22 years (Harrison, Song, and Zhang 2010, 53:124-130).

Transmission of HIV from an infected to uninfected person can occur via

- Unprotected vaginal sex;
- Unprotected anal sex;
- Contact with infected blood as when needles used for injecting drugs are shared or infected blood is used in transfusions;
- Mother to child during pregnancy, childbirth and breastfeeding.

The probability of transmission is greatly reduced by

- Using a condom during sex;
- Use of clean needles for injecting drugs;
- Ensuring that blood and equipment used for transfusions is free of the virus;
- Testing and treatment of mother at time of birth delivery and during breastfeeding.

Although there has been significant development in treatment of HIV infection, so far there is no cure and treatment must be continued for life. The effectiveness of treatment is maximized by early diagnosis and full compliance with the drug regimen. Effective treatment greatly reduces the amount of virus in the blood and other body fluids and slows progress of the infection to AIDS. Even so, the virus may become resistant to the drug and it is then necessary to move to more expensive second line drugs. As the probability of infection increases with the amount of virus in the blood, treatment is now seen by some as a mode of prevention.

II. HIV control system in Indonesia

The response to HIV in Indonesia was initially solely within the Ministry of Health (MOH). An informal study group on AIDS formed in 1985 quickly became a Working Group; following the first confirmed case of AIDS in Indonesia in 1987 the Ministry amplified its response and established a National AIDS Commission (NAC) under the Director-General of Communicable Disease Control and Environmental Health. The MOH started sero-surveillance at sentinel sites in 1989 and covered a total of 15 sites by 1994. Screening of blood donors commenced in 1992 (Elmendorf, Jensen, and Pisani 2005;Gunawan, Kosen, and Simms 2006:317-332).

Internationally, a consensus emerged during the 1980s and 1990s that this was an epidemic with the potential to devastate populations and their economies and that control of HIV was a public good requiring an all-of-government response. The result was pressure on most governments to form inter-sectoral bodies to lead the government response with emphasis on cooperation and collaboration between the various economic and social sectors and non-government organizations.

In Indonesia the view that a strengthened response was needed was buttressed by projections (subsequently shown to be a gorss over-estimate) indicating that up to 1 million Indonesians would be infected by HIV by the year 2000. In 1994 a multi-sectoral NAC, based on the earlier NAC formed by the MOH, was formed by Presidential Decree (NAC 2001). This decree also stipulated the formation of provincial, district and city AIDS commissions and technical working groups. Nevertheless, most sectors served as NAC members on paper only, there were no budget allocations to NAC or secretariat staff. A strategy issued later in 1994 was largely on paper, the NAC never met and had no staff or funds (Elmendorf, Jensen, and Pisani 2005). A Five Year Plan for AIDS Control and Prevention prepared in 1994 failed to receive adequate government funding. Donors eventually contributed $60 million to complement the government budget of $20 million over the plan period. Activities were mainly delivered through the MOH.

The Asian financial crisis at the end of the 1990s contributed to the downfall of the Suharto government and ushered in a period of political reform which included a radical decentralization of powers with authority for many government decisions and services transferred to districts and cities and a significant reduction in authority of the province level. Even though central ministries have succeeded in clawing back much of the authority they lost, the districts now have considerably more autonomy that previously and the authority of the province level remains significantly reduced (Heywood and Harahap 2009, 7:6). Overall, decentralization has, to this point, had a negative effect on delivery of government services, including those for HIV control, as the various levels struggled to find a new equilibrium under the new laws .

Despite the absence of a NAC Secretariat and a government budget, at the central level the Coordinating Minister for Peoples' Welfare continued to search for ways to strengthen the response to HIV. Indonesia signed the Declaration of Commitment of the UN General Assembly Special Session on HIV/AIDS (UNGASS) in 2001 and sends reports to the UN. In 2004 the Coordinating Minister led a consultation with the six most affected provinces (NAC 2011). Even though there was consensus that much needed to be done and broad agreement about what those activities might involve, there was no administrative response or allocation of resources to follow through on the agreements reached.

At the same time, and despite the lack of government resources and commitment, the Global Fund for AIDS, TB and Malaria (GF), which became operational in 2002 (Aidspan 2013),

commenced efforts in Indonesia beginning with a project on voluntary counselling and testing (VCT) in 2003 and another in 2005.

The election of President Yudhoyono in 2006 brought significant change in the response to HIV/AIDS as well as an increase in resources. The surveillance activities of the MOH, together with activities of donors, indicated a rapid increase in HIV prevalence among intravenous drug users (IDUs) since 2000. This provided the stimulus for President Yudhoyono's Presidential Regulation to strengthen the NAC by providing for the first time for a permanent Secretary and Secretariat charged with: leading, coordinating and managing a multisector, multipartner response, preparation of a new National Strategy, and mobilization of resources. The top priority for the new NAC was prevention of new infections. The Presidential Regulation was supported by guidelines from the Ministry of Home Affairs on the formation of NAC at the provincial and district levels, headed by the Governor and District Head, respectively. The new NAC produced a National Strategy and Action Plan in 2007 and additional funds for the NAC, MOH and NGOs from the Global Fund were secured in 2009 and 2013 to extend the response to all provinces (NAC 2011).

The new NAC also became responsible for administration of funds in the Indonesia Partnership Fund or IPF (Dana Kemitraan Indonesia untuk HIV dan AIDS – DKIA) created with DFID funds, and later also supported by AusAID and USAID. A new National Strategy for 2010-2014 was produced (NAC 2010). The NAC is currently working on a National Strategy for the period 2014-2019.

HIV-related services were mostly delivered by MOH through activities that were infrequent and routine, but generally consistent with government guidelines. NGOs generally had more success in delivering services that were more transaction intensive, such as attempts to increase condom use by risk groups. Even so, the program response in this early period was very limited and the interventions had only limited success.

The overall structure of the HIV/AIDS control effort today is shown in Figure 1. It follows the usual hierarchical pattern of the GOI with overall authority in the central ministry or agency, and provincial and district offices. Career public servants are found in these offices at all levels. With the advent of decentralization the overall authority of the provincial offices has decreased and

that of the district offices has increased. Whilst the structure for the NAC follows a similar pattern the senior staff are often retired public servants and others on short term contracts. Consistent with the structure of the Indonesian government, the approach under NAC is highly centralized with central units setting policy for uniform programs to be delivered at the provincial and district levels. Unlike other government services, HIV-related services at the periphery are delivered by government and non-government practitioners (e.g. doctors, nurses, midwives, health educators, peer educators). On paper the NAC is responsible for coordination of the overall control effort at each level. In fact, there is limited and widely varying coordination of activities between the MOH, NAC itself and the NGOs involved. In many cases there is overt hostility and lack of cooperation between MOH and NAC, especially at the provincial and district levels. Whilst the civil society organizations have always been active at the district level and below, they also now have a more hierarchical structure.

Even though decentralization has changed the distribution of power, the central government retains financial authority and the districts, with only limited ability to raise their own revenues, remain dependent on central government for funds (Heywood and Harahap 2009, 6:13). Although the overall importance of donors as a source of development funds has been sharply reduced, the control of HIV/AIDS is an area in which donors remain an important source of funding.

The major donor is now the GF which, through its Country Coordinating Mechanism (CCM) plays a critical role in deciding design of the overall program. The GF and the CCM essentially decide on the elements of the intervention program and how it will be implemented. Separate streams of funds flow to the NAC, the MOH and the civil society organizations from the GF project. The NAC and MOH also receive funds through the government budgets. Bilateral donors have projects which are implemented in overall cooperation with, and in support of, various components of the HIV control effort. Whilst there may be overall agreement at the central level on the elements of the program, once those decisions have been made the various activities of the three pillars of the program – the NAC, the MOH, and civil society – are carried out mostly independently and with little consultation and limited coordination. The chances of consultation are greater at the district level and below, but in many cases are minimal.

Thus, at the turn of the century the MOH was the major player in HIV control, despite a poor reputation for service delivery and cooperation with civil society. The NAC existed on paper only at all levels. HIV-related services at the periphery were delivered by government and non-government practitioners (e.g. doctors, nurses, midwives, health educators, peer educators). Civil society was important for delivery of most of the less conventional services, such as promotion of condom use in brothels, at the district level and below but was less important at the central and provincial levels. And although the MOH had been important in the early surveillance activities there were signs that it was not able to adjust to the realities of an epidemic, the nature of which seemed to be changing.

A decade later, following the vastly increased domestic and international support for the NAC, including the funding of a Secretariat for the first time, the NAC had moved to center stage charged with the overall task of coordinating the response for which the top priority was to prevent new infections. At the same time the GF and CCM had also increased support for the NAC which also became the manager of additional donor funds from the IPF. There was also greatly increased support for civil society organizations within a national, hierarchical structure. There were now three pillars to the Indonesian HIV control effort instead of the MOH by itself in the earlier period.

The main HIV control activities occur under the GF-funded project which has as its goal 'to reduce HIV related morbidity and mortality in thirty three provinces of Indonesia and to strengthen health and community systems in order to improve performance.' The program is delivered through national and local NGOs who receive funding based on targets linked to the district-level data from the most recent estimates of the population size of each risk group. The project aims to deliver 'standard minimum outreach service' packages to high risk groups. The standard minimum package includes contact by an outreach worker two times each month – this 'package'includes information directed at behavior change, 5 condoms and 1 lubricant sachet. The project objectives stress distribution of the minimum service package. As in the past, the FSW is, in effect, left with the individual responsibility of convincing her client to use a condom when she has little power in the transaction if, as is usually the case, the client does not want to use a condom. In the absence of solidarity among FSWs, the choice is between no condom, or no sale.

Within this hierarchical system the central units retained power over the budget and the GF, as the major donor, exerts considerable authority over the allocation of funds and program content. Although the influence of other donors, especially USAID and AusAID, remains, it is considerably reduced in comparison to the earlier period.

III. The NAC can be seen as a CPR

The NAC has a clear goal – the top priority is to prevent new HIV infections. Other objectives included improving the quality of life of people living with HIV/AIDS and reducing the socioeconomic impact of the epidemic (NAC 2010). As with other infectious diseases, the beneficiaries of prevention of new HIV infections are members of the entire community. Even though some members of the community are more at risk of infection than others, any reduction in the burden of disease due to HIV is regarded as a good in its own right and, at the same time, means that both public and private funds which might have been used for treating that disease are now potentially available for other purposes.

The new NAC can be viewed as a common pool resource (CPR) - a man-made resource system responsible for mobilizing and managing the flow of resources to achieve its goal(s) - in which subtractibility is high, funds used for one purpose are not available for a different purpose. At the same time it is difficult to exclude all potential beneficiaries from obtaining benefits from its use; in fact, it is frequently not desirable to exclude them at all. The stock of this resource is renewable as long as the system is maintained and government and donors continue to replace funds and the rate of withdrawal is less than the rate of replacement. In achieving its purpose the CPR will be responsible for both pure and mixed public/private goods, and it is conceivable that it the resources could be used for club goods as well.

For example, and as summarized in Table 1, an appropriator at the NAC could appropriate some of its resources to fund a public education campaign designed to promote safe sex by using condoms. This is a classic public good – consumption by one person does not preclude consumption by another and it is very difficult to exclude people from exposure to the campaign. At the same time another appropriator might appropriate funds for a ‘treatment as prevention’ program in which frontline drugs are made available free through accredited clinics. Because the supply of drugs is limited, consumption by one person precludes consumption by another and it

is easy for the clinic staff to exclude people who do not meet certain criteria from receiving the treatment – it is a private good. However, because treatment, provided it is taken as indicated, lowers the viral load in the blood there is reason to believe that it thereby reduces the chance of transmission of the virus during unprotected sex. To the extent that this is the case, treatment has some of the characteristics of a public good – in fact, it is a mixed public/private good. Finally, yet a third appropriator might appropriate NAC resources to fund the attendance of an NGO staff member with certain background and experience working on formulation of funding policies at an Ostrom Workshop meeting on CPRs. Each of these examples are funded through the CPR using some of the resources that are administered by, and flow through, it. And funding one activity means that those resources are not available to fund another activity.

Table 1.

		Subtractability	
		Low	High
Exclusion	Difficult	**Public goods** Useful knowledge Reduced incidence (new cases) of HIV Sunsets	**Common pool resources (CPR)** Libraries National AIDS Commissions Irrigation systems
	Easy	**Toll or club goods** Journal subscriptions Attending HIV control conference Day-care centers	**Private goods** Personal computers Treatment for HIV Doughnuts

Adapted from Hess and Ostrom (2006, 58:335-349)

So I regard the NAC as a CPR. But clearly, as described above, this CPR, the NAC, did not come about spontaneously, nor was it built from the bottom up. In fact, waiting for it to come from the bottom up may not have been the best strategy in this case. It came about in response to advocacy by the international multilateral and bilateral organizations and donors as well as by concerned Indonesians and Indonesian organizations – these are the providers of the CPR with perhaps more emphasis on those in the international community. The producers (those who construct or repair and make provision for the long-term survival of the resource system itself) include many of the same organizations and individuals with, in this case, more emphasis on the Indonesian end of the spectrum. The multiple appropriators – those who withdraw resources

from the system – are those who work as staff or are contracted by any of the three pillars of the NAC (the MOH, NGOs and the NAC itself) at all levels (central, provincial, district) to carry out activities designed to pursue the NAC's goals.

Access rights to this CPR are held in trust by the GOI which assigns or appoints a group of individuals (the appropriators) to design and implement programs to achieve the goals of the system, goals that were originally nominated by the GOI itself, with strong support from the international community and bilateral donors.

IV. The CPR and social dilemmas

The next question of interest, then, is whether this CPR faces a social dilemma. Following the arguments of the Bloomington school (Gardner, Ostrom, and Walker 1990, 2:335-358;Ostrom 1990) I consider that a social, or CPR, dilemma exists when two conditions are met – that, from the point of view of the appropriators, providers and producers, the outcome(s) are suboptimal, and that there are constitutionally feasible alternatives that would improve performance.

Are the outcomes suboptimal?

Taking a broader view of the outcomes, one that might be taken by the government and donors who fund the HIV control activities, the most widely used indicator of system performance is the number of new infections per unit of time, usually taken as a year. In countries with adequate health information systems this is usually approached by reporting on the number of new cases diagnosed each year. However, in Indonesian these statistics are thought to significantly underestimate the number of new cases for two reasons: first, because the stigma attached to the diagnosis of HIV infection leads to reluctance to seek diagnosis and treatment, in some cases even for an illness thought to be related to HIV infection; and second the breakdown in reporting through the health information system following decentralization at the beginning of this century.

A second, and widely used, approach to tracking the course of the epidemic is to carry out periodic cross-sectional community prevalence surveys of HIV infection. These surveys are organized at the national level but aim to produce estimates of trends in selected locations. Indonesia started sentinel sero-surveillance surveys of groups thought to be at risk of HIV

infection very soon after the first cases were diagnosed at the end of the 1980s. Separate behavioral surveys in the these groups started in 1996 (Utomo et al. 1999;Utomo et al. 1999;Utomo et al. 1999). These surveys provided good behavioral information (Dharmaputra, Utomo, and Iljanto 1997) but the extent to which they were used for planning interventions seems limited.

In 2007, the serological and behavioural surveys were combined with the BSS to form the Integrated Biological and Behavioral Survey – IBBS. The inclusion of both behavioral and biological results (including HIV status) in the same dataset held the potential for analyses that would help with understanding the epidemic and with program planning and evaluation. However, few such analyses have been made.

In 2009 the second IBBS was carried out but the report was never released due to concerns about data quality; in 2011 the third IBBS was undertaken - the report has been released but the quality of the report is low and it contains obvious errors; results for the 2013 IBBS survey are yet to be released.

At the district level, some districts carry out sentinel group surveillance in addition to that made under the IBBS. However, these surveys, carried out by the local health office, are intermittent and largely uncoordinated. There does not appear to be a systematic plan for these surveys, their implementation is largely controlled by the province and district, funding is sporadic, the overlap between IBBS and sentinel surveys is unclear; the results of these surveys are not released to the public and are usually not available to the NAC at any level even when the NAC may have provided the survey funds. It appears that the MOH at provincial and district levels make little use of the results.

There is also some surveillance of women attending antenatal clinics. Which pregnant women are actually surveyed is not always clear. The availability of results is also limited and they do not seem to be used at any level even though they are used in other countries as a proxy for HIV in the general community (UNAIDS/WHO 2003). Similarly, the results of screening blood donors for HIV, which started 20 years ago, are also not being used as a way of assessing what is happening outside the usual risk groups.

Nevertheless, there have been attempts to use what data is available for a more integrated analysis needed to improve understanding of an epidemic that was becoming more diverse (Pervilhac et al. 2005, 19 (suppl 2):S53-S58). The first efforts at such an integrated analysis at the national level used a basic spreadsheet approach (Departemen Kesehatan 2003). The underlying static model allowed a more integrated approach to the epidemic while also allowing the first assessment of the contribution from the various risk groups. However, the model did not allow for sexual networks connecting the groups and assumed that the prevalence in the general community was zero. A further integrated analysis of surveillance information was made in 2008 using the Asia Epidemic Model (AEM) developed at the University of Hawaii (Departemen Kesehatan 2008). This analysis formed the basis for the 2008-2014 five year plan (National AIDS Commission 2012). Further analyses are underway at the moment and likely will form the basis for the next five-year plan.

Thus, for assessing performance of the system, we have estimates of new cases from two sources, the case reports and the models. Table 2 compares estimates in the public domain of the number of new infections for 2010/2011 from two different versions of the AEM model and the relevant UNGASS Report.

Table 2.

Estimate No.	**Source**	**New cases in 2010/2011**	**Reference**
1	Model 2008	118,300	(Departemen Kesehatan 2008)
2	Model 2012	134,502	(UNAIDS Indonesia 2012)
3	UNGASS Report	42,622	(NAC 2012)
4	Peerapatanapokin 2012	108,686	(AEM training document)

Clearly, there is wide variation. Even after we leave out the numbers from the UNGASS Report (Estimate Number 3) the second estimate is almost 25% bigger than the fourth, even though the second and fourth estimates are from the same process model in the same year!

These models now form the basis for yearly estimates of the number of new infections.

Thus, Indonesia does not have reliable estimates of the annual number of new cases at the national or sub-national levels. There is, however, general agreement that, at the national level, the number of new infections each year is increasing. Indications about trends in the various risk groups, now including the general population in some areas, are dependent on the untested validity of assumptions underlying the epidemiological models.

Lack of confidence in the surveillance system means that there is limited use of information derived from it in planning and evaluation of interventions. Consequently, decisions at all levels are seldom made on the basis of adequate information. Understandably, the public is confused.

Overall, movement toward the goal is unsatisfactory from the point of view of the providers, the producers, the appropriators and the community.

Are there constitutionally feasible alternatives?

Perhaps the most important issue that requires addressing if performance of the HIV control system is to be improved is the assumption about the nature of the HIV epidemic in Indonesia and the further assumption that it is uniform across the country. Initially, the epidemic was classified as a focal epidemic, implying that the virus is mostly to be found in various high risk groups (FSWs, IDUs, MSM) and that the level of infection in the general community was essentially zero. The surveillance system was designed accordingly. Now, many years later, there are indications that in some regions there is an increasing level of infection in the general community. Nevertheless, the surveillance system continues to ignore this possibility and decisions about what might be done to address a more general epidemic are avoided.

A second, and related, issue, is that the NAC and the MOH, together with the GF, and consistent with the overall government structure, have adopted a strategy under which the interventions are the same everywhere. The best example of this is the "standardized minimum outreach service" approach that drives the GF-funded interventions. The intervention is essentially the same for all high risk groups and the push is to implement it in all provinces. The structure of NAC and nature of the intervention are the same irrespective of whether there is reason to believe that HIV infection is a problem in the area or not. Consistent with this view, there is no attempt to anticipate where new areas of increased transmission ('hotspots') might be developing and to strengthen the overall effort in that area. For example, even though it is known that national

development plans mean a rapid increase in construction activities in some areas, with the consequent in-migration of young men and women in search of employment, there is no attempt by NAC to strengthen surveillance and intervention activities in those areas.

This stress on uniformity of the epidemic is at odds with the, admittedly, limited information indicating differences in behavior and HIV prevalence between locations and the likelihood that there are regional differences in epidemiology related to regional differences in development. Thus, there is considerable scope for approaches that recognize diversity in the epidemic and in the interventions that might be designed in response.

A third example of the actions that would improve outcomes in time is improvement in the HIV surveillance effort, an activity vital to improved understanding of the epidemic and what might be done to control it. Although there is general agreement that the annual number of new cases is increasing, there has been considerable confusion and uncertainty about the magnitude of this indicator. This is partly due to the design of the surveillance system which does not include indicators of the extent to which the epidemic has crossed from the risk groups to the general community. In addition, the current design of the surveillance system, together with inadequate implementation and analysis of the surveys, means that it is not possible to provide good estimates of prevalence at provincial and sub-provincial levels. Delays in survey implementation and processing the results, together with concerns about quality mean that no level has prevalence estimates in anything approaching real time. Consequently, at the district level and below interventions are implemented with no real possibility of feedback about their effect.

A fourth example of change that would improve outcomes relates to the fact that most current Global Fund supported interventions place the responsibility for negotiating use of condoms on the female sex workers (FSWs). This is despite the fact that the FSW has the least negotiating power in the transaction. Unlike the previous harm reduction program for IDUs, no other interventions are made to persuade the client (as distinct from the FSW) that condom use is the right thing to do (in contrast, for example, to the strong support from police for the 100% condom use policy in Thailand). Structural interventions - interventions to create an environment that supports change – would provide stronger support to the FSW during transactions and increase the possibility of condom use.

A fifth example of issues that affect whether performance is optimal or not relates to the drive by some to regard treatment as a prevention strategy. As indicated above, the reduction in blood virus levels that comes with treatment and the resulting decrease in probability of transmission during unprotected sex, means that some argue for increased emphasis on treatment, particularly as prevention by other means has not been as successful as had been hoped. Were this approach to be adopted, and given that funds are limited, it is quite likely that attention to prevention per se would receive less support. The consequences of such a change in strategy are not known, particularly if account is also taken of disinhibition effects of such an approach.

Sixth, there is only limited coordination between the various organizations responsible for the HIV/AIDs control effort in Indonesia. The best example of this lack of coordination is the failure of the MOH to design and implement, in a timely manner, a surveillance system to deliver information on the current state of the epidemic at a level of resolution that allows those delivering interventions to target locations and groups most at risk and to assess the effect of the interventions.

These examples indicate that there are changes for which there is good reason to believe their implementation would improve outcomes.

The question is whether this is constitutionally feasible? Is there a necessary consensus for change? Interviews during our fieldwork indicate an emerging consensus for change amongst appropriators at all levels although the exact nature of the changes required are unclear. However, senior managers in NAC and MOH, from whom the leadership for such change would need to come, are reluctant to initiate change and remain committed to the centralist, "one-size-fits-all" approach. Given its critical role in elaboration of the current project design, leadership and support from the GF would also be required.

I conclude that there is a dilemma – the outcome is suboptimal and is produced as a result of the current combination of rules, technology and attributes of the providers, producers and appropriators. In addition, I conclude that there are feasible alternatives to the current situation. A resolution of this dilemma requires the evolution of a set of coordinated strategies to change appropriation and/or provision activities (Oakerson 1992:41-59). What is needed so that there are

improved incentives to improve outcomes? Would a change in behavior of appropriators be sufficient? Or does the situation require structural change? Or both?

To help address these questions I now turn to the IAD Framework.

V. Another view using the IAD Framework

Due to the complexity of the HIV control effort, addressing this question involves input from a wide range of disciplines. We used the Institutional Assessment and Development (IAD) framework (Ostrom 1985;Ostrom 2005;Ostrom 2007;Ostrom 2011, 39:7-27) because it was developed specifically for a task such as this, assessing the functioning of a commons.

The IAD takes as its unit of analysis the action situation, shown schematically in Figure 2. It is a general representation of an interaction between at least two individuals or actors who meet to make decisions about actions to be taken to achieve a certain outcome. The decisions made depend on the information and knowledge available to the actors, the control each actor has over their own decisions and the net cost and benefits thought to be associated with the decision. Examples of action situations range from a formal meeting of the NAC at the national level, a meeting between representatives of various ministries at the center, through meetings at the district level (e.g. NAC D, NGOs, MOH district), to staff meetings in health centers, to negotiations between a FSW and her client about use of condoms. Even though they differ greatly in size, number of participants, degree of formality, the rules used to make decisions, the outcomes sought, all are action situations in which the actors, based on information available to them and their own cognitive abilities, make a decision.

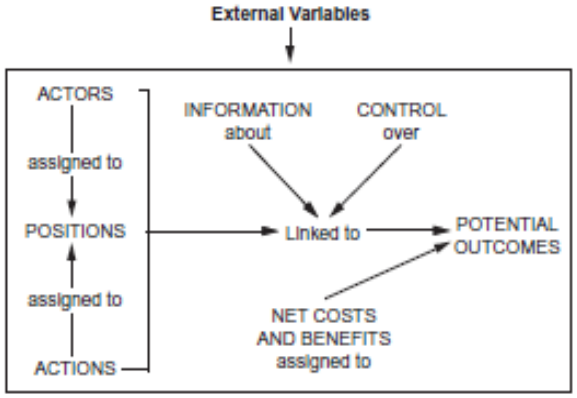


Figure 2. The internal structure of and Action Situation (adapted from Ostrom (2005))

Thus, there are many action situations, some formal, some informal. As the diagram above indicates, the actors in the action situation are also subject to external influences and these are shown in Figure 3. There is a feedback loop through which information about the effect of any actions taken on reaching the desired outcome for the resource system is signalled to the participants in an action situation.

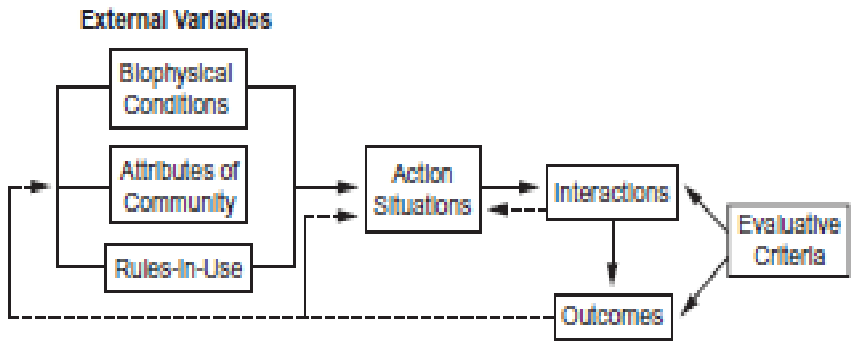


Figure 3. Framework for institutional analysis - from Ostrom (2011, 39:7-27).

Similarly, this range of action situations includes many actors, the individuals who participate in the various meetings and groups that constitute the overall system. The IAD is based on the view that the individuals or actors have incomplete information (i.e. varying access to information and varying capacity to process the information they receive) and varying capacities to make decisions and to learn from mistakes and successes. Further, the actions of individuals in the action situation are influenced by the setting, the ‘’rules’’ in use in the setting, and the norms and beliefs of the communities from whence they came and to which they also have to return. These are not cold blooded rationalists, they are warm, living people influenced by their own experience, abilities and objectives and the settings in which they live (Ostrom 2005).

Further, as already outlined above, the HIV control system is multi-level (at least central/external, provincial, district, client-provider). Because it is also hierarchical, decisions made at one level usually constrain decisions which can be made at lower levels. For example, decisions made at the central level about budget or services to be offered will limit what can be done at the levels below it. The operational level is where services (condoms, needles, treatment) are actually delivered and used. The next level up in the system, the collective choice level, is

where decisions are made that affect the operational level. For the purposes of this assessment the collective-choice level includes the management meetings at the facility, district and provincial levels as well as some central level meetings; these are meetings about how the services will be delivered by the staff of the various ministries, agencies and NGOs involved and the degree of cooperation and collaboration that will occur. The next level up in the system is referred to as the constitutional level and, in the HIV control system, refers to central level decisions, in the government and in the donor agencies, that in effect set the boundaries for the two systems below. Examples include the meetings within and between the NAC, the NAC Secretariat, national offices of NGOs, donors and technical agencies, the national parliament. This level also includes internal meetings of donor agencies as well as meetings between the donor agencies and governments.

Specific application of this framework to the HIV control system in Indonesia is shown in Figure 4 and Figure 5. We used this framework, together with an initial review of the literature, discussions with senior staff at NAC and our own experience, to identify the key variables (shown in red in Figure 4) on which our assessment concentrated. However, we are also interested in locating this action arena within the overall HIV control system and activities. The NAC was created to aid in the pursuit of control of the HIV epidemic and one of the important criteria that will be used by government and the donors is whether the resource system is being managed in a way that helps in achieving the goal, in this case, decreasing the number of new infections. Consequently, we have made a clear connection of the resource management system to the goal and included lines of feedback to the action arena and the external factors about the extent to which movement toward the goal is being achieved. This link to the goal and the associated feedback loop is critical to the value of the IAD approach in assessing whether the system is functioning well or not. We identified the key variables to be:

- Information available to the actors;
- Attributes of the community;
- Rules-in-use;
- The feedback loop

- information about the functioning of the resource system becomes available to members;
- information about the state of the epidemic

Using mostly qualitative methods, we gathered information about these variables in three provinces: DKI Jakarta, West Java Province and East Java Province. At these study sites we visited, observed, sometimes participated in meetings, and interviewed 130 people ranging from the Secretary of the NAC N to the HIV/AIDS Unit at CDC-MOH central level, NGO leaders working on HIV, NAC Secretariat and Health offices at the kota and kabupaten levels, to FSWs in local brothels. Our findings are summarized below.

1. Information available to the actors - Although there are strong indications that the epidemic is changing in nature, size and distribution, little information about these changes is available to the people who are responsible for most of the interventions at the district level. KPA Secretariats use very little information or feedback in making annual program plans. This limits the performance of KPA Secretariat at all levels. Removal of this constraint will not only strengthen the system, but will also generate and accelerate the implementation of interventions that respond to changes at the local level. Efforts to identify and strengthen weak points in the system should be the main focus of the 2014-2019 5-Year Plan currently in preparation.

   In Figure 5 these information constraints are represented by the missing feedback loop and the limited information available to the system managers. The result is that it is not possible for those managing and monitoring the HIV control system at local levels to know whether their interventions have an effect on the epidemic or not. This is particularly true at the district level where the interventions to decrease transmission are occurring. Consequently, the control system is being monitored and managed without evidence-based planning (use of feedback data and other information). The NAC Secretariat's annual plans and activities are oriented to the goal of making "a number of interventions (activities)" rather than to reducing transmission.

Therefore, it is vital that repair of the surveillance system and the feedback loop as well as access to complementary information occurs as soon as possible.

2. Attributes of the community. "Attributes of the community'' covers a wide range of phenomena that can be potent determinants of the decisions made in an action arena. The general moral and world view of a community and the society of which it is a part shape the views of all actors and, in turn, their decisions made in an HIV control action situation.

   The most important of the community attributes in the three provinces visited which ultimately have effects on transmission of HIV include:

   - Attitudes to HIV/AIDS – there is a general social stigma associated with HIV infection that prevents most politicians (including many NAC chairpersons, such as District heads, Mayors and Governors) and religious leaders from openly addressing the problem.
   - Attitudes about gender and sexuality still reflect the common stereotype in which men exert considerable power over women, including in relation to their sexuality. These attitudes, together with the social stigma attached to HIV infection, provide the basis for actions which range from general lack of support to active opposition to HIV control activities, particularly as they relate to efforts to promote condom use to reduce sexual transmission.

   - Attitudes about consumption of illegal drugs – although consumption of illegal drugs is generally opposed at the community level, the relative success of the control activities so far is, at least in part, due to greater community knowledge and understanding that there is a legal basis for these activities which is missing in the case for attempts to prevent sexual transmission.

   - These general community attitudes about HIV transmission through sexual transactions flow through to a general lack of support, sometimes active opposition to HIV control, from:
     - The local police;
     - The local legal system, including local traditional (adat) laws;

- The education system (formal and non-formal teaching).

- Cooperation between ministries – successful control of HIV requires active cooperation between ministries and agencies, especially NAC and the MOH but, depending on the situation, with other Ministries as well. Of particular importance are the Ministry of Home Affairs, Indonesian National Police Force, Ministry of Justice and Human Rights as well as Ministry of Religious Affairs. Each of these four Ministries has a dominant national function and the potential to play a crucial role in control of HIV in those districts with high HIV prevalence. That cooperation, particularly with Indonesian National Police and Ministry of Home Affairs, achieved through the coordination efforts of the KPAN, played a crucial role in making possible structural interventions to control HIV in IDUs. Perhaps reflecting overall community attitudes, similar levels of cooperation are not in evidence with respect to efforts to reduce sexual transmission.

As might be expected, there is a wide variation between districts in the underlying community attitudes about these issues and they influence what is being done to control the HIV epidemic. Similarly, there is wide variation in the stances that politicians and civic and religious leaders take. In the end, preventing transmission of HIV involves talking about the ways in which transmission occurs, and implementing structural interventions as well as those aimed directly at individuals.

However, we also found some religious and civic leaders who are willing to engage in long term efforts to improve the situation but they too lack information and knowledge and a long term commitment from local government to change community attitudes. Building coalitions with these groups will require sustained and imaginative commitment, but remains a largely unexplored option so far.

In all communities there are some community leaders who take a more liberal stance and are willing to explore ways to prevent sexual transmission that do not drive groups such as FSWs and MSMs underground. However, negotiating this terrain is

difficult and time consuming and, because of that, is often put aside for another day. As a result, the constraints that make success less likely, such as local police raids and threats to arrest FSWs and the opposition of some religious and civic leaders, remain with little attempt from local KPA Secretariat to counter the views and their effects. Consequently, attempts to increase condom use have had only small effects so far. In some ways this remains the most persistent barrier to reduction of new HIV infections and control of the epidemic.

3. Rules-in-use. At both the operational and collective-choice levels, the rules-in-use contain considerable internal contradictions and scope for conflict, both in formal written rules and informal rules. These rules, including their contradictions, frequently decrease the possibility of cooperation and collaboration, increase the scope for conflict and, overall, decrease the possibility of achieving near and long term HIV control goals. Many of these contradictions are long established "unwritten rules" about the ways departments and entities work together. Changing them requires consistent, strong and visionary leadership to, in essence, bring about a change in the ''culture'' of the organizations concerned. In the few cases where legislation or regulations are required it is important that, difficult as it may be, NAC, through the leadership of the Chairman and NAC Secretary, ensure this change occurs as soon as possible. Its importance derives from the fact that change at that level will drive changes at the lower and more operational levels.

Overall, our findings indicate that the district MOH does not see itself as having any obligation to share results or contribute to NAC Secretariat's thinking about the course of the epidemic in that district – it is seen as a static concentrated epidemic (except for Papua) that should be handled at the national level (by NAC Secretariat) and there is little need to worry about what is happening locally. In any case, collecting data is enough and there is no need to analyse it or ask what it means. Consistent with this view, analysis and interpretation should be done somewhere else (many felt this was the responsibility of NAC and/or the MOH) and there was no need to worry about it at the district level.

There is considerable scope for rules to support structural interventions at the local level to reduce sexual transmission of HIV in Indonesia. What is required now is cooperation between ministries, particularly between Indonesian National Police and the Ministry of Home Affairs, to strengthen the ability of sex workers to negotiate condom use in a way that is similar to the successful cooperation between these ministries on control of transmission between IDUs.

Rule change to support structural intervention will require a sustained and nuanced commitment from the KPA at all levels in conjunction with other government bodies and religious organizations.

4. The feedback loop
    a. About the functioning of the resource system. Appropriators within each sub-system (NAC, MOH) at the province and district levels appear to have quite good information about how the system overall does and does not operate. There are quite wide variation between in these levels that, overall, seem to be positively correlated with outcomes. And there are some sub-systems which clearly do not operate well at all. However, the lowest levels of trust and reciprocity are between the sub-systems, and particularly between NAC and MOH. Both formal and informal rules limit the ability of the two entities to cooperate and collaborate at all levels. In effect, the feedback loop within each sub-system serves to reinforce the lack of cooperation.
    b. The feedback loop about the state of the epidemic. As outlined above, the functioning of the surveillance system is not adequate. As a result there is little reliable information at any level about the state of the epidemic and the ways in which it is changing.

VI. Where to from here?

It is clear that one of the main problems contributing to the overall sub-optimal performance of the system is the lack of cooperation between government departments, and particularly between

NAC and MOH. The attitudes that drive this behavior derive in part from the departmental 'culture' but also receive some support from the local community. They also reflect attitudes and conflict between international organizations, particularly WHO and UNAIDS (UNAIDS 2008). Improving performance depends on changed attitudes which, in turn, result in rules, both formal and informal, that promote collaboration, coordinated strategies which include interventions that are both structural and individual in their targets.

Ostrom (Schlager 2004:145-175) identified the attributes of CPRs that support emergence of cooperation. They are shown in Table 3 together with a summary of our findings for the NAC in Indonesia.

Table 3.

Attribute	Description	Summary for Indonesia
Feasible improvement	resource conditions are not at the point of deterioration that is useless to organize	Yes
Indicators	reliable and valid indicators of the condition of the resource system are frequently available at low cost	indicators are available but the data is often of low quality and not available on time, concerns about quality
Predictability the flow of resources is relatively predictable	from both government and donors	depends on performance
Spatial extent	the resource system is sufficiently small, given the transportation and communication technology in use, that appropriators can develop accurate knowledge of external boundaries and internal microenvironments	currently treated as a single system, it is too large and concerns about the quality and applicability of the data, possible to group contiguous districts for which local knowledge and existing surveillance data indicate the likelihood of a single epidemic and form a sub-CPR for that region

Thus, the emergence of cooperation would be more likely if information of good quality on indicators about the CPR and the epidemic were available and if the CPR were organized on a sub-national basis.

Ostrom (Ostrom 2000, 33:33-44;Schlager 2004:145-175) also identified the attributes of appropriators that are associated with an increased likelihood of self-organization. They are shown in Table 4 together with a summary for Indonesia.

Table 4.

Attribute	Description	Summary for Indonesia
Salience	Appropriators are dependent on the resource system for a major portion of their livelihood or other important activity	appropriators value the system as they are dependent on it for income
Common understanding	Appropriators have a shared image of how the resource system operates and how their actions affect each other and the resource system	depends on formulation of, and agreement about, a narrative of the epidemic and the response to it, which is based in local time and place information, including reliable data about the status of the resource and the epidemic
Low discount rate	Appropriators use a sufficiently low discount rate in relation to future benefits to be achieved from the resource	appropriators would like the CPR to remain viable as it effects their income
Trust and reciprocity	Appropriators trust one another to keep promises and relate to one another with reciprocity	currently low overall, higher at some provincial and district levels; chances of improvement likely on ability to manage at the local level and for dispute resolution
Autonomy	Appropriators are able to determine access and harvesting rules without external authorities countermanding them	currently limited but could be increased with central/external agreement and implementation of transparent monitoring of the resource
Prior organizational experience and local leadership	Appropriators have learned at least minimal skills of organization and leadership through participation in other local associations or studying ways that neighboring groups have organized	variable, currently adequate in some provinces and districts but not in others; requires a change in personnel in some places which will require agreement from politicians and central ministries, especially Home Affairs.

Thus, improved understanding, increased trust and reciprocity, and greater autonomy would increase the likelihood that appropriators would self-organize.

In summary, resolution of the social dilemmas faced by this CPR would be more likely if the CPR was organized at a sub-national (regional) level with each region having significant autonomy, clear dispute resolution mechanisms accompanied by clear graduated sanctions for non-compliance, and a revitalized surveillance system designed to provide information on agreed indicators at all levels. This approach, which could be piloted and evaluated in several regions initially, would allow the system to be results-based and provide a basis for use of adaptive management approaches. It is important that any move to regionalize the CPR occurs alongside an agreed narrative about HIV/AIDS at the national and regional level based on local data and knowledge – this would form the basis for much improved information at all levels.

Such a move would also provide government and the donors with a much improved basis for future funding decisions, with a resultant increase in the predictability of future resource flows and flow on effects to appropriator discount rates.

Finally, it is essential that at the national level the NAC commits resources to monitoring the social, political and technological context of the epidemic so that changes in its course can be monitored, maybe anticipated, and the goal of reduced transmission realized.

Implementing these changes will require a coordinated strategy to: (1) understand changes in context; (2) accommodate differences in background factors and the nature of the epidemic between various parts of the country; and (3) develop a results oriented common purpose for the HIV/AIDS control effort.

Figure 1.

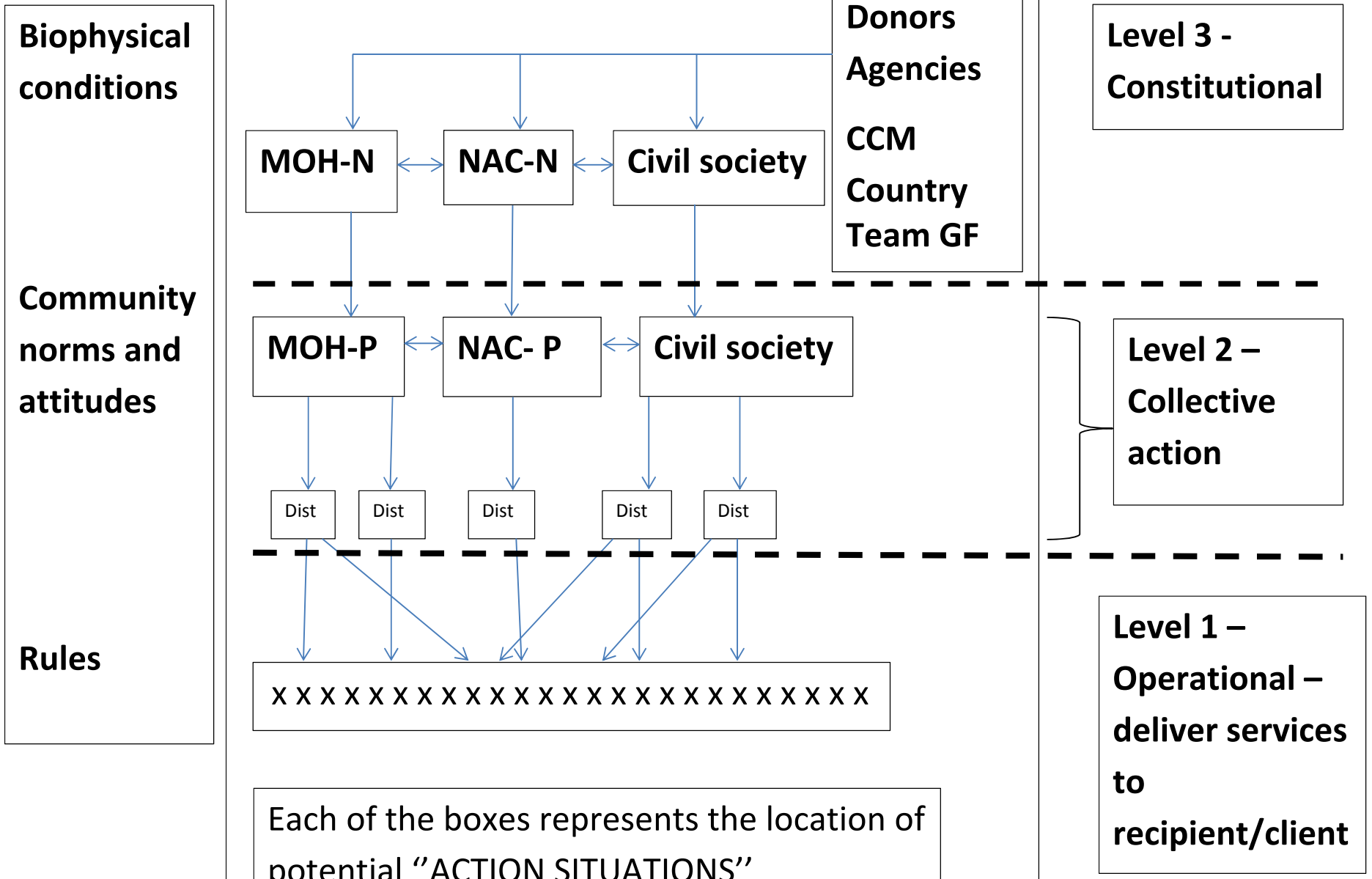

Biophysical conditions
Community norms and attitudes
Rules
Donors Agencies
CCM Country Team GF
Level 3 - Constitutional
MOH-N
NAC-N
Civil society
MOH-P
NAC- P
Civil society
Dist
Dist
Dist
Dist
Dist
Level 2 – Collective action
Level 1 – Operational – deliver services to recipient/client
x x x x x x x x x x x x x x x x x x x x x x x x x x x
Each of the boxes represents the location of potential ''ACTION SITUATIONS''

Figure 4.

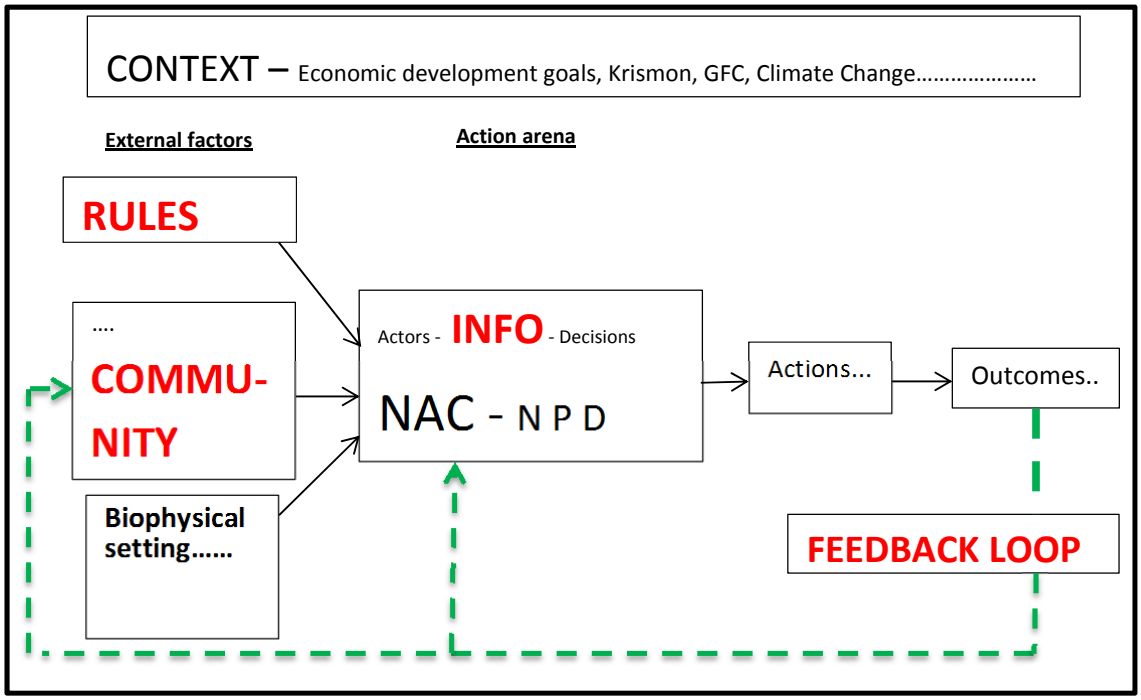
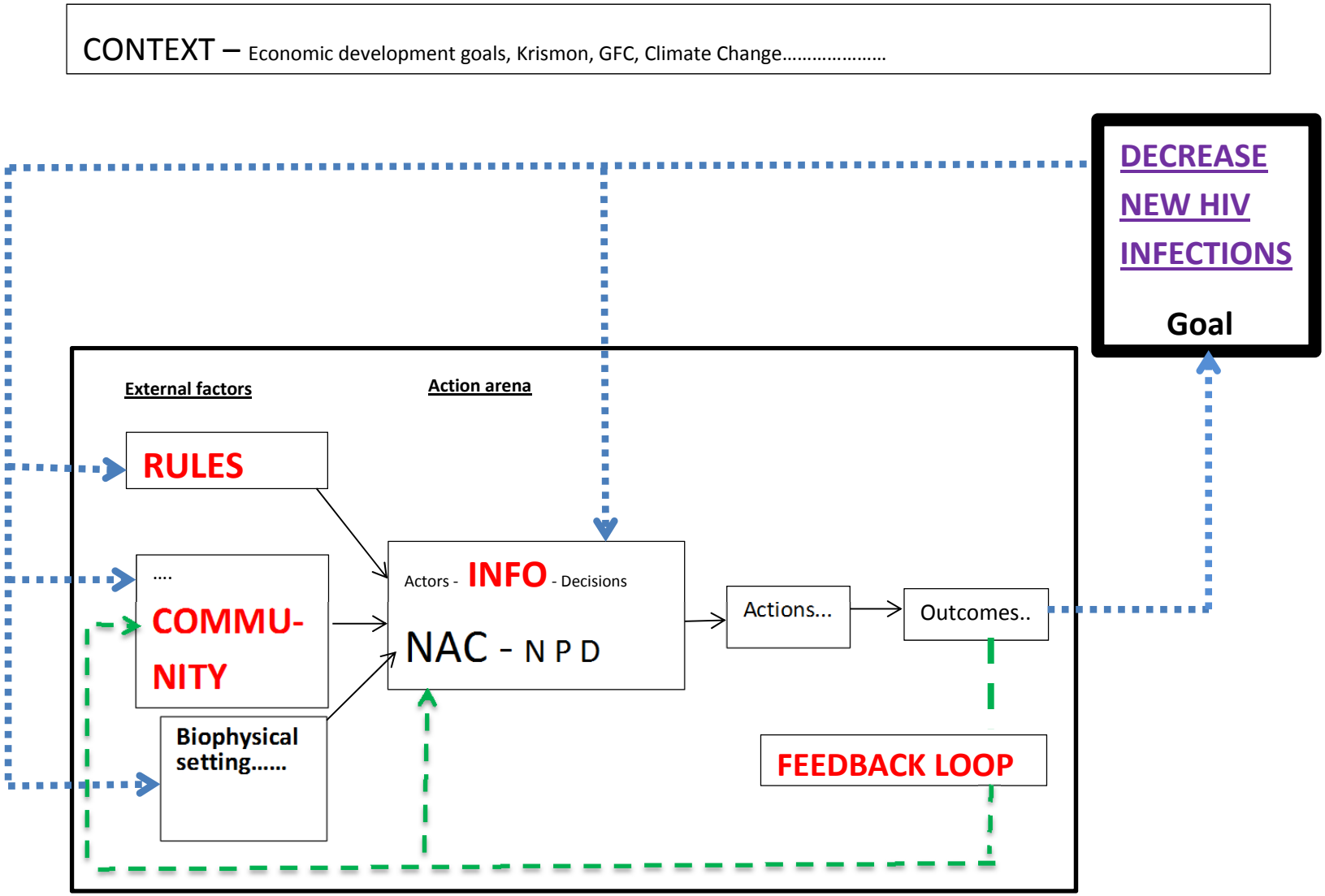

CONTEXT – Economic development goals, Krismon, GFC, Climate Change……
External factors
Action arena
RULES
….
COMMU-
NITY
Biophysical setting……
Actors - INFO - Decisions
NAC - N P D
Actions...
Outcomes..
FEEDBACK LOOP

Figure 5.


CONTEXT – Economic development goals, Krismon, GFC, Climate Change……
DECREASE NEW HIV INFECTIONS
Goal
External factors
Action arena
RULES
….
COMMU-NITY
Biophysical setting……
Actors - INFO - Decisions
NAC - N P D
Actions...
Outcomes..
FEEDBACK LOOP

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