

The Swarm Principle? A Sub-national Spatial Analysis  
of Donor Coordination in Sub-Saharan Africa

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## **Abstract**

In light of greater attention to donor coordination and harmonization, this paper considers whether foreign aid donors suffer from a lack of coordination in the spatial placement of foreign aid projects. We present a framework for assessing the level of donor coordination subnationally. If donors cluster projects in areas with concentrated need, or spread out projects in areas of diffuse need, then we conclude that donors are coordinating well. Because co-financing may be one mechanism by which donors coordinate their efforts, as a second step we examine whether the frequency of donor co-financing increases the quality of coordination. For the first time, subnational geo-referenced foreign aid data for the World Bank (WB) and African Development Bank (AfDB) are available, making it possible to map the coordination of foreign aid along with subnational poverty levels. Results indicate that coordination problems and inaccurate targeting of needs abound. There is little evidence that countries with higher frequency of co-financed activities achieve better overall donor coordination.

Keywords: Foreign aid, geocoding, donor coordination, cofinancing, Africa, East Africa

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# 1. INTRODUCTION

In youth soccer, children inevitably swarm around the ball, regardless of its location on the field. Not yet sufficiently mature or well-coached, the children are unable to distinguish when it is ideal to cluster together and when it is better to space themselves strategically in order to increase their chances of scoring a goal. Kids crowd around the ball, hoping just to kick it – not caring whether the ball advances or moves backward. Many have suggested that foreign aid donors follow a strikingly similar pattern as they have historically failed to coordinate their efforts. Instead, each donor may attempt to capture headlines with high-profile projects in the same areas (Easterly 2007, Knack and Rahman 2007).<sup>1</sup>

The donor community has gone to great lengths to eliminate duplication of efforts. In February 2003, over 40 multilateral and bilateral donors signed the *Rome Declaration on Harmonisation*, which was designed to improve coordination between donors and recipients and among donors themselves. From Paris, Accra, and Busan, more declarations and statements have followed, all of which underscore the importance of donor-donor coordination. While such coordination can take a number of forms, we consider the extent to which donors coordinate their efforts in the spatial placement of foreign aid.

Most researchers have found that donors fail to coordinate their efforts on a cross-national scale (see for examples Easterly 2007, Knack and Rahman 2007, Bigsten 2006, and Renzen 2006), but research has yet to examine donor coordination at a sub-national level. This gap in the extant literature stems from two main sources: most studies use aggregate donor aid flows rather than project-level data and there has been a chronic lack of usable sub-national aid data. Fortunately, recent developments in geo-coding (assignment of geographic coordinates to project locations) provide an excellent opportunity to scrutinize the claims of uncoordinated donor activity at a sub-national level for the first time.

What is the appropriate way to measure donor coordination at a subnational level? If need is concentrated within a country, it may be desirable to have multiple donors clustering in the needy area. Indeed, such clustering, although ostensibly signaling a lack of coordination, may be the best strategy, a point that appears lost in much of the discussion on spatial coordination of donor activities. However, if aid money is concentrated in relatively well-off areas to the neglect of needier areas, it strains credulity to conclude that donors are coordinating in effective ways.

Conversely, if donors spread out their activities in different geographic areas *within* a country in which need is diffuse, donors may indeed be coordinating effectively. The strategic spacing of donor activities throughout each country would allow donors to specialize and coordinate in much the same way that a successful soccer team is composed of different positional players working in concert. If donors spread their efforts widely but need is concentrated, on the other hand, then this may not be a virtue and signals a lack of coordination. Subnational data on both need and development aid allow a closer examination of the extent to which donors successfully coordinate their efforts.

Measuring the extent of donor coordination is, thus, one key goal in the present paper. We expect this analysis to offer insights into some of the basic objectives of attempts to increase coordination, such as the Paris Declaration. A second goal is to examine more closely whether one of the OECD's stated mechanisms for achieving coordination, *co-financing*, has facilitated greater levels of coordination. We thus question whether the frequency of co-financing among donors could help them share information better in ways that may improve the quality of coordination within countries. More co-financing might lead to improved communication and greater cooperation between donor country offices as more than one donor has the ability to influence where and how projects are implemented, which are key concerns for many donors.

This paper uses geo-coded aid data for two of the most prominent donors in Africa to provide greater insight into donor coordination within and across countries as well as the effects of co-financing. In particular, we examine geographic coordination by comparing the distribution of World Bank (WB) and African Development Bank (AfDB) projects at the first administrative division level. Specifically, we consider whether donors are clustering their geographic efforts in areas of greatest need within a country – by examining the level of concentration of need – within our six case studies. We then consider whether donor coordination (or lack thereof) can be explained by co-financing. In what follows, we begin by discussing the current literature on donor coordination and aid targeting and then lay out a conceptual and theoretical framework for understanding coordination, along with the role of co-financing. We then use recent geocoded project data for the World Bank and AfDB, in conjunction with sub-national indicators of need, in Ethiopia, DRC, Kenya, Mozambique, Rwanda, and Tanzania.

We find that effective coordination is not altogether common for these two donors. Donors appear to cluster their activities in areas of high need only in limited circumstances, often clustering instead in areas of low need. At other times, they spread out within countries, but do not cover the diffuse needs proportionally. The lack of subnational coordination is consistent with the cross-national lack of coordination that many have identified. Based on the six countries we examine, co-financing appears to be at best weakly related to effective coordination, moreover. While only an initial inquiry, the weak co-financing effect offers initial insights into the (lack of) efficacy of solutions being proposed by the international community.

The argument and analysis in this paper raise the question of whether coordination is fundamental or only incidental in improving aid delivery. Adding to the extensive concern by the donors themselves, as is evidenced by attention at high level forums and in the formal documents emanating from these meetings, such as the Paris Declaration, scholars also contend that

coordination problems carry with them nontrivial consequences. Knack and Rahman (2007) found that transaction costs are dramatically increased as recipient governments attempt to comply with variegated donor procurement and spending rules.

Beyond incurring higher transaction costs, government absorption capacities are adversely affected by attempting to work with the various aid agencies operating within their borders (Bigsten 2006). In a related problem, projects are difficult to plan in advance as recipient governments are unable to predict when funding will be disbursed and from which donor source (Renzio 2006, Woods 2005). This lack of lead time may cause budget coordination failures in recipient governments and can lead to inefficient spending as governments lack the lead time necessary to properly bid contracts and plan projects. Once projects have been planned and initiated, they may be difficult to sustain due to fluctuations in donor funding. Currently, recipients have no mechanism to sanction donors who fail to follow through on funding commitments (Renzio 2006).<sup>2</sup>

## **2. DONOR HARMONIZATION AND COORDINATION**

The *Rome Declaration on Harmonisation*, followed by declarations and statements in Paris, Accra, and Busan, all emphasize the importance of improving donor-donor and donor-recipient relations and working practices. Generally, this process involves a number of steps including donor support for country-owned and led development efforts, efforts to strengthen recipient capacity and reliance on recipient systems, among other measures (Harmonising Donor Practices 2003). A key component of this process has been efforts to encourage donors to cooperate more with each other both by communicating regularly and not duplicating efforts in recipient countries. While each of these factors is likely important, we seek to understand the extent to which aid donors coordinate their efforts.

Donor coordination is not easily defined or measured. It may include communication at the donor headquarters level or at the donor country office level, for example. Coordination may also occur through joint monitoring and evaluation of aid programs and projects. The *Paris Declaration* calls for donors to “Implement, where feasible, common arrangements at country level for planning, funding (*e.g.* joint financial arrangements), disbursement, monitoring, evaluating and reporting to government on donor activities and aid flows” (Paris Declaration and Accra Agenda 2005/2008). These various types of coordination should result in better geographical placement of foreign aid projects, such that donors work together to target need more effectively. Effective coordination to target need is ultimately one of the key outcomes of interest in the development literature and is our primary consideration in what follows.

(a) *Coordination and targeting literatures*

Existing literature on donor coordination is mostly negative in tone. A general consensus is emerging that donor efforts are uncoordinated (Easterly 2007, Knack and Rahman 2007, Bigsten 2006, de Renzio 2006). In response to concerns about poor aid administration, the Paris Declaration of 2005 sought to improve donor coordination in order to “eliminat[e] duplication of efforts and rationaliz[e] donor activities to make them as cost-effective as possible” (OECD 2005). However, in spite of recent criticism and the efforts of the more than 100 Paris Declaration signatories, it still appears that “all donors seem to want to give to all sectors in all countries” (Easterly 2007). In fact, the increase in donor organizations has outstripped the increase in foreign aid since 1975 (Bigsten 2006). The opinions in the literature diverge in explaining the causes of poor coordination, as well as the resultant financial and social costs to uncoordinated donor behavior. The current literature is limited, moreover, in that it examines coordination exclusively at the



national or sectoral (e.g., health, education) level, with almost no research occurring at a sub-national level.

One explanation for poor coordination is a lack of information on donor activities. Donors fail to coordinate not because they are unwilling to cooperate with each other, per se, but rather because they are unaware of opportunities for collaboration through projects that are supported by other donors (Halonen-Akatwijuka 2007). Alternatively, donors may fail to coordinate because they are unwilling to relinquish control over aid-funded activities. This may be particularly true in countries with central and local governments that are perceived to be weak or corrupt (Buse 1999, Platteau 2004). Donors may feel that, if they are not able to directly track funds through the implementation process, elite capture of aid funding may occur (Platteau 2004). A third common explanation for uncoordinated activity is posited by Easterly (2007): donors fail to coordinate their programs because they want the recognition of having a direct presence in every country and sector. Donors have a direct interest in spending their entire budget to prevent budget decreases in subsequent years (White and Morrissey 1997). A fourth explanation is that donors refuse to coordinate as their aid flows are largely determined by national diplomatic priorities, rather than altruistic mechanisms (Alesina and Dollar 2000, Woods 2005).

Studies of aid targeting are indirectly related to the question of whether donors coordinate: do donors take a coordinated approach to targeting need. As with donor coordination, studies of aid targeting do not paint a particularly positive picture of donor performance. The two most common indicators for targeting are need, as measured by poverty or other sectoral needs, and effective policy and capable governance. Thiele et al (2007: 622) examine how effectively donors target needs as measured by the millennium development goals (MDGs). The United States and Japan were found to have the least effective aid allocation in relation to the MDGs. Further, the study found that

“MDG-related indicators of need have hardly shaped the allocation of aid by donors such as Denmark, which are widely perceived to be superior donors because of their strong poverty orientation as measured by per capita income of recipient countries”.

Using poverty alone as the variable of interest does not improve evaluations of donor performance. Bilateral donors devote only 27.6% of aid dollars to the poorest quartile of aid recipients and 67% to the poorest half, while multilateral donors devote 36.6% to the poorest quartile and 78.7% to the poorest half (Nunnenkamp and Thiele 2006). The authors summarize find little evidence supporting the view that aid is well targeted. Collier and Dollar (2002) similarly derive an efficient allocation of aid – based on poverty – and find that current allocation is substantially different, with the poorest 74% of individuals receiving only 56% of aid. The study posits that a poverty-efficient allocation of aid would increase the number of individuals lifted out of poverty from 30 million to 80 million each year.

A third measure of effective targeting – national policy and governance – provides a mixed picture of the effectiveness of aid allocation. Berthelemy and Tichit (2004: 253) find that “most donors pay a great attention to political governance when making their aid decision” and that aid tended to flow toward democracies. However, the same study found that aid allocation is substantially influenced by international trade ties and colonial linkages. Canavire et al (2005) found that policy orientation depended upon the measure of effective governance. A separate study, however, found that donors have an overall weak policy orientation, and generally fail to reward governments for sensible improvements in policies (Nunnenkamp and Thiele 2006).<sup>3</sup>

The findings of the current literature rest on the key assumption that the state is the proper unit of analysis in examining donor behavior.<sup>4</sup> This assumption may not be appropriate in many cases, however, as donors may coordinate their activities sub-nationally. Additionally, donors that

target countries, which are better off may target the poorest areas within that country, casting doubt on the results of state-level studies. In order to definitively assess the effectiveness and outcomes of donor behavior, sub-national variations in aid allocation and recipient need must be addressed.

(b) *Coordination and co-financing*

This paper examines donor coordination in two stages. We begin by conceptualizing coordination at a subnational level and then consider co-financing as a possible explanation for coordination. We argue that the quality of donor coordination depends upon the level of geographic clustering and the geographic concentration of need – with incidence of donor co-financing potentially explaining and complementing the two key factors.

As a first step, the effectiveness of coordination can be illustrated through a contingency table, as depicted in Table 1. As the table shows, donors can effectively coordinate their activities whether working in the same areas or different areas, depending upon the distribution of need within a country. If there is one province of the country that contains the majority of the nation’s poor, we should not expect a donor to work in a different province simply because another donor has already initiated activities in the poorest region. Conversely, if poverty is evenly distributed throughout the country, it makes little sense for each donor to focus in the same narrow areas of the country while needs remain unmet elsewhere.

**[TABLE 1 ABOUT HERE]**

Our approach to conceptualizing donor coordination appears consistent with some other approaches that identify coordination based on need concentration. Barrett and Clay (2001) similarly found that targeting errors of inclusion – aid to non-needy individuals – and exclusion – failure to provide aid to those in need - were common in Ethiopia. A study of food aid targeting in Mozambique also found similar targeting errors (Tschirley et. al 1996).

This conceptualization also appears consistent with the strategies outlined in the Accra Agenda for Action, in which the stakeholders outlined strategies to coordinate aid in ways that would target it more effectively. They state:

“The effectiveness of aid is reduced when there are too many duplicating initiatives, especially at country and sector levels. We will reduce the fragmentation of aid by improving the complementarity of donors’ efforts and the division of labour among donors, including through improved allocation of resources within sectors, within countries, and across countries” (Paris Declaration and Accra Agenda 2005/2008).

Thus, if donors coordinate their efforts effectively, we should expect that donors work together in areas of concentrated need and spread out to effectively target areas of diffuse need.

We have thus far only attempted to conceptualize effective coordination raising the question of what might explain coordination. Two potential explanations for improved coordination include a lack of information on the activities of other donors (Halonen-Akatwijuka 2007) and unwillingness to share credit or responsibility for project implementation (Easterly 2007, Platteau 2004). Given the proper institutions and incentives, it is possible that these problems can be overcome.

If coordination problems exist because of information problems or credit-claiming incentives, we might expect that higher levels of co-financing could lead to better overall spatial coordination and targeting of sub-national need. Co-financing – even on a small sub-set of donor projects – could be a key factor in explaining overall coordination by solving two important problems. First, co-financing may improve coordination by facilitating communication between the donor-country offices, increasing awareness by the donors of each other’s activities. Second, co-financing activities may improve coordination by creating a cooperative environment between the two donors, ameliorating concerns about maintaining control over activities, having a broad presence within countries, and remaining committed to organizational or national goals.

While overcoming such challenges may be difficult politically, the international community seems to be banking on this as an important component of effective aid delivery. In the OECD’s guidelines, *Harmonising Donor Practices for Effective Aid Delivery*, an entire chapter is devoted to the topic of “delegated cooperation” (DAC Guidelines 2003), in which best practices are recommended for lead and delegating donors. At the heart of these guidelines is an emphasis on communication and mutual benefit. Thus, as donors engage each other more often and work out mutually beneficial arrangements, some of the information and credit-claiming problems should be ameliorated. A reasonable expectation is that positive spillover effects should accrue outside of the specific projects being co-financed, such that donors generally work together more often over time and therefore more effectively coordinate their activities throughout a country.

Given the international community’s guidelines for increasing levels of co-financing, a reasonable question is thus: does co-financing improve the effective coordination of foreign aid placement geographically in a country? We now consider this using new subnational georeferenced foreign aid data.

### **3 DATA AND RESEARCH DESIGN**

#### *(a) Geo-coded aid data*

For the first time, geo-coded data is now available for active World Bank projects worldwide. Additionally, active African Development Bank (AfDB) projects from the last three years have also recently been geo-referenced in six African nations – Ethiopia, Kenya, Mozambique, Democratic Republic of Congo (DRC), Rwanda, and Tanzania. These data were created using the UCDP/AidData Geo-Referencing Methodology introduced in Strandow et al (2011) and first applied in Findley et al (2011), allowing geo-coded projects to be compared across donors. This paper uses the recently created geo-coded AfDB and World Bank datasets to examine donor

coordination at a sub-national level. Geographic patterns of donor activities are compared in each country to examine whether donors tend to work in the same areas or whether they instead specialize geographically. After establishing levels of coordination, we compare it with levels of co-financing to determine what effect it may have.

### (b) *Geo-coding methodology*

The dataset used in this research represents the most thorough and accurate geo-coded data produced to date. Each project was hand-coded by two individuals based off of multiple project documents - including Project Appraisal Documents, Environmental Impact Assessments, and Project Papers. After two initial rounds of coding, the work of both geo-coders was arbitrated into one final data-set, resulting in data that is both exhaustive and quality-controlled. For all data, Task Team Leaders and Project Managers were contacted for clarification when locations could not be determined from available project documentation. The use of such extensive and varied documentation represents a substantial improvement over previous geo-coding efforts, which gathered location information exclusively from project titles and abstracts (Findley et al 2011).

The UCDP/AidData methodology distinguishes between coordinates based on a precision-coding system that ranges from point locations - i.e. cities or dams - through first and second administrative divisions - such as provinces and districts, respectively - to the country level. National projects are further differentiated between projects intended to benefit an entire country - such as a national anti-HIV campaign - and aid money granted directly to the central government - e.g. budget support (Strandow, et. al 2010). Three additional precision categories are used to differentiate between levels of certainty. The precision categories are as follows:

**1-2:** Used when a location lies within (1) or near (2) a specific populated place or object.

**3:** Used for a district or municipality.

- 4-5: Used for a specific province (4) or a greater region (5)
- 6: Used when a project is national in scope.
- 7: Used when no location is given or location is unclear<sup>5</sup>.
- 8: Used when aid flows directly to a government entity.

The geo-codes for each project are linked to all other project data, including commitment amount, dispersal amounts and dates - when available - primary, secondary and tertiary sectors, approval and closing dates etc. This extensive project data allows us to examine not only project locations, but also intensity and type of locational aid commitment for each donor. Thus, donor project coordination can be investigated spatially and monetarily. Finally, because the UCDP/AidData methodology also captures the administrative divisions governing each point location, we can examine geographic coordination in a more rigorous, standardized way.<sup>6</sup>

### (c) *Sub-national indicators of need*

In order to determine whether donors are clustering their activities in areas of greatest need, we use sub-national indicator data on poverty. Clearly, there are other potential variables that may be of interest, but poverty data is largely available sub-nationally within the countries of interest and may present an acceptable proxy for some other variables of interest.

Poverty data is collected from the HarvestChoice Lab's Poverty Maps and Data.<sup>7</sup> We chose to use HarvestChoice because it is a consistent measure of poverty across countries. The measurement in each country is the headcount ratio, which measures the proportion of individuals living on less than \$1.25 per day.

### (d) *Measuring donor coordination*

To evaluate the spatial coordination between the World Bank and African Development Bank, we have used first-order administrative divisions to create project location counts. Because a given project can affect more than one location, we code each of the locations and hereafter consider location counts. Given that population size may affect the choice of project location, we weight each Bank's aid portfolio by population. Using these weighted counts, we can calculate simple correlations between World Bank and AfDB country portfolios. Thus, a strong positive correlation indicates high geographic clustering while a strong negative correlation would indicate that the donors tend to work in different areas of the country.

As discussed above, simply identifying donor clustering does not indicate that they are uncoordinated. We need to determine whether they are clustering in the most needy places. Because our measures of donor clustering and localized need can be evaluated at the first-order administrative division (ADM1) level, we calculate the correlation between levels of donor financing – defined as the count of project locations per ADM1 – and our measures of poverty. This will allow us to make a better determination about the overall quality of donor coordination, which will be evaluated differently for our spatially clustered and spatially diffuse project locations. We will examine targeting of need in three stages.

First, we use a Herfindahl Index, which provides a country-level measure of whether need is diffuse or concentrated within a country. The Herfindahl Index is defined as  $H = \sum_{i=1}^N s_i^2$  where  $N$  is the number of administrative divisions and  $s$  is the share of the total held by division  $i$ . A high Herfindahl Index indicates high geographic concentration, while a low index indicates diffuse need. We use this measure primarily to determine whether there are pockets of needy areas, but it does not reveal information about precisely which areas are most needy.



Second, to understand better whether donors are targeting the right areas, we consider how well donors are targeting those concentrated areas of need. To do so, we use a simple correlation between the combined (WB and AfDB) number of project locations in an administrative division and the level of poverty in that region. A strong positive correlation between the number of project locations of the two donors and poverty suggests that donors are clustering in the most needy areas. A strong negative correlation indicates that the clustering is occurring in the least needy areas.

As an alternative specification, we also calculate the poverty concentration ratio, defined as the share of the three poorest divisions in the country, and the aid concentration ratio, defined as the number of project locations of these same three poorest divisions in the country. If the concentration of aid project locations is lower than the poverty concentration ratio, then this suggests that the administrative division is not receiving aid proportional to its poverty needs.

Because neither of these measures is perfect, we can also compare them informally. If there is a strong positive correlation between aid and poverty *and* the aid concentration ratio is greater than or equal to the poverty concentration ratio, we might conclude that donors are targeting the neediest parts of the country, perhaps excusing their failure to specialize geographically.

Finally, after assessing overall coordination quality, we consider whether co-financing enhances donor coordination. To determine the frequency of co-financing, we examined the project appraisal documents (PAD) for each African Development Bank project and the financial details from the project page of each World Bank project. For each project, we recorded whether the other donor was a co-financer, giving a score of 1 or 0. We then averaged the number for each donor country, giving the final co-financing score. For example, an average of 0 for an AfDB country would indicate that the World Bank was not a co-financer on any of the AfDB's active projects in

that country. A country with 20 World Bank projects, three of which are co-financed by AfDB, would receive a score of 15%.

To examine the impact of donor co-financing on overall coordination, we averaged the co-financing scores of the World Bank and AfDB for each country, then plotted these scores with our measure of correlation between donor activities. This allows us to visualize the relationship between co-financing and donor clustering.

## 4 EMPIRICAL ANALYSIS

We begin with a visual examination and analysis of the spatial placement of projects in the six countries of interest in this paper. Figures 1, 2, 3, 4, 5, and 6 contain maps for Mozambique, Kenya, Tanzania, Rwanda, D.R.C., and Ethiopia.

**[FIGURE 1 ABOUT HERE]**

**[FIGURE 2 ABOUT HERE]**

**[FIGURE 3 ABOUT HERE]**

**[FIGURE 4 ABOUT HERE]**

**[FIGURE 5 ABOUT HERE]**

**[FIGURE 6 ABOUT HERE]**

These maps do not tell a single story, and although conclusions are easier to reach in some (e.g., Kenya), others are less straightforward (e.g., Rwanda). As such, we consider the various statistics that we outlined in the previous section.

### (a) *Do donors cluster?*

We first consider the extent to which the WB and AfDB provide aid to the same administrative divisions. We find that there are two countries – Mozambique (-0.009) and Tanzania

(-0.080) – that are weakly, negatively correlated, providing limited evidence that each donor is specializing in different parts of the country. More striking, DRC (0.298), Kenya (0.502), Rwanda (0.317), and especially Ethiopia (0.816) each show strong correlations, indicating that both donors are working in the same areas within the country. This means that provinces with more World Bank locations are also likely to have more AfDB locations, while areas that may be less served by the World Bank will also have fewer AfDB project locations. These results alone may not tell the entire story, however, as the donors may be clustering activities in the most needy parts of each country, which would be a desirable outcome.

(b) *Do recipients have concentrated needs?*

Before considering whether donor clustering occurs in the most needy areas, we first identify which countries have localized need by examining the Herfindahl index. In examining the concentration of need, we find that there is not substantial variation across countries. Tanzania (0.049) has the most diffuse needs, whereas the other five countries are clustered fairly closely with relatively higher concentration of need: Mozambique (0.092), Rwanda (0.091), Ethiopia (0.095), DRC (0.103), and Kenya (0.13). Poverty concentration ratios are quite similar to the Herfindahl index, but yield more variation: Tanzania (0.169), Rwanda (0.276) and Mozambique (0.313), Ethiopia (0.327), DRC (0.359) and Kenya (0.443). These two measures indicate that DRC and Kenya have higher concentrations of poverty relative to the other countries, though the differences are only strong in a few cases. We can conclude, at least, that Tanzania and Mozambique have less concentrated need than DRC and Kenya.

To summarize the donor concentration and recipient need concentration results just discussed, Figure 7 displays the clustering of activities relative to need concentration. As we see, WB/AfDB activities in Kenya are highly clustered, as is the need within the country. Tanzania, on

the other hand, has both diffuse need as well as low WB/AfDB clustering of projects. The other countries appear between these extremes and are varied in their levels of coordination. Of course, we need to consider whether the clustering is in the areas of concentrated need or in other areas, which we now examine.

**[FIGURE 7 ABOUT HERE]**

*(c) Are donors coordinating effectively?*

Do the WB and AfDB cluster their activities in the areas of greatest need? To do this, we examine the correlation between the weighted project location counts and poverty in the various administrative districts. In DRC, the two donors appear to target their aid to needy areas. The correlation between levels of aid and poverty is reasonably strong (corr=0.363). Furthermore, the aid concentration ratio (0.441) is substantially higher than the poverty concentration ratio (0.359), suggesting that more aid is going to the three poorest divisions proportional to their share of the country's poverty.<sup>8</sup>

The correlation between aid and poverty in Kenya (0.2637) is weaker, however, and the aid concentration ratio (0.413) actually falls below the poverty concentration ratio (0.443) of Kenya's three poorest provinces. While not conclusive, it suggests that there is some lack of coordination by these two donors to target the areas of highest need within Kenya.

Ethiopia has an extremely high correlation of donor locations and moderately diffuse need. The correlation between poverty and aid is quite weak (0.066) and its concentration of aid (0.229) falls well short of its poverty concentration ratio in the same administrative divisions (0.327). Thus, while the two donors are going to similar places in Ethiopia, they do not appear to coordinate by working together in the areas of greatest need.

In Rwanda, there is only a very weak correlation between project locations and areas of need (0.024), suggesting that the donors are not targeting need very well. Unlike Mozambique, however, the three poorest regions are receiving a much larger share of the aid (0.395) proportional to their share of the poverty in the country (0.276). Thus, the mixed evidence suggests that while the donors are not working together in a broad set of needy areas, much of their aid is at least going to the three poorest regions.

The correlation between aid and need in Mozambique is 0.146, suggesting that the two donors tend to work in more needy areas. On the other hand, the aid concentration ratio (0.298) is lower than the poverty concentration ratio (0.314), indicating that the three poorest regions are not receiving quite as much aid as they should proportional to the rest of the country.

Finally, in Tanzania, the correlation of aid and poverty is strikingly low (-0.246), suggesting that aid is not going to areas with poverty, but rather to less needy areas. The concentration ratios confirm this result, though the difference is not as stark. The aid concentration ratio is 0.166, just lower than the poverty concentration ratio of 0.169.

In sum, the data do not tell a consistent story. Donors appear to cluster in areas of high need in some cases. They also spread out aid in areas of diffuse need. But when donors cluster, they sometimes do so in the least needy places. And when they spread out, they do not cover the diffuse needs very well. However the weak positive and negative correlations for Mozambique and Tanzania, respectively, could be due to a lack of variation on need concentration. The data thus far indicate a general lack of coordination. We thus consider whether considering levels of WB and AfDB *co-financing* helps sort out the mixed results on coordination.

(d) *Does co-financing improve coordination?*

As we have discussed, we might expect co-financing on a higher proportion of projects to improve overall donor coordination both by improving reciprocal knowledge of donor activities and increasing willingness to cooperate, sharing responsibility and credit for development outcomes. Similar to the previous analyses, the overall results offer mixed support for this expectation about the effects of co-financing.

To begin, in Kenya where both donors flock to less needy areas, there is actually no co-financing between the two donors. The same holds true for Rwanda, which showed a high level of donor clustering despite diffuse need throughout the country. This lack of co-financing may contribute to the poor overall coordination of the donors' country portfolios as it may be symptomatic of an overall lack of communication and territoriality between the country offices. While this fits with the expectation for (lack of) co-financing, it mainly illustrates the negative case. To conclude that co-financing improves coordination, we would need evidence of cases in which significant co-financing occurs and donors then cluster in areas with concentrated need or spread out in areas with diffuse need.

DRC, lists IDA as a co-financer on 1 of its 11 (9.09%) projects, while the AfDB does not co-finance any of the World Bank's projects in the country. While this certainly does not represent a high level of co-financing, it is indicative of at least some communication between the donors in DRC, which perhaps contributes to its moderately effective coordination. However, Ethiopia, with a slightly higher overall average donor co-financing (.066 compared to DRC's .046) is the least spatially coordinated of our countries (.836 compared to DRC's .314) providing a counterexample to the co-financing hypothesis.

Finally, Tanzania and Mozambique paint a mixed picture of the effects of co-financing on donor coordination. In Mozambique, the AfDB lists IDA as a co-financer on 3 of its 19 (15.79%)

projects, while the World Bank cites AfDB co-financing on 3 of its 22 (13.64%) projects. In Tanzania, there is similarly a relatively high level of donor cooperation as the World Bank acts as a co-financer on 4 of 17 (23.53%) AfDB projects while the AfDB reciprocates as a co-financer on 3 of the 39 (7.69%). Thus, in both countries donors co-finance more, have diffuse need, and spread out their activities. While both cases appear to be favorable, it appears that Tanzania does not spread its aid out evenly as discussed in the previous section (correlation of aid and need is negative). Mozambique appears better on this count, though the connection between aid and poverty is not high. Due to the less concentrated needs in the two countries we would expect correlations closer to zero and thus the two donors in both countries, while not spreading out perfectly, come closer to coordinating their activities than in other cases.

While these represent only initial results from a small sample of countries, there is some limited evidence that a lack of co-financing is highly problematic. On the other hand, there is little evidence that greater levels of co-financing helps donors target their activities better, even if not perfectly. These results are displayed in Figure 8, which should be interpreted by considering whether greater levels of co-financing are associated with more clustering that actually targets need, denoted by green-diamonds. As is evident, Mozambique and Tanzania have higher levels of co-financing, but yield mixed results at best.

**[FIGURE 8 ABOUT HERE]**

## **5 CONCLUSION**

Over the past decade, declarations and statements from Rome, Paris, Accra, and Busan have called for, among other things, greater attention to effective donor coordination. Until now, studies

of donor coordination have been confined to cross-national tests, which do not adequately capture the level at which donors spatially target specific foreign aid projects.

The emergence of new geocoded data on donor activities provides us with a unique opportunity to examine the existence and quality of donor coordination subnationally – defined as both the spatial coordination of activities and the quality of aid targeting within a country. We have outlined how the combination of clustering and concentration of need provide a theoretical framework for evaluating coordination, and have found that the quality of coordination among the same two donors can vary substantially from one country to the next.

In Mozambique and Tanzania, we found low levels of geographic clustering in countries with geographically diffuse need, combined with relatively high levels of donor co-financing. Donors appeared to cover a larger proportion of the country while still communicating and coordinating their efforts, though in the case of Tanzania there appeared to be some clustering of aid in slightly less needy areas. In DRC, we found moderate levels of geographic clustering in a country with relatively concentrated need. Only limited co-financing occurred between the WB and AfDB, perhaps explaining the moderately effective coordination. However, in Kenya, we found that both the World Bank and AfDB concentrated their activities in the same, less needy parts of the country and in Rwanda and Ethiopia we found both donors concentrating in the same areas despite widespread need throughout the country.

While the main goal of this paper is to determine whether donors are coordinating their activities, we have also suggested one explanation for why this may or may not be the case: reciprocal co-financing of each other's projects. Co-financing may improve overall portfolio coordination – rather than only that of the cooperative projects – by increasing communication and willingness to cooperate between the donor country offices. Very limited evidence for the co-



financing argument exists, but we need a wider cross-section of cases to establish this claim more definitively.

Of course, there are a host of other country-level variables, including levels of corruption, presence or history of conflict – such as in the Kivu region of Eastern DRC – or bureaucratic quality that undoubtedly also contribute to the quality of donor coordination. Moreover, we considered only levels of poverty as a need area around which donors coordinate. Future work should consider a larger portfolio of donor goals, including improved nutrition, child mortality, and disease eradication, for examples.

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## ENDNOTES

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<sup>1</sup> Jean-Louis Sarbib of Development Gateway and Bjorn-Soren Gigler of the World Bank have made the soccer analogy frequently. The “swarm principle” is an incredibly apt description of popular feelings about donor coordination.

<sup>2</sup> A lack of donor coordination may also have a negative effect on corruption and governance quality. Conflicting donor conditionalities can actually prevent governments from making effective and sensible policy changes as donors may emphasize quite different factors (Bigsten 2006). Government accountability is also undermined as responsibility for program failure is easily transferred to the multitude of donor organizations (Renzio 2006) - this is not in references!. Additionally, governments are forced to sacrifice their funding decisions to donor priorities (Woods 2005). Corruption may increase in both central and local government agencies as many donors may not have effective accountability mechanisms (Platteau 2004).

<sup>3</sup> It may be the case that multilaterals are substantially more effective than bilaterals, although this result has been challenged (Canavire et al 2005) and there is, more generally, very limited research on the topic.

<sup>4</sup> Outside of several case studies (Barrett and Clay 2001; Jayne et al 2002; Tschirley et al 1996), the aid targeting literature mostly focuses on larger units of analysis, namely the country (see for example Nunnenkamp 2006 and Canavire et al 2005).

<sup>5</sup> Because multiple project documents were reviewed in coding these projects, there are no projects in this data set with precision code 7. In addition to searching project documents, Task Team Leaders were contacted from the World Bank when clarification was needed beyond what was available in the documentation.

<sup>6</sup> Presently, the geocoded data for seventy-nine World Bank IDA countries is available through both the World Bank (at [maps.worldbank.org](http://maps.worldbank.org)) and AidData (at [open.aiddata.org](http://open.aiddata.org)). In total, the AidData/World Bank Mapping for Results Partnership has resulted in 2,608 geocoded active projects resulting in over 15,000 sub-national locations. The data available for the AfDB is not as extensive. Thus, we use only the six countries presented in this paper.

<sup>7</sup> Poverty data is available at the second administrative division level only for select countries. Thus, we use poverty data at the first administrative division level for all countries in our sample.

<sup>8</sup> Because there was no poverty data for the Maniema province as well as to avoid a negative bias in the result, we dropped the province from the aid concentration ratio. The aid concentration with Maniema included is .425, still substantially above the poverty concentration ratio for DRC.

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# FIGURES AND TABLES

Table 1: Donor Coordination as a Function of Clustering and Need

	Concentrated Need	Diffuse Need
High Donor Clustering in Areas of:	<i>Effective</i>	Ineffective
Low Donor Clustering in Areas of:	Ineffective	<i>Effective</i>

Figure 1: Mozambique Project Locations and Sub-National Poverty

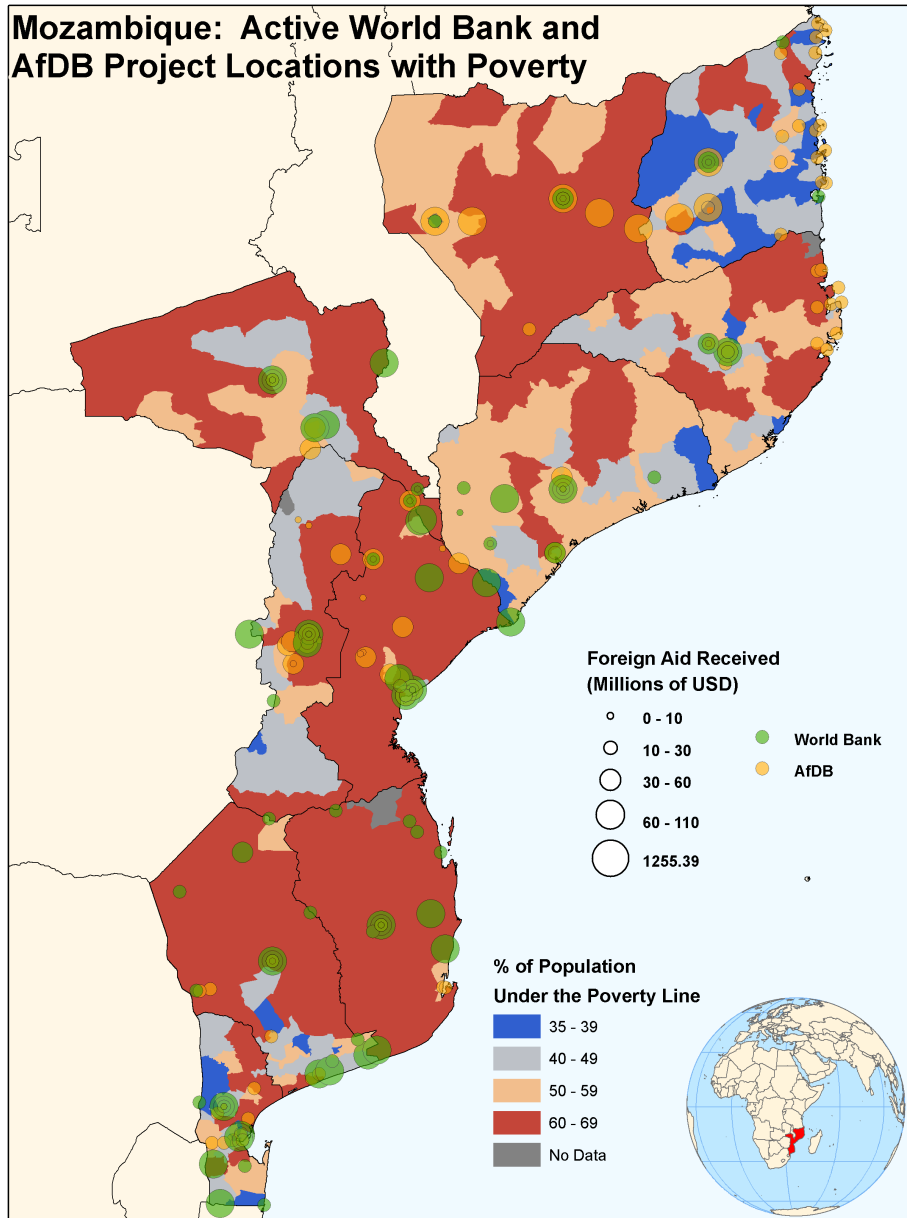




Figure 2: Kenya Aid Locations and Sub-National Poverty

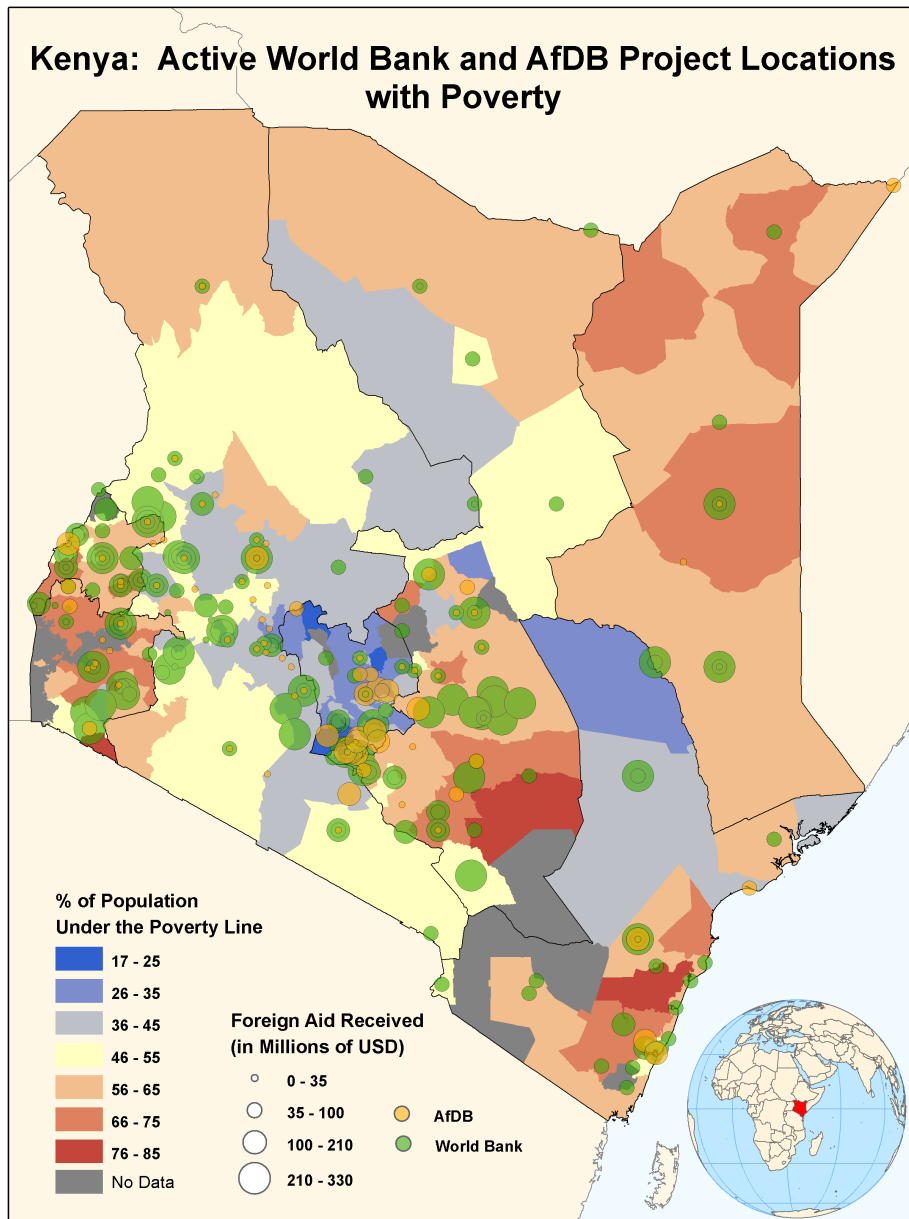


Figure 3: Tanzania Aid Locations and Sub-National Poverty

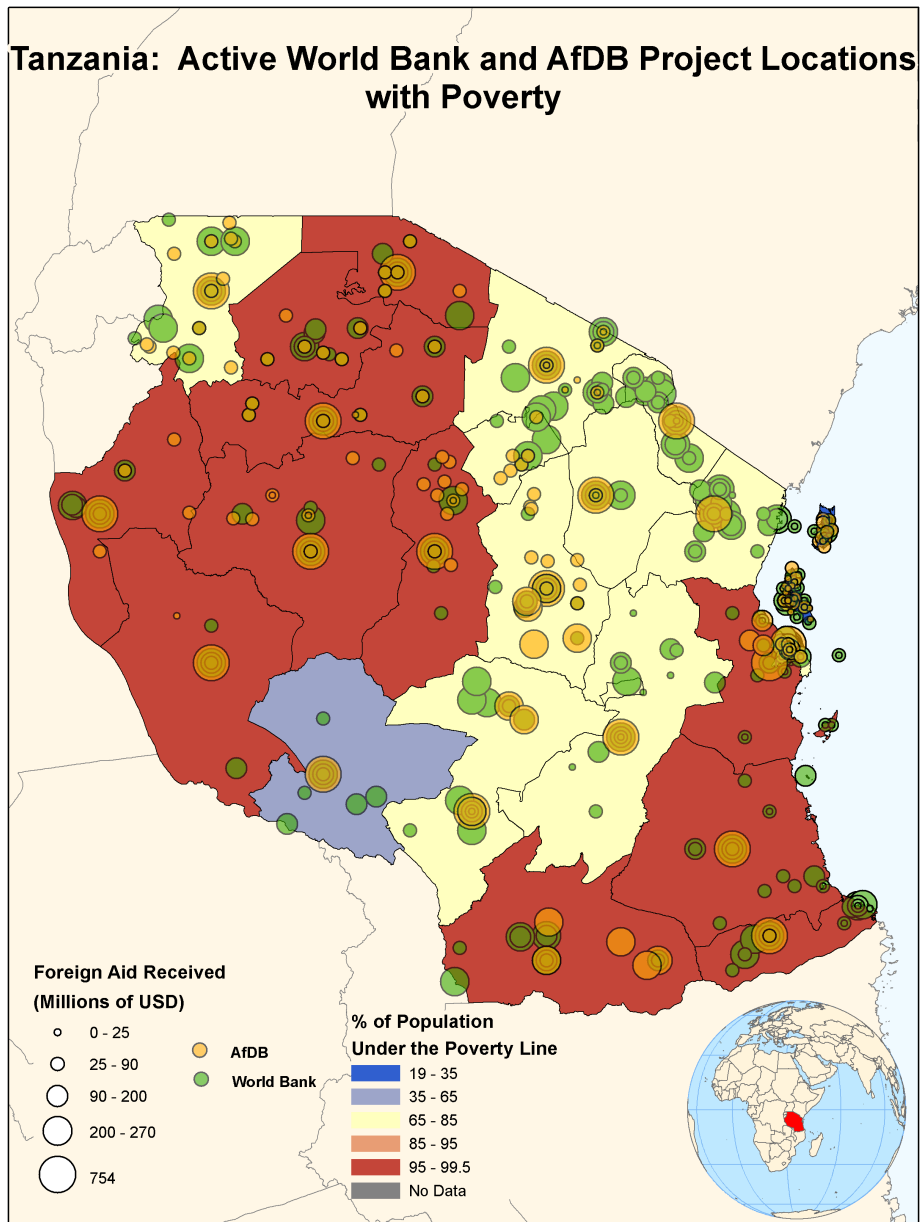


Figure 4: Rwanda Aid Locations and Sub-National Poverty

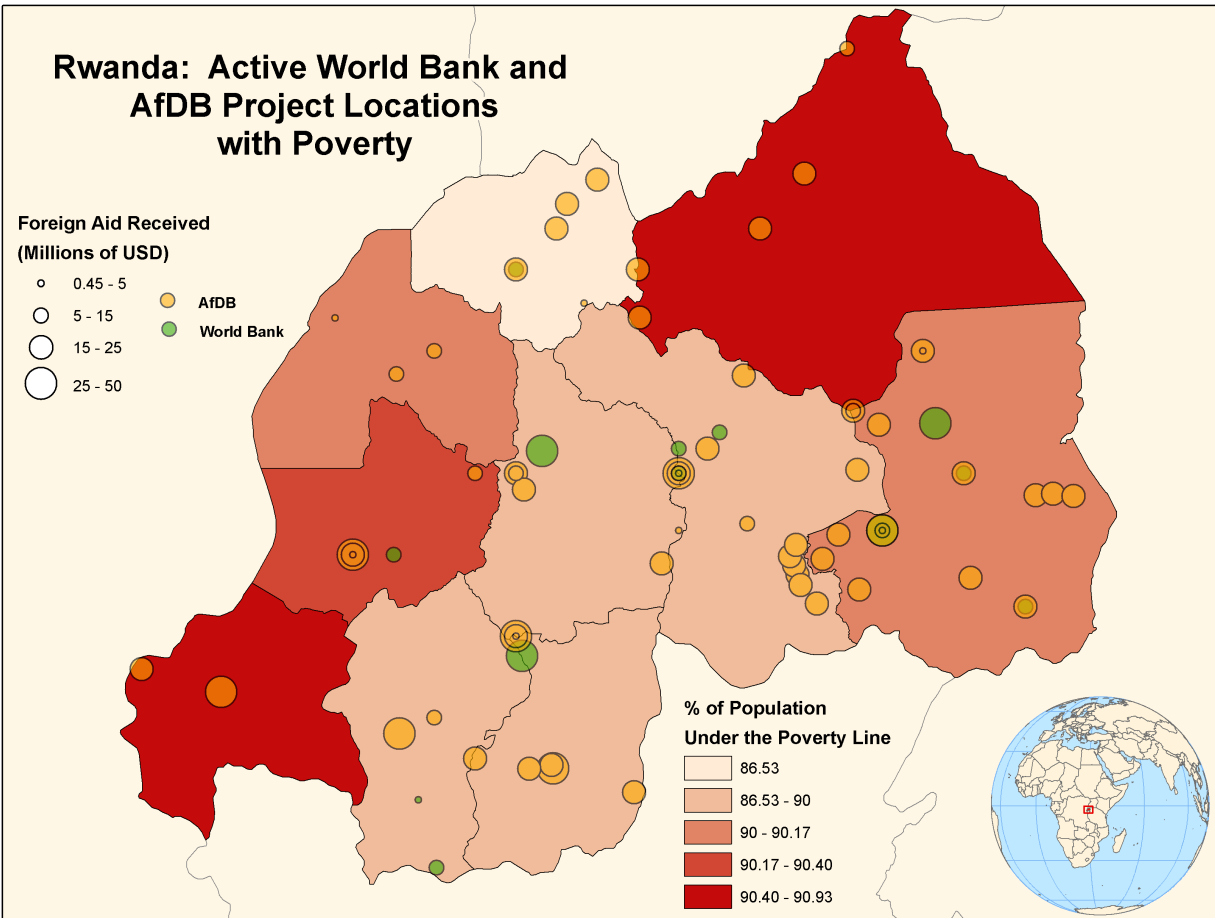


Figure 5: D.R.C. Aid Locations and Sub-National Poverty

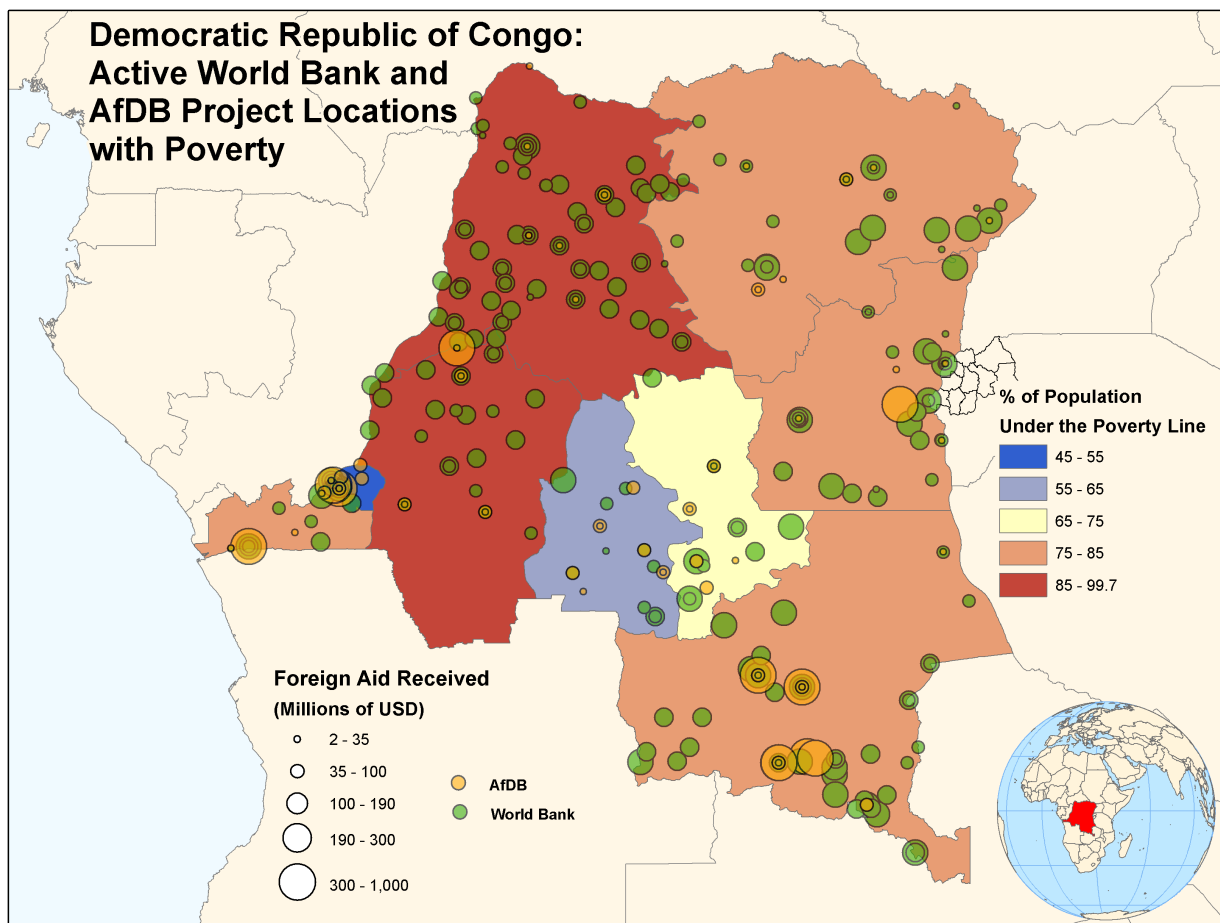


Figure 6: Ethiopia Aid Locations and Sub-National Poverty

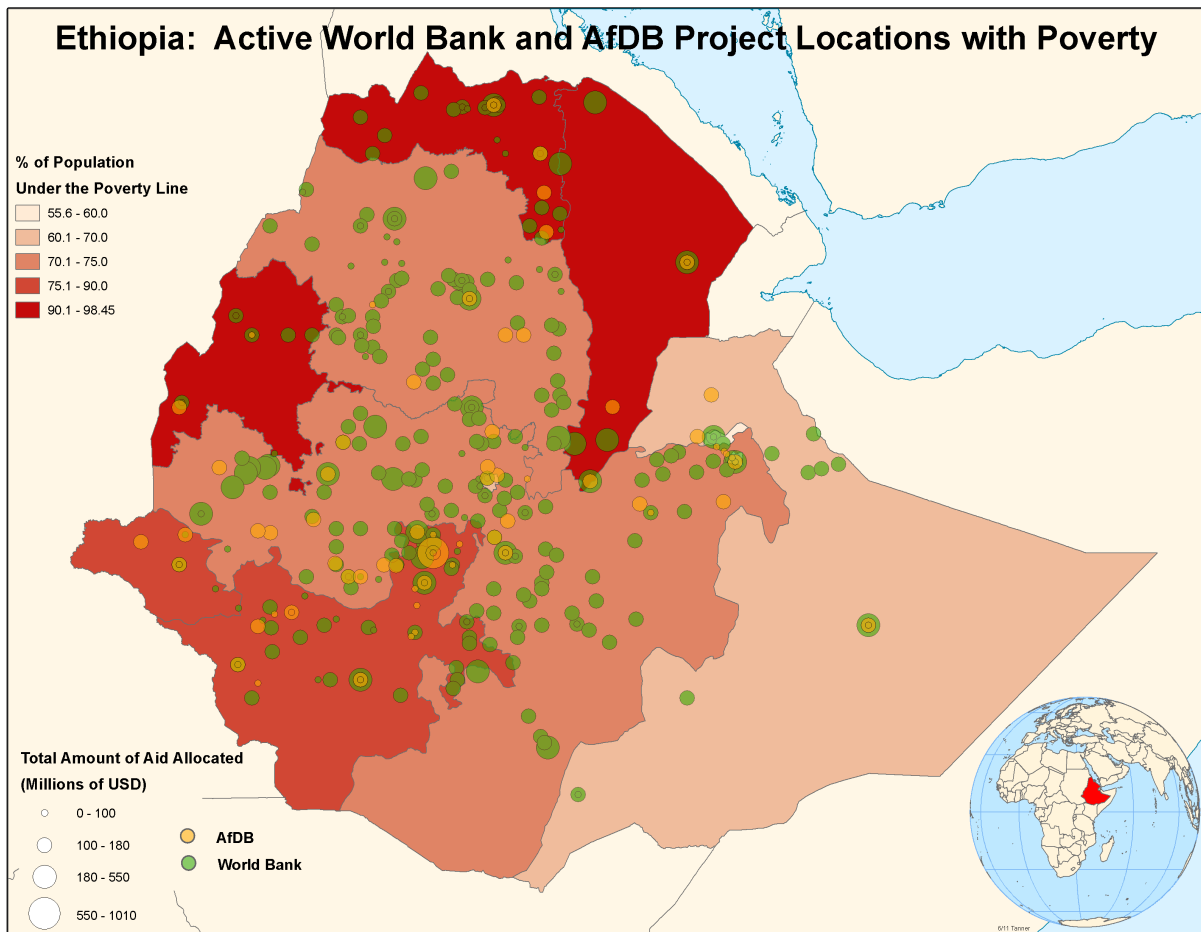
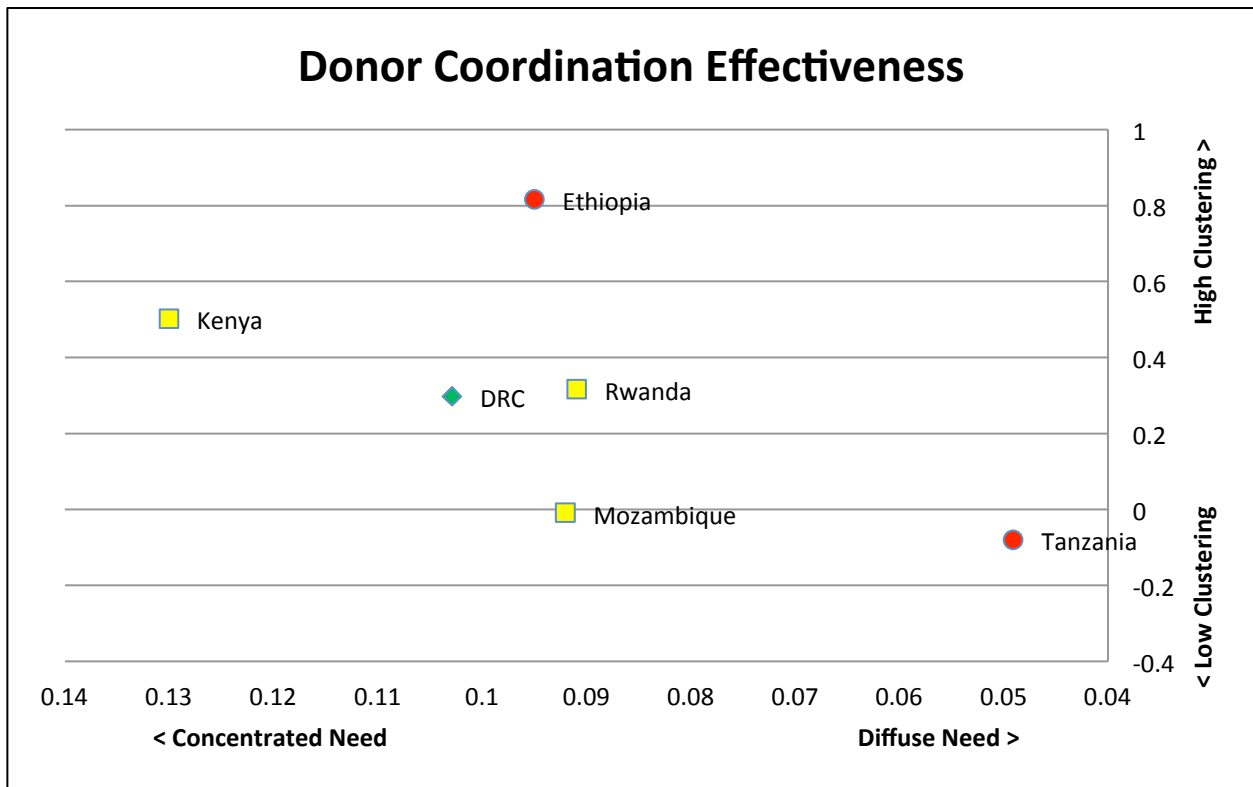
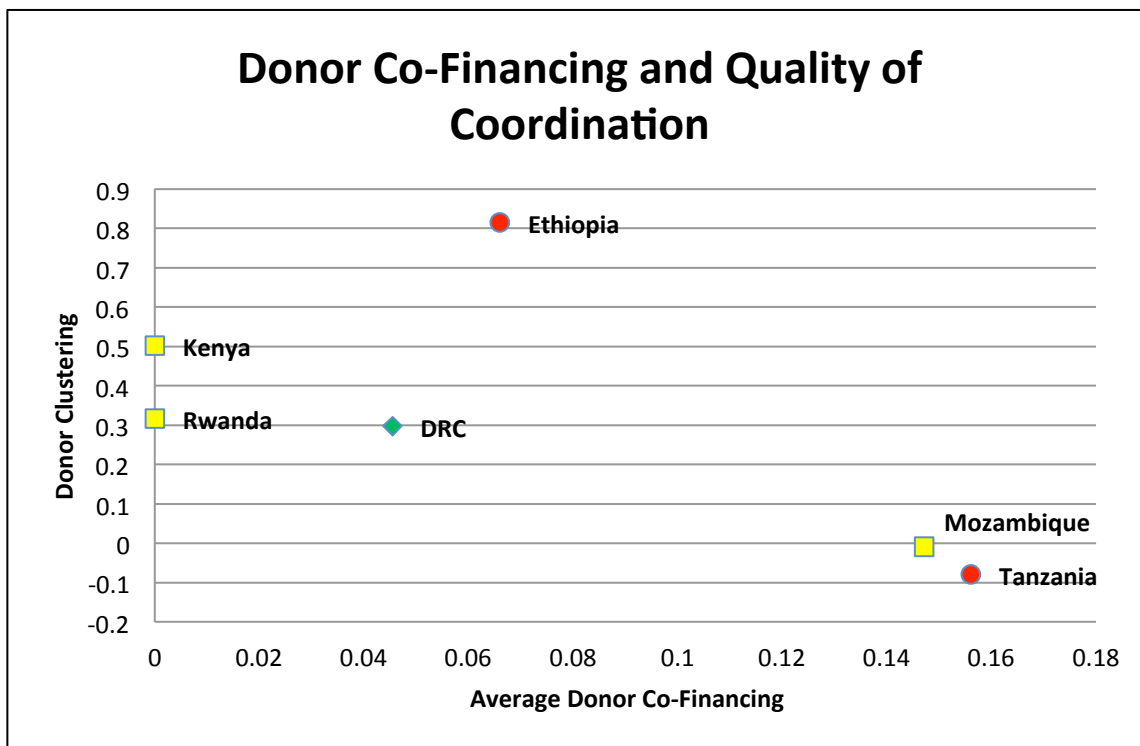


Figure 7: Donor Coordination by Clustering of Activities and Concentration of Need



Note: This figure shows the overall effectiveness of donor coordination within the country. As need becomes more concentrated (graph moves further left), donors should cluster together more (graph moves further up), provided that they are clustering in the right parts of the country. The icons indicate a rough classification of how well the donors are targeting the need within the country (as measured by aid-poverty correlation and concentration ratios) with a diamond indicating effective targeting by both measures, yellow indicating good targeting by one measure, and red indicating poor targeting by both measures.

Figure 8: Donor Co-Financing Frequency and Correlation of Donor Activities



Note: This figure shows the relationship between the incidence of co-financing and the quality of coordination between the two donors. The icons indicate a rough classification of how well the donors are targeting the need within the country (as measured by aid-poverty correlation and concentration ratios) with a diamond indicating effective targeting by both measures, yellow indicating good targeting by one measure, and red indicating poor targeting by both measures.