PROMOTING BROAD-BASED GROWTH IN TANZANIA: TECHNICAL NOTE

1. The problem: 4 in 10 rural Tanzanians cannot afford food and other basic needs[1]

Despite fast-paced economic growth in recent years, Tanzania continues to struggle with high poverty levels. For example, despite average growth of roughly 7 percent per year from 2001-2007, the proportion of Tanzanians living in poverty declined only modestly, from 36 percent to 34 percent[2] - and this in spite of multiple rounds of poverty reduction strategic planning by the government, in concert with nongovernmental partners and international donors.

These challenges are particularly large in rural areas, where poverty declined even less than in Tanzania overall, and where the poverty rate is more than twice that in Dar es Salaam, Tanzania's largest city[3]. Two rural economic priorities – agriculture and rural roads – were included in the first poverty reduction strategy in 2000. However, as the abovementioned numbers show, this prioritization appeared to be having a modest effect in practice, at best.

Fortunately, the government had established several multi-stakeholder working groups to monitor progress on these strategies and identify possible improvements. One of those – the Research and Analysis Working Group, or RAWG – was tasked with compiling and analyzing data gathered by the other groups and making specific policy recommendations. Within a few years of its 2001creation, it became clear that one of its main tasks would be to understand why rural poverty reduction lagged behind Tanzania's overall impressive economic growth.

2. REPOA's contribution: Promote infrastructure investment so *economic growth reaches the rural poor*

Research on Poverty Alleviation (REPOA) is an established source of economic policy-oriented research in Tanzania. In the words of a former manager at the International Labour Organization, among REPOA's "main strengths are their reputation with government and donors, and their great network and track record." For all these reasons, REPOA was asked to serve as RAWG's secretariat, and has done so throughout the group's existence.

In the course of this work, REPOA observed that the reason for the discrepancy between growth and poverty reduction is that the former was concentrated in a few sectors that did not involve the poor – and in particular the rural poor – substantially, as opposed to, say, agriculture. Moreover, implementation of the poverty reduction strategies appeared to focus largely on social service provision without an accompanying emphasis on inclusive growth.

As a result, around 2005, REPOA began to encourage a shift to a more nuanced approach that prioritizes broad-based growth along with social services. This position is clear, for example, in the 2005 *Poverty and Human Development Report*, RAWG's flagship biennial publication, which states that if the strategy's targets were to be met:

> it is clear that rural poverty reduction needs to be accorded critical priority. Since poverty reduction is sensitive to growth, a strategy must be put in place that ensures high growth for a sustained period of time. This calls for two things to happen. First, agriculture must grow at a sustained rate of at least six per cent per annum. Second,

> growth needs to be broad based and strategies that promote such broad based growth must be developed and implemented.[4]

Similarly, the next edition of the report, in 2007, reports the results of focus groups in which 70 percent of adults stated that the condition of roads is a "major problem." One respondent was quoted as saying, "The roads are very bad. Farmers are forced to transport their crops, even their livestock, in push-carts."[5]

In practice, the shift that REPOA, and RAWG overall, has promoted has translated into greater government investment in roads and other infrastructure (roads increased almost 50 percent as a portion of discretionary spending from 2007/8 to 2010/1 – from nine to almost 14 percent[6]), along with efforts to boost formal employment and build small-scale farmers' earning capacity through interventions such as training in modern agricultural technology and increased access to finance – all interventions that could help improve the livelihood of Tanzania's rural poor. At the same time, REPOA has helped the government target its social services to the neediest populations (e.g., those below the basic needs poverty line) to ensure a more equitable distribution overall. It continues to push for implementing this shift, most recently in the 2011 *Poverty and Human Development Report.*

REPOA's role as secretariat of RAWG both results from and furthers its strong partnerships with policymakers. For example, the Ministry of Labour and Employment and the ILO recently asked REPOA to host the new National Centre on Employment Studies, created in 2012, which will "serve as the national think-tank for employment studies and a forum for the development and dissemination of research findings, and also provide consultancy services to relevant stakeholders."[7] Interviewees from these agencies cited reasons for choosing REPOA that are similar to those for its selection as RAWG's secretariat, including its relationships with policymakers, research track record, and global network. At the same time, they also referenced the logical connection between RAWG and the Center that made REPOA a natural choice to host the latter (e.g., REPOA has conducted employment studies to inform the Poverty and Human Development Reports). A ministry employee seconded to REPOA to coordinate the Center noted that "we often commission work from REPOA because it is trusted." Similarly, REPOA was asked to host the Center because "the government had seen its work through RAWG. REPOA's reputation is why this center is hosted here."

3. The result: More income for rural Tanzanian families

To understand the potential impact of REPOA's work as secretariat of RAWG, rough estimates were developed using existing data and assumptions about how the policies it has affected might, in turn, affect Tanzanian society. The appendix details how these estimates were created. To summarize, the estimates assume that the main effect of REPOA's contribution has been to spur the government to invest more in rural roads than it otherwise would have. So, data on the effect of increasing access to roads on rural Tanzanian's income were combined with population data for a particularly rural region of Tanzania. Past rates of increase in road access then were used to estimate how much *more* access a concerted effort by the government might cause over the current strategic plan's implementation period (2011-2015). Finally, the benefit was bounded to ten years (2016-2025), consistent with the end of the high-level Vision 2025 strategy that frames the more specific plans referenced above. This approach led to the following estimates of projected results:

- **1.5-3 million** rural workers with closer access to a paved road from 2016-2025
- **$40-80 million** more income for those workers over that period (net present value)

4. The return on investment (ROI)

REPOA's contributions were influential throughout the policy change process and required an investment of only 6 person-years and roughly $250,000. To estimate its return on investment (ROI), the $60 million in additional income (using the midpoint from the estimate in Section 3) was divided by the $250,000 REPOA investment. The result is an ROI of about **$240 more income for rural Tanzanian workers per dollar spent by REPOA.**

Of course, REPOA is not solely responsible for these benefits. Understanding the portion REPOA contributed toward the projected results helps illustrate its true ROI. Experts suggest a relatively constant set of conditions for policy change that an organization like REPOA might influence. Tracking these conditions before and after REPOA became involved provides a rough picture of the think tank's contribution.

REPOA staff and outside experts were asked to rate these conditions on a 1-5, "very low" to "very high" scale for each condition's status before REPOA became secretariat of RAWG and afterwards – that is, now that the government is implementing policies with a stronger focus on growth. The averages of their responses are shown in Table 1.

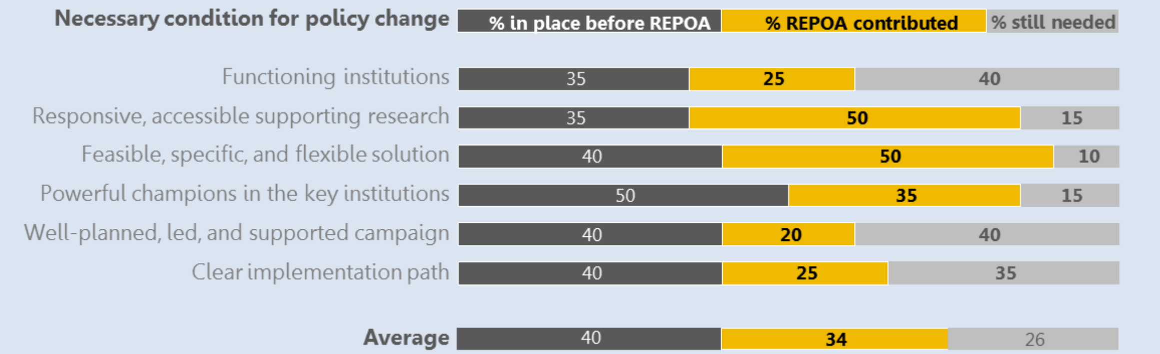
Table 1: REPOA's contribution to broad-based growth through RAWG

Condition	Before (1=very low, 5=very high)	After
Functioning institutions: The relevant legislative, legal, and regulatory institutions are functioning sufficiently for research and advocacy to be effective	2.3	3.3
Responsive, accessible supporting research: The solution is supported by compelling, data-driven evidence that can counter opposing arguments and sway decision-makers	2.3	4.3
Feasible, specific, and flexible solution: A feasible solution has been developed and shown to produce the intended benefits, with acceptable alternatives if the exact proposal is untenable	2.7	4.7
Powerful champions in the key institutions: Decision-makers who can overcome the opposition support the solution and its underlying principles	3.0	4.3
Well-planned, led, and supported campaign: Advocates assemble resources, a pragmatic and flexible strategy, and a supportive public or other allies	2.7	3.3
Clear implementation path: The implementing institutions have the commitment and the capacity to execute the solution	2.5	3.5
Average	**2.6**	**3.9**

Translating these results into percentages (1 = 0%, 5 = 100%) generates the estimates shown in Figure 1. Averaging all the conditions together suggests that REPOA's contribution would be roughly 35 percent (34 percent in Figure 1). That produces **an ROI of roughly $85 in additional income per dollar that REPOA spent,** assuming success is achieved.

Figure 1

REPOA's contribution to broad-based growth through RAWG



Note that this includes adjustments that reduce the ROI to account for the remaining uncertainty. For example, uncertainty still exists in the sense that the new investments still are being implemented – and, as several interviewees noted, implementation is often a challenge in Tanzania. This uncertainty is illustrated by the bars in Figure 1 labeled "% still needed." The crude average of those bars is 26 percent, reducing the current likelihood of success (LOS) to 74 percent. To be precise, then, REPOA's estimated contribution to "success so far" is 34 percent divided by 74 percent. As a result, the ROI cited above is actually the cost-benefit multiplied by REPOA's contribution to success thus far, then multiplied by the LOS, as illustrated in Figure 2. This methodology is conservative if full success is achieved, as it assumes REPOA makes no contribution to any of the work that is still needed.

Figure 2

REPOA's return on investment

$$\text{ROI} = \frac{\$60\text{M benefit}}{\$250\text{K cost}} \times \frac{34\%\text{ contribution}}{74\%\text{ LOS}} \times 74\%\text{ LOS} \approx \$85$$

Appendix: Details on the results estimates

The results estimates were calculated using the following baseline assumptions and data:

- For the purposes of these estimates, assume that the major effect of REPOA's input to RAWG has been that the government is investing more in rural roads than it otherwise would have. Likewise, because the actual policy effects are still unfolding, assume conservatively that the results will be limited to the Southern Coast region of Tanzania, a particularly poor region that historically has had limited infrastructure (it includes the areas of Lindi and Mtwara).[8]

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- In 2002, the population of Southern Coast was 1.9 million. Using the percent employed in agriculture as a proxy for those in rural areas (86 percent), the rural population was 1.6 million.[9]

- One study estimated that in 2000, a one km reduction in the average Southern Coast resident's distance to a paved road[a] would raise per capita income by 813 Tanzanian shillings (TZS) per month.[10] Adjusted for inflation to 2002, this value is 900 shillings.[11] *900 * 1.6 million * 12 months ≈ TZS 17.3 billion total increase in Southern Coast rural income from a 1km reduction in distance to a paved road in 2002.*

- The ratio of Tanzania's labor force to population has remained stable at roughly 50 percent over time.[12] Likewise, labor force participation rates are similar in urban and rural areas in Tanzania.[13] As a result, the number of rural Southern Coast workers in 2002 can be estimated at roughly 800,000. *TZS 17.3 billion / 800,000 ≈ TZS 21,885 increase in income per worker per km in 2002*. Adjusting for inflation to 2013, this value is TZS 51,800, or a $32 increase in each worker's annual income from a 1km reduction in distance to a road.[14]

- Assume the incremental build-out of roads will occur from 2011-2015, the years for the latest poverty reduction strategy's implementation. Then, to bound the estimate, assume that the roads' effects will be felt for ten years afterwards (2016-2025 – through the end of the higher-level *Vision 2025* strategy, which frames all the more specific plans), with a 9.5 percent annual depreciation rate – double the rate used in the Middle East and North Africa[15], which is perhaps a bit conservative, but acknowledges recent underfunding of infrastructure maintenance in Tanzania.[16]

- To estimate the incremental build out of roads, compare 1991-2000, when the average rural distance to public transport decreased from 6.1km to 5.4km (or 1.35% per year), to the following period through 2007, when it went down only to 5.3km (0.27% per year).[17] With this information in mind, first assume that the slower rate continued through 2010, at least in Southern Coast – and would have through 2015 without REPOA's contribution. Then, assume that the build-out influenced by REPOA will result in a return to the 1991-2000 rate in distance reduction for 2011-2015 (in percentage, not linear, terms).

- Tanzanian rural population growth rates have hovered around 2.3 percent per year recently.[18] This suggests that the number of rural laborers in Southern Coast will be 1.8 million by 2016, thereafter continuing to increase at 2.3% annually.

- Finally, a 10 percent discount rate is applied to account for future uncertainty, such as whether the government will continue to build out the roads through 2015 and the possibility that other circumstances will affect worker population or income in rural areas of the Southern Coast region.

[a] Using distance to public transportation as a proxy.

These numbers were combined as follows (discrepancies between the left- and right-hand sides of the equations are due to rounding):

- Use information on the average distance to a paved road in rural areas in 2007 and the 2000-2007 rate of reduction in that distance to determine the distance at the end of 2010 for rural Southern Coast residents: $5.3 * (1 - 0.0027)^{(2010-2007)} \approx 5.24$ *km to a paved road*
- Using the same information, estimate what that distance would have been at the end of 2015 without the changes to which REPOA contributed:
$5.24 * (1 - 0.0027)^{(2015-2010)} \approx 5.19$ *km*
- Replace the 2000-2007 rate of distance reduction with that for 1991-2000 to estimate the distance at the end of 2015 with the changes to which REPOA contributed:
$5.24 * (1 - 0.0135)^{(2015-2010)} \approx 4.91$ *km*
- Multiply the difference by the increase on rural worker income per 1km reduction to estimate the additional income each rural Southern Coast worker earns per year due to the changes to which REPOA contributed: $(5.19 - 4.91) * \$32 \approx \$9$ *per year*
- Apply the rural population growth rate to the estimated 2016 Southern Coast rural worker population to approximate the number of workers per year from 2016-2025:
$\sum_{t=2016}^{2025} 1.8M*1.023^{(t-2016)} \approx 19.9$ *million workers from 2016-2025, broken out as follows:*

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Workers (M)	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2	**19.9**

- Assuming that the 1.8 million workers in 2016 are largely the same as the first 1.8 million of those in 2025, the policy will have affected *2.2 million workers* by 2025. However, given the estimate's speculative nature, the figure is shown with a wide range: ***1.5-3 million rural workers with closer access to a paved road from 2016-2025***
- Multiply the annual income increase per worker by the yearly rural worker population for 2016-2025. Then factor in the road depreciation rate. Together, these steps estimate total additional income over that period (undiscounted):

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Workers (M)	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2	**19.9M**
Income per worker ($)	9	9	9	9	9	9	9	9	9	9	**9**
Road depreciation factor (%)	100	91	82	74	67	61	55	50	45	41	**NA**
Product ($M)	**16**	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**9**	**8**	**$116M**

- Finally, apply the annual discount rate to determine the estimates' net present value in 2013:

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Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Undiscounted ($M)	16	15	14	13	12	11	10	9	9	8	$116M
Discounted ($)	12	10	9	7	6	5	4	4	3	3	~$60M

Again, given the estimate's speculative nature, the figure is shown with a wide range: ***$40-80 million more income for those workers from 2016-2025 (net present value)***

Any estimate of this nature leaves out opportunity costs for which it is difficult to account. For example, the Tanzanian government could have applied the resources it is investing in rural roads toward many other development or poverty reduction initiatives – indeed, some studies find higher social returns in Tanzania from other investments, such as in agricultural research[19]. Conversely, the estimate is conservative in several ways, such as in that it looks only at REPOA's impact on investment in roads rather than all the benefits mentioned by interviewees. Overall, then, these estimates should be considered attempts to paint a rough picture of the magnitude of REPOA's impact on important Tanzanian social and economic policy – and on the resulting outcomes.

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