Achieving Agricultural Growth and Food Security in South Sudan

FINAL DRAFT

McKinsey & Company

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Part II: A three-pronged strategy for USAID/South Sudan

I. Introduction

A. Objectives of the effort

A team from McKinsey & Company was brought in to assist USAID/South Sudan construct a long-term agricultural growth and food security strategy to help guide its current and future programming in the sector. As a result, the effort created a strategy with three main objectives:

1. To set USAID/South Sudan on a transition course away from "pure" post-conflict emergency and humanitarian agriculture and food security programs, and more towards innovative developmental programming that leverages agriculture as a main tool for driving overall economic growth.

2. To align the strategy with the principles of the Feed the Future (FTF) initiative. While South Sudan is not a focus country of FTF, it is an aligned country. As such, the goals and approach underpinning the strategy are similar, namely (1) ensuring the strategy works to lift farmers out of poverty and reduces the under-nutrition burden in the country (to the extent the budget allows), and (2) articulating clear choices and rationale in three areas: (a) geographic focus; (b) prioritized commodities/value chains; and (c) distinctly identified "change agents"/theories of change that ensure the programming's long-term sustainability.

3. To take a holistic view of the agriculture portfolio of USAID/South Sudan and ensure the resulting strategy pulls together all of the various agriculture pieces found across the Mission. Whereas most of the other FTF engagements with USAID focused strictly on those programs receiving Feed the Future funding, in South Sudan the resulting strategy also looked at the agriculture-related programming of OFDA, Food for Peace, OTCM, and other EG activities, such as infrastructure.

Arising from these three objectives is a strategy that USAID/South Sudan can clearly point to within itself (and with other donors, civil society, and the Government) on what it *is* – and is *not* – doing in the agriculture sector: including why, and what the expected high-level impacts will be.

B. Methodology used, and description of activities

To develop the strategy, the McKinsey team worked closely with USAID/South Sudan and Bureau of Food Security staff for six weeks: from 25 July to 2 September 2011, based mainly in Juba. Using a methodology in part developed during McKinsey's experience with assisting sixteen other USAID Missions in crafting their Feed the Future strategies, each of the six weeks had a particular set of activities that over the month and a half led to the construction of the over-arching strategy.

Week I: "Outside-in" analysis: What do we know about South Sudan?

The team completed a full document review and conducted initial interviews to understand South Sudan's unique overall, agricultural, and Mission contexts. The goal was two-fold: (1) to ensure the team clearly understood the Mission's current operating philosophy, programs, and rationale for its choices to date; and (2) that the team understood the unique challenges and range of agriculture and food security situations found across the country.

Week II: Defining the strategy space: What is the range of possibilities to solve for?

The team identified and calibrated the range of both on-the-ground agricultural challenges and Government of South Sudan institutional challenges that define the entire set of problems in the agriculture "strategy space." In this way, the team could (1) clearly articulate the problem statement, (2) understand the range of constraints both Government and donors are trying to confront and how they are doing so, and (3) begin defining which "battles" USAID could choose from as it began to think about its comparative advantage in the donor space, and where it could add both the most value and achieve the highest impact.

Week III: Vision and Prioritization: Who will USAID be and which battles should it choose?

In intensive workshops with the Mission, Government, and donors, the team presented six main models of agricultural transformation, and how they could apply in the South Sudan context given the findings of the first two weeks. The choice of agricultural transformation model provided the guide for which "battles," that is, which challenges and interventions the Mission would take on in its strategy, and where the 'deep dive' analytics would focus.

Weeks IV and V: What will USAID do and what will it achieve?

Having settled upon a chosen agriculture transformation model and core areas for further analysis, the team engaged in numerous data-driven and interview-based activities to define what the strategic program set could look like. This bulk of work looked at (1) defining and prioritizing geographic and commodity focus areas, what the improvement potential could be, and validating demand sinks; (2) explicitly defining who the change agents would be, what their economic incentives would be, and how to get them launched; and (3) identifying what role USAID could/should play, the impacts it could achieve, and what it might mean for its current programs.

Beyond that, the team also spent time in two other areas: (1) creating an agriculture strategic roadmap with which to engage the Government of South Sudan and (2) defining a new approach to link USAID/South Sudan's relief and

post-conflict activities with those of the Economic Growth team, in order to lessen dependence on food aid.

Week VI: Wrap up and syndication

During the final week, the team pulled together the elements into the complete strategy and created this final report with program design recommendations, and high-level discussion of expected impact. It also began the process of syndication with stakeholders – including with other donors and the Government of South Sudan.

C. Top-line final recommendations

A three-pronged strategy emerged from the six-week exercise outlined in the previous section:

(1) USAID/South Sudan should focus most of its Economic Growth activities in the area defined as the "Greenbelt," which encompasses the bulk of the states of Western Equatoria, Central Equatoria, and western Eastern Equatoria. These activities should be geared around spearheading a regional agricultural transformation. This means creating a holistic change by aligning the numerous transversal investments in the region (productivity outreach, private sector development, infrastructure, policy support, etc) around setting up and supporting roughly 300 change agents who include agro-dealers, processors, market traders and self-sustaining farmers' groups. The programs should focus in two spaces: (a) develop competitive cereal and horticulture production in areas better-connected to markets, that can in turn compete with and replace imports, and help fill the 300k mt cereal deficit in the region and (b) develop the higher-value oilseeds sector in the less well-connected parts of the region where the best land is, including processing of the oilseeds. Achieving this by directly developing and empowering a select group of private sector change agents will ensure the program's long-term sustainability, and move the region from one of mainly subsistence farming, to one of market-driven farming.

(2) USAID/South Sudan should take a leading role in assisting the Government of South Sudan's agriculture/natural resources sector (especially the Ministry of Agriculture and Forestry) to define its overall strategic roadmap, ideally to the point of creating a sector strategy. This means working closely with the Government to understand the various models of sector transformation, the trade-offs required in developing and defining a strategy, and getting the Government positioned to move quickly into creating a strategy which might form the basis of its own CAADP process. The result of this effort will help the Government have a clear sense of where it wants it go and how it will get there, in a way that all stakeholders can understand, and in a way that donors can ideally "buy into" through aligning their activities and investments to the strategic plan. This will (1)

help resolve the current "shooting from the hip"/ad-hoc approach the natural resource-related parts of the Government find themselves in; (2) help align the many current policy initiatives, and resolve the various challenges with these policies and approaches; and (3) allow USAID to play a leading role amongst the donors in working with the Government to set South Sudan's agriculture agenda.

(3) USAID/South Sudan is a unique among many of the other Missions in that it has major programming involving both humanitarian relief and conflict mitigation efforts (i.e., work done by OFDA, Food for Peace, and OTCM), as well as "traditional" economic development-focused programming. Given that South Sudan is now on a trajectory away from conflict/post-conflict status, the Mission should pilot a few models that try to actively integrate both humanitarian relief and economic growth programming, and move beneficiaries towards sustainable livelihoods instead of constant emergency food aid assistance. To achieve this, the Mission should continue aggressively in its effort to develop a "Jonglei Plan," wherein EG, OFDA, Food for Peace, and OTCM actively coordinate their programs in Jonglei State to create and test new ways to get their beneficiaries firmly into an economic development situation, instead of being constantly in the emergency/ relief/ rehabilitation space. The first step in doing so will require DCHA and BFS to work together with their teams at USAID/South Sudan to identify such models, and create a joint action plan.

Given that the length of the effort was only six weeks, the strategy and recommendations therein should be treated as strong guideposts, but subject to further validation as the Mission considers the recommendations and engages in its program design/redesign. This will require investing in data collection and monitoring and evaluation, especially for base-lining and pressure-testing the preliminary targets and approaches defined in this strategy. At the end of the day, every strategy is dynamic and should be reviewed regularly and revised appropriately as it is implemented and lessons are learned. In the case of South Sudan, where there are many unknowns since almost all programming is operating on a blank sheet at the start, learning-by-doing (especially using a pilot-based approach) should inform how the strategy itself is finalized and implemented.

The rest of this document is divided into two parts:

- Part I details the context of South Sudan, what agriculture transformations are all about, and the process for arriving at a three-pronged strategic effort for the Mission
- Part II goes in-depth on each of the three aspects of the strategy, delineating the specific recommendations and actions for the Mission

PART I: UNDERSTANDING SOUTH SUDAN AND THE ROLE OF AGRICULTURAL TRANSFORMATIONS

II. South Sudan's current context and challenges

The following section outlines the overall, agricultural, and institutional challenges one finds in South Sudan, and how both Government and donors are responding to those challenges. In this way (1) the problem statement for South Sudan can be clearly articulated to those less-familiar with the country and its situation; (2) the "strategy set" of possible action areas open to USAID can be defined; and (3) the current responses of the Government and donors can be laid out and put into context.

A. Problem statement

In analyzing the *overall* challenges faced by South Sudan today, the bottom line is that economic growth is severely hindered by an oil-dependent economy that has some of the lowest levels of both human and physical capital in the world. A common refrain is that one is working from "a blank slate" when trying to drive developmental outcomes in the country. Everything is being built from scratch – from roads, to institutions, to basic levels of education and services. As such, these overall problems can be categorized into three main areas:

(1) *The need to establish a stable and diversified economy*: currently, 98% of Government revenue comes from oil, which is problematic in that (a) it is highly risky given its fragile relationship with Khartoum, and the fact that Khartoum controls the pipeline, (b) it hinders overall competitiveness given that oil can cause "Dutch Disease" by inflating the currency, which some have noted as driving (in part) high labor costs, and (c) as a commodity, its volatility can lead to unpredictable revenues. To minimize any semblance of the "resource curse," Sudan Sudan needs to diversify into other sectors, of which agriculture offers the highest potential. Compounding the situation is a very rapid population growth rate, including spiking youth unemployment – without more economic opportunities for youth, South Sudan risks further instability.

(2) *The imperative of building infrastructure*: Infrastructure is at bare minimum levels, to nonexistent. Neglected in the past when part of Sudan, and then with what little infrastructure there was being destroyed during the war, today South Sudan finds itself with only 256km of paved roads, no national electricity grid (and almost all power being supplied by diesel generators), and very limited running water. The problems this causes are seen in the basic development indicators: only 1% of the population has access to publicly-supplied electricity, 40% of the population lives more than 30 minutes from an improved water source, and 80% of the population has no access to improved sanitation. As such, any economic development program faces severe challenges in the simple flow of goods and services – the country is literally starting off from level zero, with physical capital at extremely low levels.

(3) *The need to boost human capital*: Just as physical capital is at minimal levels, so is human capital. South Sudan shows some of the weakest human development indicators in the world, almost always below even sub-Saharan Africa averages. As examples, life expectancy is only 42 years, below even Liberia at 57, and maternal mortality is at 1,700/100,000 births (versus a sub-Saharan Africa average of 300), and child mortality is at 250/100,000 births (versus a sub-Saharan Africa average of 100). In terms of education, only 37% of people over 6 have ever attended school, which has led to an adult literacy rate of barely 27% (though this is improving with literacy rates close to 40% for 15-19 year olds). As such, driving economic growth means working with a population with extremely low levels of human capital.

Against this background of severe human and physical capital constraints lies an agriculture sector with tremendous potential – nearly 90% of the land is arable, and irrigation potential is very high as the entire country lies within the Nile basin. Given this, the development potential for all crops – from cereals, pulses, roots and tubers, to cash crops – is very high. However, given the dislocation and insecurity caused by over 20 years of war and almost complete lack of skills, today only a small fraction of arable land is farmed, and close to 40% of the population is moderately to severely food insecure. Indeed, South Sudan's expected cereal deficit in 2011 is approaching 300,000 mt, despite the fact that the country itself is sitting on top of land that could feed most of the sub-region.

To understand why this *agricultural potential* is not being realized, six specific problem areas have been identified:

(1) *Essentially non-existent input markets*. South Sudan's yields (generally <1 mt/hectare for cereals) are among the lowest in the world despite sitting on some of the best land in the world. This is in part driven by the non-existence of a formal agro-input market, and therefore the availability of any sort of quality seed or fertilizers. Outside of Juba, Yei, and Yambio, which together have (reportedly) less than five formal agro-dealers, the only way to access quality inputs is via NGOs or relief organizations. Further, awareness among farmers of the value of these inputs, and how to best use them, is almost nonexistent for the bulk of the population.

(2) *Minimal market understanding and participation*. With most farmers barely able to feed themselves, even some FBOs that are part of productivity-enhancing NGO programs are barely able to sell 10-20% of their production into the market – the rest they consume themselves. Given the massive instability in the country and a culture that grew up around relief and handouts, farmers' understanding of markets and the value they could offer is low. This is compounded profoundly by the fact that even when farmers do produce something to sell, the lack of infrastructure means most produce either rots by the roadside, or is too expensive

to compete with Ugandan imports since transport costs are so high and volume is so low. Until transaction costs can be substantially lowered as feeder roads are built, production achieves scale, and a market-oriented mindset develops among the bulk of farmers, market participation and development will remain weak.

(3) *Very high labor costs*. At 100-300 South Sudanese pounds per month for part-time farm labor, labor costs in South Sudan are relatively high, due to the fact that population density is very low, and wages are appreciated due to the presence of oil inflating the currency – anecdotally, real day wages are reportedly as much as 8x higher in South Sudan than they are right over the border in Uganda, to the extent that many Ugandans are crossing the border to work and get the higher wages. Finally, with many people only just now returning and setting onto land again, much has to be spent turning fallow land back into farmland. This too is very expensive and labor-intensive given the almost total lack of mechanization in most places, which further exacerbates the labor cost and labor scarcity issues.

(4) *Extremely limited access to capital*. Unlike many of its neighbors, microfinance and SME finance has yet to take off in South Sudan. This is in part because formal financial institutional infrastructure – from regulatory frameworks to formal banking and payment systems – is either just starting or still non-existent. With so many only just returning to the country, collateral is also very poor. Further, having lived through over 20 years of humanitarian and relief-style aid, expectations of handouts and "free money" has built (in some cases) a culture of acceptability of non-repayment. As such, microfinance has struggled to gain any traction in South Sudan, and formal loans – even for larger commercial farming ventures, input suppliers, and the like – remains very small.

(5) *Weak to non-existent capacity, especially in research and extension*. South Sudan has only just started to rehabilitate its extension system, but with severe educational and financial constraints, the efficacy of whatever government extension does exist is generally quite poor. Similarly, despite having relatively vibrant research stations and seed breeding capabilities thirty years ago, most of these stations are shadows of their formal selves, and in deep need of rehabilitation and new infrastructure. What this has meant is that most farmers lack basic knowledge of improved farming methods, and access to improved services and training is generally limited only to what NGOs can provide. Combined with an almost non-existent input market, it is clear why most farmers can barely produce enough for themselves. These service provision challenges also extend into animal health, where veterinary services are also almost non-existent.

(6) *Uncertain land policy*. While South Sudan has enacted a land policy that decentralizes most control, at the community-level matters often remain uncertain, especially in areas still suffering from conflict. Whether it is recent returnees coming back to communities after decades away, or IDPs staying put in

communities that do not see them as "real" members, low-level land conflict and insecurity remains. This also extends in the wide swathe of South Sudan where pastoralists overlap with sedentary farmers, and a culture of cattle raiding and conflict over land use has existed for centuries. Exacerbated by the war and made worse by the presence of modern weapons, getting communities to feel secure and stable again is quite difficult in many parts of South Sudan. This means getting communities to feel secure enough to invest in and develop their land is often hard. On the other side of the spectrum, South Sudan was at one point the breadbasket for northern Sudan, as attested to by the presence of abandoned large commercial farms of several thousand hectares in places like Upper Nile State. However, as these farms were often owned by northern Sudanese and financed by northern Sudanese banks, they now lie empty. With very unclear land rights and effectively no capital available in South Sudan, few investors or old landowners are returning. As such, all of the uncertainty means today's South Sudanese farmer works on just less than one feddan (around one acre), despite the presence of extensive land all around him or her.

At the end of the day, none of these six agricultural problems are particularly unique to South Sudan – in fact, they could probably be applied just as easily to almost any other African country. However, it is the severity of these challenges that makes them unique. As with the overall challenges, in agriculture one is essentially starting from a zero baseline, effectively from scratch: markets are very under-developed on both the input and output side; costs of production are extremely high with tight labor markets and little access to capital; and both capacity and policy – whether in terms of extension or basic land tenure and security – are very weak. As such, the range of problems that USAID and other donors can take on – and which the Government of South Sudan must endeavor to address – runs the full gamut. For South Sudan's agriculture sector to grow and be transformative, everything basically needs to happen. Orchestrating a proper strategic response to that fact without spreading oneself too thinly and with limited resources is a very serious challenge. As such, "choosing battles" is critical – one cannot do everything, or all at once. Careful prioritization and sequencing of interventions to turn the sector around has to be at the forefront of any food security and transformation strategy in the country.

B. The Government of South Sudan's current response

The range of challenges confronting agriculture in South Sudan is daunting, and as the Government itself is still quite new, it is only in the beginning phases of creating a response. To date, the Government has been most concerned with immediate priorities – trying to get policies in place and eventually to Parliament for passage into law. As yet, there is still no sector strategy for agriculture or the natural resources sector more broadly. Part of the challenge lies in the fact that currently most Government officials see themselves as "caretakers," as no formal

posts have been confirmed as yet, and thus the current officials are not yet sure of their own security of position. As such, few serious strategic decisions with a long-term view have occurred.

Agriculture falls into what is referred to as the natural resources sector of the Government, which comprises four different Ministries and one Commission: The Ministry of Agriculture and Forestry (MAF), the Ministry of Animal Resources and Fisheries (MARF), the Ministry of Cooperatives and Rural Development, the Ministry of Environment, the Ministry of Wildlife and Tourism, and the Lands Commission. The entire 2011 budget for the sector is only US$79m, with nearly half ($40m) going to the Ministry of Wildlife and Tourism, and US$18m going to the Ministry of Agriculture and Forestry, US$13m to the Ministry of Animal Resources and Fisheries, and less than US$5m each to the Ministry of Cooperatives and Rural Development, the Ministry of Environment, and the Lands Commission. As such, not only is inter-Ministerial coordination a significant challenge, but funding levels are paltry at best. Because the bulk of the South Sudan Government's budget is going into security, the country is nowhere near reaching the Maputo Declaration target of 10% of the national budget spent on agriculture. At present the proportion is less than 1%, though it is expected to rise somewhat as peace gains are consolidated.

Further complicating matters is that while the Ministries transfer on some of their budget allocations to the ten State Ministries (US$4.3m out of US$17.8m in the case of Agriculture), these State Ministries are answerable to their State Governors first, as opposed to the Federal Ministry. As such, there have been challenges of conflicting authorities and strategies between the State and Federal levels, making alignment and implementation of programs very challenging in some States.

In the case of Agriculture, its budget split implies certain strategic choices made by the Ministry, even in the absence of a sector strategy. Of the $17.8m, $4.3m is sent onwards to the States, but $4.7m is for support to extension and co-operatives; $2.6m is for forestry; $3.5m is for research and training; and $2.2m is for general administration. For better or for worse, there is a sentiment within the Ministry of revitalizing the old agriculture research stations, and having significant government-led extension provision as the main driver of agricultural growth. This heavy public-led approach is characteristic of many parts of the Government, including the health sector, where a conscious choice has been made to focus on larger facility development instead of community-based interventions. However, given that resources are so low, coordination quite difficult, and that the educational capacity levels of front-line staff are often minimal, the efficacy and speed of these sorts of public-led change agents remains very mixed.

In terms of the outgoing Minister's own priorities, she has been fairly explicit about four main things: (1) the need for data-driven analytics in policy decision

making and baselining; (2) a focus on spurring the sector to become competitive and supplant the extreme dependence on imported food, especially from Uganda; (3) improved food security for all South Sudanese, whereby focus should be on core food staple crop production; and (4) a desire for private investment to help achieve all these goals, both foreign and local. While we expect these priorities to continue with the incoming Minister, within the Ministry itself, there has been a tension on what this means in practice – a desire for some degree of control of any private investment is seen as important, as well as maximizing the amount of South Sudanese investment/stakes versus foreign presence. Together with the land issues mentioned earlier, this has made for a mixed enabling environment for private investment.

Beyond these indirect articulations of priorities, the Agriculture Ministry has also focused heavily on getting five policies up-and-running: (1) seeds; (2) plant/crop protection; (3) capacity and training; (4) agricultural research; and (5) forestry. In almost all cases, the work is still ongoing and implementation has proved challenging. For example, because no fertilizer regulatory framework has been enacted, most commercial farmers have to resolve to informal means of getting fertilizer into the country – a bag in a car trunk here, on a flatbed there. Alternatively, permits can sometimes be arranged via the Ministry, and such is the case for most donors and NGOs. Nonetheless, this lack of implemented policies has meant inputs and most of the other previously defined constraints lack actionable legal paths for resolution at the current time.

Finally, the Ministry has been fairly explicit in de-prioritizing CAADP at the present time. With the Government yet to be confirmed and without basic policies in place, the outgoing Minister feels CAADP cannot yet be considered. As such, the common touchstone a CAADP plan allows for between donors and Government remains missing. This has meant the outgoing Minister has been quite activist in managing the donors investing in the sector, which is good, but also inherently ad hoc because there is no guiding strategic framework. Hence, for USAID and other donors, program planning is very much a bottom-up, iterative process done closely with a capacity-constrained Ministry, which has been challenging in terms of getting programs aligned and off the ground quickly.

C. The current USAID and other donor responses

USAID's current response to the agriculture challenges in South Sudan comes in four different parts: the bulk from the Economic Growth (EG) team, followed by agriculture-related activities found in the Food for Peace (MYAP) and Office of Foreign Disaster Assistance (OFDA) programming, and finally as elements within the Office of Transition and Conflict Mitigation's programming (OTCM).

Until very recently, the Economic Growth team has been heavily invested in infrastructure, including one mega-project (the full paving of the Juba-Nimule

highway) as well as important trunk and feeder roads, and town-based electrification projects. Now that South Sudan is moving more and more towards an environment ready for longer-term economic development work, the Economic Growth team has begun to invest heavily into agriculture-led development. Programming under development objective four (DO4) – expansion of agriculture-based economic opportunities – is projected to reach nearly US$300m in the FY2009-13 period, or roughly 40% of the Mission's non-emergency budget in FY2011. The activities that comprise the bulk of this work for the EG team are split into two main program portfolios: (1) the building up of commercially-viable agriculture in the Equatorias (the Greenbelt) and (2) the laying down of a post-subsistence agricultural foundation in Jonglei.

For the Equatorias, the portfolio was originally built around FARM, which works to (1) improve the productivity FBOs by providing them with grants for training, access to seeds, and in some cases, mechanization, and (2) build the policy formulation capacity of the Ministry of Agriculture and Forestry. Two years in, FARM has struggled to move beyond the relief-aid model of training-and-seeds-provision, and reaching the amount of targeted households set down at the start. It had a very wide scope at the beginning (over 15 value chains and a host of interventions) and is now down to just four staple value chains (maize, cassava, groundnuts, and sorghum) and a select set of activities. Supporting FARM's on-the-ground farmer development in the Equatorias are three other important programs: (1) RHEA, a partnership between the University of Juba and Virginia Tech to improve the capacity and higher education training in agriculture; (2) SRLG, a program to pilot community-level land tenure reforms in the region; and (3) CASE and PASS, a joint program between AGRA and IFDC to develop private sector seed companies and agro-dealer networks across the region, and bolster the rehabilitation of public seed research and breeding. Together all four programs are meant to create a holistic transformation of the Equatorias, and get the basic elements in place for commercial agriculture growth.

For Jonglei, the focus is much more around stabilization, and laying the foundations of non-emergency agriculture-led growth. For EG, this is being done through three main programs: (1) a buy-in to the large MYAP food security program that is providing farmers in the region with very localized training, input provision, and basic market linkages; (2) the development of John Garang University in Bor to not only provide a regional center for higher education and training in agriculture, but also a base for creating an alternative extension service in the State; and (3) the continued rolling out of an innovative, community-based model to mitigate conflict and provide environmental and conservation-related opportunities to youth in the sensitive Boma region. This last program is managed as part of the Office of Transition and Conflict Mitigation (OTCM). As such, while the portfolio is not commercially driven, it is intended to bring households in a traditionally food insecure and conflict-ridden region to basic levels of food

security and production, and be in a position to eventually consolidate those gains and move towards actual economic growth via agriculture and conservation. The programs are bolstered by further programs managed by OTCM, including youth livelihood work, and governance/capacity building of local government.

Supporting these two programs, the Economic Growth team also has a number of cross-cutting mechanisms: (1) RAPID, which allows for further investment in agriculture-related infrastructure, such as feeder roads and markets; (2) FEWSNET, which provides food security data and information; and (3) GDAs, to help evaluate high-potential cash crops, as well as provide cash transfers for improved environmental behaviors of smallholders.

Looking back to the six categories of constraints described at the beginning of this section, the programs of the Economic Growth team are all about resolving the capacity constraints (especially in extension and research), and at all levels – from the farmer all the way to the top levels of the Ministry. Second to that is a heavy focus on inputs – especially seeds – and finally, a third focus on the land question. The constraints of micro-finance/lack of capital and high labor costs are not directly addressed by most of the programs. Finally, while the constraint of low competitiveness and weak participation in output markets has not been directly addressed by the programs, both the infrastructure programs and the end-result of the input-focused programs are expected to help relax this constraint as well.

Beyond the Economic Growth team, the two main emergency relief offices also are programming in the agriculture space:

- Food for Peace, with a US$54m program in Jonglei State, which was described above (basic farmer training, market access, and input provision)
- OFDA, currently with a yearly portfolio of grants worth $13m when looking at those grants covering agriculture-related activities. The bulk of the grants go towards very basic agriculture-resilience work, including basic farm skills, provision of seeds, and community integration. As opposed to Food for Peace, OFDA is scattered across South Sudan, especially in the northern states.

One of the challenges has been coordination between EG, Food for Peace, and OFDA. With very small staff, and the leaders of the programs often not in-country, coordination has mainly been around information-sharing as opposed to actual joint program design. The new Jonglei State MYAP program will hopefully start to mitigate this challenge.

Stepping back from the nuts and bolts of USAID's programming, one sees a number of things that are working well: (1) a fairly clear vision of transformation: regionally-based (the Equatorias, and Jonglei), and with an idea of what success should look like; (2) well-articulated priorities – four staple value chains, two

distinct regions and development approaches, and a focus on capacity building and inputs as the main constraints to work on; and (3) a willingness to think out of the box and take some risks – such as building universities, seed systems, and agro-dealer networks from scratch. Lastly, the Mission has also succeeded in getting the Government to be well-aligned to the goals of these programs. While the Government does not have clearly articulated priorities or a strategy, nonetheless Mission has been able to make these programs agree with the Government.

At the same time, the overall program portfolio of USAID is suffering from a number of challenges, and helping resolve these is where much of this strategy effort is focused. In particular, challenges have been found with (1) getting a sustainable, private sector-led/market-driven development approach to be the backbone to the programs – in essence, FARM has been engaging in activities not too different from OFDA or Food for Peace (seed provision and training, with little market development work), with a heavy focus on the front end (inputs) but not the back end (off-take and markets); (2) the chosen change agent is unclear – often it seems to be FBOs, but these FBOs are often artificially created by the implementing partner or NGO, have a "handout" mindset, and seem more set up for reception of services, as opposed to commercial development; (3) an extreme paucity of data – from basic baselines to credible targets, most of the programs have been operating in a data vacuum, making decisions on design very difficult; and (4) almost no work is being done on nutrition, as almost no funding (<$1m) has been allocated to it. While the bulk of programming should at least endeavor to achieve FTF's first goal of lifting farmers out of poverty, at present there is nothing to indicate how reducing the under-nutrition burden will be achieved.

Outside of USAID, seven other donors are also active in the agriculture/natural resources space: the World Bank (via management of the Multi-Donor Trust Fund (MDTF), where Norway and the Netherlands are the biggest donors); DfID (UK); the EU; GiZ (Germany); CIDA (Canada); JICA (Japan); and SDC (Switzerland). Like USAID, most of these donors are currently completing new strategies to transition their activities away from pure relief work, and more towards longer-term agriculture-led economic growth work. As such, it is difficult to say who is going to spend how much in the coming years, but it is expected that together these donors will be spending at least $200m in the coming three years, with the largest donor (MDTF) spending at least $85m, and the EU spending at least $55m. Thus, it is expected that USAID will still stand out as the leading donor in agriculture in South Sudan.

Fairly well-functioning agriculture sector and infrastructure working groups amongst the donors are allowing for effective coordination. This has been exemplified by the coordination being achieved in prioritizing and parceling out various investments in feeder roads. Outside of feeder roads, most of the rest of the programming is community-level capacity building and market linkage work,

but split geographically. While USAID is mainly in the Equatorias and Jonglei, the EU is mainly in Bahr-el-Ghazal. That is not to say there is not some geographic overlap, but there is at least some degree of coordination. However, how much of the other donors' programming will be private sector-led development versus continued food security work (non-commercial seed provision and training) remains to be seen. From this standpoint, USAID's clear comparative advantage/distinctive feature amongst the donors is its focus in trying to both leverage and build up the private sector in South Sudan.

III. The concept of agricultural transformation

To help the Mission craft a long-term agriculture strategy to guide its investments in South Sudan and address its current challenges, the team looked at models used around the world to try and spur agricultural transformations. This section discusses what we mean by "agricultural transformation," the principles behind it, examples from other countries, and the proposed 3-pronged strategy for Mission.

A. Principles underpinning successful agricultural transformations

In recent years, a number of countries around the world have taken steps to fundamentally transform the performance of their agriculture sectors, using a variety of different methods to do so. When studying these many examples, however, five common principles emerged:

- Countries and their development partners switched from broadly implementing uncoordinated "transversal" investments across the entire country (e.g., fertilizer subsidies, extension, seed systems) to driving holistic "mini-transformations" with enough change energy that pulled all of these initiatives together and focused them in a geographic region or value chain – and then scaled them nationally

- Previously, too often Government, donors, civil society, and the private sector operated independently of each other with their own agendas, and often at odds – leading to weak developmental outcomes; today, more countries are creating coordinated, multi-stakeholder planning processes and execution management to ensure that the power of all four groups is effectively leveraged, brought together, and held accountable

- Until recently, most Governments saw themselves as the "do-er," that is, they had to provide everything and they needed to control everything; instead, many are realizing that Government's best role is actually in acting as an "orchestrator," that is, creating the right environment so that the private sector and civil society can do the actual "doing" and execution – whether it be extension, seed provision, off-take, and the like

- Often, programs were limited to as far as that day's political and technical constraints allowed them; today, some of the most successful programs are being designed for scalability: finding scalable private sector change agents (e.g., nucleus farmers, warehouse aggregators, agro-dealers); focusing on replicable contracts that can be applied again and again as investors come in; and using a transaction-focused approach so that expectations and "rules of the game" are set at the start, and used to drive accountability and results

The bottom line is that successful agriculture transformations require deep coordination and trust between all players – created by strong transparency and

accountability, as well as the articulation of a clear transformation plan so that each player knows their role, and where they are meant to be going.

B. Six models of agricultural transformation

As mentioned earlier, in the past few years countries have been engaging in various forms of fundamental agricultural transformation. These can be categorized around six main models, which we describe briefly here:

1. National sector transformation. This is when the Government creates a broad policy scheme that renovates the country's entire market structure to spur investment towards specific economic and social objectives. The Government has a clear vision of it wants to see happen, and does everything it can to make it happen – whether it is getting investors to develop several hundred nucleus farms in Morocco, or creating a high-powered delivery unit to leverage 60,000 extension workers in Ethiopia.

2. Value-chain intervention. This is when business investments are specifically sought in the production of a particular crop or animal to improve the value of goods from planting/raising through to consumption. The crop or animal's entire value chain is analyzed from top to bottom, the holes are identified, pathways for increasing value are laid out, and policies and incentives are aligned to bring in investors and transform the value chain. Classic examples of this include Kenya's cut flower industry, or Honduras' experience with exporting high-value horticulture.

3. Infrastructure corridor. This is when coordinated investments in an infrastructure system are needed to jumpstart and facilitate rural markets and reduce logistical inefficiencies. Often, significant amounts of resources are needed to make this happen – roads, ports, and railroads connecting a high-potential production area to key market(s) or entrepots need to be developed. As such, PPPs are often created to unlock the capital needed and develop clusters along the emerging corridor – large commercial farms with outgrower schemes, input dealer networks, and market infrastructure. This is currently a major development strategy in Mozambique (the Beira and Nacala corridors) and Tanzania (the Southern Corridor), where significant inland production areas and historical trade corridors are being linked to key ports by developing PPPs and agro-clusters.

4. Regional transformation. This is when investments are concentrated in an area with high agricultural potential and many smallholder farmers, to increase production primarily of staples. As with the infrastructure corridor, this typically means significant capital investment to focus a range of transversal investments (finance, roads, irrigation, etc) in the chosen area, and usually by allowing for a range of different PPPs to make it happen – whether through outgrower schemes, warehouse-entrepreneurs, or other similar private sector change agents of varying

sizes. Pioneered as a concept by AGRA, this is approach is in its nascent stages in northern Ghana, Mali, and some parts of East Africa.

5. Scaler of success. Perhaps the most complicated of the transformation models, this is when donors and Governments "let a thousand flowers bloom" by doing targeted experiments across the country (such as with a Grand Challenge mechanism) and scale up the most successful models. This can be very expensive and high-risk, and requires much advanced planning (such as a "learning agenda") and funds to be ready to go once success is seen so that it can be brought to scale quickly. This is seen in the type of work being done by groups such as the Poverty Action Lab, where across many African countries, a range of highly innovative approaches are being tried out, and carefully monitored to understand results and scalability.

6. Deep and targeted public investments. Perhaps the most "traditional" of the transformation models, this is when the Government and donors "go deep" by making large investments into key enabling public goods, such as roads, irrigation schemes, or national research infrastructure. The idea is that by transforming one of these "keys," the enabling environment is given a major boost, and in turn investment occurs. The biggest challenge is sustainability – for example, large irrigations schemes are often not maintained and then fall into disrepair after a decade and the transformation is lost. Malawi is another example – its fertilizer subsidy program has been very successful in bringing food security to Malawi – but it is unclear how it can continue to be funded, particularly as it continues to grow in size, while budgets get tighter. If there is no "exit strategy" whereby the investments can be taken over by the private sector or the farmers themselves and sustained over time, then this approach can be quite risky.

Thus, when considering an agricultural transformation, a range of options are available. The country must look at its starting point, and think through both what is achievable, and which model(s) make the most sense. In so doing, the country can then use the model as the guiding framework behind which to articulate its actual strategy.

C. Case studies of agricultural transformation: adapted largely from McKinsey's work with the World Economic Forum entitled "A New Vision for Agriculture" (January 2011)

1. National sector transformation example -- Morocco: "Plan Maroc Vert." Agriculture accounts for almost 20% of GDP in Morocco and over 40% of jobs but, until recently, productivity had remained stagnant for two decades. To revitalize the sector, create sustainable rural employment and meet growing demand for diverse food choices at home and abroad, the government developed a strategy to attract private investors while protecting social interests – essentially, a two-pronged strategy involving a "commercial" pillar, and a "social" pillar. The

Government stimulates high-value crop production to meet national and international consumer demand through its "Le Maroc Vert" program. The strategy is to lease land to private investors in return for implementing advanced production, developing value-adding facilities, employing rural Moroccans and aggregating the produce of neighboring smallholders. In this system, private players invest their resources and know-how for higher-value agriculture, including cash crops, irrigation efficiency and processing. They also link smaller players with the inputs, expertise and consumers they may otherwise not have the scale to reach. A dedicated government agency manages the contracts to attract investors while monitoring to ensure social equity for local communities. The program initially identified 700-900 investment projects across the country. The strategy was then incorporated into regional development plans with the aim of reaching 700,000 farmers out of 1.5 million in the first seven years. Through this proactive approach, Morocco is determined to create a million jobs and double agricultural GDP. So far, between 2008 and 2010, the annual income of participating smallholders has tripled to US$ 3,000, and agricultural GDP has increased by 30%.

2. National sector transformation example – Ethiopia: Implementation Unit
The Gates Foundation initially funded a diagnostic of the challenges to Ethiopia's extension system, and in so doing, the findings caught the interest of the Prime Minister. This led to further diagnostics on each of the key parts of the sector: seeds, major value chains, and soil fertility, among others. Together, the Government then created an integrated strategy. This led to the creation of an implementation unit reporting directly to the Prime Minister, and tasked with delivering in five main areas:

- Extension: improving regional planning and coordinating interventions at highly localized levels, linking co-ops and extension, and creating market-oriented extension well-integrated into the overall system
- Industry structure: creating a shared public-private vision and joint-review mechanism, improving the investment enabling environment (with government playing an enabling and regulatory role), increasing incentives for land tenure and finance, and building industry associations
- Irrigation: prioritizing projects, conducting best-practice research, focusing on performance and contracts, improving staff, building up roles for SMEs, and putting in place environmental safeguards
- Land development and management: ensuring extension and outreach programs include soil fertility and data outreach, developing integrated land development plans, and improving the mix of large and small farms, including outgrower schemes

- Enablers: focusing on supporting innovations in the infrastructure, finance, technology sectors, and rolling them out to farmers and other players in the agriculture space

To achieve these goals, the implementation unit engages in overall program management to ensure all the moving parts fit together and are driving towards results; hands-on support by bringing in expertise where needed; capacity building, especially through the "field and forum" approach where actual change agents (mainly extension agents) come in every few weeks to discuss their challenges with each other and with experts, and then return to the field to continue executing; and taking on cross-cutting projects that do not fit with just one Ministry. With such a mandate and high-level buy-in, the unit will drive the overall transformation by allowing for a level of coordination that ensures all stakeholders are working towards the same overall vision.

3. National sector transformation example – Rwanda: Sector Investment Plan
While most African countries have created Agriculture Sector Investment Plans as part of the CAADP process, Rwanda's is unique due to its high degree of specificity and prioritization. While the plan is comprehensive with 23 program areas, it articulates the six absolute priorities, allowing donors to know what is most important. For each program area, the Plan then lists out very specific output targets, letting donors know what specifically is needed: for example, specific types and numbers of factories for private sector investment, aspired production targets, research targets, and the like. Further, the Government ensures it is at the center of the overall development process, using the investment plan as the rallying tool. The Government engages in strong dialogue at all times between the main stakeholders and donors, leading to few surprises on how things are progressing, and where it wants activities to be. Donors are expected to buy into or otherwise support the specific investments laid out in the Sector Investment Plan; if not, some have been asked to cease their activities in the country. While intense, this ensures ultimate donor coordination, avoids challenges with duplication, under/over-investment, and acts as a common touchstone for all players. Finally, donors are routinely graded on the return Rwanda is getting from their investments – allowing for a level of accountability and driving for results not often seen in the space.

4. Value chain intervention example -- Honduras: Horticulture
Holistic value-chain interventions in Central America and around the world tackle obstacles from local production to international trade to improve the efficiency and equity of strategic crops. In Honduras, an NGO (TechnoServe) and a farmer organization (Asociación de Productores de Hortalizas y Frutales de Intibucá) are leading a partnership with donors and private companies to improve the productivity of horticulture. The country is relatively poor, with high population density and a per capita GDP below US$ 4,000 year. This value-chain intervention

focused on the impoverished region of Intibucá, where smallholders formed a strong organization and diversified their crop production but needed a jump-start from external investors to access higher-value domestic and foreign markets. Together, the partners invested in enhancing resource productivity, building organizational capacity and targeting consumers. The farmer organization now contracts with sophisticated regional buyers such as Grupo Comidas Especializadas. In just two years, participating farmers boosted yields by 50% and realized improved prices by 30%. The capital inflow has not only funded sector upgrades and additional employment through such enterprises as new processing facilities, but also improved living standards, including higher rates of school participation and access to potable water.

5. Infrastructure corridor example -- Mozambique: Beira Corridor
Businesses allied with the Government and international donors to build infrastructure in central Mozambique, where over 10 million hectares of high-potential land remain commercially under-developed. The Beira Agricultural Growth Corridor is intended to reduce early-mover risk and create economies of scale for investors by coordinating projects in advance – literally laying the groundwork for an active rural economy. Inspired by the success of the Cerrado in Brazil, which has a similar ecosystem, investors hope to make this region a global source of maize, sugar, horticulture and soy. Improved infrastructure, such as a freight network and high-capacity port, will catalyse production and link it with global markets. Construction is anchored to major mining activities in the interior, commercial farms, smallholder aggregation, and enhancements of railways that connect to the port in Beira. Proponents hope to use the technological, financial and managerial capabilities of global investors along with the regional expertise of domestic players to bolster local business. By facilitating commercial opportunities for sophisticated private players, the corridor will upgrade the supply chain and attract resources for smallholders, such as financing, improved seed, agro-dealers, storage facilities and links to deeper demand. A goal is to ensure equitable growth through models that benefit smallholders and protect their communities. To this end, commercial farms are designed to serve as hubs for outgrowers and to provide services such as irrigation to smaller farmers. The partnership comprises a broad array of stakeholders, including Government, donors and businesses, organized around a detailed investment plan. Together, they hope to raise farming revenues by US1bn, tax receipts by US$50m annually, create 350,000 new jobs and improve market access for 200,000 smallholders.

6. Regional transformation example -- Ghana: Northern Breadbasket
Concentrating resources in areas with the most agricultural promise can maximize efficiency, improve food security and create economic surplus for off-farm development. To this end, the ‘Breadbasket’ approach upgrades all elements of the value chain in a region that has the potential to produce a large share of a country’s staple food requirements. The Government of Ghana and the Alliance

for a Green Revolution in Africa (AGRA) are leading a coalition to apply this strategy. Stakeholders identified four Breadbaskets to support the country's economic goals, staple self-sufficiency and smallholder income. They tackled the Northern Region first, both for its high stakes and high potential: it is the poorest region but has great agricultural capacity with large areas of uncultivated land, good water supply and lagging yields. The strategy involves smallholder aggregation, socially inclusive commercial farms on undeveloped land to stabilize supply and generate employment, and interventions to boost access to inputs and credit. While the focus is on achieving self-sufficiency in cereals, the strategy facilitates the market links necessary for high-value crop cultivation and supports boosting production of local fruits and vegetables. The plan mobilizes the local private sector as change agents: about 250 entrepreneurs, such as SME owners and small warehouse operators, support smallholders and interface initiatives of the government, donors, input/off-take companies and commercial banks. National players with deep regional knowledge find investment opportunities in supplying domestic food markets and global agribusiness companies can use sophisticated technology and large-scale production mastery to secure export markets. In the Northern Region alone, the plan should double the incomes of 250,000 poor farmers to about US$ 750 a year, increase national rice self-sufficiency to 70% and boost agricultural GDP by US$ 500 million.

D. Implications for strategy design: choices and tradeoffs

In all of these transformations, the countries are inherently making tradeoffs around three main outcomes:

- **Agricultural GDP**: What is the best way to increase the quantity and value of the agriculture production in the country? For example, Rwanda doubled maize yields and got agricultural GDP growth up to 7%.
- **Smallholder income**: What is the best way to increase the incomes of smallholder farmers -- lifting them out of subsistence farming, and out of poverty? For example, Morocco was able to triple smallholder income from $1000 to $3000/year over a three year period.
- **Food security**: What will it take for the country to be food secure? Which staple crops should be focused upon? How can the country ensure food balance across the country (or region)? For example, Ghana has a vision to increase its rice self-sufficiency from 30% to 70%.

It is challenging to get all three to occur at once, but countries are trying. For example, the Ghana Northern Region Breadbasket has two pillars: smallholder aggregation, and socially-inclusive large commercial farms. By focusing on smallholder aggregation, it can improve smallholder income, and achieve localized food security. But the impact on overall agriculture GDP and national

food security will be small. As such, a parallel focus on large commercial farming allows for a direct impact on driving up agricultural GDP, and helping ensure overall national food security.

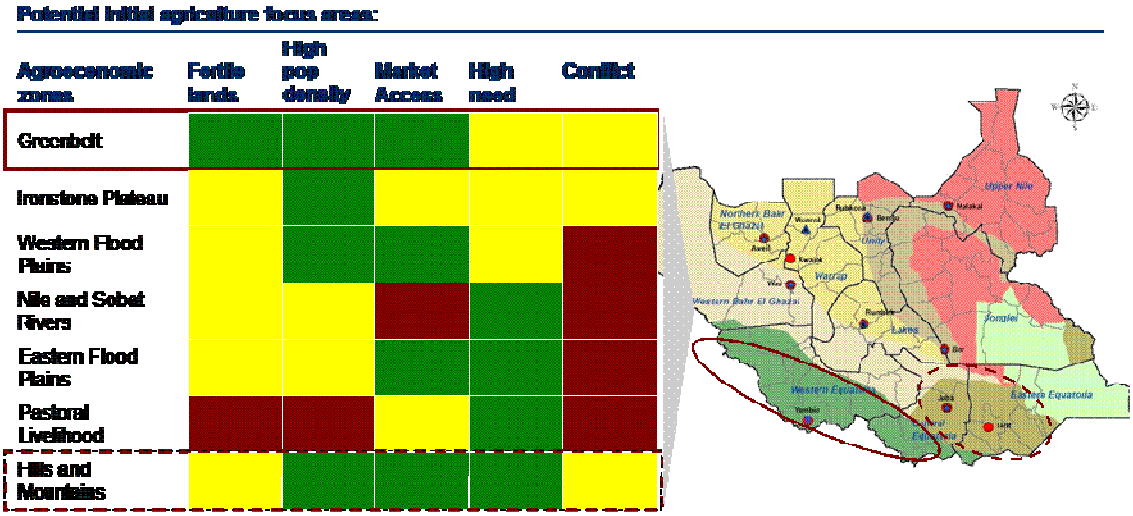
At the end of the day, however, a country has to make choices: which geographies, which crops, and which change agents. It cannot do everything at once, and will only be able to be nationally holistic over the long term. In the case of South Sudan, the challenge of balancing efforts of basic relief versus longer-term economic development is also present. As such, any choices made will carry implicit tradeoffs on how deep one will achieve each of the three main goals of an agricultural transformation: agricultural GDP, smallholder income, and food security. South Sudan is no different, and in an environment as resource constrained as South Sudan, these choices need to be examined carefully.

E. Implications for USAID/South Sudan: a three-pronged approach

Given Mission's resources and the nature of operating in South Sudan, the idea of the regional transformation model as a place to start its strategy in South Sudan resonated well. Already, Mission's programs were set up along regional transformation lines – as noted earlier, within the three Equatorias in the south, and then in Jonglei in the north. A national sector approach resonated well with the Ministry, but until it has a national strategy USAID could lock into, this seemed premature. Value chain interventions could have been an option as well, but given the challenges of operating at a national level in South Sudan, a regional transformation of a few value chains seemed a better way to go. A corridor infrastructure approach was also considered – especially given Mission's recent investment in developing the Juba-Nimule road – but it was felt that since it was in one of the likely two regions for transformation (the Equatorias) the regional approach made more sense, especially given the higher size of population that could be reached. Finally, given the deep need that South Sudan has across all levels of its agriculture sector, it was felt that the "scaler of success" and the transversal/"public sector investment" models were less ideal given that South Sudan needs a more holistic approach.

As such, with the general consensus being around a regional transformation, analytics were conducted to understand where would be the highest-potential areas for achieving a regional transformation. Using IFPRI's analysis of South Sudan's 7 agro-ecological zones along four dimensions – crop suitability, population density, market access, and poverty/malnutrition rates, we were able to quickly understand the relevant strengths and weaknesses of focusing on particular agro-ecological zones. We also added a fifth element – conflict – to understand the ease of operating in a particular zone. This was done through high-level discussions in interviews, and examining the literature. Together, with these five dimensions, we

constructed the following heat-map on the relevant strengths and weaknesses of operating in particular agro-ecological zones.



Not surprising, the Greenbelt rose quickly to the surface as the best place to start a regional transformation, followed by the Hills and Mountains zone. While most of South Sudan is very suitable for crops, the Greenbelt and Hills/Mountains is especially suitable, has a high population, and (relative to the rest of South Sudan) generally a good degree of market access. As such, it made sense as a place to start since it would have the highest likelihood of demonstrating success in market-led agriculture development, away from relief and rehabilitation. Other areas may have had higher need, but at present, operating in such areas is quite difficult, and for the time being, were likely better places for relief/rehabilitation and stabilization efforts, which could then be transitioned into more economic growth activities over time as their situation improved. As such, it was agreed that the bulk of the strategy design effort would look at how USAID could spearhead a regional transformation of the Greenbelt/Hills and Mountains (heretofore referred to as the "Greenbelt Transformation").

Concomitant with the decision to look deeply at the role for USAID in driving a regional transformation of the Greenbelt, two other "prongs" were added to the strategy, as both were felt to be critical for the Mission to work on if it wanted to achieve long-term success in its transition to a focus on economic growth:

- Deciding what role, if any, USAID could play in helping South Sudan construct a national agriculture transformation roadmap. As mentioned earlier, the lack of a national strategy has made it hard for the Government to set a clear vision around which to align resources – donor, civil society, and private. As such, this part of the strategy looks at identifying what goes into creating a transformation strategy, and how the process might look in South Sudan

- Given that outside of the Greenbelt, much of South Sudan is still characterized by significant instability and food insecurity, emergency relief plays a large role. As such, the strategy also looks at options for how to think about programming in such areas – that is, what might be ways to prepare a foundation in less stable parts of South Sudan, such that they could eventually be ready for regional (or national) transformations themselves, and actively reduce the need for emergency/food aid over time

Lastly, a sort of "fourth prong" exists as an over-arching enabler: that of research and education, in particular the Mission's activities with Texas A&M and Virginia Tech in developing the agriculture capacity and outreach of two of South Sudan's universities. While our effort did not delve deeply into this area given the primary focus on what it would take to achieve a regional transformation, create a sector road-map, and better link relief and development, it is acknowledged that research and education matter significantly. These are no-regret activities that will have long-term implications in the sustainability of all three prongs of the strategy proposed for USAID.

Thus, having settled on a three-pronged approach for the strategy effort for USAID/South Sudan:

- Spearheading an agriculture transformation in the Greenbelt
- Creating a road-map for a national agriculture strategy
- Linking relief and development to less the need for food aid

the rest of the document now goes into deep detail on each aspect.

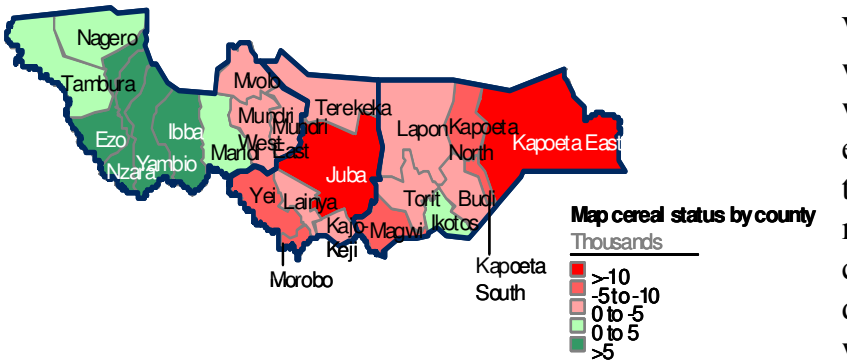
PART II: A THREE-PRONGED STRATEGY FOR USAID/SOUTH SUDAN

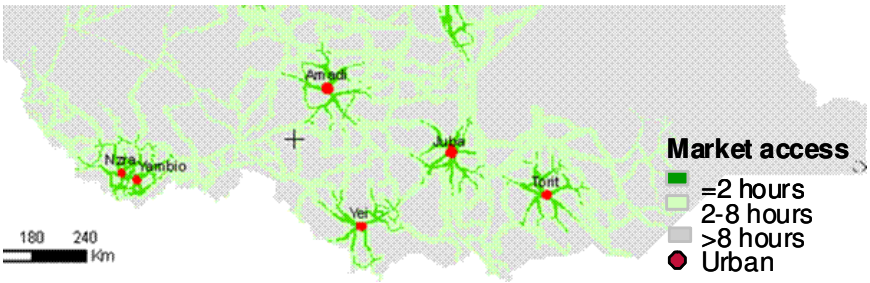
IV. Transforming the Greenbelt

A. Transforming the Greenbelt Region: What and where to focus

Of all of South Sudan's agro-ecological zones, the Greenbelt and nearby Hills/Mountains region offers the highest agricultural potential. The region extends across Western Equatoria, much of Central Equatoria, and the western portion of Eastern Equatoria; this area has an annual growing season in excess of 180 days a year—enough for two cropping seasons. The region has the country's broadest array of crops, including cereals, root and tuber crops, legumes, fruits and vegetables, oil seed crops, and cash crops. Maize and sorghum are particularly prevalent; between 30-40% of the country's cereal production comes from the Greenbelt. However, because of the conflict, much of the land in the region has remained uncultivated for more than twenty years. As such, soil is particularly fertile (though land clearing is required). All of this land offers tremendous potential to form the basis of an agricultural transformation in the region.

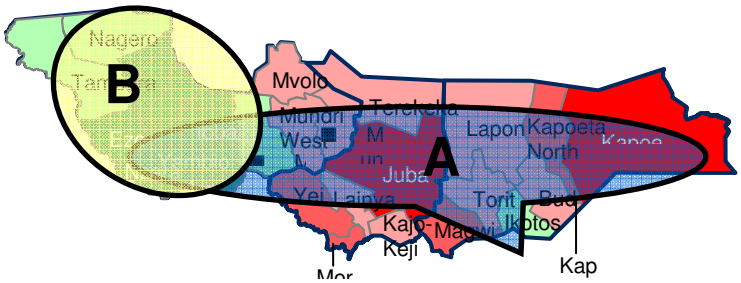
Even within the Greenbelt, there are differences in land quality, productivity, infrastructure, and smallholder need. Western Equatoria has the country's longest growing seasons and most fertile soil. In 2011, South Sudan had a cereal deficit of nearly 300,000 tons. Western Equatoria was the only state with a surplus, estimated at 24,179 tonnes. The first map illustrates cereal surplus and deficit by county, while the second shows the region's road infrastructure and market access. The Greenbelt has the country's best infrastructure, with a relatively well developed road system and five of the country's thirteen urban centers. However, the quantity and quality of feeder roads is very limited, so much of the region—particularly in Western Equatoria—remains more than 8 hours from a regular market. Note that areas with the greatest food surpluses tend to be furthest from major markets.





A newly completed paved road connects Juba with the Ugandan border at Nimule, with a quality road proceeding onwards to Kampala, so the region faces stiff competition from Ugandan imports. At present, transport costs from Yambio to Juba (430 km) are higher than traveling from Kampala to Juba (600 km).Further, costs of production are far lower in Uganda, due to increased availability of labor, improved farm techniques, a greater prevalence of improved seeds, and much better market access. As such, efforts need to focus on how to get South Sudanese farming competitive with Ugandan imports – from better roads that lower transport costs, to higher productivity and production behaviors.

Looking across these factors, two "zones," or distinct production areas begin to emerge. The first area ("Zone A") includes areas near main urban centers and along major transportation corridors in the region. This is an area that is currently in cereal deficit, with clear demand sinks and good transport access, suggesting that an increase in cereal crop production and an organized output aggregation structure would allow farmers to compete in local markets against Ugandan imports. The demand for cereal consumption is expected to rise to nearly one million tons in 2011; currently nearly 300,000 tons of expensive maize and sorghum are imported annually, and the Ministry of Agriculture has set a domestic production goal of two million tons.



Additionally, because of proximity to transport corridors in Zone A, high value horticulture crops produced in this region could be strongly competitive with Ugandan imports. Currently the vast majority of fruits and vegetables are imported from Kampala. Market prices are high, while quality is reduced by the lengthy travel. Rough estimates reflect approximately 350 million pounds of produce imported annually. With strong linkages between farmers and traders, horticulture in peri-urban areas and along transport corridors could reach Juba and other urban markets at far less cost than current supplies.

The second zone ("Zone B") includes most of Western Equatoria—areas that currently produce more cereals than needed for local consumption, but where market access is difficult and the ability to compete with low-cost staple crop imports is limited. Farmers in this region should certainly continue to produce staple crops to meet subsistence and local market needs, and as roads to other regions improve, there may be a strong case for directly transporting cereal crops and selling them locally. However, given the current infrastructure, production data and anecdotal reports indicate that marketing unprocessed cereal crops in the region is unlikely to offer sustainable income. On the other hand, increasing

production of high value, non-perishable crops—particularly crops with potential for value addition—offers an opportunity, such as with oilseeds.

Early evidence indicates a strong case in Zone B for promoting oil seed production—particularly groundnuts—where domestic demand is high, and potential for international exports are promising. Groundnuts and oils make up a substantial portion of the S Sudanese diet (4% daily calories from groundnuts, 5% from oils), but most oil seeds in S Sudan are imported. In urban centers, nearly all raw and processed groundnuts (shelled and pasted) come from Khartoum and Uganda, with prices for groundnut paste in Juba markets at 3-4x farmgate prices for raw groundnuts (>10Xx farmgate price for professionally processed and packaged peanut butter in city supermarkets).

Oilseed crops also offer substantial future growth opportunities. Both groundnuts and sesame are government priority export crops, with strong global markets. Presently, global sesame demand is almost double current supply. Further, as processors grow more advanced, there are opportunities to produce oils, refined confectionary products, and other export-driven products.

Maize, groundnuts, and horticulture value chains have faced similar constraints to-date. As discussed previously, production has been extremely inefficient, with local farmers producing smaller quantities of lower quality produce at higher production costs than regional neighbors; any intervention needs to address farmer access to improved seeds, as well as accessible training in how to use them. When farmers have surplus, post-harvest losses have reached as high as 70% due to the absence of marketing infrastructure. As farmers increase production, sustained success will be contingent on establishing infrastructure for aggregating output and accessing regional markets.

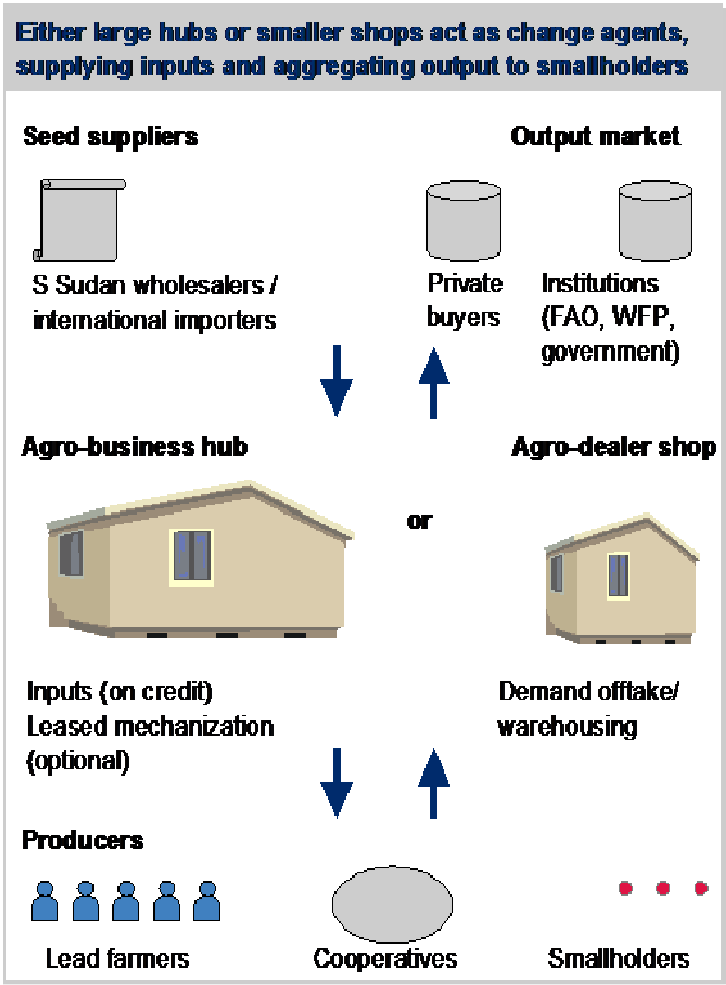
B. Identifying the highest-potential change agents

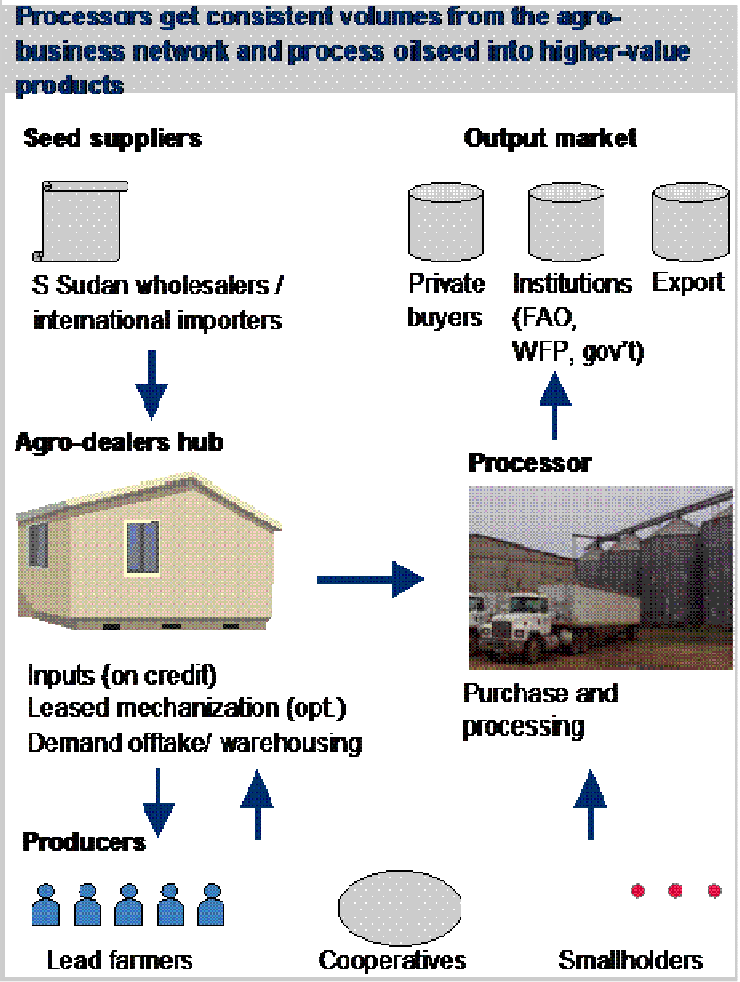
Key to solving these constraints is identifying change agents with the right incentives. In the South Sudan context, where government capacity is very low and farmer-based and community-based organizations have a limited and mixed performance record, private sector change agents are a promising entry point. Three promising change agents can drive success across zones A and B: agro-business hubs (combined input dealers and output aggregators), medium-scale processors, and horticulture traders.

In both Zones A and B, the primary change agent is the agro-business hub. Hubs provide inputs on credit by linking with domestic or international seed companies to bring improved varieties to the village level. They also offer a consistent demand sink for smallholders, buying, storing, and reselling smallholder production. With the high costs of transport in the region, it is not necessarily profitable for hubs to simply buy at farmgate and transport to regional markets, but

if the hub can add value through milling, it can become a substantial profit opportunity for entrepreneurs. Agro-business hubs serving 250-500 maize growing households could expect to earn approximately $7,000-$14,000 year from seed sales and $50,000-100,000 annually from selling milled maize, with start-up costs ranging from $145-$275,000. Entrepreneurs also need $35,000-$70,000 in yearly operating capital to buy and sell inputs on credit and purchase initial harvest quantities.

In Zone B, if farmers concentrate on higher value oil seed crops, hubs can connect directly with processors who can further profit by creating higher-value paste, oil, and cake for sale to regionally and, potentially in the future, international markets. The first figure below illustrates the relationship between producers, agro-business hubs, and input and offtake supply chains; this model applies to all cereal crop production in Zone A, as well as oil seed producers in Zone B. The right hand figure illustrates the additional role for oilseed processors in the market.





Processors in Zone B could expect to make between $75,000-$100,000/ year in profit, with start-up costs of approximately $150,000, and approximately $150,000

of working capital required to purchase groundnuts from the agro-business hub network.

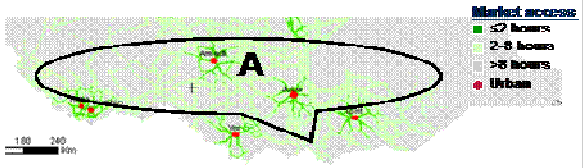
The impact is not only positive for the change agents. For smallholders previously unable to profit because of inefficient production, poor quality inputs, and prohibitive transaction costs to reach markets, agro-business hubs can turn annual returns from farming from net negative to net positive, as shown below in the illustrative income statement for a cereal-producing smallholder household:

Per cereal-producing smallholder household		Current	After aggregation	Change Percent	Comments
Revenues	Production, t	0.9	4.0	335	▪ Yield increase from .9 to 2 t/ha; land increase from 1 to 2 ha
	On-farm consumption and post-harvest loss, t	0.6	1.3	200	▪ Losses reduce by 50% with warehouse
	Sales, t	0.3	2.7	770	
	Price, $/t	350	350	0	▪ 15% price premium from hub aggregator
	Value, $	109	943	770	
Cash cost	Inputs, $	32.2	135	319	▪ From farm saved to certified seeds
	Labor, $	73.6	160	117	▪ Higher costs, but increasingly efficient with improved seeds and mechanization (contingent on fuel cost reduction)
	Mechanization, $	0	171	—	
	Transport, $	22	134	228	
	Total cost, $	145.2	617.9	369	
Income	Net income, $	-19.3	342.7		▪ With a second season (reusing seeds), profits would more than double
	Margin, %	-18	36		

The third change agent in the region is the horticultural trader. While there is strong demand for fruits and vegetables, a trader with strong relationships with local farmers is essential to collect the produce and transport it efficiently to market. As one example, for a trader able to aggregate approximately 100 households and sell 5-6,000 kg of tomatoes, profits from tomato sales alone could reach between $12,000 and $15,000.

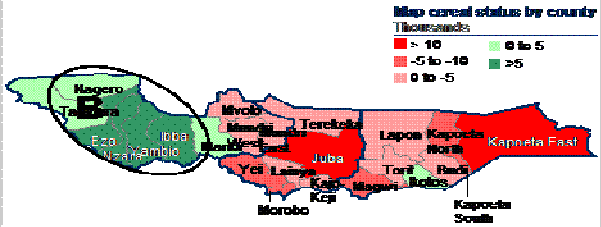
To estimate the overall potential impact of the strategy, assume approximately 25% of smallholders in each zone will choose to participate, plus an additional 10% of the population in Zone A chooses to grow high value horticultural crops. This means that approximately 40,000 of the 156,000 households in Zone A (primarily Central Equatoria) would participate in cereal crops, while an additional 15,000 households would participate in the horticultural scheme. In Zone B, about 23,000 of the 95,000 households could be expected to participate. Given that each hub serves 250-500 households, only 170 hubs and 10 processors would be required, with an additional 150 horticultural traders. The key is now to identify likely entrepreneurs to become these change agents, and work to develop them.

Intervention zone A (cereals, horticulture)



- **Counties covered**: Terekeka, Yei, Lainya, Juba, Mundri West, Mundri East, Mvolo, Torit, Lafon, Magwi
- **Households covered**: 25% or ~40,000 households out of 156,000 total farming households in zone
- **Agro-dealers needed**: 120 agro-dealers, assuming roughly 40 large dealers (500 farmers/agro-dealer) and 80 small dealers (250 farmers/dealer)
- **Horticulture Traders/FBOs needed**: 150 traders and/or FBOs, assuming 10% of population participates (15,000 households) and 100 households/scheme

Intervention zone B (oilseeds)



- **Counties covered**: Ezo, Ibba, Maridi, Nagero, Nzara, Tambura, Yambio
- **Households covered**: 25% or ~23,000 households out of 95,000 total farming households in zone
- **Agro-dealers needed**: 50 agro-dealers, assuming roughly 500 farmers/agro-dealer
- **Processors needed**: 10 processors each supplied with a total of ~3000 Mt/year of oilseeds from 5 agro-dealers

Together, these hubs, processors and horticulture traders could have a major impact on all three of South Sudan's agriculture and food security goals, as illustrated below:

1 Increasing Agriculture GDP

- ~$75-150m/year
  - Cereals: ~$50-$100m
  - Horticulture: ~$18-$20m
  - Oilseeds: ~$10-$20m

2 Improving smallholder income

- Income per cereal-growing household to between $300-$600
- Income per oilseed-growing household to between $250-$700
- Income per horticulture-growing household to between $500-$1000/year

3 Improving food security

Just in the case of cereals, if we assume:

- Smallholder yields increase from ~0.6-0.9 mt/ha to 2 mt/ha
- Average smallholder plots rise from 0.5-1 ha to 2 ha
- Growing 2x/year, cereal production would be ~320k/annum
- This would be slightly more than 100% of the current WFP projected 2011 cereal deficit in South Sudan of ~290k mt

C. Operationalizing the Greenbelt Transformation

The integrated Greenbelt Transformation should be rolled out over 3 years, beginning with an initial piloting and planning stage, with a full roll-out beginning as early as January 2012. The transformation has 5 components:

Phase I: Proof of Concept and Planning (September 2011-March 2012)

1. *Execute a pilot*: In partnership with the World Food Program, identify 10 "quick win" opportunities for agro-dealer hubs and demonstrating initial results by early 2012
2. *Build the internal and external management unit:* Establish an internal project management unit to plan and coordinate execution across multiple programs within USAID. Simultaneously, build an Greenbelt Coordination Unit with government and donor stakeholders. Embed deep monitoring and evaluation capacity.

Phase II: Scaled Roll Out (2012-2013)

3. *Prepare farmers for a market-based world:* Build capacity and change smallholder mindsets (support lead farmers and/or FBOs; provide extension and/or vouchers for agro-dealers)
4. *Build national seed supply chain:* Streamline and improve oversight into seed import process; develop domestic multiplication programs
5. *Develop entrepreneurs and hub infrastructure at scale:* Launch agro-business hubs and roll-out input and output aggregation schemes, through four essential components: a) select and vet entrepreneurs; b) establish financial models; c) provide training to entrepreneurs; d) launch agro-dealer hubs.

Current cost estimates are extremely rough, but provide an indication of the approximate level of effort required. Phase one is estimated to cost approximately $6.1 million dollars, including approximately $3 million in planning and management costs, and approximately $3 million to execute a full pilot. Phase two would cost approximately $23 million in the program's first 3 years, with costs driven primarily by the expense of intensive construction and financing ($16.2 million/year). By years 4 and 5, costs would reduce to approximately $7 million per year for continued voucher support and overall program management and oversight. As such, over a five year period, the program would cost approximately $89 million.

1. Execute a pilot

Before rolling out the program at scale, USAID has the unique opportunity to execute a proof of concept over the next six months. The pilot will offer a compelling example to government officials and other donors in order to bolster

support—as well as providing critical information on strategic choices around scaling-up the program more efficiently.

The pilot has six key steps:

(1) *Identify and train agro-dealers and entrepreneurs:* For the initial proof of concept, focus on identifying existing agro-dealers and high potential entrepreneurs. Rather than starting from scratch, aim to provide the additional training, funding, and consulting support to already qualified individuals in order to validate that the potential integrated hub model can be successful. Initial hub entrepreneurs could include current agro-dealers in Juba, Yei, and Yambio, the World Bank's most successful business plan challenge grantees, and additional noted business owners/ entrepreneurs across the Greenbelt as needed. Provide an intensive four week business and agronomy training session to these entrepreneurs; this offers an opportunity to develop and refine a curriculum, and identify training gaps. This is also an opportunity to assess the most appropriate partner to deliver training; ideally IFDC/ AGMARK could quickly launch such a pilot program; if not, perhaps FARM could work with its sub-contractors to develop such a training course.

(2) *Provide direct financing:* The Mission should determine how it can most quickly obtain the start-up financing necessary to provide initial start-up capital and operating expenses to entrepreneurs. This may include using FARM grant funding channeled through a commercial bank, DCA, the FARM administrative structure, or the Mission directly. Even if working through a commercial entity, USAID may choose to guarantee 100% of the loans in this proof of concept to ensure a rapid start—and should budget to cover the full start-up costs. Farmers should receive the same repayment conditions as the full program, paying 10% of start-up costs annually to the bank at no interest. Farmers will be able to take loans to cover operating expenses each year, with all repayments and interest going to a revolving fund administered by the Mission.

(3) *Partner with the World Food Program to obtain readily available warehouses:* The World Food Program currently has 15 pre-fabricated warehouses ready for installation in South Sudan, but has been slow to operationalize. For USAID, this offers the perfect opportunity: USAID (through AGMARK/ IFDC) will identify and train the warehouse operators and provide funding for additional needed equipment (e.g., maize mills). In return, the start-up cost of warehouse construction will be dramatically reduced, and each entrepreneur will have the potential to contract directly with Purchase for Progress to buy maize, minimizing the challenge of finding offtake buyers and transporting to market. In the proof-of-concept stage, USAID and its entrepreneurs can test additional services to provide at the warehouse site or with its agents (e.g., providing additional fee-for-service maize milling, keeping dryers and shellers on-site or providing to agents, potentially offering mechanization services like tractor rentals, etc)

(4) *Support entrepreneurs to establish input and output market linkages:* Ideally many of the proof-of-concept entrepreneurs will already be connected to seed distributors through their own previous agro-business experience, but USAID (through AGMARK/ IFDC service providers) can provide one-on-one consulting support to entrepreneurs, including troubleshooting any issues with larger quantities of seed imports. Service providers can also help to ensure entrepreneurs are able to meet all required standards for WFP purchasing contracts.

(5) *Immediately relocate extension to target farmers in the pilot areas:* As this integrated program is scaled-up, FARM should relocate all of its extension services to warehouse catchment areas. In the near-term, FARM should relocate at least one of its field extension officers to the catchment area of each hub (serving 250-500 farmers). The extension officer would be responsible for two things: a) providing basic training and vouchers to all participating smallholders through farmer field schools to build awareness and demand for improved seeds, and ensuring that farmers maximize their effectiveness. Vouchers would provide an 80% subsidy for farmers to purchase up to 2 hectares worth of improved maize seeds, with the subsidy decreasing to 50% and 25% in years 2 and 3; and b) identifying 10-25 lead farmers (~1 per 25 participating farmers) to serve as agents for the agro-dealer hub. This would be an in-depth trainer-of-trainers program, held in a centralized location at the hub. The proof-of-concept will offer an opportunity to learn whether FARM agents can quickly train community members to serve as for-profit sub-agents for the agro-dealer, connecting the dealer with community members, selling seeds at a retail level, and providing on-demand extension services. If the model is successful during the program pilot, hub entrepreneurs should contribute to the cost of training with FARM in the roll-out.

(6) *Capture baseline and follow-up data:* Quality data is especially essential in the program's pilot phase to determine the impact of this new model and understand necessary adjustments to maximize impact. In the pilot phase, USAID (potentially through FARM; ideally through a new, independent partner) should collect detailed baseline data in the hub catchment areas and statistically equivalent control areas. As capacity allows, USAID should conduct rigorous randomized controlled trials (e.g., test extension service delivery model or voucher payment sharing methods) in selected catchment areas to maximize learning.

Each of these steps and actors cannot operate in isolation; success of the pilot will be contingent upon tightly coordinated orchestration. To that end, USAID should ensure the pilot is closely managed via some sort of project management effort, especially in the initial 3-4 months.

2. Build the internal and external management unit

The Greenbelt transformation requires the unification of three broad efforts: national work to build an input supply chain, targeted efforts with private sector

entrepreneurs, and direct farmer training. Success of this project is dependent on two levels of coordination:

a) Internal coordination among USAID's programs: A strong internal function should directly coordinate activities across the Missions' programs to execute the strategy (e.g., FARM, IFDC, AGRA). This unit should be charged with assessing current progress and when needed, re-directing activities and/or adjusting individual partner objectives to fill capacity gaps. As such, it should have direct control over sequencing and coordination across initiatives. To ensure accountability, this management function should provide rigorous, independent monitoring and evaluation.

b) Greenbelt Coordination Unit within the Government of South Sudan: The sustainability of the Greenbelt Transformation is contingent on strong national ownership—ideally combining state and national leadership across multiple relevant state and national ministries (agriculture, commerce, roads and transport, etc). This group would be tasked with creating the enabling environment needed for a transformation to succeed, including streamlining agricultural import policies, working to reduce inter-state tariffs, supporting feeder road construction, and coordinating Government extension officers to complement private sector efforts. It should also work very closely to unite the efforts of all donors involved in the Greenbelt—particularly to ensure that no independent programs threaten the private sector-driven nature of this transformation. Ideally, this unit could be elevated to a quasi-independent entity with clear decision rights to make swift changes in the Greenbelt. USAID should invest heavily in this coordination function, directly embedding policy advisers and working to build the capacity of involved Government officials at all levels**.**

Coordination at these two levels should be closely connected; ideally USAID and broader Greenbelt coordination could happen together in one strong project management unit. Project management will be ongoing during the 3 year roll-out period, with an intensive up-front planning and validation period over the next several months. In the first six months, the management function should seek to accomplish five basic goals:

(1) *Validate the strategy and test assumptions in the field:* This initial strategy is based on a rapid field assessment and a detailed review of existing data. Before rolling out at scale, it would be important to validate the analytics, including costings across regions. Further value chain analyses across the Greenbelt may reveal additional profitable opportunities. However, the management team should ensure they do not become bogged down in academic analyses; the ultimate goal is to ensure there is a solid business case for private sector entrepreneurs to invest.

(2) *Set metrics for success:* The management team should set targets for each stage of the rollout, both at the overall initiative level (e.g., smallholder income,

food security, agriculture GDP growth targets), and at the field execution level (e.g., # of warehouses, amount of seed distributed). It is critical to ensure each stakeholder understands responsibilities for both sets of objectives.

(3) *Create a multi-stakeholder plan with clear government, donor, and private sector roles:* Success of the Greenbelt transformation will be most effective when investments in the region are complimentary (e.g., hubs are built around prioritized feeder roads), and donor programs seek to support transformation investments (e.g., FAO and WFP purchase from hubs, the World Bank's voucher program supports farmers at new hubs). The transformation's success is largely dependent on changing farmer mindsets from dependency to independence. It is essential to ensure new programs are not destructive; for example, free seed handouts in an area would discourage farmers from investing their own money at agro-dealers. The management unit should help new programs and donors find synergies in their investments.

(4) *Create a detailed regional transformation operational plan:* Using lessons learned in the pilot phase, the management unit should create a detailed operational plan, identifying priority locations for the initial hubs, detailing the sequencing of construction, and identifying needed investments and responsible actors in infrastructure gaps, policy needs, financing, and market development.

(5) *Capture baseline data and build M&E capacity:* Finally, the project management unit should ensure the transformation is driven by high quality data, with regular assessments. This capacity may be directly embedded within the management unit, shared with government statistical offices, or contracted to a third party. Beginning with a baseline survey, data should be captured at the individual household level, at the entrepreneur level, and more broadly across the region. Particularly with the limited infrastructure in South Sudan, data collection is slow and costly, so efforts should be extremely focused on actionable indicators. Much of the data will be directly available from each hub's business records, and government extension agents could play a key role in the data collection process at the field level; at a minimum, the unit should capture yield and profit data for each growing season.

3. Prepare farmers for a market-driven world

Most farmers in South Sudan have operated in a state of "permanent emergency" over the past decades of conflict. Even in the relatively stable Equatoria region, a dependency mindset is prevalent among smallholders. Farmers report clearing land but not planting because no NGO delivered seeds. Numerous farmer-based organizations are formed for the sole purpose of receiving aid. The market for improved seeds is almost non-existent. In 2010, farmers purchased almost no improved seed; 10% of the seed supply was distributed for free by NGOs, and the remainder was either saved or locally traded seeds. Output marketing is also

extremely limited—often confined to ad-hoc farmgate sales or trips to distant retail markets to retail small surplus quantities for immediate cash needs. The Greenbelt transformation requires a fundamental shift in farmer mindsets; even smallholders in the Greenbelt must see themselves as commercial farmers.

FARM's experiences over the past year have demonstrated the challenges of attempting to deliver wide-ranging cross-value chain support across broad geographic regions directly to smallholders and nascent farmer-based organizations. This transformation roadmap makes the problem more tractable, focusing most attention on the mid-sized hub entrepreneurs who will drive regional change. However, there is still a critical role for direct extension: it is essential to ensure that farmers have the mindset and basic capacity to take advantage of the hub system. Under this transformation plan, the FARM program mandate will be about ensuring that ~500 households within the catchment population of each agro-dealer are sufficiently prepared for commercial farming:

(1) *Provide basic agricultural training and build awareness of the benefits of improved seeds:* Given low baseline capacities (e.g., yields ¼ of those realized in Uganda, post-harvest losses of 25-70%), farmers need basic planning, production, and post-harvest handling training.

Each hub aims to cover 500 smallholders; the FARM program should assign one agent to each hub's catchment area for two to three growing seasons only. The extension officer should use a farmer field school model, working with existing groups, lead farmers, or community leaders to organize improved seed demonstration gardens and training sessions for 20-30 farmers at the community level. Depending on the density of farmers in a catchment area, the extension officer should seek to provide at least one demonstration in planting, weeding/plant protection, harvesting, and post-harvest handling. (Note: the agent should not invest in the creation of new farmer groups; as the hubs develop, farmers may organize organically, but there is very little evidence of successful commercial viability of NGO-formed farmer groups.)

(2) *Execute a voucher program to boost the uptake of improved seeds:* While FARM's extension training will help increase awareness and demand for improved seeds, smallholder willingness to pay may be limited until the benefits are experienced directly. IFDC's support to launch the agro-dealer network includes funding for vouchers to subsidize input costs. Through its farmer field school program, FARM would be well-positioned to manage the distribution and oversight of this voucher program, providing vouchers only to farmers who successfully complete farmer field school training programs. The vouchers would cover up to 2 hectares of production, covering 80% of the cost in year one, but quickly reducing to 50% in year two and 25% in their third and final year. FARM

would coordinate closely with IFDC and the hub entrepreneurs to ensure seed supply is sufficient to meet the demand generated by the voucher program.

(3) *Identify potential lead farmers to serve as liaisons for emerging agro-dealer hubs:* As FARM extension officers phase out of a hub's catchment area, they can play an important role in identifying their replacements—community lead farmers. Through the farmer field school programs and community consultations, extension officers should seek strong candidates to work directly with the hubs to provide community-based extension services and be a link for community members to purchase inputs and aggregate harvests. An extension officer could identify a pool of qualified candidates (approximately 1 per 20-30 farmers in the catchment area). Ultimately the hub entrepreneur must decide how to utilize these agents (e.g., choose a few as full-time salaried staff members, work with a broader group on a commission basis, etc). On a demand-driven basis, FARM extension officers could provide the training for these agents. If a hub entrepreneur chooses to engage the FARM extension officer to train agents, the entrepreneur must cover 50% of the training costs from start-up funds; this will ensure the hub entrepreneur is invested in developing a cadre of trained staff, and provide a direct incentive for FARM's extension officers to identify high quality lead farmers.

To transition to commercial farming, NGO-supported extension must be targeted and time-bound. From the outset, FARM officers should disclose the program's objectives and limits, including a maximum of 2-3 growing seasons of support. By the second season, the extension officer's role should taper off, shifting to support lead farmers/ agro-dealer agents. The NGO-sponsored extension agent will phase out completely over the second year.

4. Build the national seed supply chain

The Greenbelt transformation will dramatically increase the demand for improved seeds in the region. The current seed supply chain in South Sudan could not meet that demand; it will be essential to address the national supply chain in conjunction with efforts to increase demand. The problem should be addressed in two ways—simultaneously streamlining the import process and developing a competitive domestic seed production industry:

(1) *Address the policy and infrastructural constraints limiting seed imports:* At present every individual import requires approval from the Ministry of Agriculture. Because there is no national variety release committee, limited transparency into varieties allowed by the Government, and insufficient staff capacity at the Ministry, import approvals can take multiple weeks. Increased import demand could paralyze the system. The Ministry needs to quickly create a variety release committee and develop a streamlined process to issue import permits.

Currently there is also no protection for consumers to ensure certified seeds are truly improved varieties; even FARM has received large quantities of conditioned grain in allegedly certified shipments. The Government will need to station agricultural inspectors at every border post to regulate the import process. Though infrastructure at borders may be rudimentary, if all imports were tracked, shipments could then be subject to germination tests in Juba or Yei to confirm quality. AGRA should support the Government to establish basic germination testing stations. Longer term, the country can move towards redeveloping research labs, building capacity to issue FIDO certifications and establishing a more rigorous plant protection regime – but in an environment of scarce resources, these processes can be postponed until reliable import infrastructure is in place.

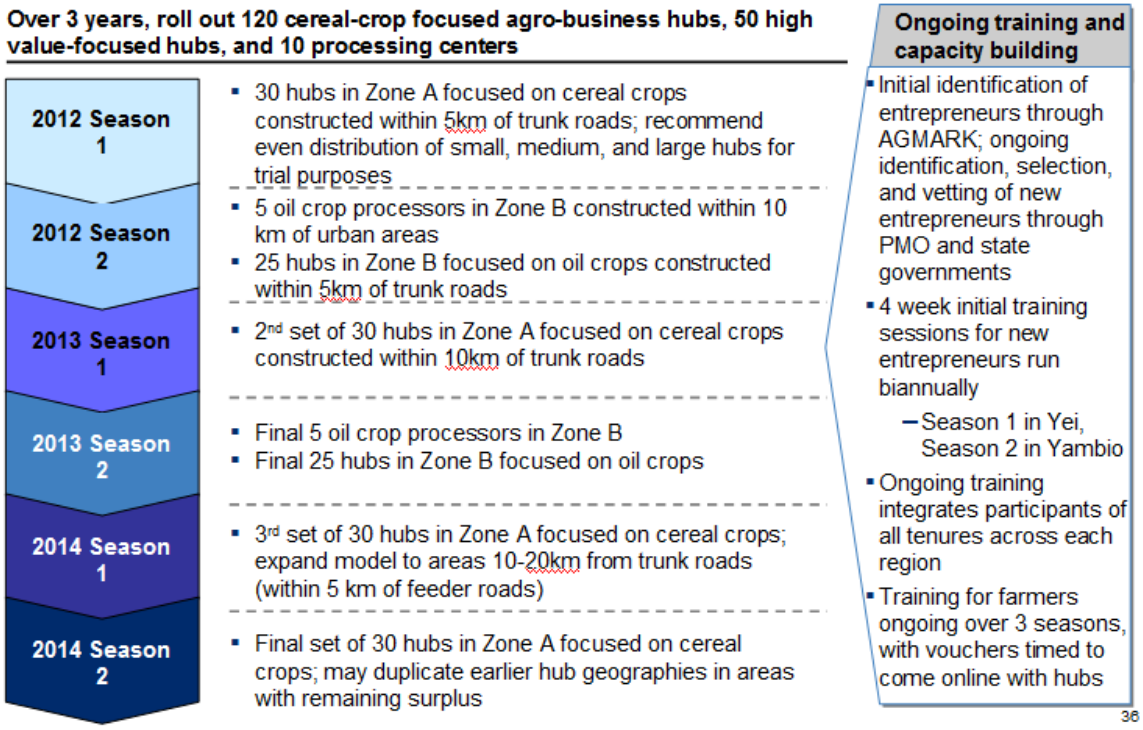
(2) *Develop competitive domestic protection:* The Ministry of Agriculture has expressed a strong desire to build a strong local seed supply industry. Competitive domestic production will help to ensure consistent supply chains and high quality local varieties. AGRA intends to lead the efforts to create a strong local industry, targeting seven strong seed companies in the country, with a combination of local investors working independently and well-established regional seed companies extending their operations to South Sudan. AGRA's program will ensure access to sufficient quantities of breeder and foundation seeds.

A primary need will be to establish the infrastructure for domestic seed multiplication. AGRA should foster multiple models for multiplication: privately-owned farms, farmer-based organization or community multiplication programs, and out-grower schemes could all be adopted depending on the local environment. The program should provide financing and start-up support to successful farmers/ agro-dealers interested in expansion. It should also be important to connect seed companies with steady demand by fostering linkages to new agro-dealers. During the initial roll-out of the Greenbelt transformation strategy, regular seed fairs in urban centers could ensure direct linkages while fostering competition in the nascent market. In the medium- to long-term, the country could benefit from research into varieties specifically suited to the South Sudan environment, but in the near-term, varieties in Kenya and northern Uganda have been proven successful in South Sudan. Beyond limited testing of different varieties in a particular soil area, resources should be focused on multiplying existing varieties until immediate supply constraints have been resolved.

5. Develop entrepreneurs and agro-business hubs and processors

The Greenbelt Transformation Model is anchored around the private sector change agents who will channel inputs to smallholder farmers and aggregate production and off-take. These change agents are key to making agriculture development in the Greenbelt a tractable problem; instead of trying to reach the project's target 80,000 beneficiary households individually, the program aims to achieve impact

through its targeting of 170 hub entrepreneurs, 10 processors, and 150 horticultural traders. While the horticulture start-up requirements are relatively low (effectively providing small capital loans to traders or for-profit FBOs to set up SME horticulture enteprises), building, financing, and training agro-hub entrepreneurs is a relatively involved process. Ideally, the entire roll-out process should be phased in over six growing seasons, with approximately 30 hubs opening each season. When possible, early hubs should be constructed near trunk roads, where transport costs will be lower and a greater number of farmers will be able to access the hub. As the program develops and the model becomes more familiar, the hubs can extend their reach into more remote areas. An ongoing training program will help to quickly bring new entrepreneurs on-line and ensure continued support to existing operations. The figure below presents a detailed look at the roll-out process.



Four steps to developing entrepreneurs and agro-business hubs at scale

(1) *Select and vet entrepreneurs*: entrepreneurs who operate the agro-business hubs, processors, and lead horticulture trade are the change agents who will determine the success or failure of the program. It is essential to ensure a transparent process with deliberate selection criteria. One concern is whether there is a sufficient base of qualified entrepreneurs in the country. In a country approximately 8 million people, including a large population of highly educated and experienced returnees, there are almost certainly 180 entrepreneurs capable of operating a hub or processor. However, it is essential to solicit well qualified applications. Potential candidate sources might include:

- Individual entrepreneurs who currently own or manage agriculture-related enterprises, or operate parallel businesses (e.g., pharmacies, dry goods stores)
- Local NGO staff, particularly including those providing extension and/or supporting agro-business ventures and farmer-based organizations.
- Government extension agents with strong local networks and an interest in moving to the private sector
- Business-minded FBOs with a strong history of collective marketing and group financial power.

IFDC, with its partnership with AGMARK, is charged with identifying potential agro-dealers. Rather than an open call for entrepreneurs, AGMARK should leverage existing identification mechanisms, including its upcoming AGMARK survey of existing agro-dealers. The Ministry of Commerce has a registry of current agro-dealers and detailed information on the World Bank's business plan competition winners. International seed companies may also be able to identify trusted South Sudanese local satellite dealers (these individuals may develop either seed companies or agro-business hubs).

All potential entrepreneurs should meet the same clear, transparent selection criteria. As examples, potential criteria could include:

- **Demonstrable history of business experience**—Evidence of 3 years of business management experience; new entrepreneurs are welcome, but some actual experience (domestic or international; owner or employee) will improve probability of success.
- **Willingness to live in rural areas**– Must reside within 5 km of warehouse site and commit to spending 50% of time over the first 2 years on-site; it is critical to avoid "remote control" entrepreneurs removed from day-to-day operations.
- **Clear "skin in the game"**-- Applicant should have a bank account and be able to provide a minimum 5% down payment ($7,500 investment for small warehouse); Even if the amount is small, some form of risk sharing is important and demonstrates up-front capacity.
- **Considered credit worthy—**Ultimately, a commercial bank must be willing to extend credit to the entrepreneur, even if much of the loan is guaranteed by USAID.

Ideally, the selection process should be a two-step process, with AGMARK canvassing the country to assess finance and agricultural potential of potential dealers conducting and pre-selecting approximately 100 entrepreneurs each year.

Then, the commercial bank partner should aim to offer finance to well-qualified borrowers with acceptable financial risk. The process should be open and transparent, with oversight from the management unit to ensure equity.

Once entrepreneurs are selected, the next step is contracting. Entrepreneurs are benefiting from a large initial grant and concessionary repayment terms. In return, the entrepreneur is expected to actively build a smallholder network, with minimum targets and regular monitoring and evaluation—as well as regular loan repayments. The final contract for the program should be based on consultation with entrepreneurs and experiences from the pilot program, but the following offers an example of potential contract provisions. Entrepreneurs participating in the program may receive the following:

- **Hub facility and start-up financing**: The transformation program will build hub/ warehouse facility and finance start-up costs. Entrepreneurs will receive an initial working capital loan directly from the partner financial institution; contingent upon full repayment, the loan may be renewed annually on a no-interest basis (no-interest provision may be limited to 2-5 years).
- **Training:** The entrepreneur will receive 4 weeks of residential training at no cost. The program will also provide regular follow-up training (semi-monthly forums with fellow entrepreneurs). Further, for the first 1-3 years of operation, entrepreneurs will have continuous access to experienced agri-business consultants for individualized technical support.
- **Farmer outreach and input subsidies:** The transformation program will sensitize farmers in hub catchment area prior to program initiation. Depending on the hub's size, 250-500 households in each selected warehouse catchment area will receive vouchers for input purchases from the hub. These vouchers will be distributed for three years with reducing annual subsidies; hub entrepreneurs are responsible for collecting the co-payment on each voucher.

Responsibilities for entrepreneurs will be clearly enumerated, and may include:

- **Financing and regular repayments:** Entrepreneurs must make an initial down payment (~5% of start-up costs) and regular monthly payments (based on 10% repayment per year).
- **Training:** Entrepreneurs must attend initial training and at least 80% of follow-up sessions over first two years of operation.
- **Detailed operational plan:** Hub entrepreneurs will complete a plan detailing locally specific staffing plans, extension models, input and offtake supply chain connections. Entrepreneurs must offer inputs on credit and maintain off-take capacity for farmers in their catchment area. Hub

entrepreneurs and their agents must provide some form of extension services at the boma level according to hub's operational plan; this may be through directly employing a few well-qualified extension staff members who work full-time to distribute inputs, coordinate aggregation, and provide demonstration. Alternatively, entrepreneurs could choose to work with the FARM program to identify lead farmers from each community in the catchment area who will organize fellow farmers and offer demonstrations and advice, receiving commissions for sale and/or aggregation.

- **Oversight and targets:** Entrepreneurs must agree to regular supervision by project officials, including project management officials and IFDC/ AGMARK project officers. The hubs must be able to fulfill at least 90% of the input demand through vouchers received in years 1-3. Hubs also must actively work to aggregate their smallholders, purchasing an absolute minimum of 100kg from 60% of their designated catchment population in the first year (enough to fill 7-15 20-ton trucks). This should rise to aggregating from 75% of the population in year two and 85% in year three. Each entrepreneur will be individually responsible for loss of crops.
- **Enforcement:** Failure to adhere to any stipulation will result in: a) increased mandatory supervision and training; b) financial penalties; and/or c) expulsion from facility (entrepreneur receives refund of down payment but forfeits loan payments)

(2) *Establish start-up financing for hubs:* It is unlikely that any entrepreneurs will have the independent capacity to finance hub construction or to cover annual operating costs to provide inputs on credit and buy from farmers with cash. The Greenbelt Transformation program should ensure financing is available for both of these objectives.

USAID should directly finance the construction and start-up costs for hubs and processors (approximately $100,000-150,000, depending on hub size, milling needs, and the final package of selected start-up equipment). Hub entrepreneurs would be expected to repay 50% of their start-up grants over a 10 year period, with no interest (processors will be expected to repay 80%, while horticulture traders will repay 80-100%). This money will go into a revolving project fund at the partner commercial bank to cover costs for annual operational funding loans.

Entrepreneurs will also receive a loan to cover working capital, ranging from 35,000 for a small hub to 150,000 for a processor. This funding will allow entrepreneurs to provide seeds to farmers on credit and purchase a first batch of harvest from smallholders. This loan should be repaid in full at the end of each year, and then can be renewed annually.

This funding would be handled entirely by the commercial banking sector, which would bear responsibility for collection. Non-performing entrepreneurs would be reported to the project management unit for potential eviction from the hub. USAID could work with DCA to establish a Loan Portfolio Guarantee (LPG) with a 50-80% loan guarantee on these loans for up to the first five years. USAID would cover bank administrative costs and interest fees on the loan for the first years of the program, transitioning to a full cost-recovery model with no guarantee needed as farmers gain experience.

In addition to building entrepreneur capacity, this program would also build capacity in the commercial banking sector. Because bank officials have final say in entrepreneur selection, they can ensure the borrower pool is credit-worthy. Kenya Commercial Bank and Equity Bank both have portfolios (if limited) lending to small-scale entrepreneurs and aim to expand to farmers. This model offers an opportunity to move into agriculture with a sustainable risk sharing model.

(3) *Training for entrepreneurs:* Participating entrepreneurs may have some business experience and/or some background in agriculture, but all will have some training gaps in order to become competent independent agro-dealers and warehouse aggregators with strong business skills and solid agricultural capacity. The transformation program should use a team-based field-and-forum model to engage entrepreneurs, beginning with intensive initial training and regular, practical follow-up. The training program has three components:

- **Initial 2-4 week residential training program:** The initial training session would provide an intensive introduction for each entrepreneur and one business partner/ assistant per hub. A team-based teaching model would ensure each session features both experienced business instructors and agronomists. The training program should focus heavily on building systems capacity for the entrepreneur (understanding of supply chains, linkages input and output markets, accounting and record keeping, budgeting, etc). The training would also include basic agronomic practices, taught with practical in-field demonstrations (spacing and spread requirements for selected varieties, seasonal timelines, water requirements, disease prevention, post-harvest handling, and processing). Introductory trainings would happen twice a year for 30 hubs (50-60 individuals.
- **Regular, mandatory semi-monthly workshop sessions**: These sessions are intended to be joint trouble-shooting sessions for all agro-dealers across a state (monthly sessions held in Yei and Yambio). The sessions will include both newly launched and experienced agro-dealers to increase shared learning. Each workshop would include updates in latest agronomic practices and customized training to respond to common problems reported in the field.

- **On-site supervision and business consulting:** Each hub and processor entrepreneur would benefit from individual follow-up and consulting services. A team of 2-3 assigned program officers per state would provide quarterly visits to each hub to audit finances, assess service delivery, and provide individual support to ensure close upwards linkages to supply chains and downward linkages to farmers. In initial years, AGMARK/ IFDC consultants visiting the hub may take a more active role in supporting off-take contracts, helping to directly connect hubs with large-scale institutional buyers (e.g., FAO, WFP, Government of South Sudan, Army) and major private buyers. This support should taper off after the first year, as hub owners learn to find and negotiate their own contracts.
- **Rigorous monitoring and evaluation:** In addition to support visits, each hub and processor would be asked to submit monthly reports detailing the status of input sales and/or output aggregation. These reports would be reviewed by the program officers, who can provide support as needed.

(4) *Launch the physical agro-business hubs and processors:* The final step is perhaps the most straightforward; the model depends on the timely construction of physical warehouses and processor units. An early activity of the project management unit should be to commission a market analysis of Greenbelt region to identify high traffic, high density agricultural areas with enthusiastic clients. Because so much of costs along the value chain are driven by transport costs, these hubs (particularly processors) should be as close to trunk or feeder roads as possible. Final location decisions should be made jointly between the management unit and entrepreneurs to ensure shared investment in outcomes.

To ensure quality while keeping costs under control, the Transformation team should retain a local/ regional construction company to build low-cost warehouses with a "turn-key" model. Entrepreneurs could select from 2-3 dealer floor plans (small, medium, and large), but all hub facilities should include secure office space, retail space, and a large storage area. Reducing post-harvest loss is contingent on warehouse conditions (e.g., maize moisture below 12.5%, grain elevated off ground, ventilated space). Entrepreneurs should be encouraged to establish demonstration gardens to allow for efficient teaching and marketing of improved seeds.

As regards the horticulture production/trading aspect of the proposed program, this is envisioned as being much less involved a process as compared to the agro-dealer hubs and processors. Effectively, entrepreneurial traders and/or farmer groups should be identified in areas well-connected to local markets. Through provision of small capital grants or loans (on similar terms to the agro-dealer hubs, if on a much smaller scale), these entrepreneurs would be empowered to create small horticulture production enterprises using any of a range of appropriate

technologies (small hot-houses, drip irrigation, simple land preparation, storage, light processing, etc), and provided with capacity provision to (1) learn how to start up and run the business and (2) identify the right crops to grow, technologies needed, and best ways to get products to market. The support would phase out in 1-2 years' time as the enterprise becomes self-sustaining, and in all cases, just as with the agro-dealer hubs, it is critical that all capital be paid back at least in part, and the capacity provision be time-bound.

D. The implications for USAID's current programs

Operationalizing the Greenbelt Transformation Strategy will require a fundamental change in Mission program design in South Sudan. In order to prevent fragmentation, the new strategy will require close coordination across donor programs rather than individual implementers thinking independently—this strategy should be seen as collectively owned.

As much as possible given contractual limitations, AID should aim to provide performance-based incentives for all stakeholders, rather than pre-negotiated contract fees. Rigorous, systematic data collection should underpin all efforts, and USAID should aim for dynamic, on-the-spot course correction to shift programs and adjust strategies. The section below offers recommendations on specific implementation roles for each of the Mission's key agriculture partners, as well as key metrics of success.

1. FARM: FARM's scope of work should be substantially narrowed under the transformation operational plan. At present, FARM provides broad support to FBOs across multiple value chains in its focus payams. Much of the program's energies are dedicated to FBO formation and strengthening and farmer field schools, while resources are largely expended on seed distribution and relatively unrestricted grants to FBOs. FARM also has a strong support function for the Minsitry of Agriculture, providing national policy guidance and advice.

In a revised scope of work, FARM's role would be far more focused: provide targeted, time-bound support to prepare farmers for a commercial world and link them to hubs. FARM should be responsible for three things alone: (1) assigning one field officer to provide extension to each hub for the first 12-18 months of operation, (2) executing the IFDC-funded voucher program to subsidize the costs of improved seeds, and, on a demand-driven basis, (3) training lead farmers to serve as agents for agro-dealers.

FARM's current extension staff of 30 people would be able to provide services to new hubs over the first six months of the program, but in order to fully support the planned 60 hub-per-year scale-up rate, FARM should plan to double its extension cadre. The roles of local and international staff members who are not directly

involved in extension and production training may need to be reconsidered or phased out.

Given FARM's goal of preparing farmers for a commercial environment, its success should be measured by the number of farmers purchasing improved seeds from hubs. In the demand-driven training of lead farmers, the decision of hub entrepreneurs to engage FARM or work independently will be a natural evaluation of the quality of FARM's extension.

2. IFDC (CASE-SS): While the IFDC's program has not yet begun in South Sudan, its goals focus on developing seed production broadly and ensuring national distribution of seeds and fertilizer. The original scope includes identifying and developing agro-dealer hubs, supporting out-grower and community breeding programs, establishing a new input voucher program, and addressing seed policy with MAF.

In a more focused scenario, the IFDC (with AGMARK and other sub-contractors) would focus almost entirely on creating, training, and supporting agro-business hubs and processors. The team would manage this entire process, from entrepreneur identification and development, to training and curriculum development, input and output supply chain support (including funding for input vouchers), and coordinating financial services and construction. While mechanization may not be a critical immediate priority, IFDC would be well-positioned to investigate ways to integrate mechanization services into the hubs in a cost-effective way. IFDC would no longer work separately with developing seed or other input value chains; this responsibility would shift exclusively to AGRA.

IFDC's performance can be evaluated both through process metrics evaluating the efficiency and effectiveness of the hub start-up process (e.g., % of entrepreneurs selected approved by the bank, post-training skills test scores for change agents, number of hubs constructed on time, volume of off-take contracts and contract fulfillment percentages for hubs, etc), as well as outcome measures demonstrating the hubs' performance over time (3 year change agent survival rates, sales volumes, profits, etc).

3. AGRA (PASS-SS): The changes in AGRA's portfolio are less pronounced, but the AGRA program should sharpen its focus in order to quickly develop a functioning national seed system. The organization currently aims to build the capacity of the public and private seed system, with programs working at all levels, from on-farm demonstrations to government training. To reduce duplication in services, AGRA should stop its independent farm demonstrations and field days; these will take place in FARM's farmer field schools active in the same area.

AGRA also divides its resources between short-run seed company and breeding program development, and long-run research and variety development programs.

Over time, rebuilding the country's research capacity will be important to spur increased growth, but in the near-term, AGRA should focus on more critical bottlenecks to production by streamlining the national import system and developing viable domestic seed enterprises. AGRA's success should be judged by overall increases in volumes of seed trades, germination rates of imported seeds (higher rates indicate higher quality imports), the number of viable South Sudan seed companies, and eventually, the volume of seed produced domestically.

4. New program needs: Despite the flexibility of the programs above, additional needs remain in the operational plan that are not currently served through existing programs. These include:

- Loan guarantees: The guarantees required to ensure hub entrepreneurs are attractive commercial borrowers could be best delivered by a Development Credit Authority (DCA).
- Physical construction of agro-business hubs and processer centers: USAID-funded construction must meet minimum engineering standards; the hub construction could potentially be incorporated into the RAPID program. The Mission could also fund construction as a sub-grant of the FARM program, or through an independent mechanism connected to a local construction company to build the hubs.
- Peri-urban horticulture program: While FARM could potentially manage this program, keeping the organization's scope narrowly focused on smallholder extension may help drive improved performance. This stand-alone intervention would be best managed by an organization with deep experience in establishing market-oriented trade models. One possibility is to contract directly with a private sector entity like Amaran (through its South Sudanese representative Agro Life). A creative GDA would help ensure the contracting partner is incentivized so spur rapid growth.
- Project management and coordination: The internal and external management unit requires a team of at least three individuals able to work across USAID programs and connect directly with the government and other partners. The team will need strong analytic capability and experience in strategic design and target setting. Ideally, all data collection and monitoring and evaluation for the transformation would be centralized within the management unit. Strategic planning and management would likely require 2-3 strong individuals, ideally supported by directors in each state. The unit will need additional support for M&E, outreach, and policy relations with the government. Ultimately, the project management unit would be responsible for orchestrating the transformation, and would be the final point of accountability for the initiative's success.

V. Developing a national agriculture road-map for South Sudan

The following section outlines recommendations for USAID on how to engage the Ministry of Agriculture (and the broader Government of South Sudan) on the idea of creating a national agriculture transformation strategy for South Sudan, along the lines of what was described in Section III's models and case studies. It presents a framework for thinking about what actually goes into creating a national agriculture strategy, example development processes of two countries that have gone through similar processes (Ethiopia and Morocco), and a possible South Sudan-specific road-map to show the Government how this might be done.

As the largest agricultural donor in South Sudan, we believe USAID is uniquely positioned to engage the Government on this important task, especially in light of the recent changes to Cabinet suggesting an opportunity for taking a new approach. Importantly, an agricultural transformation strategy creation process is inherently multi-stakeholder: many donors, Government offices, and civil society representatives would take part. As such, the road-map presented does not imply USAID should be taking all of those activities on itself – rather, it shows all the elements that go into making a strategy, and should the Government decide to engage on the idea, a first step would be for Government to pull together the relevant stakeholders, finalize the road-map, and divide up the work.

A. Re-cap: Tradeoffs in agricultural transformation

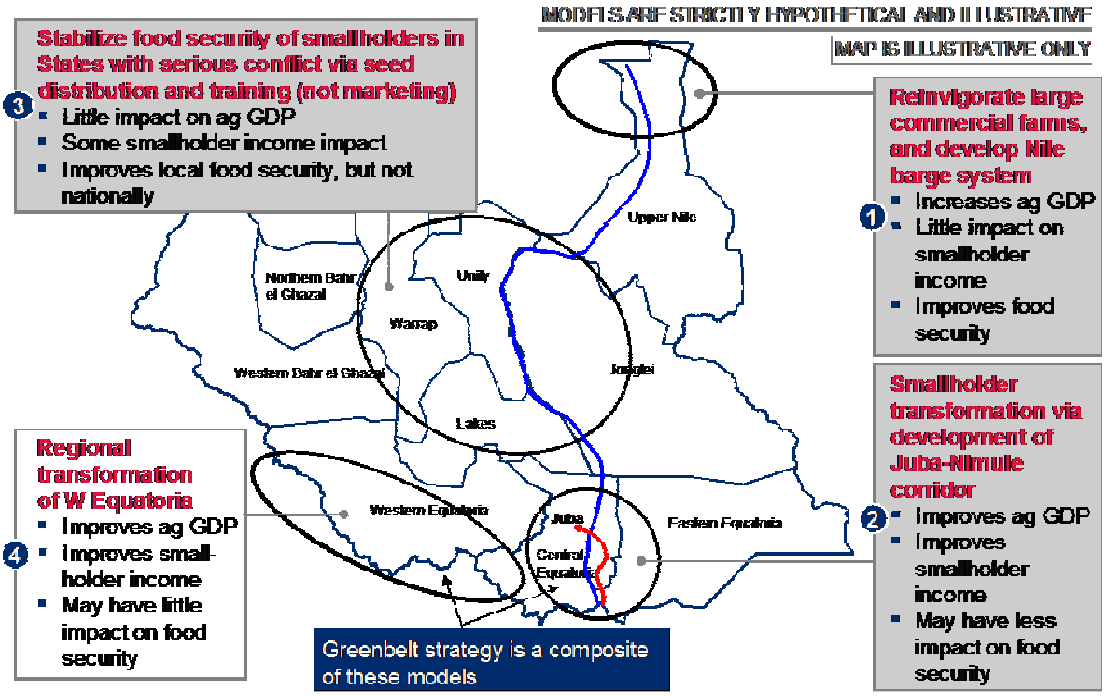
To drive home the point that making well thought-out, analytically-driven choices is important in creating South Sudan's agriculture strategy, as well as to make it clear why South Sudan needs a strategy in the first place, one can point to the big imbalance between resources being put towards the sector versus the potential that could be achieved. The Government has a very small budget for agriculture – only $14m in 2010, and roughly $18m in 2011. Combined with the range of serious constraints outlined in Section II, it will be very difficult to drive any sort of meaningful change in the sector without a strong effort to marshal the resources of donors, private sector investors, and civil society. Donors by themselves are already planning to spend anywhere from $250m-$500m in the next three years – as such, some sort of framework is needed to align their resources, and an agriculture strategy can provide exactly that. The same goes for private investors, and the activities of the myriad civil society actors in the country—if there was a common touch-point all could align around, change in one unified direction would occur, significantly increasing the chances of a successful transformation of the sector, since all players would know their role and what they should be aiming for.

The next important point to engage the Government around goes back to what was described at the end of Section III: all countries engaging in agricultural transformations are inherently making tradeoffs and prioritizing around three main outcomes:

- **Agricultural GDP**: What is the best way to increase the quantity and value of the agriculture production in the country?
- **Smallholder income**: What is the best way to increase the incomes of smallholder farmers -- lifting them out of subsistence farming, and out of poverty?
- **Food security**: How can the country become food secure – ensuring relief from famine, and reducing uncertainty of staple food availability?

In all countries, this means that creating an agricultural strategy is all about making choices: for example, which geographies would one focus upon? How many value chains should be worked on, and why? What should be the split of public versus private activity, including commercial farming versus pure smallholder improvement efforts? How much should the strategy focus on relief versus economic development? Discussing these types of questions with the Government will quickly surface its thinking on where its priorities lie, and how it might already be balancing/making trade-offs across all three of these elements.

One way to illustrate these trade-offs directly with the Government is to present a few South Sudan-specific hypothetical examples that illustrate the extremes of those trade-offs. The point is not to advocate for one example over another, but rather to show that no matter what one decides to do, choices and tradeoffs are being made. As such, most final strategies would balance across these three "extreme" examples:



'Extreme' 1: Deep focus on re-invigorating the large commercial farms in Upper Nile State. In this example, the idea would be to develop at least twenty 5000 ha large-scale commercial farms in Upper Nile State and develop road and barge links to the south. Upper Nile has had a long history of large-scale mechanized commercial farming, but it was largely owned by northern Sudanese, financed by northern Sudanese banks, and with production destined for the north as well. As such, over the last five years, most of these farms have fallen into disuse/been abandoned as no credit is available, land tenure is exceedingly uncertain, and with the border to the north closed, no markets really exist outside the immediate sub-region given the profound lack of infrastructure. However, with 1.6m arable hectares, as many as 120 5000 hectare farms could be possible – the potential is immense.

However, a strategy that worked mainly just to re-invigorate these farms would have a number of distinct trade-offs – greatly increasing GDP and food security, but fairly limited impact on smallholder income:

- *Agriculture GDP*: assuming yields of 3 mt/ha two times per year, on twenty 5000 hectare farms, and world prices around US$300/mt, roughly at least $200m/year could be added to South Sudan's agricultural GDP. This number could skyrocket significantly if more than twenty 5000 hectare farms were re-invigorated – indeed, there is room for at least one hundred more such farms.

- *Smallholder income*: because these farms are highly mechanized, employment would be limited to roughly 300 seasonal workers per farm, working at fairly low day wages for 6 months out of the year – as such, at most 36,000 jobs would be created (and therefore households impacted), but with income impacts of only around US$600-$1000/year. While not bad, the spread across a wide range of South Sudanese would be low.

- *Food security*: assuming 3 mt/ha two times per year on twenty 5000 hectare farms, this level of production (600k mt) would be roughly twice the current 2011 food deficit in South Sudan, implying total food security (assuming it could be moved around the country) and strong possibilities for export.

- *Cost*: given that Upper Nile is very isolated, for this strategy to work, either the Nile barge system would need to be reinvigorated, or a road built from Juba through to Malakal. As the road would traverse some of the most difficult terrain in the country, estimates of $2m-$5m/km are not out of the realm of possibility, implying a total cost of $2-$4bn. A barge system would be much less expensive – an analysis by Louis Berger found that getting the Nile's barge capacity back up to 300k mt/year (as it was during its heyday in the 1970s) would cost around $50m, and so if we had

tonnages approaching 600k mt/year, double that cost, or about $100m, would be needed.

'Extreme' 2: Productive smallholder market transformation focus on the Juba-Nimule corridor. In this example, the idea would be to transform the performance of smallholders living along the Juba-Nimule corridor, including those on feeder roads, and improving their competitiveness so that they could replace Ugandan food imports. This is basically one part of what the Greenbelt Transformation strategy is all about (the interventions in Area A on cereals and horticulture, as described in deep detail in the previous section), plus significant investment in feeder roads.

- *Agriculture GDP*: Assuming 50,000 households could be reached, and cereal production reaches 2mt/ha on 2 hectares/household twice per year, total production at a world price of US$300/mt would imply an impact on GDP of roughly $120m. Adding into that 1500 horticulture production groups making roughly $12,000/year as seen in a few case examples, and total contribution to GDP could approach $140m. Not as high as the commercial farms in Upper Nile example, but still significant.

- *Smallholder income*: Assuming each household sold 6mt of his/her 8mt of production each year at at least $300/mt, then total revenue for that household could approach $1800 – almost twice what could be expected of the seasonal day laborers on the commercial farms. Granted, some of this revenue would need to go towards covering production costs, but the stability factor would be much higher.

- *Food security*: 50,000 households producing 8mt/year of which 6mt would be for the market implies a total addition to the market of almost 300k mt, basically equivalent to South Sudan's 2011 food deficit. As such, food security should be achieved, but likely not enough to create a major regional/export-sized sector.

- *Cost*: Similar to Upper Nile, a significant investment in feeder roads would be needed. Looking at the currently prioritized feeder roads in the area, this would imply a cost of $200m for 1500km of feeder roads, plus another $50m (roughly) for the agro-dealers (cited in the previous section) operating in this particular area. As such, cost is high (twice that of getting the Nile barge capacity to 600k mt), but the impact in terms of number of people covered is much greater.

'Extreme' 3: Mass food security stabilization effort in conflict states (Unity, Warrap, Lakes, Jonglei) – but not market creation. In this example, the idea would be to simply engage in mass distribution of seeds and training to as many households as possible in unstable areas to get families to stable subsistence levels

of production. This inherently would not be about getting households participating in markets (yet) but rather about just getting them to the point where they could produce enough for themselves, and not need emergency food aid.

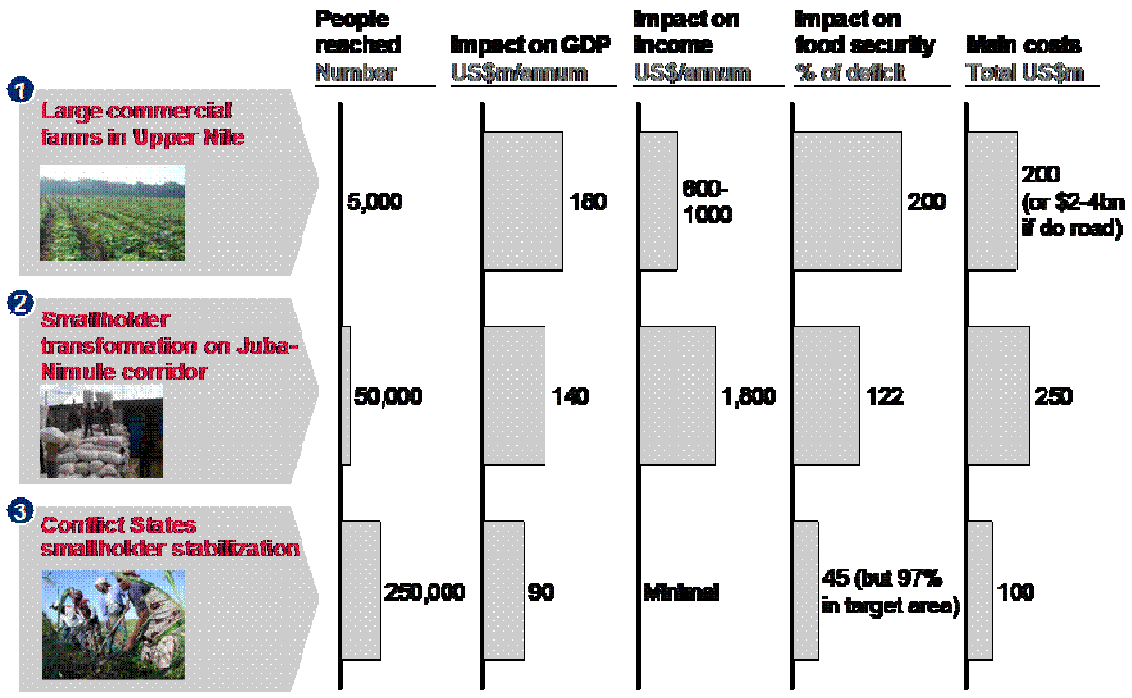
- *Agriculture GDP*: Assuming 250,000 households could be reached and they doubled yields to 1.2mt/ha on 1 ha once per year, and a world price of at least $300/mt, then addition to GDP could be roughly $90m. However, as all of this would be consumed by the household itself, it is not really a part of GDP – it is rather just potential. It is also not very much, but again, the point is more about food security and stabilization – not developing the market.

- *Smallholder income*: 1.2mt/ha on 1 ha once per year would not be enough to sell into the market after household consumption was factored in. Further, since no market-linking activities would be included in this effort, it would be assumed that there would be little to no income derived by the household from this effort. Hence, while there is wide impact in terms of number of households reached, the impact on income is minimal.

- *Food security*: Assuming 1.2mt/ha on 250k hectares once per year, this should roughly cover 97% of the 2011 food deficit *in these four states*. It would only cover 45% of the national 2011 food deficit, however, again, the point of the strategy would be about food security and stabilization just for the targeted population, and nothing more.

- *Cost*: Assuming $25m for 250,000 tech-packs, and $50m for 2500 extension workers each covering 100 households, and $25m for "Akobo model"-style conflict mitigation work, and the entire intervention would cost $100m. This would likely need to continue for two or three more years to embed the stabilization effort, and then further donor/Government projects would be needed in the medium term to bring the stabilized households towards sustainable, market-driven models.

By showing these three "extremes" of possible agriculture strategies, it should illustrate clearly to the Government the choices inherent in what it prioritizes. At the end of the day, no strategy need to pick one of these extremes, but rather invest various amounts of resources and focus on each part to created a balanced portfolio of initiatives that together transform the entire country in a more optimal and holistic way.



It is also important to note where USAID's Greenbelt Transformation fits into these strategic choices. As mentioned above, the Greenbelt Transformation itself is basically one part of a broader smallholder transformation along the Juba-Nimule corridor, broadened out to also include Western Equatoria. However, it is not at the level of a national strategy – even at the Greenbelt level. Assume for a moment that the Government did make the choice to focus deeply on transforming the Greenbelt. If it did so, the resulting Greenbelt transformation model would likely cover more activities than just what USAID's piece of Greenbelt Transformation is doing. For example:

- Socially inclusive large commercial farms and out-grower schemes
- Extensive feeder road development
- Broader microfinance and SME finance initiatives
- Development of other value chains – roots/tubers, crops for export, other types of processing, livestock/fisheries, etc
- Revised national extension models

each could be included as part of a Greenbelt Transformation strategy created as part of the national strategy. The USAID Greenbelt activities do no include these activities. Rather, what was identified and defined in the previous section for USAID are those activities USAID would be best-suited to play, and which could themselves jump-start a broader transformation of the region. One could envision other donors, the Government, private sector investors, and civil society actors

engaging in these other, complementary activities cited above. Typically, all of this would be coordinated at a national level as part of the national strategy effort, with USAID's activities forming one deeply core part.

B. The work involved in creating a national strategy

Stepping back from all of this, however, is a final important point for the Government: figuring out *how* to create a strategy that optimally balances across these three tradeoffs (agriculture GDP, smallholder income, and food security) is not easy, and in South Sudan, it requires much more work. Based on what we have seen in South Sudan during the time of this engagement, if the Government wanted to create a national strategy, effort would be needed in the following eight areas:

1. Data/baseline collection. Rapid baseline assessments in a few areas to get the right data needed for strategic decision-making (e.g., yields, trade flows, demand) is important. At present, many decisions are being made on "anec-data" at best.

2. Priority diagnostics. To augment the baselines, simple diagnostics in a few core areas (eg., extension, seed systems, horticulture) is needed. Exercises such as constraints analyses, trends/best-practice analyses, construction of solution options, are all important.

3. Cost-benefits of strategic options. Construction of several strategic options beyond "business as usual," with cost-benefit analyses of these options to weigh the trade-offs, is important. As was done in a very high-level way with the "extreme" examples above, a range of strategic proposals that balances across the three tradeoffs needs to be created, and the cost-benefits of each weighed.

4. Change agent business cases. Clear business cases or incentive structures of "what it would take" for particular change agents to succeed (agro-dealers, aggregators, extension providers, etc), including costings, is important. Whatever the final strategy is, knowing how sustainable its change agents will be, and how they will do so is critical – just as was done similarly with the change agents in the USAID Greenbelt Transformation work in the previous section.

5. Demand sink analyses. Just as with the change agents, a factbase to understand demand for the prioritized commodities of the strategy is needed. For example, detailed clarity on relative cost competitiveness and dynamics is important – what must you believe so that the commodity is profitable? This is critical because it helps show how sustainable the strategy transformation efforts would be, and what they might do to the market over time.

6. Delivery choices. A clear sense of options for driving the overall delivery of the final strategy – via Executive, Ministry, a multi-stakeholder transformation unit, donor-RoSS coordination group, a PPP body, etc – and how it would work – is

critical. Options need to be teed-up and debated among stakeholders, but a solution does need to be reached – otherwise, the strategy will not be executed well, if at all.

7. Limits analysis. Agreement among stakeholders on the timeframe, budgets, and who should be involved in designing, approving, and implementing the strategy is very important. This helps ensure the strategy is grounded in budgetary/resource constraint reality, and is fundamentally "implementable."

8. Testing and learning. Even though the strategy effort will take time and likely result in fundamental re-organization of donor, Government, and civil society resources and programming, current programming should not stop immediately. Rather, results from current donor and Government programs needs to be collected and analyzed to inform the design of the overall national strategy (learning-by-doing). In essence, the lessons from the current programs help bring a degree of ground-truthing and benchmarks to whatever the strategy is coming up with.

Together, these eight areas should indicate to the Government the level of effort that would need to be put behind the creation of a national agriculture strategy. It is not easy, and not something that can be done overnight. To help make this a bit more "real," we next discuss two case studies of countries that have done this already: Ethiopia, and Morocco.

C. The process of creating a national strategy: case examples

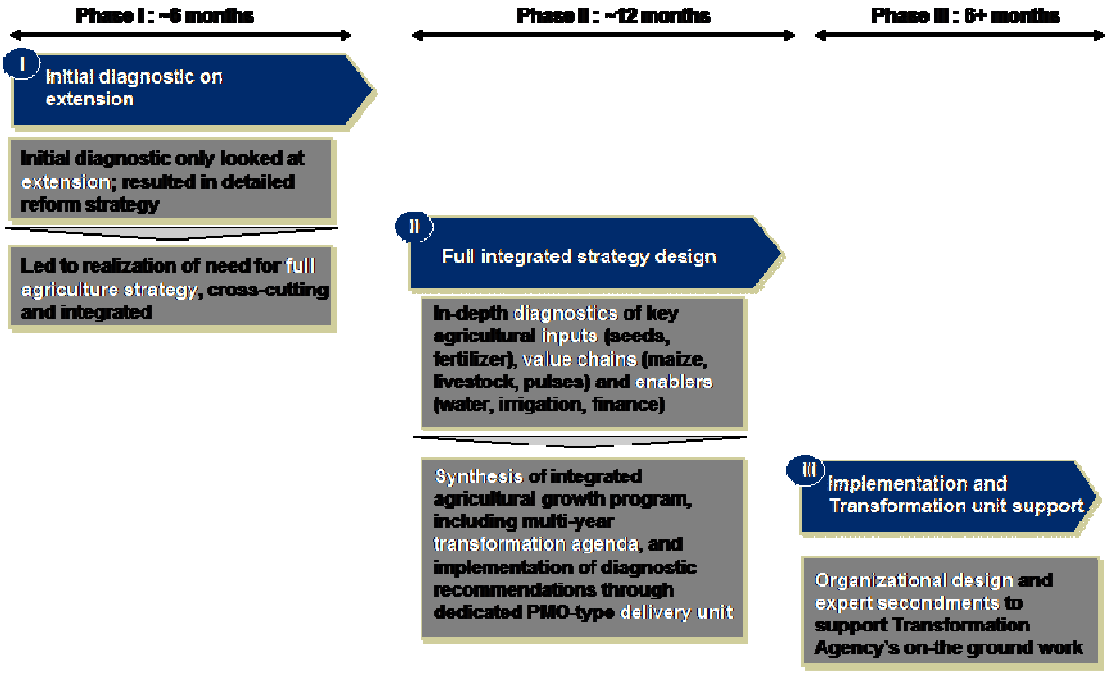
To help engage the Government on the actual process of creating a national agriculture transformation strategy, we provide two case examples: Ethiopia, and Morocco.

1. Ethiopia. Largely funded by the Gates Foundation, but led by the Prime Minister, Ethiopia's journey took roughly two years, and began with an initial six month diagnostic on extension. This diagnostic created a detailed reform strategy for how Ethiopia handles extension – no small task given Ethiopia's 60,000 extension workers, who are basically seen as the key change agents in the country. However, aside from a detailed reform strategy for extension, one of the major insights from this initial diagnostic was that the need for an integrated agriculture strategy was critical. As such, Ethiopia embarked on a year-long effort where it engaged in similar "deep" diagnostics on inputs (seeds, fertilizer), core value chains (maize, livestock, pulses), and key enablers (water, irrigation, and finance). Together, these diagnostics and their recommendations at the sub-sector level provided a deep analytical and data-driven approach to putting together one, holistic/integrated national agriculture *agenda*.

The Government, led by the Prime Minister, then created a delivery unit tasked with overseeing the roll-out of all of the key recommendations found in the sub-sector diagnostics. In this way, the unit could ensure integration across each piece

of the agriculture transformation agenda, and troubleshoot/facilitate across Ministries to get the core activities moving.

In the last six months of the effort, the delivery unit itself was formalized, its organizational structure created and cemented, and people seconded, including both national and international experts. In so doing, the delivery unit now had both the mandate and the people to drive the transformation agenda, and take all pieces of the resulting strategy forward.



There are several distinctive features about Ethiopia's approach that must be borne in mind when thinking about its relevance to South Sudan:

- The entire process was Government-led: owned by the Prime Minister, and directed by ministers. A key question would be – could South Sudan do this given the wide range of stakeholders who would need to be involved, and the State-Federal dynamics?
- Deeply analytical but action-oriented: the diagnostics each had a focus more on recommendations than on the issues themselves. It is important that any work done by donors, consultants, civil society, or any other similar actor is actually relevant to the decision makers – work cannot just be theoretical, but rather practicable.
- Focus on delivery: detailed delivery unit design was a core part of the effort. The same would apply in South Sudan – given the dearth of capacity, many donors, and multiple stakeholders to manage, some sort of delivery mechanism that can coordinate and utilize all of these parties is important.

At the same time, South Sudan will need to endeavor to find people with the level of both sectoral and political know-how to fill such roles.

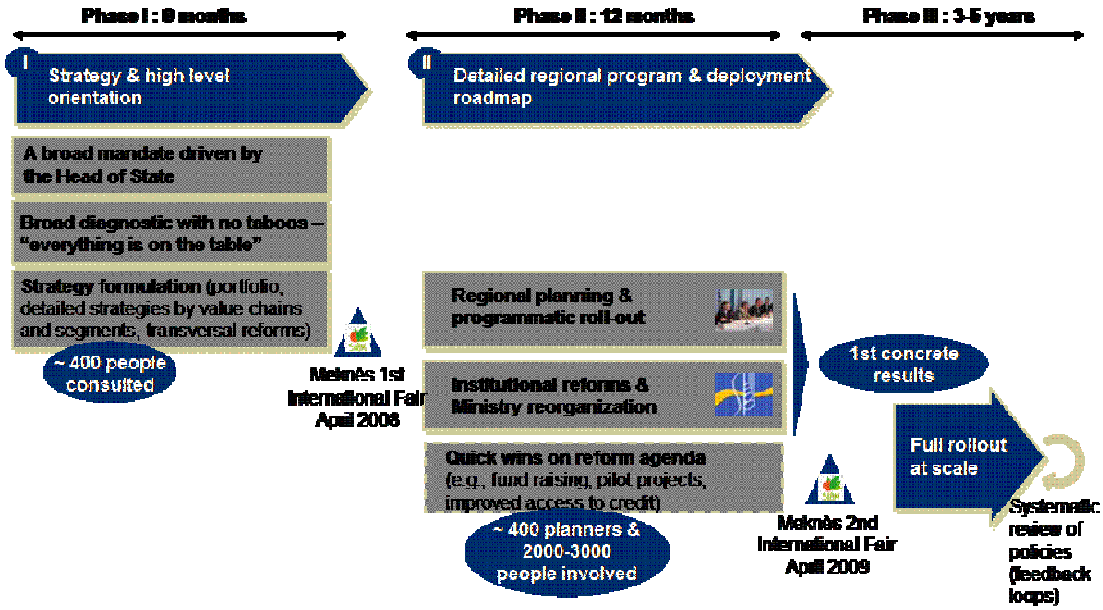
- Systems-approach to agriculture: it is interesting to note that Ethiopia's strategy is sometimes referred to as an "agenda." In part this is because it is using a holistic systems approach where each aspect – inputs, value chains, enablers – are integrated with each other so that the whole agriculture system is addressed. This is a core piece of any agriculture transformation effort, and equally applies in South Sudan.
- Highly participative: inclusion of local experts and development partners was key in co-creating the strategy. This ensures the resulting strategy was not biased one way or another, nor built "in a black box." Similarly, in South Sudan's multi-stakeholder context, especially given the Federal-State dynamic, this type of construction process is important.
- Focused on sustainability, and leveraging the private sector as a change agent: as with all strategies, including whatever happens in South Sudan, clear "change agents" need to be articulated and empowered for the strategy to work.

Together, it is expected that Ethiopia's resulting agenda will have a profound impact on the agriculture sector in the country. It is expected to (1) increase donor funding by $1 billion in the next 5 years (from currently $2-5bn); (2) unlock new private sector investment; (3) transform agriculture in Ethiopia and unlocking $20 billion of additional agriculture GDP until 2025; and (4) change the business model of the Gates Foundation itself: from selective grants to full-scale country-transformation.

2. Morocco. Morocco's journey was instigated by the king himself, but then jointly led by the Government and private sector, with deep involvement and alignment with stakeholder groups. It took roughly 18 months for the full strategy itself to be constructed, and then has been in roll-out phase for the past several years. During the first nine months, the king first came out and built a "case for change" across the country. This resulted in the construction of a high-level "concept strategy" that articulated (1) the portfolio of activities that would be done (the 'social' and 'commercial' pillars described in the case study in Section III), (2) detailed sub-strategies by value chain, and (3) a clear agenda of reform of key 'transversals' – which included things such as policy and finance. This high-level strategy design involved consultations with nearly 400 people, and was formally presented at Morocco's 2008 agriculture fair.

After the high-level strategy design, detailed implementation plans and roadmaps for how the strategy would be rolled out in each region was done over the subsequent 12 months. Activities included regional planning and programmatic

roll-out design; policy and institutional reforms as recommended in the original strategy's transversal reform agenda; and execution of "quick wins," such as pilots, and fund-raising. This led to the articulation of over 1000 discrete projects, including up to 900 private sector investments in nucleus farms, and up to 400 structured commercial programs. This allowed Morocco's transformation to be broken down into "bite-sized pieces" that could then each be tackled by particular change agents, often private sector investors. Together, this brought further momentum and excitement to the effort, and was launched at Morocco's 2009 agriculture fair. Nearly 400 people were involved in the regional planning efforts, consulting close to 3000 stakeholders.



Since 2009, the full strategy has been in roll-out mode across the regions, with systematic reviews being done regularly on how it has been going, including the policy reform agenda. By 2015, agriculture's contribution to Morocco's GDP is expected to increase 2-3x, and create close to one million jobs. As discussed in the case study, it has resulted in smallholder income increasing from $1000 to $3000/annum and close to $1bn in private investment.

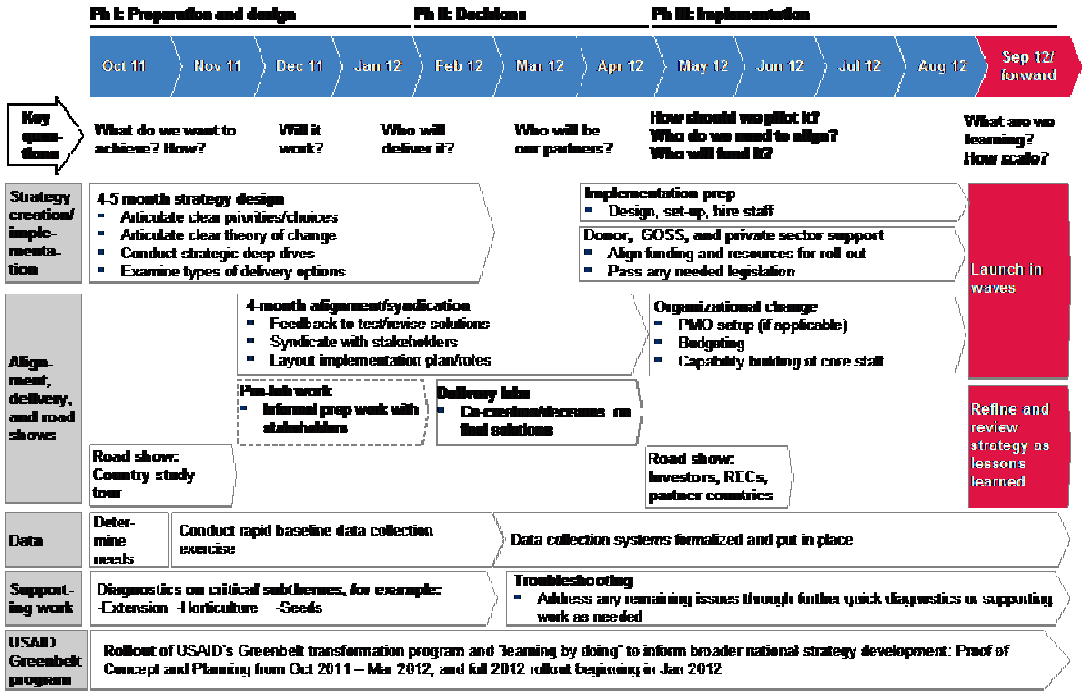
Morocco's transformation story is considered by most to be quite successful, and has several lessons for South Sudan: (1) it addresses both social and commercial angles of agriculture, something which will be critical in any strategy design for South Sudan given the strong potential on the commercial side, and deep need on the social side; (2) it is deeply private-sector-led to ensure sustainability; and (3) is has been broken into specific "bite-sized" pieces to make it actionable/tractable. What will make Morocco's approach a bit more challenging for South Sudan is that Morocco's approach has rested heavily on export-led agriculture investment, which will be difficult given South Sudan's location and infrastructure challenges; there was already some degree of existing public-private engagement in Morocco,

whilst in South Sudan it is only at nascent levels; and finally, relatively high levels of smallholder capacity were already in place in Morocco, allowing the "social pillar" through out-grower schemes to be more straightforward than it would likely be in South Sudan's context.

Both the Ethiopia and Morocco case examples of the processes they went through to create their agriculture transformation strategies and approaches are meant to be illustrative for the South Sudan government. They show the level of effort required, the amount of time needed, and the range of different pieces that go into it. Further, they show how there is no "one-size-fits-all" approach, and that strategy design cannot be done in a cookie-cutter way where a laundry list of priorities and ideas is articulated, but no clear sense of how to action it is made. At the end of the day, this is perhaps the biggest lesson from the case studies – whatever strategy is created in South Sudan, it has to be predicated on clear theories of change, together with a clear delivery model.

D. A possible road-map for South Sudan

Given the previous discussions on the trade-offs and choices that go into to making an agricultural transformation strategy, articulation of the type of work and effort South Sudan would need to put into such an effort, and examples of how other countries have done it, we now provide one possible way for how South Sudan might go about crafting its own agriculture transformation strategy, as shown in the following graphic:



Effectively, the entire strategy design and alignment process could be done in roughly seven months. The first five months would be spent on strategy design:

(1) articulating clear priorities/choices on what to tackle and why (geography, group of people, value chain, etc); (2) articulate clear theories of change for each of those priorities/choices (change agent economics, demand sink analyses, cost-benefit analyses); (3) conducting strategic deep dives on each one to design sub-strategies; and (4) articulating a clear path for how to drive/deliver the change. Starting in the third month of the five month design effort, alignment and syndication would occur: (1) feedback from experts, donors, and civil society to test/revise solutions; (2) syndication with stakeholders on the final design choices to ensure all are on board; and (3) laying out implementation plans for each part of the final strategy, and being explicit on who will do what, and how.

In these seven months, two other special activities could occur to bolster the overall design and syndication process:

1. A country road-show/study-tour. Given that many within the Government have only heard about the transformations occurring across the world it would likely be very beneficial to take senior agriculture stakeholders on a tour of those countries trying different approaches (such as Morocco, Ethiopia, and others). This will drive home the idea that many different approaches are being taken, and allow South Sudan's strategy designers to see first-hand what is possible, and understand directly from these other countries what to do and not do.

2. Delivery labs. Pioneered in Malaysia, "delivery labs" are a unique tool to use when innovative solutions need to be found quickly and efficiently, and syndicated across stakeholders as soon – and as transparently – as possible. Effectively, a significant amount of preparation work is done to generate a range of "pre-baked" ideas and hypotheses, backed up by significant data. Then, a wide range of stakeholders are effectively "locked" in a room for 2-4 weeks, and asked to come up with prioritized solutions and immediate implementation plans to whatever challenge they have been called in to solve. Malaysia has used this technique to attack problems ranging from street crime, to water connectivity, to infrastructure development. The results of this technique is that it forces disparate stakeholders to solve a common problem together, but in a top-down way given that the prep work allows them to hit the ground running in a data-driven and hypothesis-driven way. In Malaysia, these delivery labs have led to a 37% drop in street crime, an expected 95% of all households connected to a water source by 2012, and nearly $120m in savings across 200 infrastructure projects. Such a technique could certainly at least be tried in South Sudan to get the wide range of viewpoints, expertise, and stakeholders in one place, and therefore allow the strategy design and alignment processes (in some particular cases) to be done simultaneously.

Following the seven months of design and alignment, implementation design of the resulting strategy will then need to occur. This would involve five months of tactical implementation planning behind each aspect of the final strategy,

concomitant with aligning donor resources and private sector investors, as well as any sort of policy changes that need to happen sooner rather than later. This is an intensive process that needs very strong leadership to get done, and ideally be driven by whatever form of transformation unit or body or team is created. As this implementation planning is going on, a second "road show" would occur to build momentum with investors, neighboring countries, donors, and regional entities such as the EAC. The idea is to make it clear to everyone that South Sudan is "open for business" and aggressively working on transforming the performance of its agriculture sector.

In parallel to the overall strategy design, alignment, and implementation planning work, a few other activities would also occur throughout the course of the year. This would include any diagnostics on key sub-themes that might inform the strategy itself, as well as rapid data collection and base-lining to ensure the strategy design team can make data-driven decisions and analyses. Finally, as mentioned earlier, the lessons learned from the various current donor and Government projects also need to be collected and analyzed, and integrated into the strategy design process.

At the end of the day, the road-map process for South Sudan is an intensive one, but one which, with the right leadership and team behind it, could set the country on an immediate course for transformation. A final important point to articulate to the Government is that while quite a bit of effort needs to be expended, the stakes are high: many countries across Africa (and elsewhere in the developing world) are engaging in new, innovative, and high profile transformations. Donors and investors are looking for where the next success stories will be, and where they should prioritize their activities. With all eyes currently on South Sudan, the world's newest country, the case for why this national road-map needs to happen sooner rather than later should be clear.

E. Summary recommendations on USAID's role in taking the national agriculture road-map concept forward with the Government

As stated at the beginning of this section, USAID is the largest agricultural donor in South Sudan, and we believe USAID is uniquely positioned to engage the Government on this important task. Given the recent changes to Cabinet, this is a prime opportunity for galvanizing interest in the Government around creating a new and innovative approach. However, as noted throughout this section and in the case studies, an agricultural transformation strategy creation process is inherently multi-stakeholder: many donors, Government offices, and civil society representatives would take part.

As such, USAID should not (and cannot) take all of these activities on itself – rather, should the Government decide to engage on the idea, USAID should work with the Government to pull together the relevant stakeholders, finalize the road-

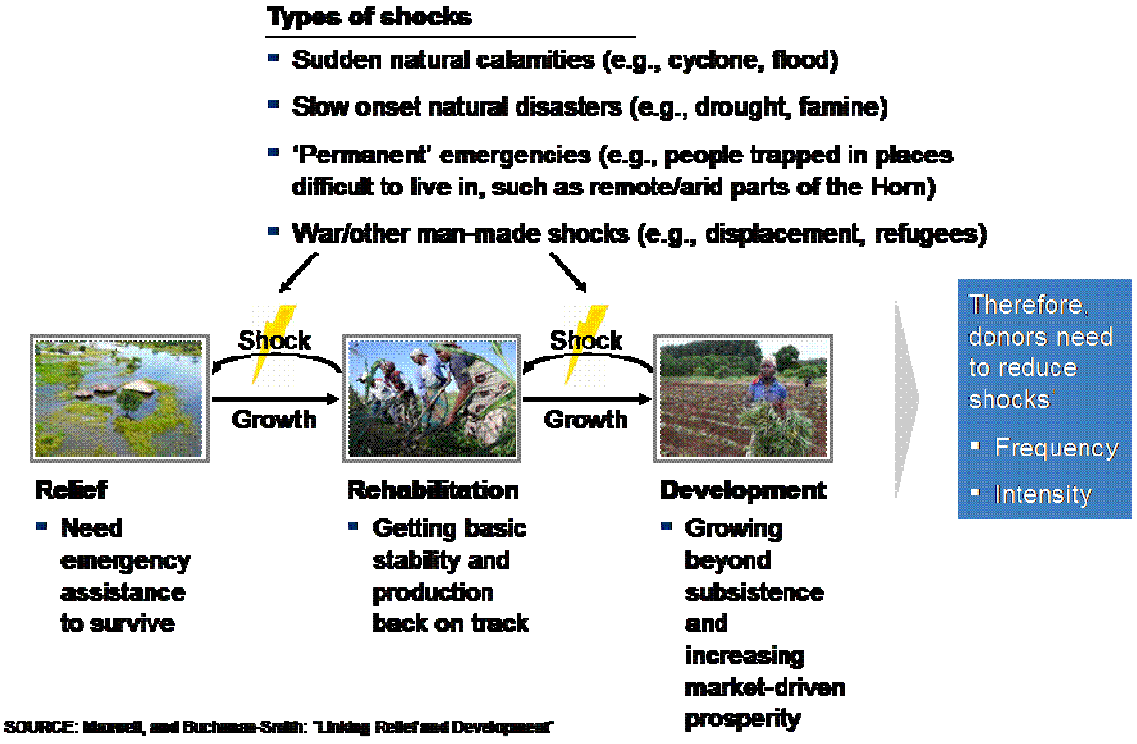
map, and figure out the way forward based on the high-level road-map provided above. This could include, but not be limited to, USAID playing the role of facilitator of the process, providing expertise and management support as needed, and funding some of the various pieces that go into the overall strategy formulation and implementation process. The first step, however, will simply be for USAID to just engage the Government around the idea – following the logic and case for change articulated across this section on (1) the need for a strategy, (2) why it is important, (3) the trade-offs that need to be made and are implicit in any strategy, (4) how the process works/what would go into it, and (4) how South Sudan might think about going about the process itself.

VI. Linking relief and development to lessen food aid need in South Sudan

With over 800,000 people in South Sudan expected to receive food aid each month in 2011, and 40% of the population currently experiencing either moderate or severe food insecurity, relief plays a huge role in the development story of the country. Dating back nearly 30 years as a result of the civil war, mass displacement of the population has meant that only in the past few years has the majority of the population felt secure enough to settle down and return to even subsistence-levels of farming. Because of the war and mass displacement, many South Sudanese depended on some form food aid or relief at one point in time or another. The repercussions of such long-term conflict and relief are felt today in that basic farmer skills are low across the country, security remains ephemeral, and challenges with food aid dependency are seen across the country. As such, USAID/South Sudan, with a large portfolio including both relief and economic growth programming, is well-positioned to create new and innovative programs that link relief and development. Such programs would help South Sudan move away from a history predicated on the pervasive use of food aid, and towards a more food secure future driven by economic growth.

A. A framework for linking relief and development programming

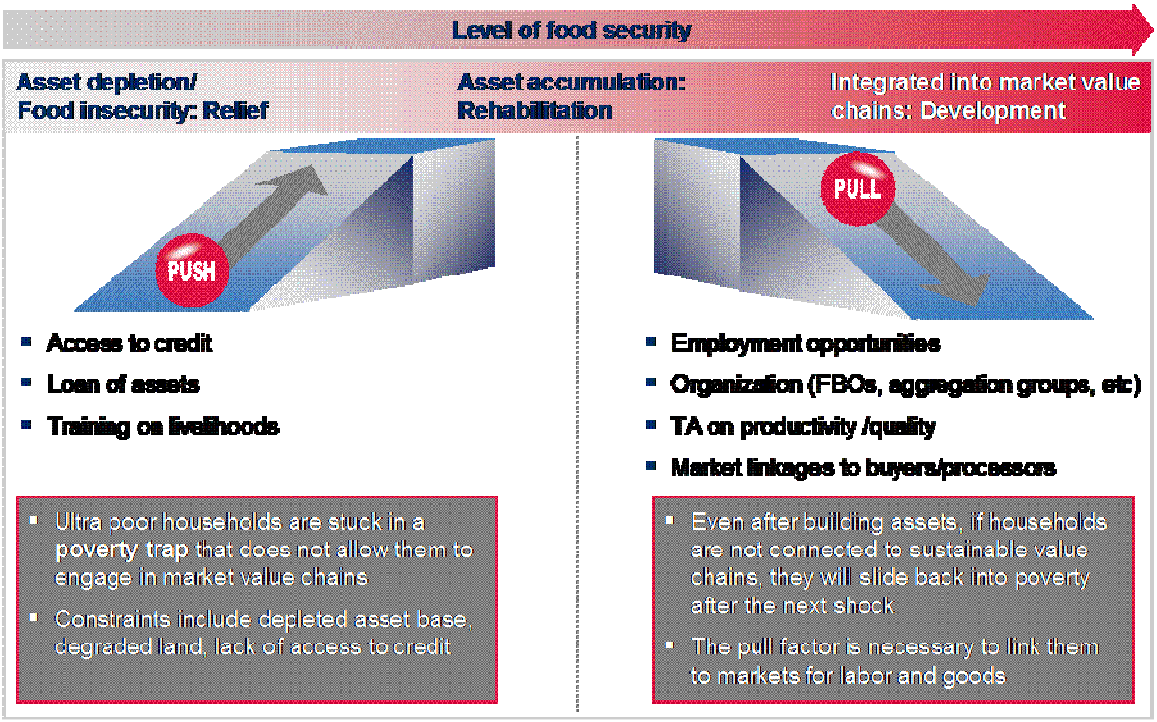
As the figure below shows, a household typically falls somewhere along a continuum:



The continuum ranges from: (1) pure relief/emergency-type situations, where some sort of disaster or war has eliminated any sort of productive behavior, and the household is totally reliant on food aid to survive; to (2) "rehabilitation"-type situations, where the effects of the disaster have largely gone away, but the household still needs significant assistance to become self-sustaining – i.e., getting basic skills, access to basic inputs, etc—so that it can produce enough to feed itself and not need as much in food aid handouts; to finally (3) "development"-type situations, wherein the household has stabilized enough such that not only is it able to produce enough food for itself, but it can also start producing more and better products for the market – and therefore no longer requires any food aid. In this last stage, on the right side of the continuum, is where "typical" economic growth programming is found (e.g., value chain interventions), whilst on the far left of the continuum is where "typical" emergency programming is found, with MYAP and OFDA programming somewhere closer to the 'rehabilitation' part of the continuum.

Unfortunately, however, development is rarely so linear – more often than not, "shocks" occur that push a household back down the continuum (i.e., to the left), oftentimes permanently so. Such shocks can include natural disasters (floods, earthquakes, hurricanes), "slow-onset" disasters (droughts, famine), "permanent emergencies" (land that is exceedingly difficult to live on and remote), and man-made disasters, such as wars, displacement, and even poor policy choices. Any one of these shocks can significantly damage a household, and push it back towards the left of the continuum. As such, in order to properly link relief and development and lessen the need for food aid, donor programming must build household *resilience*, so that when a shock occurs, the household is able to withstand it and not fall back down the continuum. This can occur in two ways: (1) reducing the *frequency* of shocks; and (2) reducing the *intensity* of those shocks. If programs can help households experience fewer shocks, and experience those shocks in less severe ways, then that household's resilience has been significantly improved, and it should be able to move farther and farther right along the continuum and not fall back as much as it might have before.

The major challenge that donors have faced in this area often has to do with households sitting near the "rehabilitation" side of the continuum. It is often very difficult to get households "over the rehabilitation hump" and move towards experiencing real economic development. As the figure below illustrates, donor programming at the rehabilitation point is often mainly focused on "push" interventions – that is, if we just provide enough resources (credit, assistance, inputs, training, insurance, productive assets, etc), the household will get out of the poverty trap, over the "hump," and be on a course towards economic growth.



More often than not, however, this works for the duration of the program, but then the household falls back when the program ends. This is because oftentimes there are no "pull" interventions to keep the household over the "rehabilitation" hump – i.e, those market linkages that pull the household towards sustainable growth because all "push" interventions stabilized the household and got it producing at a level such that now demand for its production is now pulling it towards development. These "pull" interventions could include employment opportunities, links to change agents (aggregators, FBOs, etc), or direct linkages to buyers/processors and related technical assistance. Without them, all the "push" may have been for nothing once such a program ends. This has been especially challenging in South Sudan, where very low levels of capacity and largely under-developed markets makes it hard for the needed "pull" interventions to come in.

B. Country examples

Across the world, many USAID Missions have different theories of change to reduce reliance on food aid, and get households to the right side of the development continuum.

1. Ethiopia. With a food-related MYAP budget nearly 4x larger than its agriculture growth-related budget, Ethiopia is routinely one of the largest recipients of food aid. To help reduce this dependency, the Mission wants to develop a set of food aid "graduates" that can be linked into traditional value chain programs. It will attempt to do this by locating its agriculture/economic growth programs in "productive" woredas close to "hungry" woredas (where MYAP activities are occurring). Whether through sourcing, employment, or value chain

expansion, the idea is to take households in the "hungry" woredas that have been stabilized, and link them into nearby value chain interventions so that a "pull" factor begins and they can transition into economic growth programming.

2. Bangladesh. Similar to Ethiopia, Bangladesh has a MYAP program usually at least twice as large as its agriculture-related economic growth programming in any given year. To reduce this reliance, the idea in Bangladesh is to place a typical economic growth-style value chain intervention in those districts receiving food aid. In this way, stabilized beneficiaries can immediately link into the value chain intervention, and get the "pull" needed to continue moving right along the continuum. At the same time, DfID believes strongly that in Bangladesh the "permanent emergency" nature of life in most of Bangladesh requires significant non-agriculture "push" activities as well – for example, provision of medical care, insurance, livestock and training – for beneficiaries to ever get over the "rehabilitation" hump. As such, USAID's MYAP activities will likely remain critical in Bangladesh for some time, but ideally with some directly linked "pull" interventions, the need for such "push" interventions will lessen over time.

3. Malawi. With a history of deep food insecurity, Malawi has historically had a large MYAP presence. However, the gains over the past few years has lessened the need for MYAPs, and as such, there are large pools of "graduated" beneficiaries without any sort push or pull interventions. As such, the Mission is planning to expand its value chain interventions into those areas where the MYAPs have wrapped up, and directly link into those beneficiary groups that were created to pull them forward into its value chain-style interventions. Hence, the idea is let MYAP stabilize an area, and then the economic growth programming can come in and pull its beneficiaries forward.

4. Mozambique. Mozambique has a patchwork of food insecure and food secure areas, and hence an overlap in many of its program areas. As such, the idea there is to allow MYAP to build farmer groups who are then linked (over time) to the Mission's significant commercial agriculture projects – pulling them into an economic growth system as out-growers, producer groups, or even processor employees. Hence, the push over the hump from MYAP is then linked immediately into a pull.

5. Niger. With a long history of food insecurity, one of the main challenges has been inequity within a household. Often, women and children are the most vulnerable, and suffering the most during times of food insecurity. As such, the idea with Food for Peace in Niger is that it will be targeted only towards children and pregnant/lactating mothers. In this way, the food aid will rather balance out the insecurity experienced by the household, and ideally mitigate the severity.

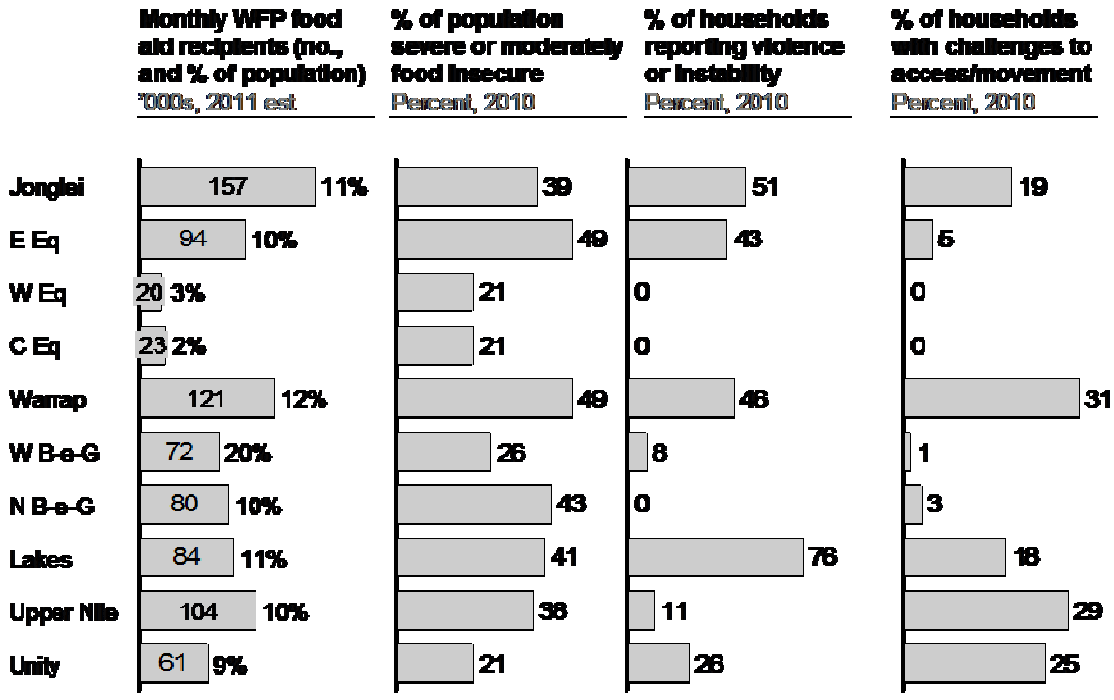
6. Pakistan. Not traditionally a large recipient of food aid, Food for Peace in Pakistan is mainly focused on providing (ideally) once-off emergency food to

people impacted by immediate crises, such as the recent flooding in the Indus basin. Hence, the idea is to keep the food aid separate from productive activities, not distort the situation, and rather be a time-bound emergency provision that will not be extended once recovery has occurred.

At the end of the day, all six of these countries are illustrating different theories of change, that is, six different ways to lessen the need for food aid. However, sustainable success has been hard to achieve, and little research has been done to know what works. All of these remain essentially experiments, and it is difficult to find the "silver bullet" that ensures households move right and stay to the right of the development continuum.

C. Options for South Sudan to link relief and development

As the chart below shows, South Sudan has nearly 800,000 food aid recipients across the country each month, anywhere from 20-40% of the population experiencing moderate to severe food insecurity, 40% of the states where almost half the population is experiencing some sort of violence or instability, and similar proportions with deep challenges in movement and access.



SOURCE: WFP

However, as the chart shows, these challenges are not evenly distributed across the country – particularly in the southern part of the country (Western and Central Equatoria in particular), there are few recipients of food aid, and few shocks. This is one reason why the Greenbelt Transformation is proposed to occur there. However, particularly in the northern part of the country, there are both high

numbers of food aid recipients and lots of shocks. This then is an optimal area for experimenting with different models to try and mitigate these shocks, and get households to show profiles closer to what is seen in the south.

In fact, USAID/South Sudan has already recognized this, and has singled out Jonglei as an area to try out an integrated set of programs, currently with five prongs:

- EG will build the local university's agriculture capacity, and use it as locus for building Jonglei's overall extension service
- Together with OTCM, EG will also support conflict mitigation and conservation activities to help stabilize local communities in the State
- Governance and budgeting skills of local government players will also be developed
- OTCM itself will work on small-scale youth livelihood interventions
- MYAP will spend $45m through 2013, focused on building the basic skills and food security of smallholders through small "catalytic" investments. EG will buy into this with an additional $9 million

The goal is to get the groundwork laid for eventual agriculture-led growth in Jonglei, by combining the stabilization activities of the OTCM and MYAP programs, with the growth foundation-building activities of the EG programs. However, this integrated set of programs is still in its infancy, and remains largely on paper. The Mission still needs to work through how this will all work in practice, and what it actually will be specifically looking to achieve. Specifically, Mission needs to:

- Look at how deeper coordination/cross-team idea development will occur to achieve integration across programs
- Articulate a clear theory of change on how this five pronged set of programs will exactly lessen dependence on emergency programming/food aid, as opposed to just have complementary programming
- Set targets that explicitly call out what is going to be achieved by integrating like this (e.g, "reduce food aid by X% in five years"), so that all programs are designed and aligned to achieve these over-arching goals, and can be tracked to see if indeed the "push" and "pull" are occurring

While strictly illustrative, we have posited four possible theories of change that the Mission might think about as it works through the tasks and questions outlined above. No one example is "right," but rather should be seen as thought starters for the Mission.

1. Localized holistic change via 1-2 value chains.

Idea: pick 1-2 counties in Jonglei, and drive a mini-transformation by developing 1-2 value chains with local market linkages that MYAP beneficiaries could link into. This would then expand outwards over time. Likely choices for value chains could include cereals, livestock, and/or fisheries.

How it could work:

(1) Give a "big push" via infrastructure and initial food provision to (a) build feeder roads, and water harvesting/flood control infrastructure, (b) provide animal traction, and (c) prepare land, and build corrals, fishponds, and market infrastructure. Critically, food aid would be provided in initial periods only to tie farmers over in lean periods and allow them to go to training/develop enterprises to link into the focus value chains, as well as provide food for assets.

(2) Develop the local market structure "pull" and phase out food provision by (a) providing productivity-based training on the value chain(s); (b) bringing in inputs and market-based measures for the beneficiaries – i.e., farmers "pay" nominal sums for inputs, extension, etc from an NGO or local provider, with subsidies reducing over time. Eventually this activity would be transferred fully over to a local entrepreneur to run. Finally, the program would build a market by developing small, local aggregators/processors with capacity provision and subsidized capital, and link them to demand sinks. In the long term, these small entrepreneurs could turn into agro-dealer hubs like in the Equatorias. At the end of the day, like in Bangladesh, the idea is that "push" interventions would be done in the same place as "pull" interventions – reducing shocks' frequency and severity because production would be increased at the same time as basic infrastructure.

2. Developing a regional emergency food reserve agency.

Idea: Using an idea from the Brookings Institute that has been in place in Mali since the 1980s, create a government or donor-controlled entity that stores only enough grain to meet Jonglei's needs in emergency situations, and releases it only during shortage to balance out the market and not distort prices.

How it could work:

(1) Give a "big push" via infrastructure and initial food provision to (a) build feeder roads and water harvesting/flood control infrastructure; (b) provide animal traction; and (c) build the network of emergency warehouses. Food aid would only be provided in initial periods to tie farmers over in the first year or two's lean periods and allow them to go to training/develop farms and participate in building the infrastructure. Critically, food handouts procured from stocks outside of the region would need to be cut as the regional emergency stocks fill up.

(2) Develop the local emergency stocks network to create “pull,” and phase out food imports by (a) providing training and inputs to get farmers producing to surplus levels; (b) providing a guaranteed ex-ante price to buy surplus for emergency stocks, and get farmers used to markets/incentives to produce; (c) manage (with Government or donors) the emergency stocks, releasing when shortages occur and price stability is needed. In the long-run, these emergency stocks would be minimized/phased out as the regular market grows due to stabilization and farmers find alternative buyers as their production to surplus increase and shortage no longer occurs. Services like FEWSNET and eSoko, to give farmers price, weather, and production information/transparency, would also be important enabling factors. At the end of the day, this intervention should dramatically decrease the severity of any shock and the frequency since it is predicated directly on driving stable food production and price stability.

3. Develop livelihoods in peri-urban areas.

Idea: Many of the people receiving food assistance are actually in South Sudan's "urban" areas -- in the case of Jonglei, places like Bor. The idea would be to create a program for them rather than one with a pure rural agriculture focus – likely via a truly market-driven, localized value chain, such as peri-urban horticulture.

How it could work:

(1) Give a “big push” via infrastructure and initial food provision to (a) build local market physical infrastructure – stalls, storage, etc, and (b) prepare small plots, put together hot-houses, lay drip irrigation, etc. Food aid would be provided to participants to tie them over during these start-up phases and allow for food-for-assets.

(2) Achieve “pull” by developing the local peri-urban horticulture value chain and phasing out food provision as income increases and stabilizes. This could be done by (a) extending the Greenbelt’s peri-urban horticulture program on a smaller scale to people receiving food aid in "urban" areas of Jonglei; (b) providing small capital to individuals or groups to get such projects started, as well as training to start them up; (c) developing local traders to improve their sourcing and selling acumen; (d) providing training and skills to get the businesses running; and (e) making connections for the participants with local markets – producers with sellers, both of whom may have been originally food aid beneficiaries. In the long term, the goal would be to link into broader markets/national value chain work as production improves – such as by developing processors for value addition, and linking with regional traders through improved financing/business skills to achieve scale and quality. Hence, severity of shocks should be greatly mitigated as beneficiaries now have a steady income source.

4. Drive an infrastructure-based transformation.

Idea: Jonglei's main problem is that there is no infrastructure and it is a difficult place to develop. It is a place with few roads, tiny villages, huge distances, and land that changes from cracked clay, to swamps as the Nile recedes and floods. As such, perhaps the bulk of donor effort needs to be on infrastructure to get Jonglei "develop-able" and out of a state of "permanent emergency."

How it could work:

(1) Give a "big push" via infrastructure and initial food provision: (a) use food provision to execute much of the infrastructure work – ideally this should be done as a cash conversion; and (b) to mitigate externalities, do community-level holistic interventions (health, nutrition, basic farming skills) as infrastructure builds out.

(2) Orchestrate and implement an infrastructure development plan for Jonglei State, ramping down food provision as stability and income "pull" naturally increase with the infrastructure. This would require (a) completing an infrastructure diagnostic of the State -- where could levees, roads, dams, paddies, polders, etc be built to impact the most people and make the land ready for economic growth? and (b) working with the State and donors to prioritize the investments using cost-benefit analyses and executing in bite-sized, affordable pieces (split among donors), just as the national feeder road project was done. At the end of the day, as areas are connected and stabilized, "regular" market driven economic growth projects could be started – such as value chain transformations – and linking in to "graduates" of the community-level MYAP programs. Hence, shock frequency should drop as infrastructure stabilizes the main causes of natural shocks, and shock severity should lessen as households stabilize in the new environment with MYAP community development programs.

In all four of these examples, while MYAP and EG are at the forefront, OTCM/D&G and OFDA would also play critical roles – OFDA working closely in communities with MYAP as an augmenter, and OTCM/D&G by working towards improving the overall enabling environment, especially in terms of conflict mitigation. These activities would have to occur in all of the options described above, but would need to be actively linked to occur in the same places where the EG and MYAP activities are happening.

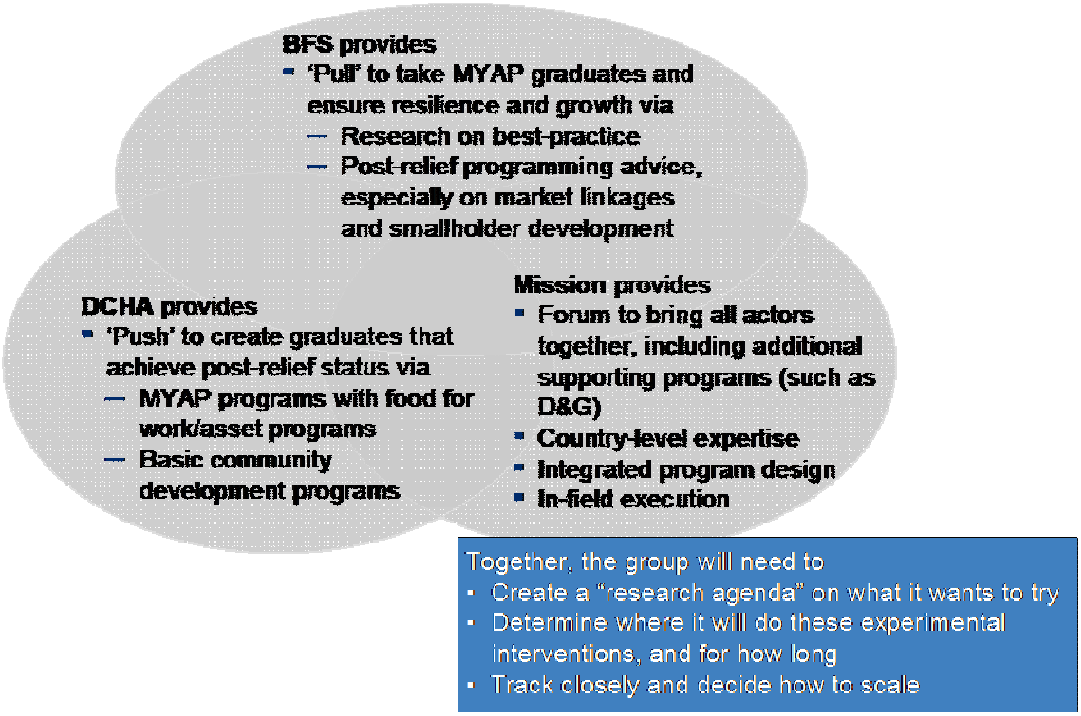
As stated at the beginning, all four of these change theories are examples – ideas to be used as thought-starters by the Mission as it takes its Jonglei plan to the next level by articulating a specific change theory, and setting targets in order to reduce the need for emergency/food aid over time.

D. Summary recommendations for Mission on linking relief and development to lessen the need for food aid

Achieving programs that link relief to development and lessen the need for food aid will require changes to how the various bureaus and teams work with each other, both at Mission and in Washington. If conceptualized in a "from-to" sort of way, the core changes would be:

- From DCHA programs and EG programs mainly just "information sharing, " to DCHA, EG, (and BFS and D&G) working in an integrated way – from joint planning/ program design to implementation and evaluation
- From DCHA programs and EG programs working in siloes, de-linked, to DCHA creating "graduates" who can enter EG programs that are prepared to link them in (the 'push' and 'pull' approach).
- From unclear theories of change in many of the emergency programs (e.g., minimal or no market linkages at the end of the project), to clearly articulated theories of change that demonstrate how beneficiaries will graduate and move from relief/ rehabilitation to development via change agents who push them "over the hump."
- From emergency programs often being spread all over the country (and often overlapping and possibly distorting development-focused EG programs) to joint emergency and development programs targeting a specific area in a holistic way that can demonstrate success models which can then be scaled up.
- From being "stuck" in traditional models of work (e.g., just seeds and training, Food for Work, etc.), to using more "out of the box" approaches that may require experimentation and changes in Washington (e.g., cash instead of food). Likely this is politically sensitive, but getting the arguments articulated by real on-the-ground examples, and engaged upon in Washington, is important.

What these means in practice is that DCHA, Mission, and BFS are now acting in a harmonized way. Specifically, DCHA would provide "push" programs to create graduates that achieve post-relief status via MYAP and OFDA with food for work/asset programs, and via basic community development programs. BFS would provide "pull" programs to take MYAP graduates and ensure resilience and growth via research on best-practice, and post-relief programming advice, especially on market linkages and smallholder development. All of this would be executed by the Mission, which provides a forum to bring all actors together, including additional supporting programs (such as D&G). The Mission has the country-level expertise, ability to create integrated program designs, and is where the in-field execution happens. Together, all three players should be working together and have established feedback loops, as illustrated in the graphic below:



In the immediate term, all three groups (with D&G) need to work together to (1) create a "research agenda" on what it wants to try in order to take the Jonglei initiative to the next level, using the theories of change articulated above as thought starters to surface ideas and possible interventions to try; (2) determine where it will do these experimental interventions, and for how long; and (3) track the eventual roll out closely and decide how to scale, and when. Washington will need to be closely involved to provide support, expertise, possible supplementary funding, and flex capacity as needed.

VII. Conclusion

USAID/South Sudan finds itself at a unique point in its mission to the country. After nearly five years of heavy emergency assistance, stabilization, and deep infrastructure investment, it now needs to assist the fledgling government with getting on a path towards real economic growth. Given the need to diversify away from oil, and the fact that the vast majority of people are engaged in farming, a strong focus on agriculture-led growth makes sense. Further, with the bulk of programming to date having been around relief and rehabilitation (that is, stabilizing households and getting them to achieve some degree of self-sufficiency), a push is needed now to put these households on a path of market-led economic growth so that they can continue to grow in a sustainable way, and not be reliant on just handouts, training, and inputs.

In terms of how to best align its programming to achieve these aims, the past six weeks' effort has arrived upon a three-pronged strategy, outlined in detail across this report:

A. Strategy summary

1. Jump-starting an agriculture transformation of the Greenbelt agro-ecologic zone. This should be done in three ways. First, in those parts of Central Equatoria, western Eastern Equatoria, and eastern Western Equatoria closest to feeder roads and the Juba-Nimule corridor, the Mission should work to develop 120 agro-dealer "hubs" spatially located across the region. Entrepreneurs would run these hubs as for-profit change agents providing both input and off-take services through aggregation. The focus would be primarily on improving the amount and efficiency production of cereal crops (especially maize and sorghum) so that they can compete directly with Ugandan imports. Second, in the same region as this first cereal intervention, the Mission should work with 150 groups – either trader-based or FBO-based changes agents – to create small horticulture enterprises (mainly vegetables, and possibly some fruits). As almost all produce in South Sudan is imported from Uganda, provision of small amounts of capital to build well-placed small horticulture schemes should allow for the creation of locally-grown produce that can easily compete with Ugandan imports. Thirdly, in those parts of the Greenbelt in Western Equatoria that are not as well-connected to roads and which are also already in cereal surplus, the Mission should invest in developing 50 additional agro-dealer entrepreneur change agents, very similar to the ones operating in cereals, but with a stronger focus on oilseeds (especially groundnuts and possibly sesame). This should be done together with the development of 10 processors in the region so that as much value addition to the oilseeds can be done in-country.

Together, we expect these three interventions to reach 80,000 households, add $75-$150m/year to agricultural GDP, and add an additional $300-$1000 in income

to each household depending on the crop in question. These improvements would come through beneficiary smallholders achieving (over the course of 3 years) average sized plot increases from 0.5-1 hectare to 2 hectares, and cereal yields increasing from 0.6-0.9 mt/ha to 2mt/ha. Together, all of this would imply production gains that would roughly equate to South Sudan's current cereal deficit of 300k metric tons.

Critically, achieving this will require some fairly substantial changes to USAID/South Sudan's core contracts with its implementing partners, especially FARM, CASE-SS (IFDC), and PASS-SS (AGRA). While the changes recommended to these programs are outlined in detail in Section IV, the bulk of the recommendations have to do with (1) focus – FARM handling mainly on-the-ground farmer development and improvement; CASE (IFDC) handling mainly agro-dealer hub development (especially entrepreneur identification, support, and monitoring); and PASS-SS (AGRA) handling seeds; and (2) performance – ensuring the right incentives and metrics are in place so that results are clearly understood and tracked, and stakeholders held to account. A two-phase process is recommended – a 6 month "proof of concept" phase to start as soon as possible in order to catch the next growing season, followed by a three year roll out plan for 2012 through 2014 that sees roughly 50-60 agro-dealer hubs created each year.

2. Engaging with the Government to create a national road-map for agriculture transformation in South Sudan. As a brand-new Government, South Sudan currently lacks any sort of real agriculture strategy, leading to two specific challenges: (1) the Government is currently "shooting from the hip"/using an ad-hoc approach when it comes to what it is doing in the agriculture sector and how it is engaging with donors; and (2) myriad policy initiatives are currently in play as the Government sets itself up, but without a guiding strategic framework, it is unclear if the polices are appropriate, deep/specific enough, or even the right policies to focus on in the first place.

To this end, USAID is uniquely positioned to engage the Government on this issue, especially in light of the recent changes to Cabinet suggesting an opportunity for taking a new approach. With South Sudan being one of the few countries left in Africa without a CAADP plan, there is also further impetus to push for some sort of guiding strategy or framework upon which the Government, donors, civil society, and investors can all anchor to and align around.

We have laid out in detail the various agriculture transformation models being tried around the world, the trade-offs on agriculture GDP, smallholder income, and food security inherent in each one of them, and how they might look in the South Sudan context. Critically, we have also laid out a way to engage the Government on this topic by illustrating country case studies, and laying out a preliminary road-map to show how this might be done in South Sudan. It is not meant to imply

that this is the *only* way to create a sector strategy, but rather it is meant to capture all of the moving parts that go into creating an effective, transformational strategy, and the amount of work – and rewards – that would be involved.

Importantly, an agricultural transformation strategy creation process is inherently multi-stakeholder: many donors, Government offices, and civil society representatives would take part. As such, the road-map presented does not imply USAID should be taking on all of those activities itself – rather, it shows all the elements that go into making a strategy, and should the Government decide to engage on the idea, a first step would be for Government to pull together the relevant stakeholders, finalize the road-map, and divide up the work. USAID could play a strong supporting role in making that happen – this could include, playing the role of facilitator of the process, providing expertise and management support as needed, and funding some of the various pieces that go into the overall strategy formulation and implementation process itself.

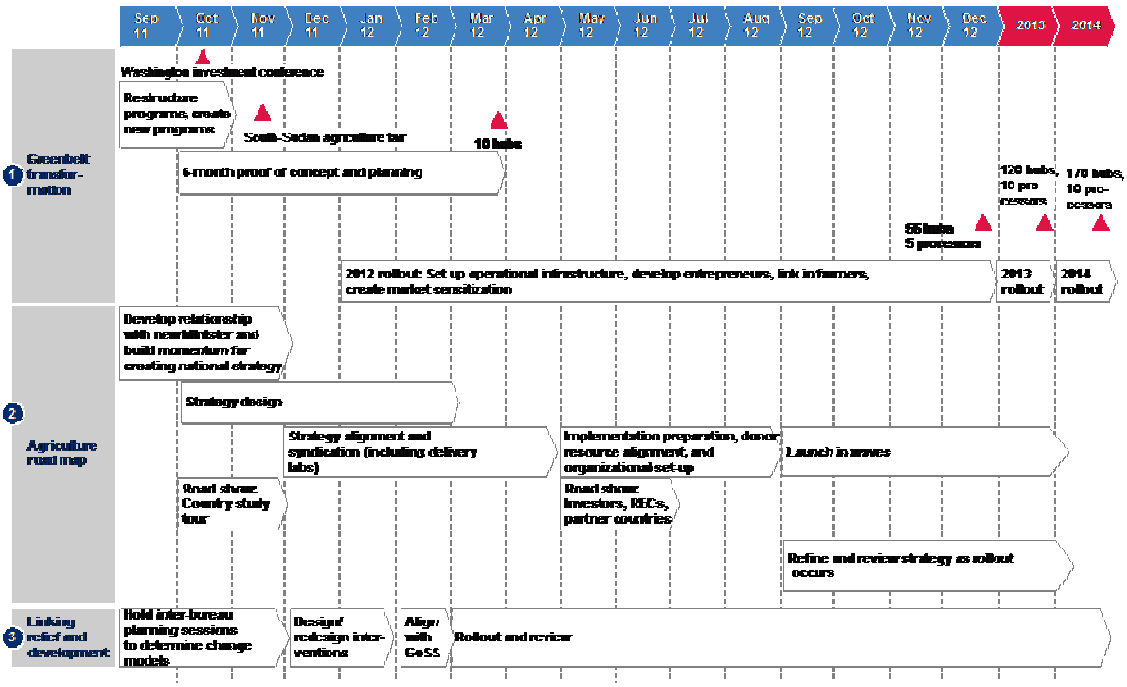
3. Creating innovative programming that links relief and development to lessen the need for food aid in South Sudan. As part of the transition to an economic growth-led strategy and away from heavy food aid focused efforts, the Mission has an opportunity to experiment with different approaches to link food aid beneficiaries into economic growth programs and thereby get them to transition out of the pure relief/rehabilitation world. Critically, this will require BFS, DCHA, D&G, and Mission to work much more closely together to design and implement projects that articulate clear theories of change on how this could happen, and set targets, especially around reduction in food aid. Since the Mission has already started to think about this with its nascent "Jonglei Initiative," this is the perfect place from which to start. We have provided four possible change theories to act as thought starters for the Mission as it explores programming options in this area, and described a high-level path and series of decisions for Mission to take on as it carries this initiative forward.

Lastly, a sort of "fourth prong" exists as an over-arching enabler: that of research and education, in particular the Mission's activities with Texas A&M and Virginia Tech in developing the agriculture capacity and outreach of two of South Sudan's universities. While our effort did not delve deeply into this area given the primary focus on what it would take to achieve a regional transformation, create a sector road-map, and better link relief and development, it is acknowledged that research and education matter significantly. These are no-regret activities that will have long-term implications in the sustainability of all three prongs of the strategy proposed for USAID.

B. Road-map for USAID/South Sudan's way forward

Importantly, the three prongs of this strategy do not work in isolate – in fact, all should happen simultaneously, and each one informs the development of the other.

Time is of the essence, and starting as soon as possible is important. The following road-map is meant to assist on how to think through the pieces of work and how they each would roll out over time:



Immediate next steps over the next two months: (1) finalize the strategy internally and revise the programs/contracts for the Greenbelt Transformation, getting the proof-of-concept pilot off the ground no later than end-October; (2) re-engage with the Government both to make it clear on what the new activities will be about in the Greenbelt, as well as to engage on the idea of creating a national agriculture transformation strategy; and (3) hold inter-bureau planning sessions to determine change models that should be tested in Jonglei, how to carry them forward, and flesh out programming details.

Going forward, as each part of the strategy is rolled out, the lessons learned will inform other parts of the strategy. For example, the lessons learned from rolling out the Greenbelt Transformation will inform many of the questions the national agriculture strategy would be looking at – everything from types of change agents, design options and choices, to timing and sequencing. Similarly, the national strategic roadmap may help inform the priorities and change models of the Jonglei initiative work (and vice versa), as the country will ideally be setting itself on a way forward that reduces the need for food aid.

Taken together, the three prongs of this approach will set South Sudan and the Mission on a path rooted in economic growth, and ensure that the transition from emergency relief and rehabilitation now moves to one of sustainable, agriculture-led growth, investment, and stability.