Norfund's Kilombero Plantation in Tanzania

– MEAGRE RESULTS FROM A LARGE INVESTMENT

FIVAS

Coverphoto: Woman carrying bucket of washed clothes from Mngeta River to her home several kilometres away.

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By Catherine Wilson for FIVAS

EXECUTIVE SUMMARY

This report set out to analyse water use by Kilombero Plantations Limited (KPL) in Tanzania and its effect on the people dependent on local water resources. Norfund, the Norwegian development finance institution, is invested in the plantation company KPL through its stake in Agrica Limited. The report finds that the water management regime of the plantation is affecting the local people minimally. Exposure to risks has increased slightly, especially for the poorer villagers unable to afford storage of water. The main risk emanating from the lack of improved water sources is however the responsibility of the Government of Tanzania, and not the company. The developmental effect however is unclear. KPL has contributed to the local and regional economy by buying materials and by hiring skilled and unskilled labour. These are however meagre spill overs compared to the planned effects of economical growth and increased domestic rice production.

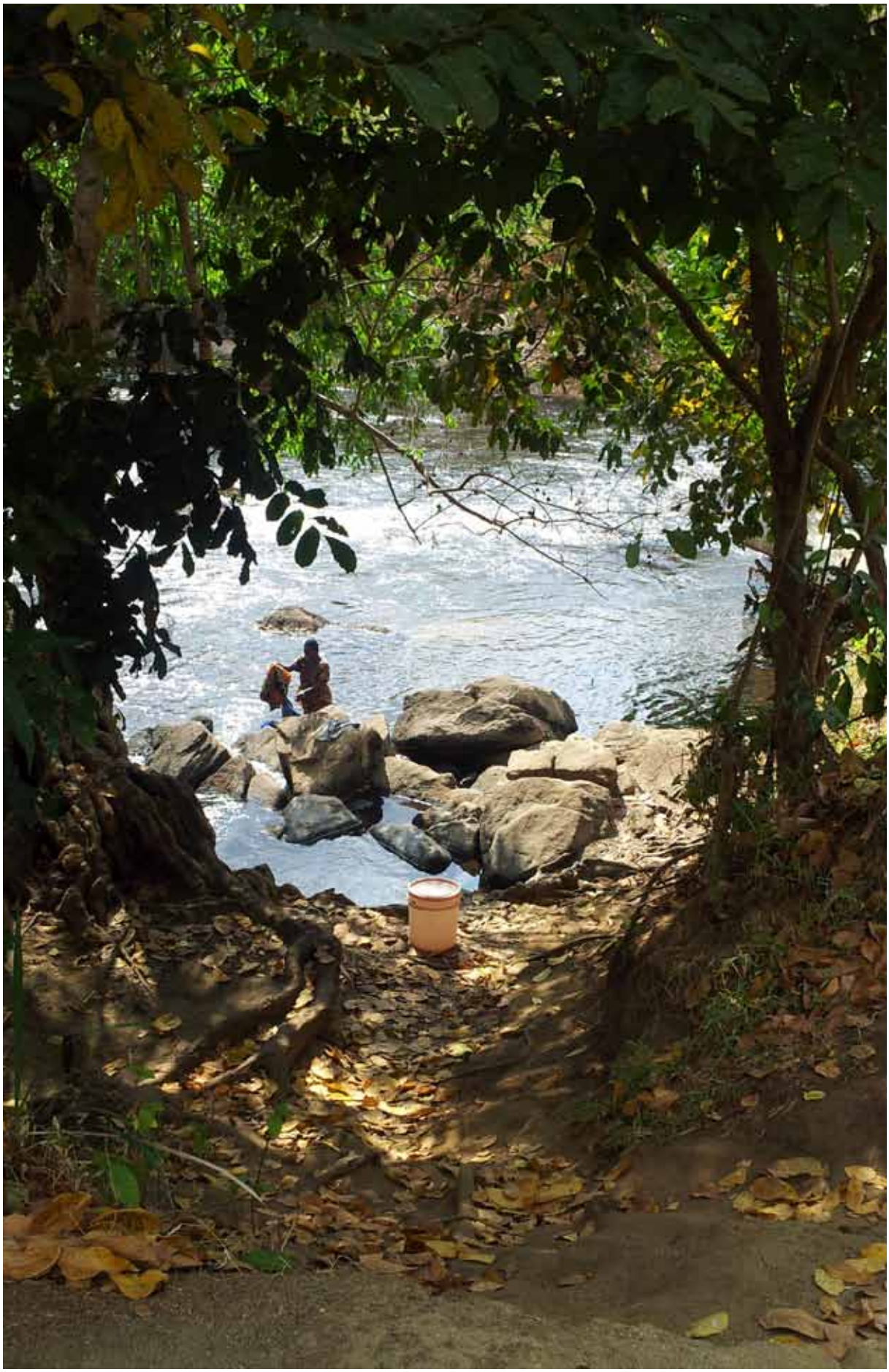
More significantly this report shows that Tanzania, like many other developing countries, lacks the fundamentals for private sector development. The challenges from unfavourable circumstances have prevented the company from turning a profit in the first seven years. The still pending expansion of the plantation and the limited success of the outgrower scheme means that the contribution to reduce Tanzania's dependence on imported rice has also been impaired. The marketing of rice from Kilombero was exposed to sudden shifts in the imported volume of rice and thus to a fall in prices. Volatile road taxation is another policy issue. There are also virtually no medium sized modern farms to recruit skilled labour from; there is a huge technological gap between mostly traditional household level farms and industrial plantations in Tanzania.

The unstable regulative regime and weak enforcement of policies are hallmarks of weak institutions. The large-scale investment favoured up until now will not benefit poor farmers in the short or medium term. One could argue that the prevailing mode is neither favourable for large agribusiness. This report shows how a matrix of criteria are necessary to create a beneficial environment for large-scale agriculture, most of which are missing or only partly present in Tanzania. A stable regulative environment, decent roads and a skilled workforce are some. Not to mention public water management. An increased effort on infrastructure, institutions and policies seem necessary before private sector investments can have a reasonable chance of impact on development. The spill over effects from foreign investments are biggest when the technology gap to the domestic enterprises is more moderate, allowing transfusion of technologies and skilled workers.

This study of water impacts was prompted by a report on the KPL project published in June 2015 by The Oakland Institute, Greenpeace Africa and Global Justice Now. The report raises a broad range of concerns, and has led to a continuing discussion between Norfund, the organisations and academics.

Jonas Holmqvist, Director, FIVAS

CONTENTS



I

INTRODUCTION

Food security is a hot topic on the international agenda. At a time when the global population is steadily increasing, the demand for freshwater is rising and access to water resources is frequently a source of conflict, debates flare over the static growth rates of world food production. Contradictions are evident and the sustainability is questionable, regarding what has been promoted by modern agriculture and multi-national corporations as efficient and preferable systems of production, for example large-scale monoculture, inorganic fertilisers, and genetically modified organisms (GMOs). As citizens become more environmentally aware and critical of inherent systemic anomalies, such as the statistics on food wastage, it is now more than ever that agriculture has the potential to be the driving force for the future of an environmentally-sustainable planet.

The relationship between agriculture, economic growth and poverty reduction has long been evaluated, with numerous country examples that demonstrate the link between the three. The most prominent example of this connection is the Green Revolution that took place in many Asian countries. Going forward, ensuring food security via agriculture-based development, such as climate smart agriculture, has become the expressed focus of development projects sponsored by international organisations and developed countries. Alongside food security though, lays an equally fundamental human need: access to water. The human right to clean drinking water has been protected in the Universal Declaration of Human Rights, but it remains elusive for large portions of the global population. Livelihoods of the poor are impacted every day by a lack of clean or accessible drinking water. It is important to recognise that modern agriculture has a responsibility to ensure that the levels and quality of water bodies remain adequate to meet the needs of the people who rely on them. The phenomenon where this is not adhered to is termed 'water grabbing'. Water grabbing is "a situation where powerful actors are able to take control of, or reallocate to their own benefits, water resources already used by local communities or feeding aquatic ecosystems on which their livelihoods are based" (Mehta et al. 2012: 197).

The Norwegian Investment Fund for Developing Countries, Norfund, was established by the Norwegian Parliament in 1997 "with the objective of alleviating poverty by investing in and providing loans to profitable and sustainable companies, thereby contributing to economic development and growth in private enterprise" (Norfund n.d.A). In Eastern Africa, Norfund aims to invest in sustainable agribusinesses so that food security can be enhanced in the least developed countries. In the case of Tanzania, national rice production has only recently produced a small surplus for the export market and is still at levels far below neighbouring countries (Barreiro-Hurle 2012). It was this gap in the market that in 2008 saw Kilombero Plantations Limited (KPL – a subsidiary of British company Agrica Limited) establish a rice plantation to introduce modern commercial agriculture to the Kilombero district. Investment support from

Photo by Catherine Wilson.

Norfund came in 2010 as the project of 5818 hectares at Mngeta Farm was in its infancy stage and required additional capital.

In light of the above, the objectives of this report are to examine Norfund's rationale for investment in large-scale agriculture, to investigate agriculture as a vehicle for growth in Tanzania and to present a case study of the socio-economic impacts of large-scale agribusiness. The case study is based on research conducted in Tanzania and is included here to critically evaluate problems with Norwegian development assistance policy and to inform future policy so that funds may be invested or loaned where they are most needed.

To introduce the topic of agricultural development, this report in section II commences with a brief discussion of the characteristics of Asia's Green Revolution and the subsequent construction of a new Green Revolution with an African narrative. A better understanding of the Green Revolution's genesis is needed as it has shaped Tanzanian policies and investments in recent years. The analysis moves on to the potential of agriculture as a vehicle for growth, with particular reference to Tanzania in section III. The section starts with a historical overview of how the previous development paradigm focused on economic growth as the driver of development, and tracks the shift to poverty reduction as the primary driver. A discussion of Tanzanian agricultural policies is included to provide a clearer understanding for later sections. In section IV, the report then highlights seven key components that can complement agricultural advancement and augment agribusiness investments. In section V, discussions explore Norfund's general investment strategy and specifically, current investments in Tanzania. A short critique follows of Norwegian development policy and Norfund's claimed investment practices. The sixth section (VI) of the report comprises a case study that investigates KPL's water abstraction for irrigation from Mngeta River, its water management approach, and the river's usage by three surrounding sub-villages in the Kilombero district of Morogoro region, Tanzania. The case describes the dynamics of environmental, social and economic issues surrounding the use of the Mngeta River, highlighting the challenges affecting the company and the livelihoods of people in the area. In section VII, research findings are thematically divided into three main discussions dealing with vulnerable communities, water management, and large-scale agricultural investments. The case study's concluding comments present an evaluation of the implied benefits upon which Norfund's strategy is based.

II

THE GREEN REVOLUTION AND ITS 'NEW' LABEL FOR AFRICA

The Green Revolution in Asian countries started in the 1960s and lasted approximately three decades (Hazell 2009), principally brought about by the threat of famine and the perceived risk that food scarcity posed for triggering communist revolutions (Akande et al 2005). During this period improvements were made in science-based agricultural research and small-scale farmer training that saw the doubling and tripling of crop yields such as rice, wheat and maize, increases in employment in rural areas, and reduction in hunger and poverty in real terms.

A primary characteristic of the Green Revolution was the employment of huge increases in irrigation and chemical inputs in order for modern varieties to achieve the increased yields expected of them. Irrigation took two forms: surface irrigation through the construction of dams flooding large tracts of productive land and towns and causing significant adverse ecological impacts; and groundwater irrigation. The latter form resulted in water shortages caused by the abstraction of large quantities of water by energised means (as opposed to manual mechanisms) and by waterlogging, the introduced technique of flooding land for rice production (Shiva 2012). Furthermore, through indiscriminate application of inorganic fertilisers, pesticides, insecticides and open-loop farming (poor nutrient cycling) farmers experienced reduced soil fertility and yields. Added to evolving pesticide resistance, these problems ultimately necessitated a shift in practices for the sheer survival of farms.

Positive outcomes of the Green Revolution were experienced differently among Asian countries. For example China achieved economic growth and poverty reduction through equitable land policies and market incentives (combined with investments in rural physical infrastructure and basic health and education); whereas poverty reduction benefits experienced by India were significantly less, attributed to underperforming agricultural initiatives and a lack of growth in its most impoverished regions (UNDP 2002). This indicates the importance of tailored, country-specific policies as opposed to blanket approaches so that poverty is accurately addressed.

The call for a 'new' Green Revolution in Africa came about in 1998 when agricultural ecologist, Gordon Conway, then President of the Rockefeller Foundation, published the book 'The Doubly Green Revolution'. Conway advocated research partnerships of farmers and researchers, to reduce reliance on chemical inputs; the use of ecology through integrated systems thinking; and the utilisation of biotechnology and genetically modified seeds to speed up the process of improved varieties (Conway 2000; Dano 2007). Following this, the Rockefeller Foundation launched the 'Green Revolution for Africa' initiative in 1999 with the goal of developing new and improved crop varieties: "improved seed varieties for larger, more diverse, and more reliable harvests" (Rockefeller Foundation 2006). In 2006 the Rockefeller Foundation partnered with the Bill and Melinda Gates Foundation to form AGRA - The Alliance for a Green Revolution in Africa. AGRA focused on the three goals of improving food security, increasing agricultural productivity, and reducing rural poverty (AGRA 2015). Various international players have since indicated their commitment to a Green Revolution in Africa, including international philanthropic organisations, national aid agencies, businesses and non-governmental organisations.

The goal of 'better' and 'improved' seeds is however undefined and leaves future research directions open to interpretation, subject to AGRA interests. Given the increasing interlinkages between the private sector and public/not-for-profit organisations, there is a risk the latter philanthropic organisations may be unduly influenced by private interests. These interlinkages can include employment by these organisations of personnel such as genetic plant scientists or senior management formerly with multinational corporations like Monsanto and Alta Genetics (Heim 2006). Other players in the new Green Revolution for Africa include Yara, Syngenta and Monsanto for example, and efforts by the World Bank to deregulate Africa's seed industry should not be underestimated (Dano 2007).

It appears that the original Green Revolution principles, external inputs, increased irrigation, and modern seeds, are being encouraged, but with the addition of GMO seeds to supposedly offset environmental externalities of the original revolution, despite the impact of GMO seeds not having been assessed. If this is the case, the 'new' Green Revolution emerges as little more than an example of green washing and, disturbingly, a chance for "transnational agrochemical, fertiliser and agricultural biotechnology companies to peddle their wares" (*ibid.*: 1).

III

AGRICULTURE AS A VEHICLE FOR GROWTH

Poverty Reduction through Economic Growth

During the last century the development paradigm centred on the pursuit of economic growth by raising investment levels in developing countries (largely through foreign aid) with the overall aim of reducing poverty. The idea was that economic growth, as measured by Gross Domestic Product (GDP) per capita, would have spillover effects in other strategic areas, such as poverty reduction, social development and governance. A prime example of this thinking is the sponsorship of major economic reforms in the 1980s by International Financial Institutions (IFIs): the World Bank and the International Monetary Fund. These reforms included reducing fiscal deficits and inflation, market liberalisation, and across-the-board privatisation, measures that in practice set developing countries back by decades in terms of poverty reductions (Amin 1990; Gibbon 1993; Shivji 2002). This was especially prominent in Tanzania where education and health expenditure cutbacks retarded development and associated advancements. Essentially, what this reform agenda failed to understand is that poverty reduction, and its distribution, is not necessarily impacted by economic growth. As described earlier in the case of India and in countries such as Tanzania, economic growth has not automatically translated to improved incomes for the poor: it is not an inevitable outcome and can sometimes even have the opposite effect. Tanzania has experienced substantial growth in GDP over the past decade (at 7% in 2014) yet the country remains one of the poorest nations with a Gross National Income (GNI) per capita of US$930 in 2014 (World Bank 2014a). Disillusionment about the failure of this growth-oriented development approach to deliver real outcomes for the poor drove a need to look at alternative approaches (UNDP 2002).

A Changed Development Paradigm: Growth with Largest Impact on Poverty Reduction

At the turn of the century the adoption of the United Nations (UN) Millennium Development Goals (MDG) shifted the emphasis of the international development debate from economic growth to poverty reduction. By doing so, it is possible to focus policy on those areas that make the most difference to the poor. Since poverty reduction "does not depend only on the rate of overall economic growth, but also on the ability of poor people to participate in that growth, this rekindled interest in the specific role of agriculture in the development process" (Christiaensen et al 2010: 1). Given that the vast majority of the developing world's poor rely on agriculture for their livelihoods, it is almost self-evident

"Economic growth itself is not a guarantee for wider social progress. In most countries, there is a wide – and often widening – gap between rich and poor, and between those who can and cannot exploit new opportunities"

United Nations World Water Development Report 2015

(UNESCO 2015:3)

that governments and international organisations' policies should be based upon improvements and investments in smallholder agriculture in order to obtain 'pro-poor' growth. An example of this thinking is Vietnam. Largely driven by economic growth, poverty has reduced significantly in recent decades from some 60% to 20% (World Bank 2013). Further reductions are however at a standstill whereby 'inclusive' growth must now be the country's central focus in order to raise the incomes of the poor. Appropriate policies must be directed at promoting rural agriculture, small to medium enterprises, social protection, quality education and health for the poor, addressing inequalities and ethnic minority poverty (*ibid.*).

Pro-poor growth can be defined as growth that achieves the largest impact on poverty reduction and "enables the poor to actively participate in and significantly benefit from economic activity" (Kakwani & Pernia 2000: 3). Additionally, "promoting pro-poor growth requires a strategy that is deliberately biased in favor of the poor so that the poor benefit proportionately more than the rich" (*ibid.*). Agriculture accordingly appears to be the most logical sectoral choice for a pro-poor growth approach to tackle poverty in developing countries: indeed studies have found that the agricultural sector is a strategic choice for poverty reduction and that policy-makers should incorporate this logic into future plans (Kaya et al. 2013). In low income and resource-rich countries, agriculture is 3.2 times more effective at reducing '$1-a-day-income level' poverty than non-agricultural sectors (Christiaensen et al. 2010: 30). Furthermore a large body of literature shows that growth in agriculture positively impacts non-agricultural sectors, thus stimulating wider economic growth.

FIGURE 1:

Systems approach to development through poverty reduction

(Adapted from Weiss 2008)

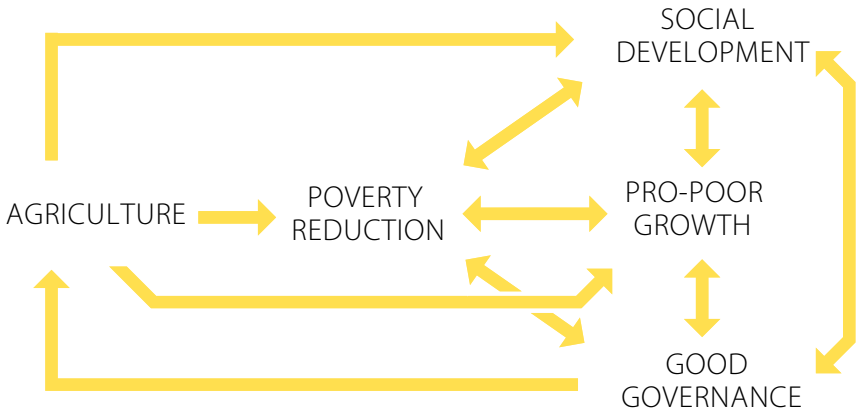


Figure 1 adopts a nuanced system whereby poverty reduction replaces 'growth' at the centre of development thought. This schematic model of the new development paradigm illustrates agriculture's core role in poverty reduction and the feedback loops that reinforce the system. By directing efforts to agriculture, pro-poor (equitable) growth increases, reducing poverty and improving social development. Poverty reduction in turn advances social development, pro-poor growth and good governance. Improved governance positively impacts all factors in the system, and pro-poor growth displays a reciprocal relationship with poverty reduction, governance, and social development.

To ensure that the best possible outcomes from agriculture are achieved, in the context of poverty reduction, policies and funding support must be targeted, so as to avoid inappropriate investment in agriculture. An example strategy is to accelerate the production of staple crops. There are multiple benefits to accelerating staple crops production in developing countries; the four main ones are listed here (Diao et al. 2008). Firstly, there will be increased food security and decreased dependency on cereal imports, as in-country supplies will more likely meet the population's demand (i.e. there is a 'natural' domestic market). Secondly, food prices will decline but consumer prices will reduce by more than double that of producer prices, and availability of food will increase regionally. Thirdly, there will be increased farmer revenues, raising incomes and even incentivising investment in new technologies. Fourthly, new market opportunities will result, and in time perhaps even surpluses for export may be achievable. These benefits show how focused agricultural investment strategies can produce simultaneous pro-poor growth and poverty reduction for the people who need it most. If steps are not taken for the advancement of staple crops in agricultural expansion, developing countries run the risk of foreign investment gaining a foothold on valuable croplands and producing profitable cash crops principally for export, with limited benefits flowing to smallholders, communities and poverty reduction.

Notwithstanding this, agriculture's relative sectoral contribution to poverty reduction is dependent on four factors; direct growth, indirect growth, participation by the poor in the sector's growth, and the size of the sector in the overall economy (Christiaensen et al. 2010). In the context of these factors, Tanzania is a strong example of a country where the economy's foundation relies on agriculture.

Tanzanian Agricultural Policies

Agriculture is placed second after services among Tanzania's largest economic sectors, making up 31.5% of the nation's GDP (World Bank 2014c). A huge 40% (383,000 km2) of the country's total land area (FAO STAT 2011) and approximately 60% of its workforce (NBS 2012) is engaged in agriculture. Despite so much of its economic activity revolving around agriculture, food insecurity is a serious issue for Tanzania and remains high on the political agenda. In addition to the limited food supply, "poverty remains widespread and recent figures indicate that more than 58% of the population lives on less than $1 per day" (WFP 2015).

Agriculture has featured high on Tanzania's policy agenda for decades. In the Republic's early years its first President, 'father of the nation', Julius Nyerere, emphasised agriculture as the basis for development. This is enshrined in the 1967 Arusha Declaration, which featured four foundational principles: the land, the people, good policies and good leadership (TANU 1967), and shaped agricultural policies to increase rural areas' productivity. The Declaration was the key document for Nyerere's *Ujamaa* (African Socialism), a plan for Tanzania's development. It was envisioned that through nucleus villages where collective farming was the central activity, citizens would together lift themselves out of poverty.

While major social advancements did occur during the 1970s and early 1980s, agricultural stagnation subsequently set in, bringing economic crisis: socialist ideology essentially failed to provide lasting benefit to the nation. There were many reasons for the stagnation, including inefficient economic policies, import dependencies, the 1970s' oil price shocks, increased protectionism in industrialised countries, the 1979 war with Uganda, foreign aid decline, and unfavourable weather conditions and resulting harvests (Skarstein 2010). The post-Nyerere years of the 1980s saw the abovementioned IFI-sponsored liberalisation instituted through a drastic reduction in the role of government and a series of market-oriented economic austerity measures. What ensued was a multi-tiered private sector-driven agricultural marketing system in which subsidies on inputs and transportation were withdrawn and private commercial agricultural enterprises supported, with the aim of modernising agriculture. Despite such reforms and liberalisation of the sector, the performance of Tanzanian agriculture declined considerably in the 1980s (*ibid*).

Following the lack of success of these reforms, the Tanzanian Government moved to a longer-term approach for agricultural policies. Revised development plans like the 1999 neo-liberal 'Tanzania Development Vision 2025' as well as adoption of the UN's 'MDGs' sought to mobilise the people and reignite optimism for the future (URT 1999). In 2009, the Government introduced a new agricultural initiative *Kilimo Kwanza* ('Agriculture First') that marked a departure from the previous state-centred, smallholder policies of the Agricultural Sector Development Program (Cooksey 2013). Authored by the Tanzanian National Business Council and notably not the Ministry of Agriculture, *Kilimo Kwanza* came with an emphasis on public-private partnerships, foreign investment and large-scale commercial agriculture. The first programme aimed at modernising and commercialising agriculture was SAGCOT (the Southern Agricultural Growth Corridor of Tanzania).

The 2010 SAGCOT initiative set out to link small-scale farmers with global agribusiness and focus on the outgrower model "that allow smallholders in the vicinity of large-scale farms to access inputs, extension services, value-adding facilities and markets" (SAGCOT 2011: 7) (for outgrower model, see box p 27). SAGCOT aims to support smallholder producer associations, "helping them enter into equitable commercial relationships with agri-processing and marketing businesses" (*ibid*.). The objectives of the programme are to "foster inclusive, commercially successful agribusiness that will benefit the region's small-scale farmers, and in so doing, improve food security, reduce rural poverty and ensure environmental sustainability" (SAGCOT 2015). This approach places emphasis on the role of commercial investors in Tanzania's agricultural future, claiming the "private sector is the engine of economic growth, mandated to be the lead implementing agent of *Kilimo Kwanza*" (FAO 2012). It is questionable to assume that this strategy can benefit small-scale farmers and advance its significant set of objectives. Tanzania may be recovering after the sweeping IFI reforms of the 1980s, but it remains underdeveloped. As outlined in the new development paradigm, growth with the largest impact on poverty reduction, or pro-poor and

inclusive growth, is considered more appropriate. Private sector interests (largely foreign, profit-driven commercial agribusinesses) are unlikely to provide the transformative growth the Government is hoping for: change must be primarily led by the public sector. Primary considerations should be the interests of Tanzanian people, specifically, a high quality of life and a competitive economy capable of producing sustainable growth and shared benefits, as set out in the Development Vision 2025, irrespective of corporate, IFI or aid agency influences:

"[A] nation's development should be people-centred, based on sustainable and shared growth and be free from abject poverty. For Tanzania, this development means that the creation of wealth and its distribution in society must be equitable and free from inequalities and all forms of social and political relations which inhibit empowerment and effective democratic and popular participation of all social groups".

The Tanzania Development Vision (URT 1999:3)

The socialist part of Tanzanian history underscores that investment in agriculture will not be a straightforward solution for poverty, without integrated policies and sectoral initiatives. As mentioned previously, an example of this is investment in and production of staple crops such as maize, cassava, sorghum, millet and rice. The fact that neither *Kilimo Kwanza* nor SAGCOT specifically advocate staple crop production is concerning. If not staples, crops will be produced for cash, luxury or biofuels and moreover for export. How is it possible to achieve the goals of poverty reduction and shared growth from agricultural investment if these markets are emphasised?

IV

MORE THAN JUST A VEHICLE: AN INTEGRATED SYSTEM

There is of course no silver bullet solution that can deliver effective and equitable national development. Policy strategies should always be evaluated by weighing up strengths, weaknesses and outcomes for different stakeholder groups. A holistic approach recognises the need for a range of astutely targeted investments and initiatives to complement agricultural investment and enhance its effect on poverty reduction and pro-poor growth. Figure 2 shows a simple representation of seven key components of a more integrated approach to agricultural advancement. Note there are multiple feedback loops between components, however these connections won't be highlighted in this brief discussion.

In the Tanzanian context, a fundamental requirement of development is infrastructural investment, encompassing both hard (physical) infrastructure - like transportation, energy, communication technology networks, crop storage facilities,

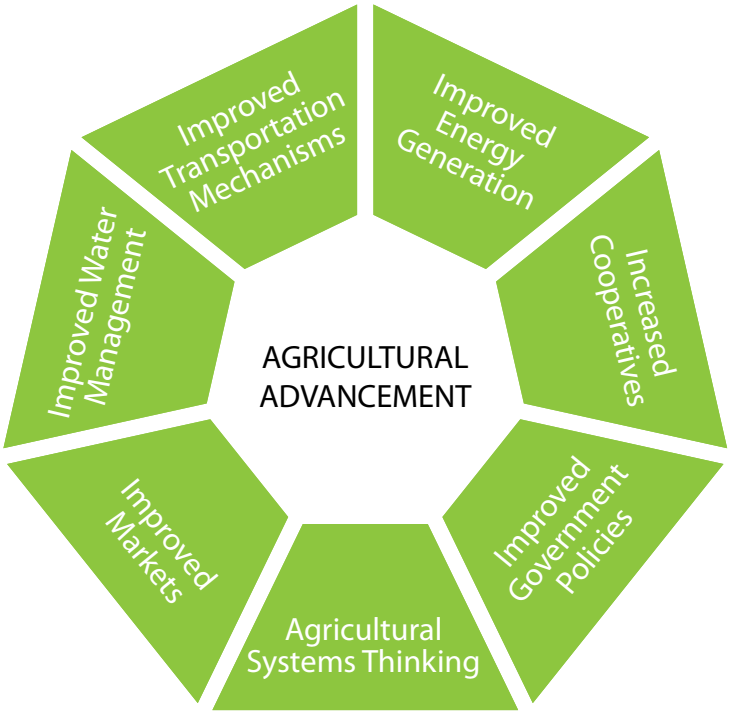


FIGURE 2:

Development through agriculture and development of agriculture as an economic sector is dependent on several components acting together. The author goes on to discuss how these seven are important for Tanzanian agriculture.

water, and sanitation systems - and 'soft' (institutional) infrastructure such as education and health. Of these, transportation, energy and water are usually considered critical for success in agriculture-based development.

Transportation Mechanism

Roads represent a significant constraint to the movement of goods within the country. Existing infrastructure is in a state of disrepair and there is also a serious lack of investment in construction of surfaced roads outside of cities. The large majority of Tanzania's population live in rural areas, over 70% in 2014 (World Bank 2014b). However, rural roads are principally dirt construction and, despite local government's sporadic attempts at grading, annual seasonal rainfall sees the condition of these go from bad to worse, with many becoming unusable. Roads connecting cities are more often surfaced (tarmac etc.) yet they are generally of low quality and irregularly maintained. Certainly, the cost of transportation in the form of taxes and levies is also a barrier to agricultural development. The way forward for enhanced competitiveness and bringing goods and services to market nationally and regionally is through improved transportation mechanisms (Jerome 2011). An ancillary to this is that an improved transportation network has been shown to improve school attendance (Fay et al. 2003 in Weiss 2008).

Energy Generation

Another critical infrastructure component is energy generation and access. Energy is a major problem for individuals and businesses across the country. A combination of supply, accessibility, and affordability issues currently constrains Tanzania's economic and social development, impacting business efficiency and individuals' quality of life. Only 15.3% of the population has access to electricity supply (World Bank 2012) but a lack of affordability for many citizens curtails uptake even further. Electrification offers people the possibility of dramatic economic benefits, allowing them to increase their productivity by utilising nighttime hours, in manufacturing, educational and other activities. Communities also receive such major flow-on social benefits as improved security and reduced violence against women. For most industries, especially agricultural, reliable electricity is a necessity. Many kinds of crop processing facilities require electrification, as do irrigation methods such as centre pivots that are mainly driven by electric motors. Where electricity is in short supply diesel is largely used as a replacement, but this is a costly alternative, both economically and environmentally.

Water Management

The last critical infrastructure component is improved water management. Water is essential for life and, more specifically, for the production of most goods, including crops. The management of this precious resource is crucial so that river flows and groundwater are protected and maintained in an unpolluted state for future generations to enjoy. Irrigation is predominantly the central consumer of water in crop production. Research in India, the Philippines, Thailand, Vietnam,

and China has shown that investment in irrigation is, in essence, pro-poor. It increases individual incomes and even positively impacts on education within households that use irrigation (such as in the case of Vietnam) (Ali & Pernia 2003). What should be highlighted here, however, is that the input, freshwater, is not a good that can be purchased limitlessly – it belongs to the people and is supplied by nature: water resources for irrigation come from a source that others share. In Tanzania, if a large-scale agribusiness wishes to abstract water from a local stream or river, permission must be sought from the relevant water basin office that is responsible for the river's management. In recent years, the process of water management has struggled to remain consistent and fair in the issuance of permits due to the pace of large-scale agricultural investment in Tanzania and the interests involved. The protection of river resources has been lacking, leading to water scarcity and availability problems in some parts of the country (Van Eeden 2014). Reasons for this lie in the poor implementation by water basin offices of the Integrated Water Resource Management (IWRM) framework on which water policy is based. The IWRM framework has been heavily criticised for ineffectively allocating water between basin users and favouring a 'state-driven private investment' economic development model (*ibid.*). The Tanzanian Government lacks well-thought-out policies and coordinated roles and dialogue between national water institutions with a pro-poor, sustainable outlook in mind for the future. Disparities have arisen from policies such as the 1974 Water Utilisation Act No. 42 that, even in 2015, require all river users to register their usage, pay a fee (introduced in the period of Structural Adjustment Programs and privatisation), and receive a permit: a fact that remains largely unknown by the poorly educated rural population. To govern Tanzania's water resources effectively into the future will require a truly participatory approach (unlike the current pseudo-IWRM approach) that considers and listens to the requirements and rights of the people. Such an approach would endeavour to protect and balance competing stakeholder interests: firstly the people's drinking water source, secondly their livelihood activities, and thirdly commercial agribusinesses that seek an ecologically realistic and socially fair amount of water for their activities.

Cooperatives

A fourth component of agricultural advancement is increased cooperatives or farmer associations. These groups develop and maximise the potential of human capital. According to Sumelius et al. (2013), cooperatives offer five advantages for low income earners that target poverty reduction: participation through ownership, sustainability through economic decision making, identity through values and cooperation, legal frameworks through doing business, and access to capital through the cooperative's size. Studies of Tanzanian dairy cooperatives confirm the numerous benefits that have been attributed to operation of farmer cooperatives in general: better prices received for products (due to economies of scale, farmer training and joint investments enabling quality improvements), price stability, improved household incomes, better access to markets and information systems nationally and regionally, greater employment, improved extension services, alternative energy sources afforded, improved housing conditions, increased

ownership of possessions, Government tax revenue increases, and improvements in education (Sumelius et al. 2013). It is evident from this list that the benefits of cooperatives can be significant for their members and particularly impressive are the pro-poor outcomes from organised, human (soft) infrastructure.

Markets and Government Policies

The fifth and six components imperative for agricultural advancement in Tanzania are improved markets and government policies. There are numerous reasons why the agricultural sector as a whole is underperforming. Some of these listed by the Government include; poor access and low usage of improved seeds, fertiliser, and mechanised technology, limited access to financing, unreliable rainfall in some regions, and the underuse of water resources for irrigation. There are however, numerous other improvements to be made, acknowledging the important role of the government in this process. Both improving the markets themselves and access to these markets are required for the progress. Enhancing markets requires improved market information in the form of incentives supported by institutions and regulations. Government policies must prioritise the production of staples by all scales of farming, as through such strategies will reduce producer-consumer price margins (Diao et al. 2008). Through a reduction of these price margins and additionally through policies aimed at minimising market speculations and stabilising prices, small-scale farmers will be incentivised to increase production. Improved markets are imperative for the advancement of agriculture because experience has shown that increased productivity without improved markets leads to a glut of staple crops, in effect driving down prices and deincentivising farmers once more (AGRA 2015). Another way to further stabilise prices is to concentrate efforts on regional market integration (access) so that product surpluses in one region can offset deficits in others (Diao et al. 2008). Additionally, to better integrate markets nationally and in East Africa, enhanced transport infrastructure (and reduced road levies) and the *previously* listed market improvements are essential.

Agricultural Systems Thinking

The seventh component is agricultural systems thinking, which basically advocates an approach that looks at agriculture as a whole rather than a series of disconnected issues. In looking at the agricultural system as a closed loop it is possible to better understand the connections and feedback loops between ecological concepts. Such concepts can include soil fertility, fertiliser usage, biodiversity, water usage, pest eradication, and seasonal changes. But also the social concepts related to the ecological, such as the use of human waste as a natural fertiliser to replace lost soil nutrients from increased land usage, thus decreasing health risks posed by lax disposal methods. Furthermore, it is important to appreciate the constraints of natural systems so that there is less reliance on environmental modifications and more emphasis on adaptations in crop and production systems. It is only through such improvements in understanding, in combination with the other six key components discussed above, that agricultural advancement is likely to occur.

V

NORFUND AND TANZANIA

Investment for Whom?

Norfund may be meeting targets and delivering on their mandate, as stated in their 2014 Report on Operations, but are they delivering on their goals for the people in the countries they invest? At the end of 2014, Norfund's investment portfolio comprised a sizeable NOK 12.8 billion representing 700 companies worldwide (Norfund 2014). This capital is allocated to Norfund through the Norwegian Government's Ministry of Foreign Affairs, who also directs the fund's overarching priorities. As a Development Finance Institution (DFI), Norfund rightfully co-invests (typically <35% ownership share) with private partners to leverage public funds and gain sector expertise for improved investments.

Norfund's purpose "is to create sustainable commercial activities in developing countries" and "supply risk capital in environments in which capital is particularly scarce" (Norfund 2014). The logic is sound: invest in an industry that fails to attract mainstream investors due to a high level of risk, and exit the investment when the business can stand on its own and attract these kinds of investors. The Norfund Act of 1997 states just this; Norfund shall "establish viable, profitable enterprises that would not otherwise have been established because of high risk" (FO 1997). The strategy of Norfund is fourfold. Firstly, to combat any unnecessary risk there is investment in a limited number of countries, selected for their favourable socio-political conditions. The focus region is Southern and East Africa, as well as Central America and South-East Asia, involving a total of 27 countries. Secondly, just three sectors are identified for investment, nominated for their high-yielding development effects: financial services, clean energy, and agribusiness. Thirdly, Norfund should only make investments in small and medium sized enterprises (SMEs) and 'greenfield businesses' (new businesses with no existing constraints and maximum potential). Fourthly, the DFI preferentially uses equity investments (although other risk capital and loans are also lent) to actively impact business decisions through ownership.

The current fourfold strategy should be examined to stimulate further debate and improve accountability into the future. Two of the above strategic approaches appear rational and responsible, whereas the remaining two leave scope for outcomes contrary to Norfund's purpose and developing country interests. Investing in countries that have favourable conditions is functional for Norfund's long-term view, as is the focus on equity as a debt instrument for least developed country investments. The second approach - supporting just three investment areas - may seem narrow but it does allow Norfund to develop expertise in those areas and

maximise its development orientation. Of the three sectors, financial services are important in facilitating a country's economic activities, however both agribusiness and clean energy require further examination.

Norfund's Strategic Sector Approach and its Anomalies in Tanzania

Norfund's strategic thinking around agribusiness as a key investment sector includes the arguments that: it employs large percentages of the workforce in developing countries; there is significant development potential for employment amongst the poorest people; it is important to improve food production; and, agricultural modernisation is the first step toward growth and poverty reduction (Norfund 2012; 2014; n.d.B). There are however, six main flaws with this logic. Firstly, by investing in large-scale agribusiness and hence modern machinery, a large proportion of the jobs that existed previously in a less-mechanised form of production have been cut and replaced by technology. Secondly, the poorest people referred to are not typically trained, highly employable workers, and positions they often obtain involve low skilled and low wage positions: there are higher barriers to entry (Reardon et al. 2000). Moreover, with the increase of commercial farms, jobs have decreased but also employment has become increasingly less secure and inconsistent through the use of casual contracts (Simbi & Aliber 2000). Companies are able to cut costs with non-permanent workers, as contracts offered are often seasonal, monthly or daily, and no pension monies are paid. Thirdly, modernising agriculture through large commercial companies means that financial proceeds of growth will be retained by these companies (characteristically overseas interests) and SME development remains unrealised. Facilitation of business loans to private individuals and other forms of promoting entrepreneurship are more complicated and administratively- difficult, but if DFIs 'enable' this important first stage in agricultural development to be bypassed, they may fail to meet their organisational objectives. Fourthly, large-scale agribusiness can have additional disruptive and potentially damaging socio-ecological impacts that are not necessarily produced by SMEs, such as pollution, water abstraction or the displacement of people. Fifthly, if improved food production is a core focus, Norfund should consider, as a matter of priority, a policy of investment in staple crop projects. Lastly, as examined in the previous section of this report, agricultural advancement requires enhancement of seven supplementary components: transportation mechanisms, energy generation, water management, farmer cooperatives, markets, government policies and agricultural systems thinking.

Benefits accruing from investment in the clean energy sector vary considerably. Renewable energy is largely a strategic sector for investment as long as this does not include hydropower. There are inherent problems with this form of energy production that have been studied both formally and informally around the world. The expanse of information is so rich that it is hard to see how hydropower is still considered a legitimate development tool by any country, let alone Norway. The report *'Alternatives to Hydropower'* (FIVAS 2014) outlines the adverse externalities of hydropower dams and details the viability of other renewable sources of power,

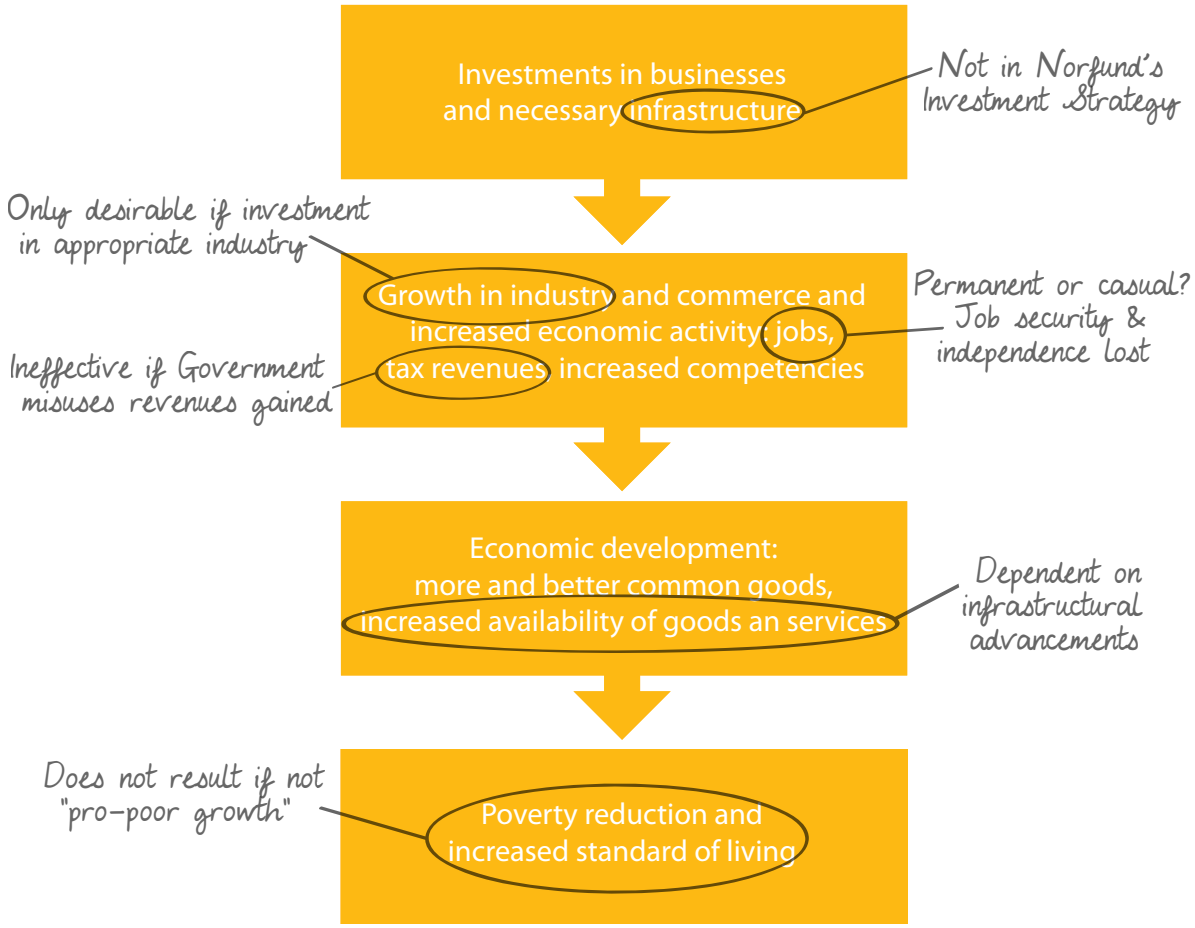
both for investment and usage. Norfund should accordingly review their inclusion of this specific energy source in their investment portfolio and potentially add large hydroelectricity to the exclusion list due to its wide-scale social and environmental harm.

Norfund's third strategic approach appears largely unfulfilled to the present time. Clearly SMEs inherently possess strong potential for local economic development (often owned and run by local people, amplifying the local benefits). However, in reality, there are very few small or medium sized enterprises in Norfund's Tanzanian portfolio. Norfund's nine current investments in Tanzania are:

- Green Resources is a Norwegian-founded, large-scale forestation company operating in three countries over a 20-year period.
- Voxtra East Africa Agribusiness Fund is a Norwegian-founded large enterprise that funds large-scale agriculture, aquaculture and forestry businesses in three countries.
- African Century Infrastructure Services is the subsidiary of African Century, a multi-sector, multi-country enterprise. The infrastructure arm of the corporation was created to support the development of the oil and gas industry in Tanzania and Mozambique.
- Asilia is a medium to large, luxury lodge, camp and safari company with a high sustainability and impact performance rating, operating in Tanzania and Kenya
- Exim Bank and Alios Finance are leading finance institutions in Tanzania, both large enterprises.
- Africado plans to be a medium-sized enterprise that grows avocados for the export market to Europe through both a central plantation and a farmer outgrower scheme.
- Yara Tanzania is a subsidiary of the Norwegian-owned multi-national corporation. Norfund loaned funds for the construction of a US$20 million fertiliser terminal in Dar es Salaam port, said to act as a regional distribution hub contributing to agricultural improvements.
- Agrica is the parent company of Kilombero Plantations Limited, a large-scale rice plantation to improve food security for the country.

Several of these investments stand out as anomalies. Just two (Africado and Asilia) meets the SME requirement of Norfund's strategy, but the second of these is in a sector (tourism) not identified for investment by Norfund. Voxtra and Agrica can be classified as greenfield businesses and they also fall within the Tanzanian development strategy of agricultural expansion; yet there are clear inconsistencies amongst the other investments. Green Resources is a well-established large enterprise, as is African Century. U.K-based subsidiary, African Century

Infrastructure Services leases and operates large-scale machinery for the oil and gas industry, thus making it a particularly puzzling strategic fit for Norfund. Furthermore, investment in Yara Tanzania appears anomalous, as the corporation does not meet any of Norfund's strategic requirements or its mandate to "establish viable, profitable enterprises that would not otherwise have been established because of high risk" (FO 1997). Yara Tanzania is already an established, profitable company that should have funded its fertiliser terminal via bank finance, rather than through the Norwegian investment fund for developing countries.



The above-listed somewhat questionable investments appear inconsistent with Norfund's published portfolio criteria and point to a need for greater clarity and strategic rigour in future project selection.

At the time of printing this report, Norfund has indicated intentions for the creation of a new strategy that would diversify away from large-scale agricultural plantations, although no details are available of what the new direction would entail.

FIGURE 3:

The schematic model 'The importance of businesses for sustainable economic development' has crucial omissions and only holds assuming the circumstances are particularly well suited.

(Model adapted from Norfund n.d.A).

Challenges for Private Sector in Development

As described previously in the section 'Agriculture as a Vehicle for Growth', there are fundamental problems with nominating economic growth as the primary focus of a development strategy. Figure 3 demonstrates a few of these, further highlighted in the following example. Despite its existence as a discrete entity, Norfund ultimately follows Norwegian development assistance policy from the Ministry of Foreign Affairs. In describing the role of the private sector in driving development and fighting poverty, the Norwegian Minister of Foreign Affairs Børge Brende stated: "the private sector creates jobs, and generates tax revenues and welfare" (FO 2014). It is important to deconstruct this statement and do so in the context of large-scale developing country agriculture, such as in Tanzania. Firstly: 'the private sector creates jobs'. This may be true, but is beneficial only if the jobs created are additional to those existing prior to the large-scale agribusiness commencing. In practice, the people and smallholders already living on and farming the land were likely displaced with the onset of the agribusiness and their independent jobs lost (if compensation arrangements were not adhered to). Even if a net job increase is achieved by the agribusiness, those people are no longer self-employed: they now work for medium to large sized businesses that characteristically employs workers on a casual basis so as to have the freedom to terminate contracts at short notice and maximise profit margins. The outcome is socially dysfunctional: such people have become landless, lost their food security and quite possibly their livelihood if they remain unemployed. Secondly, 'the private sector generates tax revenues and welfare'. This is problematic in light of the corruption pervading developing country institutions, where tax and welfare commitments lawfully remitted to Government by businesses may be squandered through institutional malpractice and mismanagement. The social consequences, in the form of 'lost' economic infrastructure and social benefits, are dire. The private sector, or specifically foreign-owned companies, are often also granted any number of investment benefits, such as tax exemptions. Typically incentives can be awarded with a wide scope for discretion, increasing the risk of corruption (OECD 2013).

In this scenario described by the Norwegian foreign minister, the benefits claimed for such investments appear unrealistic. To rely on the private sector to 'drive development' and 'fight poverty' may prove a misguided direction for Norwegian development policy to take.

As stated above, Norfund claims that investing in SMEs is a large part of who they are and what they do, yet in Tanzania the opposite is seemingly apparent. In relation to agriculture it is crucial that land remains in the hands of smallholders: "the larger the share of cultivated land by small and medium farmers, the lower the observed income inequality, and thus the greater the impact of growth on poverty" (Bourguignon & Morrisson 1998 in Christiaensen et al 2010: 15). The problem with Norfund selecting agricultural investments of a large-scale nature is that agribusinesses, by description, require land, land that must be purchased or leased from the Tanzanian Government. The land that is for sale or for lease to the large agribusiness typically already has a small-scale farmer living on and tending

the land sometimes albeit 'illegally', unbeknown to the prospective agribusiness. Through this simple transaction of purchasing/leasing what appears to be 'empty land', the deed-less farmer has been dispossessed of their share of cultivable land and the opportunity to reduce smallholder poverty is diminished (Benjaminsen & Bryceson 2012). Property rights in Tanzania are a hazy topic, as are water rights. The government must also be held accountable for the role they play in this transferral of citizen's traditional property and water rights to a large business, and to ensure land and water grabbing does not transpire. When investment and growth is driven by the private sector, it is evident that the Government's focus is on profits from land sales or leasing, tax revenues and future monies from permits and levies extracted from the large investment.

In conclusion, Norfund's investment strategy must be reevaluated so as to measure up and be held responsible against the stringent guidelines it claims to adhere to. Developing country investments need to be first and foremost, small or medium sized enterprises, and nationally owned. Large-scale businesses should utilise bank finance. Norfund admittedly has a challenging role to play to establish profitable and sustainable businesses in the least developed countries. But this role was never supposed to be easy. The fund exists to provide capital to people who need it the most in countries that lack modern economic infrastructure and market mechanisms taken for granted in the developed world. "The challenge for Norfund will be to find partners that are sized in terms of interests and which simultaneously create development for poor farmers and safeguard the local population's interests" (Aalerud & Milford 2011: 2).

VI

CASE STUDY: KILOMBERO'S IMPACT ON LOCAL VILLAGES

Mngeta River, Kilombero Valley.
Photo by Catherine Wilson.

Norfund's second largest monetary investment and their largest equity investment in Tanzania is Agrica Ltd (KPL). Norfund has invested approximately NOK 138 million since 2010, comprising both equity and debt financing for the agribusiness. KPL was established in 2008, before the Tanzanian Government's SAGCOT initiative was underway. Despite this, Agrica's project to create a large rice farm in the 'bread basket' of Tanzania fitted in with the Government's *Kilimo Kwanza* initiative and was hoped to transform the dismal state of the nation's rice production. In 2010 KPL was awarded the title of 'National Strategic Investor' by the Government (Norfund 2012). Norfund was attracted to the venture for these reasons and also for it's potential to stimulate the local economy in the form of jobs, food production - SRI yield increases for smallholders and KPL's national production, and subsequent high development impacts (Norfund 2015;

Norfund n.d.C). The investment included strict stipulations on how to setup and run the agribusiness: environmental concerns had to be addressed via thorough impact assessments and irrigation design investigations concerning the water abstraction from Mngeta River.

While other studies have examined the company's outgrower scheme and land issues relating to involuntary resettlement and environmental land concerns, this report focuses on issues directly pertaining to water usage from Mngeta River, situated in the Kilombero Valley, Morogoro. The Oakland Institute's report 'Irresponsible Investment' (2015) influenced the selection of this case study by identifying the need for investigation into Mngeta River water users and abstractions. Accordingly, this research set out to analyse the river's water usage by KPL and elucidate environmental, social and economic effects of the company's water abstraction on people in surrounding sub-villages. It endeavoured to understand local usage patterns and associated questions of livelihoods in the area. Through interviews conducted, challenges affecting the company and the livelihoods of villagers were identified. Firstly, the case study presents key findings of the research via short summaries of thematic issues and, secondly, a discussion of these findings.

Kilombero Plantations Limited
OUTGROWERS AND THE SYSTEM OF RICE INTENSIFICATION

Kilombero Plantations Limited, or KPL, is a 5818-hectare rice plantation acquired in 2008 and situated in the Kilombero Valley, Morogoro region, Tanzania. The land was leased in partnership with government organisation, Rufiji Basin Development Authority (RUBADA). The parastatal assumed responsibility for the farm in 1993 when the North Korean partnership, the Korean Tanzania Agricultural Company (KOTACO) liquidated leaving behind equipment, the cleared farm, and upstream hydropower station. For this joint venture to redevelop Mngeta Farm, RUBADA is said to have received $2.55 million in cash and an 8.3% equity holding from KPL that has since been further reduced to an estimated 5% share (KPL 2009; Chachage 2010; Oakland Institute 2015).

KPL is a subsidiary of British company Agrica Limited, created by founder and CEO Carter Coleman in 2005 to develop sustainable agribusinesses in East Africa. KPL is run by a foreign-Tanzanian management team and seeks to be the leading producer of rice in East Africa. Of the 5818 hectare 515 are currently irrigated. In addition to their own farmland, the plantation has a number of outgrower contracts with independent farmers trained in the System of Rice Intensification (SRI) program. KPL extension officers trained 7,403 farmers through an SRI program funded by the African Enterprise Challenge Fund (via Alliance for a Green Revolution in Africa) and USAID NAFAKA (Agrica Ltd 2015a). Local farmers have been employing the SRI system both as outgrowers and independently.

The system of **Outgrowers** is a form of contract farming commonly applied to include smallholder farmers in the proximity into the production system of an agribusiness. The smallholder farmers produce for the company according to a contract, often with inputs supplied by the company.

The **System of Rice Intensification** program teaches farmers an alternate system whereby rice seedlings are planted widely spaced for root development, weeded regularly by rotary hoe, intermittently irrigated, and agrochemicals added, to produce yields of double that of non-SRI plots (in the same village - Nakano et al. 2014).

Interviews were conducted in Isago, Itongoa A, and Chogowali sub-villages of Mngeta Village; selected for their use of Mngeta River for their daily household activities. All relevant government officials were met with prior to interviews to explain what the research was about and to gain permission. Figure 4 shows the location of the three villages and their proximity to Mngeta River. The population of Isago was 445 people, Itongoa A was 379, and Chogowali was 414 as of October 2015 (data provided by the Ward Executive Officer, Mngeta Ward). A total of 88 household interviews were undertaken with a convenience sampling approach where respondents were selected randomly according to who was home and available at the time. This approach differs to snowball sampling for example, where respondents are not selected by the researcher but by existing respondents or key persons such as local government officials. The gender percentage of those interviewed was 39% males, 47% females and 14% both male and female. In addition, two informal interviews and site visits were carried out with KPL representatives, and one informal interview was conducted with Norfund.

FIGURE 4:

Mngeta river and research sites. Kilombero plantation in the bottom right.

Cooking hut and upgraded residence with corrugated iron roof in Chogowali Village, Mngeta.

Photo by Catherine Wilson.

Economic Activities in the Villages

Interviews revealed that the main source of income for almost all (97%) villagers in the three locations was agriculture. Just 3% of those interviewed had an alternate main source of income in addition to agriculture, and only 1% didn't cultivate crops at all. Of the 99% that cultivated crops, figure 5 graphically displays that the great majority of farmers' staple crops were rice and maize, and that only 29% grew other crops such as sesame, cassava, beans, cocoa, bananas, or groundnuts for example, in addition. Various crops were grown on the same piece of land and surprisingly it was extremely uncommon (only in 1% of responses) that a farmer irrigated their land.

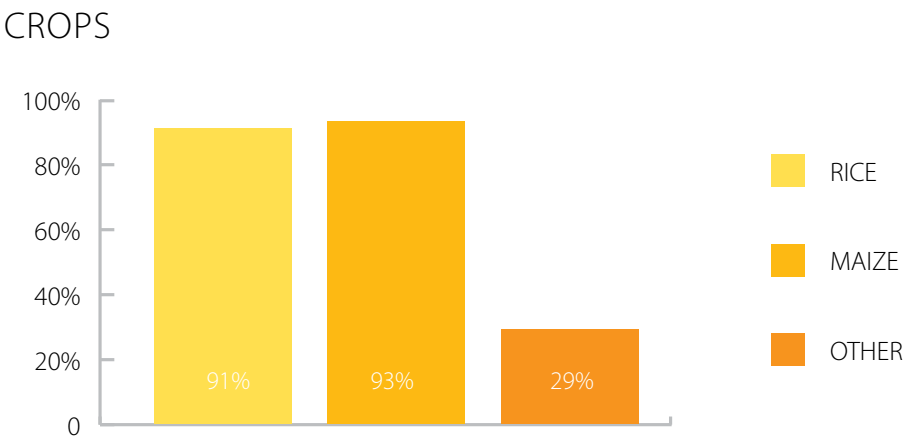
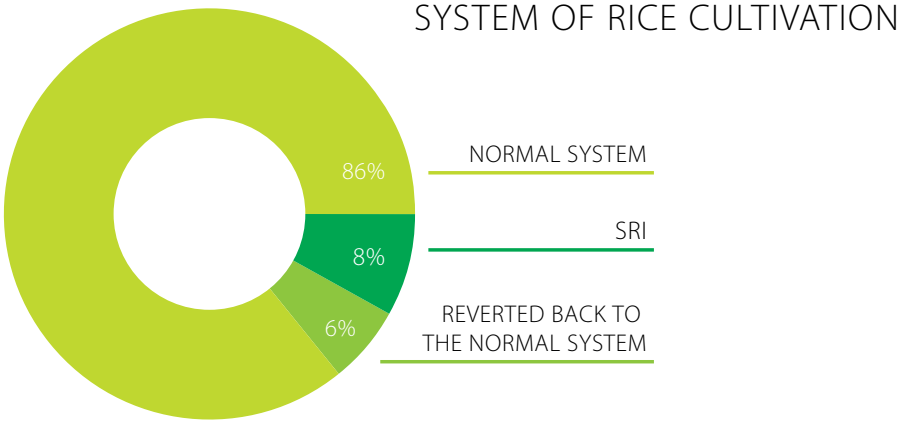


FIGURE 5:

Percentage of respondents cultivating rice, maize and other crops.

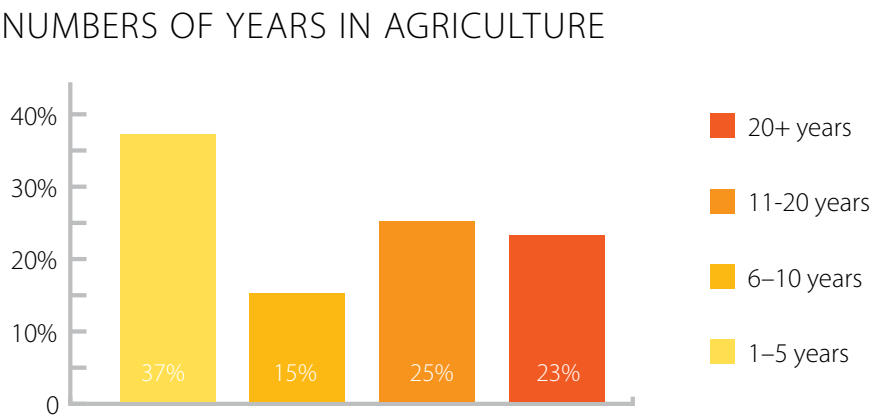
FIGURE 6:

Percentage of respondents cultivating rice in the normal system and in the System of Rice Intensification (SRI). 6 percent have reverted to the normal system.



Of those that cultivated rice, 86% had not received the SRI farmer training that KPL provides in collaboration with donor support. While the yield-enhancing program has trained an impressive 7,400 farmers, the 14% who had received training all gave comments concerning the system of intensification of their own accord. The reasons given as to why they had either stopped growing it or continued, included the following: it is less tasty than non-SRI, it has more pests, it costs more to produce as increased inputs of fertiliser and pesticides are needed, in comparison to the normal system the yields only increase if extra water is added (if irrigated and not solely rainfed). A farmer who had stopped growing it stated he didn't want to go into debt as a result of these costs and "if you have capital it's no problem, if not, it's no good". Several other farmers also noted that, after receiving training and once the first year's complimentary seeds were finished, they could not afford to purchase seeds for the following year and so switched back to the normal system. On the contrary, all SRI growers, past and present, noted that SRI provided better yields and that the growing period was one month less than the regular system, which farmers considered advantageous. According to surveys conducted by Nakano et al. (2014), rice yields were on average 5.1 tonnes per hectare for SRI plots and 2.6 tonnes per hectare on non-SRI plots in villages surrounding KPL. Lastly, all 14% stated there was a poor market for the SRI rice: buyers did not want to purchase it and it had a low sales price

Figure 7: Number of years respondents had had agriculture as main source of income by percentage.



Crop production near Mngeta River.

Photo by Catherine Wilson.

in comparison to normal rice. In speaking with KPL's representatives about such marketing concerns it is believed that the middlemen who buy from rural villages such as those in Mngeta ward, do not pay the Dar es Salaam market price and that local farmers don't know they are being exploited for a profit.*

The period of time that respondents had been cultivating crops on their current plot of land varied, the shortest period of time was just one year but the longest was approximately 60 years. Most residents who had cultivated crops for more than 20 years were born in the area and could speak of the Valley's changes over time.

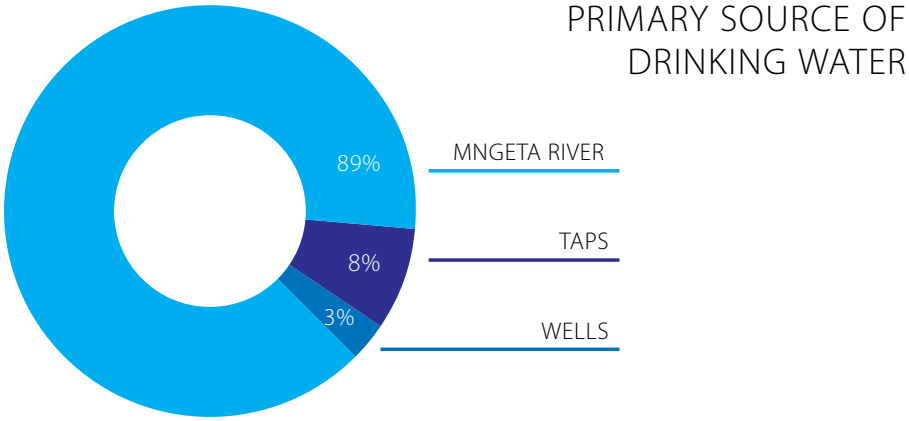
The Mngeta River Is the Primary Drinking Source

As illustrated in figure 8, households reported that their primary drinking source was the Mngeta River. Just 11% had alternative sources; however most respondents said that this source (taps or wells) was regularly unreliable in terms of its provision of water (taps frequently ran dry) or the substandard water quality (typically of the wells). The vast majority of households did not boil the river water for drinking, as they preferred its naturally cool temperature, as opposed to tap water that was described as 'hot'. Respondents who listed tap water as their water source were located outside of the three main sub-villages interviewed or on the edge of Itongoa B, next to the adjacent sub-village where tap water was available. At the start of the rainy season the river's water becomes practically undrinkable for a period of time due to its characteristically black and turbid water. This description matched that given for the period when the hydroelectric reservoir was opened. Households reported it was typical during this time to harvest water from corrugated iron roofs (for those who owned one or whose neighbours did) and use Mngeta River for the remainder of their household needs. Those who did not have the possibility of rainwater harvesting had two choices: to collect and drink either the river's water or water from shallow wells, until the river's water ran clear again. Additionally, when residents were asked if others in the sub-village had the same water source as themselves, 84% responded 'yes'; there was limited source variance due to the lack of alternatives.

** Before this report went to print, CEO Carter Coleman stated that the seed used in SRI, Saro 5, is said to have a 25% lower trading price in the market than some traditional varieties.*

Figure 8:

Respondents' reported primary source of drinking water by percentage.



Impact on Flow and Water Quality in the Mngeta River

Households and KPL representatives were asked about capacity levels in the Mngeta River and what the normal fluctuations in water levels were. Key responses were consistent with one another and included the following statements: there is a large seasonal variation in the river's volume – water levels typically are around six metres or more during the rainy season, but during the dry season (when research was conducted), approximately 0.8 metres upstream and 0.7 metres downstream of the KPL pump station abstraction point. Households dependent on the river noted that despite the dry season's significantly reduced water levels, the river's volume was more than enough for residents' purposes. When asked if KPL was abstracting 'too much water', the majority response was that the amount was currently sustainable, but that if in the future KPL or another large company were to abstract quantities of significantly greater levels than current amounts, "there would not be enough for us".

Woman washing dishes and collecting water, Mngeta River.

Photo by Catherine Wilson.

Tap used for drinking, cooking and showering, Itongoa B Village, Mngeta.

Photo by Catherine Wilson.

Residents were also asked about the quality of the water in Mngeta River and if there were changes at any period, annually or over time. There were many responses, however the central themes included the following: tap water (from Kidete and Kimbi rivers) is cleaner than Mngeta, while Mngeta's water appears clear it has a high mineral content (residents had been told by Korean researchers). Whatever the precise cause, residents who had lived in the area and drank the river's water for extended periods of time had deteriorating dental health: many people's teeth were "falling out". There was generally a low level of water-borne diseases – only a few noted typhoid or diarrhoea associated with the river's use. Various respondents noted infrequent rubbish such as common refuse and plastic bags in the water, and some reported occasional plastic pipes. The plastic pipes were claimed to be from KPL, as was the more frequently-reported comment that the company's hydropower station sporadically released oil into the water during machinery maintenance or 'glitches' (in 13% of responses, including a local government member). Oil and 'chemicals' were also noted in the river during the rainy season but this was not attributed to KPL. When asked directly if there had been any impact on the general quality of the water since KPL commenced operations in 2008, there were no negative remarks from residents, aside from experiences associated with the company's hydropower plant.

Upstream gauge station, Mngeta River.

Photo by Catherine Wilson.

KPL hydropower reservoir and weir, Mngeta River.

Photo by Catherine Wilson.

KPL inherited a small hydropower plant from the Korea Tanzania Agricultural Company (KOTACO) which owned the farm during the 1980s and 90s (prior to Agrica). The original installation was in 1990 but KPL fitted two new turbines in 2013 to replace the aging infrastructure for efficiency. The new turbines are 200 kW each (just 400 kW in total) and the company may install three more to increase its hydroelectricity generation to 1mW. Electricity generated is for residential housing ('quota houses') where employees from other parts of Tanzania live. The run-of-the-river hydroelectric plant maintains the river's flow to villages downstream, however due to silt and mud accumulation in the reservoir it requires emptying and de-silting frequently, to maintain effectiveness of turbines and prevent overflow. A large majority of households stated this occurs approximately every two to four months.

Concerning perceived impacts of KPL's hydropower activities, residents reported the following: households were notified via posters prominently displayed in villages and via megaphone announcements (an employee in a car or on foot). People were advised one to three days in advance not to use the water (for collection or bathing etc.) for a 12-hour period. All interview respondents reported that they had received this notification before the event occurred. To prepare for the disruption and continue activities as normal, households had to collect innumerable additional buckets of water. Most respondents also stated that in reality they did not use the river's water for anywhere between 24 hours and one week, depending on the period of time since the previous clean (and how dirty the water flushed out remained). There was however a small percentage of households that could not afford the numerous buckets or large 'drums' needed to contain collected water; these people resumed collecting water within just hours of the reservoir being opened (and consequently drank extremely turbid water with high suspended solid concentrations, thus increasing their risk of gastrointestinal

diseases). Just 1% of respondents stated that when they collected water one to two days after the reservoir was opened, they purchased water purification tablets to treat the water and reduce the chance of getting sick.

Plantation Employment and Other Reported Challenges

Some respondents reported that aerial pesticide applications of 2013 had affected them, through both personal discomfort and problematic crop growth or storage, however since KPL had stopped this procedure people stated they were satisfied with the company's methods of application. Overall, approximately half of residents expressed displeasure for the company in relation to what they viewed as the limited number of locals hired for operations and administrative positions. Conversely, KPL reported that only around 15% of their permanent 320 employees are from outside of the local area. Another 50 to 100 were employed on a daily basis with the number increasing to around 1000 per day in March and April for the weeding season. The company's representative also indicated that it was difficult to find locals appropriately trained for the required positions. Some respondents also reported that the company provided meagre wages for casual employees (TZS 3,850 or €1.60) and that although those were the country's legal minimum wage, remuneration for effort was hardly worth the time spent and that some preferred to tend their own land if they had the option. There were also inconsistencies over pension fund benefits received by one ex-employee (one of only four employees or ex-employees interviewed), it appears this is something that requires further clarification for farm staff. Contrastingly, positive reactions to KPL operations were received by a few of the older generation interviewed, such as the following supportive statement: *"crops grown there [KPL] are for Tanzania - maize goes to the mill and flour to the local shops – I like them because it [produce] stays in the country"*.

The most common miscellaneous comment - from 100% of responses - concerned the presence of Nile crocodiles in Mngeta River. The constant fear of attack adds difficulty to the community's already-difficult lives, whereby several individuals are attacked and injured or killed every year. The rainy season is particularly hazardous for villagers, with the water being turbid and dirty, and crocodile numbers increased due to its greater depth.

Residents also offered comments relating to the Government and its lack of political will for the area, listed in the following statements:

"They are not helping the community enough, they're not interested in development for the people".

"The government just takes tax dollars and doesn't remember the people here; they put [the money] in their pockets".

"The government only looks at the profits from them [KPL], we have no say".

"Local government leaders moved to Mkangawalo when KPL took [purchased] some of the village land; that village got electricity and water supply but not the others".

KPL pump station, water abstraction point for irrigation, Mngeta River.

Photo by Catherine Wilson.

Responses From KPL on Inputs and Government Relations

In order to reduce the company's reliance on grid electricity and reduce the expensive 1mW of diesel KPL used, an on-site gasifier was recently built to produce 500kW of methane and biogas from the rice husks (bi-product of rice cultivation). Power was noted as a particularly costly input of agriculture in rural Tanzania and a limiting factor in operations and certainly expansion. In relation to their cultivation activities, KPL utilises centre pivot irrigation for rice paddies and maize crops due to the system's 98% efficiency (as opposed to flood irrigation that gives approximately 50% efficiency). The plantation had 515 hectares of pivot irrigation, intended to be scaled up to 1470 hectares early in 2016. The plantation also has four boreholes of 80m deep that could provide additional irrigation to enable planting of the entire 3000 hectares of cropland, while still preserving 60% of the river flow. KPL also has a small water pump and three large domestic water tanks that supply the quota residences with their water requirements.

In terms of the water resource management of Mngeta River, KPL gave information indicating consistent and responsible measurement and monitoring practices. The company installed a downstream gauge station in 2014 to replace an old, unworkable government one and intends to install an automatic flow reader (taking daily measurements) to match the upstream unit installed in 2008 when the company began measurements. Every month a hydrogeologist from the Rufiji Basin Water Office (RBWO - the institution that issues KPL's water permits) comes to take the flow readings and confirm KPL's measurements. All procedures are done at the company's expense so that data recorded is reliable and verified. Lastly, KPL candidly commented that their main challenge at the time of research was the changing nature of government charges, with local government constantly altering car tariffs on rice bags and national government significantly increasing VAT taxes, driving up import costs on pre-ordered goods and future purchases.

VII

DISCUSSION: IMPACTS ON LOCAL RESIDENTS AND PROSPECTS FOR GROWTH

This section of the report is divided into topics to critically examine the research findings and better understand their social, environmental and economic implications. Challenges affecting household respondents are listed by theme: Water supply (quantity and quality – uncovering hazards and vulnerabilities), rice and market sensitivities, economic activities and prospects, and government inadequacies. Representatives from KPL listed themes including energy, water management and government inadequacies. These thematic results have been further grouped into three areas for discussion: vulnerable communities, integrated water management, and the silver bullet versus infrastructure, institutions and policies.

KPL's Impact on Vulnerable Communities

The vast majority of residents in Isago, Itongoa A and Chogowali sub-villages relied heavily on Mngeta River for their water resources, with a small number of others using shallow wells of low water quality or taps that frequently ran dry. As discussed above, the river water was routinely contaminated with excessive suspended solids during the rainy season and during KPL's de-siltation process. People's vulnerability to this hazard varied depending on their level of exposure to the river during these two periods. Vulnerability "involves a combination of factors that determine the degree to which someone's life, livelihood, property and other assets are put at risk by a discrete and identifiable event (or series or 'cascade' of such events) in nature and in society" (Wisner et al. 2004: 11). People's exposure to risk differs, for example: women and children are more at risk of crocodile attack due to their increased involvement collecting river water; and people living in the three sub-villages are more at risk of drinking black, turbid water due to their distance from safer tap sources.

Despite the hazard-exacerbation associated with de-silting, KPL can only be considered partially responsible for these groups' vulnerability and increased risk. A household's vulnerability is determined by both natural and social systems

Local fisher preparing to cast his net into Mngeta River

Photo by Catherine Wilson.

(Wisner et al 2004); in this case, the natural biophysical properties of the water and the social/power structures of the government's water policies. When asked if the government knew that residents didn't have a water source in these areas, a household respondent stated, "they say that we do have a water source. In their eyes Mngeta River is our source and why should they provide water facilities such as taps to our villages that already have water in the river". The government must address its barely-existent water supply to rural villages as a matter of priority. Tax revenues from large businesses such as KPL should be used to fund these crucial infrastructure improvements.

Further to this are two examples of the social-ecological system's vulnerability. The selection of a rice system (and seed) that produces double the yield but 25% lower sale price at the market, less desirable characteristics for producers and consumers, in addition to costly inputs such as equipment, fertiliser and pesticides, appears as smallholder farmers indicated: an unviable alternative. Social vulnerability is evident, as is the possibility of increased ecological vulnerability by the depletion of soil quality through agrochemical use. On from this, the case of agrochemicals used in KPL crop production can also affect the system's vulnerability. Scrupulous management must continue to ensure that Mngeta River is not contaminated, as this could prove devastating. Of the agrochemicals used at KPL, 9 out of 16 are 'toxic' or 'very toxic' to fish, aquatic organisms, bees, wildlife or mammals; 3 are 'moderately toxic' or 'harmful' and just 4 are 'practically non-toxic' or 'not toxic' to all species listed. Three of these (Fluazifop-p-butyl, Lambda Cyhalothrin 5% and Chlorpyrifos 500EC) are also on the UTZ Certified 'Watchlist' of pesticides known to have a "severe and/or cumulative risk on human health and/or the environment" as recommended by the UN and FAO, and Fluazifop-p-butyl has been banned in Norway since 1999 due to human health effects on reproduction and birth defects (Health Canada 2015). Dry season contamination risk is low, however rainy season run-off could provide passage for agrochemicals to the river. Ecological and social consequences of this would be disastrous, as the communities surrounding Mngeta River are vulnerable to aquatic changes such as reductions in fish stocks: a valuable source of dietary protein.

Government Regulations and Water Managment

In December 2015 KPL utilised irrigation for 515 hectares of croplands, requiring a relatively low water abstraction: 0.47m3/second if all pivots were operated simultaneously. In reality, to reduce power demand not all pivots were operated at the same time (80% efficiency). Therefore approximately 0.37m3/second, or 5.8% (calculated from 2011/ 2013 mean November river flows - 2014 Irrigation Environmental Social Impact Assessment) was abstracted from Mngeta River for crop irrigation. This percentage supports households' responses that the company was not taking 'too much' water.

KPL explained that future expansion to 3000 hectares would be less likely if Government levies and taxes were increased or the domestic rice market was again flooded with foreign imports, as in the last two years. Conversely, an improvement in the economic climate or political change could provide favourable conditions for an expansion of crop production and irrigation. Irrigation of 3000 hectares of rice or maize is estimated to require abstraction of a maximum of 2.11m3/second or 27% of dry season river flows (based on November 2010-2014 readings, KPL Environmental Flow Assessment 2015). This number has been decreased from an original estimate of 3.01m3/second or 51.2% during the driest time of the year (KPL Environmental Social Impact Assessment 2014).

KPL's water abstraction approach to date appears responsible, as demonstrated through detailed investigative documents it has commissioned (such as their 2015 Environmental Flow Assessment, or their 2014 Environmental Social Impact Assessment) which aided the company in making appropriate abstraction decisions. The influence of Norfund as an equity holder may well contribute to the thoroughness of KPL's assessment. Norfund is promoting the use of the *IFC Performance Standards*[1].

The IFC Performance Standards numbers 1 and 6 state that firms must 'assess and manage environmental and social risks and impacts' and 'conserve biodiversity and sustainably manage living natural resources', play an influential role in a KPL's actions and practices.

By contrast, striking disparities are evident in Government certifications detailing KPL abstraction limits. The irrigation permit from Rufiji Basin Water Office states KPL must ensure a minimum of just 1m3/second of water remains in the river for downstream users, while the National Environment Management Council's EIA certificate stipulates 60% of dry season minimum flows must remain in the river (a minimum of 3.4m3/second of water). This inconsistency indicates a serious lack of coordination between institutions with paramount water resource management responsibilities. It is concerning given the social and ecological implications of the significant water quantities being abstracted from a river that supplies residents and recharges Kibasira Wetland, a *Ramsar*[2] site.

[1] *For equity investments, Norfund stipulates that companies follow the **International Finance Corporations (IFC) Performance Standards on Environment and Social Sustainability**. These state that firms must meet 8 performance standards on the following themes: 1. Assessment and Management of Environmental and Social Risks and Impacts, 2. Labor and Working Conditions, 3. Resource Efficiency and Pollution Prevention, 4. Community Health, Safety, and Security, 5. Land Acquisition and Involuntary Resettlement, 6. Biodiversity Conservation and Sustainable Management of Living Natural Resources, 7. Indigenous Peoples and 8. Cultural Heritage.*

[2] *The **Ramsar Convention** is the international treaty that provides the framework for the conservation and wise use of wetlands. Kilombero Valley Floodplain (Kibasira Wetland) is a wetland of international importance, termed 'Ramsar site', that covers approximately 7000km2, the largest seasonally freshwater lowland floodplain in East Africa and a biodiversity hotspot. The site also provides innumerous ecosystem services, supplies 2/3 of the water to Tanzania's largest river, the Rufiji, and transports nutrient-rich sediments to the Mafia-Rufiji mangrove, sea grass and coral reef complex (Ramsar 2002).*

Water supply and demand for Mngeta River should be managed according to integrated principles set out in Government legislation, that is, management through stakeholder participation. Greater consideration is needed of the potential effects of such high water abstraction levels (as RBWO's permit allows). It is imperative that Government institutions take into account not only ecological impacts, but also the social consequences of abstraction rates on water-dependent residents. Future water conflicts could result if the government continues to undermine citizens' water rights. This case highlights two important points: the Government of Tanzania does not effectively manage water resource assessment, nor does it ensure cross-institutional collaboration on important issues such as river water abstraction. Limited Government funding allocation means that minimal water recording occurs and this lack of data results in decisions that frequently fail to take into consideration all necessary information for sound evaluation.

Industrial Agriculture vs Integrated Approach

The Alliance for a Green Revolution in Africa said "Africa's smallholder farmers have been unable to realise profitable returns on their investments due to high post harvest losses, high transport costs, limited access to finance and market information, and inappropriate policies" (2015). It would appear that smallholder farmers are not the only ones who struggle with such constraints. The findings of this case study underscore two main requirements needed for the silver bullet – large-scale agriculture – in Tanzania.

Firstly, infrastructure in rural areas is lacking. In the case of Mngeta village area, roads are in poor condition: the drive from Dar es Salaam to Mngeta takes approximately 9 hours (450km) with 150km of these on unsurfaced roads; transportation is limited – few local buses operate in the area; power is unreliable – this limits agricultural activities unless diesel is utilised; water supply is barely existent – there are very few wells, pumps or underground pipes in the area; skilled workers are scarce – social capital is limited.

As one of the first large agribusinesses in Kilombero district, KPL has faced many of these infrastructural problems. Big business is fairly new in this part of the country; workers with experience in machinery, operating systems and administration are in short supply. KPL spoke of the difficulties in finding experienced or formally trained local workers for necessary positions within their company – reflecting the limited number of educated professionals in rural areas – and explained that they already hired those qualified locally. The skills shortage is a very real phenomenon experienced by companies: large industries in Dar es Salaam had similarly spoken of the shortage across the country more generally, and the seriousness of job prospects for young people if national education was not prioritised into the future (Wilson 2015). Adding to this, rumours circulated in the villages where interview respondents commonly stated, "only people from Tanga are hired by KPL". Evidently there was a communication/ public relations issue for the company, whereby some communities that were experiencing limited employment benefits from the plantation, saw non-village employees in prominent company positions,

and made the assumption of discrimination in the hiring process. This was frustrating for both KPL and the community. Another aspect of this is the meagre wages and casual contracts that villagers get are hardly an income for subsistence, let alone one that could enable future poverty reductions locally.

With recent agricultural initiatives such as *Kilimo Kwanza*, metaphorically, the country wants to run before it can walk. The majority of smallholders still use the hand hoe for farming activities, yet the Government wants investment in large-agribusinesses utilising high-tech machinery. There has not yet been a period of transition for the country; the locations that have appropriately skilled professionals are only in areas where big businesses are already operating. If the state hopes to uplift the rural sector and its people with agricultural investments, there must be investment in the people, promotion of SME-driven development and improved infrastructure, to increase Tanzania's economic capacity before large-scale agribusiness is possible. If this does not occur, large agribusiness skilled workers will comprise people external to the area or foreign workers and not the rural poor, which is counter-intuitive to pro-active economic development, focused on poverty reduction.

The second main requirement for large-scale agriculture is Tanzania's lack of strong institutions. This has several impacts. Firstly, the private sector ends up functioning as Government, taking on the role of several public bodies. Depending on the industry, private companies typically collect data on water flows in rivers, meteorological data, survey data on local populations, and there is even pressure to provide basic infrastructure such as school supplies, health care facilities and water resources for communities. There is a philanthropic side to KPL, but a business making a loss must eventually focus on its main business – to record a profit. This notion that private companies are expected to function as government is reflected in the following quote from KPL's 2014 ESIA: "stakeholders appreciated KPL support in the past 5 water schemes and support to 8 schools and requested the developer to consider providing smaller, alternative water sources for some of the village (Mngeta) so that this will reduce their dependence on Mngeta River as the only source of domestic water in their villages". For the Government, encouraging businesses to take on these additional roles is a good option that minimises state expenses while data collection and infrastructure are still provided. At the same time, it is unrealistic to rely on private companies to provide financial solutions to problems that the Government of Tanzania should be tackling. Not only this but 'outsourcing' public roles to the private sector poses a conflict-of-interest situation that the Government overlooks; experience shows that companies do not always 'play by the rules'.

Secondly, weak institutions limit the remedial mechanisms available for when the Government doesn't 'play by the rules'. When the Government flooded the rice market in 2013 with 120,000 tonnes of cheap Asian imports (through Common External Tariffs - CET exemption), KPL had no prior knowledge of this market interruption (Agrica Ltd 2015b; IPP Media 2015; Oakland Institute 2015). A KPL representative stated, "a rice association in Tanzania does not even exist yet

so that lobbying and discussions are just not possible"*. The company reported it was difficult to be heard at the country level and that negotiations with Government were almost non-existent. Large businesses rely on economies of scale for successful operation, however market and price instability can jeopardise prospects for industry development. Farmers interviewed also reported difficulties associated with agricultural markets, such as the low sale price of SRI rice. KPL should lead investigations into these price heists as more than 7,400 farmers in the area have been trained in this unconventional system. It would be irresponsible and something of an anticlimax to let expensive training and farmers' time and hard work go to waste: Smallholders need this representation.

Weak policies are the product of weak institutions. In an attempt to make temporary gains, the Government appears to have adopted shortsighted policies such as increasing levies or CET exemptions that reduce already-low profits for farmers. Neither of these policies have the interests of poor farmers or large agribusinesses in mind. In the process, the Government has created an environment where agriculture becomes even more unpredictable and risky, undermining their own focus on agricultural development driven by foreign investment.

This case study has demonstrated what development policy in Norway fails to take into consideration – Tanzania (like most developing countries) lacks the fundamentals for private sector development: a lack of infrastructure, weak institutions and policies. The communities of Mngeta and KPL have shown that a development model with such a heavy focus on the private sector alone, does not deliver. Norfund's claimed benefits of poverty reduction for smallholders through SRI rice yields and income increases (Norfund 2015; Norfund n.d.C) are just that, a claim. Private large-scale agribusinesses cannot single-handedly reduce poverty for the country; there must be governmental improvements simultaneously. There must be a "good understanding of the realities and dynamics of both the agricultural sector and rural livelihoods" (OECD 2006: 17) in combination with relevant policies, institutions and infrastructure, so that pro-poor agriculture can be the main driver of development.

** Before this report went to print, CEO Carter Coleman made the author aware that KPL contributed to forming the Rice Council of Tanzania in April 2014.*

Challenges for the Future

There are six main challenges for the future in relation to Mngeta communities and KPL:

1. Water supply for villagers must be secured. The Government is aware of the river's usage and must act to adequately supply villages. Villagers also need to pressure local government representatives who can lobby for improved water supplies at higher levels. Many people at the sub-village level were unaware that their local representatives should represent them at the district and regional level to push for access to safe water supplies.

2. River water quality data is needed so the residents' water supply can be improved by the Government generally, and KPL in relation to periods of de-silting. Measurements should be carried out by an independent third party, and reported directly back to communities and the Government. If people have information about their water source they can make better choices about how and when they use it.

3. River management must be improved to include community participation and cross-institutional discussions, before water abstraction permits are issued – IWRM must be adhered to properly.

4. Targeted investments, supported by public policies, are needed from the Government and the private sector. Shortsighted policies will increase investment risks. Examples could include investment in people, SMEs and both physical and institutional infrastructure.

5. Institutional strengthening is paramount so organisations can function as intended and not 'outsource' roles to the private sector through their shortcomings. Integration between institutions will also reduce inconsistencies.

6. KPL needs to improve on the following: information distribution in local communities – information about the hydropower plant, pension fund procedures, and the number of jobs held by local residents; minimising use of harmful agrochemicals; securing a water supply for residents who use the river during reservoir de-silting; lobbying the Government for community water supply and SRI rice prices – if pressure comes from both residents and the company there is a greater chance of improvement; generally increase role as a socially responsible company, not necessarily monetary investments but to take on advocate role for local communities' passive voices.

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Kampala
White Nile
Kisumu
Lake Victoria
Bukoba
Musoma
Mwanza
Shinyanga
Nzega
Tabora
Singida
Kondoa
Dodoma
Ugalla
Shama
Lake Rukwa
Iringa
Ruaha
Mbeya
Mtorwi 2 961 m
Lake Malawi
Songea
Mzuzu
Mpika
MALAWI
MOZAMBIQUE
UNITED REPUBLIC OF TANZANIA
Lake Sulunga
Lake Mtera
Rufiji
Ruvuma
Masasi
Mtwara
Lindi
Kilwa
Morogoro
Dar es Salaam
Zanzibar
Unguja Island
Mafia Island
Pemba Island
Wete
Tanga
Mombasa
Moshi
Arusha
Lake Natron
Ol Doinyo Lengai 2 960 m
Meru 4 565 m
Kilimanjaro 5 892 m
Lake Eyasi
Lake Manyara
Mount Satima 4 001 m
Nyeri
Mount Kenya 5 199 m
Tana
Garissa
Nairobi
KENYA
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