REPOA
P.O. Box 33223, Dar es Salaam, Tanzania
157 Mgombani Street, Regent Estate
Tel: +255 (0) 22 2700083 / 2772556
Fax: +255 (0) 22 2775738
Email: repoa@repoa.or.tz

Website: www.repoa.or.tz

ISBN: 978-9987-483-30-3

The Tanzanian health sector as buyer and user of medicines and other essential supplies

Paula Tibandebage, Maureen Mackintosh, Caroline Israel, Edwin P. Mhede, Phares GM Mujinja

REPOA, is an independent, non-profit organization concerned with poverty and related policy issues in Tanzania. REPOA undertakes and facilitates research, enables monitoring, and promotes capacity building, dialogue and knowledge sharing.

REPOA research agenda is concern with poverty reduction with the focus in Socioeconomic Transformation for inclusive growth and development that reduce poverty substantially. Our objectives are to:

- **develop the research capacity in Tanzania;**
- **enhance stakeholders' knowledge of poverty issues and empower them to act;**
- **contribute to policy dialogue;**
- **support the monitoring of the implementation of poverty related policy;**
- **strengthen national and international poverty research networks, and forg linkages between research(ers) and users**

It is our conviction that research provides the means for the acquisition of knowledge necessary for improving the quality of welfare in Tanzanian society.

REPOA's Research Reports contain the result of research financed by REPOA. Our Special Papers contain the findings of commissioned studies conducted under our programmes of research, training and capacity building. The authors of these research reports and special papers are entitled to use their material in other publications; with acknowledgement to REPOA.

REPOA has published the results from this research as part of our mandate to disseminate information. Any views expressed are those of the author alone and should not be attributed to REPOA.

Working Paper
14/5

The Tanzanian health sector as buyer and user of medicines and other essential supplies

Working Paper 1 from the Industrial Productivity, Health Sector Performance and Policy Synergies for Inclusive Growth (IPHSP) research project

By Paula Tibandebage*, Maureen Mackintosh**, Caroline Israel*, Edwin P. Mhede***, Phares GM Mujinja***

* REPOA
**Open University, UK
***Ministry of Industry and Trade
****Muhimbili University of Health and Allied Sciences

Working Paper 14/5

Published for: REPOA
P.O. Box 33223, Dar es Salaam, Tanzania
157 Mgombani Street, Regent Estate
Tel: +255 (0) 22 2700083 / 2772556
Fax: +255 (0) 22 2775738
Email: repoa@repoa.or.tz
Website: www.repoa.or.tz

Design: FGD Tanzania Ltd

Suggested Citation:
Caroline Israel, Maureen Mackintosh, Paula Tibandebage, Edwin Mhede, Phares G. M. Mujinja '*Improving the Supply Chain for the Health Sector: What Role for Local Manufacturing?'*

Working Paper 14/5, Dar es Salaam, REPOA

Suggested Keywords:
Health sector performance, Supply chain for health sector, Industrial productivity, health sector and inclusive growth

ISBN: 978-9987-483-30-3

Table of Contents

List of Tables

List of Figures

Acknowledgements

We are grateful to Caritas Pesha, Sweetbert Ijumba, and Jacob Kateri who worked with members of the research team to conduct interviews and translation. We thank Mariam Mwandoro and Doreen Kachenje for data entry. We also thank Samwel Ebenezeri who managed the fieldwork and assisted in supervising the data entry and cleaning. We are likewise very grateful to staff in the health facilities we visited and the key stakeholders in both the industry and health sectors for the time they put into the interviews and discussions.

We thank participants at the Policy Dialogue workshop entitled 'Improving the Supply Chain for the Health Sector: What Role for Local Manufacturing?' held at REPOA 27 June 2013 for their comments on presentations based on this material. The research was supported by the ESRC-DFID Growth Programme [ESRC grant number ES/J008737/1]. The content of this working paper is the sole responsibility of the authors.

Abstract

The research findings presented in this working paper are drawn from an independent research project funded by the UK Economic and Social Research Council with financial support from UK DFID. The project is a collaboration between Tanzanian, Kenyan, and UK researchers. It aims to investigate the hypothesis that improved local industrial production – through higher productivity, more appropriate and cheaper products, and innovative production methods – could improve health service performance in each country, while raising economic output, and hence contribute to inclusive growth. If this hypothesis is correct, then better integration between industrial and health policies in each country could contribute to higher employment, industrial upgrading, and improved health system performance and accessibility.

This working paper provides early access to new evidence, from four districts of Tanzania, on several aspects of health sector performance as concerns essential medicines and medical supplies: availability, price, and supply chain effectiveness by sector. The paper confirms that availability of essential medicines, equipment, and medical supplies remains unsatisfactory, especially in rural areas and in lower level public sector facilities, with damaging effects for patients and staff. It shows that supply chains for medicines and other essential supplies are sharply segmented, the public sector facilities rely on one large public wholesaler, while the faith-based and private sector facilities and shops source items mainly from competing private wholesalers. The public sector's supply chain strengths lie in low prices and quality assurance of medicines, while the key problems are supply gaps and delays. The private sector's strengths include higher availability; however, private facilities and retailers face quality uncertainty, fluctuating prices, and need for credit, and try to overcome these by building working relationships with particular wholesalers.

A second working paper (Israel et al. 2014) documents to what extent health sector interviewees thought that public and private supply chains might be strengthened by more local production and procurement of essential supplies.

Acronyms and Technical Terms

ADDOs	Accredited Drug Dispensing Outlets
AIDS	Acquired Immuno Deficiency Syndrome
ALu	First-Line combination therapy for malaria
ARV	Anti-Retroviral Medicine
DMO	District Medical Officer
FBO	Faith-Based Organisation
HIV	Human Immunodeficiency Virus
Tracers	A sample of essential medicines and supplies
Tshs	Tanzanian Shilling
WHO	World Health Organisation

1 Introduction

This working paper presents interim findings from an independent research project funded by the UK Economic and Social Research Council with financial support from UK DFID. The project is a collaboration between Tanzanian, Kenyan, and UK researchers. It aims to investigate the hypothesis that improved local industrial production – through higher productivity, more appropriate and cheaper products, and innovative production methods – could improve health service performance in each country, while raising economic output, and hence contribute to inclusive growth. If this hypothesis is correct, then better integration between industrial and health policies in each country could contribute to higher employment, industrial upgrading, and improved health system performance and accessibility.

To investigate this hypothesis, this on-going research project has proceeded in three stages. In the first stage, in August and September 2012, key stakeholders in each country were consulted, and a local advisory board recruited in each country from both health and industrial sectors. In Stage 2 thereafter, the supply chains of essential medicines and medical equipment and supplies from local industries and from imports into the health systems in Tanzania and Kenya were investigated, using in-depth case studies in four districts in each country. Shortages and unaffordability of these commodities are persistent causes of exclusionary and poor quality health care in low-income Africa (WHO 2011).

This working paper first summarises interim project findings from Stage 2 on the availability of selected essential medicines, medical supplies, medical equipment, and other basic supplies in the sample facilities and shops in Tanzania (Section 3.1). The paper then traces and contrasts the strengths and weaknesses of the public and private supply chains into the health sector, as explored in the interviews with facility and shop staff, and summarises the supply chain successes and challenges encountered (Sections 3.2–3.4). Finally it identifies implications for patients and staff. Working Paper 2 (Israel et al. 2014) examines the pattern of locally made vs. imported supplies in the different supply chains, and the views of health sector respondents on the scope and potential implications of increasing local supplies.

The third stage of the research, currently on-going in 2014, draws on the findings to date and investigates the scope for improved industrial supplies from local manufacturers into the local and regional health systems.

Initial findings from Stages 1 and 2 of the project were presented at a policy dialogue workshop in Dar es Salaam, Tanzania, in June 2013. The workshop brought together policy makers and senior managers and stakeholders in the health and industrial sectors to discuss the findings, and consulted the participants concerning Stage 3 research. The presentations at that workshop are available on the Kenyan project research partner's website at http://www.acts-net.org/programmes-projects/acts-projects?id=24. Findings from Stage 3, and the project as a whole, will be presented in a policy dialogue workshop in Nairobi, Kenya, and in a policy workshop in Tanzania, in 2014.

2 Concepts and Methods

Supply chains and access to essential commodities

Health systems are large economic and social sectors, providing essential services to the population and employing large numbers of staff. The performance of health systems in low-income Africa is, however, known to be undermined by shortages of essential commodities and unaffordable prices, including supplies for gender-specific needs such as obstetric care (Cameron et al. 2008; Leach et al. 2005; Mackintosh and Mujinja 2010; Nyamtema et al. 2008; Tibandebage and Mackintosh 2005; WHO 2011). Key determinants of the extent to which the health system provides for the population in need are therefore the supply chains that deliver essential commodities into the system, and the markets that determine prices, quality, and availability of the commodities.

'Supply chains' trace the linkages and incentives by which a product is produced and delivered (Yadav 2007, 2006). Stage 3 of this project will complete the study of supply chains into Tanzanian health care from local manufacturers and importers; here we present views of supply chains as seen from the health sector. Markets are a key element of supply chain organisation and strongly affect performance.

This working paper explores new evidence on several aspects of health sector performance in the area of supplies. Using a set of tracer essential medicines and other supplies, alongside in-depth interviews, this paper presents evidence on the availability of different types of supplies on the day of the visit to a facility or shop. It then links this evidence of availability with qualitative evidence on sources of supply and on procurement methods and experiences. The findings are used to compare and contrast the performance of the two sharply distinct supply chains into the health sector – from public procurement and from private wholesalers – and to assess aspects of each supply chain's organisation and performance as perceived from the front-line health facilities, pharmacies, and drug shops.

The sample

Tanzanian health services are provided through three levels of facilities: dispensaries (87% of the total); health centres (9%); and hospitals (4%). There are around 6,000 registered facilities, two thirds owned by the public sector (MoHSW 2009). Medicines and medical supplies are retailed through pharmacies, Accredited Drug Dispensing Outlets (ADDOs), and licensed drug shops. The Stage 2 research was undertaken in four districts in three regions of Tanzania in January–February 2013. The districts included one in Dar es Salaam (District 1), one in Pwani region (2), and two in Arusha region (3 and 4). These districts were purposively sampled to capture both urban and rural characteristics in terms of infrastructure and distance to sources of supplies. Arusha region was chosen because it has districts that border Kenya, and we expected supply chains in the two countries to be more integrated along the border area than elsewhere in Tanzania (comparable sampling for the Kenya study included a district bordering Tanzania).

Within each district three wards were purposively sampled. In Dar es Salaam, one ward was selected in the commercial part of the municipality, one located far from the city centre, and one in between. The other three districts have a largely rural setting and in each we selected one ward that was the commercial centre and administrative headquarters of the district, one ward that was located furthest from the administrative headquarters, and one that was about midway. We then

purposively selected health facilities by sector and level of facility, pharmacies and drug shops from within the three wards.

In total, interviews and data collection were conducted in 42 health facilities, pharmacies, and drug shops across the four districts. Table 1 shows the distribution of health facilities and shops by rural and urban location across the four districts.

Table 1: Level of facility and type of shop, by rural/urban location

Level of facility/shop	Rural	Semi-rural	Urban	Total
Hospital	2	2	3	7
Health centre	3	4	1	8
Dispensary	9	4	4	17
Pharmacy	1	0	2	3
Drug shop	2	1	0	3
ADDO	2	1	1	4
Total	19	12	11	42

The majority of the facilities interviewed in the rural areas were in the public sector (see Table 2), reflecting the predominance of public health care in the rural areas, as compared to the greater relative prevalence of non-government facilities in urban Tanzania (MoHSW 2009).

Table 2: Sector of health facility, by rural/urban location

Sector of facility	Rural	Semi-rural	Urban	Total
Public	11	4	3	18
Faith-based	2	3	2	7
Private	1	3	3	7
Total	14	10	8	32

Data collection methods and data analysis

The methodological approach of this part of the study was mainly qualitative, aiming to achieve an in-depth understanding of supply chain behaviour and challenges. Two types of data collection instruments were used. First, a mainly open-ended questionnaire, listing topics with prompts and follow-up questions, was used to collect data on availability of pharmaceuticals and other medical supplies and equipment, the sources of supply (wholesaler and manufacturer), supply gaps, and supply chain constraints.

Second, lists of tracer pharmaceuticals and other supplies (see Appendix Tables A1 and A2) were used to obtain information regarding selected tracer pharmaceuticals and other supplies that were in stock on the day of our visit, or if not when last stocked and ordered, plus details of manufacturer,

country where manufactured, purchase price per pack, and sale price per pack. By 'tracer' commodities we mean a sample of essential medicines, and medical supplies and equipment and other basic supplies, used in the study to provide quantitative evidence of availability and source, and to provide examples for qualitative discussion.

Qualitative data were analysed using NVivo software. We coded and sorted data into different themes and undertook a systematic analysis of the information in the different themes. Quantitative data were analysed through use of Stata software to generate cross tabulations and other exploration of variables.

3 Findings

3.1 Availability of supplies by sector and level of the health system

The tracer commodities data provide us with an indication, for the day of the visit to each facility and shop, of the 'on the shelves' or in-the-ward availability of a range of basic and essential medicines and supplies. While there are other published data, to which we compare our findings below, on medicines availability in Tanzania, there is very little other published evidence on availability of other essential health care supplies. We present in this section our summary data on availability of the tracer items across the study districts by sector (public, faith-based, and private) and by level.

Hospitals

The tracer list of essential medicines contains 24 medicines, all of which we expected to be available in hospitals in Tanzania. Our case study hospitals included four public hospitals, one in each district, two faith-based hospitals, and one private hospital.

In the public and faith-based hospitals, the tracer medicines availability on the day of the visit was quite high. On average there was 86% availability in the public and 85% in the faith-based hospitals. Availability in the private hospital was lower (see Table 3).

Table 3: Availability of tracer medicines in hospitals, by sector (% of all tracers)

Facility sector	Availability			Total
	Available	On order	Never ordered	
Public	86	7	7	100
Faith-based	85	2	13	100
Private	67	8	25	100
Total	**83**	**6**	**11**	**100**

n=168

In the public hospitals, most of the missing items were on order, including essentials such as a basic antibiotic for adults and children and intravenous (IV) fluid. Very few of the tracer items were never ordered: mainly the second-line antiretroviral (ARV) for treating HIV/AIDS on the list (tenovifir/entricidabine/lpv/r 200mg+200mg+200/50mg), which three public hospitals did not use; one public hospital did not order the main anti-malarial used in pregnancy (sulphadoxine-pyramethamine, SP), and one did not keep a listed diabetic drug (metformin). In the two faith-based hospitals, one was waiting for a delivery of one of the ARVs (zidovidine/lamivudine/niverapine (AZT+3TC+NVP)), while the other did not keep ARVs.

In the private hospital, a larger number of items were never ordered: the basic antibiotic on the list (amoxicillin tablets and syrup), another antibiotic, an anti-malarial, and one of the hypertension medicines. Private hospitals may sometimes use other and more expensive drugs.

The other tracer commodities – supplies and equipment – are also essential items which are expected to be found in hospitals. Most were available, 90% on average (see Table 4), though we were not able to verify the working state of equipment. In the non-government sectors, a few items

were never ordered, including CD4 machines and test kits for HIV, rapid test kits for malaria, some tracer laboratory supplies, and (surprisingly) sharps boxes.

Table 4 Availability of other tracer commodities in hospitals, by sector (% of all tracers)

Facility/shop sector	Availability				Total
	Available	On order	Never ordered	Not functioning	
Public	92	4	3	1	100
Faith-based	88	2	10	0	100
Private	87	3	10	0	100
Total	**90**	**3**	**6**	**0**	**100**

n=210

Lower level facilities

The availability of supplies was much lower in the health centres and dispensaries visited.

Among the tracer medicines, only paracetamol was available in *all* lower level health facilities. Availability of the tracer medicines was 62% on average (see Table 5), lower in the public sector facilities and higher in the faith-based facilities.

Table 5: Availability of tracer medicines in lower level facilities, by sector (% of all tracers)

Facility/shop sector	Availability			Total
	Available	On order	Never ordered	
Public	58	9	32	100
Faith-based	72	7	22	100
Private	63	6	31	100
Total	**62**	**8**	**26**	**100**

n=624

The public dispensaries in particular either did not order or were waiting for a number of highly essential items. The items 'never ordered' by more than 50% of lower level public sector facilities included most of the medicines used to treat chronic conditions and mental illness medicines: atenolol (hypertension), omeprazole (ulcers), amitriptyline (depression), metformin (diabetes), glibenclamide (diabetes). Furthermore, one of our tracer medicines was oxytocin injectable, used for treating post-partum bleeding: 38% of lower level facilities were either waiting for supplies or did not stock it (spread across all sectors). The ARVs were also not stocked by a majority of lower level facilities.

Medical supplies, equipment, and other basic supplies also displayed relatively low availability in both public and private dispensaries and health centres (see Table 6), despite the essential nature of these items. At the health centre level availability was better in the faith-based facilities: 84% as against 68% in the public sector. Most of the items unavailable were classified as 'never ordered'. However, the supplies and equipment 'never ordered' did not appear to be unnecessary. Nearly half of public health centres had no glucometer to test blood sugar for diabetes, and a majority had never had glucometer strips to use with it; one had never had microscope slides required for e.g. malaria tests; nearly half had no sharps box; a quarter had never had bed nets (though all health centres have beds); a majority had never ordered hydrogen peroxide for wound cleaning; one had never had a weighing scale for paediatrics.

Among the dispensaries, availability was again higher in the FBO than the other sectors. A majority of public dispensaries lacked a microscope – and even more the slides for it; however, all the public facilities had surgical gloves when visited while we know from other evidence (Tibandebage et al. 2013) as well as interviews for this project that protective gloves are periodically out of stock.

Table 6: Availability of other tracer commodities in lower level facilities, by sector (% of all tracers)

Facility/shop sector	Availability				Total
	Available	On order	Never ordered	Not functioning	
Public	62	5	32	1	100
Faith-based	79	3	17	1	100
Private	64	3	33	0	100
Total	**66**	**4**	**29**	**1**	**100**

n=781

Pharmacies and shops

We expected availability of the tracer medicines to be higher in pharmacies (licensed to sell a wider range of medicines) than in other shops, and this was so (see Table 7). All shops are in the private sector; the ADDOs (Accredited Drug Dispensing Outlets) are the regulated drug shops permitted to sell a wider range of medicines than the other drug shops, and, again as expected, these registered higher availability (though the drug shops may not have admitted to stocking items they are not permitted to sell – see also below). The pharmacies stocked all the tracer medicines except the ARVs and a drug for depression (amitriptyline); one did not stock an anti-diarrhoeal (loperamide hydrochloride) nor the anti-haemorrhage drug oxytocin injectable. The shops all stocked the recommended first-line anti-malarial (arthemeter and lumefantrine -ALu) or had it on order (29%); all stocked painkillers, SP, mebendazole, omeprazole, and clotrimazole cream. The ADDOs held the basic antibiotic amoxicillin or had it on order. None held ARVs.

Table 7: Availability of tracer medicines in shops, by type of shop (% of all tracers)

Shop type	Availability			Total
	Available	On order	Never ordered	
Pharmacy	79	0	21	100
Drug shop	32	3	65	100
ADDO	46	6	47	100
Total	**49**	**4**	**47**	**100**

n=216

Looking across the private sector as a whole, the facilities and shops stocked high levels of basic medicines such as anti-malarials, antibiotics, anti-fungal, anti-pain, deworming, anti-ulcers, skin creams, and intravenous solution. However, neither the FBO nor the private sector did so well on the chronic illness medications in the tracer lists, which were much less available (see Table 8).

Table 8: Percentages of FBO and private facilities and shops stocking each item

Use of medicine	Private/FBO facilities	Pharmacies/ shops	Total
Anti-pain	100	100	100
For skin	86	100	92
Anti-ulcer	79	90	83
Anti-malarial	88	67	79
Anti-fungal	86	65	77
Deworming	64	90	75
IV fluids	86	50	71
Antibiotic	74	42	61
Anti-diarrhoea	57	30	46
For diabetes	29	35	44
Anti-haemorrhage	57	20	42
Anti-hypertension	57	50	31
Anti-depressant	21	0	13
ARVs for HIV	21	0	13
Total	**70**	**52**	**62**

Of the essential medical supplies and equipment, and other supplies, only a small proportion (21%) was available in the retail shops (see Table 9). All levels (pharmacies and shops) stocked syringes and needles, gloves, wound cleaning solutions, bandages, and a few basic cleaning items such as detergents and disinfectants. Some pharmacies also had other items, including emulsion oil for laboratories, weighing scales for paediatrics, sharps boxes, and thermometers.

Table 9: Availability of other tracer commodities in shops, by type of shop (% of all tracers)

Location	Availability			Total
	Available	On order	Never ordered	
Pharmacy	33	0	67	100
Drug shop	21	0	79	100
ADDO	14	1	85	100
Total	**21**	**0**	**79**	**100**

n = 270

Rural vs. urban availabilities

It is a known problem that rural availabilities of medicines in Tanzania tend to be worse than urban availability (MoHSW 2006), in part because of longer supply chains and lower purchasing power. The facilities and shops interviewed in this study were classified into rural, semi-urban, and fully urban locations. Areas we categorised as semi-urban were those in rural districts that had some urban characteristics, e.g. concentration of housing, non-farm economic activities, and some infrastructure such as electricity.

Within the public sector, availability of the tracer medicines was indeed markedly better in the urban and semi-urban facilities than in rural facilities (see Table 10). This is in part because the public dispensaries were mainly in rural areas, and dispensaries in general ordered fewer medicines than the higher level facilities found more in semi-urban and urban areas. Among faith-based facilities, however, the availability was higher in the rural areas than elsewhere, while among private facilities there was no difference in availability by level of urbanisation (although only one rural private facility was included).

Table 10: Availability of tracer medicines in public sector facilities, by rural/urban location (% of all tracers)

Location	Availability			Total
	Available	On order	Never ordered	
Rural	57	9	34	100
Semi-urban	75	13	11	100
Urban	73	5	22	100
Total	**64**	**9**	**27**	**100**

n=457

The availability in shops was higher in the urban areas (see Table 11). On the day of the visit the urban shops – pharmacy or ADDO – were consistently ordering and stocking a larger range of goods than the semi-urban and rural shops.

Table 11: Availability of tracer medicines in shops, by rural/urban location (% of all tracers)

Location	Availability			Total
	Available	On order	Never ordered	
Rural	41	2	57	100
Semi-urban	40	8	52	100
Urban	79	2	19	100
Total	**49**	**4**	**47**	**100**

n=217

3.2 Segmented supply chains

The wholesale supply chain for medicines and other essential supplies for the public sector health facilities is largely owned and managed by the public sector (see Table 12). However, as Section 3.5 traces, there are many interactions between public and private supply from the point of view of the patients and staff. The public sector facilities are largely supplied by a single large public wholesaler.[1]

In medicines, the tracer commodities data confirm that supply chains are very sharply segmented into the public supply chain on the one hand, and private supply chains into FBO-owned and private facilities and shops on the other hand. The public sector facilities buy from the public wholesaler or receive medicines from the District Medical Officer (DMO)'s office, which has in turn generally (but not always) obtained them from the public wholesaler. The faith-based and private facilities buy largely from private wholesalers.

Table 12 shows the sector of facility or shop on the left and the sector where the medicines were sourced across the top. The percentages are therefore the share of each source in the total items procured, by facility/shop sector. The table shows that 97% of tracer medicines found in the public sector facilities had come from the public wholesaler or the DMO. In FBO facilities, just 16% of tracer medicines had been sourced from the public sector and 83% from private wholesalers. Meanwhile, private facilities and shops had bought 97% of their supplies privately. Donations were negligible even for FBO facilities, *but* it must be noted that the big HIV/AIDS medicines funding from donors is not identified here as 'donations', since it comes through the public sector channels from the vertical programmes. Of the ARVs found in the sample facilities, 58% were sourced from the public wholesaler and the rest from the DMO; the only private facility to stock ARVs had also obtained them from the public wholesaler. This segmentation implies, as a number of interviewees pointed out, that the public wholesaler has little effective competition. There is at least one non-profit wholesaler, but we found no medicines sourced from non-profit/faith-based wholesalers in any facilities visited.

[1]In Tanzania the public wholesaler responsible for procurement and supply to the public sector is the Medical Stores Department (MSD).

Table 12: Sector where medicines were sourced, by sector of use/retail sale (% of all tracers)

Facility/shop sector	Source sector			Total
	Public	Donation	Private	
Public	97	1	3	100
FBO/NGO	16	2	83	100
Private	3	0	97	100
Total	**50**	**1**	**49**	**100**

n=638

The supply chain data for the other tracer items – medical and laboratory supplies and equipment and basic commodities – suggest these supply chains are slightly less segmented than those for medicines. Of all those tracer items found in the public sector, only 4% came from private wholesalers, while 85% were from the public wholesaler or the DMO (see Table 13). The main private purchases by the public sector had been cleaning items (brushes, disinfectant) and some essential supplies not obtainable from the public wholesaler when needed, such as syringes, thermometers, bed nets, and bed sheets. In the FBO sector, 20% of items found were from the public wholesaler, versus 7% in the private sector. The main publicly sourced items found in the non-government sectors were tests and other laboratory items; some pieces of equipment such as microscopes, foetoscopes, sharps boxes; and some bed nets and 'mackintoshes' – plasticised sheeting.

The main difference from the medicines data is the role of donations: 19% of these tracer items in the FBO sector came from donations, versus 6% in the private sector. The main items donated were equipment; 6 or more facilities (across all sectors) had received each of the following items as donations: thermometers, microscopes, BP machines, CD4 machines, foetoscopes, and stethoscopes. For the FBO and private sectors, as for medicines, the dominant source of the other tracer items had been private wholesalers (see Table 13).

Table 13: Sector where other tracers were sourced, by sector of use/retail sale (% of all tracers)

Facility/shop sector	Source sector			Total
	Public	Donation	Private	
Public	85	11	4	100
FBO/NGO	20	19	61	100
Private	7	6	87	100
Total	50	11	39	100

n=645

3.3 The public sector supply chain as seen from the facilities: successes and challenges

The implication of this supply chain pattern is that the public wholesaler is undertaking activity of daunting complexity and scale. The public sector is procuring and supplying roughly half the medicines available in the country (Chaudhuri et al. 2010), and a very substantial (though unmeasured) proportion of the medical and other essential supplies. The organisation is thus receiving orders and aggregating the required supplies for half or more of the health sector's consumption. It is organising procurement through tendering processes, and it is managing multiple funding sources, including government and donor funds. It undertakes the logistics, including receipt of goods from local suppliers and overseas exporters, and clearance of goods at entry. The public sector does the warehousing, storage, and handling of the medicines, centrally and regionally, and tracking of all the supplies. It provides transport and delivery services across a huge and challenging geographical area. In all these activities, the public wholesaler has a near-monopoly, placing on the organisation the full burden of supplying the public health services and part of the faith-based sector. One interviewee shared a view also expressed by others:

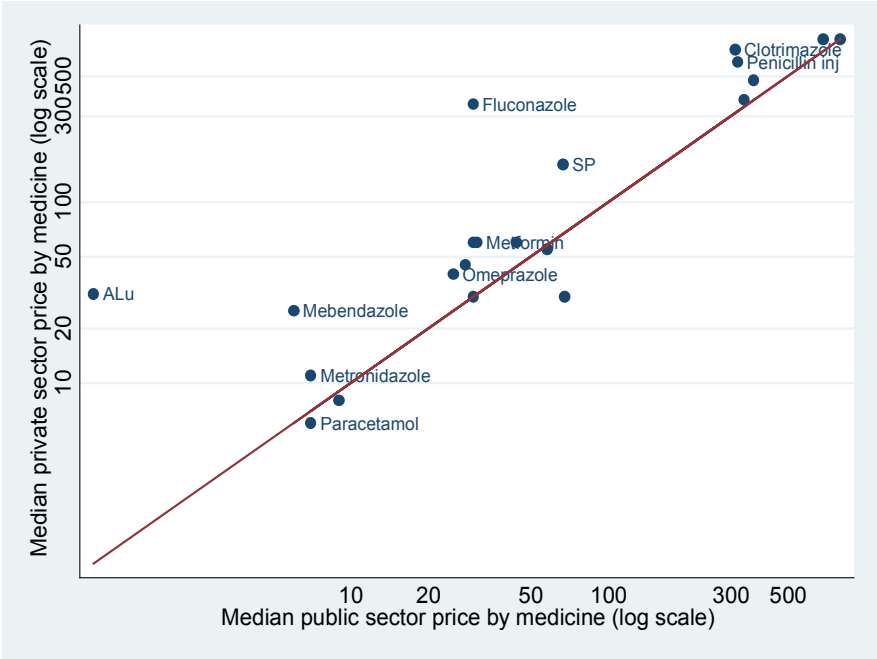
> [the public wholesaler] is overburdened. (Experienced senior pharmacist)

Strengths and successes

Despite the scale of these activities, the public wholesaler has some very substantial successes to its name that are reflected in the project data and interviews. First, as noted in Section 3.1, availability of tracer medicines and supplies was quite high, in public hospitals in particular, at the time of the research.

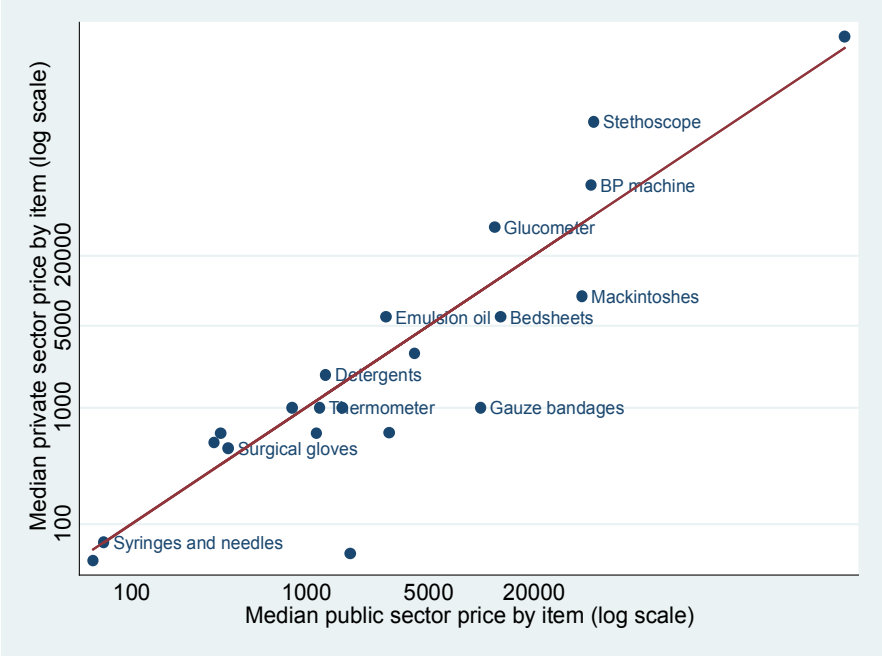
Furthermore, and importantly, prices of medicines supplied to the health sector by the public wholesaler were substantially below the prices paid by faith-based and private facilities for purchases from private wholesalers. Figure 1 shows the median purchase price from the public wholesaler for those tracer medicines for which we have the relevant data (prices per tablet, capsule, ampoule, or tube as appropriate) as compared to median prices paid by those facilities and shops that had purchased the same items from private wholesalers. The data confirm the findings of other surveys (Mackintosh and Mujinja 2010; MoHSW 2006, 2009) that the public wholesaler is consistently supplying low-priced medicines into the public sector, as compared to private wholesale prices.

Figure 1: Median purchase prices for tracer medicines from public and private sources (selected medicines identified), log scale.



Price data for medical supplies and equipment, laboratory supplies, and other essential items were more difficult to collect than prices for medicines. Many such items are purchased less frequently than medicines, at more varied specifications, and from a wider range of sources. As for medicines, invoices for other items were inspected to confirm prices. Figure 2 compares public and private wholesaler prices for those other tracer items for which we have reasonable data (prices per item). As the figure shows, the public sector appears to be less successful in supplying these items at low prices. While the public wholesale prices were cheaper for some essential items, for others, such as bed sheets, the public wholesale or DMO price appears to have been higher than the wholesale price others had paid to private wholesalers. Some of these items had been supplied by the DMO's offices, and while some had been sourced initially from the public wholesaler, others may have not. Furthermore, Figure 2 omits items that were supplied free of charge by donors, such as HIV test kits. These price data in Figure 2 should therefore be treated with caution. They do, however, raise a question as to whether the public wholesaler is as successful in ensuring low-priced public sector supply in these other essential commodities as it is in lowering the price of medicines.

Figure 2: Median purchase prices for other tracer commodities, from public and private sources (selected medicines identified), log scale.



Finally, there were also few complaints about the quality of medicines as supplied by the public wholesaler: generally the quality was regarded as reliable. This view was held by the public sector interviewees:

> We get supplies from [the public wholesaler]; we believe they have done some quality assurance. (Procurement and supplies officer, public hospital, District 1)

> [The public wholesaler] ... has professionals in pharmaceuticals and procurement who have qualifications to identify the quality of medicine and have capacity to supply medicine throughout the country. (District pharmacist, District 3)

Private sector interviewees also regarded the public wholesaler medicines as of reliable quality:

> The government should allow us to purchase drugs from [the public wholesaler]. This will help us to get good quality drugs and avoid the fake things found in our market.... (In-charge, private dispensary, District 2)

There were some compliments concerning quality of the public wholesaler's supplies of other items, but for these the reviews of quality were more mixed; for example:

> What they [the public wholesaler] supply is of good quality. For example, bed sheets supplied by [the public wholesaler] are very strong and durable and are fit for coping with heavy duty hospital use. (Hospital pharmacist, private hospital, District 1)

> Poor quality of products [from the public wholesaler], things like mops and brooms do not last. Detergents [are] too diluted and not good enough for hospital use. … sometimes we get them [mackintoshes] pre-cut from the public wholesaler and they do not fit the bed sizes. (Public hospital, District 2)

The main challenges we encounter with medical equipment include the poor quality of the items. For example beds break in less than a year. Things like BP machines: the plastic tubes burst or some of them do not work at all. (In-charge, public health centre, District 4)

Problems and challenges

Despite the successes, many problems and challenges remain. As seen from the public sector and some non-government facilities, the supply chains for medicines and supplies are problematic in many ways. Despite the relatively high level of availability in the facilities visited, the interviews with the staff members who ordered and managed supplies at the facilities identified and documented many problems and gaps in availability. The following were the key problems identified, along with some suggestions for tackling the problems.

Public dispensaries, and all facilities in the more remote district, complained of lengthy supply chains. They were ordering both directly to the public wholesaler and via the DMO, and deliveries in many cases came via the DMO, who might not have transport available.

> There are many challenges but the biggest one is the unavailability of drugs at the times needed.... Sometimes [the public wholesaler] can deliver drugs at the district level offices and these delay deliveries to us, because logistics are not well organised. For instance they have to wait to get another trip on this direction to deliver the drugs because of distance and bad roads. (In-charge, public dispensary, District 4)

There were many complaints of long delays from order to delivery: here are some examples, documented in many cases by invoices:

> Look: our September request order was brought on 14 November 2012, very late. (In-charge, public health centre, District 2)

> Medicines from [the public wholesaler] do not come on time, for example at our centre, the batch that was to be delivered in December 2012 was delivered on 01/02/2013. There was no medicine at this centre the whole of January. We wrote to DMO and we were told there was no stock. (In-charge, public dispensary, District 3)

> [The public wholesaler] delays delivery of supplies. So it's so challenging because we are dealing with human beings whose lives we need to save. We don't have much choice other than waiting for [the public wholesaler] to deliver supplies. (Hospital pharmacist, public hospital, District 1)

> It has been over a year, we are [repeatedly] ordering ORS [oral rehydration salts] but we have not got it yet, yet the main disease affecting children in this area is diarrhoea. (In-charge, public dispensary, District 4)

> For two years [the public wholesaler] has not brought sutures, and the DMO has none. (Clinical officer in-charge, public dispensary, District 3)

Incomplete supply of orders was also a common documented complaint, sometimes associated with supply of items not ordered:

> Sometimes up to 45% of the order is reported missing.... [The public wholesaler] writes 'out of stock' on so many items on the sales invoice. For example on 13/01/2013, the batch from [the public wholesaler] which was ordered in Oct. 2012 had 107 items but 57 were missing.... (Hospital pharmacist, public hospital, District 3)

> We sometimes get different items from those that we ordered. (In-charge, public health centre, District 2)

> [The public wholesaler] brings medicines which were not ordered and this is done repeatedly. A good example is a delivery to our dispensary on 03/01/2013. The following were brought though they were not ordered: Clotrimazole cream 6 packs of 24 tubes at [Tshs] 45,000; Diazepam 10 amps at 20,000; Metronidazole tabs 7 tins of 1,000 tablets at 35,000; Magnesium tablets 5 tins of 1,000 tablets at 15,500.... (In-charge, public dispensary, District 4)

> Yes, we have a problem of shortages of supplies because of shortages of financial resources. What we collect [in user fees] is not enough [to fill gaps] so we have constant supply shortages. Also, the procurement process takes very long, and there is nothing we can do about this because we have to follow the government procurement guidelines. (Hospital pharmacist, public hospital, District 4)

Filling gaps

Faced with delays and gaps, facilities turned to alternative sources of supply. Facilities could use basket funding for some items via the DMO's office. Some facilities, including hospitals and urban dispensaries, retained user fees collected and used them to buy missing items on the private market.

> We are lucky we are allowed to use the user fee contribution to buy medicines or any medical goods when the order from [the public wholesaler] is late or incomplete. (Medical doctor, public dispensary, District 1)

These alternatives also had their drawbacks:

> For much of what we buy from [the public wholesaler] through ILS [the public wholesaler's Integrated Logistics System], we use money from the basket fund. The Municipal Director is supposed to pay on our behalf promptly but the money is usually delayed and sometimes [the public wholesaler] can refuse to supply medicines if the request is not accompanied by payment or if there is accumulated debt. (Pharmacist, public health centre, District 1)

The basket funds are pooled funds from donors held at the district level. Interviewees at one district hospital explained the procedural challenges in detail. The paperwork could be slow:

> Our main source of medicine is [the public wholesaler]. However, sometimes when medicines are out of stock at [the public wholesaler] we do get medicines from the suppliers who have been selected by tender by the district council.... The requirement to get a stock-out form from [the public wholesaler] in order to purchase from other sources is also not easy. (Pharmacist, public hospital, District 2)

Not all items were easily available in the private sector:

> Sometimes things are out of stock for more than 6 months and it is unfortunate that some essentials are not available at the other [designated] suppliers. For example mackintoshes [plasticised sheets] are not readily available at other suppliers. When you include it in the order, that's when they will start ordering it from their sources, and sometimes that takes weeks or months. (Matron, public hospital, District 2)

The laboratory items were particularly likely to be out of stock at the public wholesaler:

> Because most laboratory supplies are always out of stock at [the public wholesaler] ... the procedure for sourcing laboratory supplies starts by the laboratory technician preparing a list and taking it to the DMO to sign as well as the District Executive Director (DED).… it is then taken to the supplies office, who gets quotations from the vendors, and the one with the cheapest prices for the laboratory supplies is the one who wins the tender. (Laboratory in-charge, public hospital, District 2)

These laboratory items were hard to assess in terms of quality, risking purchase of sub-standard items:

> There is a risk of getting low quality from the vendors because of the business-oriented, profit making mentality. In case of emergency (hospital running out of stock completely) there are no petty cash vouchers. (In-charge of laboratory, public hospital, District 2)

Finally, for the other basic essentials:

> I would say that 50% of other essential commodities are from [the public wholesaler] and the other 50% are from [designated] local suppliers.… for hospitals like this there are some supplies that you cannot do without, you risk the patients' lives and even our own [staff] lives. Things like detergents, soaps, and disinfectants. When there is any delay we just have to source from the shops around here. (Matron, public hospital, District 2)

Many lower level rural facilities, however, were not permitted to retain user fees collected, and hence could not fill gaps in this way:

> There are always delays for medical supplies. We ordered a weighing scale, but it has not been brought. [The public wholesaler] put it under missing items. We do not have any authority to decide to buy, or to raise funds from citizens so as to buy the weighing scale… HIV/AIDS tests have been missing for almost one month, although the test is very important for pregnant mothers. (Facility in-charge, public dispensary, District 3)

As a result, patients were sent to purchase medicines in shops at higher prices:

> We have a problem of stock-outs at [the public wholesaler] which is compounded by much higher prices by private suppliers. (Medical doctor, public health centre, District 1)

3.4 The private sector supply chain as seen from the facilities and shops

The private retailers and wholesalers are thus a fall-back for the public sector and its patients, when funds can be found, as well as the main source of supply for the faith-based and private facilities. In sharp contrast with the public sector supply chain, the private sector supply chain is made up of many importers, wholesalers, and distributors.

Competition and long-term relationships

While there are many importers/wholesalers at the national level, in each district surveyed, a few pharmacies accounted for the bulk of the supplies of medicines to the facilities and shops interviewed:

- In District 1 about 75% of the tracer medicines found were sourced at three pharmacies in roughly equal proportions (Bahari, Bariki, and Continental Pharmacies);
- In District 2, two pharmacies, Rhode with 54% and Planet with 28% of orders, were the dominant sources of medicines for the non-government facilities and shops interviewed.
- In the other two districts taken together, 41% of the tracer medicines found in non-government facilities and shops interviewed had been bought at a single pharmacy (General Pharmacy), and another 11% at each of two others (Abacus Pharmacy and MacMedics).

For the other medical and laboratory supplies, equipment, and basic items, the sources were a little more diverse.

- In Districts 1 and 2 taken together, four suppliers provided over 50% of all the items traced, with very similar shares (Anutha, Grants, Continental, and Rhodes); another 10% were sourced from general retail: items such as brooms, mops, disinfectant.
- In Districts 3 and 4 taken together, three suppliers had provided over 50% of the traced items (half from General Pharmacy and the rest divided between Abacus Pharmacy and MacMedics); general retail again supplied around 10%, mainly basic items.

These data suggest substantial competition, with no dominant national wholesale suppliers to the health sector; different wholesalers appear to have some limited market power in different regional markets. The interviews explored the experience of FBO and private facilities and retail shops of buying from these suppliers, including reasons for choice of suppliers.

Generally, interviewees buying for shops and facilities looked for a reasonable combination of competitive prices and reliability from a wholesaler. It was common to build up long-term relationships with one or two large wholesalers, and the interviewees explained why. An important reason was continuity of supply. The private wholesale suppliers did experience occasional shortages and stock-outs - this problem was not limited to the public sector and on such occasions, good established relationships with a supplier could ensure priority:

> 'We have a good relationship with them [their preferred wholesaler]. There are cases when they are left with small stock, fortunately they give us priority when we go to purchase, due to a good relationship we have established with them. Such pharmacies have all varieties of supplies manufactured from different countries. Customers have a wide range of choices. So we are sure of getting what we need from them. (Nurse, private dispensary, District 1)

For equipment requiring servicing and support, a mix of close location and advice and support were both valued:

> We prefer [pharmacy A] as our main supplier of medical equipment because of convenient location for us …. [They have] adequate number of varieties of medical equipment. After purchase of medical equipment [pharmacy A] provides us with advice on how to store and use the equipment…. [They have] good customer care [and] negotiable prices, and they provide us with promotional materials (e.g. T-shirts, notebooks, pens, banners. (Clinical officer, faith-based dispensary, District 1)

Reliability was defined in a number of ways, the most important being stock availability when required, and good quality medicines. Buyers were well aware that they relied on wholesalers' probity and knowledge of their own suppliers for quality; the buyers had no way of checking for substandard medicines, and inspection was sporadic:

> We choose these suppliers because they are reliable. Others are not reliable – each time you go, some of the medicines you want are out of stock. We also realized that when we buy from other pharmacies, when inspectors come for quality checks they tell us that some drugs are of poor quality. We have faith in the medicines supplied by the two pharmacies we buy from. (Medical officer in-charge, private health centre, District 3)

One interviewee displayed a sharp appreciation of how to try to combine good prices with availability on demand:

> [Pharmacy B] sells commodities at cheaper prices than other suppliers. It is also accessible; everyone can reach the pharmacy. Service provided is good because

> someone will be sure to find all the products that they need. Moreover, [pharmacy B] supplies commodities to other wholesalers too. For instance [pharmacy C] will purchase supplies from [pharmacy B], and then sell to us. In this case, you will agree with me that [pharmacy B] is the best place to purchase commodities. If other wholesalers make purchases at [pharmacy B], why not us? (Nurse, ADDO, District 3)

Given the low incomes of patients, buyers compared prices from local wholesalers; wholesalers responded with inducements for loyalty:

> The main reason [for choosing a supplier] is the price. [Pharmacy C] has the most reasonable prices compared to those two other pharmacies I have mentioned. On top of that, there are some privileges or forms of motivations that [pharmacy C] provides when you buy drugs of at least 100,000/= Tshs. If the drugs are bulky, they can offer you transport [clarified – by taxi] to the bus stand. On other sized purchases, they give things like calendars, small note-pads and other small things. I also believe [pharmacy C] does not sell fake drugs. (Medical officer in-charge, private dispensary, District 3)

The public sector is also not alone in facing financing problems; the non-government dispensaries and shops are often strapped for cash flow. As a result, a key inducement to remain with a particular wholesaler is access to trade credit:

> I chose [pharmacy D] over the others because I can be given drugs stock even when I do not have cash in hand. I find it worth buying all my needs from them. I am trusted, and I rely on them when things go wrong. Second, if I go to buy a large stock worth between 3 to 5 million/= Tshs at [pharmacy D], I can get a discount of about 100,000/= Tshs. I am used to them and the medicines are the same all around but their prices are lower on so many drugs compared to other pharmacies. Even though the difference is small, it's a difference at the end of the day. (Nurse assistant, ADDO, District 2)

Faced with these different requirements and inducements, buyers did shop around, so competition was sustained despite the longer term buying relationships:

> We buy medicines from the [two] pharmacies mentioned because [pharmacy E] is very near to the bus stand, and this reduces transport costs from pharmacy to the bus stand. They may also bring medicines to the shop, sometimes, and they pay frequent visits to our shop to see how we are going on with business. [Pharmacy F] can give medicines on a loan basis without any collateral provided what you take from the pharmacy does not exceed 400,000/= Tshs and you pay after selling, in 1 or 2 months' time. [Pharmacies G and H] have reasonable prices. (Nurse-midwife, ADDO, District 4)

> The main reasons why I chose those wholesale pharmacies are the prices of the drugs, quality and the convenience each of them offers. [Pharmacy I] is my number one priority because for most medicines they have the lowest prices. Also to them I can make an order by phone and they send the drugs by bus with the invoice and after I have received, I confirm with them and send money by m-pesa. (Clinical officer, Private dispensary, District 4)

Difficulties and challenges

There were a number of key problems that recurred in the interviews with buyers for the FBO and private sectors. One has been mentioned: stock-outs. Some items displayed recurrent private sector shortages in wholesalers, and had to be sought through retailers at higher prices; other items were unavailable locally for considerable periods:

> Sometimes the suppliers fail to meet the order from our dispensary for things like beds or equipment. In such situations we buy from retail shops. But other items are not easily found, especially some equipment and reagents. Worse still is when we have reagents that are not available anymore. To address this we have to buy an alternative reagent that is available. (Nurse in-charge, faith-based dispensary, District 4)

Delays are also experienced in the private sector, though less extensively than in the public supply chain; in some cases this may be because there are only one or a few importers of particular products:

> The order can take so long without being filled sometimes because of many customers at the agent [i.e. importer/wholesaler]. And this is because some products are in high demand, and there is only one agent. For example there are some painkillers, anti-malarials, and medicines for skin diseases that are very much in demand: such as paracetamol in blisters from Kenya, or candistat, cotrimazole cream in tubes. (Director, pharmacy, District 1)

Supply mistakes, short expiry dates, and substitutions also occur in the private sector, while patients may have opinions as to the ultimate source of the medicines they prefer, as the same interviewee explained:

> Medical supplies received sometimes have a very short shelf life, and sometimes, you can order a certain product from a specific manufacturer and are supplied with a product from a different manufacturer. And when you ask the supplier to take the products back, they will start negotiating with you and convince you to take it and even offer a much lower price. But this becomes another challenge since I will then also have to convince my customers to buy the item. (Director, pharmacy, District 1)

A problem specific to the private supply chain is rapid price fluctuations for individual items:

> ... Another challenge is fluctuation of prices. It is a free market so everyone has the right to set and change the prices anytime he wishes to do so. For instance, you will never find a medicine that lasts a week with a constant price. These price changes affect us in running our business because sometimes it forces us to increase the sale price to customers, who in many cases don't have money. If I keep prices fluctuating, I may lose customers as they go to other pharmacies. There are about seven pharmacies [including ADDOs] around this place, and each of us sets his own price. Competition is very strong. Sometimes I am forced to sell at a loss in order to keep my customers. (Assistant medical officer, ADDO, District 3)

Finally, transport is a major challenge for the private and faith-based sectors. Facilities and shops have to handle their own transport, while distances are long and roads are bad. District 4 illustrated these problems particularly sharply:

> In the course of transporting the supplies from one point to another, sometimes transport conditions are unfavourable, a situation that can cause the supplies to expire before their expiry date or to give false laboratory results in testing. This is a big challenge due to poor infrastructure, especially given the car that we use and the long distance to our health facility. (Nurse in-charge, faith-based dispensary, District 4)

> The challenges are about transporting the drugs by public buses. Medicines get destroyed, for instance, ampoules and glass bottles do break, syrups pour out, and tablets packed in boxes get damaged by oils. Sometimes the buses arrive later than expected and go away again with your parcel, and sometimes they may pack for you drugs that have a short shelf-life – and returning such drugs is not easy. (Clinical officer, private dispensary, District 4)

3.5 Interactions between supply chains and implications for patients, staff, and businesses

Although supply chains appear quite strongly segmented between public and private supply, there are nevertheless many interactions between the two. First, the public sector facilities rely on purchases from private wholesalers to fill gaps in public supplies, using out-of-pocket fees and basket funding, as Section 5 documented. Furthermore, patients frequently have to purchase their own medicines and even supplies such as gloves from private shops:

> We have a problem of stock-outs at [the public wholesaler] which is compounded by much higher prices from private suppliers. If there are shortages of drugs then we cannot provide good care to patients. We tell patients to buy drugs outside the health facility where they are more expensive in private pharmacies. Some patients are supposed not to even pay for health care. (Medical doctor, public health centre, District 1)

> When medicines come late to our dispensary from [the public wholesaler], patients go without services. If for example it is confirmed they have malaria, they are told to go and buy medicines from private drug shops. They complain about the prices there because most of our customers are poor. (Clinical officer, public dispensary, District 3)

We do not know what proportion of the medicines and supplies used by public sector patients are bought by them in private shops. But a considerable amount of public sector care clearly relies in practice on private sector medicine supply and purchase. Earlier work (Mackintosh and Mujinja 2010: iii179) found that around a third of medicine buyers interviewed in rural drug shops had come with a prescription from a facility. A shop owner in this study commented:

> The patients are sometimes prescribed medicine that we do not have. The shop does not have permission to sell most other medicines required. They [patients] suffer as they travel in search of medicines and incur costs while they are sick. They sometimes go to Arusha to buy medicines that are not in [District 4] from Arusha town pharmacies. (Medical doctor, ADDO, District 4)

Many patients go without care as a result: 17 out of 18 public facilities and 6 out of 7 FBO-owned facilities said that shortages of medicine and other supplies were having an adverse impact on both patients and their own staff. Specific items experiencing severe shortages that were mentioned by respondents included the first-line anti-malarial treatment, ALu; rehydration salts, ORS; syringes and needles; gloves; cotton wool; and gauze. One respondent had this to say on the shortage of ALu:

> The challenges I have mentioned affect patients in that they don't get the services being sought and on time. For example, many patients suffer from malaria, but when I receive the consignment [of medicines] without even a single anti-malarial, it affects my patients and I am also affected since I am not able to serve them… For example, currently the first-line anti-malaria is Mseto [Kiswahili for ALu], but I get quarterly supplies without it, not even the second-line drug [for malaria]. (In-charge, Public health centre, District 4)

Patients' illnesses worsen:

> As delays in receiving medicines continue for a long time, patients' illnesses become chronic and sometimes they do not recover at all. Most of the patients in our location have low income and they do not have other ways to obtain medicine. Many children in our villages have died from pneumonia. (In-charge, public health centre, District 2)

> Experiencing stock-outs has implications for patients and can put them at risk. For example, if you have cases of diarrhoea, cases of diabetes, severe infection or poisoning, patients can die if required medicines are not available. (Clinical officer, faith-based health centre, District 3)

> Patients are much affected by absence of medicines. For example from December 2012 we didn't have ORS at this centre and so we advised patients to make local ORS.... This is a risky game. We order from [the public wholesaler] but they do not bring it. The DMO also has none of it. Things become worse for households which pay into the Community Health Fund, Tshs 10,000 per year, and they complain a lot that they paid their money in order to access services which do not exist. (Clinical officer, public dispensary, District 4)

> When there is shortage of medicine in our rural facility, we give patients a referral letter but most patients cannot afford to travel to [the district town] because they are poor. Sometimes when medicines are expensive, poor patients do not come for treatment. They come either late while seriously sick, or they die because they use herbals and traditional medicine men as alternatives. (Nurse, faith-based dispensary, District 2)

Shortages also reduce the chances that patients will receive correct and complete treatment even if they can pay:

> When you ask a patient to go to buy medication, you are not sure if they buy the right dosages prescribed. (Lab technologist, public hospital, District 1)

Working in a context of repeated shortages also affects the morale of staff. Respondents expressed frustration, despair, and a sense of helplessness when unable to help patients, some of whom may be very sick, and working in an environment that is full of complaints by patients. For example:

> Delays in the procurement process cause stock-outs so this puts patients at risk. For staff it is demotivating and it creates frustration. Patients lose confidence in us if we tell them we have no medicines or supplies. (Medical doctor, public hospital, District 4)

> ... and we are also blamed for not giving drugs or asking the client to buy supplies. We are called corrupt…. This demoralises us. (Lab technologist, public hospital, District 1)

> Workers ... are always embarrassed about telling patients that some or sometimes all medicines are out of stock. Some patients actually 'murmur' that doctors and nurses have manipulated public medicines and taken them to their private drug shops in town. (In-charge, public dispensary, District 2)

It becomes hard to work professionally:

> For staff it is frustrating because it is like a teacher being in a classroom without a chalk.... (Clinical officer, faith-based health centre, District 3)

> For a service provider, apart from the fact that I get demoralised, the working environment becomes hard because some clients can be badly hurt, and I have no way of helping them.... Some people do not believe us when we tell them there are no supplies or drugs. (In-charge, public dispensary, District 4)

> For workers, it is very frustrating if you don't have supplies ... Staff get frustrated because they cannot do their job professionally, e.g. a woman can get a large tear during the delivery process and there may be no sutures. (Medical doctor, public health centre, District 1)

As Section 7 documented, private facilities also experienced supply problems and delays, affecting both staff morale and also business viability.

> The effects of supply chain gaps do affect the clients and us as well. For instance, I can get a patient with PPH [post-partum haemorrage] and she needs emergency first aid. If I have no drugs in my stock, I will be affected since I will not be able to provide the service and my patient's life will be in danger. She will have to be rushed to another facility nearby where I am not sure they will have medicines in stock. (Clinical officer, private dispensary, District 4)

> When we do not have inputs to work with, it makes [an] unfavourable environment, for instance when the patient comes to be diagnosed and you find we are out of stock for some laboratory reagent and medicine. We can't hold a patient so we refer him to another health facility. (Nurse, private dispensary, District 1)

As a result, business cash flow decreases, for both shops and facilities:

> Due to fluctuation of prices, we really do not make a profit. It is a free market where anyone can set their own price. There are many shops around here, about 7 of them. So if you increase price, while the rest have not done so, customers will go to the relatively cheap pharmacies. Basically we are doing charity work. Sometimes you feel sorry for the customers and give them a dose at half price. (Assistant medical officer, ADDO, District 3)

> Delays in getting drugs or chemicals needed will affect my clients by either making them wait for long hours or failing to get the services they need from me. Likewise, my business is being affected since I will not get the money from my client and if that happens more than 2 times to the same client, I may end up losing a client who is crucial to me. (Administrator, private hospital, District 1)
> It [shortage of supplies] can also affect the facility as a whole in terms of loss of revenue, because if you do not have medicines you have to tell patients to go elsewhere. In the long run you can also lose patients because patients come to a facility expecting to get all services and not to be told to go get some of the services elsewhere. (Clinical officer, faith-based health centre, District 3)

> When agents [wholesalers] delay my supplies, this means that my customers will not get the medicines or the medical supplies they need.... In business that amounts to a loss since you would have got profit from the customer. (Director, ADDO, District 1)

4 Conclusion

Providing medicines and supplies for a large and complex health sector, spread over a huge geographical area, and serving a predominantly low-income population, creates enormous challenges. Interviewees recognised that the public wholesaler is struggling with a huge logistical challenge, with limited financial resources. The private supply chains are more flexible – but the recourse to private out-of-pocket payment for supplies excludes and impoverishes many patients in need of care. The extent to which the public health system relies on (a) payment for private supplies by facilities from fees and charges and basket funding, and (b) private out-of-pocket payment for supplies and medicines in shops by patients, is not well documented. Some public facility interviewees argued for more freedom to retain and use fees and other sources of funding. Some private and FBO sector interviewees argued for price controls to prevent medicine price fluctuations.

This project is aimed at understanding the extent to which both public and private supply chains might be strengthened by more local production and procurement of supplies. Working Paper 2 in this series examines the extent to which supplies were found to be locally procured in both sectors, and the views of interviewees in the health sector on the benefits and problems of local supply chains.

References

Cameron A., Ewen M., Ross-Degnan D., Ball D., and Laing R. (2008). 'Medicines prices, availability and affordability in 36 developing and middle income countries: A secondary analysis'. *The Lancet*, published online 1 December.

Israel C., Mackintosh M., Tibandebage P., Mhede E., and Mujinja P.G.M. (2014). Improving the Supply Chain for the Health Sector: What Role for Local Manufacturing? *Working Paper* 2 from the *Industrial Productivity, Health Sector Performance and Policy Synergies for Inclusive Growth (IPHSP) research project*, REPOA, Dar es Salaam.

Leach B., Palluzzi J.E., and Munderi P. (2005). Prescription for Health Development: Increasing Access to Medicines. *UN Millennium Project, Task Force on HIV/AIDS, Malaria and TB, and Access to Essential Medicines*, Earthscan, London. http://www.unmillenniumproject.org/reports/tf_essentialmedecines.htm, accessed on 14-08-08.

Mackintosh M. and Mujinja P.G.M. (2010). 'Markets and policy challenges in access to essential medicines for endemic disease'. *Journal of African Economies,* Supp 3: iii166–iii200.

Ministry of Health and Social Welfare (MoHSW) (2009). Annual health statistical tables and figures Tanzania Mainland. http://www.google.co.tz/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=3&ved=0CDoQFjAC&url=http%3A%2F%2Fmoh.go.tz%2Findex.php%2Fdownloads%2Fcategory%2F18-monitoring-evaluation%3Fdownload%3D28%3Atanzania-health-statistical-tables-and-figure-2009&ei=MyTvUqPhIsO2hAfXhYH-4Ag&usg=AFQjCNHeXIaL4FtOxazPCDbT-uOAI_-PDA, accessed on 29-01-2014.

Ministry of Health and Social Welfare (MoHSW) (2009). Medicine Price Monitor 2009. United Republic of Tanzania, Dar es Salaam.

Ministry of Health and Social Welfare (MoHSW) (2006). Medicine Price Monitor Nov–Dec 2006. United Republic of Tanzania, Dar es Salaam.

Nyamtema A.S., Urassa D.P., Massawe S., Massawe A., Mtasiwa D., Lindmark G., and van Roosmalen J. (2008). 'Dar es Salaam perinatal care study: needs assessment for quality of care'. *East African Journal of Public Health* 5 (1):17–21.

Tibandebage P., Kida T., Mackintosh M., and Ikingura J. (2013). Empowering nurses to improve maternal health outcomes. *Paper 1 from the Ethics, Payments and Maternal Survival project,* REPOA *Working Paper* 13/1, REPOA, Dar es Salaam.

Tibandebage P. and Mackintosh M. (2005). 'The market shaping of charges, trust and abuse: health care transactions in Tanzania'. *Social Science and Medicine* 61:1385–1395.

World Health Organisation (WHO) (2011). The World Medicines Situation: Medicines Prices, Availability and Affordability. Geneva, April. http://www.who.int/medicines/areas/policy/world_medicines_situation/WMS_ch6_wPricing_v6.pdf.

Yadav P. (2007). Analysis of the Public, Private and Mission Sector Supply Chains for Essential Drugs in Zambia. *A study for DFID Health Resource Center under the aegis of the META project*. http://apps.who.int/medicinedocs/documents/s18001en/s18001en.pdf.

Yadav P., Curtis K., and Sekhri N. (2006). Mapping and Realigning Incentives in the Global Health Supply Chain. *Global Health Forecasting Working Group Background Paper*. http://www.cgdev.org/doc/DemandForecasting/RealigningIncentives.pdf.

Appendix

Appendix Table 1A: Tracer medicines list, Tanzania

ARTEMETHER+LUMEFANTRINE (AL/ALU: adult); 120+20mg
SULFADOXINE +PYRIMETHAMINE (SP); 500+25mg
QUININE; 600mg/2ml
AMOXICILLIN (adult); 250mg/500mg
AMOXICILLIN SYRUP (child); 125mg/5ml
BENZL PENICILLIN; 5000000IU (5MU)
CIPROFLOXACIN; 250mg/500mg
ATENOLOL; 50mg/100mg
PARACETAMOL; 500mg
DICLOFENAC; 50mg/100mg
ZIDOVIDINE/LAMIVUDINE/EFAVIRENZ (AZT+3TC+EFV); 300mg+150mg+6000mg
ZIDOVIDINE/LAMIVUDINE/NIVERAPINE (AZT+3TC+NVP); 399mg+150mg+200mg
TENOFOVIR/ENTRICITABINE/Lpv/r; 200mg+200mg+200/50mg
OXYTOCIN;10iu & 5iu per ml
METRONIDAZOLE; 200mg/400mg
FLUCONAZOLE; 50mg/150mg/200mg
MEBENDAZOLE; 100mg
OMEPRAZOLE; 20mg
CLOTRIMAZOLE cream; 1%
AMITRIPTYLLINE; 25mg
METFORMIN; 500mg
GLIBENCLAMIDE; 5mg
LOPERAMIDE HYDROCHLORIDE; 2mg
NORMAL SALINE AND 5% DEXTROSE (IV fluid)

Appendix Table 2A: List of other tracer supplies, Tanzani

EQUIPMENT	MEDICAL/OTHER SUPPLIES	LABORATORY SUPPLIES
THERMOMETER	SURGICAL GLOVES	GIEMSA STAIN
BLOOD PRESSURE MACHINE	GAUZE BANDAGES	EMULSION OIL
MICROSCOPE	CREPE BANDAGES	DETERMINE HIV TEST KIT
SLIDES (FOR THE MICROSCOPE)	SYRINGES AND NEEDLES	RAPID DIAGNOSTIC TEST FOR MALARIA
STETHOSCOPE	HYDROGEN PEROXIDE (H202)	GRAME STAIN REAGENT FOR TESTING BACTERIAL INFECTION
FOETOSCOPE FOR MIDWIFERY	ALCOHOL/SPIRIT FOR WOUND CLEANING	HAEMOQUE FOR HB LEVEL
GLUCOMETER	DISINFECTANTS (HIBITANE OR SAVLON)	SD BIOLINE FOR SYPHILIS
STRIPS (FOR THE GLUCOMETER)	MACKINTOSHES/PLASTICISED SHEETING	
WEIGHING SCALES (FOR PEDIATRICS)	BED NET	
CD4 MACHINE	BED SHEETS	
SHARPS BOX	MOP OR BROOM	
	DETERGENTS	

Publications by REPOA

Books

"Researching Poverty in Tanzania: problems, policies and perspectives"
Edited by Idris Kikula, Jonas Kipokola, Issa Shivji, Joseph Semboja and Ben Tarimo

"Local Perspectives on Globalisation: The African Case"
Edited by Joseph Semboja, Juma Mwapachu and Eduard Jansen

"Poverty Alleviation in Tanzania: Recent Research Issues" Edited by M.S.D. Bagachwa

Research Reports

14/6 *In Quest of Inclusive Growth: Exploring the Nexus between Economic Growth, Employment, and Poverty in Tanzania*
Rizwanul Islam and Abel Kinyondo

14/5 *Cultural Factors Influencing Youth Attitudes on the Use of Condoms Against HIV Infection in Tanzania*
Mary N. Kitula and Thomas J. Ndaluka

14/4 *The Impact of Gazetting the Derema Forest Corridor in Tanzania on Community Livelihoods and Forest Conservation*
Nangena Mtango and Adam Kijazi

14/3 *Integrating Traditional and Modern Knowledge Systems in Improving Agricultural Productivity in Upper-Kitete Village, Tanzania*
Julita Nawe and Herbert Hambati

14/2 *Structural Barriers, Constraints, and Urban Youth Employment: The Case of Ilala Municipality, Dar-es-Salaam*
Christopher S. Awinia

14/1 *Socio-Economic Factors Limiting Smallholder Groundnut Production in Tabora Region*
Mangasini A. Katundu, Mwanahawa L. Mhina, Arbogast G. Mbeiyererwa and Neema P. Kumburu

13/1 *Factors Influencing the Adoption of Conservation Agriculture by Smallholders Farmersin Karatu and Kongwa District of Tanzania*
Simon Lugandu

12/4 *Factors Affecting Participation in a Civil Society Network (Nangonet) in Ngara District*
Raphael N.L. Mome

12/3 *"The Instrumental versus the Symbolic: Investigating Members' Participation in Civil Society Networks in Tanzania"*
Kenny Manara

12/2 *"The Effect of Boards on the Performance of Microfinance Institutions: Evidence from Tanzania and Kenya"*
Neema Mori and Donath Olomi

12/1 *'The Growth of Micro and Small, Cluster Based Furniture Manufacturing Firms and their Implications for Poverty Reduction in Tanzania'*
Edwin Paul Maede

11/2 *'Affordability and Expenditure Patterns for Electricity and Kerosene in Urban Households in Tanzania'*
Emmanuel Maliti and Raymond Mnenwa

11/1 *"Creating Space for Child Participation in Local Governmence in Tanzania: Save the Children and Children's Councils*
Meda Couzens and Koshuma Mtengeti

10/5 *"Widowhood and Vulnerability to HIV and AIDS-related Shocks: Exploring Resilience Avenues"*
Flora Kessy, Iddy Mayumana and Yoswe Msongwe

10/4 *"Determinants of Rural Income in Tanzania: An Empirical Approach"*
Jehovaness Aikaeli

10/3 *"Poverty and the Rights of Children at Household Level: Findings from Same and Kisarawe Districts, Tanzania"*
Ophelia Mascarenhas and Huruma Sigalla

10/2 *"Children's Involvement in Small Business: Does if Build youth Entrepreneurship?"*
Raymond Mnenwa and Emmanuel Maliti

10/1 *"Coping Strategies Used by Street Children in the Event of Illness"*
Zena Amury and Aneth Komba

08.6 *"Assessing the Institutional Framework for Promoting the Growth of MSEs in Tanzania; The Case of Dar es Salaam"*
Raymond Mnenwa and Emmanuel Maliti

08.5 *"Negotiating Safe Sex among Young Women: the Fight against HIV/AIDS in Tanzania"*
John R.M. Philemon and Severine S.A. Kessy

08.4 *"Establishing Indicators for Urban Poverty-Environment Interaction in Tanzania: The Case of Bonde la Mpunga, Kinondoni, Dar es Salaam"*
Matern A.M. Victor, Albinus M.P. Makalle and Neema Ngware

08.3 *"Bamboo Trade and Poverty Alleviation in Ileje District, Tanzania"*
Milline Jethro Mbonile

08.2 *"The Role of Small Businesses in Poverty Alleviation: The Case of Dar es Salaam, Tanzania"*
Raymond Mnenwa and Emmanuel Maliti

08.1 *"Improving the Quality of Human Resources for Growth and Poverty Reduction: The Case of Primary Education in Tanzania"*
Amon V.Y. Mbelle

07.2 *"Financing Public Heath Care: Insurance, User Fees or Taxes? Welfare Comparisons in Tanzania"*
Deograsias P. Mushi

07.1 *"Rice Production in the Maswa District, Tanzania and its Contribution to Poverty Alleviation"*
Jerry A. Ngailo, Abiud L. Kaswamila and Catherine J. Senkoro

06.3 *"The Contribution of Microfinance Institutions to Poverty Reduction in Tanzania"*
Severine S.A. Kessy and Fratern M Urio
Publications by REPOA

06.2 *"The Role of Indigenous Knowledge in Combating Soil Infertility and Poverty in the Usambara Mountains, Tanzania"*
Juma M. Wickama and Stephen T. Mwihomeke

06.1 *"Assessing Market Distortions Affecting Poverty Reduction Efforts on Smallholder Tobacco Production in Tanzania"*
Dennis Rweyemamu and Monica Kimaro

05.1 *"Changes in the Upland Irrigation System and Implications for Rural Poverty Alleviation. A Case of the Ndiwa Irrigation System, Wes Usambara Mountains, Tanzania"*
Cosmas H. Sokoni and Tamilwai C. Shechambo

04.3 *"The Role of Traditional Irrigation Systems in Poverty Alleviation in Semi-Arid Areas: The Case of Chamazi in Lushoto District, Tanzania"*
Abiud L. Kaswamila and Baker M. Masuruli

04.2 *"Assessing the Relative Poverty of Clients and Non-clients of Non-bank Micro-finance Institutions. The case of the Dar es Salaam and Coast Regions"*
Hugh K. Fraser and Vivian Kazi

04.1 *"The Use of Sustainable Irrigation for Poverty Alleviation in Tanzania. The Case of Smallholder Irrigation Schemes in Igurusi, Mbarali District"*
Shadrack Mwakalila and Christine Noe

03.7 *"Poverty and Environment: Impact analysis of Sustainable Dar es Salaam Project on "Sustainable Livelihoods" of Urban Poor"*
M.A.M. Victor and A.M.P. Makalle

03.6 *"Access to Formal and Quasi-Formal Credit by Smallholder Farmers and Artisanal Fishermen: A Case of Zanzibar"*
Khalid Mohamed

03.5 *"Poverty and Changing Livelihoods of Migrant Maasai Pastoralists in Morogoro and Kilosa Districts"*
C. Mung'ong'o and D. Mwamfupe

03.4 *"The Role of Tourism in Poverty Alleviation in Tanzania"*
Nathanael Luvanga and Joseph Shitundu

03.3 *"Natural Resources Use Patterns and Poverty Alleviation Strategies in the Highlands and Lowlands of Karatu and Monduli Districts – A Study on Linkages and Environmental Implications"*
Pius Zebbe Yanda and Ndalahwa Faustin Madulu

03.2 *"Shortcomings of Linkages Between Environmental Conservation and Poverty Alleviation in Tanzania"*
Idris S. Kikula, E.Z. Mnzava and Claude Mung'ong'o

03.1 *"School Enrolment, Performance, Gender and Poverty (Access to Education) in Mainland Tanzania"*
A.V.Y. Mbelle and J. Katabaro

02.3 *"Poverty and Deforestation around the Gazetted Forests of the Coastal Belt of Tanzania"*
Godius Kahyarara, Wilfred Mbowe and Omari Kimweri

02.2 *"The Role of Privatisation in Providing the Urban Poor Access to Social Services: the Case of Solid Waste Collection Services in Dar es Salaam"* Suma Kaare

02.1 *"Economic Policy and Rural Poverty in Tanzania: A Survey of Three Regions"*
Longinus Rutasitara

01.5 *"Demographic Factors, Household Composition, Employment and Household Welfare"*
S.T. Mwisomba and B.H.R. Kiilu

01.4 *"Assessment of Village Level Sugar Processing Technology in Tanzania"*
A.S. Chungu, C.Z.M. Kimambo and T.A.L. Bali

01.3 *"Poverty and Family Size Patterns: Comparison Across African Countries"*
C. Lwechungura Kamuzora

01.2 *"The Role of Traditional Irrigation Systems (Vinyungu) in Alleviating Poverty in Iringa Rural District"*
Tenge Mkavidanda and Abiud Kaswamila

01.1 *"Improving Farm Management Skills for Poverty Alleviation: The Case of Njombe District"*
Aida Isinika and Ntengua Mdoe

00.5 *"Conservation and Poverty: The Case of Amani Nature Reserve"*
George Jambiya and Hussein Sosovele

00.4 *"Poverty and Family Size in Tanzania: Multiple Responses to Population Pressure?"*
C.L. Kamuzora and W. Mkanta

00.3 *"Survival and Accumulation Strategies at the Rural-Urban Interface: A Study of Ifakara Town, Tanzania"*
Anthony Chamwali

00.2 *"Poverty, Environment and Livelihood along the Gradients of the Usambaras on Tanzania"*
Adolfo Mascarenhas

00.1 *"Foreign Aid, Grassroots Participation and Poverty Alleviation in Tanzania:*
The HESAWA
Fiasco" S. Rugumamu

99.1 *"Credit Schemes and Women's Empowerment for Poverty Alleviation: The Case of Tanga Region, Tanzania"*
I.A.M. Makombe, E.I. Temba and A.R.M. Kihombo

98.5 *"Youth Migration and Poverty Alleviation: A Case Study of Petty Traders (Wamachinga) in Dar es Salaam"*
A.J. Liviga and R.D.K Mekacha

98.4 *"Labour Constraints, Population Dynamics and the AIDS Epidemic: The Case of Rural Bukoba District, Tanzania"*
C.L. Kamuzora and S. Gwalema

98.3 *"The Use of Labour-Intensive Irrigation Technologies in Alleviating Poverty in Majengo, Mbeya Rural District"*
J. Shitundu and N. Luvanga

98.2 *"Poverty and Diffusion of Technological Innovations to Rural Women: The Role of Entrepreneurship"*
B.D. Diyamett, R.S. Mabala and R. Mandara

98.1 *"The Role of Informal and Semi-Formal Finance in Poverty Alleviation in Tanzania: Results of a Field Study in Two Regions"*
A.K. Kashuliza, J.P. Hella, F.T. Magayane and Z.S.K. Mvena

97.3 *"Educational Background, Training and Their Influence on Female-Operated Informal Sector Enterprises"*

J. O'Riordan. F. Swai and A. Rugumyamheto

97.2 *"The Impact of Technology on Poverty Alleviation: The Case of Artisanal Mining in Tanzania"*
B W. Mutagwaba, R. Mwaipopo Ako and A. Mlaki

97.1 *"Poverty and the Environment: The Case of Informal Sandmining, Quarrying and Lime-Making Activities in Dar es Salaam, Tanzania"*
George Jambiya, Kassim Kulindwa and Hussein Sosovele

Working Papers

14/5 *The Tanzanian health sector as buyer and user of medicines and other essential supplies*
Paula Tibandebage, Maureen Mackintosh, Caroline Israel, Edwin P. Mhede, Phares GM Mujinja

14/4 *'Economic Transformation in Tanzania: Vicious or Virtuous Circle?'*
Marc Wuyts and Blandina Kilama

14/3 *The Changing Economy of Tanzania: Patterns of Accumulation and Structural Change*
Marc Wuyts and Blandina Kilama

14/2 *Silent Killer, Silent Health Care: A Case Study of the Need for Nurse-led Hypertension Management*
Celestina Fivawo

14/1 *The Invisibility of Wage Employment in Statistics on the Informal Economy in Africa: Causes and Consequences*
Matteo Rizzo and Marc Wuyts

13/4 *Payments and Quality of Ante-Natal Care in Two Rural Districts of Tanzania*
Paper 4 from the Ethics, Payments and Maternal Survival project.
Paula Tibandebage, Maureen Mackintosh, Tausi Kida, Joyce Ikingura and Cornel Jahari

13/3 *Payments for Maternal Care and Women's Experiences of Giving Birth: Evidence from Four Districts in Tanzania*
Paper 3 from the Ethics, Payments and Maternal Survival project.
Maureen Mackintosh, Tausi Kida, Paula Tibandebage, Joyce Ikingura and Cornel Jahari

13/2 *Understandings of Ethics in Maternal Health Care: an Exploration of Evidence From Four Districts in Tanzania*
Paper 2 from the Ethics, Payments, and Maternal Survival project
Paula Tibandebage, Tausi Kida, Maureen Mackintosh and Joyce Ikingura

13/1 *Empowering Nurses to Improve Maternal Health Outcomes*
Paper 1 from the Ethics, Payments, and Maternal Survival project
Paula Tibandebage, Tausi Kida, Maureen Mackintosh and Joyce Ikingura

Special Papers

14/4 *Review of the Governance Effectiveness of the Constituency Development Catalyst Fund in Tanzania*
Policy Forum and REPOA

14/3 *Hydrocarbon resources in Tanzania:*
Achieving benefits with robust protection
Sufian H. Bukurura and Donald E. Mmari

14/2 *In Quest of Inclusive Growth: Exploring the Nexus between Economic Growth, Employment, and Poverty in Tanzania*
Rizwanul Islam and Abel Kinyondo

14/1 *Assessing the Potential of Development Grants as a Promotive Social Protection Measure*
Flora Kessy

13/1 *Understanding the Process of Economic Change: Technology and Opportunity in Rural Tanzania*
Maia Green

13/2 *Rewards for High Public Offices and the Quality of Governance in Sub-Saharan Africa*
Theodore R. Valentine

12/4 *Growth with Equity – High Economic Growth and Rapid Poverty Reduction: The Case of Vietnam*
Do Duc Dinh

12/3 *"Why Poverty remains high in Tanzania: And what to do about it?"*
Lars Osberg and Amarakoon Bandara1

12/2 *The Instrumental versus the Symbolic: Investigating Members' Participation in Civil Society Networks in Tanzania*
By Kenny Manara

12/1 *The Governance of the Capitation Grant in Primary Education in Tanzania: Why Civic Engagement and School Autonomy Matter*
By Kenny Manara and Stephen Mwombela

11/1 *"Tracer Study on two Repoa Training Courses: Budget Analysis and Public Expenditure Tracking System"*
Ophelia Mascarenhas

10/5 *"Social Protection of the Elderly in Tanzania: Current Status and Future Possibilities"*
Thadeus Mboghoina and Lars Osberg

10/4 *"A Comparative Analysis of Poverty Incidence in Farming Systems of Tanzania"*
Raymond Mnenwa and Emmanuel Maliti

10/3 *"The Tanzania Energy Sector: The Potential for Job Creation and Productivity Gains Through Expanded Electrification"*
Arthur Mwakapugi, Waheeda Samji and Sean Smith

10/2 *"Local Government Finances and Financial Management in Tanzania: Empirical Evidence of Trends 2000 - 2007'*
Reforms in Tanzania"
Odd-Helge Fjeldstad, Lucas Katera, Jamai sami and Erasto Ngalewa

10/1 *"The Impact of Local Government Reforms in Tanzania"*
Per Tidemand and Jamal Msami

09.32 *"Energy Sector: Supply and Demand for Labour in Mtwara Region"*
Waheeda Samji, K.Nsa-Kaisi and Alana Albee

09.31 *"Institutional Analysis of Nutrition in Tanzania"*
Valerie Leach and Blandina Kilama

09.30 *"Influencing Policy for Children in Tanzania: Lessons from Education, Legislation and Social Protection"*
Masuma Mamdani, Rakesh Rajani and Valerie Leach with Zubeida Tumbo-Masabo and Francis Omondi

09.29 *"Maybe We Should Pay Tax After All? Citizens' Views of Taxation in Tanzania"*
Odd-Helge Fjeldstad, Lucas Katera and Erasto Ngalewa

09.28 *"Outsourcing Revenue Collection to Private Agents: Experiences from Local Authorities in Tanzania"*
Odd-Helge Fjeldstad, Lucas Katera and Erasto Ngalewa

08.27 *"The Growth – Poverty Nexus in Tanzania: From a Developmental Perspective"*
Marc Wuyts

08.26 *"Local Autonomy and Citizen Participation In Tanzania - From a Local Government Reform Perspective."*
Amon Chaligha

07.25 *"Children and Vulnerability In Tanzania: A Brief Synthesis"*
Valerie Leach

07.24 *"Common Mistakes and Problems in Research Proposal Writing: An Assessment of Proposals for Research Grants Submitted to Research on Poverty Alleviation REPOA (Tanzania)."*
Idris S. Kikula and Martha A. S. Qorro

07.23 *"Guidelines on Preparing Concept Notes and Proposals for Research on Pro-Poor Growth and Poverty in Tanzania"*

07.22 *"Local Governance in Tanzania: Observations From Six Councils 2002-2003"*
Amon Chaligha, Florida Henjewele, Ambrose Kessy and Geoffrey Mwambe

07.21 *"Tanzanian Non-Governmental Organisations – Their Perceptions of Their Relationship with the Government*

of Tanzania and Donors, and Their Role and Impact on Poverty Reduction and Development"

06.20 *"Service Delivery in Tanzania: Findings from Six Councils 2002-2003"*
Einar Braathen and Geoffrey Mwambe

06.19 *"Developing Social Protection in Tanzania Within a Context of Generalised Insecurity"*
Marc Wuyts

06.18 *"To Pay or Not to Pay? Citizens' Views on Taxation by Local Authorities in Tanzania"*
Odd-Helge Fjeldstad

17 *"When Bottom-Up Meets Top-Down: The Limits of Local Participation in Local Government Planning in Tanzania"*
Brian Cooksey and Idris Kikula

16 *"Local Government Finances and Financial Management in Tanzania: Observations from Six Councils 2002 – 2003"*
Odd-Helge Fjeldstad, Florida Henjewele, Geoffrey Mwambe, Erasto Ngalewa and Knut Nygaard

15 *"Poverty Research in Tanzania: Guidelines for Preparing Research Proposals"*
Brian Cooksey and Servacius Likwelile

14 *"Guidelines for Monitoring and Evaluation of REPOA Activities"*
A. Chungu and S. Muller-Maige

13 *"Capacity Building for Research"*
M.S.D. Bagachwa

12 *"Some Practical Research Guidelines"*
Brian Cooksey and Alfred Lokuji

11 *"A Bibliography on Poverty in Tanzania"*
B. Mutagwaba

10 *"An Inventory of Potential Researchers and Institutions of Relevance to Research on Poverty in Tanzania"*
A.F. Lwaitama

9 *"Guidelines for Preparing and Assessing REPOA Research Proposals"*
REPOA Secretariat and Brian Cooksey

8 *"Social and Cultural Factors Influencing Poverty in Tanzania"*
C.K. Omari

7 *"Gender and Poverty Alleviation in Tanzania: Issues from and for Research"*
Patricia Mbughuni

6 *"The Use of Technology in Alleviating Poverty in Tanzania"*
A.S. Chungu and G.R.R. Mandara

5 *"Environmental Issues and Poverty Alleviation in Tanzania"*
Adolfo Mascarenhas

4 *"Implications of Public Policies on Poverty and Poverty Alleviation: The Case of Tanzania"*
Fidelis Mtatifikolo

3 *"Who's Poor in Tanzania? A Review of Recent Poverty Research"*
Brian Cooksey

2 *"Poverty Assessment in Tanzania: Theoretical, Conceptual and Methodological Issues"*
J. Semboja

1 *"Changing Perceptions of Poverty and the Emerging Research Issues"*
M.S.D. Bagachwa

Project Briefs

Brief 45 *Transparency and Accountability in Local Governance in Tanzania*
Amon E. Chaligha

Brief 44 *Public Accounts Committees in Eastern Africa: A Comparative Analysis with a Focus on Tanzania*
Riccardo Pelizzo and Abel Kinyondo

Brief 43 *Reversing Pharmaceutical Manufacturing Decline in Tanzania: Policy Options and Constraints.*
Samuel Wangwe, Paula Tibandebage, Edwin Mhede, Caroline Israel, Phares Mujinja, Maureen Mackintosh

Brief 42 *Incomplete Intermediary Coordination and its Effects on Productivity of Sugarcane in Tanzania*
Donald Mmari

Brief 41 *Citizen Participation and Local Governance in Tanzania*
Amon E. Chaligha

Brief 40 *National Agriculture Input Voucher Scheme(NAIVS 2009 - 2012), Tanzania:Opportunities for Improvement*
Kriti Malhotra

Brief 39 *Examining the Institutional Framework for Investment in Tanzania: A perspective from the Executive Opinion Survey, 2012-13*
Johansein Rutaihwa

Brief 38 *"Achieving High Economic Growth with Rapid Poverty Reduction: The Case of Vietnam"*
Do Duc Dinh

Brief 37 *"Social-Economic Transformation for Poverty Reduction: Eight Key Messages for Unlocking Tanzania's Potential"*
Philip Mpango

Brief 36 *"Tracer Study for Research Users: The case of TGN Media Training"*
Ophelia Mascarenhas

Brief 35 Understanding Rural Transformation in Tanzania

Brief 34 Affordability and Expenditure Patterns for Electricity and Kerosene in Urban Households in Tanzania

Brief 33 Biofuel Investment in Tanzania: Awareness and Participation of the Local Communities

Brief 32 Supporting Tanzania's Cocoa Farmers

Brief 31 The Instrumental versus the Symbolic: Investigating Members' Participation in Civil Society Networks in Tanzania

Brief 30 Competitiveness of Tanzanian Coffee Growers amid Bifurcated Coffee Markets

Brief 29 Using Annual Performance Reports to Manage Public Resources in Tanzania

Brief 28 Growth of Micro and Small, Cluster-Based Furniture-Manufacturing Firms and their Implications for Poverty Reduction in Tanzania

Brief 27 Creating Space for Child Participation in Local Governance in Tanzania: Save the Children and Children's Councils

Brief 26 Tracer Study on REPOA Training Courses for Research Users: Budget Analysis and Public Expenditure Tracking System

Brief 25 Transparency in Local Finances in Tanzania.
2003-2009

Brief 24 Social Protection of the Elderly in Tanzania: Current Status and Future Possibilities

Brief 23 Children's Involvement in Small Business: Does it Build Youth Entrepreneurship?

Brief 22 Challenges in data collection, consolidation and reporting for local government authorities in Tanzania

Brief 21 Children's Involvement in Small Business: Does it Build Youth Entrepreneurship?

Brief 20 Widowhood and Vulnerability to HIV and AIDS Related Shocks: Exploring Resilience Avenues

Brief 19 Energy, Jobs and Skills: A Rapid Assessment in Mtwara, Tanzania

Brief 18 Planning in Local Government Authorities in Tanzania: Bottom-up Meets Top-down

Brief 17 The Investment Climate in Tanzania: Views of Business Executives

Brief 16 Assessing the Institutional Framework for Promoting the Growth of Micro and Small Enterprises (MSEs) in Tanzania: The Case of Dar es Salaam

Brief 15 Preventing Malnutrition in Tanzania: A Focused Strategy to Improve Nutrition in Young Children

Brief 14 Influencing Policy for Children in Tanzania: Lessons from Education, Legislation and Social Protection

Brief 13 Disparities Exist in Citizens' Perceptions of Service Delivery by Local Government Authorities in Tanzania

Brief 12 Changes in Citizens' Perceptions of the Local Taxation System in Tanzania

Brief 11 Citizens Demand Tougher Action on Corruption in Tanzania

Brief 10 Outsourcing Revenue Collection: Experiences from Local Government Authorities in Tanzania

Brief 9 Children and Vulnerability in Tanzania: A Brief Overview

Brief 8 Mawazo ya AZISE za Tanzania Kuhusu Uhusiano Wao na Wafadhili

Brief 7 Mawazo ya AZISE za Tanzania Kuhusu Uhusiano Wao na Serikali

Brief 6 Local Government Reform in Tanzania 2002 - 2005: Summary of Research Findings on Governance, Finance and Service Delivery

Brief 5 Children Participating in Research

Brief 4 Changes in Household Non-Income Welfare Indicators - Can poverty mapping be used to predict a change in per capita consumption over time?

Brief 3 Participatory Approaches to Local Government Planning in Tanzania, the Limits to Local Participation

Brief 2 Improving Transparency of Financial Affairs at the Local Government Level in Tanzania

Brief 1 Governance Indicators on the Tanzania Governance Noticeboard Website TGN1 What is the Tanzania Governance Noticeboard?

LGR 12 Trust in Public Finance: Citizens' Views on taxation by Local Authorities in Tanzania

LGR 11 Domestic Water Supply: The Need for a Big Push

LGR10 Is the community health fund better than user fees for financing public health care?

LGR 9 Are fees the major barrier to accessing public health care?

LGR 8 Primary education since the introduction of the Primary Education Development Plan

LGR 7 Citizens' access to information on local government finances

LGR 6 Low awareness amongst citizens of local government reforms

LGR 5 Fees at the dispensary level: Is universal access being compromised?

LGR 4 TASAF – a support or an obstacle to local government reform

LGR 3 Councillors and community leaders – partnership or conflict of interest? Lessons from the Sustainable Mwanza Project

LGR 2 New challenges for local government revenue enhancement

LGR 1 About the Local Government Reform Project