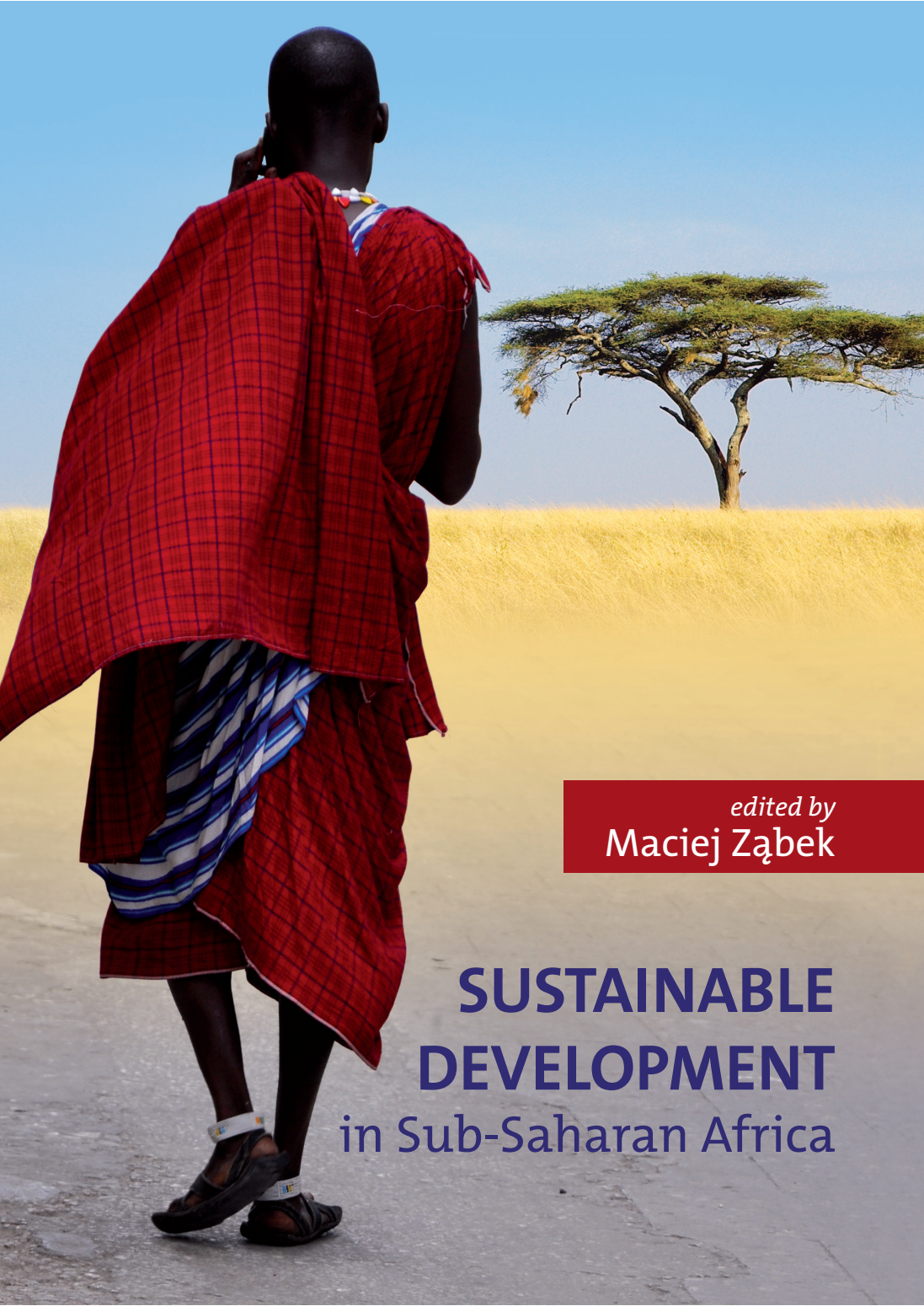

edited by
Maciej Ząbek

SUSTAINABLE DEVELOPMENT
in Sub-Saharan Africa

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CONTENTS

INTRODUCTION

The Tanzanian-Polish conference held at the private University in Iringa, Tanzania, in February 2015, served as an inspiration for this publication. Its leading theme was the idea of „sustainable development".

This term was firstly used in 1713 in the Treatise on the management of forests by the German scholar Hans Carl von Carlowitz[1], who proved that people should cut only as many trees as the number which could grow in the same place in a similar period of time so that the forests would never vanish.

"Not by accident this „cutting-edge" consideration appeared when there had already occurred an acute scarcity of timber for the local extractive industry because trees had been clear-cut in the neighbouring forest areas.

This is a very natural way of thinking as people resort to the idea of „sustainable" usually in times of disasters, calamities, deficits or ecological imbalance. Only faced with such crises do people wonder how they could have been prevented.

In the 20th century the need to take into consideration the principles of sustainable development was firstly emphasized by U Thant, the Secretary-General of the United Nations, in 1969. Finally, (first and foremost under the influence of the report of the Club of Rome of 1972 warning about unlimited exploitation of natural resources), the search for alternative models of devel-

[1] H.C. von Carlowitz, *Sylvicultura oeconomica*..., Freiberg 1713.

opment started. They became an inspiration for the birth of the above-mentioned term introduced to the global political debate. In 1983, the United Nations established the so-called Brundtland Commission (named after Gro Harlem Brundtland, the chairman of the Commission)[2], which coined and defined the meaning of the term "sustainable development" and contributed to convene the so called Earth Summit in Rio de Janeiro[3], in 1992.

Leaders from majority world countries, major United Nations agencies and pro-ecological organizations and movements participated in this summit. They compiled a set of rules for sustainable development, i.e. the so called Rio Declaration on Environment and Development, and the United Nations Framework Convention on Climate Change and Biological Biodiversity, in an attempt to enforce this idea.

The Brundtand Commission defined the concept of „sustainable" as „development which satisfies the needs of contemporary times, without violating the ability of the future generations to satisfy their own needs". Furthermore, in the Polish translation the word „sustainable" implicates „stability", „renewability", „rationality", „adaptation", „temperance", „mildness" and "peacefulness". In fact, the very definition „development" is still understood as the process of growth or development to a more and more complicated form, more intense, and more excellent. Yet, it has already been made clear that „development" understood as the economic growth does not translate itself automatically into the betterment

[2] Its full name is as follows: World Commission on Environment and Development.

[3] The next Summit was held in Johannesburg, in 2002. During the summit principles and recommendations developed in Rio were confirmed. See: U. Grober, *From Freiberg to Rio – Hans Carl von Carlowitz "Sylvicultura Oeconomica" and career of the term "sustainability"*, in: U. Grober, *Sustainability – A cultural history*, Totnes, UK, 2012.

of living conditions and security. Thus, it has been assumed that in order to be secure the „development" should be „sustainable". Such an assumption became to be commonly perceived as not only proper, but also natural. It is evident that no one wants to live in a degraded, exploited and polluted environment. This philosophy quickly crossed the frames of the sheer environmental protection. Its core is considerably constituted by social welfare and the so called human rights[4]. A lot of emphasis is placed on minimizing "external costs" generated by economy and the co called social justice. The problem, however, is very particular, as it is not obvious how to develop oneself and simultaneously avoid negative effects resulting therefrom. In fact, it is sometimes very hard to recognize potential threats on a day-to-day basis. Generally, only after a certain period of time are we able to evaluate the real influence of defined technologies on both the environment and the human being. Such obstacles may be exemplified by new varieties of medicines currently coming into the market, food containing GMOs, or any other inventions which cannot be immediately classified as safe or unsafe. A similar situation occurs in case of many development projects executed in Africa. The root of uncertainty as to the final results of various programmes may be also found in scientific research conducted under the influence or commissioned by groups representing miscellaneous financial, political or ideological interests.

In reality, academic researchers, expressing distinct opinions on generally favoured development projects, are often subject to political pressure. In their close environs they are frequently de-

[4] In 2002, The United Nations developed a set of challenges to be faced by humanity in XXI century, defined as Millennium Development Goals (MDGs). They include among others halving extreme poverty and famine, promoting gender equality, improvement of health care, environmental protection and global partnership for development purposes.

rided and calumniated. They are separated from the main sources of financing and consequently, at universities where freedom of speech should be guaranteed, a lot of scholars are forced to stay silent. On the other hand, however, one should remember that the very scholars are not innocent, which is nowadays highly stressed by reflective anthropology. In fact, they hold specific political views, they are consumed by obsessions and they mix up knowledge with opinions. Additionally, the results of their research presented as objective, are in fact ideologically or business-biased. This type of controversy may be exemplified by heavily political discourse on the so called global warming. In fact, despite climate fluctuations being constantly documented in the whole world, according to sceptics it is still hard to categorically define the direction of the on-going climate changes (warming or cooling) and their significance, not to mention to prove their anthropogenic character. No wonder that the measures undertaken with the aim to fight with the above-mentioned global warming may cause more concern than hope for the positive change in a situation when we face a rather ostensible consensus enforced by political groups, which in reality is far from unanimity[5].

The idea of „sustainable development", in view of slogans opting for the shift in economy from competitiveness to greater solidarity,

[5] An example of the lack of this unanimity was the so called Heidelberg Appeal, announced before the Earth Summit in Rio in 1992, signed by 4000 scholars from all over the world including several dozens of Nobel Prize winners, discouraging the governments from taking decisions based on pseudo-scientific arguments or false data; see: http://www.sepp.org/heidelberg_appeal.html. The so called ecologists found it a deceit prepared by industrial concerns. Still, since then a lot of statements, publications and reports undermining arrangements of the *International Panel on Climate Change*) have been published and the debate on this topic between mainstream scientists and sceptics has been continued until now. See C. Parkinson, *Coming Climate Crisis? Consider the Past, Beware the Big Fix*, Plymouth UK 2010.

cooperation and levelling inequality, was spread, as commonly known, by the left wing. This, in turn, entails the programme of economy requiring state and international organisations' intervention, pro-ecologic fiscal and legal regulations, and finally the establishment of the world government. Supporters of such changes argue that only then is there a chance to stop the global destructive rivalry, struggles for raw materials and toxic industrial waste export to the poor countries. Only then will the introduction of fair trade and eradiation of the above-mentioned anthropogenic reasons of global warming, along with the implementation of the ideal of „sustainable development" seem plausible.

However, numerous questions which might be asked here still lack good answers, e.g. "Who could establish such world government?" or "Whose business would this government represent?", "Is not the idea of „sustainable development", by chance, used by the West to maintain their world dominant position by lowering economic growth in the poorer countries?", "What does fair trade mean?", or "May subsidies and protectionism assumed by fair trade be called fair?". Many experts on sustainable development do not ask such questions but meanwhile, countries like Poland and Tanzania, with extensive socialist experience should certainly make the researchers of both these countries take a cautious approach to adopting and realising unverified ideas, even so correct in their general objectives as the idea of „sustainable development".

Authors of this book do not relate to the above-mentioned general problems, though in their detailed studies of certain cases they tackle the questions provoking disputes and controversies. Thus, I have decided to view them in a wider context so as to better comprehend their meaning. One example of such texts, falling both into the context of struggle for ecological balance and the above-mentioned social justice, is a paper written by a young researcher Evelyn Paraboy Kaney and her friend Katharine Farrell. It

examines the Maasai in Tanzania who face problems with access to pastureland and water for their cattle in the context of fast expansion of agriculture, which according to the authors, poses a threat to their survival. The Maasai are forced to resign from the mobility of livestock in favour of ranch farming. The Maasai, however, as the researchers underline, do not approve of such solutions as mobility of livestock (connected with migratory cattle breeding) is the key element of their identity. Hence, the authors representing their interests put forward solutions allowing the possibility of legal changes and state support aimed at conservation of pastureland of the Maasai and access to water for their cattle, and even at establishment of pastoral reserves resembling national parks.

On one hand, critical analysis of this exceptionally interesting paper allows for the ascertainment, as already proved, that migratory cattle breeding is one of the most ecological ways of using pastureland and to a certain extent fits in the idea of sustainable development[6]. On the other hand, however, it is not true that it constitutes the necessary prerequisite to maintain the Maasai identity. The authors are not the first researchers to herald fast extinction of the Maasai[7], whereas the Maasai people set a good example of extraordinary well-developing ethnic group. In fact, other clusters, influenced either by western-like globalisation or Islam, faster lose their identity in Tanzania, often to the benefit of the Maasai by adopting their identifying patterns[8]. It may be also observed that

[6] Numerous studies on pastoral communities confirm this fact. See, e.g.: A.B. Smith, *Pastoralism in Africa: origins and development ecology*, London – Ohio – Johanesburg 1992.

[7] Amin, Mohamed, Duncan, Willetts and John, Eames, *The last of the Maasai*, London, Bodley Head, 1987.

[8] Examples are set by ethnic groups of the East Africa such as: Mukogodo, Sonjo, Saleita, Lanat, Turkana, Rendille and Akie. See Lee Cronk, *From Mukogodo to Maasai. Ethnicity and Cultural Change in Kenya*. Harvard, Westview Press, 2004.

a lot of Maasai people no longer breed cattle for a living. They shift to the widely understood sphere of services not only in tourism, but also in administration and education, like Evelyn Paraboy Kaney. Thus, neither extensive cattle breeding in its existing form nor life in a reserve seems to be a dream of all the Maasai people. However, in the context of confrontation with farmers and in view of scarcity of traditional open-access resources it seems right to ask a question whether pastoralists should continue defending their practices or they would rather find more modern methods to defend their business? Neither nationalisation of the common-property resources, tried during Tanzanian socialism, nor privatisation of pastureland and ranch farming, postulated nowadays, seem to be appropriate solutions. A better solution embracing tradition and modernity, nomads and farmers would be the implementation of the idea of collective society and governing the *common-property resources* by local communities, pursuant to the theory of Elinor Ostrom[9]?

Next, in my article, I examine consequences resulting from the inflow of refugees to certain African countries and their stay in special refugee camps. In regions where such settlements are set up, numerous conflicts between the newcomers and the indigenous people occur. Such places set a good example of emergency when different types of deficit, devastation or ecological imbalance appear and form the basis for discourse on the sustainable development. In this context a question arises what should be done so that the host countries could on one hand protect refugees and on the other hand resist the negative impacts of their influx on the whole environment, which usually happens in the regions not prepared for welcoming such a great number of people. In other words, how to stay loyal and faithful to the postulate of defending

[9] Elinor, Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge, 2009.

human rights and at the same time not to cause disasters violating these rights? To answer the above questions I would like to present the thesis endorsed by UNHCR stating that the inflow of refugees does not deepen the poverty of the host countries but brings them benefits. Thanks to this phenomenon local economy starts to thrive in neglected regions and the very refugee camps become suitable areas to test new ecological technologies promoting sustainable development. Are not these arguments, however, given mainly because of the interests of the aid organisations whose main objective is to bring the refugees together? It seems fairly obvious that such camps, similar to shantytowns, contradict the idea of „sustainable". Negative reactions of some conference participants (who already knew this problem) to these proposals suggest that their doubts are not groundless. The authorities of the host countries should, in line with the idea of sustainable development, not only object to the attempt of introducing development projects (including even those pro-ecological ones) in the vicinity of refugee camps, but not allow for setting up the camps. This approach does not mean opposing the idea of welcoming refugees but abandoning the idea of creating big clusters. A more pro "sustainable" idea would be to scatter them by promoting the so called autonomous settlement in rural and urban areas (where refugees melt into the local communities), like in e.g. Cameroon or Uganda. Unfortunately, UNHCR and authorities of the host countries usually do not approve of this idea.

The mainstream anthropological studies also embrace issues connected with the use of the so called indigenous knowledge[10]

[10] The term, in the above-discussed meaning, was popularized by D. M. Warren in the 1970-s.; D.M.Warren, *Comments to Paul Sillitoe's „The Development of Indigenous Knowledge: A new Applied Anthropology"*, "Current Anthropology", 39(2), 1998, pp. 244–245. The terms: local knowledge and folk knowledge are synonymous.

for the idea of sustainable development. It is defined as local or folk knowledge on unique technologies, characteristics of various organisms and general knowledge on environmental issues and dependence relationships, including religious beliefs. These questions were examined in the study by Sosthenes Ruheza, who along with his colleagues (Z.A. Mattee, E.E. Chingonikaya and Z. Kilugwe) from the Agricultural University Sokoine from the city of Morogoro, conducted exceptionally interesting ethno-botanic studies on the significance of indigenous knowledge system in sustainable management and the use of forests in the Nguru Mountains. Majority of the Nguru Mountains inhabitants, according to the authors, believe in sacred nature of the environment they live in. Moreover, in line with cultural heritage of these tribes, traditional customs and beliefs help to protect nature. They include, among others, prohibitions on intensive farming and destroying „sacred forests" inhabited by the deceased ancestors or possessing supernatural forces affecting people living in the close vicinity. It is a great taboo to pick up certain wild plant species or cut „sacred trees", as this could lead to curse, disease or death. Bans embrace killing and eating meat of certain rare or harmless animals, which are perceived as sacred. The researchers concluded that when people working in local reserves have no ability to efficiently protect the environment, religious beliefs of indigenous people should not only be taken into consideration but also practically used in the sustainable management of the local natural resources. Indigenous people believe that God created all living creatures and a man does owe him due respect. It raises hope that thanks to their faith it is possible to save the biodiversity of the local environment. Recommending this article I wish the authors had extended their studies and included additional presentations on bio-prospecting, i.e. the use of local wild plants. Nowadays, bio-prospecting belongs to the leading faculties of the applied anthropology covering studies of

indigenous knowledge system in search of useful components of living organisms to be used in pharmaceutical industry[11].

Already mentioned controversies over global climate changes constitute the central theme of the next article, written by Jerzy Gilarowski. It is one of the most crucial subjects in the studies of „sustainable development", whose most enthusiastic supporters have since long favoured the reduction of carbon dioxide emission and decarbonisation of economies as the main drivers of global warming. The author refers to this theory and analyses the increase of average temperatures over the last 150 years, without overcomplicating, however, anthropogenic nature of the reasons. Instead, he highlights the scope of global warming symptoms occurring in the natural environment, asking the question whether, as many scholars argue, global warming is in fact lower in equatorial regions than in temperate and polar climates. Research which he conducted aimed to explain this issue at least in the context of Tanzania, located in equatorial region. Students, their parents and grandparents were to answer a set of questions regarding changes taking place in their closest environment over the last 30 years. The results confirmed the author's doubts as ¾ of respondents actually observed negative changes in their environs, mainly with regard to climate and soil fertility. According to the author, environmental changes are likely to occur in the future so he warns that Tanzania will have to adjust to them its agriculture and system of water management. Commenting on the above theses it should be stressed that research regarding memory and evaluation of the past, although very interesting indeed, should always be analysed with some margin of error. Human memory is selective and the

[11] See, inter alia, J.M. Finger & P. Schuler, *Poor People's Knowledge: Promoting Intellectual Property in Developing Countries*, Washington 2004; D.A. Posey, *(Re) Discorvering the Wealth of Biodiversity, Genetic Resources, and the Native Peoples of Latin America*, „Anales Nueva Epoka", 2002, (5), pp. 37–60.

process of recollecting the past is accompanied by emotions and lack of distance, which results in a tendency to idealise it, in line with the philosophy that ”life was much better in the past”. Still, the number of respondents (250 people) and the study having been conducted twice, prove its credibility. Obviously, as I have already mentioned, it should be remembered that the recorded changes in certain natural environments of Tanzania do not demonstrate that the main reason is e.g. the emission of carbon dioxide.

The leading theme of the next article, written by Flora O. Kasumba and Robert Lukelo, is „overproduction” of higher education graduates in Tanzania. The problem highlighted by the authors, present in majority of the developed countries[12], was until recently hardly recognizable in the developing ones. The fact that it proceeded so fast in countries like Poland and Tanzania may come as a surprise. It mainly stems from over-evaluation of higher general education and underestimating the significance of various technical skills; sublimating a high school diploma as the only path to individual career and a better life, and the same as a driver of the country’s development. In the past it was common knowledge that graduating from university guaranteed a highly desirable stable job with a state employer. Nevertheless, various high schools diplomas have become so commonplace that nowadays majority of employers opt for concrete vocational experience and qualifications rather than general education, not to mention humanistic or economic specialisation. The country’s development naturally depends on highly qualified experts but they do not necessarily include thousands of graduates, who except having excessive ambitions, are not specialists in any concrete professions. Unfortunately, in the field of education even the slightest lack of temperance and ra-

[12] Germany is an exception in Europe as it develops technical faculties according to plan and intentionally limits the access of youth to higher education.

tionality leads to crisis calling for the the philosophy of sustainable development. In this context, the authors show the situation in Tanzania where, similarly to Poland after liberalisation of higher education in the 1990-s, the number of high schools and their graduates have been on the increase. The alumni, however, have problems in finding the desirable job. Flora O. Kasumba and Robert Lukelo blame cultural factors and mismatch of school curriculums to the job market requirements. Alumni do not want to be self-employed mainly because they lack the required qualifications, not to mention financial capacities. Thus, they strive to find positions in state-owned companies. Symbolic expression of their lot is the photo presenting 10 000 alumni gathered at the state stadium in Dar es-Salam in search of 70 vacancies. The authors wonder what they should do in this situation. What goals are achievable for them and how can they be reached? They raise an issue of social threats caused by millions of unemployed young people. They pinpoint the need of changes in the higher education sector and its sustainable development directed at introduction of new faculties and specialised skills (foreign languages, technical skills, team-work, problem solution, creativity and innovativeness). They also underline the possibilities of self-employment of alumni in agriculture, fishery, tourism and the use of other natural resources that Tanzania abounds in. Additionally, they highlight unused business potential in Tanzania mainly in the production of local goods and show how to accomplish these ideas by the alumni, with the help of their families and the state.

Next article raises the issue of development assistance extended by the Catholic Church to the marginalized inhabitants of the Northern Cameroon in the context of their evangelization. The author, Fr. Jarosław Różański, does not refer, like the others in this volume, to the idea of „sustainable development". Instead, he indicates the term of „human promotion" already recalled by

the Pope Paul VI and referred to in the documents of the Second Vatican Council emphasizing that the term "human promotion", which like the "secular" sustainable development is much broader than "progress" generally understood as technological or economic[13]. This concept entails Christian development which does not only aim to achieve higher economic growth but implies integral development of humanity, raising the standard of living and improving the overall human condition, not to the detriment of our environment.

This standpoint, in line with the leading idea of this volume, was particularly emphasised by the Pope Francis in this year encyclical *Laudato Sii'* („Praise be to you")[14], which thus far was the loudest attempt to attract attention to the problem of the degradation of environment caused, among others, by energetics of hard coal. Fr. Jarosław Różański underlines concrete development and charitable activities of the missionaries in the Northern Cameroon. Development aid encompasses the introduction of new crops, raising the living standards, building latrines, acquiring skills of housekeeping and money management, reforestation and prevention of desertification. Charity embraces: taking care of the poor families, "street children", the displaced, the physically and mentally disabled and help in natural disasters. Moreover, integrity of development with evangelization assumes supporting local cultures by codification of grammatical rules of the local

[13] Pope Paul VI expressed his opinion on this topic in apostolic exhortation *Evangelii nuntiandii*. The term refers to the higher theological argumentation presenting a man as chosen by God and affirming his special role in the creation and assumption that evangelization and human promotion, i.e. development and liberation are interlinked. See: J. Różański, *Misje a promocja ludzka*, Warsaw 2001, p. 25.

[14] The name of the Encyclical refers to the prayer by the Saint Francis of Assisi *Canticle of the Sun or the Praise of the Creatures*, Cracow 2005, p. 348.

languages, implementation of the alphabet and publications in the local languages along with establishing reputable catholic schools.

The last three articles are devoted to the economic context of the discussed issue. They directly or indirectly regard the so called "sustainable business" or "corporate social responsibility". The terms embrace a certain philosophy being a response to challenges of the idea of sustainable development[15]. It is also defined as responsible entrepreneurship searching for synergy among people, earth and profits; business, which in a long run, apart from environmental and social benefits, is to guarantee a long-term increase in the value of enterprises. It is assumed that taking the lead by entrepreneurs in sustainable business will contribute to growing attractiveness, competitiveness and credibility of their businesses. On the whole, the main goal is to enhance the business performance, i.e. undertake voluntary commitments in favour of natural environment and local communities, and reduce negative phenomena. Whereas, in reality the so called small and medium-sized enterprises (SMEs), referred to in above-mentioned articles, can boast about better performance than big business organizations as far as principles of sustainable business are concerned.

One of the final papers, written by Ryszard Piasecki and Janusz Gudowski, commences with the elaboration of the theory of the so called Foreign Direct Investment (FDI) from the most advanced economies in Sub-Saharan Africa, assuming that such investments constitute the domain of the most powerful companies in the world. Competitive advantage of these multinational enterprises in the technical and organisational fields allows for their active business operations in the chosen countries. Meanwhile, we can observe an increasing investment activity of small and medium-

[15] OECD, *Corporate Social Responsibility. Partners for Progress*, Organization for Economic Co-operation and Development, Paris, 2001

sized enterprises from the so called emerging economies from Asia, South America and Eastern Europe. It contradicts the theory and puzzles the economists dealing with these issues. Authors do not completely solve the mystery, postulating further research. They present, however, determinants and tendencies regarding the inflow of direct foreign investment to Sub-Saharan Africa (signalizing favourable factors and arising threats), and also list examples of Polish investments which have taken place in these markets until now. It seems that small and medium-sized enterprises, coming from emerging economies such as Poland, Turkey or India, are likely to enjoy a better future than multinational enterprises. In fact, they run a more sustainable business and generate lower costs. Moreover, they are better adjusted to African conditions (also in understanding poverty), more actively engage themselves in everyday life of local communities, know them better and are able to act in favour of them.

In the penultimate article by Izabella Łęcka, from the perspective of reports of Economist Intelligence Unit[16], the topic of small and medium-sized enterprises (SMEs) has been enriched by educational context. Admitting that SMEs play an essential role in the development of global economy mainly because they create most of new workplace all over the world, the author states that nowadays they face greater difficulties in globalised business environment. Thus, she attempts to answer the question of how enterprises from African countries can handle the international competition and expansion. According to Izabella Łęcka, it may be only achieved through the development of education and science, which has an

[16] Economist Intelligence Unit (EIU) is a research and analysis division of the Economist Group (international media enterprise with its registered seat in London, specialising in providing information on international economic activity, forecasts and offering advisory services, preparing analysis, reports and economic forecasts). See the website of Economist Intelligence Unit, "Who we are".

indirect relationship with the increase of economic innovativeness. Nonetheless, the key factor of growth is the development of human capital and investment in science, which can be best exemplified by Asian countries which Africa should follow. In conclusions, the author underlines that there is an absolute necessity to develop small and medium-sized enterprises in African countries taking into consideration the increasing number of youth entering reproductive age. These nations should make every effort to create not only the most friendly business environment but also enhance the educational level of young citizens. This latest postulate stressing the importance of quantitative over qualitative factor seems to be of great significance as it harmonizes with the idea of sustainable development and theses already enunciated by Flora Kasumba and Robert Lukelo on overproduction of alumni in Tanzania, who neither create nor find jobs there.

The volume ends with an interesting article by Kennedy Kibona and Benedict Shilla who conducted the study in Iringa Municipality aiming to assess the importance of saving as one of capital sources for SMEs in Tanzania. The researchers focused on the saving possibilities of owners and managers of such enterprises as these very savings constitute the main source of financing their further business activity. Their study showed that in Tanzania people aged between 26–31 years have accumulated the greatest amounts of savings. These people live in cities and have not set up their families yet or their families are very small (3–4 members). Such entrepreneurs are able to save daily the amount ranging from 10 to 20 thousand shillings (i.e. from 20 to 40 Polish zloty), which in local conditions constitutes the most in the group of SMEs owners. Age, place of living and a number of dependent family members are of key importance. It occurs that education does not play here a major role (most of these entrepreneurs do not have higher education). Similarly, gender, ethnicity and religion (although majority

are Christians) do not matter. The authors prove, however, that crucial in further development of SMEs in Tanzania will be the access to seed capital and educational development. Thus, they postulate to follow the American pattern based on cheap crediting which should be supported by state. It means that the influence of global model of free market American capitalism is more and more commonplace in certain social processes, which leads to the dissolution of traditional family even so strong as the African one. It is tantamount to the following appeal: borrow money from the bank, insure yourself, break relations with your family and have fewer children. Only then will you be „happier". Following this path will certainly result in a lower birth rate. Yet, is it still sustainable?

To sum up, I would like to stress that the presented topics encompass only symbolic fragments of a vast array of issues regarding the idea of sustainable development. Its diversity, exemplified by this volume, proves the complexity and extent of the subject matter. Please note that as an editor I neither changed nor interfered with the forms and structures of the published papers. I presented them in a specific order, in line with the subject area outlined in this introductory section.

Maciej Ząbek

EVELYN P. KANEY AND KATHARINE N. FARRELL

MOBILITY AS A PASTORALISTS' SURVIVAL TECHNIQUE

ABSTRACT

This paper reports the preliminary results of an empirical study of farmers-pastoralists conflicts in Mbarali District in the Southern Highlands of Tanzania. The results are based on a combination of literature review and semi-structured interviews conducted with pastoralists in the villages of Matebete and Mwanavala. Studies of farmers-pastoralists conflicts are usually presented from the farmers' perspective. In this study I explore the conflict from the pastoralists' perspective, with the aim of finding ways to reduce conflicts among the farmers and pastoralists in the two case study villages of Matebete and Mwanavala, and to provide examples of how it may be possible to make laws for Tanzania that will allow the two groups to live in peace and harmony while sharing scarce resources. Conflict in Mbarali District has been increasing at an alarming rate over the past ten years with acts of violence against pastoralists and their

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cattle becoming increasingly common. At first glance, this appears to be caused mainly by a scarcity of water associated with the drying up of the Great Ruaha River and Chimala River. However, we hypothesize, that a combination of increased rice farming activities and associated policies restricting the mobility of livestock are also contributing to the conflict.

Where earlier practices included loose rules for informal shared land use, today, each village in the region is expected to have enough land and other resources to sustain its own livestock. Movement of livestock between villages is prohibited. In my study I explore how prohibiting the pastoralists to graze as they did before may be increasing the negative impacts that arise for both farmers and pastoralists and ask what land use rights would be fair and correct from the pastoralists' perspective. Pastoralists started to settle in Mbarali District in 1952 and lived in the region for many years without conflict. My results suggest that progressive increases in the amount of land being used for rice cultivation, with the Kapunga Rice Project, Mbarali Estate and Madibira Rice Estates have changed the relationship between pastoralists and farmers. Before expansion, livestock drank water from the same rivers and crossed the same villages without conflicts. Today, many farms are found along the way to the river and pastoralists are charged both to take their cattle to feed on the residue of these farms and to access the river. Bringing cattle to feed on farm residue was previously viewed as a service. Today's changed land use obliges pastoralists to move their livestock across these farms to access water.

Key words: Maasai, pastoralists, farmers, cattle, access to water, mobility, conflict

Introduction

In recent years there has been great fear among the village pastoralists of the Mbarali District in Mbeya Region of Tanzania over government policies that do not favour pastoralists, which led to the eviction of pastoralists in the Mbarali District in 2006 and 2007. Both, the pastoralist inhabitants of Matebete and Mwanavala villages see these recent evictions as a threat to existence of pas-

toralism in the district. The evictions have come along with other changes that are being observed by pastoralists, such as massive increases in the farmed area in Mbarali District, expansion of the boundaries of the Ruaha National Park and prolonged droughts that have affected wet areas of Malenga Makali, Mapangala and Msanga. The use of grazing land in Msanga, Malenga Makali and Mapangala is more traditional, with the wet land being used for dry season pasture. Once pasture from these wards is exhausted, cattle are forced to move to the neighbouring villages to search for pasture and water. Pastoralists are obliged to pay farmers for the use of this land and there are violent conflicts occurring regularly as pastoralists try to use land without paying, and farmers try to demand payment for the use of land that was traditionally used by the pastoralists. Conflict is increasing in the region between pastoralists and farmers, the livelihood of Matebete village is threatened and Mwanavala will be threatened soon too.

The study presented here aims to gain insight into what is causing the conflict and to identify ways in which the situation might be changed, in order for the pastoralists to continue living in the region in peace. The primary research was conducted by the first author in 2013 and 2014 in Mbarali, Mbeya. Structured and semi-structured interviews were carried out with pastoralists still living in the region, following the 2006 evictions and lands in the region were viewed. All interviews were conducted in Maa or Swahili. The decision to interview only pastoralists, not farmers, was made in an effort to shed light on this underrepresented perspective on the conflict. We agree that farmers have rights too and are not trying to be unfair. The economy of the farmers is well understood but that of the pastoralists is not. In addition, this is active violent conflict, in which pastoralists are treated as second class citizens and for her own safety the first author, who is Maasai, cannot go around asking these questions to the farmers

and officials. Had the environment been a peaceful one, we would have asked all three groups the same questions.

In an effort to develop a better understanding of the pastoralist perspective on these conflicts, this study compares how the Mbarali evictions, the other changes and the current conflict are being experienced by pastoralists in the two villages of Matebete and Mwanavala. While they are similar in many ways, the people of Matebete have a title deed to the land of their village, whereas the people of Mwanavala do not. By focusing on the pastoralist perspective in these two villages, the study provides insight into the role and importance of possessing a title deed for the pastoralists.

Matebete pastoralists were given a title deed for them to have permanent settlements and have a place for them to graze their cattle. It is crucial to point out that pastoralists had water for the cattle that flowed on the Msanga River until late September. Pastoralists' survival was possible because of mobility. Grazing beyond the ranch during dry season was previously possible. Livestock moved to open lands outside the ranch. Over the past 20 years in the ranch and the lands around it many things have happened; open lands that were used by the pastoralists have been converted to rice farms piece by piece since the 1990-s. Many cattle are living in the ranch; the number is estimated to be more than 4,000 livestock.

Conflict in Mbarali District has been increasing at an alarming rate over the past ten years with acts of violence against pastoralists and their cattle becoming increasingly common. At first glance, this appears to be caused mainly by a scarcity of water associated with the drying up of the Great Ruaha River and Chimala River. However, I hypothesize that a combination of increased rice farming activities and associated policies restricting the mobility of livestock are also contributing to the conflict. Movement of livestock between villages in Mbeya is prohibited. In my study I explore how prohibiting the pastoralists to graze, as they did before, may

be increasing the negative impacts that arise for both farmers and pastoralists and ask what land use rights would be fair and correct from the pastoralists' perspective.

Background of the Case

Pastoralists started to settle in Mbarali District in 1952 and lived in the region for many years without conflict.

Matebete pastoralists are currently facing conflicts with the farmers. The farmers grow rice during the rainy season. During the dry season they plant gardens along the Chimala River, a major source of water in the area. Different crops are planted such as tomatoes, vegetables and corn. Small irrigation channels are built for watering such gardens. When the livestock crosses the irrigation channels or steps into the gardens, farmers demand payments for destroying infrastructure (irrigation channels) or crops. The introduction of large irrigation channels for intensive rice production has created an opportunity for farmers to take water from these large channels into small channels that they can use to cultivate land in the dry season.

During the field research for this study, a key difference between Mwanavala village and Matebete village was observed: farmers near Matebete village, Igumbilo, Ihahi and Kibaoni villages farm throughout the year near the river. Currently, there is no farming in Mwanavala village during the dry season. However, there is an irrigation channel that is being built under a joint venture with the government and the citizens of Rujewa, Ubaruku and Mwanavala itself. The irrigation channel is being built to solve the water problems affecting farmers in the area especially since the investor is not giving water to small farmers anymore. The government will contribute 80%, while the citizens will contribute 20%. I passed through their office called

Mwenda Mtitu Irrigation Cooperative. The irrigation project is called Mwenda Mtitu. After the completion of Mwenda Mtitu project, all farms that are not farmed will be farmed when there is water. Mwanavala pastoralists will also be in frequent clashes with the farmers in the area as gardens will be all over the place in the dry season. One thing that we know for sure is that livestock would never feed on dry grass or farm residue, while they can see green crops from a distance.

In Mwanavala most of the conflicts are with the rangers at the Ruaha National Park. A similar problem will be evolving in Mwanavala once the irrigation scheme is built and fully operating. Farming throughout the year will be also carried out in Mwanavala. As a result, pastoralists in Mwanavala will face the same problem that pastoralists in Matebete village are facing.

Where earlier practices included loose rules for informal shared land use, today each village in the region is expected to have enough land and other resources to sustain its own livestock. In Mbeya, Matebete is the only pastoralists' village with its own title deed. There are three big rice farms, one owned by small scale farmers, second by an investor in a district and the third largest farm is co-owned by South African and Indian investors. These farms are located in a place where Maasai used to take cattle in the dry season and if they are caught there now, they must pay a heavy fine. In the surrounding areas small holding farmers are also growing rice in the wet season and vegetable in the dry season. These lands are also suitable for grazing but are now used for agriculture in the dry season thanks to irrigation. In 2006 government passed national livestock policy intending to get Maasai to settle down. But in dry season people have to move. If they move out to get water for cattle, then farmers demand money. But elsewhere in the northern parts like Arusha there have been many evictions going on, due to land being set aside for different investors.

1. Mbeya Region, Tanzania, Ihefu: Photo:Adam Mwarabu

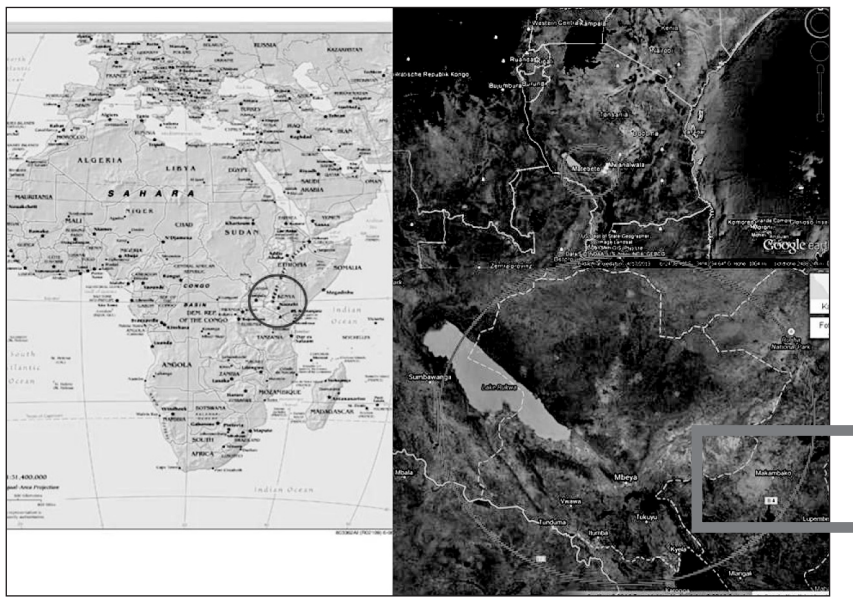

Fig. 1: Africa Map and the Villages of Matebete and Mwanavala – Google Earth 2013

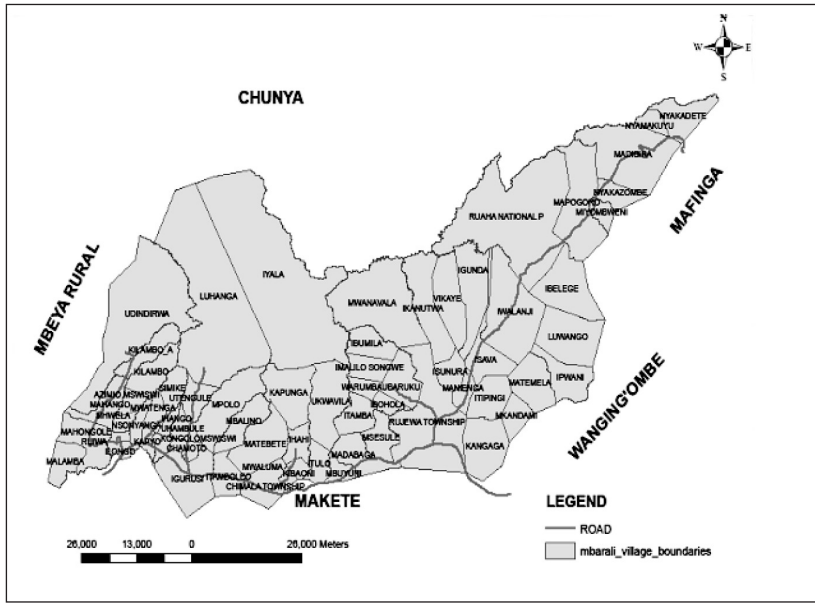

Fig. 2: The map of Mbeya – credit to Howard Stein in 2014

There are many changes that are affecting pastoralists now. In the past, pastoralists who were living in Matebete village used to take their cattle to Kapunga where the rice project is now located in plains like Lwanjili and many others. All those places have now been turned into agricultural land leaving little room for their cattle.

The neighbouring villages, where we are taking our cattle for grazing now, were used for 1 or 2 months, a few months prior to the beginning of the rain season.

The village of Matebete is in conflict with 1, 400 farmers who filed a case, case No. 17 of 2008, against pastoralists at the High Court Land Division in Mbeya. The farmers are claiming that they have rights to Matebete land. The case is still heard in the high court and is being conducted in Kiswahili and most of the documentation of the hearing is done in English. The Maasai could not follow.

Therefore, they decided to hire a lawyer. The farmers' big interest in Matebete village is timber, firewood and land for growing corn. Originally, in areas surrounding Matebete pastoralists have agreed to exchange resources during dry season; farmers were allowed to collect dry firewood in Matebete area and pastoralists graze their livestock on fields in neighbouring farmers' villages.

Lupindu 2007 pointed out that the future of pastoralists in Mbeya District is uncertain. We agree with Lupindu that many factors are contributing to the decline in Mbarali and to an overall decline of pastoralism: for example, the decline of open lands to graze animals. Furthermore, Fratikin 2008 argued that pastoralists' way of life is threatened by population growth, loss of herding land, ranches, national parks and urban growth. The lives are severely affected because of pressure from international development programmes. The programmes encourage privatization and individuation of land that was communally held. I agree with Fratikin that 50% of Mbarali District is now part of the Ruaha National Park. Tanzania National Parks in particular have brought sufferings to pastoralists. One key factor is clear that the total amount of land available for direct human use, for farming or pastoralism, is now substantially reduced. At the same time, the population of the region is increasing. The logic of the context is clear – more people, less land, increased competition. However, even after the loss of land to parks, which has happened again and again for many years, there was a time when conflicts were less frequent and now the conflicts have increased significantly. When the land, titled and open, was sufficient for livestock and now it is not; when informal use was allowed but now must be paid. The research aims to shed light on these new conflicts and how they may be resolved by asking what has changed around the pastoralists and also within the pastoralists, to give rise to these changes. Trying not to pay and have conflict instead of cooperation with farmers

and park officials, the research aims to ask, what changes in the situation could make it possible for the Maasai not to feel like they have to do these things.

Methodology and Data

In order to explore the conflicts from the pastoralists' perspective, literature review, the research questions and semi structured interviews with sixteen pastoralists were undertaken. The interviews were designed to encourage deep conversation and to give pastoralists a chance to give details of their encounters with the farmers and how they have handled those conflicts.

First, semi structured interviews were conducted in Matebete village and then they were carried out in Mwanavala village.

The data collected was mainly about payment to farmers, whether agreements existed for those payments, the distance that farmers had to cover to get water for their animals in the dry season, right of pastoralists to access land, water and farm residue during the dry season.

We chose to collect data by reading first what other scholars, who have researched and written about pastoral-farmers conflicts, had to say. While reading, I realized that the pastoral voice was actually missing in all the literature. That is the reason why the focus was given to the pastoralists only. They were the ones who were interviewed.

Pastoralists are good at telling stories as theirs is an oral culture, so we kept the interview format as open as possible to create space for them to tell us about their experiences relating to grazing and the payments they are required to make to the farmers. Based on a combination of the original semi-structured interview questions, which are included in Appendix A, and the responses that were received during the interviewing sessions, six interview

topic Areas were identified, which have been used to code and process the interview data:

Terms of grazing use agreements

1. When pastoralists cross their land and enter into other villages to graze their livestock, there are payments that farmers demand especially during the dry season
2. Pastoralists and farmers also enter into informal agreements at the beginning of the dry season for pastoralists to graze on farmers' land
3. Title deed – it is a form of grazing use agreement that ensures rights to graze on the land for which the pastoralists holds a title

Reciprocity – Fairness

1. Refers to how the society exchanged natural resources such as firewood, crop residue and fertilizers
2. Mutual benefits between the pastoralists and farmer communities

Access to water

1. In the dry season pastoralists are forced to move from their land to Chimala and Ruaha rivers for livestock to drink water
2. There are streams and seasonal rivers allowing pastoralists to have water in their communities
3. Wells at Mwanavala – the wells are used by Sukuma and Sangu pastoralists. The pastoralists at Mwanavala, whose livestock is currently using the Ruaha river, are afraid that one day they will also find themselves in the same situation

Land use change

1. Rice farming is increasing at a rapid pace in Mbarali District. Land that was formerly used for grazing is now used for rice farming leaving little room for pastoralists' livestock to graze. Apparently, both villages are close to the heavily irrigated rice

farms. Matebete village is approximately 14 kilometres from the Kapunga rice farm while Mwanavala village is approximately 20 kilometres from Mbarali Estate rice farm.
2. National Parks expansion has been also expanded into pastoral lands by the United Republic of Tanzania under Tanzania national parks umbrella

Mobility
1. Mobility is central to pastoralism; if there is no mobility the pastoralists' ways of life is also under threat and will likely disappear
2. Pastoralists have used mobility as a technique to preserve the environment and take advantage of the dry lands

Identity and politics
1. There is an argument at the national level that pastoralists destroy the environment with their herds by causing overgrazing and improper water falls to the great Ruaha River
2. Pastoralists identify themselves with herds of cattle. Cattle act as investment, security and a symbol of status in the society

Table 1: Summary of General Profile of Interview Respondents
(Some households were without a male head. 8 people were interviewed in Matebete village)

Overview of Respondents	Matabete	Mwanavala
female respondents	3	1
male respondents	5	7
household headed by a husband or brother	7	6
household headed by a son	1	2
average # of children	5	5
modal # of wives	(6 of the 8) 1	(7 of the 8) 1
average # cows	77	67
average # cows per person in household	10	10

Although the number of wives in the interview group is almost always 1, this is not the Maasai tradition. In many cases these one wife households had a second wife before but she had left. Maasai family has several wives, traditionally, and in the old days a man did not simply let a wife leave, but at the moment, if the man cannot support the woman and her children, he must let her leave if she can find a better place to live. The very low number of wives per household in these two villages is a clear indication that the communities are under survival threat.

Results

Currently Matebete village has 2 dams that were constructed for livestock to use during the dry season but none of them has ever worked.

2. One of the dams at Matebete village. Photo: Evelyn P. Kaney

3. Wells used as a source of water for livestock and human beings at Mwanavala village. Photo: Evelyn P. Kaney

The responses from the pastoralists interviewed in the two villages can be analysed as follows:

Table 2: Analysis of Interview Responses. Selection of Typical Comments from Matebete Terms of Grazing Use Agreements

Interview Topic Areas	**# and force Respondents' Concern – Matebete**	**# and force of Respondents' Concern – Mwanavala**
Terms of Grazing Use Agreements	6 out of 8 (61 *statements*) **46% of total**	6 out of 9 (*7 statements*) 9% of total
Reciprocity – Fairness	4 out of 8 (*19 statements*) 14% of total	8 out of 9 (26 *statements*) **34% of total**
Access to Water	6 out of 8 (*13 statements*) 10% of total	8 out of 9 (*17 statements*) **22% of total**

Land Use Change	8 out of 8 (*14 statements*) 10% of total	5 out of 9 (*10 statements*) 13% of total
Mobility	4 out of 8 (*12 statements*) 9% of total	2 out of 9 (*2 statements*) 3% of total
Identity and Politics	6 out of 8 (*15 statements*) 11% of total	7 out of 9 (*14 statements*) 18% of total

We had not paid anything to the farmers until we chased the farmers away in our land. When they were chased away they were growing maize and groundnuts in our land. That was the time when they decided to turn us into a project that generates income. We decided that each group should stay on its land. That was also the time when the language of paying for using others' land emerged.

Access to Water

We need reliable water dams in our area now so that we do not fight with farmers.

Land Use Change

There are many changes that are affecting pastoralist now. In the past, we used to take our cattle to the Kapunga where the rice project now is located and in plains like Lwanjili and many others. All those places have now been turned into agricultural land leaving little room for our cattle.

Pastoralists pay farmers for using the land now. They make agreements with farmers and pay them a certain amount that both sides agree on. Payments differ from one pastoralist to another. Ideally, all payments depend on the agreements between them and farmers. There are no permanent agreements, only seasonal ones; for example from July to November.

The interviewed pastoralists know the importance of the title. For example, Matebete pastoralists realize that the title that they have protected them from the Ihefu operation in 2006/2007 and

from Storm Evictions planned that took place from October 3 to November, 2013. Although the pastoralists in Mwanavala do not have a title deed, they understand benefits of the title very well. It protected pastoralists against evictions that have been going on in Mbarali District. Although the title deed acted as a shield to pastoralists against evictions, the titled area does not have the entire infrastructure to support the livestock so they do not cross borders. The title deed, as it was pointed out by people interviewed in Matebete, is a shield for the pastoralists against eviction. The operation that took place in Ihefu within the same district of Mbarali could have also affected the pastoralists in Matebete if they had not had a title.

Respondents stated that they believe livestock should have access to feed on the farm waste because then livestock becomes healthy, grows and multiplies.

Lack of the right to use the land will cause movements from one area to another, lack of permanent settlement, lack of education and important social needs.

The advantage for pastoralists to have a right to use the land is that it gives them profits when they sell the livestock or crops. Pastoralists can also build houses, schools, worship centres and other important infrastructure such as the dams. Having a right to use land makes pastoralists economically well-off.

One respondent said “I blame the government for dividing us. Boundaries have been placed between us, our product is livestock. When they say you should not go here, then it is difficult. The government is causing a fight because the farm does not move. The farmer was the first one to settle on water sources and on farms.” The farmers have farms on dry lands as they grow gardens during the dry season and have farms during the rainy season. If the pastoralists had land and plenty of water, they would not be fighting with their neighbours. Interviewees reported that in

October 2013, during a traditional ceremony when young boys were circumcised, and cows are usually slaughtered, it occurred that cattle large intestine was actually black. They believe this is because the animals were feeding themselves on the remaining burned residues.

The farmers in villages surrounding Matebete came up with a language from the district that animals from one village should not be crossing over to other villages without permission. In October 2013, a few days following my interviews in Matebete, pastoralists who were living with their cattle in Igumbilo had to vacate Igumbilo immediately as there was an operation from the district.

In Mwanavala we asked the people whether some farmers burn the residue after harvesting. The response was that very few farmers burn the farm residue.

Progressive increases in the amount of land being used for rice cultivation, with the Kapunga Rice Project, Mbarali Estate and Madibira Rice Estates, have changed the relationship between pastoralists and farmers. I toured the Mbarali Estate in February 2013, with a group of researchers from the U.S, Denmark and Tanzania. My role was to only assist with language interpretation. I saw firsthand projects carried at Mbarali Estate. There was a chicken project, dairy project, a bakery, bottled underground water called Ihefu water and a store.

The Mbarali Estate owner has prevented any water from going to any village or farmers around his farm. The relationship with the community that he lives in is seriously compromised. On Friday, December 6 on my way from Mwanavala village I saw a Land Cruiser that had full lights during day light. The car was speeding too. Perhaps, it was going 120 kilometres per hour. At first glance, I thought it was an ambulance going to pick up a sick person. But there were no sirens on the vehicle. I asked the taxi driver who was driving us what was wrong with the vehicle and what was happen-

ing? He told me that the vehicle belonged to Mbarali estate Chief Executive Officer. The driver pointed out that perhaps he went to pray at a Mosque in Rujewa town. He used to attend a mosque in Ubaruku town, the township near the farm. The driver went on to say he can no longer go to that mosque, nor pass along that route. I became more curious as to why he cannot set his foot in Ubaruku anymore. The driver mentioned that when the young CEO closed all water so that it does not go to the farms around him, the citizens of Ubaruku organized themselves and took their anger to the streets and eventually to the estate. They vandalized the buildings and distributed chickens that the investor was raising.

The main reason for over-speeding and avoiding to set his foot in Ubaruku town is fear. He fears that his car will be stoned or logs and nails might be placed on his way. The driver went on to say that sometimes when the conflict gets intense, the investor gets on the helicopter and goes to Dar and comes back when things are cooler. The police were called to respond to the unrest at the Mbarali Estate.

4 out of 16 people interviewed in both Matebete and Mwanavala agreed to reduce the herd size if they were guaranteed the right to use land. Only men agreed to reduce the cattle, not women. The larger the herd, the more status one has in the pastoral society. Livestock serves many functions. It is used to pay dowry for the bride, to settle down payments such as when someone kills somebody. One pays cattle according to the identified body joints. Livestock is also used to treat sicknesses and when women give birth.

Pastoralists in Matebete village worked for 5–7 kilometres for livestock to drink water while the pastoralists in Mwanavala village worked their animals for 8.5 kilometres. They work that distance due to lack of water and grass.

Before expansion, livestock drank water from the same rivers and crossed the same villages without conflicts. Today, many farms

are found along the way to the river and pastoralists are charged both to take their cattle to feed on the residue of these farms and to access the river. Bringing cattle to feed on farm residue was previously viewed as a service. Today's changed land use obliges pastoralists to move their livestock across these farms to access water. This fosters mistrust, resentment and conflict. Our interview results show a strong degree of frustration among pastoralists that the current situation is not properly recognised as one of mutual benefit – that there is no fairness and no reciprocity in the demands for payments. Instead, farmers and rangers are taking advantage of the opportunity to demand exploitative rent for use of the land, even just to cross the land to reach the water, or to use the water from the river, with pastoralists paying up to 250, 000 Tanzanian Shillings, equivalent to 156 United States dollars, for access to the river and farm residues and fines of up to 12,000,000 Tanzanian Shillings to rangers for crossing into the national park across boundaries that have not been made public.

Discussion

The research reported upon here has been guided by a set of eight specific research questions, which are used to structure the following discussion. These questions were developed based on a combination of reference to literature concerning relations between pastoralists and settled communities in east Africa, the author's familiarity with the particular details of the Mbarali District conflict, and a series of preliminary field studies designed to help specify the research questions for this particular study of the conflict.

1. How is prohibiting the pastoralists to graze, as they did before the expansion of rice farms settlements, increasing the negative impacts that arise from pastoralists' grazing?

   - This is a tool that is being used to completely destroy the traditional way of grazing cattle
   - Pastoralists are now seen as a rebellious group, hence more tension with the farmers
2. What are land rights that would be fair and correct, that would allow the pastoralists to continue to live in Mbeya without conflicts?
   - Allowing them to graze in the farms after harvest free of charge, crop residue is important for the animals especially during the dry season
   - Payments to use the land and access water in the dry season should be abolished
3. How would making clear the needs of the pastoralists help in the process of achieving peace between them and the farmers?
   - Pastoralists like any other Tanzanians need land for grazing as they depend on livestock for survival. Land should be set aside in each village that pastoralists reside. The land should have clear boundaries. It should not be an open land which can be easily taken by the village government or entered by farmers for agriculture
   - The United Republic of Tanzania has set aside 40.5% of its land for wild animals and other conservations, it should also set aside land for pastoralists
4. Why do the Maasai pay farmers for access to land?
   - Pastoralists pay farmers for access to land so that their livestock can survive. At the moment this is the only survival technique as it is difficult to watch the animals die if they stay in the Matebete-Madungulu ranch where it is very dry and there is no water
   - The orders from above, central government, require each village to have livestock that it can handle. The farmers are standing on those orders; if such orders were not from there,

pastoralists would not have cared for them, either. In a way, they are afraid to break the law.

5. What are the costs and benefits to the pastoralists of these payments?
   - The costs are many to the pastoralists since there is no single place that they can recover the costs associated with paying farmers. The costs add up quickly for a year. A pastoralist might find himself paying up to 5,000,000 million per year
   - The benefit is that at least cattle are not left alone to die in the dry season. Although many pastoralists would not consider this a benefit. They would describe this as a means of putting ones head above the water so that they do not drown in dangerous waters
6. What are the costs and benefits to the farmers?
   - Farmers earn money that eventually helps them in the next farming season
   - The infrastructure such as the irrigation channels are repaired by pastoralists. Sometimes the farmers ask pastoralists to contribute for classrooms, building materials such as cement, sand etc.
   - The only cost to the farmers is that the resources are not shared equally. That is, most farmers do not get a share of the pastoralists' contributions for using the land. These are only the leaders in the farming community who benefit the most, unless the farmers land is directly consumed
7. Could the pastoralists meet their mobility needs without using this land?
   - Currently, the pastoralists could not meet their mobility needs without using this land
   - The only way to meet their mobility needs without using this land would be proper infrastructure such as the dams at

the Matebete-Madunguru ranch for livestock to use during the dry season

8. What kind of law will be required to ensure that the pastoralists have the mobility they need?
   - A law that allows for mobility between villages in the dry season
   - Laws that are friendlier to the pastoralists are required and should be in the national constitution. Laws that recognize pastoralists as economic way of life for the pastoralists are required

Conclusions

Our research suggests that conflict in the region could be reduced if the prohibition on livestock mobility between villages was to be replaced by regulation that included fair and formal pricing of the services that this movement provides to both pastoralists and farmers.

Previously, the farmers farmed only in the dry season. The situation changed cash opportunity as they can farm in the dry season. They have access to cheap fertilizers from the pastoralists' livestock and cheap water. The cost of letting the pastoralists graze on farmers land has increased. The situation has turned pastoralists into the cash machine under the current system.

Farmers have a good economic reason for demanding payments. Pastoralists cannot use land in the estates since it is private, cannot use farmers' land either without paying. There is opportunity cost for the farmers at the local level. They have something to lose, vegetables and other crops, if pastoralists were to put their animals on the farms during the dry season. This is clearly acknowledged that pastoralists no longer have the land to graze on. There is no end to conflicts between farmers and pastoralists in Mbarali District.

The pastoralists need to have land of their own with proper infrastructure in place to sustain their livelihood.

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MACIEJ ZĄBEK

REFUGEE CAMPS IN AFRICA: SUSTAINABLE EXISTENCE OR SUSTAINABLE DEVELOPMENT

ABSTRACT

Refugees impose a variety of economic, environmental and security burdens on host countries, but also embody a significant flow of resources in the form of international humanitarian assistance, economic assets and human capital. This article explores the challenges and opportunities for African local communities arising from the double impact of refugees – generated resources and security problems. It argues that the potential benefits for the local people go beyond the burdens imposed by a mass influx. Moreover, refugee camps become a field of competition for various developmental projects because many aid organizations work there. It encourages the use of innovative tools and new technologies including projects supporting the idea of sustainable development. Refugee resources and security threats potentially provide long-term gains, and, by compelling the state to strengthen its grip on border areas, enable the state to "harden" its presence there. However, for host states to realize the potential of refugee resources and continue hosting refugees, they must be assisted by appropriate humanitarian programmes.

Key words: Refugee camps, developmental projects, international humanitarian assistance.

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1. Kakuma camp. Kenya. Photo M. Ząbek

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Refugee camps in Africa resemble great villages of provisional, primitive habitations. They are located far from the cities, intentionally isolated and not easily accessible for strangers, like leprosaria in the past. The sight of them does not arouse associations with development and much less with sustainable development. The striking poverty of them causes a common belief that refugees even deepen economic problems of the countries they enter, not to mention the threat for the local environment. On the other hand, however, according to the international discourse, there are arguments supporting the statement that refugee camps[1] may constitute the source of benefits for the local communities, like in

[1] K. Jacobson, *The Economic Life of Refugees*, Kumarian Press, Boston 2005.

the works of Karen Jacobson, an American researcher of refugees. They emphasize that the settlement of refugees in rural areas brings benefits to the local economy as it may boost it especially in the neglected or less urbanized areas. Actually, such examples may be found in the wealthier countries. Whether this is the case of the poor countries remains a problematic issue. However, such a question should be asked because, following Robert Chambers, the British expert on the developmental problems, all literature concerning humanitarian aid is refugee-centred. The vast majority of refugee-related research concentrates only on them. Almost nobody focuses on the problems which refugees constitute for the host countries. Refugees are mentioned only in the context of their integration with the communities in the target countries[2].

Thus, the purpose of this thesis is to show the importance of the refugee influx for the economy of the host communities and answer the question about the resulting profit and loss balance[3].

* * *

Refugee camps in Africa are created within the international humanitarian aid in order to ensure protection and maintain lives of refugees from the neighbouring countries, usually hit by the armed conflicts, as well as exiles fleeing from bombings, pogroms, massacres, famine, violence and rape.

The above mentioned aid includes two basic types: the first type means provision of food and medicine, whereas the second one means provision of materials and human resources necessary

[2] Robert Chambers, *Hidden Losers? The impact of rural refugees and refugee programs on poorer hosts*, "International Migration Review", 1986, 20, 2: 245–63.

[3] I mainly refer to the works of Robert Chambers (1989) and Karen Jacobson (2002), devoted to the defence of opposing theses on the economic influence of refugee camps on host communities, and my own research studies carried out in Kenya, in Kakuma and Dedaab.

to render medical, educational and safety services. Aid is provided by in three ways: bilaterally – on the basis of international agreements, through international organizations (mainly by the High Commissioner on Refugees of the United Nations – UNHCR) and through the non-governmental organizations (NGOs). There are two ways of providing such aid: the first one includes material aid (provision of goods, specialists and services), the second one means financial aid (provision of necessary funds for the purchase of the above goods). Generally speaking, more than five hundred different NGOs all over the world, acting in cooperation with and on commission of UNHCR, are devoted to humanitarian assistance for refugees. Refugee camps may be of different size, ranging from 2 thousand people like the Mauritanians in Senegal, to 100 thousand people or more like the camps of Sudanese in Kenya. In practice, the huddles of refugees may be even larger because they sometimes form clusters of camps around one humanitarian base, like the camps around Goma in Congo which gave shelter to about 750 thousand of refugees during the 1990-s.

Shelters are typically temporary and makeshift. Almost everything in camps is unsteady. In spite of this, they may sometimes exist 20 years or even more. Long-term wars in their home countries prevent refugees from returning home. Even if the conflicts stop, they have often nowhere to return to. One may also suspect that NGOs have their vested interest in the camps' long-term existence. Humanitarian crises which lead to the creation of them require prompt action. However, it may be later observed that further action slows down, as a result of which the camps continue to exist in a state of a perpetual stopgap. The solution to the problem of refugees is first and foremost seen in their repatriation and finally in their resettlement to the third countries (i.e. west immigrant countries), not in their integration, as it is not the intention of the host countries. Thus, living conditions in the camps are not im-

proved above the necessary minimum equivalent to mere survival and prevention of epidemic outbreaks.

UNHCR, established in the form of the international refugee regime, is responsible for the camps administration, logistics, searching for sponsors and coordination of aid-connected activities. The organization cooperates with the host departments of internal affairs to maintain safety of the refugees. The NGOs, including also church organizations, are directly responsible for executing aid operations.

A camp is created in such a way that firstly an unoccupied site is fenced (e.g. 2–3 hectares) by means of thorny trees and barbed wire. Then, the area is equally divided into the so called blocks for several hundred refugees. The sections are also fenced with thorny branches, equipped with latrines and partitioned with internal roads for the police cars, medical ambulances or transport. After being registered, each refugee receives about 10 meters of foil, a pole, a metal bed with a mattress and a square in size of 4 square meters where they may settle and build their shelters.

The above-mentioned shelters are constructed in various styles typical of the residing cultures, mainly with the use of sheet metal, old clothes and UNHCR bags. In Kenya, the Somalians erect light constructions in the form of domed huts which are covered with foil and UNHCR bags, while the Ethiopians form their habitations out of clay. Such shelters are equipped with metal beds and mattresses, two pots and some old clothes. In front of the entrance there is a fireplace to cook the dishes.

In these refugee-like "cities" people try to lead normal lives despite great difficulties. A camp becomes a place of business, cultural, educational and sport activity. People conclude trade transactions and cultivate craft (such as weaving, tailoring, carpentry, sheet-metal work, and shoemaking). There are stalls, marketplaces, restaurants and bars, whore houses, workshops, slaughterhouses,

schools, sports fields, hospitals, temples of various Christian denominations, mosques and pagan holy places.

All these institutions work regularly although their economic profitability is highly uncertain. It mainly depends on the inflow of funds from the outside, from NGOs which employ and remunerate refugees. Thanks to this income, they are able to build their shelters out of better materials and employ other refugees. They can also invest in small stalls with vegetables in the market, the tailor's shop, the hairdresser's or the photographic studios.

Additionally, NGOs set up special programmes called "operations generating profits". Primarily, they include workshops producing regional goods which may be sold to e.g. UN representatives visiting refugee camps.

Obviously, it is not a real market. The main point is to keep up appearances of work or maintain the sense of social usefulness among refugees. A more substantial profit is generated by neighbours of refugee camps. Inhabitants of those close or remote cities come to such a camp like to the city where they can buy products and services they cannot purchase in their home areas. Camps also attract relatively wealthy, as for the local conditions, professional traders, dealers and owners of big herds of livestock, and clan chiefs who can make deals there. Still, only thanks to such an international "cash injection" this primitive camp economy for refugees may thrive and each decision related to them, taken even so far away as in New York, Geneva or Nairobi, has a direct impact on it.

Refugee camps are often compared to cities[4], mainly in the meaning of a big collective of people forming a complex social and economic structure on a relatively small territory. On the other hand, however, they only resemble the so called "cities" being

[4] M. Agier, *Aux Bords du monde, les réfugiés*, Flammarion, Paris 2002, s. 112.

potential places where basic institutions, typical of standard cities, perform on a primitive level, undeveloped and temporary. To that effect, these cities contradict the common connotation of solid and indestructible places offering facilities unavailable outside the city.

Tumult and constant movement prevail in the main streets and marketplaces. A camp like a city has its arteries for people and goods, its pulse and its "heartbeat". It may be observed that people living there show a certain kind of entrepreneurship, activity and inclination to work. Unfortunately, for majority of camp inhabitants there is no opportunity to work. Once one enters a particular block in the camp, one may notice that most refugees have nothing to do. Their poverty seems to be not only of economic but also of social and psychological nature. The great extent of their poverty results mainly from isolation and almost entire lack of social and professional activity.

Waiting for food occupies most of refugees' time. Food is sometimes the only sense of existence, like a currency convertible into everything, is the sole topic of conversations, the cause of fights and life-and-death struggles. Food is also a source of conflicts between refugees and locals, as refugees sometimes arrive during periods of food scarcity. In a reverse situation, however, when there is plenty of food, it may become a perfect integration tool between local and new communities.

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Locals hardly ever perceive refugee camps in their neighbourhood as greatly beneficial. They are usually in minority as compared with the population of refugees and often suffer greater poverty than refugees themselves. Their only contact is during shopping in marketplaces and main streets of the camps. They have to compete with the newcomers about work, food, place of living and money. They are often exposed to: the threat of epidemic (prosti-

tution spreads in camps which may directly result in the epidemic of AIDS), the risk of influx of rebels together with refugees and potential outbreak of riots on their territories. Cases of murders occurring through the fault of both sides fuel mutual conflicts.

Serious troubles are caused to the locals mainly by unprotected camps (or badly protected ones) located in border regions. They often fall victims to plunderers and various gangs, like on the Kenya – Somalia border. Organised crime and rebels are often recruited from young and bored men staying in camps. Moreover, together with refugees there also come economic emigrants who try to gain humanitarian aid appropriated for refugees. Great difficulties in differentiating between refugees and people who personate them cause that criminals and rebels often end up together in refugee camps. It sometimes happens that rebels or criminal gangs take control over the whole camp as it took place in the camps of the Rwanda refugees in Congo. Additionally, host countries face problems with refugees who run away from camps and after entering the cities of host countries start begging in the streets, stealing in order to survive or arms trafficking.

Furthermore, refugees distract the local authorities' attention from local affairs and problems. These authorities, just as UNHCR and NGOs often focus only on refugees. On the one hand, this seems to be the correct approach because refugees suffer most and it is hard not to concentrate on them and not to pay them special attention which they certainly deserve. However, natives also demonstrate their own needs and expectations which often go unnoticed. Officials visiting local leaders always mention the need to give refugees a warm welcome, ignoring problems of the local community.

It also happens that locals leave the camp environs in despair as it often comes to open tensions between one group of the poor receiving supplies and another group of the disadvantaged who do not. The sense of injustice among the local tribes is expressed

in hostile attitude towards refugees growing in the course of time. Besides, natural environment becomes greatly devastated around camps. Local infrastructure is strained, mainly owing to excessive use of roads, airports and hospitals, especially in the first period of the camp existence.

The presence of refugees also exerts an indirect impact on the social relations among the locals. Youth and people with initiative, who decided to start their own business operations, become richer and gain significantly higher status than the older generations. Family relations between husbands and wives worsen, especially because of flourishing prostitution and trade being taken over from women as a more lucrative business than in the past. Accordingly, the dominant[5] thesis prevails that local communities, especially the poorest groups, considerably lose because of the influx of the refugees.

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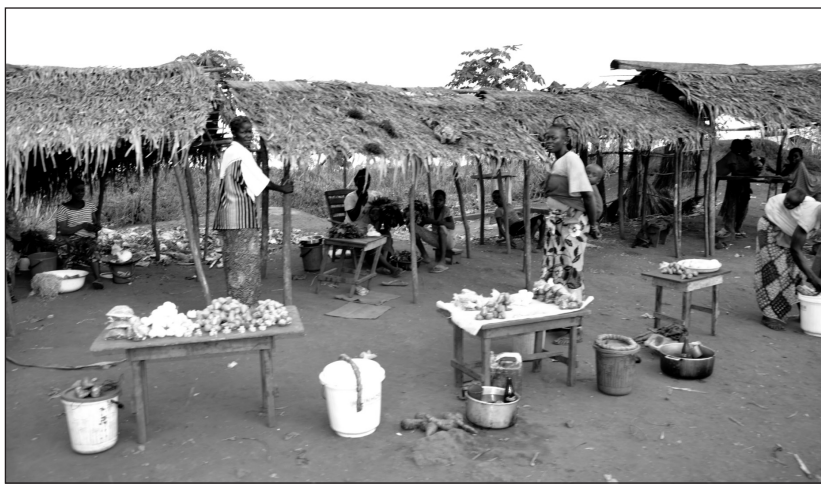
On the other hand, as I mentioned in the beginning, there are arguments that international aid organized for the refugees staying in camps helps to develop local infrastructure and finally not only levels undesirable phenomena but also constitutes the source of development for the local communities. Even if it does not occur immediately after the camp ceases to exist, the infrastructure becomes accessible to the locals. Despite the fact that majority of camp outbuilding is of temporary character, it is to be noticed that new houses, schools and hospitals of bricks are sprouting up in places where they have not existed before. The level of education and medical care are on the increase and new agricultural projects start there. Refugee camps become a field of competition for various developmental projects because many

[5] R. Chambers, op.cit.

aid organizations work there. It encourages the use of innovative tools and new technologies including projects supporting the idea of sustainable development. It mainly refers to renewable energy, installation of solar panels to light particular sections as well as the whole camp, tapping water from the wells or cookers. There are also recorded examples of the use of wind energy in Ethiopia and biogas. Biogas in the form of ethanol is made from confectionary industry waste. Filters for river water purification are also built near some camps. In Sudan, for example, one of the refugees had even come up with an idea how to use scrap and waste to make a radio, TV or solar energy device.

Thus, it may be strongly supposed that in the long term locals will gain more benefits from the stay of refugees on their territories than they will suffer losses.[6]



2. Batalimo. Central African Republic. Economic activity in the camp. Photo M. Ząbek

[6] K. Jacobsen, *Can Refugees Benefit the State? Refugee Resources and African Statebuilding*, "The Journal of Modern African Studies", Cambridge University Press, Vol. 40, No. 4 (Dec., 2002), pp: 577–596.

It should be admitted that refugee camps become in fact a trigger point for development and succession of changes to take place in the region. Various products and items provided to camps within humanitarian aid, often find their way to local marketplaces through commercial exchange. In order to diversify their food, refugees buy fruit and vegetables from locals, selling them in exchange cleaning staff, plates or clothes received from humanitarian aid. Most of all, crowds of several hundred thousand generally poor people constitute quite a large market for goods sold in Kenya. Besides, not all refugees are completely poor and economically passive. Some of them have raised funds they can invest in setting up cafes, workshops or agricultural farms. There are also people who were already well-educated with defined qualifications, thanks to which they can offer their skills to local community. In Ghana, for example, well-educated and enterprising Liberian refugees noticed numerous needs of the locals and started their own small businesses on the basis of them. By contrast, many uneducated refugees are often abused by locals as a cheap workforce. In Tanzania, refugees located among the locals aroused their big dissatisfaction when they suddenly decided to leave and settle autonomously in another place mainly because hosts were forced to do works earlier performed by refugees. So, despite common reluctance between refugees and locals they sometimes get together and integrate themselves. There are even some cases of marriages between refugees and locals. In previous years, farmers in Tanzania, Sudan or Guinea welcomed refugees with open arms. It happened so not only for the reason of untrustworthy hospitality or altruistic approach of local Africans but because refugees constituted for them the source of profits. In Sudan, an owner of a big agricultural farm near Gedaref, employing 250 workers, praised their work by saying that before they came he had been forced to spend long hours recruiting workers and paying them high wages. Since refugees from Erytrei flew, he has

been in a position to pay them less, while at the same time they are more flexible as they have no other alternative to find a better job. However, using refugees as a cheap workforce depends on the situation. When the demand for farm workers is high, local people object to refugees leaving their territories. Nevertheless, in periods of drought and famine refugees are made redundant. In reverse situations, a refugee camp may become a place of work for the locals. It is well illustrated in Kakuma, in Kenya where local people living in considerably worse conditions than refugees were employed in a camp to carry water or collect firewood so as to improve their standard of living. Thus, refugee camps may constitute for locals both the source of a cheap workforce as well as an additional source of income, like in the case of Kenyan Turkana.

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Providing long-term help to refugee camps requires from international organizations investments in infrastructure: construction of roads and bridges, airport buildings and development of thorough logistics. Furthermore, UNHCR, leading the policy aiming to mitigate conflicts with the locals, deliberately invests in the region in the construction of new water supplies and new schools not only for refugees, but also for the hosts. Hospitals, clinics and medical care developed in refugee camps are also available to indigenous people. Moreover, the quality of medical care and education in refugee camps is often on a higher level than local one and thus hosts try to enter camps and benefit therefrom. In reality, in the first months and years of the refugee inflow both pharmaceuticals and places at schools in the territories around camps remain usually scarce. Local people have to share everything with refugees until new schools and wells are built. In such situations neither part gains. With time, however, new facilities, roads and wells appear mainly because these types of investments prove to be the easiest

to verify and sponsors eagerly allocate money on them. Besides, they are treated as one element of the integration policy between locals and refugees. If there were no refugees, nobody would even think of investing in such facilities in border or poor regions of these countries. In the long run, local people gain from such investments because, thanks to refugees, external sponsors spend money on them. In Uganda, Kibanda region, circa 40% of humanitarian aid was granted to local people in order to mitigate conflicts between host people and refugees. Similarly, in Tanzania, Kigoma region, a special investment programme was launched to improve infrastructure of the region. This would not have happened but for the refugees. Investments, initially channeled for refugees, after their repatriation to the third countries, remain and are entirely taken over by local communities. In 1995, for example, UNHCR gave to the Malawi government schools, hospitals and vehicles worth about 35 million dollars whereas additional 78 million was transferred for the purpose of removing environmental damages which took place at the time of refugee camps' existence.

In fact, in the beginning, refugees use resources such as water or firewood "free of charge" from the local natural environment, which leads to impoverishment and imbalance of the natural resources economics. The role of the international organizations is to reduce such degradation through the development of proper infrastructure and higher crop quality thanks to which the local standard of living will also increase. Land cleaning and recovery of natural environment are usually sponsored by international agencies in close cooperation with the local governments. Additionally, help is provided to farmers whose crops were destroyed by refugee camps.

Next advantage in the list of benefits for the local people is a numerous staff of foreign organizations. To cater for the needs of the wealthy clients new shops, hotels, bars and restaurants are

opened in the neighborhood. Job vacancies await the qualified medical care, education or accounting staff. Local drivers and security guards will also find a job in refugee camps.

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Nevertheless, even the greatest optimists realize that positive effects of refugee camps are not always unambiguous. During refugee camps' close-down the infrastructure is often destroyed. It is often an intentional step so that refugees quickly return to their home countries. Thus, local people inherit hardly anything from the refugee camps. Besides, stay of refugees may at one time lead to the increase in food prices in the closest areas of refugee camps or decrease in food prices another time. Everything depends on various factors: good or poor harvest, season of the year, or the extent to which refugees are used by local farmers as a cheap workforce. Price increase leads to the situation where the poorest local people cannot afford to buy food whereas decrease in prices results in a dramatic drop in income of those farmers who dedicate production surplus to the market. Anyway, local people always put the blame for this situation on refugees. Besides, refugee camps are always, as I already mentioned, source of problems related to safety and reluctance of the local governments and local people.

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To conclude, major threats resulting from refugee camps include, on the one hand, higher expectations towards bureaucracy of the host countries visible in their management of local environment resources being within the range of refugees and securing them for the local people. On the other hand, they include growing requirements towards security agencies connected with potential rise in the crime rate of the region. Problematic issues are also deepened by ubiquitous corruption prevailing among local admin-

istration staff trying to use international aid so as to meet their own needs. Generally speaking, economic effects of the refugees' stay on a given territory are sometimes greatly diversified and hardly predictable in advance. It remains hard to prove whether the final balance is positive or negative, especially in the context of the discourse on sustainable development. In the short term, there seem to be usually more negative adverse effects (including, as I already mentioned threats connected with security and destabilization of local economy). However, at the time of camp existence, there are numerous advantages to be noticed mainly for the host communities which to a certain extent level negative consequences of the refugee camps. The most significant include better school education and higher standard of medical care. They are mainly connected with the influx of new specialists and the possibility of developing local economy thanks to a cheap workforce and entrepreneurship of some refugees, as well as access to previously unavailable products. It should be noted that results of the cheap workforce are volatile. On the one hand, work of refugees may support local people in generating higher income, but on the other hand, not all host countries may employ refugees as a cheap workforce. This in turn entails competition between the locals and refugees about the place in the local economy. In this case a lot depends on good or poor harvest. Except that, refugees as a cheap workforce may replace women at work, leaving them redundant. Additionally, women are at a disadvantage because all social help is channeled not to them, but to refugees. Benefits from infrastructure in refugee camps are not available in the very beginning but after camps cease to exist they become open to a local community. It manly depends on careful accomplishment of the project. Obviously, positive effects after the camp close-down are no longer ambiguous. They result from the infrastructure being taken over by the locals. Profit and loss account is heavily

reliant on the international aid operations indispensable in this situation. Delays in providing humanitarian aid, along with insufficient quantity of funds, lead to the situation where refugees are treated as a heavy burden to the host communities which in turn entails hostile atmosphere. Nevertheless, it seems possible to avoid serious conflicts between refugees and host communities on the condition that international help and cooperation of all parties concerned are effective and act for one good cause.

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INDIGENOUS KNOWLEDGE SYSTEM (IKS) AND BIODIVERSITY CONSERVATION IN SOUTH NGURU MOUNTAIN FOREST RESERVE, TANZANIA: Often neglected partner for sustainable management and use of biodiversity

ABSTRACT

This study examines the significance of indigenous knowledge system (IKS) in sustainable management and use of biodiversity in South Nguru

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mountain forest reserve. Semi-structured and key-informant interviews, field observations and focus group discussions (FGDs) were used for data collection. This study observed that indigenous people had a bundle of IKS that significantly contributed to the management of biodiversity. The study also observed that neither the IKS nor the biodiversity conservation methods can sustainably manage and use biodiversity: their combination would achieve more than either in their separation. The study recommends: official recognition of IKS; active participation of potential actors; motivation and capacity building of indigenous social structures from which the IKS evolved, is enhanced and sustained, the cornerstone for a wide use and application of the knowledge system and to its integration into biodiversity conservation methods.

Keywords: Indigenous knowledge system, Biodiversity, Biodiversity conservation, Sustainable management and use, South Nguru Mountain Forest Reserve, Tanzania.

Introduction

Biodiversity is at the heart of sustainable development and life insurance in itself (Mc Neil and Shei, 2002 cited by Sajise, 2005), whereas overexploitation of biodiversity results in reduced capacity to support present and future generations. The South Nguru Mountain Forest Reserve is not excluded from the increasing worldwide problem of biodiversity decline, a problem that poses the greatest challenge to human survival and development (TFCG, 2007). The Mountains harbour one species which is critically endangered, eight endangered, ten vulnerable, two near-threatened and twenty vulnerable plant species based on IUCN threat classification (ibid).

Despite IKS being widely known for its roles in the conservation of natural resources, indigenous people are often considered backward and antithetical to conservation objectives. In lighting of the similar view, McGregor (2004); Sobrevilla (2008) and Kajembe *et al.* (2010) argue that many global environmental problems such as the decline

of biodiversity have been attributed to the failure of most biodiversity conservation initiatives to efficiently use IKS. Quite recently, there have been several calls for the integration of IKS into biodiversity conservation methods, to take complementary advantage of their strengths and weaknesses, as their combination may achieve what neither would achieve alone (Stevenson, 2005; Nganje, 2009; Fitzgerald and Stronza 2009; Kajembe *et al.*, 2010; Cobb, 2011 and Das Gupta, 2011). Moreover, their integration would create a mechanism of dialogue between indigenous people and scientists (Nyong, Adesina and Elasha, 2007), leading to less serious conflicts among actors.

In this study, IKS refers to a body of knowledge that has been generated, tested, improved overtime through human interactions with their supporting ecosystem, enhanced and safeguarded by norms, values, taboos, rituals and sacredness that is interwoven into local politics, spiritual and socio-economic characteristics of the people concerned. Wilfred *et al.* (2007) refer biodiversity as a variety of life forms (animals, plants and micro-organisms), ecosystems and the ecological process in which these components are interacting, and the spiritual consciousness of the people concerned on such a relationship (Kimmerer, 2002). This implies that for indigenous people, biodiversity is synonymous to a scientific view of ecosystem with spiritual value attached to it. It is from the above argumentation, this study perceived biodiversity as abundance and number of different species of wild species of plants and animals and the non-living organisms in a given geographic area, living in spiritual and reciprocal relationships between the living and the non-living things, whereas humans are perceived as being part and parcel of the supporting ecosystem.

According to Charnley, Fischer and Jones (2007) biodiversity conservation methods refer to conservation initiatives that are driven by theoretical models that are governed by testing of hypotheses and not necessarily utilitarian, often generalizable and

not always location-specific. In this study, biodiversity conservation methods refer to all forms of rules and regulations that are derived from scientifically derived approaches, and that perceive human beings as managers and part of the broader ecosystem. McGregor (2004) observed that the indigenous people in their own language (Ojibway language) had no single word to describe sustainable management and use of biodiversity. People simply believe that there should be a mutual taking and giving back to nature for the benefit of all components of the supporting ecosystem, and such duty is for the tiniest animals up to the powerful sun and spirits. This study refers to sustainable management and use of biodiversity as the management of humans' interactions with wild species of plants and animals and non-living things in a supporting ecosystem, to ensure a reciprocal taking and giving back to nature so as to meet the needs and aspirations of present and future generations of all creations, and their spiritual values herein.

It is against this background, using South Nguru Mountain Forest Reserve as a case study, that this research explores IKS and management and use of biodiversity. Integration of this knowledge system into biodiversity conservation initiatives, may improve biodiversity conservation outcomes.

Methodology

Study Area

The South Nguru Mountain Forest Reserve (Figure 1) is situated roughly at the centre of the Eastern Arc Mountain chain of Tanzania, lying between S 05° 53 ′ S – S 06° 17 ′ and E 037° 27 ′ – E 037° 45 ′ in Mvomero District, Morogoro Region. The Mountain covers an area of 184 square kilometers (DIIS, 2007), with an altitude ranging between 760 and 2400 meters above sea level (Menegon, Doggart and Owen, 2008).

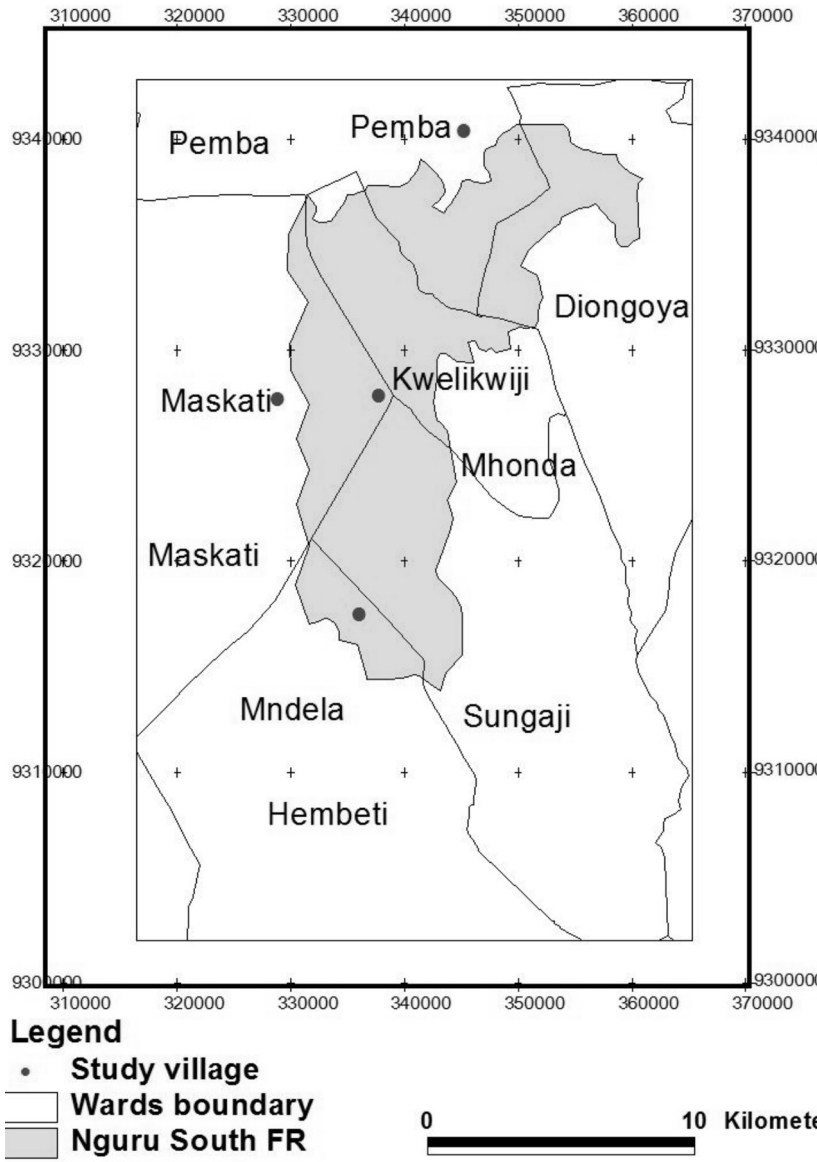

Figure 1: A map showing location of the study villages

Research design, sampling procedures, data collection and analysis

In this study, an exploratory cross-sectional research design was used. According to De Vaus (2002), a cross-sectional research design involves the collection of information from representative population sample in one time duration at a single point. The choice of this research design is grounded on the fact that it is more flexible to provide opportunity for considering different aspects of a problem under study (Kothari, 2004).

A purposive sampling was used to select 4 villages out of 25 villages bordering South Nguru Mountain Forest Reserve, each representing one ward within the landscape. Four villages were purposively selected, one village from the Northern, Southern, Eastern and Western parts of the mountain landscape, representing different socio-economic characteristics of the study population. The study village included Pemba (north), Mndela (south), Maskati (west) and Kwelikwiji (east) of the South Nguru Mountain Forest Reserve.

Based on the criteria of being an indigenous person, as being a person who has lived in an area for not less 20; a sampling list was created using the 2005 voting list. A sample of 60 interviewees was randomly selected from each of the four village's sampling list, making a total of 240 interviewees. Semi-structured and key-informant interviews, field observations and Focus Group Discussions were used for data collection. Four Focus Groups Discussions (FGD), (one in each of the four selected villages), that included walukolo, members of village environmental committees and the village chairperson, and/or the Village Executive Officer (VEO) were held to complement the information collected through interviews and field observations. Data collected in phase one was analyzed using both qualitative and quantitative methods. The Statistical Package for Social Sciences (SPSS) was used to analyze the quantitative data whereas content analysis was used to analyze the qualitative data.

Results and Discussion

Respondents' views on the origin of biodiversity in the South Nguru montane forest

The results (Table 1) showed that most respondents (90.0%) believe that biodiversity was created by God/gods, while only 10.0% of the respondents did not know the origin of biodiversity. Based on these findings, it is apparent that there is a spiritual belief amongst most of the respondents that biodiversity is God's/god's creation. Similarly, Anis (1994) cited by Mokuku and Mokuku (2004), added that most indigenous people believe that all living organisms share a creator and the creative process, and therefore they relate to one another, and such spiritual relationship has been determining human relations with other living things.

However, in his study Mapara (2009) reported that the indigenous teaching among the Shona ethnic group of the present day Zimbabwe was normally through proverbs, starting with the words "Vakuru vedu vanoti"... or "Vakulu vedu vaiti" ("our elders used to say "..." or "our elders said "..."), whereas Vakuru implies either the dead or the elders who are knowledgeable/or were knowledgeable on IKS, indicating existence of a spiritual belief among indigenous people on existences of connectivity with their ancestors.

Arguing on the significance of spiritual beliefs on conservation, Ylhäisi (2006) puts it that spiritual reasons have played a significant role in the management and use of biodiversity, as they determine human-biodiversity interactions of a particular ethnic group (Berkes 2008, Turbull 2007 and IIRR 1996b cited by Tanyanyiwa and Chikwanha 2011, Cobb 2011) and less labour and more cost effective as compared to biodiversity conservation methods (Kideghesho, 2009). Moreover, management and use of biodiversity and the degree of adoption of new innovation, rests on the spiritual beliefs of a particular group of people about nature (IIRR, 1996a cited by

Tanyanyiwa and Chikwanha 2011). This suggests that appreciation and consideration of spiritual values attached to biodiversity by indigenous people might reduce conflicts among actors, promote and enhance the knowledge system and significantly contribute to sustainable management and use of biodiversity.

Table 1: The respondents' views on the origin of biodiversity in the South Nguru Mountain Forest Reserve

Response Item	Frequency (n=240)	Percentage
Respondents' views on the origin of biodiversity		
Created by God/gods	216	90.0
I don't know	24	10.0
Total	**240**	**100**

The presence of, status and custodians of sacred groves/places

Results (Table 2) show that most (93.3%) of the respondents appreciate the presence of sacred groves/place(s) in their communities, while 6.3% of the respondents said there were no sacred groves/places in their community and only 0.4% of the respondents expressed their ignorance on the presence of sacred groves in their village. This implies that most of the respondents were appreciating the existence of sacred groves/places in their respective village. This study observed several sacred groves/places in all the villages, and the respondents who claimed that there were no sacred groves/places in their village might have been influenced by other factors: sacred groves/places were obvious, though they were increasingly less respected.

According to Dash (2005) cited by Jaryan *et al.* (2010), sacred groves refer to patches of forests conserved through human's spiritual beliefs and faith, whereas Ylhäisi (2006) refers to sacred forests/groves as being those forests/groves which are conserved by pre-colonial indigenous institutions and spiritual structures, and

believed to be inhabited by supernatural powers which influence the life of the people living in the area, and where ritual practices take place to strengthen the harmony between living people and supernatural powers, acting on behalf of the dead ancestors on the one hand and the unity among the people themselves, on the other hand. Their destruction has been prohibited to avoid destruction of the harmony of people livelihoods and the home of their ancestors (Ylhäisi, 2006). Arguing on the distribution of sacred groves, Jaryan *et al.* (2010) claimed that sacred are not restricted to any particular place or community and are well distributed across the globe and vary in sizes. Unfortunately, many are fast disappearing as a result of the influence of rapid socio-economic transformation, materialistic attitudes of the people that lead to the overutilization of resources.

Table 2: Respondents' views on the presence, status of and custodians of the sacred groves

Presence of sacred groves/places in the village	**Frequency (n = 240)**	**Percentage**
Yes	224	93.3
No	15	6.2
I don't know	1	0.4
Total	**240**	**100**
Custodian(s) of sacred grove/place (n= 224)		
walukolo	173	77.0
The village government	7	3.0
walukolo and village government	42	19.0
None	2	1.0
Total	**224**	**100**
Status and density of the sacred groves as of the past 20 years (224)		
Are of the same size(s)	59	26.0
Have decreased	98	44.0
Almost extinct	66	29.6
I don't know	1	0.4
Total	**224**	**100**

(Table 2) shows that most (77.0%) of the respondents claimed that sacred grove(s) were under the management of *walukolo* (indigenous leaders, elders in most cases), while 19.0% of the respondents said that sacred groves/places were managed by both *walukolo* and the village's government officials. Results further show that 3.0% claimed that sacred groves were managed by their village government and only 1.0% of the respondents said sacred groves/places are under the management of no one. According to PEMA (2006), conservation of sacred groves and/places has been historical practice of the Nguu ethnic group, mostly under the custodian of heads of the clan (*mlukolo* in Nguu language, meaning a head of people sharing common norms, values and practices). In lighting of the presence of the *lukolo*, Kajembe *et al.* (2010) and Shemdoe (2003) contend that all over Tanzania there are indigenous leaders responsible for the formulation and enforcement of taboos, norms and rules which, among others, determine humans-biodiversity interactions. For example, *Steiner et al.* (2004) cited by Hens (2006) argue that despite the fact that sacred groves have been biodiversity reservoirs, they were ignored by governments, conservation agencies and policies, so, their survival depends on the indigenous people (*walukolo* in such a case).

According to PEMA (2006) sacred groves/places have been devoted to worship, rituals, tribal ceremonies and cemeteries. Grave forests in Ghana are protected to respect the dead as it is believed that the ancestral spirits live there, and entrance to those places is limited to certain members of the community such as the royal family members, village leaders and clan heads during burial purposes. Collection of products from grave places is an invitation of evil spirits and may instigate calamities such as famine, floods or death, resulting in conservation of biodiversity in such places (Ntiamou-Baidu 1995 cited by Mbwambo 2000).

1. A sacred grove in public land in Maskati village of the South Nguru Mountain Forest Reserve: Photo Ruheza S. Mattee

Reporting on the status of sacred grove(s)/place(s) for the past 20 years (Table 2), the majority of the respondents (44.0%) claim that the size of scared groves has decreased and almost 29.6% of the respondents said that sacred groves were almost extinct. Of all respondents, 26.0% said that size of sacred grove(s)/place(s) had remained the same, as of the past 20 years, and only 0.4% of the respondents said they did not know. It was further observed that some pieces of lands, which were previously restricted from farming, called *ng'alimwa* in Nguu language (meaning places that should not be farmed), have been converted to farmlands. Similarly, a study by Ylhäisi (2006) in the Usambara Montane Forests found that sacred groves were encroached on for agricultural purposes,

fetching of fuel wood and valuable timber trees species had led to a decrease in their taxonomic diversity, size and densities of most sacred groves and of biodiversity.

The Nguu ethnic groups and sacred groves and/or places

The results of different Nguu ethnic groups and their respective sacred groves/or places are presented in Table 3. This study revealed the existence of sacred groves/places with a total estimated area of 47.5 ha, managed mostly by 9 Nguu clans. The largest sacred grove is 4.8 ha, while the smallest grove is 0.05 ha, with a mean area of 1.8 ha.

In Maskati village there are seven sacred groves with an estimated size of 10.45 ha, managed by three clans: Wanyagatwa (9.2 ha), Waganaza (1.2 ha) and Gombero (0.05ha). The Mndela village is dominated by a single clan, Wasongo, which manages a total of three sacred groves, totaling 4 ha. Results also show that in Pemba village there are a total of sixteen sacred groves managed by six clans: Wasongo (8.2 ha), Wanyasa (11.2 ha) and Kilangulu (6.4 ha). Others include Wakwigina (4.4 ha), Waluhanga (2.8 ha) and Waruwi (1.2 ha). Table 3 shows that Kwelikwiji village is also dominated by a single clan, having a single sacred place referred to as Luamba ritual site with an estimated size of 0.05 ha that is under the custodian of Wanyagatwa. The study further disclosed that some of the clans are dominating more than one village, and therefore, the indigenous territories are not conforming to government village demarcations.

The study further reveals that the Maasai, like the Nguu ethnic group, have sacred groves/or places, probably because of their forest-livestock relationships in this particular area. Furthermore, traditionally the Maasai do not hunt or consume wild meat and are less involved with forest clearing for agricultural purposes. Moreover, the Maasai perform annual rituals, aiming for health

and wishes, though currently they are no longer practiced, as most of them prefer to sell their cattle rather than to offer sacrifices for rituals. This finding is supported by a study by Shemdoe (2003) in Lake Manyara National Park which reveals that Maasai spiritual leaders, referred to as *laiguinan*, who were acquainted with their clan culture, are respected in terms of their decisions, rules and regulations on the management and use of biodiversity, among others.

A study by Ylhäisi (2006) finds great variation in size and density of sacred groves among different *lukolos* within and between villages, as a result of differences in the degree of social solidarity exercised by a particular clan and on the presence/absence of the responsible head of a clan (*mlukolo* in Nguu tribe) to manage the use of the clan's sacred grove(s)/place(s). Similarly, studies by Kweka (2004), Msuya and Kideghesho (2009) also observed that dominance of a certain ethnic group in a particular area determines their strengths in the emphasis of their indigenous knowledge for the management and use of biodiversity, and sacred grove(s) being part of it. It is worth noting that the Nguu and Zigua ethnic groups are closely related in their culture, norms, values and language. A study by Ylhäisi (2006) revealed that the Zigua, the first clan to settle in an area, established a clan (a *lukolo* in both Zigua and Nguu languages), and a *mlukolo* is responsible for the conservation of the sacred groves, ritual practices and enforcement of the IKS, among other duties (Ylhäisi, 2006). The *lukolo* is mainly based on having a common ritual place, and not necessarily being a blood relation (Oppen, 1992 cited by Ylhäisi, 2006). It is from the study findings and literature that this study argues that sustainability of sacred groves and/places that have been widely reported to conserve biodiversity mostly rests on the *walukolo*, in a context of increased external and internal pressure for their encroachment.

Table 3: The Nguu ethnic groups' sacred groves/places in the study area

Name of the village	Name of the sacred grove/place	Estimated size (Ha)	Custodian clan
Maskati			
	Mpeele (Kwentingu)	4.0	Wanyagatwa
	Magole	2.0	Wanyagatwa
	Manyasa	1.6	Wanyagatwa
	Disalaza	0.8	Wanyagatwa
	Mazinde	0.8	Wanyagatwa
Sub total		**9.2**	
	Pangai	***1.2***	Waganaza
	Gombero	**0.05**	Wafati
Total		**10.45**	
Mndela			
	Kochamazi	0.8	Wasongo
	Kwedimongo	1.2	Wasongo
	Mlima Mteke	2.0	Wasongo
Total		**4.0**	
Pemba			
	Finta	4.0	Wasongo
	Nyanyiunga	1.8	Wasongo
	Mkunvuru	2.4	Wasongo
Sub total		**8.2**	
	Kwevirango	4.4	Wanyasa
	Heviziwa	4.8	Wanyasa
	Mgoroka	2.0	Wanyasa
Sub total		**11.2**	
	Khwarike	**1.2**	Waruwi
	Msente	0.4	Waluhanga
	Kwevilulu	0.8	Waluhanga
	Kikangazi	1.6	Waluhanga
Sub total		**2.8**	

	Mheza	2.8	Kilangulu
	Rwinyi	1.2	Kilangulu
	Kimwege	2.4	Kilangulu
Sub total		**6.4**	
	Vikinga	1.6	Wakwigina
	Gereza	1.6	Wakwigina
	Mapalamba	1.2	Wakwigina
Sub total		**4.4**	
Total		**33.0**	
Kwelikwiji			
	Luamba	**0.05**	Wanyagatwa
Grand Total		**47.5**	

Presence of sacred wild plant species and reasons for their sacredness

Most of Nguu people are aware of the existence of sacred wild tree species in their village. Table 4 demonstrates that most of the respondents (81.0%) agreed on the presence of sacred wild tree species, while only 19.0% of the respondents expressed their ignorance of the presence of sacred tree species in their village. The study further disclosed that *Mvumo* (*Ficus inges, F. scassellatii*) were mentioned by most of the respondents (53.0%) as a sacred tree species, while 27.0% of the respondents mentioned *Mkuyu* (*Ficus altissima*) and only 8.0% of the respondents claimed that Mdala (*Euclea divinorum*) was sacred. Of all the respondents, only 7.0% and 5.0% of the respondents mentioned any big tree/very old trees and Mnyasa (*Newtonia buchananii*) as sacred trees, respectively.

Results (Table 4) have further shown that majority (47.0%) of the respondents claim that tree species that are sacred are believed to inhabit ancestral spirits and/or used for traditional ceremonies, while 27.0% of respondents say those trees improve soil fertility and conserve moisture, and 18.0% of respondents say that sacred

trees are believed to cause curse, sickness and death to a person or a close relative, if destroyed. Results further show that 5.0% of the respondents believe that all edible wild fruit trees are sacred and only 3.0% of the respondents claim that medicinal trees are sacred.

Scattered wild tree species on public lands are also considered sacred, varying in size from very big and probably very old trees to small ones. It was revealed that in case it is deemed necessary to cut down such very big/very old trees, some rituals have to be performed as a way of appeasing ancestral spirits. For example, according to the Maasai, trunks of cut sacred trees have to be covered by fresh leaves as a way of appeasing ancestral spirits for cutting such a tree. Tanyanyiwa and Chikwanha (2011) also found that very big/very old wild trees were perceived among the Shona/Ndebele ethnic group as inhabiting ancestral spirits and capable of rainmaking. They are normally used for shade and traditional ceremonies, and therefore have been considered sacred and were protected from any malpractices that threaten their survival. Ancestral spirits are believed to use such tree species to reach people. It is from the above findings and literature review that this study argues that beliefs in sacred trees have significantly contributed to management of biodiversity. Sacred attachment to flora species is varied within different ethnic groups, probably because of their socio-economic characteristics and perceived contribution of such species to their livelihood and spiritual beliefs.

Table 4: Respondents' views on the presence of sacred wild plants and their reason(s) for their sacredness. Sacred wild animals and reason(s) for their sacredness

Presence of sacred wild species	**Frequency (n = 240)**	**Percentage**
Yes	195	81.0
No	45	19.0
Total	**240**	**100**

Name of sacred tree species (n = 195)		
Mvumo (*Ficus inges, F. Scassellatii)*	124	53.0
Mnyasa (*Newtonia buchananii*)	11	5.0
Mdala (*Euclea divinorum*)	19	8.0
Mkuyu (*Ficus altissima*)	63	27.0
Any big tree	16	7.0
Reasons for sacred wild plants (n = 195)		
Harbors evil spirits and used for traditional practices	218	47.0
Medicinal plants	14	3.0
Improve soil fertility and conserve water	126	27.0
Provide wild fruits	21	5.0
Can lead to curse, sickness and death	82	18.0

The sanctity of wild animals is another aspect of the linkage between IKS and biodiversity conservation. Table 5 shows that most of the respondents (75.0%) agreed on the presence of sacred wild animals in their community, while 23.0% of the respondents said there were no sacred wild animals and 2.0% of the respondents said they did not know. *Mbega* (*Colubus angelensis*) is mentioned by most of the respondents (74.2%) as being sacred and 13.4% of the respondents mention *Gwalangwa* (millipede) being sacred (Table 4). Of the respondents, 7.4% claim that *Kunguru* (*Corvus albus, C. albicollis*) is a sacred animal while only 5.0% of the respondents mentioned *Dondoro* (*Cephalophus harveyi*) as a sacred wild animal. Despite *Dondoro* (*C. harveyi*) being mentioned as a sacred animal, the study and literature show that duikers are some of the most hunted wild animals for bush meat and can rarely be seen nowadays. Arguably, it is possible that the animals are mentioned as sacred either because they are illegally hunted inside the forests, a practice that has been restricted by the forest officers, or as a way of trying to hide activities as facts on the ground.

Most of the respondents (86.0%) express that wild animal species are neither destructive, harmless, nor consumable and those which contribute to people's livelihood strategies are normally considered sacred, and killing such animals has been perceived as a taboo, as such action goes against the God's reasons for creation and management and use of biodiversity. About 11.0% of the respondents say that they do not know why some wild animal species are perceived as sacred, though they believed killing such animals can lead to curse and/or death of an offender or a close relative, and only 3.0% of the respondents said that harmless animals such as *Galangwa* (millipede) were sacred.

Table 5: Respondents' views on the presence of sacred wild animal

Presence of sacred animal(s)	Frequency (n = 240)	Percentage
Yes	179	75.0
No	56	23.0
I don't know	5	2.0
Total	**240**	**100**
Name of sacred species (n = 179)		
Mbega (Colubus angelensis)	150	74.3
Gwalangwa (millepede)	27	13.4
Dondoro (Cephalophus harveyi)	10	5.0
Kunguru (*Corvus albus, C. albicollis*)	15	7.4
Reason(s) for sacredness (n = 179)		
Non-destructive and not consumable	187	86.0
Harmless	7	3.0
Killing can lead to curse and death	23	11.0

Mokuku and Mokuku (2004) contend that some animal species are perceived as being sacred as they have powers to cause certain awesome consequences for humans and communicate

with humans, once seen or encountered, suggesting the existence of complex interactions between physical and spiritual beings of indigenous people into other species. For example, an owl's call is believed to warn about or cause death in the family (Mokuku and Mokuku, 2004; Kweka, 2004). Mokuku and Mokuku (2004) also found that the pied-crows (*C. albus*) are believed to bring good luck, such as one may get money, and therefore favour their conservation. In summing up the discussion on sacred animals and management, and use of biodiversity, Mokuku and Mokuku (2004) put it that association of some organisms with fearsome consequences if destroyed and providence seen or encountered shrouds them with spiritual powers, sacredness and awe, creating a basis for their respect and therefore their conservation. Mapara (2009) also reported that in pre-colonial Shona society, taboos were used to discourage people from transgressing norms on totemic species, and there were several fines for the transgressor of those norms, resulting in conservation of the species of concern.

What needs to be done to revive the IKS for management and use of biodiversity

Results (Table 6) show that half of the respondents (51.0%) say that the youth must be formally taught on the significance of the IKS for management and use of biodiversity to ensure sustainability of the knowledge system, while 27.0% of the respondents proposed official recognition of and capacity building for the custodians of the knowledge system. Of the respondents, 7.0% said that integration of IKS into village bylaws will enhance and sustain a wide use application of the knowledge system, while 15.0% of the respondents express their ignorance of what should be done to revive the knowledge system.

Arguing on the lack of the official recognition of IKS, Kideghesho (2009) states that there is a minimal official recognition of this

knowledge system in conservation policies despite the government being a signatory of the CBD of 1992 which emphasized, among others, on the wide use an application and integration of the IKS. In lighting of the similar view, Mattee (2007) argues that policies in Tanzania are formulated through a centralized system of public interest resulting in failure of such policies: the process of policies formulation has ignored power relationships and roles among potential stakeholders making them being almost irrelevant and leading to conflicts among actors interested in management and use of biodiversity.

Table 6: Strategies to revive the indigenous knowledge system

A strategy	Frequency (n = 240)	Percentage
There should be more teaching on the significance of IKS	199	51.0
Official recognition and capacity building of IKS	105	27.0
Integration of IKS into village bylaws	30	7.0
I don't know	58	15.0

Respondents' views on the significance of the IKS/ biodiversity conservation methods on management and use of biodiversity

The respondents' views on the significance of the IKS and biodiversity conservation methods in their separation on management and use of biodiversity are shown in Table 7. Result show that most of the respondents (97.0%) express their view that the IKS alone cannot effectively conserve biodiversity, with only 3.0% of the respondents claiming that the knowledge system alone can effectively and sustainably conserve biodiversity.

Results also show that of the respondents who claim that the IKS cannot sustainably manage and use biodiversity, almost 80.3%

said that lack of legitimacy and power of IKS to deal with offenders of the system has limited its effectiveness on management and use of biodiversity, while 9.1% of the respondents said that labeling the IKS as out-dated has limited its effectiveness, and almost 6.6% of the respondents said that as not all areas are under the custodians of the IKS, its effectiveness on management and use of biodiversity is thus limited. Results further reveal that almost 2.6% of the respondents say that the knowledge system can effectively and sustainably manage and use biodiversity since the system is still respected by most people, while 1.4% of the respondents claim that the knowledge system alone cannot sustainably manage and use biodiversity, unless otherwise, poverty is dealt with. Poverty has compelled people to abuse their knowledge system just to make a living.

Arguing on the lack of legitimacy amongst the custodians of the IKS, Ylhäisi (2006) states that regardless of the significance of the *walukolo* on management and use of biodiversity through enforcing the IKS, their roles have increasingly been eclipsed by national legislation, government institutions and village administration, with most of the duties of the forestry officers being limited inside boundaries of the forest reserves, with the exception of some exported plant species such as *Mninga* and *Mvule*. Through key-informant interview, it was disclosed that limited budget and staff were the reasons why the forestry officers have limited effectiveness inside the forest reserves. In furtherance of the discussion on the exclusion of the indigenous people in the realm of biodiversity conservation, Ylhäisi (2006) further added that, despite the Tanzanian government being a signatory of the CBD of 1992 and the Forest Act of 2002 emphasizing active participation of the indigenous people, most forest officers still consider indigenous people as harmful to biodiversity, rather than potential partners in management and use of biodiversity. In light

of this, several studies have pointed out that both colonial and post-colonial government policies and regulations marginalized the IKS, triggering a struggle for legitimacy between the knowledge systems (Mutta, *et al.*, 2009, Kideghesho, 2009 and Ossai, 2010).

Results (Table 7) have shown that most of the respondents (97.5%) claimed that biodiversity conservation methods alone cannot effectively and sustainably conserve biodiversity, while only 2.5% of the respondents expressed that biodiversity conservation methods alone can effectively and sustainably conserve biodiversity. Results also indicate that half of the respondents (50.2%) claim that limited resources hampered the effectiveness of biodiversity conservation methods, while 24.3% of respondents mention lack of spiritual connectedness amongst forestry officers and other practitioners of sustainable management, which reduces their seriousness on management and use of the same. Of the respondents, 18.4% said that biodiversity conservation methods alone could not effectively conserve biodiversity in the absence of a complementary partner, the IKS, while only 7.1% of the respondents said that biodiversity conservation methods could not effectively conserve biodiversity as they are less known to most people.

Table 7: Respondent's views on the effectiveness of the IKS/ biodiversity conservation methods on management and use of biodiversity

Effectiveness of the indigenous knowledge system alone on conserve biodiversity	**Frequency (n = 240)**	**Percentage**
Yes	7	3.0
No	233	97.0
Total	**240**	**100**
Reasons for the effectiveness status of IKS (n = 240)		
IKS has no legitimacy and legal power to deal with offenders	220	80.3
Indigenous knowledge system is perceived as outdated	25	9.1
Not all areas are under indigenous knowledge system	18	6.6

People still respect IKS	7	2.6
Income poverty has to be dealt	4	1.4
Effectiveness of biodiversity methods alone on conservation of biodiversity		
Yes	6	2.5
No	234	97.5
Total	**240**	**100**
Reason for the effectiveness status of biodiversity conservation methods (n = 240)		
The government officials lack spiritual connectedness to biodiversity	65	24.3
The government has limited resources for meaningful conservation	134	50.2
Biodiversity conservation methods are less known	19	7.1
Indigenous knowledge system is an ignored complementing partner	49	18.4

Through a key-informant interview, it was reported that conservation initiatives of the forestry reserve were limited by funding and field forestry officers. For example, in the last financial year (2011–2012), the allocated funds were only 60.0% of the requested budget, with a shortage of seven field forestry officers needed for conservation of the South Nguru Montane Forest Reserve as per the Mkingu Nature Reserve Forest strategic plan. According to FBD (2005); Kideghesho (2009) limited budgets and inadequate workforces which have limited the capacity of most governments in enforcement of the biodiversity conservation methods. Similarly, Sabuni (1998) cited by Mbwambo (2000) and Burgess *et al.* (2007) also noted that insufficient funds limited effective management and use of biodiversity in the Eastern Arc Mountains Forests.

PEMA (2006) also found that poor enforcement of poorly understood government rules and regulations for the management and use of biodiversity has limited their effectiveness. Arguably, limited resources have hampered the capacity of the government

on the management and use of biodiversity. Moreover, through interviews, it was found that negligence of the spiritual aspects attached to biodiversity amongst the government officials has also limited the effectiveness of biodiversity conservation methods. Similarly, citing Gibson *et al.* (1999), Kweka (2004) also put it that a meaningful participation of primary beneficiaries could do much better for the management and use of biodiversity. It would address the problem of limited government staff for the enforcement of the rules and regulations, by increasing indigenous people's sense of ownership of the biodiversity to be conserved, enhance peoples' attitude towards conservation and the forestry staff and increase mutual trust between forestry staff, and the indigenous people.

For example, a study by Ylhäisi (2006) observed that in Simbomu and Vuchama Ngofi villages of Mwanga district, village by-laws were supporting protected indigenous forests, whilst the caretakers of the indigenous forests (*walukolo*, in the case of this study) are officially recognized and continue to protect their forests using their IKS. In cases where a caretaker of a certain sacred grove converted into either Christianity or Islam, the management of the sacred groves would become the responsibility of the respective village government (Ylhäisi, 2006). Moreover, village governments have been responsible for all cases of destruction of the protected indigenous forests instead of the care takers of these forests, who in most cases are elders, unable to meet the costs and all other bureaucracy associated with dealing with the offenders (ibid). Citing the Simbomu and Vuchama Ngofi examples of the integration of IKS and biodiversity conservation methods, Idd (2002) cited by Ylhäisi (2006) argues that such an integration of the knowledge systems was a very important strategy and a good example to the whole of Tanzania, as it resulted in recovery and improvement of the sacred groves in Simbomu village. This suggests that integration of IKS and biodiversity conservation methods would achieve

more on sustainable management and use of biodiversity than either in their separation.

In summing up the discussion of the effectiveness of the IKS and biodiversity conservation methods in their separation on sustainable management and use of biodiversity, Ylhäisi (2006) puts it that bylaws, laws and the IKS in their separation have less influence in preventing people from using forest land as most people prefer and follow the unwritten policies that enable them to survive, despite being aware of the fact that by doing so they are destroying their most important partner in their survival (Mvungi, 1998 cited by Ylhäisi, 2006). In furtherance of this view, citing Guyer and Richard (1996), Korhonen (2009) argued that the western idea of separating humans and nature is a strange idea in some cultures, yet perceiving indigenous people as having lived in harmony with biodiversity is also not true. This suggests that both the IKS and biodiversity conservation methods are perceived as not being effective in sustainable management and use, and thus it has been widely argued for their integration. Sadly, the IKS has been excluded from the management and use of biodiversity as it has been perceived as being primitive, barbaric and backward, just a few to name.

Conclusions

Biodiversity is a cornerstone for sustainable development, and the IKS has a great role to play in attainment of the same. It is from the findings and the literature the following conclusions are drawn by the study. First, in the South Nguru Mountain Forest Reserve, local people possess a wealth of IKS that determined humans-biodiversity. The knowledge system was interwoven into people's indigenous social structure and politics, whereas the social structure links humans, the land in which ancestors were

buried and the ancestral spirits, with the latter being believed to affect the lives of the people. The knowledge system included but not limited to sacred groves and places, globally known for their biodiversity richness and sacred species of both, flora and fauna.

The study also revealed that most of the indigenous people believed that all the living and the non-living things were the God/or gods' creation and deserved upmost respect, so they had to be used in a reciprocal relationship among themselves, whereas restrictions in forms of taboo, sacredness, totemic, just to list a few attached to favour their conservation. Sadly, despite the significance of the IKS on management and use of biodiversity being extensively documented, most of biodiversity conservations initiatives relied on the western view of conservation with written rules and regulations excluding the IKS. Conclusively, the integration of the IKS on its own ways of knowing and doing, and biodiversity conservation methods and for sustainable management and use of biodiversity is a cornerstone for the achievement of the same, as the knowledge systems are complementing each other on their weaknesses and strengths.

Recommendations

- To the government and non-governmental organizations, official recognition, motivation, capacity building and promotion of indigenous social structures from which IKS relevant for management and use of biodiversity gets evolved, enhanced and sustained is a corner for cherishment, sustainability and integration of IKS into biodiversity conservation methods for management and use of biodiversity. The IKS should be used based on its own ways of knowing, teaching and learning.
- Last but not least, an in-depth study on biodiversity richness and taxonomic diversity of the sacred groves and places in the

South Nguru Mountain Forest Reserve and elsewhere, by the government and biodiversity conservation practitioners, is of paramount importance as sacred groves and places are globally acknowledged for being the habitat of endangered and nearly extinct species of both flora and fauna.

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JERZY GILAROWSKI

ENVIRONMENTAL CHANGE AND ADJUSTMENTS IN AGRICULTURE IN TANZANIA

ABSTRACT

The most common definition of climate change is an alteration in the variables of the climate system over long periods of time. The main factors of the natural climate change are: variations in **solar radiation**, orbital variations of the Earth, variations in the **albedo** or reflectivity of the continents and oceans, volcanism and **continental drift**. However, in the last 150 years, the most significant agents of climate variation were human activities. Of most concern in human influences is the increase in carbon dioxide levels due to emissions from **fossil fuel** burning. The fastest changes in climatic variables, especially in temperature patterns, occur in temperate and polar zones. Many scientists agree that the pace of global warming is much slower in the intertropical belt, but despite these common views, my research, which I did in 2010 and 2013, with the help of my geography students, shows, that climate and environmental changes are much faster than the scientists write. Within the last 30 years the biggest changes took place in temperature and precipitation patterns and in soil fertility. As the changes are likely to continue in the future, Tanzania will have to adapt to them its agriculture – change the structure of production, methods of cultivation, and first of all create, together with neighboring countries, deeply thought-out system of water management.

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Key words: Environmental change, Tanzania, Adjustments in agriculture, Water management.

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Natural climate change is an ongoing process, but in the last 150 years the average temperature of the Earth's lower part of the atmosphere was growing as a result of the greenhouse effect (caused mostly by an addition of carbon dioxide to the atmosphere from burning fossil fuels). The observed climate anomalies occur, however, especially in temperate and polar climate.

Many scientists agree that global warming refers, to a lesser extent, to equatorial regions (for example Tanzania). According to them, due to global warming, the air temperature rises quickly in the area of polar and temperate climates (for example: in Europe, USA, Canada, and Russia). Is it really so? Does Tanzania experience lesser climate change? My research shows that it does not – climate and environmental changes in Tanzania (according to Tanzanian residents) are much faster than the scientists write.

The study of the environmental change in Tanzania (made through questionnaires) involved 140 students of the Faculty of Arts and Social Sciences from the University of Dodoma. All students were attending my lecture on Climatology. The study took place in 2010, and 2013 in the middle of second semester, during the Easter break. Before the break, just before students' leaving to their homes for holidays, I discussed with them in details the content of the questionnaire. Students were asked to interview their parents and grandparents in terms of the questions contained in the questionnaire. Each questionnaire contained 6 questions that focused on possible changes in the environment that have occurred (or not) in the last 30 years in their places of residences and – more generally – in their administrative regions. Responding to a question (on a basis of received answers from relatives

and on a basis of their own observations) students had a choice of selecting one of three options: Yes – changes have taken place, No – changes have not taken place or I don't know – if there was no information available (or lack of self-knowledge). Students were informed that it is better (for my research) to select the last option, if the person questioned by them was not sure if the changes took or did not take place in fact. I wanted, in this way, to get the material for the specific/real changes that have occurred in a particular place, rather than general knowledge of students about the ongoing climate change and its consequences.

Students were told, that if they choose/select a positive answer (Yes – changes have taken place) they will have to describe shortly these changes – giving concrete examples. Six questions, included in questionnaire, were as follows:

1. Do you think (or your parents/grandparents have told you) that forest surfaces have decreased or some forests have disappeared?

2. Have you observed or your parents/grandparents have told you about any changes in the water levels in lakes?

3. Have you observed or your parents have told you about any changes in water flows in local rivers/streams?

4. Have you observed or your parents have told you about any climate changes (for example: precipitations, temperatures, and the span of wet/dry season?)

5. Do the peasants think that the fertility of soils has decreased in your region?

6. Have you observed (or your parents have told you) that some animals in your region have disappeared/or became extinct?

Students came from all administrative regions of Tanzania, but most of the questionnaires were fulfilled in the regions of: Iringa, Kagera, Kilimanjaro (respectively 21, 16, and 14 questionnaires), the least in the regions of: Lindi, Mtwara, and Tabora (only one questionnaire fulfilled).

Questionnaires filled out by students provided 840 responses (140 students/questionnaires x 6 questions). Considering all regions of the country and all of the above six categories of environmental change, 575 responses were positive (Yes, the changes have taken place), which is 68.5% of all responses, 101 negative (12%), while 164 responses (19.5%) were neutral (the responders did not have any knowledge on a given subject).

Taking into consideration the whole country (all regions) – the first question (regarding changes in forest area) was positively answered by 70% of respondents, the second (the changes in the level of water in lakes) was positively answered by 62.9% of respondents, the third (changes in the flow of water in rivers) – 72.9%, the fourth (changes in climate elements) – 85.7%, the fifth (changes in soil fertility) – 77.1%, the sixth (the wildlife population) – by 42.1% of respondents. The table below shows all responses.

To the first question, regarding changes in forest areas, respondents who ticked positive response, wrote mostly as a commentary, that the forests round their villages disappear because people cut down trees for firewood, charcoal production (which covers up to 90% of energy needs among Tanzanians) and in order to obtain more arable land, and pasture for their herds (which is evidenced by FAO reports[1]). Over 80% of respondents answered this question positively (Yes – changes have taken place) in regions such as: Dodoma, Kagera, Kigoma, Lindi, Manyara, Mbeya, Morogoro, Mtwara, Shinyanga, Singida and Tabora[2]. While the lowest percentage of positive responses to this question were in: Tanga, Dar es Salaam/Pwani and Arusha (relatively: 25, 37.5 i 44.5%).

The low response rate in these regions is easy to explain. The questionnaire shows that students who came from the region of

[1] http://www.fao.org/forestry/country/57478/en/tza/ [23.04.2013].

[2] Although it should be noted, that in Lindi, Mtwara and Tabora only one questionnaire has been filled.

Tab. 1. Comparison of responses to asked questions by administrative regions of Tanzania

Region	Number of responses to individual questions																		The total number of responses for the region and for the whole country			
	1			2			3			4			5			6						
	Y	N	?	Y	N	?	Y	N	?	Y	N	?	Y	N	?	Y	N	?	Tot	Y	N	?
Arusha (9)	4	2	3	4	3	2	6	1	2	7	0	2	6	1	2	3	1	5	54	30	8	16
Dar es Salaam + Pwani (8)	3	4	1	1	7	0	4	2	2	4	3	1	4	3	1	4	2	2	48	20	21	7
Dodoma (3)	3	0	0	1	0	2	2	1	0	3	0	0	2	1	0	1	0	2	18	12	2	4
Iringa (21)	13	4	4	12	1	8	17	1	3	17	2	2	16	2	3	7	2	12	126	82	12	32
Kagera (16)	13	2	1	14	0	2	14	0	2	12	1	3	15	0	1	7	0	9	96	75	3	18
Kigoma (7)	6	0	1	5	0	2	6	0	1	7	0	0	4	1	2	4	0	3	42	32	1	9
Kilimanjaro (14)	9	1	4	9	1	4	12	0	2	13	1	0	13	1	0	3	1	10	84	59	5	20
Lindi (1)	1	0	0	0	1	0	1	0	0	0	0	1	1	0	0	0	1	0	6	3	2	1
Manyara (3)	3	0	0	3	0	0	3	0	0	3	0	0	2	0	1	3	0	0	18	17	0	1
Mara (6)	4	1	1	6	0	0	5	1	0	6	0	0	5	1	0	3	2	1	36	29	5	2
Mbeya (12)	11	0	1	7	2	3	10	0	2	11	0	1	11	0	1	8	2	2	72	58	4	10
Morogoro (6)	6	0	0	3	2	1	6	0	0	6	0	0	4	1	1	1	4	1	36	26	7	3
Mtwara (1)	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	6	6	0	0
Mwanza (12)	6	3	3	11	0	1	3	4	5	10	1	1	6	2	4	1	1	10	72	37	11	24
Rukwa (2)	1	1	0	2	0	0	1	1	0	2	0	0	2	0	0	1	0	1	12	9	2	1
Shinyanga (2)	2	0	0	0	2	0	2	0	0	2	0	0	2	0	0	2	0	0	12	10	2	0
Singida (4)	4	0	0	4	0	0	2	2	0	4	0	0	4	0	0	2	0	2	24	20	2	2
Ruvuma (5)	4	1	0	1	2	2	3	0	2	5	0	0	4	1	0	4	0	1	30	21	4	5
Tabora (1)	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	6	6	0	0
Tanga 4	1	3	0	3	1	0	2	2	0	3	1	0	4	0	0	2	1	1	24	15	8	1
Zanzibar + Pemba (3)	2	0	1	0	1	2	1	0	2	3	0	0	1	1	1	1	0	2	18	8	2	8
Tanzania (140)	98	22	20	88	23	29	102	15	23	120	9	11	108	15	17	59	17	64	840	575	101	164

(9) – the number of completed questionnaires in the region
Y – Yes, changes have taken place; N – No, changes haven't taken place; ? – I don't know
Tot – the number of questions asked in the region (number of completed questionnaires x 6 questions)

Source: Students' field studies, 2010

Dar es Salaam lived within the city or in the suburban districts where the forests disappeared over thirty years ago (that now there is nothing to deforest). In turn, in the region of Tanga forests occur on the high slopes of the Usambara Mountains, where agriculture is sporadic (and therefore there is no deforestation), while in Arusha, which is one of the driest regions of the country, the predominant formation of the plant is dry savanna. Forests are there only high in the mountains – on the slopes of Mount Meru and the Ngorongoro crater, or in the vicinity of Lake Manyara (all of these areas are protected as national parks).

It should be emphasized that deforestation (at least theoretically) takes place mainly in areas not covered by the statutory protection, which in Tanzania covers approximately 62% of the total area of the country. In the most of aforementioned regions – Dodoma, Lindi, Manyara, Morogoro, Mtwara, Shinyanga, Singida and Tabora (according to surveys – some of the most vulnerable to deforestation), forest areas are largely outside protected areas. In these eight regions, 100% of respondents noted a decrease in forest areas. It should be emphasized that the perception of intensive deforestation in Tanzania, obtained through the surveys, has its reflection in the official FAO statistics (see table below). According to Global Forest Resources Assessment, the deforestation rate in Tanzania in the period 1990–2000 and 2000–2005 was 1% and 1.1%, respectively (FAO, 2006, Global Forest Resources Assessment).

Tab. 2. Changes in forest area in Tanzania in the period 1990–2005 (in thousand hectares)

Category of wooded area according to FAO classification	1990	2000	2005
Forest	41 441	37 318	35 257
Other wooded land (woodland)	22 374	10 629	4 756
Forest + woodland	63 815	47 947	40 013

Source: http://www.fao.org/forestry/country/32185/en/tza/ (23.04.2013)

To the second question, regarding the changes of the levels of water in lakes, the most positive responses (over 80%) were in the following regions: Kagera, Manyara, Mara, Mwanza, Rukwa, Singida and Tabora. No positive response was noted in the regions: Lindi, Shinyanga, and Zanzibar, which resulted from the simple fact that in these regions, or better say in the districts inhabited by responders, there are no lakes (which was emphasized by respondents in the comment).

Those who positively responded to this question (Yes, changes have taken place) mainly emphasized the fact that as a result of intensive irrigations (catching the water from rivers) less water flows in rivers and streams and as a result less water enters into the lakes. Some also pointed out that it may be due to the decrease of precipitations (rainfall) in the last 30 years (according to the information received from their parents and grandparents). Most respondents gave examples of decreased level of water not only in small bodies of water (such as Lake Babati in Arusha region, Lake Ikimba in Kagera region, Lake Jipo in Kilimanjaro region, the artificial water dam Mtera in Iringa region), but also in a large-area lakes such as: Victoria, Tanganyika, Malawi, Rukwa, Manyara.

In Kagera region, 10 respondents (out of 16) noticed a marked reduction of water in Victoria Lake, while in Mara region – 2 respondents (out of 6) noticed the same phenomenon. Respondents, in accordance, wrote that the former lake level is clearly marked on the shore, especially in the quays of the port cities – in Bukoba and Mwanza. A similar situation occurred in the Lake Tanganyika. Former water level is marked on the quays in ports in Kigoma and Ujiji. Several respondents wrote that on the Lake Tanganyika, near the town of Kibirizi, at present one can see some rocks above the surface of the water, where 20–30 years ago you could not see them, and on the Lake Victoria, in the Sengerema district, some offshore islands joined the mainland.

To the question concerning changes of water flow in rivers, more than 80% of positive answers were in the following regions (12): Iringa, Kagera, Kigoma, Kilimanjaro, Lindi, Manyara, Mara, Mbeya, Morogoro, Mtwara, Shinyanga and Tabora. On the other hand, only in the regions of Mwanza and Zanzibar response rate was less than 50 (25 and 33%, respectively). It is worth noting that the latter two regions plus the region of Dar es Salaam (together with Pwani)[3] and Lindi were rated by the respondents as the least changed of all[4].

Like as in the case of lakes, respondents gave examples of decreasing water flow in small and big rivers. The main reasons for the decrease in water flow in rivers are irrigations and deforestation. A spectacular example of the decreasing amount of water is The Great Ruaha River. I have had the opportunity to personally observe this phenomenon for several years. Not only does this river carry less water, but it also dries up the swamps in its basin.

One of the consequences of the decrease in the flow of water (and drying of smaller streams) is the lowering of the groundwater level. This phenomenon is especially present in the dry central part of the country (the respondents wrote about the lowering of the water level in wells in Dodoma and its surroundings).

Tab. 3. Rivers and streams in which the respondents observed a change in water flow

Region	River/stream
Arusha	Rau, and streams near Karatu
Dar es Salaam + Pwani	Mbezi, Msimbazi, Tegeta
Dodoma	Streams in vicinity of Dodoma
Iringa	Great Ruaha

[3] Previously Dar es Salaam and Pwani were considered as Coastal region.

[4] Taking into account all environmental changes – they received from 42 to 52% of positive answers.

Kagera	Kagera, Ngono, Kabalobi
Kigoma	Muhanga, Mtunguruzi, Kumwambu
Kilimanjaro	Kikafu, Mwanjo, and streams flowing down the slopes of Kilimanjaro
Lindi	Rondo
Manyara	Bubu, streams in districts Babati and Kondoa
Morogoro	Kilombero, Ruhembe
Mwanza	Mwongo
Rukwa	Nzovwe, Kisa, Mtovisa
Shinyanga	Homs
Ruvuma	Ruvuma

Source: Students' field studies, 2010

The fourth question, regarding the observed climate change, received the most positive responses from all the questions (85.7% answers were positive – Yes, changes have taken place). In most regions, the positive responses accounted for over 90% of all responses. However, in the region of Dar es Salaam, there were only 50% of positive answers. In Lindi region, where only one questionnaire was filled, the respondent pointed out the answer – I do not know. It is worth emphasizing that in almost all regions respondents stressed the following facts: precipitation decreased, air temperature rose and the length of the rainy season shortened. The temperature increase is observed especially in the higher altitude areas, which have been told so far to be "cool" – for example, Iringa, and Mbeya. Respondents wrote that nowadays winter is not as cold as it used to be, and one of the consequences is an increase of mosquitoes, and thus the increased incidence of malaria. The increase in the occurrence of malaria was also observed in the regions of Kigoma and Manyara.

The increase of temperature has been registered by weather stations. According to Intergovernmental Panel on Climate Change (2007), the temperature in Africa within XX century rose by 1.0°C. According to the same source, in the period between 1970

and 2004, in the eastern, central, and north-eastern part of Tanzania the increase in temperature was 0.2–1.0°C and in western, south-western and southern Tanzania between 1.0 and 2.0°C[5]. Projections for 2030 indicate that the region will get more rain but become drier as temperatures rise[6]. For Tanzania, the predicted increase in temperature is between 2.5°C and 4.0°C.[7] Parts of the country are projected to receive more rainfall, while the rest of the country – including the drought-prone southern areas – will receive less. Owing to that, the maize productivity is projected to fall in Tanzania in some simulations by 33%[8].

According to the respondents, the visible consequences of the decrease in precipitation so far are: decline of yields (Singida), single maize harvest during the year instead of two harvests (once in Rungwe), replacement of maize, which requires a bigger amount of water by other, less water demanding crops (Songea).

A spectacular consequence of climate change is the gradual melting of the snows on Mount Kilimanjaro and, as mentioned earlier, the reduction of water flow in rivers and streams flowing down its slopes.

Several respondents highlighted the fact that the climate is becoming more unstable and unpredictable – for example droughts

[5] Intergovernmental Panel on Climate Change, 2007, *Synthesis Report*, Valencia, Spain, 12–17 November 2007

[6] According to the respondents, there was a rainfall decrease during the last 30 years, but according to meteorological data, the precipitation remained the same (in general, taking under consideration the whole territory of the country). Higher temperatures, however, intensified the evapotranspiration, and as a consequence less water was available. That is why, in opinion of respondents, there was a rainfall decrease.

[7] Murray L., Orindi V., 2005, *Adapting to Climate Change in East Africa: A Strategic Approach*, Gatekeeper Series 117, International Institute for Environment and Development, London.

[8] Ibidem

(Iringa, Kagera) and floods (Iringa, Morogoro) are more frequent. Despite the fact that the amount of rainfall (per year) in some places remains the same, the shorter rain season causes more torrential rains, which leads to frequent floods.

The fifth question (about soil changes), also in the whole country, achieved a high rate of positive responses (77.1). More than 90% of positive responses were noted in 10 regions: Kagera, Kilimanjaro, Lindi, Mbeya, Mtwara, Rukwa, Shinyanga, Singida, Tabora and Tanga. In other regions, the positive responses constituted 50 percent or more. Only for Zanzibar and Pemba each of the three respondents indicated three different answers – Yes, No, I do not know.

Respondents mostly wrote that the decline in soil fertility expresses a significant reduction in crop yields. According to them, the deterioration of the soil quality was mainly caused by its overexploitation (population growth → increase in the intensity of cultivation/ pasture overgrazing → decline in soil fertility) in the conditions of simultaneous unpredictable pattern in the rainfall schedule.

Most of the respondents wrote that today, without the use of chemical fertilizers, they cannot obtain such high yield as in the past. However, the use of chemical fertilizers or – as part of the respondents wrote – incompetent use of them, causes the deterioration of soil fertility (students gave several examples from the regions of Dar es Salaam, Iringa, Kagera, Kigoma, Kilimanjaro). All this means that in order to produce enough food for increasing demands (because of population growth), the peasants have to get new land for cultivation. The only way to achieve it is cutting down the natural vegetation in the vicinity.

The sixth question related to possible changes in wildlife population. In a positive way (Yes – changes have taken place) less than half of the respondents (42%) answered this question. It is worth noting that only to this question (out of six) positive responses do not constitute a majority. At the same time, it is worth noting the

fact that the negative responses (No – changes have not taken place) accounted for an even smaller percentage (only 12%). Most of the respondents have indicated the answer – I do not know (46%). This was, unfortunately, largely due to the fact that a significant proportion of respondents took into account changes in the population of wild animals before, when writing a comment to the second question, relating to the depletion of forests (deforestation entails the disappearance of some animal species). Therefore, answering the question number six, significant proportion of respondents indicated neutral response – I do not know (to avoid a kind of repetition, as I was informed later in the classroom). In this case the responses to this question have given quite a distorted picture of the changes in wildlife. It seems that in this case only taking under consideration the number of positive responses (59) and negative ones (17), except for neutral responses (64), will give a more reliable picture of the perception of the change in wildlife.

As the comments to this question, respondents stressed that generally outside of protected areas there are less and less wild animals. In six regions respondents noted the disappearance of lions, and in three regions disappearance of elephants, antelopes and hyenas. In individual regions respondents noted the disappearance of buffaloes, giraffes, cheetahs, gazelles, wild pigs, rabbits, hares, and many species of birds. Most of respondents indicated that the main factor in the extinction of animals in certain areas, or moving to other areas, was and is the deforestation.

The following table shows the share of positives answers (Yes – changes have taken place) to the three asked questions (Yes, No, I do not know) in different regions. For the reasons mentioned above, with respect to the sixth question only, the column – Wildlife – shows the share of positive responses to the sum of positive and negative ones.

The above table shows that in Tanzania 76.2% of all questions about the observed environmental changes were answered posi-

Tab. 4. The percentage of positive answers by administrative regions

Region (the number between the brackets indicates the number of respondents/ questionnaires per region)	Categories of environmental change						The percentage of positive answers to all questions (an average of 6 questions)
	1. Forests	2. Lakes	3. Rivers	4. Climate	5. Soils	6. Wildlife	
Arusha (9)	44,4	44,4	66,7	77,8	66,7	75,0	62,5
Dar es Salaam + Pwani (8)	37,5	12,5	50,0	50,0	50,0	66,7	44,4
Dodoma (3)	100,0	33,3	66,7	100,0	66,7	100,0	77,8
Iringa (21)	61,9	57,1	81,0	81,0	76,2	77,8	72,5
Kagera (16)	81,2	87,5	87,5	75,0	93,7	100,0	87,5
Kigoma (7)	85,7	71,4	85,7	100,0	57,1	100,0	83,3
Kilimanjaro (14)	64,3	64,3	85,7	92,9	92,9	75,0	79,2
Lindi (1)	100,0	0,0	100,0	0,0	100,0	0,0	50,0
Manyara (3)	100,0	100,0	100,0	100,0	66,7	100,0	94,4
Mara (6)	66,7	100,0	83,3	100,0	83,3	60,0	82,2
Mbeya (12)	91,7	58,3	83,3	91,7	91,7	80,0	82,8
Morogoro (6)	100,0	50,0	100,0	100,0	66,7	20,0	72,8
Mtwara (1)	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Mwanza (12)	50,0	91,7	25,0	83,3	50,0	50,0	58,3
Rukwa (2)	50,0	100,0	50,0	100,0	100,0	100,0	83,3
Shinyanga (2)	100,0	0,0	100,0	100,0	100,0	100,0	83,3
Singida (4)	100,0	100,0	50,0	100,0	100,0	100,0	91,7
Ruvuma (5)	80,0	20,0	60,0	100,0	80,0	100,0	73,3
Tabora (1)	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Tanga 4	25,0	75,0	50,0	75,0	100,0	66,7	65,3
Zanzibar + Pemba (3)	66,7	0,0	33,3	100,0	33,3	100,0	55,6
Tanzania (140)	**70,0**	**62,9**	**72,9**	**85,7**	**77,1**	**77,6**	**76,2**

Source: Students' field studies, 2010

tively. As can be seen from the table, the most altered regions in terms of environmental change (taking into account the percentage of positive answers – Yes, changes have taken place) are: Mtwara, Tabora (100% of positive answers)[9], Manyara, Singida (over 90%) and Kagera, Kigoma, Rukwa, Shinyanga, Mara and Mbeya (80%). The regions of the slightest environmental changes are: Dar es Salaam + Pwani (44.4%), Lindi (50.0%), Pemba, Zanzibar + (55.6), Mwanza (58.3% of positive answers).

According to the survey, among 6 categories of environmental change, the changes in the elements of climate were mostly noticed (85.7% of positive answers). It should be emphasized, that the symptoms of climate change in Tanzania presented by respondents reflect the global climate change patterns. Globally and locally, the irregular rains decrease amounts of accessible water. Global warming will produce significant changes in evaporation and precipitation, and, as a result the hydrological cycle, will be more unpredictable. Higher air temperatures will increase evaporation from the oceans, and evaporation from land, so less water will be available in soils, lakes and rivers. These changes will modify rainfall patterns and will produce more extreme weather events, including floods and droughts (what is taking place in Tanzania, and what has been described by respondents in questionnaires).

The decreasing amount of accessible water is a phenomenon that the whole world is facing. It is also connected with the increase of population, which is taking place mainly in poor countries, and lack of investments in irrigation, and water infrastructure in general (Tanzania is an example). The decrease in the amount of accessible water in the World is presented on the following graph.

[9] It should be noted, however, that in these regions only one questionnaire was filled.

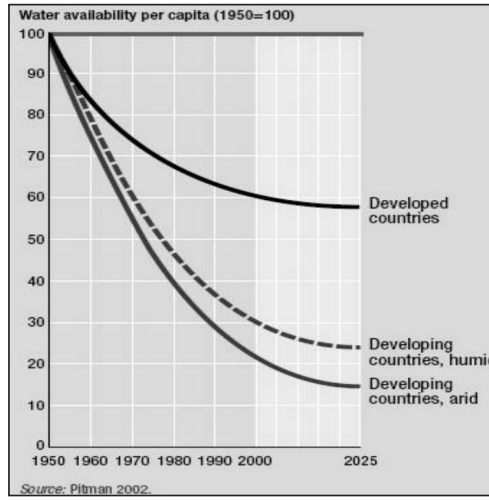

Fig. 1. Decrease in the amount of accessible water per person in the group of the chosen countries in the years 1950–2000
Source: UNDP, 2006, Human Development Report. Beyond Scarcity: Power, poverty and the global water crisis, New York.

Human Development Report (2006) foreshadows that the amount of population facing water scarcity will be growing above all in the poorest regions of the world. For instance, in 1990, in Sub-Saharan Africa 100 million people lived under conditions of water shortage. In 2005, this amount rose to 300 million but it is estimated that in 2025 it will come to 750 million people.

How, and at which degree will this water shortage influence development in the world's poorest countries? In African countries with subequatorial climate there is a close relationship between rainfall amount and Gross Domestic Product. It mainly results from the dependence of those countries' economies (which mostly rely on agriculture) on water supply, which due to the lack of retention depends on rainfall regime. In Sub-Saharan Africa only 3% of land under cultivation is irrigated and in Tanzania about

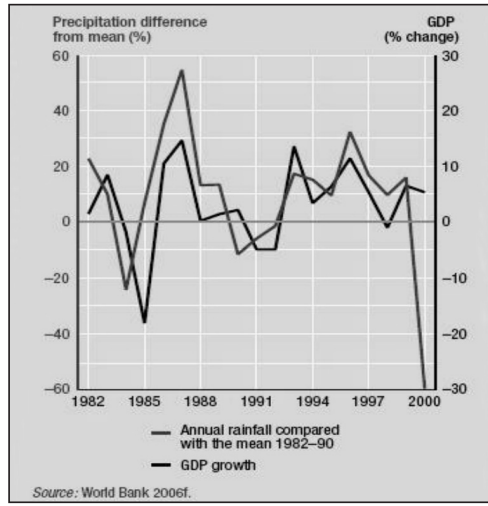

Fig. 2. GDP mirrors rainfall regime in Ethiopia
Source: UNDP, 2006, Human Development Report, op. cit.

5–10%[10]. The remaining 90–95% of farmland depends merely on climatic conditions. The figure below illustrates the dependence of Sub-Saharan Africa's agriculture (national economy in general) on the rainfall regime. The figure presents the situation in Ethiopia, but the same situation and the same mechanism can be observed in other countries of this region.

The figure below presents the relationship between climate change and cereal productivity in Africa. As it can be seen on the map, the most significant fall in productivity in Tanzania, in the period 2000–2080, will be partially in Tanga, Iringa, Ndjombe and Mtwara regions. The productivity will decrease also in south-east, west and north-west of the country. As it was mentioned before, because of the decrease of the available water for crop production, the maize productivity is projected to fall in Tanzania up to

[10] UNDP, 2006. Human Development Report, op. cit.

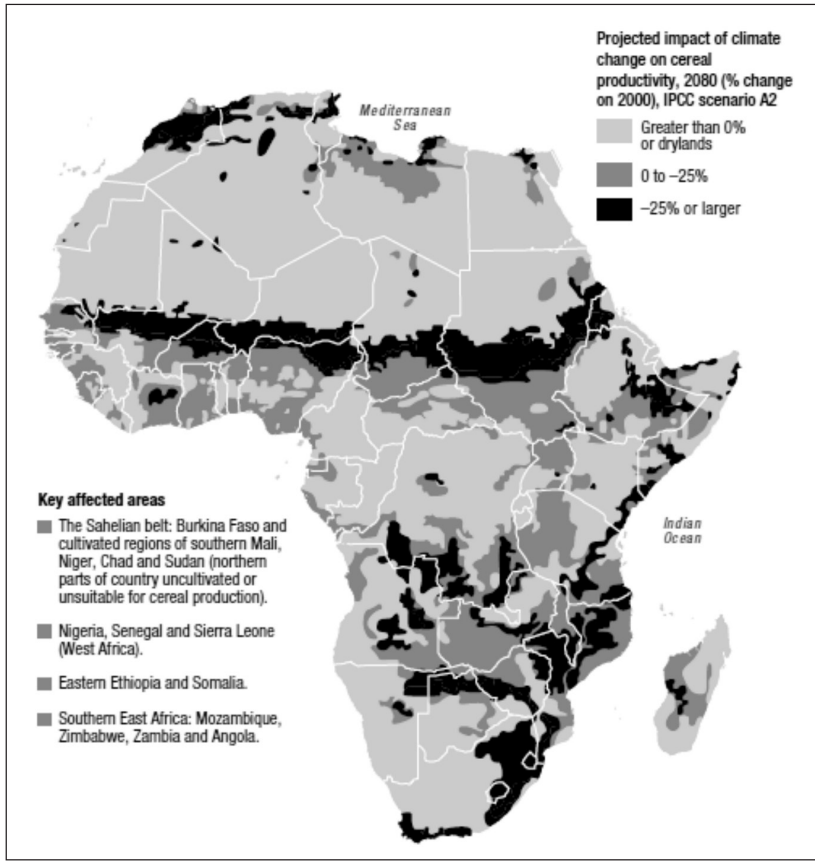

Fig. 3. Climate change and cereal productivity in Africa
Source: Fisher and others, 2005, in: UNDP, Human Development Report, 2006

2030 by 33%[11]. Taking these facts into consideration, the following question arises – what Tanzania should do to face the consequences of climate change (or more specifically – the decrease in productivity, and finally – a shortage of food)? In my opinion a set of actions should be undertaken, and should work in concert.

[11] Murray, L., Orindi, V., 2005, op. cit.

The main of them are: to change/adjust the existing structure of crop production to climatic changes, to improve the techniques of cultivation, to build well studied irrigation systems, and finally to create functional system of food storage.

Adaptation of the structure of production to climate change should take place mainly in these areas, in which, for various reasons, the irrigation systems will not be built (for example, adverse topographical and geological conditions). Plants with less water and soil requirements should replace these with higher requirements (for example, sorghum instead of corn or cassava instead of potatoes). Appropriate/optimal choice of crops should be carried out with the help of extension officers.

With the change of cultivated plants, production techniques will also change. The most important change will aim to reduce evapotranspiration and retain water in the soil. There are many ways of doing that. The simplest and a very effective one is a complete coverage of the field during the growing season by unused parts of crops from the previous harvest (leaves, stems) and increasing the amount of humus in soil (humus is an excellent water absorbent).

The biggest challenge, however, puts the construction of irrigation systems and water retention. All water projects must be coordinated with one another to avoid situations in which one system is running against another – for example depriving it of water. This will require not only carrying out the specialized research/surveys (for example geomorphological and hydrological), but it must also take into account the existing technical infrastructure and functioning economic linkages. Also, demographic situation must be analyzed so that the implementation of the projects did not lead to the social conflicts.

A deficiency of any good always creates conflicts at the local, regional, national or international level. Solving conflicts within the country is the responsibility of the government and local authorities. However, the greatest threat to peace creates the claim to the

same natural resource by several countries. In the case of East and North-East Africa, climate change, and thus a reduction in access to water, can lead to conflict between the countries lying in this region.

The potential and very real conflict is connected with the access to water from the Nile and may involve 9 African countries situated on its shores. The tensions over water among these countries are becoming more and more apparent and show the significant role played by that river in economy and politics of those countries. So far, the rules concerning the Nile water consumption were based, to a wide extent, on a colonial agreement dating back to 1929, signed by Great Britain (that controlled a vast part of the Nile basin), independent Egypt and Sudan that was under control of Great Britain and Egypt. As a result of this agreement, Egypt was allowed to consume annually 48 billion cubic meters of the Nile water, while Sudan 4 billion cubic meters. Furthermore, Egypt obtained the right to monitor the Nile water flow in the countries located in the upper part of the basin, as well as to hinder there any investments involving the Nile water intake (if such investments could reduce the river level). As a result, any commission of irrigation system or dams on the Nile and its tributaries required Egyptian agreement.

In 1959 the governments of Egypt and independent Sudan signed another agreement which stated that both countries had the right to 90% of the Nile water consumption (80% for Egypt and 10% for Sudan). The remaining countries situated at the river basin, which were not asked for any approval (they were still European colonies), were left with only 10%. Such division was based on the signatories' assumption that rainfall rates in the southern countries are big enough so that they do not need to consume the Nile water, while Egypt and Sudan depend entirely on the river. Egypt was entitled to veto any investment on the Nile and its tributaries.

After all the countries in the Nile basin gained independence, they started suggesting that the water division is unjust. Already in

1961, in the independence year, the president of Tanzania, Julius Nyerere announced that agreements between Egypt and Sudan do not apply to Tanzania. At the same time he stressed the fact that his country is ready for negotiations with regard to a new, just water division[12]. Since then other countries in the Nile basin have also been making similar statements, however, due to the lack of funds for water investments these were only temporary expressions of discontent. On the other hand, the growing problem of more and more common droughts in the region, especially severe in Ethiopia, has led in recent years to widespread criticism of Egyptian-Sudanese agreement. In May 2009, seven countries of the Nile basin: Burundi, Democratic Republic of the Congo, Ethiopia, Kenya, Rwanda, Tanzania and Uganda accepted a new agreement that entitled them to wider water consumption in the Nile and its tributaries. However, the governments of Egypt and Sudan do not want to discuss any changes in the already existing agreement. They do not want to accept any reduction in the Nile water consumption.

The relations between Egypt and Sudan and the other countries of the Nile basin are very tense and finding a solution certainly will not be easy. On the one hand, Egypt and Sudan are almost completely dependent on water from the Nile. On the other hand, other countries faced more and more often with drought problems (which are connected with global warming) demand the right to investments without Egyptian consent. It is difficult to explain to them why they cannot build irrigation systems without Egyptian permission and consequently eliminate the spectre of hunger. Fields' irrigation is a priority for Ethiopia with its 80-million population, with half of Ethiopians living in the Nile basin. It is also particularly

[12] The Citizen, *What's next in row on Nile Waters*, Wednesday, 26 May 2010, Dar es Salaam.

important for the drier, north-eastern part of Tanzania, as well as for eastern Rwanda and Burundi.

It is hard to disagree with arguments presented by both sides of the conflict. There are requests for more benefits and there are some threats too. Subsequent presidents of Egypt threatened with military intervention in case of reduction in water flow in the Nile caused by any country situated in the basin. The Prime Minister of Ethiopia, Meles Zenawi, has even announced that if Egypt tried to prohibit his country the Nile water consumption, then it would have to occupy Ethiopia. He also said that Egypt, which is covered with desert, has troops of soldiers trained for fighting in a jungle, which probably means that they are prepared for battles in jungles of East African countries[13]. It seems that no one is going to retreat as it is the matter of "to be or not to be". And it is probably high time the United Nations and the African Union dealt with this serious issue.

* * *

In 2013, I repeated the same survey using the same questionnaires, but this time at the University of Iringa. The study involved 90 students of the Faculty of Science and Education. As in the case of Dodoma, students were attending my lecture on Climatology, and the study took place during the Easter break. In the meantime Tanzania changed the administrative division of the country – a couple of new regions have been created due to the division of some pre-existing ones. The new regions were taken into consideration. On the other hand, because there were no students from Tabora and Zanzibar this time, we cannot compare the results of 2010 and 2013 surveys in these regions. The results of 2013 survey show the two tables below.

[13] The Citizen, *The Nile: Is a big water war looming?*, Saturday, 29 May, 2010, Dar es Salaam.

Tab. 5. Comparison of responses to asked questions by administrative regions of Tanzania (respondents/ students from the University of Iringa)

Region	Number of responses to individual questions																		The total number of responses for the region and for the whole country			
	1			2			3			4			5			6						
	Y	N	?	Y	N	?	Y	N	?	Y	N	?	Y	N	?	Y	N	?	Tot	Y	N	?
Arusha (10)	10	0	0	3	1	6	7	3	0	8	1	1	9	0	1	9	1	0	60	46	6	8
Dar es Salaam + Pwani (3)	2	0	1	1	1	1	3	0	0	2	0	1	3	0	0	2	0	1	18	13	1	4
Dodoma (2)	2	0	0	1	0	1	0	0	2	2	0	0	1	0	1	0	0	2	12	6	0	6
Geita (1)	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	6	6	0	0
Iringa (9)	9	0	0	3	4	2	5	0	4	5	3	1	8	1	0	5	2	2	54	35	10	9
Kagera (3)	3	0	0	1	0	2	1	0	2	2	0	1	3	0	0	3	0	0	18	13	0	5
Kigoma (2)	2	0	0	2	0	0	2	0	0	1	0	1	1	0	1	2	0	0	12	10	0	2
Kilimanjaro (8)	7	0	1	4	2	2	7	0	1	7	1	0	7	1	0	4	3	1	48	36	7	5
Lindi (1)	1	0	0	0	1	0	1	0	0	1	0	0	0	1	0	1	0	0	6	4	2	0
Manyara (1)	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	6	6	0	0
Mara (3)	3	0	0	3	0	0	1	0	2	3	0	0	3	0	0	3	0	0	18	16	0	2
Mbeya (22)	22	0	0	13	6	3	18	1	3	18	2	2	20	2	0	14	6	2	132	105	17	10
Morogoro (3)	3	0	0	1	1	1	3	0	0	3	0	0	3	0	0	3	0	0	18	16	1	1
Mtwara (1)	1	0	0	1	0	0	1	0	0	1	0	0	0	1	0	1	0	0	6	5	1	0
Mwanza (4)	4	0	0	3	1	0	4	0	0	3	1	0	3	1	0	2	1	1	24	19	4	1
Nyombe (3)	3	0	0	1	0	2	3	0	0	2	0	1	3	0	0	2	0	1	18	14	0	4
Rukwa (1)	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	6	6	0	0
Ruvuma (5)	4	1	0	3	2	0	3	2	0	4	1	0	5	0	0	3	2	0	30	22	8	0
Shinyanga (2)	2	0	0	0	1	1	0	0	2	2	0	0	2	0	0	0	1	1	12	6	2	4
Singida (1)	1	0	0	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	6	3	2	1
Tanga (7)	7	0	0	4	0	3	7	0	0	6	1	0	5	1	1	3	2	2	42	32	4	6
Tanzania (92)	**89**	**1**	**2**	**47**	**20**	**25**	**69**	**7**	**16**	**73**	**11**	**8**	**80**	**8**	**4**	**61**	**18**	**13**	**552**	**419**	**65**	**68**

(10) – the number of completed questionnaires in the region
Y – Yes, changes have taken place; N – No, changes haven't taken place; ? – I don't know
Tot – the number of questions asked in the region (number of completed questionnaires x 6 questions)

Source: Students' field studies, 2013

Tab. 6. The percentage of positive answers by administrative regions (respondents/students from the University of Iringa)

Region (the number between the brackets indicates the number of respondents/ questionnaires per region)	Categories of environmental change						The percentage of positive answers to all questions (an average of 6 questions)
	1. Forests	2. Lakes	3. Rivers	4. Climate	5. Soils	6. Wildlife	
Arusha (10)	100,0	30,0	70,0	80,0	90,0	90,0	76,7
Dar es Salaam + Pwani (3)	66,7	33,3	100,0	66,7	100,0	66,7	72,3
Dodoma (2)	100,0	50,0	0,0	100,0	50,0	0,0	50,0
Geita (1)	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Iringa (9)	100,0	33,3	55,6	55,6	88,9	55,6	64,8
Kagera (3)	100,0	33,3	33,3	66,7	100,0	100,0	72,2
Kigoma (2)	100,0	100,0	0,0	50,0	50,0	100,0	66,7
Kilimanjaro (8)	87,5	50,0	87,5	87,5	87,5	50,0	75,0
Lindi (1)	100,0	0,0	100,0	100,0	0,0	100,0	66,7
Manyara (1)	100,0	100,0	33,3	100,0	100,0	100,0	88,9
Mara (3)	100,0	100,0	33,3	100,0	100,0	100,0	88,9
Mbeya (22)	100,0	59,1	81,8	81,8	90,9	63,6	79,6
Morogoro (3)	100,0	33,3	100,0	100,0	100,0	100,0	88,9
Mtwara (1)	100,0	100,0	100,0	100,0	0,0	100,0	83,3
Mwanza (4)	100,0	75,0	100,0	75,0	75,0	50,0	79,2
Nyombe (3)	100,0	33,3	100,0	66,7	100,0	66,7	77,8
Rukwa (1)	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Ruvuma (5)	80,0	60,0	60,0	80,0	100,0	60,0	73,3
Shinyanga (2)	100,0	0,0	0,0	100,0	100,0	0,0	50,0
Singida (1)	100,0	0,0	0,0	0,0	100,0	100,0	50,0
Tanga (7)	100,0	57,1	100,0	85,7	71,4	42,9	76,2
Tanzania (92)	**96,7**	**51,1**	**75,0**	**80,7**	**81,1**	**73,6**	**76,4**

Source: Students' field studies, 2013

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FLORA O. KASUMBA & MR. ROBERT LUKELO

SUSTAINABLE DEVELOPMENT AND GRADUATE UNEMPLOYMENT IN TANZANIA

ABSTRACT

In Tanzania, following the liberalization of higher education from the mid-1990-s, the number of graduates has been growing each year. This has resulted in the creation of a growing number of job-seeking alumni. If the motive behind cost sharing is to cut down enrollment and ultimately reduce the unemployment rate among graduates, then it will take time for the results of this measure to be visible. At institutional level, there have been initiatives such as reviewing academic programmes to make them more marketable and advocating for education which aims at educating job creators and not job seekers.

Notwithstanding this backdrop, employment opportunities for graduates are limited. Currently, many higher education graduates are facing a dilemma as to whether they should continue with the job search or go for further studies. However, none of these options is readily accessible to many of these graduates.

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Successful implementation of a plan that addresses graduates' unemployment problem in Tanzania requires the presence of graduates' knowledge, skills, and a supportive environment. It is in the light of this, that this paper discusses sustainable development as one of the avenues for employment opportunities whereby a larger proportion of these graduates will not join the job searching band, but given their knowledge and skills they will use available resources to improve their well-being without compromising the needs of the next generation.

This paper attempts to answer the following questions: What do graduates choose or wish to have? What has been available? How can their goals be realized?

Background of Sustainable Development

At the global level, the term 'Sustainable Development" can be traced back to the United Nations Conference on human environment, held in Stockholm in 1972. It is used to refer to development which meets the needs of the current generation without compromising the ability of future generations to meet their needs (UN, 1989). Twenty years after the Stockholm conference, in 1992, the term became prominent in the discussions that made the global environment a matter of priority. The United Nations World Summit (2005) affirmed the concept of sustainability, economic, social and environmental factors that need to be taken into consideration and their cultural context. Further Sustainable Development philosophy has evolved to show how individuals and communities behave and interact with the earth.

At the level of education, sustainable development has been defined as the process of equipping students with knowledge and understanding, skills and attributes needed to work and live in a way that safeguards environmental, social and economic well-being, both in the present and for future generations (UN, 2005). In essence, sustainable development in education entails an enabling

environment in which student factors including their age, gender, background and the teaching context interact to facilitate learning that promotes self-regulated learning, critical thinking, creativity and commitment to the well-being of self and others.

The assumption is that the education system would enable students to acquire these skills and attributes so that they are able to find employment. However, there is a growing global outcry for skills mismatch among young people (ILO, 2014). The report also shows that youth employment rate and projections by regions of the world is on an upward trend.

This paper reflects key issues in the national policies and practice in the provision of higher education in Tanzania along the lines of Sustainable Development. It also highlights the provision of higher education in the country and the general outcry for graduate employment in the country. Although this paper addresses higher education, graduate reference is also made to youth employment status and occasionally the term is used to refer to both.

Sustainable development is not a new concept in the policies that have governed the provision of education in Tanzania. The baseline has been the provision of education which is relevant to society. The purpose of Education for Self Reliance (ESR), for example, was to impart values of cooperation, sharing and service to the community. It also directed the curriculum to integrate theoretical and practical skills. In essence, ESR had the potential for the development of attributes and skills such as team spirit, problem solving skills and commitment. These attributes closely match global goals for sustainable development in education.

In practice, the concept of Sustainable Development in Tanzania has been articulated through both the Higher Education Policy (1999) and the National Strategic Development Plan

(2010). The Tanzania National Higher Education Policy (1999), for example, points out the need for changing higher education sector through:

– Need for specialized skills;
– Need for new emerging areas of science and technology e.g. biotechnology, environmental science, genetic engineering, microelectronics and informatics;
– Need for entrepreneurship;
– Need for globalization and international competitiveness;
– Need for sustainability of higher education by resource reallocation;
– Need for social democracy and good governance.

However, the realization of these needs has been complicated by increased enrollment and dwindling resources allocation. From this understanding this paper reviews the provision of higher education and graduate unemployment in Tanzania within the context of sustainable development.

Higher education development in Tanzania

Since independence in 1961, Tanzania has been guided by the Manpower Requirement Approach (MRA) in its expansion of higher education. As a result of limited government resources allocation, higher education expansion was difficult to achieve. This explains why for more than three decades there has been only one higher education institution in the country, the University of Dar es Salaam.

From 1961, when the first university was established in Tanzania, to the early 1990-s, higher education provision was solely controlled by the government. In an attempt to expand opportunities for higher education, many of the private institutions were established after 1996 (TCU, 2007). In spite of this, higher education

attendance in Tanzania has been low compared to other countries in East and Central Africa. Table 1 shows higher education enrollment trends in Tanzania over a fifty-year period.

Table 1: Higher education enrollment over a fifty-year period

Year	**1961**	**1981**	**2001**	**2011**
Number of university graduates	14	2,586	14,568	135,367

Source: Basic Education Statistics in Tanzania: Various Years.

It should be also understood that higher education in Tanzania has been characterized by two contending variables. The first is the social demand for higher education. Although the government placed restrictions on higher education expansion, there was a growing demand for this level of education particularly due to expansion of primary education especially through the Universal Primary Education (UPE) programme between 1974 and 1978, and the subsequent expansion of secondary school education. The second is the limited available higher education opportunities whereby over the years efforts to expand higher education could not match the needs of students who qualified for public universities.

Following the liberalization of higher education from the mid-1990-s, the number of graduates has been growing each year. This trend is to be traced back to 1980-s when Tanzania embarked upon the structural adjustment programmes that included the privatization of education and other services. Thus, from the mid-1990-s, Tanzania started to witness the expansion of the higher education sector through the establishment of higher education learning institutions and emergence of diverse programmes in both public and private sectors of higher education. Table 2 shows higher education enrollment trends in Tanzania over some years.

Table 2: Students enrollment in higher education from 2006/2007 to 2010/2011

Year	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
No. of students enrolled	49,967	82,529	101,222	123,434	135,367

Source: TCU, (2013).

According to the Tanzania Commission for Universities' (TCU, 2007), the annual enrollment of fresh graduates in Tanzania in both public and private universities and university colleges in the year 2006/07 was about 49,967 students.

Traditionally, university education or formal education has generally been considered to be the passport to the paid employment and the government was the main employer. However, following the liberalization of higher education from the mid-1990-s, the number of graduates has been growing each year. This has resulted in the creation of a growing number of job seeking alumni.

The introduction of Government Students Loans in the 2005/2006 academic year has provided opportunities for a large number of Tanzanians to get admission to university. Notwithstanding the growing number of graduates, those who are employed constitute only a small fraction of those who graduate from higher education institutions. A larger proportion of those who do not get into employment is high. For example, every year less than ten percent of school and college graduates in Tanzania find employment in the formal sector (World Bank, 2014). According to the report, this group of youth consists of college graduates from almost more than 25 accredited higher education institutions. It has also been reported that there were 324,597 higher education graduates in Tanzania in 2012 (URT, 2015).

The growing number of unemployed graduates shows that job vacancies available are not enough to absorb the graduates. The

system and education acquired at the universities have little effect on promoting the unemployed youth to create their own jobs. This has resulted in the creation of a growing number of job seeking alumni. As a result of cultural attitudes, graduates are unwilling to get into self-employment because of lack of knowledge, skills and financial capability, and lack of right social attitudes (Youth Research Foundation in Tanzania, 2014). As a result, there is an endless job hunting phenomenon.

The ILO 2007–2017 report projections show that in most regions of the world youth unemployment rate is on an upward trend. It is even more so in the Sub-Saharan region. Comparatively, figures for youth unemployment in Tanzania appear to be lower. However, the state of unemployment among youth has reached proportions that are difficult to control. Lack of the required skills is one of the factors that impinge on youth employment. The major problem has been that of skills mismatch and it has tended to be more prevalent among young women than men (ILO, 2013). This may explain why youth tends to work in irregular jobs, or go for jobs that are lower compared to their educational level or keep moving from one job to another. The ILO report further projects a long-term impact of the employment crisis and poor quality, informal, subsistence job in developing countries.

Studies show that Tanzania has more than 24-million-labour force capable of getting involved in production, however most graduates believe that formal employment is the best option for employment. The number of vacancies announced cannot be compared to the number of graduates who seek employment, Young Researchers Foundation Tanzania (YRFT), (2014).

Figure 1 shows the multitude of job seeking alumni, assembled at the national stadium in Dar es Salaam, and taking part in the preliminary exercise of filling forms for a job interview. Out of this entire crowd only 70 job vacancies were available.

1. In June 2014, more than 10,000 graduates were called for a job interview in Dar es Salaam for 70 job positions which were announced by the Ministry of Home Affairs Source: Mathias, J. (2014, September 9) Mwananchi. Retrived from http://www.mwananchi.co.tz/Makala/Ugumu-wa-kupata-ajira-kwa-wahitimu-wa-Kitanzania/-/1597592/2446678/-/3ce5cyz/-/index.html.

With the increase of higher education institutions in the country, graduates output has been growing tremendously. While only a few of them have been absorbed in government and private employment, a larger proportion of university alumni are unemployed or tend to shift from one employment to another because they are not satisfied with the job conditions or they came to terms with the demands of the world of employment. Out of desperation, as the report by ILO (2013) shows, youth are more likely to land low quality jobs in the informal economy than in jobs paying decent wages.

The discrepancy between education skills and the labour market requirement in Tanzania has greatly contributed to graduate unemployment. The higher education system has not been updated

to match the changes in formal and informal economy that are happening fast. For example, a great number of universities enroll a high number of students in courses such as business. In the real sense, business students are taught a lot of theory without practice related to the real life settings. The education system does not provide enough room for students to acquire skills that would help them to get accommodated in the dynamic world of employment.

As a result, students graduate with the theoretical basis of business rather than with the experiential studies of real business life. In the end they fail to secure a job in the labour market and they also fail to employ themselves. Due to such discrepancies half skilled graduates end up in indecent work in order to make ends meet. They get into indecent work such as cybercrimes, corn artists, stealing of public properties and hacking as well as being used by gangs and rebels. However, indecent work is not sustainable work. Decent work is the one that promotes an individual's well-being. It is also a form of work that is a source of personal dignity, family stability, and peace in the community (ILO, 2013). On these grounds, what may appear to youth as fast money making business undertakings undermines the whole concept of sustainable development.

Tanzania education discrepancies can be traced in its early stages whereby it fails to identify and nurture special skills and abilities that students have had ever since they were young. From the primary school level, secondary school levels there are no efforts to assist students who are good at art, sports or science. The education system is theoretical and emphasis is placed on getting good grades and passing examinations instead of focusing on practical knowledge that students could use in the future. In some schools art and sports are banned, students are forced to study either business or science. As a result, students talented in arts do not perform well in science subjects or business subjects and they also lack that opportunity to nurture what they are good at. Those who are fortunate perform

average and get their way to college with lost dreams. At college they end up studying any course in order to get a degree and enter the world of work to get a job that does not match their in-built ability and skills. Such kind of graduates find themselves doing works they have never dreamed of doing, they just work to earn their living. Some would move from one job to another or sometimes even quit a job as they find it boring or hard because they do not have the passion for such work. In some cases such graduates have been reported to be less innovative, none hard workers, incompetent and unable to work with others.

Higher education institutions have taken this as a challenge and as a result they have embarked on diversifying programmes or initiating new programmes, or reviewing curriculum or courses that would make the students more marketable in the world of work. These constant reviews are an indication that Higher education institutions are aware of the ever changing demands of consumers for their products.

Studies at the University of Dar es Salaam (Mkude & Ishumi, 2004) found out that the institutions had lecturers, but there was a shortage of materials, equipment and space. Graduates reported to have learnt useful skills but wished for more. Employers were less impressed by limited English proficiency, low communication skills, problem solving ability, innovativeness and creativity as well as negative attitudes towards other workers and unwillingness to learn. It is clear from such studies that there is a need to review curriculum and monitor academic programmes.

It is important that the provided education meets global standards. The shift in the demand for non-cognitive jobs cannot be overlooked. It is imperative that in addition to cognitive skills students need to acquire skills in areas of entrepreneurship, such as problem solving, interpersonal communication, conflict resolution, negotiation, and team working.

At the national level, the government has also formulated policies such as the National Youth Development Policy (1996; 2007). In addition, the names of ministries that are associated with the youth and employment have been changing to reflect the challenging nature of youth employment. For example, the Ministry of Labour and Employment 2012 was formally the Ministry of Information, Youth Culture and Sports 2006. However, policies that are in place or nomenclature may not solve the problem of graduate unemployment if they are not accompanied by consideration of social and environmental factors that are found in the country. However, inequality and corruption mar the government's efforts in addressing unemployment among graduates and youth in general.

As the rate of unemployment grows, the private sector has not been growing fast enough to absorb higher education graduates. The challenges that the private sector faces in Tanzania include: financial incapability, lack of job security, lack of entrepreneurial skills and social attitudes towards self-employment. Individuals have tended to prefer government employment because of the job security it offers and the longevity of employment. For example, the promise of 700,000 job vacancies for youth in the country is one of such government initiatives (URT, 2014). These jobs would be created from the implementation of various development projects in the public sector, youth employment through the Tanzania Investment Center (TIC) and Export Processing Zones Authority (EPZA). However, such efforts need to be continuous if sustainable development is to be achieved.

What has been available?

Natural resources

Tanzania has been endowed with vast resources which have not been exploited. Sustainable use of such resources could enable

graduates to create their own employment as well as enable the future generation to create more self-employment through the same resources. This will in a long run reduce the number of unemployed graduates who are constantly looking forward to be employed in the formal sector. Such resources include: land, water, minerals, natural gas and forests. For example, Tanzania has been endowed with fertile land to support cultivation of different types of crops, fruits and flowers, which could offer self-employment for graduates. Tanzanian land comes along with the tourism industry, which could be beneficial for graduates to create self-employment. Water resources have a lot to offer, such as fishing; the fishing industry is mostly done by local fishermen who have no training on how to make the business generate income and create employment for countless members of the society. If graduates were involved in the fishing industry, it would be more thriving than it is nowadays.

Apparently, graduates are unable to make effective use of the available resources due to a number of factors. When it comes to investing in minerals, natural foreign investors are given priority over local investors. Illegal activities such as poaching are also deteriorating the tourism sector, which would also offer a platform for graduates to employ themselves. Generally, there has been an ineffective management of all natural resources, which could be the source of employment for Tanzanian graduates.

Policies on sustainable development and graduate employment

A number of policies, programmes and plans on sustainable development still exist as well as the policies to support the self-employment for graduates. However, such policies are not implemented accordingly (Business Times, 2012). Examples of these policies are The National Youth Employment Policy, National Environmental Policy, (1979), Agricultural Marketing Policy (1992),

National Strategy for Growth and Poverty Reduction, (2005–2010), Property and Business Formalization Programme, (2007). These plans could be avenues for creating job opportunities for graduates and in the country. However, success in the implementation of these policies is hampered by poor follow up and corruption.

Unexploited business opportunities

The Tanzania economy still depends on the importation of goods from outside the country. However, the available labour force within the country has the ability to produce different types of goods. However, areas like science and technology have not been exploited as scientific and technological inventions are not promoted as they should be.

Following the liberalization of the economy in the 1980-s, the Tanzania market is still dominated by imported foreign goods. Imported products are normally cheaper and of better quality, hence they end up waging an unbalanced competition against locally produced versions. In the long run the goods have outdrawn local graduate entrepreneurs from producing similar products within the country. However, with the changes in lifestyle, Tanzania graduates are still in a better position to produce goods of African origin which cannot be easily produced abroad. They could still be still in high demand to both locals and foreigners. These include African outfits, medicine and herbs, African ornaments, tools of labour, art, packaging of African foods and spices, and architecture for recreation. All these have not been exploited as they should but could offer greater self-employment opportunities for graduates.

In Tanzania, the habit of taking a heart of self-employing is not likely to be as fast as one desires, because of the number of factors including the preparations made through the education curriculum, lack of right social attitudes as the societies bank

their beliefs in searching for jobs. In addition, inadequate financial capability is one of the major aspects hampering youth initiatives for self-employment.

In some cases, graduates from well-to-do families can have access to capital so they start their business. But in most cases such business fail and the founders join other graduates in looking for employment in government or other offices. An interview, conducted for the purpose of this paper with some graduates who had capital and intended to launch an Information Technology consultancy company which failed in the end, revealed that despite having capital to run the business the graduates did not have enough skills and knowledge needed to run the business. Their business went bankrupt hence they had to part ways and look for employment in the government sector just like other graduates who had no access to capital.

How can their goals be realized?

In a survey by YRFT (2014), it was found that a number of graduates had big dreams before joining the labour market as they hoped to use their education to improve their lives. In turn, the situation was different. However, their dreams could not be realized.

As the labour market conditions do not seem to accommodate majority of graduates, therefore there is a need to review the curriculum so that it is more practical. Such education will open students' minds into the real world of work and expose them to all its challenges and what it takes to be a successful entrepreneur. Apart from that, practical education will enable graduates to become more confident in undertaking projects as well as realize their capabilities instead, of ending up jobless.

Education for sustainable development should be integrated into the higher education system within universities. Students should

be taught how to protect the environment and resources as well as make use of them in a way that will be more productive and at the same time not depreciating such resources so that they can be reused to sustain a living as well as make the resources available for the future generation.

Government policies should aim at creating conducive environment for graduates who want to employ themselves. More emphasis should be placed on issues such as loans: the government should specify the conditions for graduates to obtain loans and grants especially when they intend to employ themselves. Also, the investment environment should not favor foreigners only, but locals as well. This will instill the spirit of patriotism in Tanzanians.

It is also the responsibility of parents to support graduates financially so that they become entrepreneurs. Apparently, most graduates wish to become entrepreneurs but they have no access to loans which are offered by the government and other financial institutions. Parents need to change the mentality that formal employment is the only source of stable income their children can have, but with the rising trend of unemployment they need to understand that graduates need to be self-employed instead of wasting a lot of time looking for employment without success. Moreover, families and community need to start pulling resources together so as to invest in economic activities that are sustainable instead of wasteful spending of money in social functions such as expensive weddings, kitchen parties, and many social functions which have become the order of the day in our society.

Recently, the University of Iringa has started raising awareness about entrepreneurship among staff and students. This involves changing the methods of teaching and learning to reflect entrepreneurial teaching and learning, and also encouraging students to start and run businesses and establishing strategic University-Industry linkages.

There is a need to formalize entertainment activities so that they also become formal employment opportunities to graduates. These include sports, music and performing arts. Other measures should include controlling indecent work like prostitution, drug abuse, counterfeit and cyber-crimes.

There is a need to invest in agriculture because there is a lot of arable land, but youth are reluctant to invest in agriculture for two reasons. Firstly, graduates lack capital to invest in this sector of agriculture. Secondly, in the society mindset, agriculture is for the uneducated. This calls for a need to commercialize agriculture.

Finally, it is apparent that the aspirations of many Tanzanians are to see a growing number of university graduates enter into one form of employment or another. However, it is important that Sustainable Development continues to be a top agenda in the education system as well as in the policies that govern resources deployment in the country.

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JAROSŁAW RÓŻAŃSKI OMI

MISSIONS IN NORTHERN CAMEROON AND DEVELOPMENT OF LOCAL CULTURES

ABSTRACT

Regular missionary activity in Northern Cameroon began late (in 1946). The beginning initiatives in development assistance undertaken by missionaries in Cameroon involved local mission stations. They included various aspects of everyday life, mainly schooling, health care, agricultural development, and charitable activities. With the passage of time and the development of Church structures this development assistance has taken on diocesan structures and has broadened its field of activity.

Key words: North Cameroon, Missions of the Oblates of Mary Immaculate, missions in Cameroon, assistance for development, schooling in Cameroon, training in Cameroon, health care in Cameroon.

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Northern Cameroon differs substantially from the southern lands of Cameroon geographically, climatically, and ethnically. It even has its own distinct history, especially of pre-colonial times. It has always been perceived, by the inhabitants of the south, and previously by the colonial rulers, and even by the first travelers and anthropologists,

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as a more backward part of the country, and completely Islamified. The majority of ethnic groups of northern Cameroon however keep to their cultural traditions and beliefs, not surrendering to Islamicization. These peoples call themselves the „Kirdi."

The name „Kirdi" was given to them by Islamic invaders and has been more or less universally accepted in European literature. After Cameroon gained independence there began an interesting process of the birth of a new Kirdi awareness, which crossed ethnic divisions. Traditional African religions fulfill for the Kirdi an important function of integrating and sanctioning the organization of societies based on blood ties, as well as societies based on inhabited territory. The significance of these religions stems also from the particular role that religion plays in general in a culture, permeating its various segments. In Kirdi cultures its role was notably confined to the boundaries set by the concrete tribal society and village.

Systematic evangelization among the Kirdi began in November of 1946 with the arrival of 16 French Missionary Oblates of Mary Immaculate. In less than 70 years of work these missionaries accomplished great evangelical endeavors in an area encompassing almost 1/3 of the entire territory of Cameroon. Their work included not only proclaiming the Gospel, but also aiding the development of the Kirdi. Evangelization and the aiding of development are two aspects of the one mission of the Church. The two complete and permeate each other. The road to salvation passes through this world, through its conditions, societal life, its economic structures, and so on. The pastoral constitution on the Church in the modern world of Vatican II, *Gaudium et Spes*, speaks many times of "human promotion," and "progress," emphasizing that the term "human promotion" is a concept broader than a "progress" generally understood as technological, economic, or a raising of the standard of living, improving the overall human condition. (GS, n. 35). Aid to development was given much space in the Decree on mission-

ary activity, *Ad Gentes*. We read in it, for example, "Just as Christ, then, went about all the towns and villages, curing every kind of disease and infirmity as a sign that the kingdom of God had come, so also the Church, through her children, is one with men of every condition, but especially with the poor and the afflicted. For them, she gladly spends and is spent [...] Let Christians labor and collaborate with others in rightly regulating the affairs of social and economic life." (AG, n. 12)

The beginning initiatives for aiding development were undertaken by the missionaries on the grounds of their missionary stations. They included various aspects of farm life as well as attention to schooling and health care. As time went on and Church structures developed, diocesan structures also took on aid in development. The first *Comité Diocésain de Développement* (CDD-Diocesan Development Committee) came into existence in the Diocese of Maroua-Mokolo (1976). In 1980 a similar development committee was established in the Archdiocese of Garoua. In the Dioceses of Ngaoundéré and Yagoua CODAS-CARITAS (*Comité Diocésain des Activités Socio-Caritatives*) was brought into being, whose task it was to be concerned in material and social development, as well as in spreading the social teachings of the Church, and in charitable activities.

Animating villages and Agricultural Training Centers

Missionary animation of farming also began in northern Cameroon in the 1960's. It did not however have a broad or formal nature. In the beginning, the best-known initiative was the work of Fr. Louis Chauvat of the Fignolé mission in the Archdiocese of Garoua, where he established the Center for Agricultural Formation. This Center not only equipped people with the newest methods for cultivation but also taught them how to use new agricultural tools, that is, mainly, the plow and coulter. It also fostered the use of draft animal power

and with time brought the first tractors to the northern part of the country. In 1963 a missionary from Fignolé was named a member of the Council for Development for the North Province [known as North Region as of 2008] and invited to develop a five-year economic plan for that region[1]. Similar, although on a smaller scale, initiatives were conducted in missions at, among others, Touboro, Djinglia, Djohong and Karna. An Agricultural Center was established in Touboro in 1965. Lay missionary Dominique Fichot worked there for the first three years of its existence. The main task of the center was to spread new cultivation and new farming techniques among the inhabitants of the surrounding villages, as well as educating the local farmers in self-sufficiency. A whole village founded in Djinglia as a model of increased effectiveness in local farming through the use of new techniques and cultivation[2]. Fr. Louis Blaire led a similar undertaking among the Mafa[3].

Besides the organizing of agricultural education centers, what also played a major role in the animation of villages was short-term schooling, exam sessions, and meetings conducted by members of the Christian communities or by animators trained for the purpose. In the schooling and exams emphasis is usually placed not on big development projects but on a change in mentality through slow changes in everyday life and habits. For example, it would be proposed that windows be put into the walls of a house, and the door enlarged, that the walls be plastered, the kitchen partitioned

[1] Cf. E. de Loizy, *La maison Rurale de Fignolé, un exemple de formation d'exploitations agricoles*, Nord Cameroun, Agi-Service-Afrique (1968) nr 3, pp. 12–17.

[2] Cf. J. Boisseau, *Quand on implante une mission dans un milieu humain*, Missions OMI (1970) vol. 332, pp. 125–134; L. Blaire, *Equipes rurales*, Pôle et Tropiques (1964) nr 7–8, pp. 184–185; P.H. Doublier, *En équipe avez Dourous pour la promotion du village*, Pôle et Tropiques (1974) nr 7–8, pp. 174–184.

[3] Cf. L. Blaire, *Equipes rurales*, op. cit.., pp. 184–185.

off into its own separate room, that care be taken of household equipment such as kerosene. In regards to work in the fields: to use oxen, to do the sowing in long straight lines, to plant fruit trees, to grow vegetables. Guidelines were also given regarding children, the relationship between husband and wife, activities on the level of the territorial community, etc.[4]

Similar simple directives and guidelines were published in local animators textbooks, brochures, and periodicals dedicated to development[5].

Improvement of living conditions and development level

An important element of training was the obtaining of skills for farm-management and cash turnover. Not knowing how to use money, together with its attractiveness, was causing many farmers to sell their products immediately after the harvest, for very low prices, only to then buy them back in the leaner periods between harvests, for much higher prices. This is a neglect of the past custom of storing reserves in granaries and at the same time a falling into perpetual debt. It had a negative effect on the life of the whole family, sinking it into ever-deepening poverty. Therefore

[4] Cf. meeting dedicated to the problem of village development in Mokolo, November 1972 r.: *Evagélisation et développement*, [MS Maroua, publication date not given].

[5] In the development bulletin *En Avant*, published in Maroua in so-called „simplified French," various types of procedures and questions connected with farm and societal life are clarified. Some examples: information on the conditions and circumstances for making a new ID card (April 2001), weeding crops (June 2001), raising sheep and goats (May 2001), conditions for registering to vote (January 2001), planting garlic (December 2000), innoculating goats (September 2000), basic information about cholera (August 2000), feed for two donkeys (August 1999), chicken coops and raising chickens (April 1999).

there was training in foreseeing costs and in keeping a ledger of income and expenses.

Another big problem was the lack of insurance in case of drought, fire, accident, or illness. As a rule, children as well as youth remained outside of all stipend or scholarship systems. For this reason many missions also began to practice the cultivation of so-called „Christian community fields", the income of which served as their own insurance fund as well as being a source from which the community drew for operational costs[6].

Another form of rational money management was putting it into a common fund and then attaching it to the mission's account. The mission account was then connected to the diocese's account in the national bank where it would be possible to earn greater interest. Separate, subjective accounts, even for individuals, were set up in the villages; they existed only in the ledgers of those responsible for them. This taught individual saving and rational money management.

An idea known as Savings-Credit Clubs (CEC – *Club d'Épargne et de Crédit*) also spread in many villages in the diocese of Maroua-Mokolo. It spread the practice of saving in accounts set up in banks.

The zone of what is called the Sudan Climate, and most of all the Sahelu zone, is a region given to drought and consequently to famine or malnutrition. That this area is undergoing desertification is born witness to by the fact that the Sahara Desert is increasing by

[6] A pioneer of this system was Fr. Franciszek Chrószcz, who founded the Guider mission in the Koina sector, an experimental agricultural cooperative. The Christian community received fields for cultivation. Qualifying grain and farming equipment were purchased which caused a significant increase in yield per hectare. Everyone worked in the community field. Cf. A. Kurek, O. *Franciszek Chrószcz OMI*, Niepokalana (1977) nr 3, p. 92. At the Lam mission, where the present author did his missionary training from 1991–1993, there existed seven „co-op farms" of this type. They were located in the villages of Lam, Dahal, Kongkong, Djiougi, Mbrousum, Bali and Badia.

about 1.5 million hectares per year. The noticeable lack of water, especially in the dry season, was the cause of many diseases, and more than once, also of migrations. In order to obtain healthy water missionaries collected funds for digging wells and also taught the technique for this to the local peoples. The missions run by the Polish Oblates in the Guider area became known, among others, for this kind of activity; using traditional methods they dug, or drilled into rock, about 150 wells. In the Diocese of Maroua-Mokolo in 1995 the Diocesan Committee for Development established a legally recognized association for the purpose of building wells and canals (GOIP – *Groupe des Organismes Intervenants dans les Puits et les Biefs*), made up of specialists trained in building wells and canals. Improved living conditions in the mountains of Mandara became also a goal of the Mandara Mountains Regional Development Project (PDRM – *Projet de Développement de la Région des Monts Mandara*), financed by the European Union. The Project was implemented in 1996. It anticipated the building of schools, granaries, wells, and canals[7].

Afforestation initiatives were promoted and conducted by a good number of missions as another attempt against the desertification of the Sahelu area. These were developed especially in the territories of the Dioceses of Pala, of Maroua-Mokolo, and the Archdiocese of Garoua.

The cultivation of sorghum improved living conditions; it is known as *berbéré* in Chad and in northern Cameroon as *muskuwari*.

[7] Cf. L. Robin, *Du pain sur la planche et de l'eau dans le puits*, Pôle et Tropiques (1982) nr 5, pp. 103–104; J. Lavoie, O. Filion, P. Marcheterre, *Echos du Cameroun*, Pôle et Tropiques (1986) nr 7–8, p. 117; Y. Schaller, *Problèmes d'eau*, Pôle et Tropiques (1990) nr 7–8, pp. 20–21; B. Noyer, *Un peuple se leve* Pôle et Tropiques (1997) nr 3, p. 15. This initiative also found an echo in a campaign organized by the Institute of Ethnology and Anthropology and the Poznan division of the Polish African Society under the title of *Woda i zadrzewianie strefy Sahelu – Water and Refforestation for Sahel – WARS*. Dr hab. Ryszard Vorbrich coordinated this campaign.

It is sown in clayish soil recovered with the floods of September-October, when the clay held a sufficient amount of water after the dry season. Seedbeds are installed. Seedlings are transplanted after 30–40 days in holes made with sticks and are watered. The harvest would take place in December or January[8].

Mission hospitals, health-care centers, and pharmacies

When the first Missionary Oblates arrived in northern Cameroon in 1947, there was no organized medical care at all in the whole vast region[9]. The situation improved somewhat during the 1950's. Besides taking into consideration a house for the missionary, the building projects for the majority of missions also included a church, school, home for religious sisters, and buildings set aside for a mission health-care center. In the year 1970 there were existing in northern Cameroon 32 Catholic health-care centers; in the year 2000 there were 41 of them.

An example that witnesses to the significance and influence of local Church health-care and its influence in changing mentalities is the transformation of one of the better – known hospitals, founded in 1959 by Swiss Dr. Maggi in the village of Tokombéré in the Mandara Mountains. Today it has 120 beds. Working there are one doctor and 15 nurses as well as visiting specialist doctors. Since every year saw an increase in illnesses and deaths due to epidemics, significant changes were made in modes of action and the „Center for Health Promotion" was built next to the hospital. Its purpose was to reach out beyond the hospital walls to the vil-

[8] A full description of cultivation methods and terrain in: Ch. Raimond, *Évolution des terres repiquées en sorgho au sud du lac Tchad (Tchad). Mémoire de DEA*, Paris 1993.

[9] Cf. Y. Plumey, *Mission Tchad-Cameroun. Documents, souvenirs, visages. L'annonce de l'Evangile au Nord-Cameroun et au Mayo Kebbi 1946–1986*, Rome 1990, p. 513; J. Boisseau, *Quand on implante une mission dans un milieu humain*, Missions OMI (1970) t. 332, pp. 125–134, p. 128.

lages, and there form people and train them how to fight the most widespread, basic diseases which, it had been confirmed, in about 60% of cases can be treated on-site, without need for hospitalization. Every year different awareness campaigns are begun: year of the latrine, year of malaria, year against child mortality, etc. This plan was not formed behind a desk but worked out during meetings and discussions with villagers. It is one of the tasks of the Village Healthcare Committee[10].

Charitable activities

Abject poverty creates a situation unworthy of the human person. Institutionalized government and social forms of aid are not capable of completely preventing it. Therefore today missionary activity is accompanied by the works of mercy. The Vatican II Decree on the apostolate of the laity, *Apostolicam Actuositatem*, speaks of their necessity, recalling that, „Wherever there are people in need of food and drink, clothing, housing, medicine, employment, education; wherever men lack the facilities necessary for living a truly human life or are afflicted with serious distress or illness or suffer exile or imprisonment, there Christian charity should seek them out and find them, console them with great solicitude, and help them with appropriate relief." (AA 8) The works of mercy include, among other things: bringing help in time of natural disasters; taking care of poor families, displaced persons, the sick and mentally disturbed, of the mentally and physically handicapped, homeless children, etc.

The diocesan development committees were responsible for the works of mercy. At the parish level they were most often attended

[10] Cf. Ch. Aurenche, H. Vulliez, *Tokombéré, au pays des Grands Prêtres. Religions africaines et Évangile peuvent-ils inventer l'avenir?*, Paris 1996, op.cit., pp. 68–70.

to by specialized groups of lay people, sometimes associated with a movement set up for one of the works of mercy, as for example the Hearth of Charity (*Foyer de Charité*), or the Association of Women of Mercy.

Although the phenomenon of abandoned orphans had been virtually unknown in traditional societies in this part of Africa, contact with the European economic system has contributed significantly to the emergence and exacerbation of this phenomenon, particularly in the big cities. One of the first orphanage-boarding schools was founded by Fr. Alexis Atangana OMI in Guider in 1958. In Figuil and Mandama orphanages and boarding schools for girls were founded by the Polish Sister Servants of Mary Most Holy.

A new phenomenon which came much into focus in the 1990's is that of „street children," deprived of family, home, education, and means of support. They begin their day by begging[11], rummaging through garbage, performing small services or petty trade. At the end of the day they go to sleep on sidewalks, vestibules, under the marketplace roofs, or in abandoned cars.

It is estimated that in Garoua, northern Cameroon, about 35% of children are to a greater or lesser degree, „street children." The majority of them come from the nothern provinces of Cameroon (about 85%), 6% from Chad, 4.5%, from Nigeria, 2–3% from southern Cameroon, and 2% of unknown origin[12]. By the year 1987 in Garoua the Center for Social-Sanitary Promotion (CPSS) had been begun and was working with the Diocese of Milan's *Centro Orientamento Educativo*. The Center's work concentrated

[11] It is sometimes difficult to distinguish these children from the pupils of the Koran schools, who beg for the expenses of their teachers. This is a permanent element of their extracurricular activities.

[12] Cf. M. Zeitcheu, *Les enjeux de la nouvelle évangélisation dans l'archidiocèse de Garoua. Mémoire de fin de cycle de theologie*, [MS] Maroua 2000, pp. 24–26.

on the most neglected social environments, providing them with, among other things, a doctor's clinic in Garoua, a Youth Center, and a program called „Street Children." In 1997 in Garoua was opened the *Piccola Casa* for „street children" which is a project of Italian missionaries. Such children are also included in care in Maroua.

Another group of people in need was immigrants. One reason for migration was war in Chad and the Sudan. Refugees from Chad sought refuge in the territories of Cameroon and the Central African Republic. The best-known wave of refugees appeared in the end of the 1970's in the Cameroon town of Kousseri, situated across from Ndżameny. It is estimated that between 80–100.000 exiles sought refuge in Kousseri at that time.

The missions also took care of migrants in whom could be seen a lack of stability and a conviction that they would not be settling in the new territory „forever" but only temporarily. They were prepared at all times to change villages. They also had a feeling of „foreignness," seeing themselves as aliens. Connected with this was negligence in self-development, wasting money, and a lack of solidarity. It was very difficult to form a community with migrants arriving from various regions because of language, customs, and so on. Missionary work and aid for development among migrants was undertaken first of all by missionaries in Bibémi, Lagdo, Ngong, Pitoa, Tcholliré, Madingrin and Touboro.

The tragic situation of sanitation in African prisons was the reason not only for organizing a dynamic prison ministry but also an extensive nutritional and medical aid plan. Prisoners are under guard in, among others, prisons in northern Cameroon and prisons at Garoua and Tcholliré where prisoners under sentence of death are sent. In the Tcholliré prison Polish male and female missionaries undertake ministry and humanitarian activity, along with lay co-workers.

Reputable Catholic schools

In establishing Catholic schools much emphasis was placed on general-education schools. However, due to lack of trade schools, missionaries were concerned with setting up schools of this type as well as with other forms of training craftsmen. They also developed original teaching forms and literacy programs for local village populations.

The best-known secondary school in northern Cameroon was the de Mazenod College in Ngaoundéré – the first secondary school in that part of the country. Bishop Yves Plumey invited the Christian Brothers of Canada to conduct this College.

Among the state secondary schools to be found in northern Cameroon, for a long time there was not one trade school or center for apprenticeship. For this reason it was an unusually valuable initiative when in 1969 the Oblates founded in Meignanga the Paul VI Center for Technical Training[13], where auto mechanics could be trained. In 1992, 52 pupils were studying at the school. In 1991 in Garoua, at the initiative of Christiana Tumi, the Saint Therese College was opened.

An original initiative was undertaken in the year 2000 in Maroua, when the Jacques de Bernon College was established. In its founding the college undertook the formation of youth in both the humanities and in technical courses, encouraging in this way the creating of small and medium-sized businesses. In this the school was open most of all to youth coming from poorer areas, mainly the Mandara Mountains.

A separate chapter in mission teaching is informal, out-of-school, teaching. This includes for example the training of craftsmen by religious brothers. The fast pace of the development of the missions,

[13] The school later changed its name to *Le Collège d'Enseignement Technique Industriel Paul VI*. It goes everywhere by the abbreviation CETIP.

Catholic schools, clinics, etc., demanded numerous buildings and this in turn was connected to a need for a professional labor force. The buildings were most often produced by religious brothers. Their full, dedicated work had in this way an aspect at once formational and instructional. Almost everyone had local co-workers whom they were training, making for a practical professional school. The Africans working with them changed often, so that the percent of people trained in the profession was considerable. It was similar for the workshops of auto mechanics and carpenters existing near the missions, where religious brothers taught the local youth. The best-known „school" of this type was the workshop at the Maroua mission, which was run in the beginning by Br. Pierre Petard, and after him by Br. Garbriel Tessier. Br. Gabriel Tessier was honored by the Premier of Cameroon for his education work[14].

Another similar initiative also developing in the 1970's and 80's in northern Cameroon and Chad was known as „school under the trees." Classes were held in various places, depending on need. Theory was usually taught under a tree, and practice lessons in the fields, in the garden, by the well, and so on. It was a school of teaching the basics of farming, effective cultivation, hygiene, but also counting and often reading and writing as well[15].

Many youth ministry centers filled to a great degree a teaching aid function, even if only by creating a library and providing a room with electricity.

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[14] Cf. N. Leca, *L'école d'apprentissage de Maroua, interview de frère Gabriel Tessier*, Pôle et Tropiques (1958) nr 8–9, pp. 20–22; *Promotion de l'homme par le changement de metier*, [w:] *Devant les aspirations des hommes que nous rencontrons, les chrétiens s'interrogent. Stage de Pastorale, Sarh (Tchad) 24 juin–10 juillet 1975*, [Sarh 1975], pp. 24–28.

[15] Cf. O. Arnaude, M.L. Merceron, *Mindjil, un village en pays Moundang qui bouge*, Pôle et Tropiques (1979) nr 7–8, pp. 189–190; L. Blaire, *Ecole de brousse en pays M'Boum*, Pôle et Tropiques (1949) nr 12, p. 159.

Linguistic work and appreciation of local culture

Evangelization demands knowledge of local languages. As arule not only evangelization progress but also the survival and development of a culture depended on the introduction of an alphabet, codification of rules of grammar, and publishing in the given language. When missionaries began their work in the mid-twentieth century the local languages did not have a written form or standard rules of grammar. Work on the local languages was decidedly hampered by the lack of preparation in linguistics in the missionaries. But numerous unpublished dictionaries and grammars quickly began to appear. Among these were also to be found limited editions of grammar books for the Gidar language, compiled by Polish missionary W. Kozioła and local teacher J. Maingle[16]. Also published were a grammar and dictionary of Gbaya as well as grammatical elements of Uldeme[17]. An unquestionably noteworthy linguistic achievement is the work of Dominique Noye on the Fulfulde language, which filled the role of a vehicular language[18].

A greatly richer set of publications in local languages are translated works. Most often they were done locally on duplicating machines. Editions were done in the languages of, among others, Matakam, Podokwo, Kapsiki, Mafa, Mofu, Gisiga, Bana, Djimi, Uldeme, Mada, Daba, Gidar, Tupuri, Namtchi, Pere, Gbaya, Mbum, Massa, Ngambay, Sar, Mbai. For Christian liturgies, and especially para-liturgies, many local symbolic elements were imported when Judeo-Christian

[16] W. Kozioł, J. Maingle, *Grammaire guidar*, Figuil 1993.

[17] P. Bodénés, *Grammaire Gbaya élémentaire*, [MS] Meiganga 1954; Y. Blanchard, Ph. Noss, *Dictionnaire gbaya-francais: dialecte yaayuwee*, Meiganga 1982; D.P. Provoost, S.P. Koulifa, *Essai sur la langue uldeme*, Tervuren 1987.

[18] D. Noyé, *Dialecte peul du Diamaré*, Paris 1974; ibid., *Dictionnaire Foulfouldé-Français (dialecte peul du Diamaré, Nord-Cameroun)*, Paris 1989.

or European Christian symbolism would be poorly understood or even intelligible. Along with the expansion of Christianity came also the spread of indigenous Christian creativity. It used a wealth of local dance and song, singing accompanied by various types of instruments. These songs, at first copied singly or a few at a time, were memorized, and with time popularized in various songbooks.

Alongside translated works and indigenous Christian creativity is also education in reading and writing in these languages. As J.M.Ela stated, „an illiterate African is not necessarily one who does not know French or English, but above all one who is not able to express himself orally or in writing in his own language"[19]. In the Diocese of Maroua-Mokolo, particularly in the Mandara Mountains, missionaries organized 25-person groups of youth aged 14–26 to meet during the dry season, from January to April, four times per week, for four hours each meeting. There was provision for a very thorough, three-year training in literacy. They also set up so-called „local language committees" which endeavored to develop an alphabet for the language and produce rules for writing it. These committees co-operated with the National Association of Language Committees in Cameroon (ANACLAC – *Association Nationale des Comités de Langues au Cameroun*). In 1988 a legally recognized association emerged from these committees, acting on behalf of the local languages and human promotion through literacy (ALPHA – *Association pour les Langues et la Promotion Humaine par l'Alphabetisation*).

Appreciation of local culture began to clearly change the consciousness of the younger generation which as a rule is fascinated with new things coming from the outside world. Even among youth attending school and recent graduates, an increasing awareness grew that to speak French or English, and not to know one's

[19] J.M. Ela, *La plume et la pioche*, Yaoundé 1971, p. 14.

own language, is another form of illiteracy. In many places there was a renewed discovering of, and getting to know, tradition. An example of this can be the Youth Home in Tokombéré in the Mandara Mountains. In 1990 the Baba Simon College was added to the mission with the help of parents and of young people, and the settlement around it managed and kept up by youth who in that way learned self-organization, mutual aid, and working to maintain oneself. The „*Sare Youth*" of Tokombéré have their own library and video-library. The youth have been inflamed with, for example, an interest in their own culture, that is, the culture of various ethnic groups. They have begun collecting proverbs, folk tales, sayings, histories of particular tribes, and traditional religions....first in the Mujang language, and later other languages as well. This experiment proved so successful that the pupils of Tokombéré continued it at the university in Yaoundé, the youth coming from the Mandara Mountains concentrating on similar guidelines for communal life and working together[20].

There are many studies of a popular rather than scientific nature. In publications in French[21], German[22], and Polish[23], missionaries repeatedly presented various aspects of the local cultures, popularizing them among European readers. It is not possible here to overlook the papers and theses written by indigenous clerics in the major seminaries of Maroua, Bakara, Sarh, and Bangi. Many of them take on the attempt to describe various aspects of local culture.

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[20] Cf. Ch. Aurenche, H. Vulliez, *Tokombéré, au pays des Grands Prêtres. Religions africaines et Évangile peuvent-ils inventer l'avenir?*, op. cit., pp. 87–94. Published on the initiative of youth in.: *Vingt contes des Monts Mandaras, Nord Cameroun*, Champigny-sur-Marne 2000.

[21] Mainly *Pôle et Tropiques*.

[22] *Der Weiberg*; *Immaculata*.

[23] Mainly *Misyjne Drogi*.

RYSZARD PIASECKI, JANUSZ GUDOWSKI

THE POTENTIAL ROLE OF FOREIGN CAPITAL IN DEVELOPMENT OF SUB-SAHARAN AFRICA

ABSTRACT

Foreign Direct Investment (FDI) is mostly channeled by leading economies and is located in arising economies (China, Latin American states, Eastern Europe). Sub-Saharan Africa made an exception to this trend recently. It is a subject of FDI interest from China and India as well as from some advanced economies. In case of FDI from other arising economies (like East European ones), in SSA the situation is, however, different. First, the scale of an action is limited. Even so, the competitiveness of FDI is worth considering. Arising economies offer cheaper projects due to less expensive staff, and next, they are closer to substantial sectors of economy. This is why their potential role in supporting the level of life in benefiting countries seems to be important. They encourage cooperation with small scale sector, which offers services and outsourcing activities. One may call this phenomenon indirect local development. Another problem deals with sustainable development. An institutional support seems to be essential for achiev-

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ing expected effects (as it is seen now in European Union), while its lack may postpone it.

Key words: foreign direct investments; arising economies; Sub-Saharan Africa

Introduction

Less advanced economies were the hosts of foreign direct investment (FDI) for quite a long period. At the beginning it was overwhelmed by investments by multi-nationals, mostly in China, due to its cheap labor resources and vast internal market. In the course of time that activity extended to other countries and other companies. The late phenomenon is an increasing investment activity from the emerging economies of the middle-income countries. In case of Poland there is an important direct investment completed recently in copper industry in Chile, as well as some less successful investments in Sub-Saharan Africa, in China and India. Due to the investments in less competitive branches and due to the lower costs, FDI from emerging economies is likely to occur on much larger scale in the coming years.

Determinants of foreign direct investment (FDI) in less developed economies by the companies coming from arising economies

From the past experience of FDI by multinational enterprises in the poorer countries in transition the following conclusions can be drawn:

1) Multinational enterprises (MEs) can be a very important source of capital, technology and skill training. It is well known fact that the countries in transition consider the MEs as one of the main vehicles to achieve the transformation of the productive

capabilities in their economies. However, the task to attract them is not easy.

2) MEs are selective in their areas of entry: the most important factors are "location specific" attractions to encourage such investments (resource attractions or market opportunities). Low wages do not necessarily attract labour-intensive investment activities. While cheap labour and cheap qualified manpower may attract offshore production activities, the real determinant is the unexploited potential of the home markets of these countries. In fact, labour costs in all these countries are very low, but this is not a decisive factor in location and nor are tax breaks and special incentives. Investment has to be attractive itself. Usually the main motive is the market potential and the importance of getting a stake in that market. So, it explains why the macroeconomic stability and low wages are not in themselves a sufficient attraction to foreign capital.

3) The importance of the "institutional framework" of markets (e.g. property rights, banks, specialist suppliers etc.) should not be ignored.

4) The presence of highly trained technical manpower will not in itself attract high tech businesses, but may attract offshore processing activities (e.g. software)

5) The key determinant of the FDI of multinational firms in the long run is the growth of their home markets.

(a) Poverty as an obstacle to FDI

The problems of less developed economies are very complex and much linked to the poverty, which has a very serious impact on the economic situation of these countries. The war on poverty is not a struggle simply to support people, to make them dependent on generosity of others. It is a struggle to give people a chance. It is an effort to allow them to develop and use their capacities.

In advanced economies public policy toward poverty has always been plagued by a persistent dilemma. Should we provide poor people with enough income to buy "adequate" nutrition, housing and clothing? Or should we instead provide them with improved opportunities to earn their own incomes? In other words, should we offer welfare or work to low-income families? The answer is not easy because the two policy options often conflict. Generally speaking, the availability of welfare benefits reduces the need to work.

To be counted as a poor, an individual or family must be unable to provide for the essential needs of food, shelter and clothing according to standards of a given country. Naturally, it is not going to be universal agreement about how little is not enough.

There is empirical evidence that the market mechanism and economic liberalism are the most effective ways to improve productivity and competitiveness of a given country. They help to achieve higher economic growth and economic development. Better economic development means less poverty. In the market economy the state has a very important task to fulfill – the distributional function. The state can use the following instruments:

1) Fiscal system (taxes, tax reductions and so on)
2) Public spending (health care, education, „welfare benefits" etc.)
3) Intervention through the price mechanism (it is rather negative from the point of view of effective allocation of resources):
   – the policy of minimal wages
   – the control of house rents etc.
   – food price subsidies

Encouraging poor people to work is a generally acceptable policy option (but the price of work factor cannot be undervalued as it used to happen in non-market economies). There are limits, however, to the effectiveness of this approach. Many poor people are too old or sick to participate in the labour market. It is true that even labour – force participants remain poor because of their

inadequate human capital (it is the bundle of skills and abilities that a person carries into the labour market).

Obviously, any kind of discrimination can preclude full use of human capital. Race, sex and class discrimination could have significant impact on both the distribution and the extent of poverty.

The most effective way to attack poverty is to attack unemployment, not the symptoms of it. So, what should be done?

It seems that the most important tasks are: developing human capital, training programs, dismantling discrimination barriers and improving the flow of information about job vacancies and work opportunities. Can FDI from highly developed countries fulfill this function?

For some observers, the provision of education, training, and even jobs seems to be too expensive and too uncertain, and entails too much government intervention. What about „welfare benefits"? Welfare benefits can help a lot the poor people but they can also perpetuate dependence (in the USA there are whole generations of „welfare" people especially in black districts), since they do not increase human capital and job opportunities. Welfare benefits can even worsen the poverty problem by discouraging recipients from working.

In developing countries, and especially in Africa, the problem is more complex. The common denominator of all these countries is low income. Even in rich DCs important segments of the population live in extreme poverty. Statistics of per capita income are a fundamental measure of a country's economic development, but the reality of these countries is reflected in statistics on life expectancy, literacy and social conditions (like lack of food, health care, safe water etc.).

There are many serious barriers to the economic growth in Africa:

1) Growing population with relatively little fertile land and capital available (high fertility rates and too large families)
2) Wide-spread open and disguised unemployment

3) Severe shortages of skilled labour and managers
4) Lack of capital resources (and not enough local savings)

Poor African nations are chronically short of skilled labour, management, capital and technology. External financing is usually required. Foreign investment, loans and aid are all sources of vital external financing. So, introducing market reforms, opening up economies, inviting foreign direct investment and foreign aid (in the field of technology, education and so on) can significantly reduce the poverty of a given country. \

(b) What FDI and from where?

The crucial question is what kind of FDI and from which countries? The presence of Chinese companies is understandable because they seem to be best adapted to the African conditions. Chinese companies understand poverty very well and they are highly experienced in small scale businesses and appropriate technologies. Here is the huge opportunity for the FDI from emerging countries.

What motivates a company to go beyond exporting or licensing? What benefits does the multinational enterprise expect to achieve by establishing a physical productive subsidiary in other countries? These are the questions that the theory of foreign direct investment has sought to answer for decades. As with trade theory, the questions have remained largely the same over time while the answers have changed. With hundreds of countries, thousands of companies, and millions of products and services, there is no doubt that the answer to such an enormous question will satisfy everybody. The theme is a global business environment that continues to attempt to satisfy increasingly sophisticated consumer demands, while the means of production, resources, skills, and technology needed to become more complex and competitive. There is no question that much of the initial FDI was the result of firms seeking valuable natural resources for their products. The twentieth century has

the expansion of this activity combined with a number of other objectives sought by multinationals.

The resources needed for production are often combined with other advantages that may be inherent in the FDI receiving country. What is used as the source of international competitiveness in labour-intensive products according to factor proportions trade theory provides incentives for firms to move production to countries possessing those factor advantages. And, consistent with the principles of Vernon's product cycle, the same companies may move their own production to locations of factor advantages as the products and markets mature. Companies may attempt to acquire firms in other countries for the technical or competitive skills. Finally, firms may seek markets. The ability to gain access to markets is a key to multinational firms. The need to grow beyond the domestic market is central to all of global trade and business theory. As governments have become more intertwined in the business affairs of their constituents, multinational firms have often been forced to position themselves against the potential loss of market access by establishing permanent physical presence. The reaction of North American and East Asian firms to the single European market pushed forward in 2002 was to increase their level of investment in the European Union to ensure that they would not fall victim of the protectionism.

So far, theoretical interest in the FDI, service and trade expansion to less developed economies exhibit the role of business potentates, or large international corporations as well as large-scale capital. Approach to this issue has significantly changed over the past decades, from the criticism aimed at the root element of ideology (in Poland in the 1970-s it was called "neo-colonialism"), to praise the new manifestations of economic freedom (FDI in countries adjusting to the requirements of market economy), interspersed with statements about the long-term benefits of globalization, where multinational companies play a fundamental role.

The theory of FDI has so far paid only limited attention to multinational companies coming from the emerging markets (e.g. Poland, Brazil, Chile) to other less developed countries (including the poorest African countries). Only to some extent the theory dealt with an issue of a great importance for medium developed economy, namely whether – and in what areas the capital coming from the very economy may invest in underdeveloped markets? This lack was mostly due to a small amount of this type of companies coming from medium developed countries. Only the increasing amount of direct investment from such countries as Brazil, Chile, Mexico, China, India, etc. caused that scientists began to closely examine the determinants of FDI from these countries. The most recent example of this type is a huge direct investment of the Polish company KGHM in Chile (4 billion USD) and ORLEN in Lithuania.

This lack in theoretical literature is especially visible today, when a completely new phenomenon appeared: significant amount of FDI from emerging economies is invested in less developed countries. In Poland, the first complex study on the activities of Polish companies investing abroad was conducted in 2004 at the Nicolaus Copernicus University in Toruń [Karaszewski, 2013]. The authors showed that in the period 2008–2012 Polish FDI doubled. Growing investments of Polish companies encourage the need for further research in this area.

Traditional theory of FDI assumed that crucial element for this type of investments is to achieve by the company competitive advantage that will provide long-term benefits. This type of investment enables the control over the manufacturing and sale of products or services of a relatively innovative nature. In case of manufacturing, the aim of FDI was to secure a stable and cheap supply of raw materials for production processes. However, today, when completely new forms of production are being developed (e.g. sub-contracts, manufacturing products of the highest technological generation in

poor countries) the theory of foreign direct investment should be further modified. FDI became a method of increasing the effectiveness of capital and the companies' value. In the era of globalization, this does not apply only to capital coming from the richest countries.

Trends in FDI coming to Sub-Saharan Africa

According to J. H. Dunning, there is a relationship between the level of economic development and the volume of FDI [J.H. Dunning 2002]. It is evaluated by the so called NOI parameter, which means net outward/outflow investment per capita compared to the level of invested funds. Dunning recognized four stages of economic advancement due to the level of NOI. African states which are attractive to foreign capital represent the 2nd stage, where NOI per capita is much less 0 due to the heavy inflow of FDI and no outflow of domestic capital.

Foreign investment has a long story in independent Africa. Soon after nationalization in many new independent states has been completed, the lack of foreign capital assistance was revealed. It was mostly in the 1970-s when multinationals started to penetrate Africa. It was the era of the Cold War, so the Eastern Block blamed this action as neocolonial dominance over less developed economies. Other developing countries did not stay lazy. Thus, an open door policy was implemented by a number of less developed states. It aimed at advancing of abandoned areas, reducing unemployment, etc. Implementing IMF adjustment programs in the 1980-s and later made a number of African countries attractive as potential clients to external capital. Today, most of less advanced economies, especially those with stabilized political situation, are the host countries to FDI.

Current international opinion is very enthusiastic about the chances of FDI in Sub-Saharan Africa. The reason is that a number of African countries got high economic growth in recent years. Some

of them are even the leaders of the fast growth. This is the case of some the least developed economies in the world like Mozambique, Ethiopia and Zambia. Other African countries with a very high economic growth in recent years are: Tanzania, Congo and Nigeria. Surely, high international prices of copper, gold and coal played an important role in case of African exporters, but the list is longer. Processed goods as well as services started to be much more visible in African export. As a result, some indicators of the level of social development like extent of poverty, food consumption or enrollment to schools have been improved. Some opinions also say that the middle class extends in some African states and growing salaries push the demand up. Is it an impulse to local producers and suppliers? It is a very good question since experience of other countries proves that this kind of demand increase is mostly directed to imported goods.

There are three possible ways to encourage FDI to the host country. The first one is to enable the purchase of an existing company, which is called *brownfield investment*. Usually this action is done either after an announcement by the host government the offer to sell a public company, or on the stock exchange. It mostly deals with some large scale public companies that may be restructured and improved due to FDI.

The next possible way to FDI is creating a new company just from the grass root level, which is called *greenfield investment*. Greenfield investments are often met in case of mining with associated processing and mostly represent large scale FDI.

The last way to FDI is relevant for a medium scale FDI as well, but even then it requires good experience in international cooperation as well as some support from the country sender. This is making *joint venture* with the partner from benefiting country.

There are two main obstacles to FDI in case of Sub-Saharan Africa. One is political turmoil while the other is natural disaster,

like long-lasting draught or Ebola epidemics. Both are or were mostly faced in West Africa in recent years. Interesting is that "traditional" say barriers, like political system, corruption risk, etc. are not often met in international press, as it used to be. Did the situation improve or perhaps foreign investors stopped bothering about it – is a good question.

In 2010–2013 the top recipients of FDI in Sub-Saharan Africa were Nigeria, Mozambique, South Africa, Democratic Republic of Congo and Ghana, with yearly inflow of FDI between 1 to 9 billion US $. However, one may observe irregular inflow dropping visibly or suddenly growing in subsequent year. For example, Ebola risk slowed down FDI in West Africa, including one of the Polish leading FDI in mining and fertilizers' manufacturing. Political events in Nigeria decreased FDI, as well. On the contrary, Central Africa maintained good trends in FDI, based mostly on copper-cobalt deposits in Congo. East Africa proves the same trend due to FDI in Mozambique, Tanzania and Uganda, while South Africa reveals heavy drop in FDI for a couple of years after 2010 [World Investment Report 2013]. Nearly half of all FDI coming to Africa (the whole continent) in 2014 is to be concentrated in few recipients (Egypt, Nigeria, South Africa), as "The Wall Street Journal" informed on May, 19, 2014. The top investing countries are U.S., the U.K. and France, which represents more than 50% of FDI value in particular years. The others are China followed by Brazil, Russia and India.

Polish investments in Sub-Saharan Africa

Poland is one of bigger European economies (considering overall GDP), preceded only by Germany, France, Great Britain, Italy, Spain, Holland and Sweden. Polish achievements, first in adjusting economy to the requirements of market economy, next in fulfilling EU requirements, are highly appreciated. Furthermore, it came

over last economic crisis in the world quite successfully, keeping relatively high economic growth, though situation in some areas, especially if underemployment and increasing income disparities are considered, cannot satisfy?

For the last two decades Poland was one of the biggest European beneficiaries of foreign direct investments. New situation appeared after Polish companies started to be visible abroad. The biggest Polish foreign investments (greenfield investments plus joint venture) were so far situated in Lithuania (energy sector) and only recently in Chile Republic (copper industry). These two deals engaged together around 4 billion US $. Even if the overall Polish FDI (including capital investments) is relatively low (estimates by the Polish National Bank say it was only 30 billion Euro, mostly invested in other European economies), increasing activity of the Polish companies abroad is a fact. Furthermore, this trend is politically supported by the highest authorities including the President and the Prime Minister. As a result, the new idea of creating central fund supporting companies to start activities abroad appeared and was implemented at the end of 2014.

Polish investments in Sub-Saharan Africa are still low, anyway. According to the National Bank of Poland till the end of 2012 it was a total of 172 million Euros only, which represented merely 0.4% of all Polish FDI. The deals were located mostly in Liberia, Senegal and Angola [National Bank of Poland 2014]. Polish companies represent mostly mining sector (copper, aluminum, coal & petrol) as well as accompanying manufacturing. This list might be easily enlarged by agricultural and food processing sector, machinery and tools, furniture and the others.

Polish enterprises are interested in implementing their activities on new markets due to two reasons:

– The scale of many potential host markets attracts FDI, especially the internal market grows visibly as well as the growth

of GDP over there is high (China, Latin American countries, some African countries),
– Low costs of labour in host countries makes higher competitiveness of a final product.

Conclusions

Foreign direct investment is a real chance for less developed economies to break some vulnerabilities of underdevelopment. One may assume, basing on so far experiences that FDI locates mostly in the best or the most promising sectors of economy. Thus, in future, the state control over the very sectors is limited and is granted by the tax inflow plus direct advantages, like an increased employment (decreased unemployment) and higher local demand. FDI, in course of time, influences positively local development of associated services, which again supports budget revenues, employment and the demand. The critics, however, show that national macroeconomic structure may lose an own industry, if any. It might be the temporary phenomenon, however, until the native capital capacities become competitive enough to start its own expansion, perhaps outside the country, too.

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SMALL AND MEDIUM-SIZED ENTERPRISES (SMEs) FROM THE PERSPECTIVE OF THE ECONOMIST INTELLIGENCE UNIT
Education as a chance for the development of the creative sector in Africa

ABSTRACT

Small and medium enterprises (SMEs) play an important role in global economic development mostly because small companies provide majority of employment opportunities worldwide. But nowadays, SMEs are facing the same macroeconomic pressures as bigger businesses, and are struggling to find their niche within a rapidly globalised business environment. They have to think about the world as a whole, and engage a range of clients, suppliers, and contractors in multiple countries to survive if they like to expand internationally. SMEs represent big spectrum of businesses, from financial services to retail. They face a number of obstacles as they plan their international trade strategies, including unreliable infrastructure, prohibitive set-up costs and unstable politics. Economist Intelligence Unit reports are strives to identify the key issues that small and medium enterprises (SMEs) cope with as they expand internationally and to outline how companies have successfully resolved these challenges. They discuss how high growth small and mid-sized enterprises (SMEs) are scaling their organisations to provide resources

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for growth whilst ensuring flexibility to respond quickly to changes in market conditions; the role of technology in scaling SMEs; and success factors in scaling headcount. Most of the information is obtained in Delphi methods which is not a very comfortable source of information in African businesses. It is interesting to analyze some of the key findings from the report in context of African business challenges:

1) The majority of SMEs see international trade as vital for their survival, despite the risks and costs associated with expansion. While 40 percent of respondents currently earned zero revenue from international operations, a clear majority expect to derive between 11 and 50 percent of their revenues internationally in five years' time. Majority of all respondents agreed that international trade was vital to their survival, with broader client bases and stronger revenue topping the list of trade benefits.
2) Companies see growth opportunities internationally – but the challenges of entering

new markets are a bigger concern.

3) The vast majority of SMEs expand into markets that are similar to their own. Given the risks of expansion, most SMEs with international operations have those operations in markets that resemble their own.
4) Tapping into established local networks is a good way to limit the costs of expansion.
5) As far as developing markets go, China is the most attractive whereas Africa is the least alluring.

What can we do with such an opinion? Can we identify any solutions? Any indications?

Key words: Small and medium enterprises, global economic, African business, Sub-Saharan Africa

* * *

Small and medium-sized enterprises (SMEs) have a crucial role in development of world economy, mainly because small firms ensure the majority of jobs in the whole world. Nowadays, SMEs face the same macroeconomic problems as big companies and have to fight for finding a niche in globalized business envi-

ronment. They have to treat the world as one entity, and engage number of clients, retailers and workers in many countries if they want to survive and be competitive. SMEs are the big groups of firms, engaging in finance services as well as e.g. selling. Their existence is threatened by a number of problems, including questions about planning international strategy of development (the infrastructure as well), enormous costs of restructuring and lack of stability in the countries, which they want to cooperate with (Scaling SMEs...2013).

Reports of the Economist Intelligence Unit describe the key problems, which are faced by SMEs when they try to compete on the global market. The majority of the data has been obtained by the Delphi method, which unfortunately is a complicated tool to be used, nor is it a credible source of information about African enterprises. However, as the development of African entrepreneurship is indispensable, it is interesting to analyze the chosen key conclusions of the report, in the context of business challenges in Africa (Breaking borders...2014):

1. In the opinion of the majority researched SMEs, international trade is important for them to survive, despite risk and costs caused by the expansion. In the situation when 40 percent of respondents calculated their current revenues connected with international activity as zero, the vast majority estimates to obtain 11–50 percent of their income in next 5 years.

2. The majority of SMEs plan the expansion on the markets similar to their own. Taking into consideration a risk related to the expansion, the majority of SMEs think that they have a bigger chance on markets reminding their own.

3. SMEs favor to develop their business in the location with existing infrastructure, especially in telecommunication sector.

4. Good idea to limit the costs of expansion is to use the functioning local network.

5. The most important factors which diversified costs of developing European and American business on the developing markets, despite the corruption level, are the skills and competence of local people.

6. China is the most attractive market of developing countries, while Africa is the least.

What should be done with such an opinion? Can we draw any conclusion for expansion of the African business on the international markets? Can Africa adapt ideas from China or other Asian countries, which have undergone an economic boom during the last 20 years?

The key condition is high quality of human capital, in the meaning of education and professional qualifications, which have an impact on the creativity of economic sector. Well-educated people are more innovative and open to high technologies and tools used in every-day life.

The human capital, better known as human resources, plays an important role in economic development. Human resources are most often understood as the sources of knowledge, skills, health and vital energy existing in every human and society. These sources describe the human ability to work and to adapt to the changes around, as well as to motivate to create new ideas. According to the economists, the human capital is the most important factor to develop technologies, services and innovation. It should be supported by social capital, which is defined as the network of connections and cultural capital, which includes knowledge and skills of single human or society (Czerny A., Czerny M., 2006, p. 284; Kuciński K., 1999, p. 53).

The following part of the article concerns the level of the education of the future African creative sector, i.e. the access of high- and middle-educated people to the labor market, their international cooperation in research and their effectiveness measured in the

number of registered patents. The comparison with Asian countries, which are the example of success in international business, provides the broader perspective.

More than 50 years ago, almost half of the world citizens (43–50%) were illiterate, and the majority of them originated from the so-called developing countries. Africa was the most affected continent, where ca. 80–86 percent of people did not participate in scholar education at all. Relatively high rates of literacy were observed only in Democratic Republic of Congo which was a Belgium colony, where 35–40 percent of the society was able to read, following Madagascar (30–35 percent) and Egypt (26 percent) (Kaczmarek T., 1998, p.285).

Accordingly, in the half of the nineties of the 20th century, level of literacy remained low in two main areas: Africa and Asia.

In Africa, indicators concerning the level of education in Sub-Saharan states are still the lowest in the world. In the beginning of 21st century only two third of men and one third of women were able to read (World Education Report, 2000).

The second area of illiteracy is Asia, particularly South Asia. Even in the late fifties and the sixties of 20th century in most countries of Middle East, South Asia and Indochina, the illiteracy rate reached 80 percent, but in several countries of these regions this indicator was even higher. 30 years later, in majority of Middle East states, 75 percent of adult citizens were able to read and write. The highest rate of literacy was noted in Israel and the so-called Asian Tigers (90 percent and more), where development of education system was accompanied by dynamic economic growth in the seventies and eighties of 20th century (Kaczmarek T., 1998, p. 284).

Besides the literacy indicator, effective method to examine the education quality is to measure an average time of scholar education. People living in high developed countries spend at school

more than 10 years. In turn, in Africa (e.g. in Burkina Faso, Nigeria, Chad, Somalia) and in less developed Asian countries (Afghanistan, Bhutan) the average education time is under 1 year. This indicator well illustrates a social-economic gap between the richest and the poorest countries (Kuciński K., 1999, p. 283).

In most economies (especially in developed ones), innovations in 50 percent cases stemmed from the company staff so they depend on education of people who work in the enterprise. Thus, the appropriate quality of education and science research are the main factors of innovative economy growth. Relation between education and innovation is a long term process of indirect character. The scientific results are helpful to make the education more modern, yet well-educated human has more chances to be innovative. It could be said that the education system has a bigger influence on innovation level of economy even than system of scientific research. Although in contemporary world new technology markets are dominated by huge international corporations, high speed of new technology development creates new niches of specific technological chances, available for less developed countries as well (Wierzbicki A., 1995).

It should be noted, that the biggest potential of people of 20–24 years, who are able to finish studies and work using high technologies and know-how, live in China. However, it will be surpassed by India soon and then by African countries (all together) (Science & Engineering Indicators, 2004, p. 34).

The number of graduated young people living in Sub-Saharan Africa (Burkina Faso, Ethiopia, Mozambique) has varied from 1 percent in the beginning of new millennium to few percent in 2005. In 2010 the average rate of youngsters who finished the high school was higher and reached 40 percent (Global Education Digest, 2012). Unfortunately, students rarely choose technical or engineering studies (World Education Indicators 2005).

Several Asian states, especially those politically unstable, still have a huge problem with education on the third level.

Top 10 African universities (4 International Colleges & Universities, 2013) are universities from South Africa (the University of Cape Town, the University of Pretoria, Universiteit Stellenbosch, the University of the Witwatersrand, the University of South Africa), four Egyptian universities (The American University in Cairo, the Cairo University, the Mansoura University, the Alexandria University), as well as the University of Dar es Salaam in Tanzania.

Simultaneously, in the last decade the universities of East, South-East and South Asia (even without Japan) have made much bigger progress in the quality of education. On the list of the best world universities (QS Top World Universities, 2014/2015), in top 100 there are 12 Asian schools (excluding Japan) meanwhile the University of Cape Town has been ranked on 171 place and the University of the Witwatersrand on 318 place.

Among the best world universities there are schools from Hong Kong, China, South Korea and Singapore. Thus, this is not surprising that these states are able to create innovation and added value in relation to actual knowledge. It is well visible in the number of scientific articles, inventions, as well as rising export and a growing number of scientists and engineers (Science and Technology ..., 2007).

Since the nineties of 20th century, the number of people in Asia obtaining a doctoral degree in science and engineering (S&E) faculties has risen, reaching 24.9 thousands in 2001 (Table 1). Similar level was noted in the United States (26–27 thousands in 2001–2003) and it was nearly doubled in European Union (40–42 thousands in 2001–2003). 45 percent of Asians, who are doctors in science and engineering faculties, have a Doctor of Engineering degree (EngD), twice more than in EU or the US. (Asia's rising..., 2007, p. 4).

Table 1. The number of doctorates in science and engineering (SE) in Asian countries

Field/The year of reaching doctoral degree	Asia	China	India	South Korea	Taiwan
All disciplines (Science&Engineering) (S&E)					
1995	15, 192	3, 417	4,000	1,920	650
2000	23,584	7,304	5,395	2,865	931
2001	24,874	8,153	5,394	2,956	970
2002	NA	9,523	5,527	3,225	1,069
2003	NA	12,238	6,318	3,192	1,167
Doctorates on engineering					
1995	6,096	1,659	335	938	373
2000	11,163	4,484	723	1,654	502
2001	11,242	4,341	778	1,638	521
2002	NA	5,252	734	1,899	587
2003	NA	6,573	779	1,868	656

NA (*not available*). According to International Standards Classification of Education (ISCED 97), S&E contains the following fields: education, humanities and arts, social sciences, business and law, business and administration, science, engineering, manufacturing and construction, agriculture, health and welfare, as well as services (www.uis.unesco.org/TEMPLATE/pdf/isced/ISCED_A.pdf, pp: 39–45). Source: Asia's rising science and technology strength, 2007, p. 5; changed.

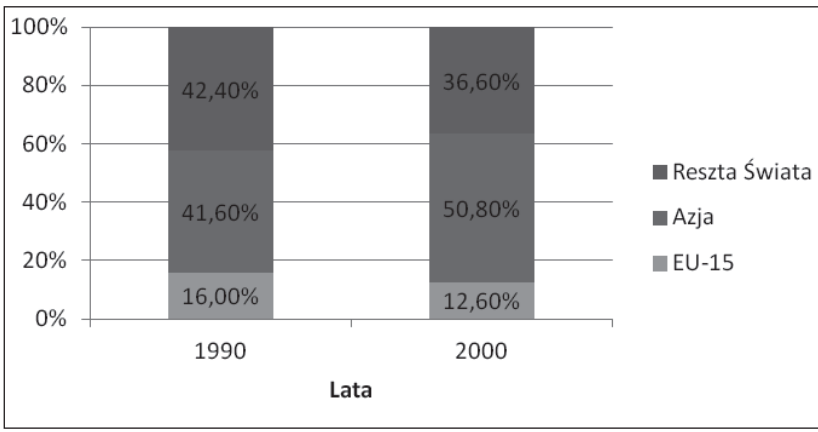
China visibly leads the „production" of Doctors of Engineering ahead of other states in the region. It is also well observed that in India the number of EngD is relatively small, only two times bigger than in South Korea, which population is definitely smaller (Table 1).

Moreover, a lot of young people decided to prepare their doctorates in well-developed states. It means that the real number of doctors with Asian origin is much higher.

Many students from Third World were graduated not only in the United States (pic. 1), but also in the Great Britain, France, Canada and Japan. Annually, at the turn of 20th and 21st centuries,

37 percent of doctorates on S&E in the Great Britain were prepared by foreign students. Half of that number concerned engineering. In France more than 20 percent of doctorates were written by foreigners (20 percent of this number on engineering), in Germany – 9 percent, in Japan – 14 percent. 44 percent of doctors on mathematics and IT in the Great Britain and 29 percent in France were foreigners. Persons with doctoral degree who decided to return to the country of the origin have had a huge impact on development of science and research, as well as on building economic power of their countries (Science & Engineering..., 2004, p. 40).

Pic. 1. Regions of origin of foreign EngD in United States in 1990 and 2000.



Source: own work based on: Asia's rising science and technology strength, 2007, p. 12.

In last couple of years the signs of success of Asian „Tigers" have been visible primarily in science. Since 1991 Chinese scientists have been the largest group of doctors of science and engineering among Asian and EU citizens (from 1.5 thousand to 3.1 thousand of Chinese doctors per year). From the middle of the nineties of 20th century there have been 3 times more Chinese doctors than

Indians and 2.5 times more than Korean (having regard to the difference between demographic potential of these states). Moreover, in last few years the number of publications written by Asian S&E scientists has significantly risen.

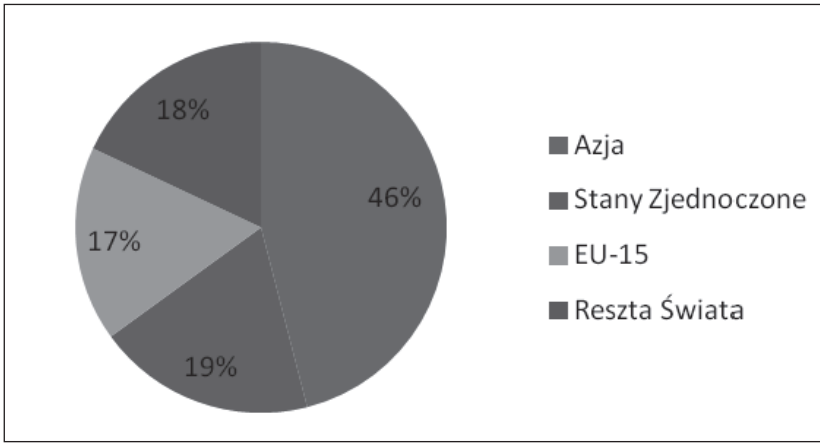
There is a small number of African students on American universities in spite of the fact that United Nations led program (USAID) which already 30 years ago envisaged support for the development of science and technology in Africa. However, it was interrupted in the beginning of the eighties of 20th century. Private foundations made the similar decision. Nevertheless, for few years the American and African cooperation on education and science has been growing. A consortium of Ford, Rockefeller, Carnegie and McArthur Foundations has renewed the investments in many African universities. The consortium is planned to be supported by other organizations. The cooperation will concern students' exchange, training, science research and improvement of skills in fields of health, agriculture, environment and private sector. The main goal is to create the African leaders of entrepreneurship and technology. (Lake A., Whitman Ch. T., 2006, p.122).

In years 1988–2001 in Sub-Saharan Africa, the number of articles published in ISI Citation Index fell, which is evidently related to the shrinking science activity in this region. That was caused by dramatically small activity of scientists in Nigeria and RSA, after political changes in the nineties (Regional and ..., 2004). Nevertheless, these two countries accompanied by Kenya and Zimbabwe are still on top list of places in Africa, where significant group of scientists publish in prestigious world magazines. Excluding those countries, publishing scientists become also from Cameroon, Ethiopia, Senegal, Tanzania and Uganda. Science is much more developed in North African countries and in the Middle East.

Although the science market is dominated by Western experts (according to Zegeye and Vambe, 2006), the number of scientists

with African roots has been growing dynamically. As authors suggest, „science production" is not free from the influence of political ideologies, thus governments should ensure the best conditions for science development. Although the number of publications is growing each year in all African regions, the role of Africa in global „scientific production" is still really insignificant. (pic. 2).

Pic. 2. The growth of number of working people with at least secondary education in the world, years 1990–2000



Source: Barrow R.J., Lee J J., 2000, International Data on Educational Attainment, CID Working Paper, 42, Center for International Development; quoted from: Asia's rising science and technology strength, 2007, p. 9.

For many countries spending on research and development (R&D) is a key factor of economic growth and prosperity. The amount of R&D spending is treated as an indicator of country's potential to implement technological innovations.

In poorer states spending on development of R&D sector is really crucial, because it shows political and economic will to connect country with processes of global development and permanent modernization of public life.

Due to diverse level of economic development in Asia and Africa, the scale of public spending on R&D is different. The majority of African countries and several poorer Asian states do not invest in R&D at all or they allocate only a little amount of money (Table 2). In 2005–2012 spendings in Sub-Saharan Africa were the lowest in the world (0.58 percent of region's GDP), whereas in the same period the East Asian countries spent 2 percent of GDP (World Development Indicators: Science and technology, 2015).

Table 2. Spendings on R&D in 2005–2012 in African countries (official data only)

No.	Country	R&D spendings (% GDP) 2000–2005	R&D spendings (% GDP) 2005–2012
1	Algeria	0,16	0,07
2	Botswana	0,39	0,53
3	Burkina Faso	0,18	0,20
4	ex Republic of Congo	—	0,13
5	Egypt	0,19	0,43
6	Ethiopia	0,20	0,25
7	Gabon	—	0,58
8	Gambia	—	0,13
9	Ghana	—	0,38
10	Kenya	—	0,98
11	Lesotho	0,06	0,01
12	Madagascar	0,16	0,11
13	Mali	—	0,66
14	Morocco	—	0,73
15	Mauritius	0,38	0,37
16	Mozambique	0,52	0,46
17	Namibia	—	0,14
18	Nigeria	—	0,22
19	RSA	0,87	0,76
20	Senegal	0,09	0,54
21	Tanzania	—	0,52
22	Uganda	1,25	0,56
23	Cape Verde	—	0,07
24	Zambia	0,03	0,34

Source: own work based on World Development Indicators 2008, 2015.

The R&D funds flow from a state budget (GERD – Government Expenditure on R&D), economy (BERD – Business Expenditure on R&D) and in much smaller scale from private non-profit institutions, e.g. foundations (PERD – Private Expenditure on R&D). The base for deeper analysis of the modernization and innovation of states' economies should be built on indicators concerning the structure of spending and job creation in R&D sector. Unfortunately it is not possible due to lack of data in many African and Middle East countries, as well as in less developed Asian states.

Investments on R&D are simultaneously the reason but also the consequence of economic development. Invested funds do not come entirely from state budget. Part of money comes from foreign investments of high developed countries on research in dynamic developing countries. In American research prepared by Kauffman Foundation (Hatzichronoglou T., 2008, p. 69–70), international corporations marked the most important issues for choosing the localization of R&D investment in developing countries: the potential of growth, the quality of scientific staff, lower cost of research, chances of cooperation with universities and support in product sale. The most crucial differences concern the role of intellectual properties and possibilities of preserving them in developed and developing countries. It means that despite the importance of preserving intellectual properties on the raising markets and potential danger of steeling them, they do not seem to be vital reasons to obey the law.

The amount of GERD shows the importance of political support for development. The amount of BERD is the factor of interest of business for development. The share of public spending on R&D in GDP depends on economy structure and export of a given country. Bigger share of processing industry in export (particularly hi-tech) means bigger investments related to R&D.

The amount and structure of investment also depend on:

– pro-export industry orientation, because the production located on foreign markets has to maintain high and permanent innovation to be competitive (higher value of BERD);
– type of state technology policy. If the state supports only existing knowledge and assumes that import or wide use of foreign technologies (particularly advanced technologies) gives better results than own R&D actions (what is characteristic for developing countries), GERD indicator will be relatively lower;
– high rate of depreciation of the results of R&D and related capital investments (buildings, equipment). It causes investment's growth, because it increases the costs and thus reduces the tax base;
– tax breaks for R&D enterprises. When this kind of instruments promoting R&D is introduced to fiscal system, it evidences the pro-investment state policy;
– higher investments on research and development are conducive to the high share of large companies in the overall industrial structure (higher value of BERD).

However, according to Maciej Grabski (2006), not GERD, but the value of BERD is the most crucial indicator of innovation and economic stimulator. Low value of BERD, ca. 30 percent, is characteristic for low-innovated economies.

It is impossible to say that African countries have important contribution in modern entrepreneurship and high technologies. At the same time Asian countries are deeply engaged in global hi-tech market, products and services, as well as they spend a lot of money investing in their own R&D projects (Asia's rising ..., 2007). It is not known, what was the real beginning of this spectacular development. According to Easterly (2008, p. 293–4), this process supposedly has not been started due to the support of World Bank (as it is emphasized in World Bank publications), but thanks to young, creative entrepreneurs. A good example is National Institute of Information Technology (NITT), private IT school established in India by Rajendra

Pawar i Vijay Thadani in the beginning of '80. They have quickly decided to expand their activity, giving concessions for new schools in the cities and countryside, where there was a demand for it. NITT preserved its trademark very carefully by unified classes, teachers' training and controls the standards of teaching. The project became perspective and profitable. Similarly, India has reached a spectacular success in providing IT services for American companies. The most expensive firm on the Indian stock exchange ensures services to 138 enterprises ranked in Fortune 1000 and Global 500. The founder, Mr Azim Premji graduated from the Stanford University.

In developing countries, most companies doing business in the R&D sector are foreign. Only 237 of 1250 biggest R&D corporations have huge budget and turnover about 130 million dollars per year. Two third of them are American. 65 percent of them act in the IT sector (including software) and 25 percent in biotechnology and pharmacy (Hatzichronoglou T., 2008, p. 48).

Table 3. Research and development in Africa and the Middle East financed by international corporations, with 50 percent share of United States in 2004 (millions of US dollars)

Region/country	2004
Africa	28
Egypt	2
Nigeria	D
RSA	23
others	0
Middle East	875
Israel	872
Saudi Arabia	D
Emirates	2
Others	0
South America and Caribbean	726

D – secret data
Source: U.S. Direct Investment Abroad: Financial and operating data for U.S. Multinational Companies, 2004.

The amount of spending on R&D is an indicator which determines the growth of the number of registered patents or trademarks, as well as rising of export of new technology and technical services. The patent's activity is very often perceived as a measure of country's innovation. However, it is difficult to compare the values of this indicator measured in different countries, due to diversity of patent regulation. What helps to make it more useful is an annual list of patents in USA, containing data of inventors' nationalities (Table 4).

Table 4. Patents obtained in United States by individual inventors and organizations from different parts of the world* in 2008. Source: own work based on: Patent statistics report available for viewing, 2008; different schedules.

Region/ country/ territory	2004			2008			Change in years 2004–2008[%]
	individual patents	organizations' patents**	∑	individual patents	organizations' patents	∑	
China	83	200	283	121	822	943	233
Hong Kong	59	139	198	59	145	204	3
India	16	278	294	25	495	520	93
South Korea	262	3802	4064	196	6977	7173	76,5
Singapore	12	365	377	17	296	313	–17
Taiwan	1860	3423	5283	1065	4658	5723	8
Thailand	6	0	6	3	1	4	–33
Malaysia	13	43	56	1	121	122	118
Philippines	1	17	18	0	9	9	50
Kenya	3	3	6	1	0	1	–500
RSA	36	14	50	19	19	38	–24

* The patent is included to the heritage of this country, from which came the first inventor on the list.
** The list of patents registered for a given country by the origin of the main inventor includes only these organizations, which in 2004–2008 obtained at least 5 patents. The overall number of patents could be larger.

Among the African countries, Egypt, Kenya and the RSA have the larger number of patents, although the role of the RSA in the

world science has been unfortunately falling down since the middle of the nineties of 20th century.

Conclusions

The development of SMEs in Africa is really vital, not only because of expected incomes, but also regarding new jobs creation for the rising number of young people, who have just started their professional carriers. It should be remembered that the economic success of Asian states was involved with the cooperation with foreign companies, which chose Asia for expansion mainly because of human capital. African countries have to try their best to create the most friendly and flexible business environment. The infrastructure gap will be reduced steadily, but it takes time and capital, which is lacking in many countries' budgets. Relatively the most promising seems the plan for improvement of education of young Africans. Thanks to educational investments Asian countries have reached a spectacular economic success in 20 years. Such a strategy should be repeated in Africa. If not, none international aid will resolve the economic problems of Africa.

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A ROLE OF SAVING IN SOLVING THE PROBLEM OF CAPITAL AMONG SMEs
A case Study of SMEs in Iringa Municipality

ABSTRACT

The study aimed at assessing the role of saving in solving the problem of capital among SMEs in Iringa Municipality. The research was guided by three objectives: to determine the sources of fund among SMEs, to compare between the contributions of saving and other sources of finance to capital structure among SMEs, and to examine factors affecting the level of saving among SMEs owners. The research was guided by three research questions: What are the sources of fund among SMEs, to what extent does saving contribute to capital structure among SMEs, as compared to other sources of finance, and what are the factors affecting the level of saving among business owners? Cross sectional survey research design was employed to collect data from SMEs owners in Iringa Municipality, who were selected randomly. Data analysis was done using a Statistical Package of Social Science (SPSS). Descriptive results were presented using frequency tables. Linear regression model was used to assess the factors affecting the level of saving. The findings revealed that the level of initial capital, number of dependents and level of profit had significant effect on the level of saving.

Key words: SMEs, Savings, Source of Capital

Introduction

The small and medium scale industry is seen as the key to Tanzania's economic growth, alleviation of poverty and unemploy-

ment in the country. Available data shows that SMEs contribute about 40% to the country's Gross Domestic Product (Tamara, 2006). SMEs are said to be 80% of registered businesses, each employing between 5 and 99 people (Tamara, 2006). Promotion of such enterprises is therefore of paramount importance since it brings about a great distribution of income and wealth, economic self-dependence, entrepreneurial development employment and a host of other positive, economic uplifting factors.

According to the EU Survey report (2011), 74.8% of companies used debt financing. Unsurprisingly, the use of debt financing increased with enterprise size class. Debt financing was used by 66.3% of all micro-enterprises, 79.3% of all small enterprises, and 85% of medium-sized enterprises. The difficulty of using own savings in solving the problem of capital affects both developed and developing countries, though mostly affects developing ones. Debt access among emerging entrepreneurs has been a problem especially to youth who lack collaterals as required by most of financial institutions.

Background of the Problem

Most of the African Small-Medium Enterprises struggle to raise capital to establish and expand their businesses. According to Kauffmann (2005), "Africa's SMEs have little access to finance, which thus hampers their emergence and eventual growth. Their main sources of capital are their retained earnings and informal savings, and loan associations, which are unpredictable, not very secure and have little scope for risk sharing because of their regional or sectorial focus.

Over the past fifteen years, Tanzania has marked as one of the developing countries on an ambitious and long process of economic, social, and political reforms to improve the business environment and to increase economic growth and reduce poverty. The Government approved the SME Development Policy in 2003. The policy

examines the contributions of the SMEs in the economic, social and political reforms embarked by Tanzania for the past years, as stipulated in the (FYDP); 2011/12-2015/16; "to improve the business environment so as to increase economic growth and finally reduce the prevalent poverty level".

Research Objectives

General Objectives

The main objective of the research was to assess the role of savings in solving the problem of capital to the SMEs.

Specific Objectives of the Study

Researcher studied the problem by focusing on the following specific objectives

1) To determine the sources of fund among SMEs.
2) To compare between the contributions of saving and other sources of finance to capital structure among SMEs.
3) To examine factors affecting the level of saving among SMEs owners.

Research Questions

1) What are the sources of fund among SMEs?
2) To what extent does saving contribute to capital structure among SMEs as compared to other sources of finance?
3) What are the factors affecting the level of saving among business owners?

Significance of the Study

The study is significant to SMEs owners and Government. To SME's, the results of this study will help them to work out various methods of accessing saving in raising and expanding capital structure of their business. Suggestions and recommendations

arising from this research are helpful to them in overcoming the problems of financing their businesses. To the Government, the study will compliment on the efforts of Government in promoting development of SME's. The results will create awareness on the problems hindering SME's level of saving for financing business and hence recommendation on their solutions will give Government an opportunity to support SMEs in Tanzania.

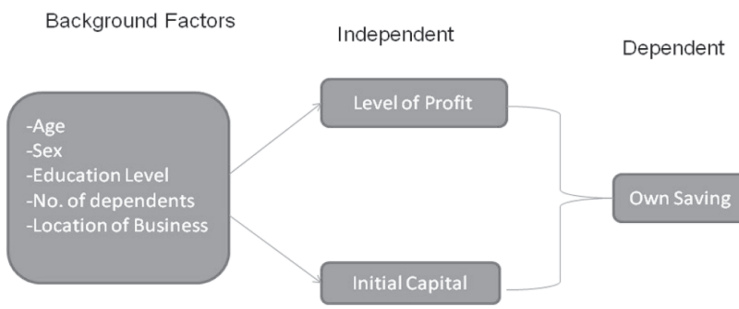
Literature Review

Review of Relevant Theory: Pecking Order Theory

Myers (1984) argued that firms prefer internal finance to external one and, if resort to external finance becomes necessary, debt finance is preferred to equity finance. If internal funds are not enough to finance investment opportunities, firms may or may not acquire external financing, and if they do, they will choose among the different external finance sources in such a way as to minimize additional costs of asymmetric information.

Conceptual Framework

Figure 1: Conceptual Framework



Source; Researcher (2014)

Empirical Literature Review

Due to difficulties in accessing finances, many SMEs start with personal savings, or finances borrowed from family and friends. Okraku and Croffie (1997) argued that SMEs rely primarily on personal savings of owners, business profits, family members or friends for their financial needs (they have little or no access to external credit). This is caused by high cost of borrowing which leads SMEs to prefer mostly personal saving to loan. Having noted that saving rates in Africa are generally estimated to be low and stagnant, most of SMEs in Africa have earn low profit and have large family size which lead to more consumption than saving. Due to low profit, SMEs use that money for family purpose, which reduces the level of saving for improving the business.

According to Nesta (2009), debt financing is the most widely used form of finance as it is generally one of the least expensive ways to raise finance. It is most suitable for established lower risk businesses, with a stable cash flow to repay the debt. Lack of access to finance has been cited as problem for SMEs, while information on the financial performance and capital structure of SMEs is generally unavailable. Within the access to finance category, credit conditions relating primarily to interest rate, maturity, collateral requirements and lending procedures were perceived to be the most important limiting factors.

Methodology

Research Design, sampling and data collection

The study used cross-section survey design, the method was chosen as it is non-resource intensive in terms of time and money, but it is capable of exploring the required data. The study was conducted in Iringa Municipality, the areas with large number of SMEs varying in characteristics. The targeted population specified by the researcher

was the owners of small and medium enterprises located in Iringa Municipality. The researcher used probability sampling method.

Data Analysis

Descriptive data were presented by using frequencies tables and cross tabs which used responses from respondents and were analyzed by reflecting the objectives and goals. The answers provided by the respondents were analyzed with descriptive statistics and frequencies measures found on SPSS. Those kind of measures used depend on the required analysis needed by researcher. Frequency distribution table was used to present results of descriptive data.

To assess factor affecting level of saving, linear regression model has been used. The linear regression used in this study is,

$$\mathbf{LoS} = \beta_0 + \beta_1\mathbf{Age} + \beta_2\mathbf{Sex} + \beta_3\mathbf{Dependants} + \beta_4\mathbf{Profit} + \beta_6\mathbf{Capital} + \beta_7\mathbf{Education}$$

Where **LoS** represents Level of Saving

Research Findings and Discussion

Respondent Background Information

Sex of Respondents

The finding shows that 32 (64%) of the respondents were male and 18 (36%) were female, as shown in the table 1. It seems that most of the businesses were owned by men. There is a need to encourage women to get involved in entrepreneurship issues so as to improve economy and welfare of their families.

Religion of the Respondents

Data show that, 36 (72%) of the respondents were Christian while Muslim were 13 (26%) and Hindu were 1 (2%) of the re-

spondents. This variation occurred because researcher obtained the respondents by using random probability sampling; though in areas were the research was conducted Muslims and Christians dominated rather than other religions such as Hindu. Religion has a little impact on establishing businesses especially in this region, unlike other places where religions have some sort of hindering the involvement of some of the people in business.

Age of the Respondents

Data show that 26 (52%) were aged between 26–31 years, followed by 8 (16%) percent of respondents aged 20–25 years. The results therefore reveal that majority of the respondents, who participated in the study were aged around 26–31 years, meaning that youth have awaken on self-employment instead of waiting or depending on working for the institutions/organization.

Education Level

Majority of the participants in this study were primary school leavers, occupying 19 (38%) of the participants in the study. This was followed by secondary school leavers by difference of 2 respondents having 17 (34%) of respondents. Then, respondents who held diploma were only 6 (12%), followed by Certificate and Degree holders occupying 4 (8%) each.

The results reflect that most of the owners of small and medium businesses were the ones who have low level of education because 72% of respondents have primary and secondary education, while 28% of respondents have above secondary education. The human capital theory postulates that the more educated and experienced the individual, the higher the degree of success in economic activities, so we expect to find a positive relationship between human capital variables and business performance (Chirwa, 2008).

Location of the Business

Location of the business is another variable which contributes a lot in the performance of the business, especially in the issues of increasing capital in the business. The results show, that 16 (32%) of the SMEs were located around schools and colleges, followed by respondents located at roadside/footpath and commercial in which each location has own 13 (26%) of the respondents in the study. 7 (14%) of the SMEs were located in the market place and 1 (2%) of the respondents used mobile market.

3.1.6 Number of Dependents

Number of dependents is considered as the important variable in this study. The study assumes that even the number of dependents affects the increase of capital to the business. The results from findings show that majority of the respondents have 3–4 dependents with having 20 (40%) of the total respondents, followed by 0–2 dependents and 5–6 dependents where both have 12 (24%) each. And respondents who have more than 7 dependents cover only 6 (12%) of the respondents.

Level of Saving

The study wanted to explore the average level of saving per day, where the researcher assumes that the level of saving has a positive relationship with the access to own saving. Majority of the respondents save 0–5,000 per day, which occupies 27 (54%) of the respondents, followed by those who save between 5,001 and 10,000 by 13 (26%). Then, 4 (8%) of the respondents save more than 20,000. Respondents who save 10,001–15,000 and 15,001–20,000 occupy 3 (6%) of the respondents. This means that the majority of the SMEs have a low level of saving which can lead to little access to own saving because researcher believes, that saving determines the accessibility of own saving.

Table 1: Distribution of Respondents According to Daily Average Saving

Daily Average Saving	Frequency	Percent
0–5,000	27	54
5,001–10,000	13	26
10,001–15,000	3	6
15,001–20,000	3	6
20,001+	4	8
Total	50	100

Level of Profit

Findings show that 21 (42%) of the respondents make profit between 10,001 and 20,000 per day, followed by respondents who earn a profit between 0 and 10,000 per day by having 18 (36%). 9 (18%) of respondents making profit of 30,001+ per day and 2 (4%) of respondents make a profit between 20,001 and 30,000 per day. This means that the majority of the respondents earn a low profit per day whereby this can be caused by the small size of their businesses. This may hinder not only accessibility of their own saving but even other sources of finance which lead to difficulties on increasing capital.

Contribution Saving to Capital Structure

From the findings it results that saving contributes by 69.49% on average and another source of finance contributes by 30.51% on average to the capital structure of the SMEs. This means SMEs have more access on saving from the level of starting their business and lead to operate under little pressure which can help them to make profit instead of focusing on the debt finance, which can lead them to get low profit or to operate under loss.

Results of Linear Regression

Table 2: Model Summary

Model	R	R Square	Adjusted R Square
	.821	.674	.629

Based on our model, the correlation is 82.1%, which indicates a good level of prediction. Independent variables explain 62.9% of the variability of level of saving which indicated through R2 value which is a relative strong association between independent variables and dependent variables.

Table 3: Linear Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.206	.395		.520	.606
	Gender	–.043	.252	–.016	-.170	.866
	Initial Capital	1.162	.358	.420	3.249	.002
	Education	.132	.304	.048	.435	.666
	Age	.132	.395	.042	.334	.740
	Number of Dependants	.332	.160	.254	2.082	.043
	Level of Profit	.980	.245	.389	4.007	.000

Results of Linear Regression

The results in Table 3 show that capital, level of profit and dependents are all statistically significant to the level of saving, which means their p-value is less than 0.05, while other variables including age, education and gender are statistically insignificant to the level of saving ($p>0.05$).

Predictors of the level of saving with Capital ($b=1.162$, $p=0.002$); capital coefficient is positive, which means SMEs with high capital have predicted to save more than the ones who have used low capital in their business and the results mean, that if the capital increases to the business in one unit, the level of saving is predicted to increase by 1.162, too. Level of profit ($b=0.98$, $p=0.000$), which means SMEs which earn more profit per day have a chance of having a higher level of saving than ones who have earned low profit per day: this indicates, that as the level of profit increases by 1 TSH, the level of

saving will increase by 0.98 TSH. Dependants (b=0.332, p=0.043), this means as dependents change by 1, the level of saving is also going to change by 0.332 TSH.

Ambrose J. (2012), in his study tests factors for saving mobilization in which one of the variables was dependency level, shows that the dependence level was statistically significant to saving mobilization. The results show that the number of dependents and the savings for growth show very significant variation at 0.01 level of significance ($F = 4.99$, $df = 3$), $p = 0.002$) showing that the dependency level is a factor with an immense influence on savings mobilization for growth of woman enterprises.

From the results the researcher concludes that capital, profit and dependents related to the level of saving of the SMEs, as these variables change, lead to the change of the level of saving of the SMEs. SMEs should improve capital of their business, which may lead to increase the profit and their level of saving.

Conclusion and Recommendations

Conclusion

First question wanted to know sources of fund among SMEs and sources considered in this objective were: savings, profit, loan and friends/family. Findings show that SMEs mostly use their own saving in the processes of increasing capital to their business.

Saving is a loan taken to increase capital which represents other sources of finance. Second question wanted to know the contribution on own saving and other sources of finance on to capital structure among SMEs. The findings show that own saving contributes a lot to the SMEs capital structure, whereby own saving occupies 69.49% on the capital structure of the SMEs while other sources of finance have only 30.51% in the capital structure of the SMEs. This data valuated from the start-up capital of the respondents.

Third question wanted to examine factors for accessibility of own saving. Through various literature reviews which deal with the accessibility of capital, researcher formulates different independent variables whereby researcher thinks that they contribute to the accessibility of own saving.

Researcher uses the following variables gender including age, sex, dependents, capital, level of saving and level of profit. Through the linear regression test, it shows that capita, profit and dependents are statistically significant to the dependent variable, which means that only this variable can determine the accessibility of own saving to the SMEs or increasing their capital to the business. Even if other variables show that they are insignificant in determining the accessibility of own saving but the researcher thinks that some of them clearly have impact on the accessibility of own saving because on the analysis, which use cross tabs, some of them show that they have impact on the accessibility of their own saving.

Recommendations

The study recommends the following: SMEs should put more efforts on using own saving in establishing and expanding their business. This will help them to increase their level of profit. When they use more loans on establishment and expanding businesses even the level of profit and saving will decline because they should repay the loans provided.

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CONCLUSIONS

The conference held at the University of Iringa was an exceptional opportunity for the Polish and Tanzanian researchers to meet regardless of physical distance separating these faraway countries. In fact, they share not only similar experiences of the socialist system but also common problems of the contemporary world. The meeting broadened our general knowledge by adding a wide variety of both theoretical and empirical approaches and also paved the way for publication of this volume. Unfortunately, some of the authors who had participated in the conference did not manage to send their papers. Nevertheless, we do hope that the collected texts will suffice to acquaint the potential readers with multifaceted aspects of sustainable development. Contemporary times confront us with increasingly demanding tasks to better ourselves, to improve our scientific and didactic work, and to enhance the surrounding world. However, we can face these civilizational challenges only once we realize the necessity of sustainable development and timely avert all negative phenomena caused by ourselves. We believe that this book will trigger reflection and inspire discourse both among scientists and students. We also hope that the Tanzanian-Polish conferences will be held in the future on a cyclical basis, as suggested by Prof. Nicholas Bang, the chancellor of the University of Iringa.

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