TANZANIA: government forces hybrid seeds and fertilisers, but agroecology consciousness rise

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Introduction

The United Republic of Tanzania is the largest country in East Africa. The country has a his-to-ry of political stability and a multiparty po-litical system, although in practice one party has dominated politics since independence in 1961. Its official capital city is Dodoma in the centre of the country, where the President's Office, Parliament, and some government ministries are located, whilst Dar Es Salaam, the former capital, retains most government offices and re-mains the country's largest city, principal port, and leading commercial centre.

Tanzania's population of an estimated 50 million (World Bank, 2017) is diverse, and com-posed of several ethnic, linguistic, and religious groups, including the renown Masai in the North. According to the World Bank, the poverty rate fell from 60% in 2007 to an estimated 47% in 2016. However, it is worth highlighting that the absolute number of impoverished people has not significant changed given the fast pace of population growth (over 3% per an-num), and about 12 million Tanzanians still live in extreme poverty earning less than US$0.60 per day.

Over the last decade, the country has expe-rienced high growth (averaging 6%–7% per an-num), according to the World Bank (World Bank, 2017). The country's land is rich in biodi-versity and natural resources, including sizeable deposits of natural gas. The agricul-ture sec-tor is key to Tanzania's overall eco-nomic growth and development. It provides about 66.95% of employment, accounts for about 29% of GDP, 30% of exports and 65% of inputs to the in-dustrial sector (FAO, 2017). Tanzania is amongst the highly vulnera-ble country to climate change globally. The average annual temperature in Tanzania has increased by 1.0ºC since 1960 and is project-ed to in-crease by 1.0ºC to 2.7ºC by the 2060s (UNDP, 2012). In the last 40 years Tanza-

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nia has experi-enced severe and recurring droughts with devastating effects to agri-culture, water and energy sectors. Climate change related scenarios including prolonged dry season, severe floods, al-teration in ecol-ogy of pests and diseases with outbreak of disease such as cholera and malaria, livestock deaths, crop failures and uncertainty in crop-ping pattern, have been regularly ob-served (Ojija et al., 2017). In fact, currently more than 70% of all natural disasters in Tanzania are climate change related (Irish Aid 2016).

This report looks at how farmers in Luale, Nyandira and Tchenzema villages in Mvomero dis-trict are coping with the effects of climate change in their farming activities. Agroecol-ogy and food sovereignty consciousness is rising among farmers despite an intense at-tempt by the government to introduce seeds and other industrial inputs. The report further shows that, due to harsh agroecological and climate conditions in the regions as well as certain misguided public (and aid) policy, it is not always possible for peasant farmers to do away with hybrid seeds and fertilizers.

Agriculture

About 80% of the population lives off suste-nance farming, livestock keeping and pro-duction, and fishing (World Bank, 2017). Crop production in Tanzania is mainly rain-fed and dominat-ed by small-scale farmers. Main sta-ple foods in Tanzania are maize, rice, banana and cassava, and the country has the third largest number of livestock in Sub Saharan Africa. In 2014 close to three quarters of the crop area was cultivated by hand hoe; the remainder was cultivated by ox plough (20%) and tractor (10%). However, the government has endeavoured to in-crease mechanisation by massive importation of tractors and other farm implements (Majule et al., 2014).

Heavy dependence on unreliable and irregu-lar weather conditions means that land pro-ductiv-ity remains insufficient to cover daily food requirements. Furthermore, peasants continue to suffer high post-harvest losses through disease and pest infestations, and deterioration due to lack of processing and storage facilities. The use of chemical fertiliz-ers and so-called improved seeds (industrial hybridized seed) is very low in Tanzania. It is worth noting that it is related to farmers' bad experience in 1960s and 1970s which led to perception that inorganic fertiliz-er destroys soil (Majule et al., 2014). Extension packag-es and pilot projects have tried to dis-prove this notion but it is still widely maintained by farmers in most parts of the country. Sim-ilarly, most farmers do still keep and recycle their traditionally stocks.

Within national development agenda, agri-culture is expected to lead the growth and structur-al transformation of the economy and maximise the benefits of accelerated growth. Tanzania Development Vision 2025, which aims to transform Tanzania into a mid-dle-income country, envisages that by 2025 the economy will have been transformed from a low productivity agri-cultural economy to a semi-industrialised one, led by modernised and highly productive agri-cultural activities which are effectively integrated and strength-ened by supportive industrial and service activities in the rural and urban areas. To this effect Tanzania has just adopted the second phase of the Five-Year Development Plan (FYDP II 2016/17 – 2020/21), whilst the Tan-zania Agriculture and Food Security Invest-ment Plan (TAFSIP 2011/2012 – 2020/2021) maps the investments needed to achieve Tanzania's commitment under the Com-prehensive Africa Agriculture Development Programme (CAADP). The FYDP II focuses on key interven-tions, including increasing use of modern technologies, in particular ICT and ex-tension ser-vices; lengthening and deepening value chains; skills promotion along the value chains; com-mercialisation; quality and stan-dards, research and innovation; promotion of producer groups; and promoting marketing and improved access to financial services.

Climate change

Climate change influences crop yields by decreasing soil moisture content, and support dis-eases affecting crops. For example, Rowhani et al. (2011) claim that, seasonal increase in tem-perature by 2oC as projected by 2050 will reduce yields of rice, sorghum and maize by 7.6%, 8.8% and 13% respectively in Tanzania while a 20% increase in precipitation variability will decrease yields of rice, sorghum and maize by 7.6%, 7.2% and 4.2% respectively by 2050. In addition, increase in temperature between 2oC and 4oC will cause ecosystem shifting (Row-hani et al., 2011).

According to the FAO (Sebukeera, 2005), forests and woodlands also play an important role in the livelihood of rural and urban populations in Tanzania as approximately 90% of the popu-lation depends directly on bio-energy for heating and cooking. It is estimated that forests pro-vide water catchments for over 80% of the country's water supplies, which accounts for over 60% of Tanzania's generated electricity through hydro-power.

Although food and water shortages are not new to Tanzania, they appear to happen more fre-quently and harshly (InfoBrief, 2011). This impact disproportionally on impoverished and ru-ral communities owing to their complete dependence on subsistence rain-fed agriculture and forests resources coupled with limited capacity to adapt to climate change.

Furthermore, the rangelands which were suitable for use by pastoral communities for live-stock keeping and settlements have declined because of climate change. Increase of deaths of livestock, as well as disease such as escalation of tsetse flies due to shortage of water and higher temperature, are reported every year. As a result, pastoralists have been forced out of their former areas into farmers' areas to search for pastures and water for their livestock, or to convert to a more sedentary lifestyle. This is causing competition and at times severe con-flicts between farmers and pastoralists for natural resources (Ojija et al., 2017). The authors review gives a broader picture of impacts of climate change on the agriculture sector. It re-veals that in many parts of Tanzania, the agriculture sector may continue to suffer from the effects of climate change aggregated with limited awareness among communities. It is ex-pected that outbreaks of infectious diseases including malaria and cholera may increase as they correlate positively with high temperatures and rainfall. As a result, health problems and reduced crops production will continue. The impact of climate change therefore accelerates food shortage, poverty, deforestation and forest degradation, poor livelihoods and occurrence of infectious diseases (Ojija et al., 2017).

National strategy and policy framework

Climate change has increasingly been incorporated into Tanzania's national strategy and poli-cy framework as a result of international influence and funding support, together with in-creasing realisations of climate change impacts, though climate change adaptation in policy remains highly sector specific (England et al., 2017).

The overarching policy structure that oversees issues related to environment and manage-ment of natural resource is the National Environmental Policy (NEP) of 1997, which is imple-mented in conjunction with the National Environmental Management Act (NEMA) of 2004 (Meaghan et al., 2015). The NEMA outlines management principles and specifies the need for and content of environmental impact and risk assessments, environmental standards, and pollution controls. Climate change is embedded in the NEP as a one of the cross-cutting issues in management of the natural resources, which reflects the time at which it was drawn when climate change was just emerging as a central concern for

national governments globally. Par-ticular emphasis is made on the government's commitment to address environmental issues that are man-caused and that transit beyond countries boundaries. A new NEP was expected in 2016 but it seems to remain at an advanced draft stage (Acosta et al., 2016). It specifically acknowledges climate change as one of the major environmental and developmental prob-lems facing the country, and aims at enhancing early warning and response systems, improve climate change capacity and strengthen the implementation of the 2012 National Climate Change Strategy (NCCS). Given that the NEP is the overarching policy for dealing with all envi-ronmental issues facing Tanzania, including climate change, it would represent a critical first step toward fully integrating climate change issues across sectorial and governmental activi-ties in Tanzania.

In 2012, Tanzania launched its National Climate Change Strategy (NCCS), which aims to ena-ble the county to effectively adapt to climate change and participate in global efforts to miti-gate climate change, whilst also achieving sustainable development. It is in line with the country's vision geared towards reducing poverty and supporting sustainable economic develop-ment, as outlined in the Tanzania Development Vision 2025, the Five Years National Devel-opment plan, and national sectoral policies, such as the National Strategy for Growth and Re-duction of Poverty II (MKUKUTA II 2010/11 and 2014/15). The Strategy enforces and opera-tionalizes climatic-related issues of concern as directed by the NEP and EMA. The Strategy co-vers a broad range of interventions, both in relation to adaptation and mitigation, as well as cross cutting issues that are affecting social, economic and physical environment. As a Least Developed Country (LDC), adaptation is emphasised as the highest priority for Tanzania. Alt-hough as such the country is not obliged to reduce greenhouse gas (GHG) emissions since it has minimal contribution to global GHG concentrations, the NCCS also establishes a case for achieving sustainable development while participating in mitigation initiatives, such as REDD+ and other carbon markets or trading activities, which have since also being translated into specific policies and guidelines.

One of the key objectives of the NCCS is clearly to ensure that the country benefits from global climate change mitigation and adaptation financing opportunities. The strategy proposes the establishment of a National Climate Change Fund to ensure resources availability and also a special climate change window under Basket Fund to finance its implementation. However it fails to stipulate its actual budget costs and explicitly indicate the expected source of the fund-ing, hindering the effectiveness of its implementation, arguing that it is difficult to cost the necessary strategic actions needed to address climatic changes owing to uncertainty of climate change.

Tanzania ranks agriculture and food security as "the most vulnerable and important sector that is severely impacted by climate change and advocated that studies on the impact of cli-mate change in the sector and on food security be a priority activity" (NCCS, 2012). As a result, the government adopted the Agriculture Climate Resilience Plan (ACRP 2014-2019) in 2014. The agricultural sector, under the leadership of the Ministry of Agriculture, Food Security, and Cooperatives (MAFC), is in fact one of the few sectors that has responded directly to the call within the NCCS to develop sectorial climate change action plans (Meaghan et al., 2015). The Plan provides a roadmap for adaptation and mitigation of climate change impacts and identi-fies 4 priority actions in the sector: 1) improve agricultural land and water management, 2) increase yields through climate-smart agriculture, 3) protect the most vulnerable against climate-related shocks, 4) strengthen knowledge and systems to target climate action. The plan explicitly recognises

the role of weather and climate information in supporting climate resili-ence within the agricultural sector and focuses on increasing knowledge and strengthening systems to identify and prioritise climate action. However, alike the NCCS, the Plan fails to stipulate specific financial resources availability (Acosta et al., 2016).

In 2015, the Tanzania government further demonstrated its commitment to climate adapta-tion and mitigation goals by submitting the country's Intended Nationally Determined Contri-butions (INDCs) to the United Nations Framework Convention on Climate Change (UNFCC). The new climate change action plan is expected to enhance long-term resilience to the ad-verse impacts of climate change to sustainably secure Tanzania's productive and economic sectors.

Lack of awareness on climate change

Tanzanians have always struggled with unpredictable weather patterns in their livelihood strategies and economic activities and the realities of climate change are difficult to grasp without appropriate efforts at raising awareness. The NCCS identified the need to build the capacity of key economic sectors and relevant institutions to address climate change adapta-tion and mitigation. To this end, the government launched the National Climate Change Com-munication Strategy (NCCCS 2012-2017) in 2012, which provides a framework for delivering key messages on climate change issues at all levels using systematic and effective approaches.

However, no evaluation to determine the implementation and effectiveness of awareness cre-ation programmes has been done, and recent studies stress the limited knowledge and skills held by stakeholders at national and local levels to deal with climate impact (Acosta et al., 2016). This covers the capacity to both understand and explain in simple language what cli-mate change is, how it can be tackled and who is responsible for doing it. Stakeholders in-clude: both central and local government authorities, civil society, and the private sector. It also highlights how documents related to climate change tend to be written in English - a lan-guage which the majority of local population is not proficient in - instead of Kiswahili. Hence this low awareness trickles down to local people, in particular vulnerable communities, as well as how different social groups are affected differently.

Moreover, the lack of understanding of the scope of climate change can be evidenced by how the issue has effectively been articulated in existing policy documents. It appears that climate change has mainly been narrowed down to an environmental issue, and policies have there-fore failed to explicitly address the concerns pertaining to climate change and its adverse im-pacts on various economic sectors. Most policies were drafted in the late 90s and early 2000s, including the National Land Policy of 1995, the National Forest Policy of 1998, the National fisheries Policy of 1998 and the National Water Policy of 2002. Whilst climate change issues were acknowledged at the time, the later only gained critical importance and were recognized as a key challenge later on. This was a missed opportunity to incorporate plans for climate change adaptation beyond environmental issues (Acosta et al., 2016).

Effective implementation of climate change policies will therefore require enhancing country-level institutional capacities to significantly build comprehensive knowledge on climate change across levels, as well as increasing awareness among vulnerable communities, with the view of investing in adequate adaption responses to climate change.

Structure of government's response

The overarching policy documents responsible for creating and maintaining the institutional structures and mandate through which gov-

ernment entities respond to climate change date to the late 90s (National Environment Policy 1997) and early 2000s (Environment Management Act 2004). Consequently, all climate change issues are addressed using the existing environ-mental institutional framework. According to the 2004 Environmental Management Act, the Ministry in charge of the Environment - currently under the Vice President's Office - takes on the national leadership role on climate change, thus setting the course of subsequent action on climate change in Tanzania. This has implied a disconnect from the Ministry of Agriculture, Livestock and Fisheries (MAFC), which deals with the most vulnerable sector affecting liveli-hoods of the vast majority of Tanzanians. The government partly addressed this shortcoming by developing the Agriculture Climate Resilience Plan in 2014. However, the main reliance on an institutional architecture developed to address environmental issues may not be sufficient to integrate climate change issues in the plans and programmes of all the relevant sectors (Trujillo et al., 2014), and incorporate systematic plans for climate change adaptation at all levels of government policies. The lack of clear distinction between environmental and cli-mate change issues has understated the challenges of climate change which are considered to be broader than environment challenges.

Moreover, poor coordination of climate change actions from the national level to the local lev-el remains a challenge and create a disconnect hindering the implementation of climate change actions.

The 2012 National Guidelines for Mainstreaming Gender into Climate Change Adaptation (NGMGCCA) translates Tanzania's international and national commitments for effective gen-der-equitable climate change actions. The main objective of the Guidelines is to provide a sys-tematic approach in mainstreaming gender into climate change adaptation related plans, poli-cies, strategies, programmes and budgets for key ministries, institutions and private sector. It states the importance of working towards equal participation in decision-making processes, equal access to resources and opportunities and to utilizing the gender-differentiated knowledge, skills and experience in climate change adaptation and mitigation. It describes women's challenges in realising gender equality in sectors including agriculture and food se-curity, water, forestry, human settlement, human health, energy, infrastructure, and educa-tion. Within the agriculture sector, the important role of women as farmers in going food for the family, and in fisheries as artisanal fish processors and traders, is highlighted.

However, the analysis appears oversimplified. Men and women are presented as a dichotomy, whilst needs, constraints and opportunities of other social groupings are not taken into con-sideration. Women's vulnerability to climate change - difficulties in accessing (formal) train-ing, land, credit, and increased burden of fetching water - is overly highlighted, whilst men's specific vulnerabilities are overlooked. In this sense, gender is equated mostly to women's is-sues, presenting a narrow approach to gender and leaving untapped the important role that men could have in closing the gender gap in agriculture and natural resource management (Acosta et al., Nov 2016).

Furthermore, the Guidelines departs from the recent government trend to promote so-called climate smart agriculture (CSA). The former points out how women hold "a vast traditional knowledge and coping strategies that could be a resource in dealing with climate change" (NGMGCCA, 2012). It recognises women as agents of change in disaster prevention, adapta-tion and mitigation, through their wealth of indigenous knowledge, skills and experience in natural resource management, including sustainable forest management, preservation tech-niques and storage. Whilst Tanzania, unlike other

African countries, have tended to give their backing to a lesser degree to the concept of green revolution, the government in collaboration with development partners and the private sector announced in May 2017 the launch of the National Climate Smart Agriculture (CSA) Guidelines, framed notably according to the Nation-al Climate-Smart Agriculture Programme (2015–2025). The Guidelines reiterates the gov-ernment's commitment to make the agricultural sector "climate-smart" by 2030 (Rioux et al., 2017). Although gender considerations are to be integrated into CSA technologies, there is a growing body of evidence that the true purpose of these initiatives is the advancement of ag-ribusiness based on commercial, large-scale agriculture, to the detriment of the majority of the population, i.e. women peasant farmers. The new agenda promoted by the government will do little to address the structural constraints and unequal power relations, which prevent women from fully contributing to climate-related planning, policy-making and implementation.

Findings

Field study area

The field research of this study was carried out in Luale, Nyandira and Tchenzema villages (wards) in Mvomero district within the Uluguru Mountains in Morogoro region, eastern Tan-zania. The average annual rainfall in the area is approximately 1000mm. The area's drainage system mainly occurs through rivers that serve as sources of water for agriculture and domes-tic uses (Mkonda, 2014). The rainfall distribution pattern is with the main rainy season from October to May (in Tchenzema and Bunduki), and from December to April in other areas mostly those around Mizungu Mgeta (Kimaro et al., 2001). The peak rainfall occurs in April in most places in the region, with the high-altitude areas receiving more rainfall than the lower areas (idem). Some regions in Tanzania, such as Dodoma, lower Morogoro and Singida, have one rain season.

Research participants and methods

The research areas were suggested by MVIWATA and participant farmers are thus MVIWATA members. MVIWATA is a national farmers organisation, which brings together smallholder farmers from all regions of Tanzania with the aim of creating a common voice to defend the economic, social, cultural, and political interests of smallholder farmers. Founded in 1993, MVIWATA is also a member of La Via Campesina. For the purpose of this study 17 farmers - men, women and youth (in minority) - were interviewed, including one group discussion in Luale. However, individual interviews were given priority. Some farmers were interviewed at their plots for the purpose of explanation, demonstration and observation, and other at home.

Climate Change: reasons and consequences

All respondents affirmed that they have witnessed a dramatic change in the climate, which has impacted negatively their farming and consequently their livelihoods. Farmers attributed weak yields, unreliable rainfalls, and the outbreak of pests and "strange" insects to climate change, as well as loss of vegetation on the mountains. As per the causes of the changing cli-mate some farmers pointed to deforestation – by farmers – and population growth. According to a respondent, "since the population is growing and there is need for settlement, people are clearing new areas for cultivation and houses".

Temperature increase has affected crops like beans, maize and cowpeas, which has forced farmers to relocate to new areas. New crops like macadamia were introduced to compensate for the low productivity of other crops. Global factors, such as over production and consump-tion and extractive industries, were not mentioned by farmers.

Concepts like adaptation and mitigation were rarely used by farmers during interaction.

Land availability

Due to their location – mountainous area, located approximately 300m above sea level to a peak of 2600m above sea level – farm lands are scarce and located in areas with difficult ac-cess to farmers. In Luale, Nyandira and Tchenzema farm fields are generally far away from households and land is too steep, which makes any local irrigation system very difficult. Ac-cording to a local extension officer, another factor for land scarcity is that "farmers overuse the small lands they have and the land gets exhausted". He added that there was a lot of com-petition among farmers to access land. "Competition" for water was also mentioned; due to population growth and reportedly densely populated area, it is said that local government es-tablished rules for the use of water in the region.

Due to land scarcity, some land conflicts between villagers were reported, but there was no reference to conflict between local farmers and companies. Farmers hardly know how much land they have in total since their small plots are spread out.

Corporate seeds and industrial fertilizers

As mentioned above, the government of Tanzania has been promoting hybrid seeds, industrial fertilizers and pesticides. Indeed some farmers in Luale, Tchenzema and Nyandira had al-ready used some of these inputs, which they had paid for partially. Since the cost of these in-puts remains high for farmers, even with government subsidies, not all farmers can afford them. Although the numbers of farmers buying – or forced to use – hybrid seeds and chemi-cals tend to grow, in part because of the devaluation of the land (erosion, infertility) and the difficulty to carry sacs of organic manure from homes to the fields, the majority of local farm-ers still relies on local systems.

Regarding the difficulty in transporting compost, one farmer said: "I would like to use manure and compost, but it is easier to carry those small sacs of fertilisers that we get from shops to the hills".

Farmers that get the subsidies are not well informed about those inputs and are not well trained on how to use them. This is probably the reason why even MWIWATA has facilitated access to some hybrid seeds, fertilizers and pesticides, teaching farmers how to apply them correctly. A MVIWATA agriculture officer said: "we teach them how to avoid incorrect use of fertilizers and pesticides to preserve soil fertility". MVIWATA, however, tell farmers not to abandon local and non-commercial seeds in order to maintain seed sovereignty and sustainability.

According to a local government extension officer in Langali – where the government agricul-ture department responsible for Luale and Tchenzema is – government is aware of the limita-tions and risks of hybrid (and GMO) seeds, whilst also stating: the government "knows what it is doing. The government would never bring something dangerous for its people". The officer recognizes nevertheless that local food systems and farming practices, such as agroecology, would be the best option for Tanzania, but it had to be embraced by the (central) government. He went on to say that in Tanzania "every leader comes with his own agenda and priority. The current minister of agriculture in Tanzania is pro-GMOs". He remembered that "during Mwa-limu [Julius Nyerere]'s era the government was pro-agroecology, using our resources. Later came new leaders to change it. We, the people, are forced to follow the rules of the leadership".

In Tanzania hybrid seeds are sold (and the sector controlled) mostly by, among others,

the following companies: PANA and Syngenta for maize; MONSANTO and East Africa Seed for vegetables.

Use of techniques for "adaptation"

MVIWATA has implemented some projects in the area to promote "modern and good agricul-ture practices" under the Malimbichi project implemented in Mvomero for three years. This included installation of demo plots for vegetables such as tomatoes. Tomatoes are considered good for household income.

MVIWATA also started teaching agroecological methods to its local farmers through its training program that produce 120 promoters yearly. Methods trained including planting, control-ling pests, use of non-industrial fertilizers, and ways of combating erosion. Many of them told the research team that they had been engaging in trees plantation to avoid erosion, protect some crops from heavy sun hit and avoid quick water evaporation after rains and irrigation, where applicable. Mangos and avocados were said to be more suitable to current climate in the three villages and had acceptance at the markets.

The villages visited did not practice such a diversity of new techniques as the areas visited in Uganda. One specific example (in Uganda) was the use of tree and corn waste to fertilize the soils. Leaves and corn stalks are solely used as feed in Tanzania.

In plots that are not too steep, some water channels are opened to allow the flow of water.

Some farmers believe that the use of their own seeds was a good practice towards adaptation. A woman farmer who said she had never bought seeds from shops, but instead either selected and saved her own seeds from harvest or got seeds from fellow farmers, said: "I use my own seeds to be sure that they germinate. With those other seeds, you never know the outcome and they are expensive".

Main crops

Most of the crops grown by local farmers in the villages are for markets. Those include beans, maize, pigeon peas, sweat pepper, tomatoes, onions, and Irish potatoes. During the period of the field visit this was not seen, but sunflower and sesame crops are also produced in the re-gion by local farmers. All visited farmers had small plots in their homesteads in which they generally produce food crops (mostly vegetables) and keep small animals (livestock). Women were in most cases, but not always, producing food crops and male farmers cash crops. This indicates the existence of gender-division for crop production.

Gender aspects

The UNFCCC recognizes that women commonly face higher risks and greater burdens from the impacts of climate change, as they are most reliant on natural resources for their liveli-hoods. Whilst Tanzania has undoubtedly acknowledged and made efforts in mainstreaming gender in its national policies and strategies to address gender inequalities in relation to the effects of climate change, the proposed frameworks do not seem to have the potential to dra-matically change or address the current gender gaps in agriculture and natural resource man-agement, even less so under a changing climate (Acosta et al., Nov 2016).

In a group discussion in Luale village, men participants were arguing that climate change af-fect everyone similarly, while it was clear to women participants that the consequences were much harder for women farmers. One woman said: "we are the ones looking for firewood, wa-ter in distant places and we still have to carry the burden of domestic work". Even in relation to access to

land in the context of scarcity, male farmers are more at an advantage.

Final remarks: Agroecology and food sovereignty

Agroecology and food sovereignty consciousness is rising in Luale, Nyandira and Tchenzema. Farmers are aware of the benefits of a farming system that protects nature and biodiversity, and do away with chemicals and corporate seeds and inputs. Can there, however, be agroe-cology in Mvomero? This question is similar to Tania Murray Li article´s title "Can there be food sovereignty here?" (2014), a provocative article in which the author expresses skepticism about the idea that food sovereignty could be achieved everywhere. Drawing on long-term field research in highland Sulawesi, Indonesia, she explains why farmers switched from food to mono-crop cacao production and outlines their reasons for the switch, their struggles to make ends meet on small plots of poor-quality land, and the rapid polarisation that soon arose (idem, 205). The point Li makes is that adverse climate and agroecological conditions may force farmers to produce mono-cash-crops for survival instead of diversified food crops.

Land in Luale, Nyandira and Tchenzema is not as degraded and scarce as in the case of highland Sulawesi. However, there are still several obstacles to building a fully agroecological food system in these areas. For example, farmers see themselves in a situation where combination of food and cash-crops is a strategy to obtain basic income and ensure social reproduction of the households. Unlike other peasant farmers in Tanzania – and in many African countries – farmers in Luale, Nyandira and Tchenzema sell most of their production. One farmer testified that if he harvested 5 sacks of maize, he would sell 3 to 4 sacs and keep the remainder for family consumption.

MVIWATA is working with its members across the country to amplify agroecology and build food sovereignty. This can be seen in the organisation's documents, strategic plan, as well as in practice in various villages in the country. While consciousness and practice of agroecology continues to rise in Mvomero, and across the country, the one main challenge to the amplifica-tion of agroecology in Tanzania will surely revolve around how it can be interiorized and uti-lized by Tanzanians, in its diverse local markets.

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