2 Can and Should Cooperatives Manage Water, Energy and Forest Resources in Tanzania?

Mathias Sylvester Nkuhi

2.1 Introduction

Cooperatives are among the oldest enterprises in the world, having existed since the dawn of humanity. The enterprises have been and are likely to be at the epicentre of mankind socio-economic development. For a considerable period, the enterprises' roles were exclusively member-centric, confined mostly on advancing members socio-economic interests without extending the benefits to the surrounding communities following the enshrining of the concern for community principle, a shift in terms of thinking came into place, where cooperatives are thought of as institutions that could cater not only for the needs of the members but also for the surrounding communities.

This chapter explores whether cooperatives can and should assume responsibility for the management of natural resources as part of role expansion. It is a continuation of the author's study on what cooperative enterprises may undertake under the umbrella of the principle of concern for community with an emphasis on the socio-economic needs of non-members. However, the analysis is limited to natural resources management in Tanzania. The author wondered whether Tanzania's institutional, legislative and policy frameworks encourage cooperative societies to carry out their responsibilities for managing natural resources. The discussion is triggered by explanations on the cooperative organisation role evolution from being member centric to encompass concern for community. It then gives special attention to the enterprises' roles in natural resources management. In this, the chapter explains why cooperatives fit in the picture using best practices and examples of the enterprises' endeavours to meet the economic progress of members while satisfying their socio-cultural interests and protecting environment.

The chapter makes a critical analysis of Tanzanian cooperative and other natural resources policies and laws and questions surrounding the enterprises' authorities and legal environment in natural resources management. Pertinent is the silence of such laws and policies on the role of cooperatives in management of natural resources. The discussion is confined mainly to water, forest and energy resources where the chapter observed scanty and/or non-existent initiatives on use of cooperatives. In accordance with best practices, several

DOI: 10.4324/9781003662952-3

recommendations are made, including reviewing cooperative and other laws to locate cooperatives at the closest natural resource management hub. The chapter underlines opportunities that are accessible and the beneficial ripple effects that are likely to result from the enterprises' central roles in the management of natural resources.

2.2 Cooperatives Role Evolution

Cooperative societies' role evolution is crucial to explaining the enterprises' place in natural resources management. The evolution not only explains the enterprises' traditional member-centric role but also uncovers realities that necessitated their role expansion to address surrounding communities' needs. It is in this section that the nexus between cooperatives and concern for community principles is expounded. The section begins with the examination of the traditional understanding of cooperative roles and their historical member-centric orientation. It then proceeds to trace the normative shift which led to the adoption of the principle. The chapter demonstrates how this development widened the enterprises' roles, allowing them to undertake roles beyond exclusive members' interests. The discussion further illustrates the growing significance of the principle, especially with its recognition under international policy frameworks and global development agendas. Global goals are now set relying on a cooperative enterprise ability to address mankind needs within and beyond the surrounding communities. The major argument set forth in this section is that, with the concern for community principles, cooperatives are institutionally and normatively positioned to respond to a broad spectrum of community social, economic and cultural needs, including the mitigation of environmental disasters.

2.2.1 Cooperatives as Member-Centric Organisations

Cooperatives, also known as cooperative societies, are enterprises that are member based and have been so for time immemorial. Characterised as autonomous association of persons voluntarily united to meet their common economic, social and/or cultural needs, cooperatives are unique enterprises whose roles to poverty eradication need not to be reiterated. The enterprises' significance is recognised in agriculture, agricultural produce marketing, fisheries, extraction (mining in particular), dairy, savings and credit, housing and many more industries/sectors. Cooperators' livelihood improvement is part and parcel of socio-economic advantages of forming and operating cooperative enterprises. Members in the enterprises are united with a common bond. This was the initial thinking on the scope of membership. Those with common needs came together and formed an enterprise for the purpose of addressing such needs. History suggests that when the Shore Porters Society was formed in 1498 in Aberdeen Scotland, it was formed by porters who wanted to address their social and health issues. When a mutual insurance

company was formed in the United States of America in 1752, it was simply Benjamin Franklin and his fellow firefighters seeking to protect themselves from dangers that fire may cause to them.

The list continues with the Fenwick Weavers Society of Ayrshire, which was formed in 1761. The weavers formed the Society for the socio-economic benefits of the members. They united forces, as weavers, purchased in bulk (food and books) and made the goods available to the membership at affordable rates. The cooperative enterprise member-centric position was not confined to consumer cooperatives only. Early credit cooperatives unions had also manifested their focus on their members. In Greece, for instance, craftsmanship unions were established in 1762 to provide credit to members.

The Rochdale Pioneer Society, which is also regarded as a prototype society, elaborates further on the point that cooperative enterprises were formed for the benefit of members. The pioneers, when faced with the high prices of food and encountered challenges of affordable housing, decided to open a consumer shop for themselves where they initially were able to have flour, oatmeal, sugar and butter at affordable prices (Holyoake, 2016). This member-based character for the cooperative enterprise was common amongst the early Germanic, Indian, Israelite and Africa's cooperative movement. The 1846 Raiffeisen Society of Bread and Grains in German; the 1904 India's Titur Agriculture Credit Cooperative Society; the 1921 Moshav's in Israel; and the 1920's Agriculture cooperatives in Africa. It is therefore fair to sum up that cooperatives have mostly been member-centric enterprises, formed to address members' shared socio-economic and cultural needs. Since the times of the Shore Porters of Aberdeen, cooperatives have consistently prioritised their members' livelihood improvement. The member-centric principle was the cornerstone of cooperative enterprises' collective prosperity across diverse economic sectors.

2.2.2 Concern for Community and Widening of the Enterprise Role and Scope

Cooperatives are identified mainly by their unique values and principles. Cooperative values and principles are none but the moral codes and guidelines, respectively (ICA, 1995). It is the principles which guide the putting into practice of values. The evolution, and subsequently, universalisation of the principles has a long history, beginning with the adoption of the Rochdale Pioneers' (the prototype society) principles. Seven principles were initially adopted by the International Cooperative Alliance (ICA) in 1937 (Lambert, 1965). The principles were meant to guide cooperative enterprises to achieving member-based set goals. The same was the case with the revised six principles that were adopted in 1966. The principles primarily focused on open, voluntary membership, democratic governance, limited return on equity, surplus belongs to members, education of members and public in cooperative principles and cooperation between cooperatives. In 1966 the ICA revised

the principles leaving out two principles, namely political and religious neutrality and cash trading (no credit extended). In addition, the ICA adopted a new principle, namely cooperation among cooperatives. Formally, although no conclusive evidence was advanced, the long understanding that cooperatives are member-based enterprises was "disturbed" in 1995. A century after its existence, the ICA added concern for community principle into the previous six principles making it the seventh. It was this addition that made a shift in terms of the enterprises' scope of roles. The addition is referred to as the newly emerged guideline on cooperative roles towards non-members and/or surrounding communities for "cooperatives are enterprises that can address problems beyond those of their members" (Nkuhi et al., 2023).

The international community praised and welcomed the expansion of cooperatives' scope. Cooperative societies and the socioeconomic demands of the people around them and beyond were of interest to the UN and its agencies, particularly the ILO. In 2002, the ILO underlined the potential of cooperatives in responding to social and economic needs of the community (ILO, 2002). The UN, on the other hand, has had an agenda entitled cooperatives in social development from 2003, which came to replace the initial agenda on the role of cooperatives in light of the new economic and social trends.

There are more than 10 UN General Assembly (UNGA) resolutions on cooperatives in social development, the latest being that of 2021. Under these resolutions, cooperative enterprises are looked at as enterprises that promote the fullest possible participation in the economic and social development of all people, including women, youth, older persons and persons with disabilities, and according to the UN, they are the major factor for economic and social development. The statement cuts across the preamble to these resolutions: UNGA Resolution 58/131 of 22/12/2003; UNGA Resolution 60/132 of 16/12/2005; UNGA Resolution 62/128 of 18/12/2007 (in which the scope of people was expanded to cover indigenous peoples and roles expanded to poverty eradication); see also: UN General Assembly Resolution 66/123 of 19/12/2011; UNGA Resolution 58/131 of 18/12/2013 (adding the role of eradicating poverty and hunger).

The 2017, 2019 and 2021 resolutions similarly affirm this recognition and further extend the roles to encompass disaster management. Cooperatives are underlined as enterprises that can address conflicts through peace building roles (UN, 2017, 2021). They are the enterprises placed at the centre of disaster management with a view of addressing food insecurity and pandemics as well as engaging into climate change mitigation and adaptation (UN, 2023). The next section explores the nexus between the cooperative enterprise, concern for community and roles on natural resources.

The section main argument is that concern for community goes beyond cooperative members' needs and requires cooperatives to undertake major roles to address surrounding community needs including ones on energy, forest and water. It is also argued that the cooperative enterprise offers a best

model for natural resources management (including energy, forest and water resources) because of the determination to solve common problems through joint actions. With cooperatives, free riders' tendencies are dispensed with and inequalities dissolved.

2.3 Cooperative Enterprise, Concern for Community and Natural Resources

2.3.1 Concern for Community: Roles on Natural Resources

There is therefore a clear nexus between the developments discussed above and the role of cooperative enterprises in natural resource governance. Any meaningful engagement of cooperatives in preservation, protection and/or management of natural resources must be rooted in the principle of concern for community. Cooperatives occupy a pivotal position in the UN Agenda 2030 (UN, 2015). The agenda sets out 17 goals. Goals 6, 7, 13, 14 and 15 are pertinent to the present discussion given their direct relevance to natural resource management. They address water, energy, climate action, life below water and life on land, respectively.

Goal 6 seeks to ensure availability and sustainable management of water resources. Goal 7, on the other hand, seeks to ensure modern energy is available, affordable and managed sustainably. As for Goal 13, the globe seeks to ensure urgent measures are taken in order to combat climate change and its impacts. For the remaining two goals, that is, goals number 14 and 15, they aim at conserving, sustainably, water and land resources. Under Goal 14, primacy is on conservation and sustainable use of oceans, seas and marine resources; under Goal 15, the protection, restoration and promotion of sustainable use of terrestrial ecosystem, ensuring there is sustainable management of forests, combating of desertification, reversing land degradation and biodiversity losses. Partnership is key to implementing Agenda 2030. Multiple actors have roles to play in its implementation. Cooperative societies are referred to two times as private sector enterprises that have critical roles to play in the implementation of the Agenda. The Agenda acknowledges the diversity of the private sector and calls upon all enterprises within it, cooperatives expressly referred to, to apply their creativity and innovation to solving sustainable development challenges. Cooperatives can contribute to realisation of 12 sustainable development goals including one on sustainable natural resource management (Wanyama, 2016).

They can do so in a variety of ways including ensuring the resources are not depleted, providing for local people to find solutions to environmental change, managing the resources and diversifying their activities to embrace green economic ventures (ILO and ICA, 2014). Given their diverse nature, they can indeed contribute to ensuring natural resources are not depleted. They can do so, as rightly pointed out by the ILO and the ICA, by sustainably managing the resources and embarking on green economic ventures. Cooperatives can

contribute to climate change mitigation and adaptation actions. As a form of social entrepreneurship, they have a role in combating the climate crisis in Nordic agriculture (Kujala et al., 2025).

They also practice climate-smart activities. For instance, in Bangladesh, cooperatives employ agroforestry, diversified agriculture, water conservation, efficient irrigation and livelihood diversification to not only enhance food security, optimise resource use and stabilise incomes but also address immediate climate adaptation needs (Nipa, 2024). In Ethiopia, villages with cooperatives have proved to adopt more climate change adaptation practices than farm households in villages without cooperatives (Kahsay and Endalew, 2025). More evidence of these practices is presented in greater detail in subsequent sections of this chapter. At this point, it is fair to conclude that the concern for community principles formally recognises cooperative societies' roles in natural resource management. There are practices increasingly observed in both developed and developing countries. The next section ventures into why cooperatives are particularly suited for such roles.

2.3.2 Why Cooperatives? Explanations from Literature

Literature provides evidence of cooperatives' engagement in the management of natural Common Pool Resources (CPRs) and most especially the village CPRs. Singh and Ballabh argue that CPRs contribute to the rural economy in a variety of ways, including supply of fodder and grazing space, water for various purposes, raw materials for different rural industries, as well as silt and mud for house construction (Institute of Rural Management Anand, 1992). Besides, CPRs such as dry beds of rivers/tanks used for off-season cropping and tanks used to collect irrigation water play an important resource-augmenting role in the private property resource-based farming system.

CPRs also contribute greatly to the impoverished man's nutrition by facilitating his food gathering from forests, ponds and other sources, and strengthening his self-provisioning system. The forest and other CPRs were used and are still being used as buffers, particularly in a fragile environment, to support life. They help in regaining productive capacity and thus provide stability to production systems in such environments. Additionally, CPRs contribute substantially to the income of rural poor households. The reasons for such engagements are multiple. Most authors look at the common goal motive for the creation of cooperatives as a critical factor for the organisations' interventions in natural resources management.

The resources are for the communities, and they are thus common to all. Singh and Ballabh (1992) posit that a social structure, like that of a cooperative enterprise, is critical to manage the resources because it embodies common goals, concerns and joint actions. Patil and Lele, views cooperatives as a collective action for adequate, timely and predictable supply to beneficiaries of irrigation facilities. Palakudiyil (1992) reiterates the need for joint action insisting that is crucial whenever difficult climatic conditions strike our

communities citing how pertinent it was with lift irrigation cooperatives in some parts of India.

Cooperative management of natural CPRs was regarded as the most appropriate of all forms of management in most situations (Ballabh and Shah, 1989). It is distinguished from management by private individuals and/or public agencies. While private individuals may have their private agenda leading to inequalities, public agencies operations are coupled with top-down standard procedures making them to focus on accountability to the higher authorities' interests on use of inputs with less focus on outputs. It was also evident that there were disappointments resulting from public management of CPRs, pointing to, among other reasons, the decline of forest resources and insufficient utilisation of water resources (Ballabh and Shah, 1989).

Cooperatives offer an ideal model for balancing the use and management of natural resources, as they are composed of the local people directly affected and can effectively address inequalities between all beneficiaries. Ultimately, it all goes back to collective actions by local people as a means of achieving collective goods. Ballabh and Shah uses theories by Buchanan and Tullock (1965) and Olson (1971) explaining the behaviour of a cooperative society as a firm where Buchanan and Tullock asserts that in view of separate individuals participating in collective actions with different and often conflicting interests and purposes, "any theory of collective choice must attempt to explain or to describe the means through which (the) conflicting interests (of individuals) are reconciled". On the other hand, Olson's theory is focused on the belief that voluntary groups can provide collective goods in a wide range of areas, including natural resources despite the free riders' challenge (Olson

Mishra, in agreement with joint actions through a cooperative model, argues that Hardin's theory of the tragedy of the commons is negated where the local community develops a democratic and sustainable institution for the management of the common property resource (Institute of Rural Management Anand, 1992).

In addition to reasons already discussed, Ballabh and Kramer (1992) believe that a successful cooperative in natural resource management "could reduce these transaction costs". The belief is also shared by Ballabh and Shah. Ballabh and Shah (1989) argue that in the context of management of natural CPRs, a group would choose a collective mode of action when each of its individual members finds it profitable to act collectively rather than individually, that is, when his perceived costs are less than his perceived benefits from the collective action. Furthermore, management of natural resources by cooperative enterprises is considered as ideologically and morally superior to other forms of organisation because of the enterprises' democratic governance structure and control and the belief that distribution of gains would be fair and equitable (Ballabh and Kramer, 1992).

Because of this ideological and moral superiority, cooperatives have been promoted in a variety of situations, particularly when all other forms of organisation failed. There are beliefs that cooperative institutions are able

to sustainably manage resources, including groundwater resources. Retnam and Nair (1992) posit that co-operative management appears to be a possible institutional mode of ensuring judicious use of scarce groundwater on a sustainable basis besides fiscal and legal measures that have to be designed and implemented by the state in order to conserve groundwater.

To Moench, there is either an absence or difficulty in creating factors to encourage effective management of the common resources by local groups. As a result, identification of institutions that can effectively implement groundwater management actions is perhaps the most critical factor determining the societies' ability to address emerging problems. To Moench, the existing rural co-operatives organised for purposes other than groundwater management may represent one such institutional possibility. He looks at such cooperatives as offering advantages in technical capacity development, provision of extension services, advice and credit to small cooperatives (Institute of Rural Management Anand, 1992).

At this juncture, it is fair to conclude that literature recognises cooperatives as an effective model for CPRs management largely due to their democratic structure, collective action orientation and local membership which allows them to easily address inequalities, balance usage and foster sustainable practices. The discussion now moves to evidence of cooperatives' engagement in natural resources management roles.

2.4 Evidence of Cooperatives' Engagement into Natural Resource Roles

2.4.1. The Pre-1990 Special Reference to India

Even though the adoption of concern for community principle is explained as the formal triggering event for cooperative enterprises' roles in natural resources management, there exists evidence of societies' engagement with such resources prior to the adoption. These are from different parts of the world. However, the author makes a special reference to initiatives that took place in India from 1940s involving water and forest resources. The special reference to India is crucial to inform how cooperatives have been engaged into natural resources management. It is critical to inform Tanzania's and other countries' cooperative development in the area. Village Cooperative Forest Societies (VCFS) were operational in some parts of India by 1940s (Agarwal and Singh, 1992). They represented what literature described as an organisational innovation in co-management of natural forests.

Their establishment in India was mainly to protect, improve and regenerate the forest in order to meet village requirements for forest resources (such as timber, fuelwood and fodder, to increase grazing and fodder resources by rotational closure and by planting fodder and economic crops (forest products)) as well as to prevent erosion and denudation of the forest areas. VCFS were considered necessary to reverse the impacts of British colonial forest policies and

legislation as responsible for alienating village and forest communities from management of their forests. Cooperatives turned wasteland into productive lands through wasteland afforestation. At the centre of these successes were the tree growers' cooperatives. These came into being following the establishment of the National Tree Growers' Co-operative Federation (NTGCF).

The NTGCF had pilot projects in five states: Gujarat, Andhra Pradesh, Orissa, Karnataka, Rajasthan and Uttar Pradesh. According to Saxena (1992), India had, by early 1990s, three models, namely, the Anand Pattern or RVMSL model promoted to the Rashtriya Vriksha Mitra Sahyog Ltd., the IFFCO model promoted by the Indian Farmers' Fertilisers Cooperative Ltd and the Masik model promoted by Shri Viriayak Rao Patil, which seem to be relatively more important. Multiple primary tree growers' cooperatives were established under these models.

There were also cooperatives specifically on irrigation, reservoirs and marine fishery management from the 1960s. Sub-surface drainage cooperatives were also thought of as solutions to challenges of soil erosion (Datta and Joshi, 1992). The cooperatives were a result of common needs of affected farm households. They saw the joint need of adopting various components of drainage technology and other agronomic practices to improve the soil, share or pool the money, labour or both. It was also part of the necessary initiative to provide access to dispose of the drainage effluents.

There were also water users' cooperatives and canal irrigators' cooperatives. Irrigation cooperatives were successful in Gujarat, Andhra Pradesh and Maharashtra. The primary objective, in the case of lift irrigation co-operatives, was the ensuring of efficient and equitable distribution of water among its members. The Mohini Water Co-operative Society (MWCS), in Surat district of Gujarat is cited as likely the first water users' cooperative in India having been registered in 1978 and entering into operations in 1979. The MWCS was described as a successful cooperative as it was able to provide members with secure, adequate, assured, equitable and timely supply of water from a public canal system. According to literature, the services offered by MWCS were far beyond the non-dependable services under the management of Irrigation Department (Sing and Ballabh, 1992).

By the early 1990s, India had many successful canal irrigators, co-operative societies and cooperative lift irrigation societies in several states. Literature described farmers and water users' cooperative interventions in irrigation as far beyond satisfactory in some canals in Gujarat in the 1990s. They were beneficial to the farmers in the areas as they rose standards of living amongst them. However, their success was coupled with challenges, including dependence on donor-funded projects, water charges payment conflicts (free riders) and increased intensity in production affecting capacity. Specifically, regarding forest resources, the negative attitude of the Forest Department was underlined amongst the reasons for VCFS bad shapes and ultimately their silent decline (Agarwal and Singh, 1992). India's examples are unique and important. However, it is the post-1990s development which explains how

cooperatives found themselves at the centre of natural resource management in different parts of the world and how crucial their engagements are.

2.4.2 The Post-1990 Developments

There are examples of cooperative societies which are already into natural resources undertakings in some parts of Africa, the Americas, Europe and Asian countries. In the area of forest resources, there are cooperatives which are fully engaged with management, reforestation, afforestation and sustainable forest resources production. The Lamac Multipurpose Cooperative is one such societies in the Philippines. The enterprise has developed a 48-hectare reforestation area where 25,000 seedlings of rare species plants have already been planted by members (Verma, 2023).

There is yet another important cooperative in the Philippines, namely the PH Haiyan, whose work on reviving the mangrove forests cannot be ignored. The PH Haiyan work seeks to prevent devastating effects of big typhoons which affected the city of Tacloban. In Fiji, 4120 hectares of tropical rainforest is being conserved by the Drawa Black Forest Community Cooperative. They enjoy multiple other benefits from conservation, including generating revenue from beekeeping and sale of carbon credits (about 18,800 carbon credits per year) (Verma, 2023).

In India, two cooperative societies are worth a reference namely the Indian Farmer Fertiliser Cooperative (IFFCO) and the Indian Farm Forest Development Cooperative (IFFDC). The societies' role in forest resources is notable. The IFFCO planted 1,054,120 trees in 2025 alone as part of its efforts to become a carbon-neutral cooperative. The cooperative planted 700,000 neem trees in a single event in 2019 and 1,000,000 neem trees as part of longer-term efforts. The IFFDC, on the other hand, is turning wasteland into forests in Rajasthan, Uttar Pradesh and Madhya Pradesh. By 2025, the IFFDC is reported to have planted 14,100,000 trees by 2025. There are other examples in the Americas and Europe. In the Amazon's National Forest of Papa Jose, a cooperative soceity, namely the Mista Da Flona Du Papa Jose, implements a community forest management role (Sousa et al., 2019). In Finland, the Finnish Metsaliitto Cooperative, often described as a large-scale Finnish Forest cooperative, owns about 50% of the country's privately owned forests.

In the area of energy resources, the ILO highlights the pivotal role of cooperative societies in facilitating access to sustainable energy (ILO and ICA, 2014). It characterises them as enterprises that lead the way towards the adoption of new and renewable energy (particularly wind and solar energies) in most parts of the world. Generating renewable energy is cheaper, creates employment and comes with far lower emissions compared to non-renewable sources (Güney, 2019). In Denmark, cooperatives play a pivotal role in the generation of wind energy. They are part of the enterprises that contribute to the Danish government's efforts to reduce carbon emissions by 70% in 2030 (Barker et al., 2022).

Currently, half of the total 900 megawatts produced by wind power capacity is owned by cooperatives (Johansen, 2021; Tranaes et al., 2010). Another example is from Costa Rica where the Cooperativa de Electrificacion Rural de San Carlos or Coopelesca R.L. has invested in sustainable energy production as part of the country's initiative to sustain good environmental practices. With the up to 2021 statistics, the society had made electricity available to an area of 4770 km^2. (Moxom et al., 2021).

A similar type of enterprise exists in Australia, where sustainable and environmentally friendly energy-producing mechanisms are employed by the Hepburn Community Wind Park Cooperative to supply electricity to about 2100 homes. In the United States of America (USA), cooperatives own 42% of the nation's electric distribution lines, which cover almost 75% of the land mass (Wanyama, 2016). There are several other exemplary energy cooperatives in Germany, the United Kingdom, Japan, India and Bangladesh.

Success stories in some developing countries in the area of renewable energy are biomass energy-producing cooperatives. Where national electric supply companies have yet to reach all communities, cooperatives have stepped in to provide solar and biomass energies at household levels. They light homes facilitating important community economic, social and cultural activities. No accurate statistics are available in Tanzania, but it is safe to say that cooperatives are investing in renewable energy for their members and surrounding communities.

In water resources, the Coopelesca R.L. is again exemplary as its works extend to basin conservation and aquifer protection. It engages children and young people in planting trees with the intent of preventing global heat. Next to the list is the Cooperative League of Thailand, which is the National Apex Organisation of the Cooperative Movement of Thailand. It joins the list of cooperatives in Asia that work around water resources preservation. The League has a campaign on plant trees to save water with a slogan "one coop one tree" (Wanyama, 2016). In India, the Satara Water Cooperative in Maharashtra is cited as a relief to water parched village Panvan. The women-led society works to conserve water and improve the levels thereof.

Examples from both developed and developing countries demonstrate the crucial of cooperatives in addressing common human needs, particularly ones for renewable and clean energy, forestry for environmental protection, and water resource management. They also underscore the belief that the cooperative model is the best model for joint action and alienation of inequalities.

2.5 The Place of Cooperatives in Natural Resources Management in Tanzania

2.5.1 Mapping the Diverse Nature of Natural Resources in Tanzania

Tanzania, like many other countries of the world, is endowed with plenty of natural resources, forming part of 945,087 km^2. The discussion under this

section is confined to water, energy and forest resources. The main argument arising out of the mapping of the diverse resources is that there are many water, energy and forest resources that are not sustainably managed. Sustainable management of these resources depends on joint action by cooperators who share common needs and goals, and operate under principles and values that foster their bond with their enterprise and its activities as part of their life.

Water Resources and Challenges

Tanzania is endowed with numerous and diverse water resources in the form of rivers, lakes, groundwater aquifers, ponds, reservoirs and wetlands. The country is riparian to some of Africa's largest trans-boundary freshwater lakes, including Lake Victoria, Lake Tanganyika and Lake Nyasa (URT, 2019). According to recent statistics, Tanzania's lakes and swamps cover 5,439,000 hectares and comprise 5.8 percent of the country's surface area. There are 633 dams in the country, and the total capacity of large dams is almost 104,200 million m^3. The country is perceived to have adequate surface and groundwater resources compared to other countries in Africa for meeting its present consumptive and non-consumptive needs. Even with numerous, diverse and adequate water resources, the country encounters severe and widespread shortages in many areas.

The water shortage problem is likely to escalate as water demand in the county is around 40 million cubic meters (40 MCM) per year and the increase in population and socio-economic activities is expected to increase the water demand to 57 million cubic meters (57 MCM) per year in 2035 (URT, 2019). There is also a high potential of development of socioeconomic activities that require water, including irrigation, hydropower and industry. Although this is 45% of the total renewable water resources in the country, substantial measures of conservation of water sources, demand management and efficient water use are required now. Can cooperatives play any role in water conservation? Are there model enterprises that can sustain, in collaboration with water regulatory authorities, or independently, efficient water resources protection and use? These are questions that cooperators need to reflect on looking at examples from other countries most of which have been replicated here.

Energy Resources and Utilisation

Apart from water resources, Tanzania is endowed with diverse energy sources, including biomass, natural gas, hydro, coal, geothermal, solar and wind power and uranium, much of which is untapped (Kahangwa, 2024). Commercial energy sources, that is, petroleum and electricity, account for about 8% and 1.2%, respectively, of the primary energy used. Sadly, however, coal, solar and wind account for less than 1%. Besides, the Tanzania power sector is dominated by a single vertically integrated national utility,

Tanzania Electricity Supply Company Ltd (TANESCO). The contribution of non-hydro renewable energy for power generation is also low, accounting for less than 5% of the country's total generation. Most people are still into wood-fuel, which accounts for up to 90% of total national energy consumption. The remaining 2% is from electricity and 8% from petroleum products (Kahangwa, 2024). The tiny contribution of renewable energy connotes that there are avenues for the enterprise to invest and assist in the process, as is the case with cooperatives in some countries, including Denmark, Germany and Australia. The question remains, however, whether cooperatives can do so in Tanzania, under the current legal framework.

Forest Resources and Classification

Apart from water and energy resources discussed earlier, Tanzania has forest resources. The country's forest resources increased from 38.8 million hectares in 2003 (which was equal to 41% of the country total area) to 45.7 million hectares of forests (it had 38.8 which was about 41% of total area in 2003), which is about 55% of the total land area (Nzunda and Yusuph, 2022). However, forests are divided into four broad categories, which are closed forests, woodlands, mangroves and plantations (URT, 2002; John, 2023).

Forests play an important role in the livelihoods of Tanzanians. As noted earlier, it is estimated that more than 90% of the population uses wood for domestic energy. Forests also provide various non-wood products and are important for water catchment. Woodlands, for instance, serve as important habitats for a variety of animals and plant species. According to the Tanzania Forest Service Agency (TFS), over 10,000 plant species have been identified in Tanzania's forests. Like other resources, forest resources are under enormous pressure from human settlements and activities, such as illegal harvesting, fires and mining. These pressures have led to an increase in deforestation from an estimated 91,000 hectares per annum to 469,000 hectares per year (FAO, 2020).

Cooperatives present the best model for joint action by members and surrounding communities to address the pressures and ever-increasing deforestation. With cooperatives, collective actions are for the betterment of all, and they are understood as such by members, especially in addressing common needs. What remains unclear is whether the legal environment permits cooperatives to manage forest resources in Tanzania. And it is this question, together with the ones on energy and water resources that brings us to the discussion on the main question of the chapter, can and should cooperatives manage the three resources?

2.6 The Legal Environment: Water, Energy and Forest Laws

The discussion of the Tanzanian legal and policy environment of natural resources management is vital to discussing the position a cooperative

enterprise occupies in the management process. The overall management of most natural resources in Tanzania has, since colonial times to the present, been placed in different departments of the government (Nshala, 2000). Whether water, energy and forest resources follow the same pattern, that is a question that the present discussion seeks to respond to. Under the Water Resources Management Act (WRMA) 2009, water resources are managed at five levels, namely, National Water Board, Basin Water Boards, Catchment Water Committees, Local Government Authorities (LGAs) and Water Users Associations (WUA) (URT, 2019).

The WRMA 2009 inherited a system of use of water basins from the then Water Utilization (Control and Regulation) Act, 1974. There are nine Basin Water Boards currently that are fully responsible for regulating and planning water resources and uses within the basin borders (URT, 2019). Interesting and pertinent to the present discussion are the WUAs. These are entities established by the users of water resources within specified areas to, *inter alia*, manage, distribute and conserve water from the source used jointly by their members (URT, 2019).

WUAs are the critical part of the Integrated Water Resources Management (IWRM) approach and represent a broadly applicable model for water management at the local level (Richards, 2019). WUAs are promoted as key to the rolling out of IWRM principles through a participative process. There are multiple options for forming WUA, and the options are diverse in nature and operations, ranging from profit maximisation like water companies to the attainment of social equity like in cooperative societies (Sokile and Van Koppen, 2004). WUAs including cooperatives are into the management of water resources such as irrigation schemes. Irrigation farmers have been registering their irrigators' organisations under either the Ministry responsible for Cooperatives as Cooperative Societies or the Ministry responsible for Home Affairs as irrigators' associations (URT, 2010). WUAs are also recognised under the National Water Policy, which among other things recognised the need to put in place decentralised autonomous entities for management of water supply and sewerage services in all urban centres. According to the Policy, new entities of user groups and private cooperatives will be promoted and established (URT, 2002).

Energy resources are regulated by different legislation, including the Rural Energy Act No. 8 of 2005 and the Electricity Act 2008, Act No. 10 of 2008 (as amended by the Written Laws Miscellaneous Act No 2 of 2020). The Rural Energy Act establishes the Rural Energy Board, Fund and Agency under sections 6, 17 and 14, respectively, for the promotion of improved access to modern energy[1] services in the rural areas of Mainland Tanzania. The trio are meant to facilitate the provision of modern energy in rural areas for other reasons, such as productive economic uses, health and education, clean water, civil security and domestic applications. Private and community initiatives and involvement are key to realising sustainable development through modern energy in rural Tanzania.

Under the principles outlined in the Act, the role of government in rural energy service provision is that of a facilitator of activities and investments made by private and community entities (URT, 2005). Cooperatives fit into both private and community entities. They fit in Aristotle's and Ostrom's collective action as a solution to the management of natural resources. They also fit in the UN implementation framework for SDGs and, in this case, SDG 7. After all, they form part of the private sector, which is acknowledged as vital to implementing Agenda 2030. It suffices to say that the current legislation for rural energy creates a conducive environment for cooperatives to play their roles in the management of energy resources.

In addition, the Electricity Act provides for, *inter alia*, facilitation and regulation of generation, transmission, transformation, distribution, supply and use of electricity in Tanzania as well as the planning and regulation of rural electrification in Tanzania (URT, 2019). According to the Act, these activities may be performed by "any person" provided that a license is obtained from the licensing authority. A cooperative enterprise falls within the definition of any person, as a legal person, so long as it can undertake any of the activities listed with a view of contributing to sustainable development through electrification.

Forest resources, on the other hand, are managed at central government, local government, village committees and private persons' levels (SUA, n.d.). The classification is thus national, local, village and private forests (URT, 2002). The Forest Act No. 14 of 2002 is the main legislation in matters relating to the management of forests in Tanzania. The Act is characterised by formalisation of integrated forest management approaches. It recognises community forest reserves in village land and private forests on general and or village under the ownership of an individual or more than one individual, partnership, corporate body, non-governmental organisation (NGO) or any other body. The Act provides avenues for Participatory Forest Management (PFM) and Community-Based Forest Management (CBFM). In the previous local communities collaborate with either the Central Government or the Local Government to sustainably manage forests while they may solely manage their village land forest reserves in the latter.

2.7 The Cooperative Legislation and Natural Resources Management

In Tanzania, cooperative societies are regulated by the Cooperative Societies Act, 2013, and the Microfinance Act, 2018. The previous is for general regulation of all types of cooperatives, while the latter is for regulation of microfinance enterprises where Savings and Credit Cooperative Societies [SACCOS] are included. These legislation do not express provisions on natural resources management by cooperatives. There are no provisions expressly referring to the roles of these societies in conservation, protection, utilisation and/or management of water, energy and forest resources. Cooperative laws rarely address emerging roles, and where they have done so, the discretion of societies is dominant.

The restrictive provisions on what cooperatives can and cannot do and their subjection to regulators' consent are still part and parcel of the cooperative legislation in most Anglophone African countries. Cooperatives, under the current stipulations, can undertake these roles under restricted investment terms. However, the Tanzania Mainland Cooperative Societies Act offers an avenue for registration of cooperatives in the areas of energy, water and forest management. Section 27 of the Act provides for types of societies that can be registered. The list encompasses agricultural cooperatives, cooperative financial institutions, consumer cooperatives, industrial cooperatives, housing cooperatives, livestock cooperatives, fishery cooperatives, producers' cooperatives for agricultural, forestry or other natural products, mining cooperatives (for mining operations and mineral marketing) and such other cooperatives as may be established.

The Act refers to forestry but only in the context of producer cooperatives. Of interest to the present discussion are "such other cooperatives" in the list. Even though there are no specifically listed energy, water and forest-managing cooperatives in the long list of types of cooperatives in Tanzania, this flexible clause is meant to accommodate new developments bringing in new specific types of cooperatives. Irrigation cooperatives are not part of the list but are currently commonly registered under the Act under the "such other cooperatives" category.

2.8 Realities on the Ground

Cooperatives on natural resources preservation or management roles are at embryonic stages in Tanzania. A few are visible, but because of scarce literature on the area, most of these have remained unknown. The few cooperatives that were/are into these roles did/are doing so as part of their concern for community and not as their core business. The chapter managed to gather a few cases from the few sources available. Starting with energy, the problem of slow progress in rural electrification in Tanzania led to the emergence of electrification cooperatives. Notable is the 1993 registered Urambo Electric Consumers Co-operative Society (UECCO), which was formed by electricity consumers in the district as part of the agreement between the consumers, Tanzania National Electricity Company LTD and Stockholm Environment Institution (SEI) (Ilskog et al., 2005).

The cooperative supplied power for over a decade to a large portion of the district covering household, businesses and institutions. Unfortunately, the UECCO was a project-based initiative. Another electrification cooperative exists in Ifakara, Morogoro region, where a cooperative is supplying renewable energy to villagers. There are other cooperatives that have preferred to light their members' household through biogas technologies. There are no reports on strategic investments by cooperatives into wind or solar energy sources.

In water management, there were 64 registered irrigation cooperatives in Tanzania as of 2023 (TCDC, 2014). They are registered and operate as water

users' associations. They are scattered in different parts of Tanzania. The number has gone down from 96 in 2007 and 98 in 2008 (Maghimbi, 2010) to 64 in January 2022. Apart from duly registered and functioning irrigation cooperatives, there are other cooperatives that provide water services to surrounding communities. Maghimbi referred to three primary cooperatives in Uru North in the Kilimanjaro region that joined forces to form an association to provide common services. One of the services under the initiative is the community water project. They provide the services using part of their surplus.

As earlier construed, cooperatives are linked with forestry only insofar as the latter produces are concerned. It is fair to say that there are no forest management cooperatives that have been registered in Tanzania. Much as the laws permit, the provisions are yet to be tasted. What is happening in practice is for existing cooperatives or the members thereof to participate in afforestation and forest preservation activities. Bamanyisa's study found out that cooperatives in Moshi and Urambo Districts are into woodlots, agroforestry practices, tree planting and conservation of natural forests, which are important drivers of land use and land use changes (Bamanyisa, 2019).

According to his study, quantitatively cooperatives' actions contributed significantly to 76% of the existing carbon stock per hectare in agroforestry systems and 31% of the total carbon stocks per hectare in the miombo woodlands. The cooperatives' involvement is also reported by Mangasini, who examined the role played by primary cooperatives in reforestation measures in Urambo District (Mangasini, 2007). Interestingly, the study found out that planting trees is part of the prerequisite for a member to obtain agricultural inputs. The examples do not erase the fact that, notwithstanding their potential in forest resources management, cooperators in Tanzania are yet to register and operate cooperatives in the area.

2.9 Conclusion and Ways Forward

This chapter concludes that cooperatives can and should be engaged in the management of energy, water and forest resources in Tanzania. They can do so because the existing policy and legal framework, particularly in natural resource governance, accommodates participatory approaches and community-based institutional arrangements within which cooperative societies belong. These approaches and arrangements place local communities at the centre of resource management. Cooperatives are at the core of local communities, and they consequently fit well in the picture. Cooperatives should engage in such resource management because they consist of the very communities directly affected by resource use and depletion, and they provide an organised framework for collective actions. Their democratic structure and local embeddedness make them the most appropriate entities to own and manage forest, water and energy resources in an equitable and sustainable manner. In this respect, the societies contribute to the resolution of the free rider dilemma. In Tanzania, this potential is yet to be significantly

utilised. Cooperative engagement in electrification, irrigation and afforestation is scanty, scattered, project-based and, most of all, not considered a core mandate for natural resource management. Legislative silence, restrictive investement requirements, financial limitations and limited awareness are also at the core of the underutilisation of the potential. However, investing in energy, water and forest resources requires us to initiate these projects. There is also a limited understanding of the roles contributing to the extremely low number of cooperatives in natural resources management in Tanzania. The study recommends a review of the cooperative societies' legislation to embed cooperative-specific roles in natural resource management and types based on the resources. Members' awareness creation should be both a short-term and long-term measure with a focus on the expansion of society's roles, from members addressing global issues and goals.

Note

1 "Modern energy" is defined to mean energy that is based on petroleum, electricity or any other energy forms that have commercialised market channels, a higher heating or energy content value than traditional biomass fuel, and that which may be easily transported, stored and utilised. See Section 3.

References

Agarwal, C. & Singh, K., 1992. *The Kangra Forest Co-operative Societies in Himachal Pradesh: A Case-Study*, in Institute of Rural Management Anand. Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

Ballabh, V. & Kramer, R. A., 1992. *Property Rights, Transaction Costs and Cooperatives in Management of Common Pool Natural Resources: A Survey of Indian Experience*, in Institute of Rural Management Anand. Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

Ballabh, V. & Shah, T., 1989. *Efficiency and Equity in Groundwater Use and Management*, Workshop Report No. 3, Institute of Rural Management Anand, Gujarat.

Bamanyisa, J.M., 2019. *The Role of Co-operatives in Reducing Greenhouse Gas Emissions and Enhancing Sinks through Land Use, Land-Use Change and Forestry in Tanzania* (Doctoral dissertation, Moshi Co-operative University (MoCU)).

Barker, A., Blake, H., D'Arcangelo, F.M. & Lenain, P., 2022. *Towards Net Zero Emissions in Denmark*. OECD Publishing. https://doi.org/10.1787/5b40df8f-en

Buchanan, J.M. & Tullock, G. (1965). *The Calculus of Consent: Logical Foundations of Constitutional Democracy*. University of Michigan Press.

Datta, K.K. & Joshi, F.K. 1992. *Problems Mid Prospects of Co-operatives in Managing Degraded Lands – A Case of Salxme and Water-Logged Soils*, in Institute of Rural Management Anand. Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

FAO 2020. *Global Forest Resources Assessment Report*.

Güney, T., 2019. Renewable energy, non-renewable energy and sustainable development. *International Journal of Sustainable Development & World Ecology*, *26*(5), pp.389–397.

Holyoake, G.J., 2016. *The History of the Rochdale Pioneers*. Routledge.

ICA 1995. *Statement on Cooperative Identity, Historical Context and Global Relevance for Today*, accessed from 25-anniversary-concept-note-final-draft–554502669.pdf (ica.coop) on 22/07/2023 at 1302 hours.

Ilskog, E., Kjellström, B., Gullberg, M., Katyega, M. & Chambala, W., 2005. Electrification co-operatives bring new light to rural Tanzania. *Energy Policy*, *33*(10), pp.1299–1307.

International Labour Organization and International Co-operative Alliance 2014. *Cooperatives and the Sustainable Development Goals: A Contribution to the Post-2015 Development Debate (Policy Brief)*, retrieved from https://www.ilo.org/empent/Publications/WCMS_240640/lang--en/index.htm.

Johansen, K. (2021). Blowing in the wind: A brief history of wind energy and wind power technologies in Denmark. *Energy Policy*, *152*, p.112139. https://doi.org/10.1016/j.enpol.2021.112139

John, E.M., 2023. *A Forest Monitoring System for Tanzania: Mapping Change and Extent* (Doctoral dissertation, PhD Thesis, University of Aberystwyth).

Kahangwa, G., 2024. Necessity of education for efficient and sustainable production and consumption of energy in Tanzania. *Tanzania Journal of Engineering and Technology*, *43*(2), pp.108–122.

Kahsay, G.A. & Endalew, Y.G., (2025). The role of cooperatives in promoting climate-smart agriculture: Panel evidence from Ethiopia. *Agricultural Economics*, *56*(4), 637–665. https://doi.org/10.1111/agec.70011

Kujala, I., Nordell, M. & Nyström, A.G., 2025. Cooperatives as a form of social entrepreneurship and their role in combating the climate crisis in Nordic agriculture. In *Entrepreneurship, Sustainability and Social Responsibility: The Importance of Agenda 2030* (pp. 53–66). Cham: Springer Nature Switzerland.

Lambert, P., 1965. The Rochdale principles and the international co-operative alliance. *Annals of Public and Cooperative Economics*, *36*(4), pp.443–459.

Maghimbi, S., 2010. *Cooperatives in Tanzania Mainland Revival and Growth* (No. 995017193002676). International Labour Organization.

Mangasini, A., 2007. *Evaluation of the Association of Tanzania Tobacco Traders' Reforestation Programme: The Case of Urambo District* (Doctoral dissertation, Sokoine University of Agriculture (SUA)).

Mishra, V.K., 1992. *The Tree Growers' Co-operatives, and the Village Commons*, in Institute of Rural Management Anand. Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

Moench, M., 1992. *New Roles for Existing Institutions Rural Co-operatives and Groundwater Management*, in Institute of Rural Management Anand. Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

Moxom J, *et al*. (Eds) 2021. *Cooperation for a Transition to a Green Economy, Global Thematic Research Report*, ICA-EU, Brussels.

Nipa, S.A., 2024. Unveiling the role of climate-smart cooperatives in climate change adaptation and sustainability transitions. *Environmental Science*, *345*, p.118754.

Nkuhi, M., Towo, E. & Machimu, G., 2023. *Conflicts, Climate Change and Cooperative Interventions*, A paper presented during the CUK 7th Annual Conference entitled "The Role of Social and Solidarity Economy in Sustainable Development, Climate Change Mitigation and Adaptation" held in Nairobi Kenya from 3rd–4th August, 2023 (unpublished).

Nshala, R., 2000. *Management of Natural Resources in Tanzania: Is the Public Trust Doctrine of Any Relevance?*. Unpublished Paper.

Nzunda, E.F. & Yusuph, A.S., 2022. *Forest Degradation in Tanzania: A Systematic Literature Review*. IntechOpen.

Olson, Jr., M., 1971. *The Logic of Collective Action: Public Goods and the Theory of Groups, with a New Preface and Appendix* (Vol. 124). Harvard University Press.

Palakudiyil, T., 1992. *Co-operatives in Natural Resource Management: Case Study of a Co-operative Lift Irrigation' Society in Western Maharashtra*, in Institute of Rural Management Anand. Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

Patil, R.K. & Lele, S.N., 1992. *Irrigation Co-operatives in Maharashtra: Experiences and Lessons*, in Institute of Rural Management Anand, Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

Retnam, C.V. & Nair, K.N., 1992. *Deterioration in Groundwater Resources: Could Co-operation Help Conservation?,* in Institute of Rural Management Anand. Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

Richards, N., 2019. Water users associations in Tanzania: local governance for whom?. *Water*, *11*(10), p.2178.

Saxena, R., 1992. *The Vatra Tree Growers' Co-operative Society Ltd: A Case Study*, in Institute of Rural Management Anand. Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

Singh, K. & Ballabh, V. 1992. *Cooperatives in Natural Resources Managements: Experience, Issues and Agenda for Future Research*, in Institute of Rural Management Anand. Proceedings of the Workshop on Co-operatives in Natural Resources Management, IRMA: Anand.

Sokile, C.S. & Van Koppen, B., 2004. Local water rights and local water user entities: the unsung heroines of water resource management in Tanzania. *Physics and Chemistry of the Earth, Parts a/B/C*, *29*(15–18), pp.1349–1356.

Sokoine University of Agriculture n.d. *Community-Based Forest Management for Sustainable Forest Management and inclusive Growth in Southern Tanzania - REFOREST - Regional Research School in Fores*t *Sciences*, https://sua.ac.tz/.

Sousa, A.M.P., Pontes, B.S., Silva, M.J.S.D. & Vieira, T.A., 2019. Cooperativism in forest Communities in the amazon: what do non-members say?. *Ambiente & Sociedade*, *22*, p.e01201.

Tanzania Forest Eco-Systems – Tanzania Forest Services Agency (TFS), accessed on 17/08/2023 on 0940 hours.

TCDC 2014. *Vyama vya Ushirika Vilivyosajiliwa* | Tanzania Cooperative Dev. Commission, accessed on 21/01/2024 at 1619 hours.

Tanzania Cooperative Development Commission 2024. *Statistical Cooperative Report July–January 2023 (FY 2022/2023)*, retrieved from https://www.ushirika.go.tz.

Tranæs, F., Jensen, T., Skovgaard, M., & Andersen, P. (2010). *Danish wind energy*. Retrieved July 23, 2023, 13:10, from https://envirojustice.org.au/wp-content/uploads/2017/04/www.spok_.dk_consult_reports_danish_wind_energy.pdf

UN 2015. *Transforming Our World: The 2030 Agenda for Sustainable Development A/RES/70/1*.

UN 2019. *Cooperatives in Social Development*. *A/RES/74/119*.

UN 2017. *Cooperatives in Social Development*. *A/RES/72/143*.

UN 2021. Resolution adopted by the General Assembly on 16 December 2021: A/RES/76/135, Cooperatives in social development. United Nations. https://docs.un.org/en/A/RES/76/135

UN 2023. *Cooperatives in Social Development*. *A/RES/78/175*.

URT 2002. *National Water Policy*.

URT 2005. *Rural Energy Act, 2005*, Act No. 8 of 2005.

URT 2010. *National Irrigation Policy*.

URT 2019. *Benefits and Challenges of 7 Transboundary Water Cooperation for Tanzania 2008/2009–2018/2029*, Water Resources Division, Dodoma a report available at sw1562756943-Benefits & Challenges of Transboundary Water Cooperation for Tanzania.pdf (maji.go.tz), accessed by the author on 16/08/2023 at 1600 hours.

Verma, S., 2023. *Role of Cooperatives in Climate Change Mitigation, Adaptation for Sustainable Development, A presentation made during the CUK 7th Annual Conference entitled "The Role of Social and Solidarity Economy in Sustainable Development, Climate Change Mitigation and Adaptation"* held in Nairobi Kenya from 3rd–4th August, 2023.

Wanyama, F.O., 2016. *Cooperatives and the Sustainable Development Goals a Contribution to the Post-2015 Development Debate*. International Labour Organisation.