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# **On the road from Mbeya to Uporoto highlands and Lake Nyasa lowlands (Tanzania): mountain transect, rural-urban flows and markets**

Sylvain RACAUD and François BART

In South-western Tanzania, close to the Zambia and Malawi borders, Uporoto Mountains, as part of the Southern Highlands, display a fascinating example of rural and urban development rooted in a mountainous environment. One of the highest summits, Mount Rungwe, is a stratovolcano standing at an altitude of 2,961 metres (9,710 feet), at the junction of the eastern and western arms of the East African Rift. Its caldera has a diameter of more than 4 km. Mount Rungwe is a cone-shaped water tower with a dense hydrographical network: Kiwira, Mbaka and Lufirio rivers flow into Lake Nyasa.

A road runs along this mountainous area, linking several environments, and contributing to the organisation of flows. This route, combining a fantastic range of landscapes, is the course of the transect. A transect is “a system for land observation or the representation of a space, along a linear path and following the vertical dimension, aimed at emphasising a superposition, a spatial succession or relations between phenomena” (Robic 2014: 1). Transects serve to emphasize level differences, slopes, altitudinal zonation, incline gradients and altitudinal differences and complementarities. Transects appear as gashes whose scale exaggerates heights in such a way as to emphasize level components. They also demonstrate the very essence of the system, from high altitude down to the plain. “They reveal not only biophysical data, such as plant or soil formations, but data for economic and social geography, such as population density and farm systems, as well.” (Bart and Pomel in Bart *et al.* 2006: 215). Taking the example of the Uporoto Mountains and its piedmont down to Lake Nyasa, this article uses the transect methodology in order to emphasize the variety and the complementarity of the different areas in terms of rural landscapes and of marketplaces. Landscape indicators such as vegetation, topography, soil, human density, density and type of housing, crops and production systems, are used to show the social production of the landscapes. The landscapes are the results of the interactions between the natural environment and the human activities (Pinchemel 1997). Analysing the landscapes and their relationships with infrastructures (markets, roads) enables us to show how the population develops the local resources. This paper aims at answering this question. The first part describes the different areas crossed by the transect, i.e. along the only asphalted road connecting the Tanzania-Zambia highway to Malawi. It emphasizes the vertical dimension, from the temperate areas to the tropical shore of Lake Nyasa. It is also a question of following the road for a distance of about 130 km, in order to show the dissymmetric dimension between the northern part and the southern part of the Uporoto ridge. The second part is about the marketplace networks and the “rurban” development with regards to the structuring effect of the main road.

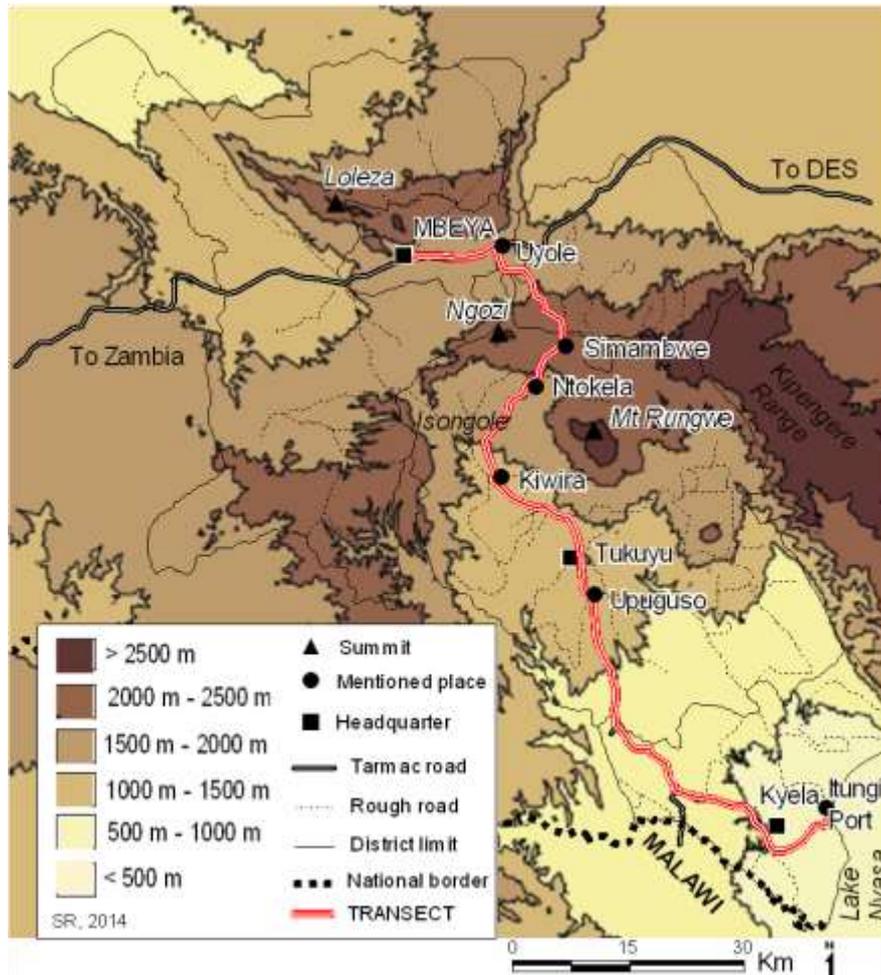
## **One of the most spectacular transects in tropical Africa**

The area between the northern extremity of Lake Nyasa and the mountainous highlands of the Uporoto range, part of the East African Rift System (fig. 14), is noteworthy for the magnitude of its height differences (more than 6,000 feet/2,000 metres from the lake surface to the ridge line). It is also marked by a climate dissymmetry between those slopes facing the lake, which

are also exposed to the south, i.e. to the wind, and those slopes 'out of the wind' facing the dryer regions of central Tanzania. In addition, the high population densities in the highlands around Tukuyu, in a 'mid-level' zone around the city of Mbeya, and in the hot lowlands of Kyela in the south, are located along a good asphalt road. The key functions of this road are transit and exploiting the complementarities between slopes and altitude zones, which are greatly differentiated both ecologically and economically. These take material form in the succession of major markets spaced out along its route (Kiwira, Upuguso-Ushirika, Uyole, and Tukuyu) or in the hinterland of the tarmac road.

The beauty of these landscapes, their great variety over a horizontal distance of barely 100 kilometres, the sensation of passing in a short space of time through a succession of greatly contrasting natural environments and farming landscapes, all come together to make this axis the transect par excellence, in both human and physical terms. Over barely 100 kilometres we meet in succession: a cool and fairly dry climate favourable to 'temperate' cereal crops such as wheat; a cool, humid area under cabbages and potatoes; a warm, misty altitudinal zone favouring tea; a 'temperate' and well-watered level given over to banana and coffee trees; and low, humid, tropical lands under rice, palm and cocoa trees. This superb catena of altitudinal zones is well interconnected along the broad, regular slopes and made productive by a community of small farmers who have constructed an astonishing range of farming landscapes.

Geographical analysis of a space such as this must therefore closely link the vertical dimension (height differences, altitudinal zones and boundaries, etc.) with the horizontal (distance and rainfall dissymmetry due to exposure to or shelter from the wind). Transect analysis can be used to account for this complexity, highlighting continuities and discontinuities, symmetry and dissymmetry, thresholds, and all those elements which take account of the way that populations have developed the resources within the environment through their systems of production and their mobility (flows of products and human beings).



**Figure 1.** Location map of the transect

### The vertical dimension: from “cold” to hot environment

This is the main dimension of the transect: it connects very different climatic and agricultural zones, because of the differences of temperature: during the dry season, some night frost may occur in the upper parts, preventing farmers from cultivating such plants as banana or coffee trees (fig. 15).

#### *The “temperate” mountain*

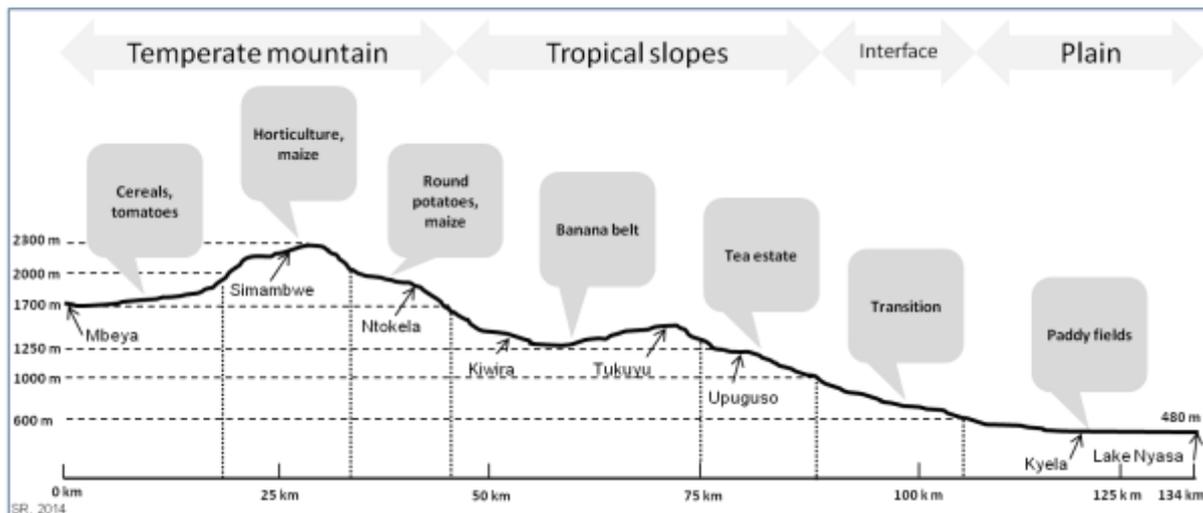
The mountain is by definition a concentration of multiple gradients so that, in a limited area, there are several ecological environments. The temperate mountain is composed of three different zones. It ranges from 1,700 m to 2,300 m, km 0 – km 45.

\* The “landscaped patchwork” level: 1,700 m – 2,000 m, km 0 – km 20

Except for the Uyole Agricultural Research Centre, the area between Mbeya (Mbeya city 385,279 inh.<sup>1</sup>) and Uyole (about 30,000 inh.<sup>2</sup>) is an urban continuum. The urban density decreases from 5 km after Uyole and some houses show some traditional building materials like bamboo. The topography is characterized by some entanglements of undulating hills. The landscapes are open and composed of a patchwork of sloping small plots (photo 3).

<sup>1</sup> All the demographic data come from the national census led in 2012. (URT 2012).

<sup>2</sup> This value refers to the urban wards gathered around Uyole, including Uyole wards.



**Figure 2.** *Transect Mbeya Lake Nyasa* (Racaud 2011)



**Photo 1.** *Patchwork of plots, Uporoto Highlands* (Racaud 2011)

Wheat fields are mingled with maize fields and tomato fields, some crops are growing while others are ready to be harvested, and the soil is tilled by many farmers. There are small scattered groves and there are not many trees, most of the spaces are cultivated land, the main crops being cereals (wheat, maize), and horticulture (mainly tomatoes).

\* The foggy level: 2,000 m – 2,300 m, km 21 – km 32

The Uporoto ridge is usually covered by fog during the mornings and sometimes all day long. The landscape mixes green and brown colours. The mountain forest lying along this section is composed of pine trees. The tree cover is denser, and the main species are *Milletia*, *Ficus* and *Cissus*. There are some vestiges of terraces and the few remaining terraces are badly maintained. As a consequence, the soils are leached where slopes are steep. The topography is more complex than in the first part of the transect, it consists of an entanglement of hills, escarpments and deep narrow valleys. The rainfall ranges between 1,000 mm and 2,000 mm and this zone is familiar to frost between May and September (July is the coldest month). The wooded grasslands have

been replaced by horticulture: round potatoes, carrots, peas and cabbage. Maize is cultivated as it is the main staple food and pyrethrum used to be the main cash crop. For the last three decades peasants have shifted to commercial food crops and some zones have specialized in particular crops. This is the case for Iwalanje, which has specialized in carrots and for Simambwe that is a special production area for cabbages (photo 4).



**Photo 2.** *Plots of cabbages along the tarmac road (Racaud 2011)*

The asphalted road crossing the Uporoto and linking Malawi to Tanzania is the catalyst for the commercial food crops. The number of villages is important; in this section, the road goes through six villages: Ijombe, Iwalanje, Galijembe, Simambwe, Isyonje and Mbeye, and these villages have about 1,500-2,500 inhabitants.

\* The level specialized in round potatoes production: 2,000 m – 1,700 m, km 32 – km 45

The tarmac runs through the villages of Mporoto, Ndaga and Ntokela. These small urban centres have about 3,500-4,000 inhabitants (URT 2002). This zone is localized in the part of the Isongole basin, which is enclosed by the Poroto Ridge and Mount Rungwe. The size of altitudinal plains is larger and the gullies are less deep. Except for some governmental forest reserves, almost all the land is cultivated. Landscape is homogenous, characterized by the omnipresence of round potatoes (photo 5) produced for the urban demand.



**Photo 3.** Round potatoes as far as an eye can see (Racaud 2011)

Most of the plots have a size of one acre (0.40 ha: 63 x 63 m) and they are intensively exploited. Many indicators (bags of potatoes, casual farm workers, road side markets) show that this area is a hotspot for this tuber. Moreover, the size of the trucks proves that it is a long distance trade. Generally, in one year, the same plot produces two crops of potatoes and one of maize.

Despite the small area of this section, the temperate mountain presents three different agro-ecological zones (the “landscaped patchwork” level, the foggy level and the level specialized in round potatoes production), which differ from the tropical slopes.

#### *The tropical slopes*

The transect enters into what is considered as the more emblematic part of the tropical mountain, the coffee-banana belt, which is a highly populated area. On the lower part of this section, the tea estates stretch out as far as the interface with the plain.

\* The coffee-banana belt: 1,600 m – 1,250 m, km 45 – km 75

This section spreads over 30 km and the area seems to be full. The settlements are dense, the human densities range from 150 inh./km<sup>2</sup> to 500 inh./km<sup>2</sup>. The intensive building of houses is more important along the main road and along the countless tracks. Most of the space is cultivated in agro forestry, except the wooded escarpment down which flows the water from Mount Rungwe towards Lake Nyasa. The southern slopes of Mount Rungwe are deeply dissected by the many tributaries of the Kiwira, Mbaka and Rumakali rivers. Rainfall is important, reaching 2,662 mm/year in Kiwira and 2,577 mm/year in Tukuyu (Rugumamu 1988<sup>3</sup>). Banana trees are dominant in the landscapes (photo 6), this latter is a hybrid scenery between bocage and agro forestry.

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<sup>3</sup> Data for the period 1961–1982.



**Photo 4.** *Banana belt, near Tukuyu (Racaud 2011)*

The banana is the main crop of this area. It is planted with maize, beans and fruit trees, mainly avocado. The agricultural panorama is completed by the tropical tubers (cassava, sweet potatoes and yams) and some coffee tree vestiges. Coffee trees are not uprooted but they are not well maintained; according to the official data, between 2002 and 2010, the cultivated areas are stable whereas the production decreases by nearly 50 % in the Rungwe district. Like the shift observed in Uporoto highlands (from pyrethrum to round potatoes and cabbages) the peasants of the tropical slopes developed crops for the urban demand.

Seven urban centres are situated in this part of the transect, two of them playing an important role. Kiwira is a commercial hub for local agriculture production and Tukuyu is the district headquarters. Kiwira is located along the tarmac road, at a height of 1,400 m. Despite being a modest urban centre (4,000 inh. in 2002), this place plays a key role in the commercial food crops exchange system through its periodic markets, which operate twice a week (Tuesday and Friday). Kiwira market develops and carries out two complementary commercial functions: it offers supplies for the local population while also acting as the collection centre for foodstuffs which are later dispatched to urban centres. This hotspot of exchange is a symbol of the amplification of agriculture and of the integration of rural areas to the national territory and to the global economy. Tukuyu is located halfway between Mbeya and Malawi. According to the official data, the town had nearly 16,000 inh. in 2002, and 41,000 in 2012! The urbanization follows the topography, the original location is on the top of the dome which is a low shield volcano, while below the urbanization is influenced by the dissected topography. The centre has basic urban characteristics, as well the administrative buildings, there are many urban services (hospital, post office, schools and colleges, etc.) and business places. Nevertheless, it develops in the shadow of Mbeya and its influence does not exceed the district; the regional metropolis is much more attractive.

\* The tea estate level: 1,250 m -1,000 m, km 75-km 90

About ten kilometres after Tukuyu, i.e. from Upuguso (about 2,000 inh.), there are three tea plantations: Musekara Tea Estate, METL Gold Estate and Chivanje Tea Estate, this latter covers an area of about 900 ha. These plantations are located along the tarmac road. Many smaller

plantations are scattered in the hinterland. There is an important production zone on the south-eastern slopes of Mount Rungwe (photo 7), at a height of 1,400 m – 1,600 m. The tea harvested in the latter area is processed by the Katumba Tea Factory and Wakulima Tea Factory a few kilometres on the West.



**Photo 5.** *Tea plantations* (Racaud 2011)

Most of the area within this section is cultivated except some small wooded plots. The banana trees, beans and sweet potatoes cultivations are also present in the area. The topography and the rainfall are similar to the ones of the upper level of the mountain. The settlement is organized around the tracks; these latter follow the ridges on the top of the many interfluves. The roads run across only one village in this portion: Upuguso. In the last kilometres, the red sandstone lands give way to fertile lands.

*The interface mountain - Kyela plain: 1,000 m – 600 m, km 90 – km 105*

Below 1,000 m, the transect enters warmer lands. The human density of the interface decreases to below 150 then 100 inh./km<sup>2</sup> and only three small villages are along the road. In parallel, the area covered by bush increases (Photo 8). The bottoms of the wet valleys get wider and are cultivated lands.



**Photo 6.** *Bush and cultivated bottom of valley of a tributary of the Mbaka river (Racaud 2011)*

The lands are less fertile and soil colour changes; the red sandstone is composed of silica and quartz. A section of about 10 km, between 800 m and 670 m is a quasi no man's land, the shield shows on the surface and the land is non fertile.

*The Kyela plain: 600 m – 480 m, km 105 – km 134: shore of the Lake Nyasa*

The last quarter of the transect consists of a plain characterized by the omnipresence of the paddy fields. The settlement is organized along the road and around the meanders of the Kiwira, the Mbaka rivers and their tributaries. These areas have landscapes of tropical low coasts, mango trees and oil palms overhang banana trees and cocoa trees. Agricultural production systems are composed of fruit trees (mango, coconut palm, oil palm, banana tree and cashew), cocoa and tubers. Most of the Kyela plain comprises of paddy fields which are irrigated by the numerous streams supplying the Lake Nyasa. Rainfall is 2,583 mm per year (Rugumamu, id.) and some parts of the delta are flooded during the rainy season.



**Photo 7.** *Paddy fields in the Kyela plain* (Racaud 2011)

The delta is an important production zone for rice in Tanzania and the paddy from Kyela (photo 9) is appreciated by the population of Dar es Salaam. Kyela town had about 28,000 inhabitants in 2002 and 47,000 in 2012, its landscapes are marked by the rice business, with many rice warehouses. The town is located at an altitude of 500 m, about 10 km from Itungi Port, on the shore of Lake Nyasa. However, this port is no longer operating because of the silting-up of the river's mouth.

The transect presented shows the impressive varieties of different agro-ecological zones which are complementary and offers to Uporoto mountain and its lowlands some structural advantages.

#### **Dissymmetric sides: from dry to humid environments**

This dissymmetry is superimposed onto altitudinal zones in the cases of the median and higher zones. The hot lowlands are solely located on the southern side, below 3,000 feet (1,000 m), at the bottom of the "graben" containing Lake Nyasa.

The presence of the warm waters of this lake is what helps to accentuate the rainfall dissymmetry. As they move northward along the lake, the masses of air carried by the South East Trade Winds collide not only with the slopes of the Uporoto Mountains, but also, slightly more to the east, with the imposing wall of the Livingstone Mountains, whose very abrupt, deeply gullied slopes dwarf the little plain bordering the lake. Taken together, these features constitute a sort of huge topographical funnel which probably has the effect of accentuating uplift dynamics, thus favouring cloud cover and above all triggering rainfall.

At low altitude, the humidity is such that the lake shores offer a farm shape of palm oil trees, coconut palms and cocoa trees, unique in Tanzania. Higher up, above the so-called 'temperate' altitudinal zone of the coffee-banana belt on the higher slopes exposed to the wind, the humidity and relatively low sunlight levels create a climate favourable to tea cultivation at around 5,500 to 6,000 feet (1,800-2,000 m). In great contrast, at a similar level on the other slopes, the sunlight and coolness combine to create a veritable high-altitude cereal-growing region where wheat and barley display their yellow and golden colours in a landscape which, in spite of its

inclines, inevitably brings to mind open field systems such as those seen on a number of high Kenyan and Ethiopian plateaux.

As this magnificent palette unfolds, a single crop seems to be omnipresent: maize. But it is primarily the asphalt road and the population centres that give real unity to this transect, which functions as a major economic axis.

### **The main road and “rurban” development: “markets system and territorial integration” (Racaud 2013)**

East African mountains are considered as food granaries and are grasped as “open mountains”, included in exchange systems integrating multi-scalar geographical dimensions. Mbeya town is about 850 km from Dar es Salaam and accounted for 385,279 inhabitants in 2012 (URT 2013). Mbeya Region is bordered in the South-East by Malawi and in the South-West by Zambia. The regional administrative centre is a busy commercial hub linked to Dar es Salaam and to southern African countries by both the Tanzania-Zambia highway and the Tanzania-Zambia railway (TAZARA). This specific location gives Mbeya the position of business gateway to the neighbouring land-locked countries of Zambia, Malawi, Zimbabwe and the south-eastern part of the Democratic Republic of Congo (Foecken et al 2004). On a smaller scale, the town also acts as an outlet for local agricultural products. How can the Uporoto Mountains markets system contribute to the territorial integration of the mountain and how can it have a structuring effect on production zones?

#### **A dynamic markets system**

The market system is composed of the network of market places and of the nearby production zones. 39 registered market places<sup>4</sup> are located in the research area composed of 3 districts. The Mbeya urban district includes Mbeya town and its periphery and it has 12 registered daily markets. Those urban markets comprise local operations between urban traders and urban customers for small quantities. In this paper, Mbeya town markets are considered as a whole. Uyole market is about 8 km from Mbeya and is a major collect centre that creates interactions between production zones and markets. Mbeya rural district has 12 registered *gulio* markets (table 4), and Rungwe district has 15 registered *gulio* markets (table 5). There are also several unregistered small *gulio* markets.

<i>Saturday</i>	<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
Iwiji	Isuto	Mbalizi	Izumbwe	Isuto	Inyala	Ilembo
Santilya	Songwe			Muvwa		Izumbwe
Isangati	Igoma			Simambwe		

**Table 1.** Mbeya Rural *gulio* markets<sup>5</sup>

<i>Saturday</i>	<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
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<sup>4</sup> “Registered” means that the city council takes taxes from those markets. There are also around 20 unregistered and “unorganised” small selling areas.

<sup>5</sup> Inyala and Mbalizi are daily markets but they also have a day of increase of activities.

Lwangwa	Mpuguso	Mbambo	Ibililo	Ikuti	Tandare	Ibililo
	Mwakaleli	Lufilio	Kiwira	Lwangwa	Igombe	Ntaba
		Lugombo		Kinyika		Kiwira
		Tandare				

**Table 2.** *Rungwe gulio markets*<sup>6</sup>

Local interests explain the choice of *gulio*. For example, Kiwira and Ibililo that are nearby places (less than 10 km) have *gulio* on the same days: Tuesday and Friday. There is no competition, but complementarity (Racaud 2015). If a farmer coming from a surrounding place does not find satisfactory prices at Ibililo, he can easily go to Kiwira because there are many transporters during *gulio*. A local agent can collect bananas at Ibililo and sell them easily in Kiwira on the same day because it is *gulio*. Ibililo market started in 1998, before its creation, people used to do business in Kiwira. Keeping up these habits also explains Ibililo *gulio* because people were used to those market days. There is no regulation of the market day planning by district authorities. Districts only collect taxes. Each market has its own leaders and makes its own decisions. There are no specific rules to organise a market, local leaders choose how to manage the place. The organisation (in Santilya, Ibilio, Igoma, Mpuguso, Tandare, Simambwe, Ntokela, Uyole, Mbalizi, etc.) is ruled by a committee composed of a chairman, a secretary and three to eight members. They are elected for three to five years by farmers and traders. Most of the time, the ward executive officer is a member. Nevertheless, Kiwira market is ruled by a board of traders and farmers (a chairman, a secretary, a treasurer and one member) who are elected for three years. Mbeya urban district has a collective organisation of market committees, which rely on more regularity of operations. The chairman and secretary of each committee meet once each three months, they decide about basic organisation such as cleaning, about the trends, and about some problems to solve. Because of their proximity, there is no problem of accessibility between those markets but, in rural districts, connections between the markets are much more difficult. Such organisation does not exist in rural districts. Committees have a common interest: facilitate and increase activities. Those objectives face the lack of means and, as a consequence, the main tasks are basic ones such as place infrastructure maintenance. The market leaders I met confessed there is no competition between the markets and no specific policies to attract people. Offers and demand are not regulated, but some tax amounts can act upon them. In Kiwira some traders complained because taxes increase and discourage some traders who will choose to go to a cheaper trading centre. Autonomous strategies of actors link the different places and collective organisations and local authorities are not strong actors of the Uporoto markets' system integration.

Authorities characterise the markets according to the type of supply: primary markets are supplied by farmers and secondary markets are supplied by traders. But the reality is very complex because there can be different types of supply in the same market according to the product and according to the season. Uyole market is a relevant example to qualify this distinction. This major centre of collection and redistribution is located on the Tukuyu-Mbeya road and in a high production zone for market gardening (especially tomatoes), maize, beans, and potatoes. Tomato supply changes according to the season: from May to October, farmers bring them and from November to April Uyole traders go to the farm to buy. The farmers can't sell directly to consumers because they don't have a selling place in the market (it is different during *gulio* where farmers have the opportunity to access the market directly; they sell to traders who are settled in a special place in the market). Sometimes farmers come to announce

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<sup>6</sup> Tukuyu has one daily market and Tandare one *gulio* market.

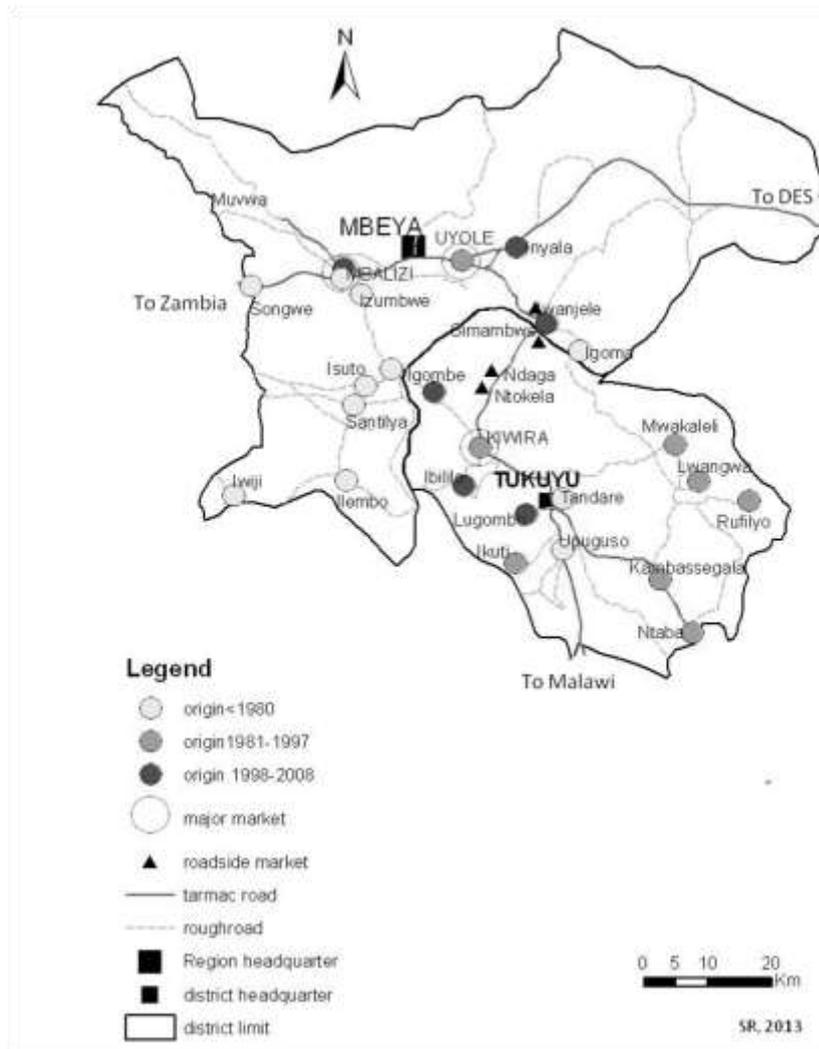
to traders that the harvest is ready. On the other hand, traders can go to production zones to order tomato harvests. There is no single method of supply for tomatoes or for bananas. Two movements have been observed: from Uyole traders who go to Rungwe markets to buy bananas, and from Rungwe farmers who bring their bunches to Uyole. Actors try to bypass middlemen to make more profits. Because this place has a specific location and has good access, the chain between the production zone and the market is short and Uyole market is also the cheapest one of the Mbeya urban district. The criteria “type of supply” is not sufficient to categorize the markets and particularly the major ones (Uyole, Mbalizi, Kiwira). The structure of supply chains is complex and dynamic. The place of interactions has to be grasped through physical criteria such as location, size, infrastructure/organisation, structure of the offer and through exchange systems.

This chapter presents two types of market places: major and *gulio*. Major hubs are the bigger centres of collection and redistribution that are strongly connected to both local markets and to national and even international markets. *Gulio* markets are generally located in rural areas with lower accessibility. Flow measurement is the most relevant technique to categorise the various market places. Those locations, especially in the research area, connect several geographical scales from local to international. Dynamic components in space and in time highly characterise the Uporoto market system.

Dynamism relies on environmental and social potential and on marketing opportunities. Accessibility issues are a determining factor of modalities of the mountain opening and of its integration.

### **Markets: place of exchange or place of territorial integration?**

The map below (fig. 16) presents the evolution of the market network in Mbeya rural, Mbeya urban and Rungwe districts.



**Figure 3.** *Densification of the markets network* (Racaud 2011)

Major markets and three *gوليو* markets are located on tarmac roads. All other trading centres are situated on rough roads. Accessibility is a key constraint for those places. The lack of accessibility maintains low prices because there are important offerings but a low number of traders. Farmers who have no access to other markets (mainly because they don't have capital to transport products) are forced to sell with a limited possibility of bargaining. *Gوليو* represent a major opportunity for local farmers to get direct access to the market, but their power of bargaining is low. Some local leaders talk about a deflation economy. Ibililo has poor accessibility but this village attracts traders from distant areas (Mbeya, Iringa, Dodoma, Dar es Salaam) looking for cheap prices. Prices are higher in the nearby major Kiwira market located on the tarmac road. Some traders also come to Ibililo because of specific local produce: one of the four main banana varieties grown here is directly sold in Dodoma. The destination and the type of marketing chain change according to the type of banana. Traders take advantages of accessibility problems. They have capital to transport and store produce whereas the majority of farmers have not enough capital to move to a more profitable place. Ibililo farmers can go to the Kiwira market to sell at better prices if they are looking for items they can't find at Ibililo.

Lorries coming from Mbeya are generally shared by five to seven traders selling in Mbeya town markets. Lorries coming from distant areas (Iringa or Dar es Salaam) are generally loaded by one trader. Difficulties of accessibility are not a real problem for those traders looking for availability and cheaper prices. They have capital to pay for produce collection and transport.

If they don't find enough produce in one market, they move to another *gوليو*. Farmers are not collectively organised to bring their harvest to the market. Their limited means of transport and their location in relation to the market are major constraints for market accessibility. Location affects more farmers than traders for access to the market. Proximity to main infrastructures of transport can also modify production zones.

The markets are not only formal trading places, but concentrate the whole of material means and measures allowing transactions. National scale introduces powerful actors. Orders made by traders from Dar es Salaam generate specific roadside markets in the Uporoto zone, along the Mbeya-Tukuyu road. Iwalanje is becoming an informal carrot supply centre because environmental conditions are excellent and the farms are close to the main road. Traders make contracts with farmers. They agree on the number of carrot plots before the harvest. In Simambwe, processes are equivalent for cabbages; in Ndaga and Ntokela we observed similarities for potatoes. The common point is that those places are located on the main road. There are different rhythms of response to market opportunities according to the location. Urban investment is quickly increasing in those sites. In Ntokela, a local leader estimates that 50% of the land is hired by people from Mbeya, Dar es Salaam and also Zanzibar. They invest in potato farming that will be sold in the Tanzanian economical capital. Integration to the market is important and is a consequence of the response to the increase of the urban demand and to marketing opportunities. This shift is a relevant indicator of rural-urban linkages.

## Conclusion

The mountains' activities are based on agricultural marketing oriented to external markets, particularly to distant urban markets. Amplification of agriculture results in the increase of flows and in the specialisation of production zones and of markets. Market places attract flows of produce and of stakeholders, then those places of exchange direct the flows towards more or less distant markets. The marketplaces try to attract activities in order to generate incomes and to develop. In a context of ascendancy of commercial functions, the capacity to generate flows appears to be a condition for development. This remarkable transect Mbeya-Tukuyu-Lake Nyasa is not only a fascinating physical cross-section of landscapes (from cold tropical to hot tropical, and from humid to dry, etc.) but also, and consequently, an economical axis which is the basis of strong commercial links between highlands and lowlands and between rural and urban areas. The urban component of this rural-urban system is made up not only of the regional cities (Mbeya, Tukuyu, etc.) but also of faraway towns, especially Dar es Salaam (more than 800 km). Moreover, an international dimension of this transect has to be pointed out, namely Malawi, Zambia, even Katanga (Congo), beyond the border posts in Tunduma and on the Songwe bridge.

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