Understanding the Vulnerability of African Farmers Living with Uncertainty: A Study of a Village in Central Province, Zambia

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Abstract The importance of the concept of vulnerability is widely acknowledged, however it is not easy to fully understand and evaluate it because of its multi-faceted nature. The vulnerability can only be assessed using a multi-factor approach. This paper tries to show one example how to explore the vulnerability of small scale farmers in Africa. I carefully examined changes in farmers’ vulnerability in a village of Zambia based on the long-term records since 1992. I focused on the change of farmers’ accessibility to natural resources. The result shows that the impact of socioeconomic change on vulnerability is open to more than one interpretation, and more, changes may have counteracting effects on vulnerability through the resulting socioeconomic changes. Thus the multi-factor approach shows us how intricate the concept of vulnerability and resilience are.

Keywords vulnerability, uncertainty, resilience, Zambia, livelihood

1. Introduction

The importance of the concept of vulnerability is widely acknowledged. The theory of vulnerability has become indispensable in discussions regarding poverty reduction, self-help development, social capital formation, self-governing institutions, sustainable development (Sneddon 2000), and political ecology (Watts 1983; Bassett 1988). However, the concept of vulnerability is not yet well defined (Osbahr et al. 2007).

Chambers (1989) stated that vulnerability does not mean “lack or want” like poverty, but rather defenselessness, insecurity, and exposure to risk, shocks, and stress. Watts and Bohle (1993) further explained vulnerability as possessing two facets: external and internal. External vulnerability represents an exposure to risk, and internal vulnerability is a lack of capacity to cope with trigger events and a limited potential to recover from a difficulty. This view of vulnerability, determined by the degree of risk exposure, coping capacity, and recovery potential, is widely accepted (Bohle et al. 1994: 39).

It has also become important to define what conditions constitute vulnerability. Various analytical methods, such as asset-based approaches, have been used to assess vulnerability.
ever, asset-based approaches confront the difficulty of attempting to quantify the varying values of an asset.

Many studies have attempted to measure vulnerability, most of them showing the intensity or nature of vulnerability through the use of several indicators (Hahn et al. 2009). Other studies have tried to measure and assess vulnerability as a multi-dimensional concept. Hinkel (2011) said that “the one-size-fits-all vulnerability label is not sufficient. Speaking of ‘measuring’ vulnerability is particularly misleading.” However, researchers have attempted to measure vulnerability by selecting indicators that are thought to form the basis of vulnerability assessments. Some of the indicators have been successful in showing different sensitivities of household to climate risk and capacities in a region by variable climate condition (e.g., Eakin and Bojorquez-Tapia 2008).

As Blaikie et al. (1994) noted, it is not easy to define vulnerability. As an example, they used the impact of a new road on the vulnerability of previously isolated rural communities. A new road may help to reduce the vulnerability of the community in times of drought, but it may also serve to increase vulnerability through the migration of able-bodied youth away from the community, causing a decrease in production. They emphasized that an increase in vulnerability can only be assessed using a multi-faceted approach, suggesting that vulnerability assessment using an index will produce results that may not accurately reflect reality.

If a multi-faceted approach is to be used in a vulnerability study, it is important to take people’s experiences into account (Obrist 2006: 359). To do so, we must (1) search for all possible factors that influence vulnerability, (2) elucidate each process of increasing or decreasing vulnerability by a given factor, and (3) examine the relationships among the factors and processes through a livelihood study. The third task is difficult because, as Blaikie et al. (1994) showed, changes in economic conditions may work to both increase and decrease vulnerability. Furthermore, economic changes are often related to political changes.

To fully understand and evaluate vulnerability, we have to carefully examine the multi-faceted influences of any given factor on vulnerability as well as the side effects of that factor on other factors. To see these influences and effects, a livelihood approach is useful and long-term observation is essential (Hajdu 2005: 60, Mortimore 2005: 47-48). Relationships between factors can be well ascertained by searching for events that have occurred in succession over time. Livelihood can be defined as comprising “the assets (natural, physical, human, financial and social capital) that together determine the living gained by the individual or household” (Jufare 2008: 2).

This paper discusses changes in residents’ vulnerability recorded in a long-term study of a village (henceforth called village C) in Zambia. My first visit to the village was in 1991 to get permission of field study. And I started field study in August 1992. The central focus of the study then was on the intensive vegetable cultivation on dambo, seasonally waterlogged wetland. I have expanded my object of study into the field of socio-economic aspects since 1994. All the data were collected by interview, observation and mea-
surement in the field study. The periods of study in Zambia were as follows: 27 July - 3 Sept., 1993; 16 Nov. - 10 Dec., 1994; 17 July - 17 Aug., 1995; 20 Aug. - 12 Sept., 1997; 21 Aug. - 14 Sept. & 27 Nov. - 11 Dec., 1998; 28 Aug. - 26 Sept., 2000; 30 July - 8 Sept., 2001; 25 Feb. - 10 March & 2 Aug. - 1 Sept., 2002; 10 Feb. - 1 March, 2003; 18 Aug. - 16 Sept. & 13 Nov. - 12 Dec., 2004; 13 Nov. - 12 Dec., 2005; 9 Aug. - 29 Aug., 2006; 4 Nov. - 22 Nov., 2009; 22 Aug. - 30 Aug., 2011.

2. Study Area

Village C is located about 90 km north of Lusaka, not far from the main national highway. The village was founded in the early 1970s and currently has more than 100 households. Blessed with accessible markets and water-rich dambo suitable for farming, farmers in this village have conducted cash crop farming since the 1980s. They also do upland farming of maize. I have done intensive interviews with residents on the periphery of K. dambo in the village.

Fig. 1 shows the land divisions and household locations in the K. dambo area in 1993. Family A was the first to move to the area when they arrived in about 1970 to clear bush. In 1972, the family of the village head (family C) moved in and settled on the northwestern side of the dambo. Family B arrived in 1975 and families D and E in 1981. Family B was given the northern side of the dambo, and D and E settled on the eastern side. The F family moved onto the northeastern bank of K. dambo in 1988 when the village head took family B’s land and gave it to Mr. F-1. The G family moved in immediately after the arrival of Mr. F-1. The families have different ethnic backgrounds, including Lenje, Tonga, and Shona from Zimbabwe and some Tanzanians, and arrived by a variety of means.

3. Destruction of the Forest Reserve

In 1994, a rumor began to circulate that the chief of this area had given his permission to open up bush land in the Forest Reserve (See Fig. 2). This rumor spread by word of mouth and became a semi-official authorization to clear the forest even though there was no amendment that year.
to any law regarding the Forest Reserve. At the time, the destruction of forest reserves had become a serious nationwide problem in Zambia, and what was to happen to this particular reserve was commonplace across the country.

3.1. Changes prior to the rumor

Prior to the rumor, significant changes had been made to the land tenure system in the area. In 1992, the chief publicly announced that anybody could apply for a title deed, which encouraged those who wanted a deed to apply. It also resulted in conflicting roles for the village head. An applicant for a title deed first had to approach the village head to obtain his approval. Once an applicant received a consent letter from the village head, the applicant could then seek the approval of the chief. Once this approval was gained, the applicant would then apply to the Ministry of Land. This process placed the village head in a position of power with regard to his initial consent, but at the same time, his authoritative hold over the land would be weakened and possibly even collapse once the consent was given. Thus, this became a very sensitive issue for the village head.

Another significant political change was announced in 1992: government procurement of maize was going to be abolished. Farmers had to sell their maize directly to traders instead of bringing it to a governmental purchasing depot. Farmers had long complained about the procurement system because they were given a check as payment, but it could not be cashed until the following rainy season. However, after the privatization of the maize market, people began to complain about having to hold large amounts of cash, even for short periods of time, because most of them did not have bank accounts. Thus, people began to fully realize the effect of 1991’s political change and the corresponding shift from the UNIP (United National Independence Party) to the MMD (Movement for Multi-party Democracy).

With the effects of these political changes still fresh, the forest-clearing rumor had a significant influence on some farmers, and the destruction of the forested areas should be viewed in the context of the concurrent rapidly changing socio-economic national climate.

3.2. Government change and the Forest Reserve

The MMD Government effected many policy changes in quick succession after their rise to power. Decentralization was a key policy, which was supported by donor countries. Decentralization had been trumpeted in their manifesto during the 1990 election; they pledged to recognize the legal status of traditional chiefs and to empower the Council of Chiefs. Chiefs and village heads began to consider the possible impact and ramifications of this policy.

However, people in village C saw this democratic system differently. For them, the MMD was popular because Mr. Mwanawasa, a then-important party statesman, was related to the village head. People began to consider that the power held by the forest guards under the UNIP might not be as strong under the MMD. With a new government and its new policies and the prevailing belief that the “chief wants to develop the Forest Reserve,” people increasingly felt they could go into the forest without fear of government action against them.
The rumor of new policies was seen as good news for those who wanted *dambo* land. Because, since 1990, the villagers’ demand for *dambo* land had grown to such levels that it had become a serious problem, one that concerned the village head. In this sense, local people used the national “political vacuum” for their own ends.

Farmers who moved into the Forest Reserve became rich because of good harvests on the newly farmed land. Two sons of family B who moved into the Forest Reserve in 1995 became rich and bought a second-used tractor in 1999. Crop production in the forest was much better than that in the village. However, the function of the Forest Reserve as common storehouse of fire-wood, medicinal herbs, and hardy wild plants was severely damaged, thereby considerably reducing farmers’ access to resources.

4. Disputes

4.1. Land dispute

People in the area were not given freehold rights to the land; instead, they had usufruct rights. As long as the farmers used the land properly and lived there in peace, the usufruct rights could not be revoked, but the rights could be revoked if those conditions were not met. In the early 1980s, there appeared to be no serious problems concerning land allotment. However, by 1993 when this field study began, *miombo* forest areas remained only on the eastern part of K. *dambo*. There was little land left for development, and land disputes began to arise.

The main disputed area is shown in Fig. 1. The village head at the time, Mr. C-2, wanted to allocate this land to his wife’s relatives, but the D family was using the land in the early 1990s. However, Mr. C-2 considered that the land belonged to his family and that it had been on loan, free of charge, to family D. He believed that the land allocated to the D and E families was limited to the eastern side of K. *dambo*.

Mr. D-1, the head of the D family, believed that that disputed land had been allocated to them by the first village head, Mr. C-1, before K. *dambo* was considered the boundary between the village and the Forest Reserve. And D-1 thought that the eastern part of K. *dambo*, as a matter of course, belonged to them since the moment when the boundary of the Forest Reserve was moved about 1.5 km to the east.

In 1998, Mr. C-2 built a house for his in-laws on land where Mr. D-1 had cultivated maize during the previous rainy season. Mr. C-2 stated that he had asked them to stop using the land several years earlier, which they had not done. Because Mr. C-2 built the house without advising Mr. D-1, Mr. D-1 was extremely angry and burned the house down. As a result, Mr. C-2 confiscated the land, as well as the adjacent *dambo* land that Mr. D-1 used to grow crops.

Mr. D-1 did not accept the confiscation order and wrote a letter of appeal to the chief. The letter was shelved by the village head, who did not send it to the chief. Mr. D-1 had not expected the letter to reach the chief and asked the village head for an alternate site, in particular, *dambo* farmland. The request could not be denied, and Mr. D-1 was given an alternate site in the *dambo* area. Even though Mr. D-1 was not completely satisfied with the land because of its low water levels, the dispute was ultimately settled.
4.2. Eviction order

The village head does not possess complete autocratic power over villagers because important issues must be discussed with the village committee. However, in practice, the village head has considerable power over the committee because he is the chairman of the committee and appoints all its members. He can also dismiss members at any time.

In 2001 and 2002, the third village head, Mr. C-3, issued eviction letters to some villagers, which was unusual. The former head, Mr. C-2, had also issued verbal banishment orders, but he had not strictly enforced them. In contrast, the manner in which Mr. C-3 had acted was different because he had issued letters call for eviction. The evictions letters were written after a skirmish between the village head and a PTA (Parent–Father Association) member and a village committee member. A detailed prologue is necessary to understand the reason behind the eviction letters issued toward them.

The PTA and committee members, Mr. H-1 and Mr. I-2, had been nominated by the second village head, Mr. C-2, to be my research assistants. However, as soon as Mr. C-3 took over the power of headmanship, he wanted to select new field assistants for the study because, through their field assistance, H-1 and I-2 had become more influential and sometimes opposed the village head’s opinions. It seemed that their growing self-confidence had given them a new boldness, which the village head thought of as selfishness.

In addition, the rainy season of 2000/01 was extraordinary. The rain was heavy and accompanied by violent storms that blew the roof off the primary school. I discussed with my friends and decided to help the school purchase a tarpaulin as a temporary roof. We met with Mr. H-1 and another PTA board member from a neighboring village and gave them one million K (Kwacha : 1US$=3600K) to buy the tarp. We included a note explaining that this money was to be used by the PTA representatives as they saw fit. After our meeting, the PTA representatives immediately visited the village head with committee member J-1 to show him the note and explain the plan because they knew he was suspicious of any plans that bypassed him. We had expected the village head to support this idea.

Because of several unforeseen accidents and the pressure of farming work, they could not buy the tarp before the rainy season started. The village head began to accuse Mr. H-1 and Mr. I-1 of misappropriating the money for their own use. Although the village head’s accusations intensified daily, they still could not buy the tarp. The village head then changed tactics and demanded that the PTA board member resign immediately and that the money be transferred to a new member who he had already nominated. However, the PTA representative did not acquiesce with this demand. The village head then called for the village committee to deal with the two men. They were not allowed to attend the meeting, and the committee decided that they would be expelled from the village at the end of May 2002. Letters of eviction were sent to each man, stating they had to leave by the end of March (not May as agreed at the meeting).

To avoid any further escalation of the matter, Mr. H-1 and Mr. I-2 went to the village head to
ask for more time until the end of the rainy season. They explained that they were looking for a tarpaulin or for tin to cover the roof, but because the rainy season had arrived, they had no time to do it because of farming commitments. Members of an organization in which these men were executives went to the village head to ask for forgiveness. They stated that, without these two men, the organization, which operated alongside an international non-governmental organization (NGO) promoting efficiency in farming and others means to increase income, would falter. Some senior villagers also became involved in the matter and tried to mediate. The intervention which will be mentioned below might have considerable impact on these senior villagers and also village headman himself.

In the end, the two men were allowed to remain in the village and they purchased some tin and a tarpaulin and covered the roof by the end of June. This is because of intervention mentioned below.

5. The Winds of Change

5.1. International NGO intervention

During the eviction incident, Mr. H-1 and Mr. I-2 acted unexpectedly and wrote a letter to the human rights office of an international NGO in Lusaka because they believed that the village head possessed no legitimate power to expel people from the village. They explained the entire story and attached a copy of the eviction letter. The reply from the NGO, sent both to the men and the village head, stated that the village head’s letter was unlawful. In addition, the letter advised the men to visit the Legal Resource Center at Kabwe to formally apply for a retraction of the eviction letter, which they did. This resulted in an investigation by the District Commissioner, who sent a letter calling both parties to a meeting in October 2004. Other villagers were also asked to attend as witnesses. As a result of the meeting, the Commissioner revoked the eviction letters.

This was a historic event, not only for the village head but for the villagers as well, who had never experienced this kind of contact with the outside world. Understandably, the village head was astonished by the commissioner’s letter. He intensified his criticism of their selfish and deviant behavior, which he claimed was immoral and would bring evil to the village. Despite his anger, however, the Commissioner’s decision did not allow him to enforce his expulsion order.

These events encouraged the two men. They gained a sense of democracy in action, and used a system that was supported by international organizations. However, the issue also created confusion in both the village head and some villagers, particularly members of the village committee. Some of the senior members had endeavored to resolve the matter using traditional methods of mediation and reconciliation. It was effective in some extent to persuade the head not to enforce the eviction. But what these two men had done was beyond the village authorities’ realm of understanding, and it appeared to be an act of betrayal.

5.2. Irrigation program

Many other changes accompanied the national political change in the early 1990s, including the reactivation of international development aids. Various aid programs were introduced in village C,
such as small-scale financing and conservation programs and a small-scale irrigation program that began in 2001. Most of the local aid programs started only after receiving the approval of the village head, but participation in and implementation of the programs were usually controlled by the aid agency without consulting the village head. Therefore, the role of the village head was limited if he did not participate in the program himself.

As a result of political democratization, many aid programs no longer consider it necessary to keep in close contact with local authorities. Instead, the organizations prefer to bypass the local powers and establish direct access with capable and motivated individuals, a process that has sometimes proven to be controversial.

Two representatives of an NGO unexpectedly visited Mr. F-1 in February 2001 after reading about him in one of our earlier study reports (Shimada 1995). Through the report, the men learned of Mr. F-1’s abilities, and presented plans to implement a small-scale irrigation system in the village (See photo 7 in p. 237). They also brought a demonstration treadle pump and left it for the villagers to try. The men asked Mr. F-1 to consider setting up an organization to oversee a project they wished to develop in the village.

The project aimed to empower small-scale farmers by increasing their agricultural production through the use of irrigation systems. The treadle pump had a total cost 480,000 K, but the NGO would make it available to farmers if they paid a deposit of 60,000 K. The balance was due in 12 months, after the following harvest. Thus, the organization was supplying both the pumps and the credit to purchase them.

Mr. F-1 found 10 applicants, but when he went to collect deposits, he discovered that the village head had sent the applicants a note explaining that Mr. F-1 would be expelled from the village. Although many of the applicants considered the village head’s actions to be ridiculous and anti-development, they were reluctant to confront him. By August, 6 of the 10 members had quit the group.

In September 2001, the regional representative of the NGO visited the village and further explained the plan in detail. A manual was shown to the villagers, and farmers were told that if they prepared the irrigation fields themselves, they could borrow the treadle pump free of charge. Although this new plan required some commitment from the farmers, they reaffirmed the NGO’s pursuit of development.

The village head remained suspicious about the plan, which he believed had been instigated without his blessing. Mr. F-1 carefully explained why the NGO representatives approached him directly and that he had no intention of advancing the program without the village head’s permission. Mr. F-1 further explained that these people had now come twice to the village and were very committed to the plan. He stated that he believed that the development plan would help improve the villagers’ welfare. The village head was moved by this explanation and abandon to enforce the deportation order.

Mr. F-1 then again called for members and collected a deposit of 15,000 K per person. The collection went smoothly this time, and in September 2001, an inauguration ceremony was per-
formed at Mr. F-1’s compound. A week later, as promised, the treadle pumps arrived.

Introduction of the pumps brought about significant changes. It enabled women and children to pump enough water to irrigate all fields in a short period of time. Because of the design of the fields, the water naturally flowed down through the fields, and each field did not have to be watered separately. Production in the first two dry seasons was very good, but some farmers had difficulty in properly maintaining the fields. The ridges in the fields easily collapsed, and it was difficult to retain the slope required to encourage the natural flow of water. Although the production results were favorable and less labor was required to water the crops, the efforts necessary to irrigate the fields were still greater than the farmers had expected.

6. Emergence of New Institutions

The most recent field study of the village was conducted in August 2010 (after a 6-year interval) and presented new impressions of the village. The road linking the highway to the village was newly paved, and the clinic, which had been under construction for some time, was completed. There were also changes to various social institutions and economic activities—there had been a rapid growth in micro-finance and obvious changes in contract farming.

6.1. Micro-financing

Micro-financing was introduced to the village in 2001 when the aforesaid international NGO started the Vifor project to promote irrigation agriculture and agroforestry. When the NGO launched the project, it established the Micro Project Unit (MPU), which is a fund of 7 million K.

MPU helped farmers to purchase the treadle pumps necessary for irrigation. Any farmer wanting to join the project was required to pay 520,000 K in advance to MPU. Once the money was paid they received a treadle pump. Farmers were then required to pay the remaining balance in 6 months’ time, at an interest rate of 2.5% per month. MPU lending services later included the purchase of fertilizer.

A flaw in the treadle pump scheme soon appeared: some families got two pumps, one each for the husband and wife, while others had none in spite of advance payment. As a result, people withdrew from MPU as a sign of their dissatisfaction with the unfair management of the system. To make matters worse, 7 of the initial 22 members died in quick succession, including 3 executive members. Some members died with outstanding loans, and few relatives (who were meant to inherit the membership) were willing to take responsibility for the repayments—only 2 memberships were subsequently taken on by relatives. A sizable amount of debt was left unpaid, which reduced MPU’s lending ability, and by 2007, MPU had stopped lending.

In the wake of MPU’s collapse, numerous small-scale financing groups known as OSAWEs (Own Savings for Asset and Wealth Creation) emerged. In August 2010, there were more than 10 OSAWEs in operation, and they are generally managed as follows. Members are credited with a certain amount of money every month, and those who want to borrow money can do so within their credit limit. The borrower is required to repay the amount within a month along with inter-
The gains from the interest can be used to further develop the OSAWE or, as is more usually the case, it is divided among the members. The OSAWE scheme appeals to many people. Although some OSAWEs are managed like traditional mutual financing associations, they are the exception.

There are three types of OSAWEs. The first is organized by MPU members. The second is made up of members from a new development project called OPAD (Organization to Promote Agricultural Development) which was formed in 2008 for the purpose of developing agricultural and animal husbandry production. OPAD created its OSAWE as a self-help mechanism. The final group is not affiliated with an organization; it was organized by individual facilitators who have been trained in micro-financing.

Although there is little difference in the methods the three groups use, there are variations in regard to the monthly credit amounts. The OSAWEs managed by MPU and OPAD have a monthly credit limit of 50,000 K; whereas in some independent associations, the limit is 15,000 K.

OSAWE group savings and lending is a relatively new practice in the villages. Some people are skeptical because of their previous bad experiences with MPU and their unfamiliarity with the strict default rules. However, the scheme is growing rapidly. Its success is due in part to the external influences on MPU and OPAD. Some of the OSAWE facilitators were trained by various NGOs (during a week-long training course) on group establishment, screening method of applicant, accountancy, bookkeeping, and constitution formation. However, some people without this training have also become OSAWE facilitators, showing that the administration of an OSAWE is not overly difficult as long as there are committed people involved. Some churches have also organized similar savings and lending clubs, in which the congregation pays 10,000 K every month and the fund operates similar to an OSAWE. The main difference is in the way interest gains are used—the churches generally use the funds to host religious ceremonies or for other church-related functions.

6.2. Cattle and plow lending

Two types of farming occur in the village: upland maize production during the rainy season (December to April) and vegetable cultivation in the dambo during the dry season. Although vegetable cultivation on dambo farms has become important for many villagers, the production of upland maize remains the central crop because maize is a staple food (See photo 8 in p. 237). Dambo cultivation is performed by individual households, which consist of a husband, wife or wives, and children. Widows or divorced women with children sometimes cultivate dambo farms on their own.

Unlike dambo farming, upland cultivation is carried out by groups. The size of the groups can vary, but the most common unit in upland cultivation is a cluster of households, typically an extended family. All family members work
together in cultivation and weeding, under a system based on patriarchy and seniority—widows, divorced women, and young couples who lack agricultural equipment or cattle, cultivate and weed the family land. In this respect, group cultivation functions as a mutual assistance system.

This group farming system has benefits and shortfalls. While it helps those who may be lacking labor, cattle, and plows, it also distributes risks unequally amongst the members. Fields cultivated early in the rainy season have a higher probability of reaping a good harvest. Thus, the senior members benefit because their fields are prepared first. Of course, this likelihood varies annually because of the area’s irregular rainfall patterns, but villagers know through experience that an early planting is generally better than a later one. Thus, the larger the group, the greater the risk to the junior members’ production, and junior members are often frustrated with the delayed cultivation of their fields. To avoid this, younger farmers often employ extra help to tend their land.

At least two mature cattle and one plow (a “set”) are needed to cultivate upland fields. Farmers who do not own the set or junior group members who wish to cultivate their land earlier often hire such teams from a farmer or a group of farmers who have more than one set in exchange for cash, seeds, or fertilizer. During the 2000/01 rainy season, there were not a few instances where sets were loaned free of charge, not only to relatives but also to friends, but the 2010 field study showed that lending contracts for sets had become more commonplace.

7. Changes in Vulnerability

As noted in the introduction, a multi-faceted analysis is imperative to assess changes in the vulnerability of a society and a livelihood approach is useful for this purpose. In this section, I examine changes in vulnerability in relation to the previously described social changes that occurred in the village since 1990. Vulnerability was assessed with regard to changes in the accessibility of natural resources.

In Section 4, the security of usufruct rights to land was discussed. The right is not always secured without debate, but as long as the farmers use land properly and appropriately, even the village head is unable to confiscate the land. Although some farmers have felt anxious about land security, this is not a new concern. Thus, the land tenure situation has not made a notable impact on changes in vulnerability in the past two decades.

In contrast to land rights, the destruction of the Forest Reserve described in Section 3 has had a considerable impact on increasing the vulnerability of villagers. The destruction of the forest denied villagers access to traditional fruits, herbs, and wood, items that were used in the past in times of famine as medicinal remedies and for fuel. Although several people who migrated into the Forest Reserve became rich, their success did not produce positive effects that were great enough to compensate for the loss of access to natural resources for the rest of the village.

The power of the village head, described in Section 4, was shown to have a subtle influence on people’s vulnerability. The eviction of a farmer
Fig. 3  Events that influenced the destruction of forest and institutional changes

Fig. 4  Factors influenced on the change of vulnerability
from the village would have a significant impact on him or her because of the denial of land tenure. Chiefs and village heads have tried to exploit the political changes, such as decentralization of the national policy, however, as seen in Section 5, two attempted evictions were not successful as a result of a series of appeals by the farmers concerned. In the course of events, it has become clear that democratization policy has had opposite effects on local politics. This means the change in the national political system had ambivalent effect on vulnerability. It has reduced people’s voices but at the same time it has empowered villagers.

The introduction of new irrigation projects, burgeoning small-scale savings and credit groups, and the practice of loaning out farm animals and implements, all discussed in Section 6, indicate that farmers do enjoy new channels to access resources. This has contributed to mitigate the vulnerability of those who had lost access channels to resources by the decrease in familial cooperation or mutual assistance.

Fig. 3 shows a chronological record of village events since 1990 and it represents a schematic depiction of the destruction of forest in the Forest Reserve along with concurrent changes in institutions and cultivation systems. The destruction of forest and the decrease in cooperative cultivation (Shimada 2007) have increased the vulnerability of farmers, particularly those who had previously benefited from group farming.

Increases in contract cultivation using cash or other commodities have helped to increase the production of farmers. Thus, generally speaking, this process has mitigated vulnerability. However, this mitigating effect has its limitations because poorer farmers are not able to afford to rent farm equipment. The emerging financing groups and projects have had a positive effect on farmers, making it easier for them to access funds or agricultural resources, all of which mitigate vulnerability. It must be noted that there are also farmers who do not participate in these groups or projects.

As mentioned in the introduction, vulnerability should be assessed across many factors, which I have done. However, integrating these changes in vulnerability as assessed by each individual factor is difficult. Because each factor shown in the Fig. 4 has different unit for measurement; destruction of forest is area and other factors are number (Cooperative cultivation, contract cultivation, micro finance, and NGO projects).

But if I focus on farmers’ access to natural resources judging from the tendency of each trajectory, it will be allowed to suggest that the vulnerability of farmers in the village increased in the first half of the 2000s and decreased in the latter half. However, not all farmers experienced a reduction in vulnerability during this latter period, and the disparity in vulnerability among farmers in the village may have grown during this period.

The impact of socioeconomic change on vulnerability is open to more than one interpretation, and moreover, changes may have counteracting effects on vulnerability through the resulting socioeconomic changes. This is why I dare to show some factors with different quality in a figure. There were also changes that occurred as byproducts of other changes and instances of social resilience. For example, the failure of the
first micro-financing attempt in the village was followed by extensive growth of smaller credit groups facilitated the development of set lending.

The multi-factor approach shows how intricate the concepts of vulnerability and resilience are. Long-term field study is indispensable for to evaluate vulnerability.

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不確実な社会に生きるアフリカ農民の脆弱性
—— サンビア中央州の1農村における調査から——

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要旨 脆弱性概念の重要性は広く認識されている。しかしその概念が持つ多面性から、その意味を理解することも測ることも容易ではない。脆弱性は多面的アプローチを採用することによってのみ評価が可能であると考えられる。この論文は、アフリカの小規模農民の脆弱性を捉える1つの事例を示すものである。サンビアの1農村で1992年から実施してきた長期の調査結果をもとに、農民の自然資源へのアクセスの変化に焦点をあて、彼らの脆弱性の変化の分析を試みた。その結果、社会経済的变化が農民たちの脆弱性増大に与えた影響は1つの要因だけでは説明できないこと、さらにその社会経済的变化が脆弱性を緩和するように働く事もあり得ることを明らかにした。脆弱性やレジリエンスの概念は、このような複数の要素を分析することにより初めて明らかになる複雑な概念である。

キーワード：脆弱性，不確実性，レジリエンス，サンビア，生業

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