Thirty Years of Agrarian Change at an Upper Elevation Village in Western Nepal

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Abstract

In 2016, I returned to Chimkhola, a village whose farming system I had studied in detail in the mid-1980s. Living conditions, child mortality, education levels had all improved greatly. Remissions from family members working overseas were supplanting subsistence farming. Community resources include agricultural fields and forests from 1600 to 4000 m on the southeast flank of Dhaulagiri Himal. I seek to preserve an account of the complex farming system the community used in 1986, describe how it appears to be dissolving, and speculate on the future. Unlike many parts of Nepal, in 2016 the people of Chimkhola farmed without industrial inputs, as they did in 1986. However, they reduced the area they were farming. It seems likely that, if recent trends continue, the communal system will collapse.

Keywords Agrarian change · Socio-economic transitions · Remittance economy · Farming systems

Introduction

In 2016 I returned to Chimkhola, a village that I had studied in 1986 (Metz, 1989a), to discover the changes that have occurred during the intervening 30 years. I found many significant improvements in the health and education level of the villagers. This is due to the efforts of the people and to the broader changes in Nepal and the world. The village is in Myagdi district on the southeast flank of Dhaulagiri Himal (Fig. 1). In 2016 a motor road was a one-day walk from the village, compared to a three-day walk in 1986, and there was even a rough track that allowed tractors to pull wagons of goods to the village through most of the year.1 In 1986, few goods not locally produced were available, so villagers relied on their farming system to meet most of their needs.

In 2016 the ethnic composition of the population remains little changed, with 83% of the households Pun Magars and the other 17% being Dalit blacksmith, tailor, and leather worker households (HHs). The village has long had extremely important ties to the outside world: the men had been heavily recruited to the British Gurkha brigades and, after 1947, also to India’s Gurkhas. When I was there in 1986, 40% of the households had men who were or had been Gurkhas, and many were receiving small pensions, about $360/household/year, as estimated in 1986 by the head of the village council. More importantly, they had experienced the wider world and knew that their children needed an education to prosper, so they had lobbied for and won an elementary and a high school for the village. By 2016 the educational opportunities had paid off, with virtually all children going to school for some years, and many to high school and beyond.

However, by 2016 in the village, as in virtually all of Nepal, the economy had shifted from subsistence farming to overseas work (Seddon et al., 2002; Maharjan et al., 2012; Sunam & McCarthy, 2016; Sijapati et al., 2017; Speck, 2017), and half of the men between the ages of 20 and 40 were working in the Arabian Peninsula kingdoms and other parts of the world as construction workers, guards, and many other jobs. The money they were remitting to their families was funding the purchase of food and goods from outside their territory, the education of their children, new houses, and moves to cities. If they have the resources, families send their children to private schools in regional cities or Kathmandu (Maharjan et al., 2012; Gioli et al., 2014; Jaquet et al., 2016; Speck, 2017).

1 In 2021 a motor road was built to the village as part of a major dam project on the Rahughat Khola.
These changes have led many villagers to reduce their farming activities significantly, partially because of labor shortage with so many men away, and partially because they can afford to buy food from outside (Adhikari & Hobley, 2015). In 1986 I did a detailed analysis of their farming system, which included large areas of forests that provided fodder for their large herds of livestock, fuelwood, construction materials, foods, and other materials. To fertilize their widely dispersed agricultural fields, they had developed a sophisticated farming system that moved livestock to recently harvested fields, where they held the animals for one to several weeks. After fertilizing one set of fields, they moved to a different set, and then to a third, fourth, fifth, sixth, and seventh set. When all fields were planted, they took their herds into the forests and allowed the animals to browse forest vegetation, while the herder, who lived with the animals through all these moves, climbed trees and cut branches with leaves to feed his herd. At each of these locations the herder built a shelter of poles, roof mats made of split bamboo, and walls of mats and branches. These shelters are called goThs, pronounced approximately as “goat.”

By 2016, the system was declining, as households abandoned distant fields and reduced their livestock herds.

I had published short descriptions of this 1986 farming system (Metz, 1990, 1994), but only in my dissertation (Metz, 1989a) had I explained the system in sufficient detail to reveal its sophistication. As villagers abandon the system, their knowledge of how to wrest survival from these mountains is being lost: in two generations it will be largely forgotten. Many villagers look at the unending toil and harsh life that the old system demanded and say “good riddance,” as indeed would we. I have two goals for this paper. My two goals are first to describe Chimkhola’s 1986 farming system so that there is a published record of how it functioned, and second is to show how the village has changed over the last three decades. My description of the 1986 system adds to the range of accounts of human adaptations to these difficult Himalayan environments and can be seen as a celebration of human ingenuity and adaptability.

In the first section of the paper I first outline the types of subsistence production systems that functioned in the Hills of Nepal in the 1980s to provide a context for Chimkhola. Second, I describe the opportunities and limits of the village’s biophysical environment. I next explain the methods I used to investigate the farming system in 1986 and to update it in 2016, and then describe the farming system in 1986 in detail. I next sketch the agricultural and socio-economic changes that have occurred in the village since 1986, and compare Chimkhola’s agrarian transition to those of restudied villages in SE Asia. In conclusion, I speculate on Chimkhola’s future and the tradeoffs the people are making by joining the global economy.

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2 South Asian languages have aspirated and unaspirated consonants: “d” and “t” also have dental and retroflex pronunciations. I mark the aspirated consonants with an accompanying “h.” I symbolize the retroflex D and T with uppercase letters and dental with lower case. Hence, “goTh” has an aspirated and retroflex “T” pronunciation; it can be approximated as “goat.”
Chimkhola as Example of “Upper Elevation Production Type”

Before my study of Chimkhola, I spent a year in Sindhu Palchok district, northeast of Kathmandu, studying forests (Metz, 1997) and observing the farming systems in the region. As I learned about Chimkhola’s farming system, I was struck by how similar the farming systems were between these two regions and formulated a model of farming systems based on their elevations and locations in the landscape (Metz, 1989b).

Several previous classification systems have been proposed, but most are based on single village studies or several villages in a region, and so are not applied to a larger part of the country. Hitchcock (1980), Messerschmidt (1976), and Hoffpaurit (1978) divided villages into lower and upper types, with lower having many irrigated fields, on which wet rice (*Oryza sativa*) is grown, houses are distributed through the landscape, and smaller numbers of cows and buffalo livestock are stall-fed. In contrast, upper elevation villages have few irrigated and more rainfed fields on which they grow maize (*Zea mays*), millet (*Elsine coracana*), barley (*Hordeum vulgare*), wheat (*Triticum vulgare*), soybeans (*Glycine maxima*), and many other crops; they also have more animals, that spend periods of varying length away from the nucleated villages. Bergeret and Petit (1986) added an intermediate or middle elevation village type that includes a mix of features of low and high elevation villages depending on the distribution of irrigated land and access to forests. To these, Blamont (1986), following Kawakita (1971), added a fourth: communities living north of the high mountains, in the rain shadow of the monsoon.

I adapted these classifications to fit my experience, identified where in the landscape these village types occur, and applied the classification to 40% of the country, encouraging other scholars to expand and improve my system (Table 1).

Nepal’s territory includes parts of the northern edge of the Gangetic plain, called the Tarai, and areas north of the

| VILLAGE TYPE | LOWER | MIDDLE | UPPER | HIGH |
|--------------|-------|--------|-------|------|
| ELEVATION    | 1100-1500 m | 1400-1900 | 1800-3500 | 3000-4000 |
| KHEt/BARI RATIO$^1$ | 60 to 40 | 40 to 60 | 10 to 90 | 0 to 100 |
| FORESTS      | Subtropical patches, often degraded; many healthy Community Forests (CF); private trees | Subtropical patches often degraded; many healthy CFs; private trees | Broadleaf Evergreen Temperate & Subalpine; Degrading & CF | Large areas of Subalpine; Under Stress |
| LIVESTOCK NUMBERS | Moderate numbers; buffalo, cattle, goats; Stall fed | Moderate numbers; Stall fed and grazed | Large numbers, grazed in forest from goThs | Large numbers, grazed in Alpine pastures |
| AG FIELDS    | Compact | Slightly Dispersed | Widely Dispersed | Dispersed |

$^1$Khet are flat, irrigated terrace fields; Bari are slightly out-sloping rainfed terraces

Source: Metz (1989b)
high mountains called the “Inner Valleys.” South of the Himalayas, two other mountain chains parallel the high mountains: the 2400–2900 m tall Mahabharat Lekh, and the 900–1300 m Siwalik Hills (Fig. 1). The Mahabharat Lekh blocks the south flowing streams of the high mountains, collects them into three large rivers which flow east or west north of the Mahabharat and into the gorges they have cut through the Mahabharat and Siwalik ranges, from which they flow into the Ganges system.

My classification has three scales of analysis (Fig. 1): first, four south to north divisions: the flat, fertile Tarai; the valleys between the Siwalik Hills and the Mahabharat, called the “Inner Tarai;” the “Hills,” which are the steep sloped ridges and valleys descending from the high mountains to the Mahabharat, as well as the north and south slopes of the Mahabharat Lekh itself; and the dry “Inner Valleys” north of the Himalayan chain (Hagan, 1972; Stocklin, 1980; Ramsey, 1986).

Second scale is within the Hills, the arrays of ridge and valley topo-sequences running south from the high mountains to the Mahabharat Lekh and the short ridge and valley sequences flowing north and south from the Mahabharat ridges (Fig. 2). Persistent monsoon clouds cover these ridges above 2400–2600 m, making agriculture unproductive, except in areas behind high elevation ridges which create partial rain shadows, like in Khumbu, the home of the Sherpas. Forests commonly begin at about 2500 m, while in 1986 areas below 2500 m had only patches of forests in the uplands and in some of the valley bottoms, with most territory in shrublands created by the long-term overuse of former forests. Within the shrubland matrix, villagers have constructed elaborate terraces of agricultural fields. There are two main types of terraces: flat “khet” on which rice irrigated by monsoon rains are grown; and slightly out-sloping rainfed “bari” fields to which maize, elusine millet, barley, wheat, soy, and other crops are planted (Kawakita, 1971; Maharjan, 1985; Schroeder, 1985; Blamont, 1986).

The third scale is on the ridge-valley topo-sequences, which I divide into four farm-system types (Fig. 2). “Lower Elevation Production” types have significant areas of irrigated khet fields, as well as some rainfed “bari” fields on which villagers plant maize, millet, wheat, soy, and other crops. They fertilize these fields, which are close to their spatially dispersed homes, with manure composted with crop residues. They have small herds of stall-fed cattle, buffalo, and goats. Fodder and fuelwood come from private trees, crop residues, and degraded forests (Table 1). In 1986 most forests were in poor condition, but by 2009 healthy community forests were common (Pandey & Subedi, 2008; Ojha et al., 2009). Examples of this village type are described by Hitchcock (1980), Schroeder (1985), and Hoffpauir (1978).

“Upper Elevation Production” types, in contrast, have few or no irrigated fields, but large areas of rainfed bari fields, but these are often scattered far from the nucleated villages. To fertilize these fields, households take their large herds of cattle, buffalo, and goats onto harvested fields and hold them there for one to several weeks. These villages control the forests that occupy territories above 2500 m, and herdies often take livestock into the forests when all agricultural fields are planted. A household member stays with the livestock as they
move through the landscape, building a rough hut called a goTh, at each stop. Forests provide fuelwood, livestock feed, building materials, but these uses were degrading their extensive forest holdings. Examples include Macfarlane (1976), Fricke (1986), and Blamont (1986).

“Middle Elevation Production” types share parts of both these systems depending on their location: they have some irrigated fields, but larger areas of rainfed terraces. Forest holdings are larger, with some communities accessing the forests above 2500 m. Livestock herds are larger than low villages, but most fertilization is by composted manure carried to khet fields. By 2015 many communities had used the Community Forestry program to create productive forests (Pandey & Subedi, 2008; Ojha et al., 2009; Niraula et al., 2013). Examples of this type are Kawakita (1971) and Berthet-Bondet et al. (1986).

“High Elevation Production” types are rare in high elevation, partial rain-shadow valleys. Crops are barley, naked barley, buckwheat, and potatoes. Traditionally, households had large herds of yak and yak hybrids that were used in trans-Himalayan trade with Tibetans, but that trade has been almost completely replaced by tourism (Table 1). Examples are given by Stevens (1993) and Brower (1991).

Chimkhola’s Bio-physical Resources

The village of Chimkhola is located on the southeastern slopes of Dhaulagiri Himal, in west-central Nepal, just west of the Kali Gandaki valley (Fig. 1). The nucleated village sits between 1650 and 1730 m on the nose-slope of a ridge formed by the Rahughat Khola and its tributary Bagar Khola. The village controls approximately 50 km² of land, ranging from 1550 to 4000 m. The landscape is steep, with relatively few places suitable for agriculture (Figs. 3 and 4).

As a result, the village’s agricultural fields are scattered one to one-and-a-half hours walk in three different directions from the village center, making stall feeding and carrying manure to fields impossible. Villagers have solved this problem, as in similar villages, with a system of moving their large herds of livestock onto harvested fields, holding them there for a week or more to fertilize the fields, and moving to a different set of fields. About 20% of Chimkhola’s land resources, i.e., 10 km² from 1600 to 2500 m, are a landscape of shrubs, patches of degraded forests, and agricultural fields. The agricultural fields make up approximately 35% of this 10 km² area, aggregated into 68 named groups (Metz, 1989a). Soils are shallow and marginally fertile: the government has classified 74% of the soils as third and fourth-class rainfed fields (Metz, 1989a, p. 82).

Broadleaf evergreen forests lie between 2500 and 3100 m and have many species of the Fagaceae, Lauraceae, Symplocaceae, Ericaceae, and other families, but enough trees of four oak species that forest types are often named for the oaks (Stainton, 1972). These broadleaf forests, which cover 35% of Chimkhola’s land, merge into Fir-rhododendron (Abies spectabilis-Rhododendron barbatum) forests between 3000–3400 m. From 3100 m birch trees (Betula utilis) and Rhododendron shrubs (R. campanulatum) intermix with the Abies and Rhododendron trees and gradually become dominant. These subalpine forests and rhododendron shrublands make up 45% of Chimkhola’s territory. Between 3400 and 4000 m, alpine meadows gradually come to dominate. These meadows are grazing grounds shared with communities from other sides of Dhaulagiri Himal (Metz, 1998).

The climate, as determined from three years of temperature and precipitation data from the late 1980s, is temperate monsoonal, with January average maximum and minimum temperatures of 18.0° and 6.4° C and June average maximum and minimum temperatures of 28.9° and 19.3° C. Snow is unusual in the village, but above 2200 m becomes common. During these three years, annual precipitation was 2707 mm/yr. 82% of which fell from mid-June to mid-October. December through March had 149 mm of precipitation, and afternoon thunderstorms brought 103 mm of rain in April and 142 mm in May. These thunderstorms only partially alleviate the high temperatures and xeric conditions of the pre-monsoon period.

With 2.7 m of precipitation Chimkhola is at the western edge of the heavy monsoon precipitation zone in Nepal, often exemplified by areas upslope from Pokhara; to the west of Dhaulagiri precipitation totals decrease significantly and the vegetation and agriculture practices reflect this change (Stainton, 1972; Dobremez, 1976, p. 41; Bishop, 1978).

Research Methods

In the last months of 1985 and all of 1986, I lived in the village and measured the ways people made their livings. My research assistant, Mr. Bo Bahadur Thapa, a retired British Gurkha, was an essential guide to the village. We first used village records to collect demographic information on everyone in the village. We then numbered the HHs and used a table of random numbers to select 100 households for detailed interview surveys of demographic, land and livestock assets, agricultural practices, food consumption, house age, fuelwood use, and other info. Two of the 100 HHs were unavailable, so this survey included 98 HHs. Because villagers do not record newborns until they are one year old, we considered the 98 HH Survey more accurate than village records. In 2016, we did the comparable survey of 100 randomly selected HHs described below.
Fig. 3  Land Use of Chimkhola
Village
In 1986 we selected 40 households from the 98 HH Survey for a detailed monthly inventory of their agricultural system, livestock herds/goTh-shelter locations, fuelwood volumes and species used, livestock fodder fed to herds, food and wild vegetation villagers ate. At six times through the year we also weighed fuelwood at the 40 HH’s homes to quantify their verbal reports. We also visited their goThs frequently and measured the poles used to build them, how long the roof mats lasted before rotting, the number of loads and weights of lopped leaves they fed their animals each day, and the weights of the fuelwood they burned. Analysis of these data showed that forest resources used in these goThs significantly exceeded those of the HHs in the village (Metz, 1990, 1994).

As we accumulated these data, I gradually understood the pattern of goTh movements, and how these patterns organized the lives of the entire village. Additional discussions revealed that another level of organization, a three-year rotation cycle, governed each year’s activities (Table 2; Fig. 6). Analysis of all these data allowed me to provide a quantitative summary of forest and wild vegetation use by the community (Metz, 1989a, 1990, 1994).

By 2016, Bo Bahadur was living in the UK with thousands of other retired Gurkhas, but the village Vice-Chair hosted me and my young female research assistant. The Vice-Chair provided information from village records on village households and arranged for us to interview 100 HHs. The survey instrument we used collected data parallel to the 1986 98 HH survey, including demographics, land and livestock resources, education levels of HH members, child mortality, farming activities, fuelwood use, whether the HH still have goThs, volumes and sources of fuelwood at different seasons. In addition, we collected data on HH members working or studying outside the village: where they were; the work they were doing; where they obtained loans to pay the large upfront costs for labor contractors, passports, visas,
transportation, etc. (Kern & Muller-Boker, 2015). I entered these data into spreadsheets, calculated descriptive statistics for interval and ratio data, and classified and counted HH nominal data.

The GoTh Farming System of Chimkhola

As I noted above, Chimkhola’s agricultural fields are widely distributed in three directions from the nucleated village, so they fertilize fields by taking their herds onto just-harvested fields (Figs. 3 and 4). Fewer than 1% of Chimkhola’s land is irrigated rice terraces, but they have large areas of rainfed fields on which to grow maize, millet, barley, wheat, soybeans, and other crops and vegetables.

The movement of herds through the year structures the entire farming system. A herder lives with the animals through all these moves, building goThs at each stop, which are pole structures roofed with mats of woven split bamboo and walled with mats and/or small branches. The 68 fields are aggregated into seven groups that I call “functional groups,” and these are the units of the annual cycle. Herds visit each of the seven functional groups twice per year, once to fertilize before HHs plant spring and summer crops, and once before they plant winter crops (Figs. 4 and 5). Each winter one-third of the fields are held fallow and the herds are kept on them for an extended fertilization period.

In addition, there are three times during the year when all fields are planted, so herders take livestock into the forests. The first of these is after the winter fallow ends. The herds are taken to and held in the lower (2500–2800 m) forests from mid-March to late-April. HHs have cleared small areas within these lower forests to which they return for each of the three forest periods, though during the second period, from early July to mid-August, many herders take animals into the high forests and alpine meadows (Fig. 3). At these lower forest clearings, they also plant potatoes and enclose the area with a fence of branches, so I call these lower forest sites Potato Gardens (Figs. 3, 4, and 5).

The choice of the days on which to move the herds is made at open village meetings, so farmers know when they must finish their harvest before the animals arrive. On these moving days over 200 households and thousands of animals moved across the landscape. The herder carried the roof-mats, and at least one other HH member carries the large basket that holds the cooking utensils, salt, spices, and other equipment the herder uses at the goTh.

The system is more complicated because the seven functional groups of fields are aggregated into three larger “Annual Rotation” groups, each in different years of a three-year rotation (Table 2, Figs. 4, 5, and 6). Rotation Group A fields are mostly on the west-facing slopes far above the Rahughat Khola and include two of the seven functional groups. Most Rotation Group B fields are on south-facing slopes and include three of the seven functional groups of fields. The aspects of Rotation Group C fields are largely north and northwest and contain two of the functional groups.

We start the three-year Rotation with the winter fallow. In 1986 the B Rotation fields were the winter-fallow fields, which meant that after the fallow villagers planted Early Maize in spring and barley in winter (Table 2). That same year the A Rotation fields were in the second year of the cycle; on these fields villagers grew Late Maize in summer and barley and wheat in winter. The C Rotation fields were in the third year of the rotation in 1986, so they were planted with millet and soybeans in the spring and became the fallow fields in the 1986–87 winter (see Figs. 5 and 6; Table 2).

In 1986, the winter fallow B Rotation fields had village herds spend about a month on each of the three functional groups’ fields. In early March and the herders took their animals up into the lower forest Potato Gardens and HHs began sequentially planting the three functional groups’ fields with Early Maize. As the B Rotation fields were being planted, the winter crops of the A Rotation fields began to be harvested, and after the harvest was complete in mid-May, HHs took their herds back down to fertilize the A Rotation fields. While the animals were on the A Rotation fields, villagers harvested the winter crops of the C Rotation fields and finished planting the B Rotation Early Maize fields. Herders then took livestock to fertilize the C Rotation fields, and HHs planted Late Maize on the two functional groups of A

| Table 2: The Three Year Rotation of Crop Cycles |
|-----------------------------------------------|
| B FIELDS (3 FUNCTIONAL GROUPS) | A FIELDS (2 FUNCTIONAL GROUPS) | C FIELDS (2 FUNCTIONAL GROUPS) |
| SEASON/| SUMMER/WINTER | SUMMER/WINTER | SUMMER/WINTER |
| YEAR 1 | Early Maize/ Barley–Wheat | Late Maize/ Barley–Wheat | Millet / Fallow |
| 1986  | | | Early Maize / Barley–Wheat |
| YEAR 2 | Late Maize/ Barley–Wheat | Millet / Fallow | |
| 1987  | | | |
| YEAR 3 | Millet / Fallow | Early Maize / Barley–Wheat | Late Maize / Barley |
| 1988  | | | |

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Rotation fields. By the end of May the C Rotation fields had been fertilized, the herds were taken back into the forests for the summer, and villagers planted millet and soybeans on the two functional groups of the C Rotation fields. During this long summer period, from early July into mid-August, many herders took their herds into the high forest and alpine meadows, then returning to the potato garden GoTh sites for another four weeks (Figs. 5 and 6).

While the herds were in the forests, farmers were busy. First, by mid-June the millet had been planted in the C Rotation fields, and HHs entered the first of the 3 functional groups of the Early Maize B Rotation fields to interplant millet and soybeans among the growing maize plants, though they sometimes substitute taro and yams for the soy and millet. This relay-interplanting is an example of an intensification of the system, a pattern that is widespread (Boserup, 1965; Schroeder, 1985; Bergeret & Petit, 1986). After these Early Maize plants were harvested in late July, the interplanted soy and millet were left to mature during the summer and were finally harvested in October.

The next task, about 3 to 4 weeks after the millet and soy were planted on the C Rotation fields, had village women and a few men weeding and thinning these fields. Weeding and thinning the millet crops are among the most labor-intensive tasks of the year. Chimkhola, like many Nepalese communities, uses the “parima” system to ease the burden. In parima ten or more HHs agree to work together to weed the fields of each HH, the order being determined by a random selection process; at the end of each day, the host HH gives the workers a meal. After the millet had been weeded, farmers individually weeded their other fields through the summer.

By mid-August the maize on the intercropped B Rotation Early Maize crop was harvested, leaving the interplanted millet and soy to grow and mature. In September, HH’s began to harvest the other two functional groups of Early Maize that had not been intercropped. This harvest was completed in the third week of September, so the herders and their animals returned to fertilize these two functional groups of the B Rotation fields with millet and soy. HHs then focused on harvesting the Late
Maize crops on the A Rotation fields. By mid-October the A Rotation fields were clear, so the herders took the animals to fertilize them, and farmers planted the two empty B Rotation functional groups with barley. During this same period, farmers harvested the relay interplanted millet and soybeans from the last functional group of the B Rotation fields. Following that harvest, during the first two weeks of November, the livestock were taken to fertilize the last B Rotation Early Maize fields, and HHs planted the A Rotation fields with barley and wheat. Then mid-way through November the herds were taken to the potato garden forests for two weeks while the last functional group of B Rotation fields was planted to barley, and farmers harvested the millet and soy on the C Rotation fields. Finally, in the first week of December, the livestock were taken down to the new winter fallow fields, which were the C Rotation fields for the 1986–87 winter fallow. In the spring of 1987, these C Rotation fields, that had been the winter fallow fields, became the “Early Maize” fields, The B Rotation fields became the “Late Maize” fields, and the A Rotation fields moved into the slot the C fields had just completed: growing millet in summer and becoming the winter fallow for the winter of 1987–8 (Table 2).
Above, because Magars are one of the four “janajati” groups working outside Nepal and sending money home. By 2016 Chimkhola had half of its men between 20 and 40 working outside Nepal (Thieme & Wyss, 2005; Paoletti et al., 2014; Sijapati et al., 2017). Chimkhola’s families had joined this flow, occurring throughout Nepal.

First, the international demand for foreign workers had increased greatly, especially in the Arabian Peninsula countries and Malaysia, with the result that an estimated third or more of Nepal’s HHs have one or more members working overseas (Thieme & Wyss, 2005; Paoletti et al., 2014; Sijapati et al., 2017). Chimkhola’s families had joined this flow, and by 2016 Chimkhola had half of its men between 20 and 40 working outside Nepal and sending money home. Foreign work is not new to Chimkhola, as mentioned above, because Magars are one of the four “janajati” groups heavily recruited by the British military for the last 200 years (Seddon et al., 2002; Sijapati & Limbu, 2017). The impact and benefits of British army service have been very important to the village, but by 2010 the UK so severely reduced recruitment that even villages like Chimkhola have almost no new soldiers.

Foreign labor migration in the 21st century is fundamentally different from what had preceded it: around the world hundreds of millions of people live and work far from home. The Arabian Peninsula countries are iconic examples, as they use their oil wealth to build new cities and cutting-edge infrastructure. However, they have too few citizens able or willing to do the work, so they import large numbers of foreign workers. For Nepal, the most spectacular change has been in Qatar: World Bank data had 464 Nepalis in Qatar in 2000 and 2.3 times as many in 2017: 456,000 (CESLAM, 2019). Like other Nepalese foreign workers, the rest of Chimkhola’s overseas workers have scattered to countries all over the world.

The second important external change affecting Chimkhola, and all of Nepal, is the expansion of roads. Paved roads have brought enough outside foodstuffs and consumer goods to the district center, Beni, that the reduced prices and the money from out-of-village wages allow Chimkhola HHs to purchase these items in Beni or from village storekeepers. In 2016 Chimkhola had five stores, while in 1986 there were no stores, only one household that sold sugar, salt, matches, batteries and other goods from its porch. Now, storekeepers obtain goods from mule trains or tractor-pulled wagons, which come over the rough dirt road the villagers have built to reach the paved road to Beni. The combination of cheaper goods and overseas remittances has alleviated the need for the relentless work that subsistence farming demands.

Changes within the village have come from new infrastructure and the ongoing emphasis on education. First, access to clean water from a system with taps distributed throughout the village, and the widespread creation and use of pit latrines have improved health conditions enormously. These changes are largely responsible for the astounding 75% decline in infant and child mortality over the 30 years (Fig. 7). Second, the creation of a reliable hydro-electricity plant led to electric lights, televisions, computers, and omnipresent mobile phones – communication tools that tie villagers together over local, regional, national, and international spaces. Third, HHs are using much of the money remitted by family workers to educate their children. The village has long been committed to education, and those investments have paid off. In 2016, virtually all the children attended school in the village or in private schools in regional cities or Kathmandu. The changes are most striking in female education: in 1986 only 25% of females had attended any school, but by 2016 75% of females had some schooling.

### Chimkhola in 2016

By 2016 Chimkhola had changed dramatically in response to changes in the world outside their village and to improvements within the village that the people had implemented themselves (Table 3). Most of these changes parallel those occurring throughout Nepal.

| # Persons/HH | 1986 | 2016 | % Decline |
|--------------|------|------|-----------|
|               | 6.22 | 4.88 | 22        |
| Total Livestock Units | 11.03 | 6.79 | 39        |
| Large Livestock Units  | 9.57 | 4.80 | 50        |
| Avg Land Owned  | 12.64 | 9.02 | 28        |
| Avg Land Planted    | 12.64 | 6.68 | 47        |

Source: this study

aLand is measured in number of ropanis (902 m²)
bLivestock units are calculated thusly: cows and oxen = 1; water buffalo = 1.5; sheep and goats = 0.2; young animals = ½ adult

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3 Khet are flat, irrigated terrace fields; Bari are slightly out-sloping rainfed terraces (Table 1).

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4 Janajati groups are Tibeto-Burmese peoples who migrated to what became Nepal from the northeast in the first millennium CE. The janajati groups were incorporated into the middle ranks of the caste system, which was imposed by the high-caste Hindus who migrated into the mountains after the Muslim conquests of India and created scores of petty kingdoms, which were consolidated into the country of Nepal in the mid-18th century by one of the formerly petty kings, Prithvi Narayan Shah (Stiller, 1975).

5 Qatar’s expansion is largely because Qatar convinced the Federation Internationale de Football Association (FIFA) to award it the 2022 World Cup, which has required the construction of many new facilities (Bruslé, 2012; Paoletti et al., 2014; NPR, 2021).
and most of the 25% of women with no schooling in 2016 were children in or before 1986 (Fig. 8). More importantly, the educational attainments of girls in 2016 matched those of boys.

In 1986 there were 276 households, and in 2016 there were 321; that the increase is small relative to birth rates in the 1980s appears to be the result of many HHs moving out of the village to urban areas. The ethnic composition has remained similar, with the number of Magar households declining from 86% in 1986 to 83% in 2016, while dalit blacksmith, tailor, and leather worker households increased from 13 to 17%. Household size, however, had declined by 2016, but the definition became more ambiguous because so many men and students were not residing in the village. I calculated several definitions of HH size, but used the number of people eating plus those “likely to return” to identify 4.88 persons/HH, as the best 2016 analog to the number we calculated in 1986, 6.11 persons/HH (Table 3).

This reasons for this decline are largely explained by the change in birth and fertility rates, as shown in the differences between the population pyramids of 1986 and 2016 (Figs. 9 and 10), and by a huge reduction in childhood mortality (Fig. 9). By 2016 the demographic transition was well under-way. This decline mirrors a striking drop in fertility rates for Nepal as a whole, from 6.0 children per woman in 1970, to 5.3 in 1990, to 2.8 in 2010, to 1.91 in 2020 (Worldometer, 2021)!

![Population Pyramid 1986](image_url)

![Female Education Levels in 1986 and 2016](image_url)

![Child Mortality Reductions 1986 to 2016](image_url)
These changes have reduced the reliance on subsistence farming and consequently reduced the amounts of land families own and plant and the numbers of livestock they maintain (Table 3). Quite revealing is the 63% of HHs which have no oxen to plow their fields. We asked the interviewees if they still have goThs and move their herds through the landscape, and 70% said they do. Conversations with the Vice Chair of the Village Development Committee, however, revealed that only about 45% of HH follow the entire cycle of the traditional goTh rotation through the entire year, while half only use fields close to their dwellings. This decline in following the entire annual cycle is verified by the decrease in the amount of land HH’s own, the decrease in the amount they plant, and the decrease in the numbers of animals they hold. With fewer animals, about 15% of the HHs, or 1/3 of the of the full-cycle HHs, combine herds and pay the herder to care for their animals (Table 3).

Finally, the culture is changing. The people of Chimkhola are nominally Hindus, but in reality, their religion is a form of animism. However, by 2016 about 5% of the population had converted to Christianity and had built a church in the village. A much wider set of changes is the intrusion of international culture of music, dress, and consumerism. One example is the teenage girls and young women who often dress in western clothes. Access to the internet via phones and computers is bring them information and images of the wider world, and like youth everywhere, they seek to join it.

The Agrarian Transition and Chimkhola

In the introduction to a book of 14 restudies in Southeast Asia, Rigg and Vandergeest (2012) note that restudies are relatively rare and almost always discover results that the original scholars did not anticipate. One of the few Nepalese examples is the restudy that Blaikie et al. (2002) made of their extensive mid-1970s research project (Blaikie et al., 1980; Seddon et al., 1979). The 1970s research sought to determine the impacts road expansion would have on the people of west-central Nepal. They concluded that poverty and hunger would increase because the majority of the region’s HHs were subsistence farmers who had no surplus, while large farmers and landlords, who had surpluses, were unlikely to adopt technologies of the Green Revolution package which would increase yields, allow them to sell surpluses to markets, and expand the food supply to support the rapidly growing population. Blaikie et al.’s return study (2002) found that conditions had improved: the percentages of landless laborers and poor peasants had decreased by 10% and 4% respectively, while the percentages of middle and rich peasants had increased 7% and 8%. Blaikie et al. (2002) attributed the improvement to increases in non-farm income, especially from an unexpected surge in remissions from overseas migrant laborers (Blaikie et al., 2002, p. 1265). However, they cautioned that the improvements only enhanced subsistence, but did nothing to transform agriculture into a form that created real food security.

A second Nepal example is Fox’s 1990 and 2010 restudies of his 1980 research (Fox, 1984, 1993, 2016) at Bhogteni, a low elevation village in central Nepal. Fox focused on the impacts of community forestry on the condition of his site’s forests in 1990 and 2010. Four community forest user groups had taken control of the 1980 forests of his original study: the two large forests had increased in density and tree size, but the two smaller forests had degraded. Population at this village had increased 28% between 1980 and 1990, but from 1990 to 2010 the increase was an insignificant 0.7%. Fox attributed the lack of demographic growth to many villagers abandoning

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6 The National Academy of Sciences (2019) distinguishes between *reproducible* restudies, those which use the data and methods published by an author to redo the same study, from *replicable* restudies, in which the same or a different scholar uses the same methods of a previous study on the same site at a later date in order to identify change. This is obviously a replicable study.
farming and moving to cities or the Tarai, moves made possible by remissions from overseas migrant workers.

Both of these studies, like many recent village studies in South Asia, found that foreign migration income had transformed individual lives and societies. The decline of farming at Bhoteni is more extreme than at Chimkhola, but the processes are similar and are examples of “agrarian transitions.”

The classic model of this transition, articulated by Marx, Kautsky, and Lenin, (Akram-Lodhi & Kay, 2010a) was how the farming systems of pre-capitalist societies would: be converted to capitalist enterprises. In volume 1 of Capital Marx (1956) explained how the transition evolved in England via the enclosure of common property pastures and forests, thereby displacing small farmers and ultimately forcing them into “free” wage labor in the factories of the industrial revolution. Marx noted that the English example was unique, because all such transitions depend on local political, economic, and social conditions. A generation later Kautsky (1988) and Lenin (1964) explored factors impeding the development of agrarian capitalism: many small farmers persisted by self-exploiting to grow food for subsistence and for sale, by working for agricultural and non-agricultural employers, and by producing and selling handicrafts.7 (Akram-Lodhi & Kay, 2010a, p. 180).

The “agrarian question” re-emerged with the post-WWII development projects, which sought to reduce the general poverty of the citizens of former colonies, while integrating them into the world capitalist economy. During the first 30 years donors sought to build social and physical infrastructure by providing governments with resources and advice on modernizing the newly independent countries’ agricultural, industrial, and political infrastructure (McMichael, 2009, 2012). Since 1980, international donors have adopted neoliberal ideology, granted new loans to repay old ones, and used “structural adjustment” policies to force countries of the Global South to eliminate trade protections and replace food crops with export crops (Holt-Gimenez & Shattuck, 2011; McMichael, 2006; Akram-Lodhi & Kay, 2010b). A result of these processes has been growing food insecurity and the need to find alternative sources of income to maintain HH livelihood: foreign labor migration has become an important way to survive these changes (Ratha et al., 2021a; Sunam & McCarthy, 2016).

A collection of 14 village restudies in Southeast Asia (Rigg & Vandergeest, 2012) explain how the agrarian transition has been occurring in that region and provides a contrast to villages in Nepal (Vandergeest & Rigg, 2012; De Koninck et al., 2012). Malaysia, Thailand, Indonesia, and Vietnam have developed dynamic manufacturing and productive agriculture, which have reduced poverty greatly over the last decades (Rigg et al., 2016: Table 3). The SE Asian restudies discovered many unanticipated changes, some that seem contradictory. For example, although the dominant global pattern is small holders abandoning agriculture and moving to cities (Davis, 2004), some southeast Asian HHs are abandoning urban lives and returning to rural homes (Vandergeest, 2012; Peluso et al., 2012). Nevertheless, amid the diversity of adaptations, there are commonalities (De Koninck et al., 2012; Rigg et al., 2016). Many HH’s continue to farm their land, even as the areas owned have declined by 50% and their livelihoods have become based on non-agricultural wages, often involving circular migration to jobs in domestic cities or in rural oil and timber extraction sites (Peluso et al., 2012).

Rigg et al. (2016, pp. 120–121) note that small holder HHs are largely responsible for the dynamic economies of Thailand, Malaysia, Indonesia, and Vietnam, both by adopting Green Revolution technologies to grow the food to feed the populations and by providing the labor for industrialization. Unlike Nepal, this migratory labor occurs mostly within their own countries, and therefore is improving infrastructure and creating domestic work opportunities, rather than building up foreign countries. This difference returns us to the Blaikie et al. restudy (2002) that explained the limitations of Nepal’s stagnant economy and how remissions were not being productively invested in ways that will lead to cumulative development.

Nepal’s stagnant domestic economy has not taken off because the main source of foreign exchange, remittances from international laborers, has been spent on consumption and education, not on job-creating investments (Sunam & McCarthy, 2016; Thieme & Wyss, 2005). Part of the reason for this is the geological and political-economic instability of the last three decades: the 1996–2006 civil war; a decade of political stalemate as the former civil war enemies continued their struggle politically; two severe earthquakes in 2015: a new, federal constitution that restructured the government and provoked import blockades in 2015–16; and the Covid-19 pandemic (World Bank, 2015, 2022a, b). Hence, the pattern occurring in SE Asia, the dynamic agriculture and industry which creates many non-agricultural jobs, has not and is not likely to occur in Nepal. Residents of remote villages like Chimkhola are even less likely find local opportunities that support HHs and individuals than in lower elevation communities, so it seems that young people will continue to leave the village and farming to seek work internationally, becoming part of the global reserve army of the working poor.

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7 One of Kautky’s scenarios was that agro-industrial corporations would provide inputs to replace tasks farmers provided themselves, like labor-saving machinery, fertilizers, seeds, and they would industrially process outputs, but not take control of agriculture production itself. This describes the condition of much of contemporary US agriculture, where owners are also workers, and agribusiness has created horizontally and vertically integrated corporations that provide inputs and process outputs (Hauter, 2012; Heffernan, 2000).
Conclusion

In 1986 Chimkhola’s farming system appeared to be stable, though it relied heavily on the broadleaf evergreen forests for fodder, fuel, and forest products. Even then, in areas around some goThs, the most desired fodder species trees (Ilex dipyrenia, Quercus spp.) had many to most branches lopped off, and a few were dying. The population was growing rapidly, and 85% of HHs participated in the goTh system.

By 2016, birthrates had declined steeply and the demographic transition was well underway. Half the village men in the prime of their lives were working overseas and remitting money to support their families. HHs were abandoning distant fields, shedding livestock, and relying on purchased goods rather than ones they produce themselves.

The global economy had penetrated their territory, and they had embraced it. However, as farming declines and essentials are purchased rather than made, the society is turning their welfare over to the global economy. Some scholars interpret out-of-village labor as a diversifying strategy to increase HH security and stability, especially as climate change disrupts the bases of past farming (Gioli et al., 2014). The Covid 19 pandemic, however, shows the dangers of that bargain: thousands of Nepali workers were stranded for months, not being paid, living in cramped dormitories, and unable to return home (Baniya et al., 2020). Gradually, many have found way home, but without the money they had planned to earn and many with debts. Over the last 15 years Nepal’s government has passed laws and made agreements with the worksite countries to improve the work conditions of Nepali workers, but these were being inconsistently implemented even before the pandemic hit (Sijapati & Limbu, 2017). The massive crisis the pandemic unleashed exacerbates these weaknesses and reveals the dangers of relying on foreign work. The danger from this reliance is revealed by the 28.4% of Nepal’s 2019 GDP that came from overseas remissions, the sixth highest in the world (Ratha et al., 2021b): a significant decrease in remissions will push the entire economy and country into crisis. Adding to the dangers are the Arabian Peninsula countries’ policies aiming to reduce the number of foreign workers: from 2017 to 2021 the Saudis reduced the number of foreign workers 22.6%; from 2020 to 2021 Oman reduced the number 10.3%, Qatar 5.9%, Bahrain 9.8% (Ratha et al., 2021b). Some of this decline is due to the Covid pandemic, but very little: remittances to South Asia were 5.2% greater in 2020 than 2019 (Ratha et al., 2021a, p. 2). Moreover, reducing the reliance on foreign workers was an established policy before the pandemic and is extremely likely to continue. In addition, after the 2022 World Cup, Qatar, the largest worksite for Nepalese workers, will no longer need many construction workers and will greatly reduce their numbers (Hamblin, 2021).

Prospects for domestic development that will allow migrants to devote their labor to improving their homeland are dim. Unlike the dynamic economies of Southeast Asia, where the labor and talents of the people have been invested domestically and have greatly reduced poverty (Rigg et al., 2016; Table 3), no dynamic economy has emerged in Nepal and good jobs remain scarce. Domestic migrant labor has been key to improving the economies and lives of SE Asian countries, but Nepalese workers build the infrastructure and economies of foreign countries.

Families choose migrant labor out of desperation because they see no other pathway to improving their lives and giving their children the education that they will need to survive and prosper. Indeed, this investment has improved the lives of many Chimkhola residents, as my results show. But they face an unjust world. The people of Chimkhola designed a farming system that allowed them to survive and prosper despite their harsh, resource-limited landscape. Now they attempt to survive the corrupt, exploitative world of migrant labor. As subsistence farmers, they learned to live with the unforgiving laws of nature, but now they face the dangers of a human-created world, designed to extract as much from them as possible. Their employers have the power to adjust to their operations to global, national, or local conditions and to continue or abandon employment opportunities. Nepalese citizens can only choose from the options others provide. The Government of Nepal requires destination-country employers to pay for transportation to and from the worksite country, to grant workers the right to change employers at end of their contracts, and to provide food allowances and daily rest periods (Sijapati & Limbu, 2017), but these rules are frequently ignored, and Nepal’s government has little ability to enforce them. Pressure from the development donors with projects in Nepal can force migrant work-countries to enforce bilateral and international agreements that create better working conditions. Journalists (NPR, 2021), researchers (Bruslé, 2012), and human rights groups (Paoletti et al., 2014) have all promoted this route, and it seems to be the best strategy to improve conditions. However, concern for Nepal’s migrant workers is not a high priority of many governments. Workers from Nepal, like from so many other places, are desperate enough to take the risks that foreign work entails and continue to search for better lives through labor migration.

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