
OWNERSHIP AND CONTROL IN CHINESE RANGELAND MANAGEMENT SINCE MAO: THE CASE OF FREE-RIDING IN NINGXIA

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INTRODUCTION

With the introduction of rural reforms in the early 1980s, China broke with its collectivist past and began the arduous transition from a centrally planned to a free market economy. The People's Communes – the institutional basis of agriculture under Mao – were disbanded, and communal land was redistributed to users through a family-based 'Household Contract Responsibility System' (HCRS), which offered farmers more managerial freedom by linking rewards directly to production and efficiency.

The first period of agricultural reform was largely successful, with grain production increasing enormously and a bumper harvest of over 400 million tons being achieved in 1984. This success legitimised a move towards the further fragmentation and individualisation of agriculture – including the forestry and livestock sectors. The HCRS model was subsequently extended to grazing areas and in 1985 a new Rangeland Law was promulgated, under which rangeland could be contracted to collectives or individuals. The law prohibits certain 'harmful' activities, and empowers local governments 'to stop anyone from farming a rangeland in violation of the provisions of the present law, to order the person to restore the destroyed vegetation, and to pay a fine if serious damage has been done.'

The success of previous agricultural reforms was not, however, mirrored in the livestock sector. Today, the Rangeland Law is unenforceable in many parts of China, while the contract system for grasslands has failed miserably. Far from promoting the sustainable use of the rangelands, the new system has tended to enhance pasture degradation, with economic freedom acting as a stimulus for individuals to increase production, whatever the long term implications for the range. The situation as it stands raises a number of questions about the implementation and consequences of the HCRS and Rangeland Law in the livestock sector. In particular it raises doubts about the wisdom of extending policy measures designed for crop agriculture to the livestock sector, without taking into account the inherent differences between production systems.

This article addresses these questions by analysing the shifts in rangeland management and pattern of grassland usage in the Ningxia Hui Autonomous Region

in the northwest China. It focuses on three key periods: 1) pre–1956, when grassland was privately owned, but collectively used; 2) 1956–1978, when grassland was used and owned collectively and livestock belonged to the collective, and 3) 1978–present, when the State attempted to implement a hybrid State/private property regime by contracting rangeland to individual farmers (who had by then regained ownership rights of their livestock), but retaining ownership rights within the collective.

This analysis suggests that the principal underlying cause of the current alleged ‘Tragedy of the Commons’ situation in Ningxia is the establishment of collectivist institutions which undermined the legitimacy of customary rights structures over the regulation of grasslands. Communes failed to create the necessary socio-economic and regulatory conditions that allowed individuals to pursue their own well-being without harming the prospects of future generations. Instead, the pattern of resource use that developed bore all the characteristics of an open-access system, under which resources were squandered. The present government’s attempt to privatise and individualise rangeland areas also lacks these essential regulatory conditions, and many features of rangeland use have changed little since the collectivist era. Most significantly the problem of free-riding remains unresolved.

The Ningxia Hui Autonomous Region

Ningxia Hui Autonomous Region is bordered by Shaanxi Province to the east, Inner Mongolia to the north and west, and by Gansu Province to the south. It has a total land surface area of 66 400 km² and contains 4.24 million people – of which 1.37 million (32 %) belong to the Islamic Hui minority. Instead of being administered as a province, Ningxia was carved out as an Autonomous Region for the Hui in 1958.

Fieldwork was carried out in the spring of 1994 and focused on two ecologically different regions: The semi-arid desert/steppe area of Yanchi County in the middle eastern part of Ningxia, where animal husbandry is the dominant economic activity; and Guyuan County in the mountainous and highly erosive Loess Plateau of southern Ningxia, where mixed farming prevails. Guyuan County is the poorer of the two counties. It has inadequate access to drinking water, a poorly developed infrastructure, and an illiteracy rate of around 36 % (60 % among women). In contrast to Yanchi County, the population is dominated by Islamic Hui (about 80 %).

Ningxia once belonged to a region called ‘the land of grass.’ Before much of the lush grassland was reclaimed by agricultural settlers, the whole landscape was one of rich grandeur. Reports from Sven Hedin’s expeditions in the 1920s, and

other reports from the 1930s, make it clear that the rangelands of Ningxia have deteriorated since that time (Hu *et al.* 1992). Today Ningxia contains 3 million ha of grassland – about 45 % of the total land surface. Of this, 2.3 million ha has been reported to be affected to some degree by desertification or soil erosion, while 2 341 km² of rangeland has been classified as severely desertified (Liu and Huang 1993). The problem is most serious in the northern and central parts of Ningxia, where damage to communication lines and agricultural land by drifting sand has been reported. The most important degradational agents active in the area are listed in Box 1.

Box 1 Agents of land degradation in Ningxia

Bielfeldt and Steinbach (see Shen and Steinbach 1993) have enumerated the following causes for degradation of the steppe ecosystem in Ningxia:

- **Population pressure;** population density in Ningxia has increased to 75 persons km⁻² of arable land, ten times the upper limit for arid zones proposed by the UN (Liu and Huang 1993: 59);
- **Overgrazing;** livestock density in Ningxia is by far the highest for all pastoral regions in Northern China (80.8 animals km⁻²), and almost twice that of the next highest (Liaoning Province);
- **Reclamation of unsuitable land;** increasing population pressure has led to the reclamation of new lands for cultivation that are unsuited to agriculture;
- **Excessive ground water irrigation;** leading to quickly receding water tables;
- **Digging of medicinal plants;** particularly the liquorice root (*Glycyrrhiza uralensis*) and black moss (*Nostoc flagelliforme*), producing deep, highly erodible holes;
- **Use of shrubs as fuelwood;** loosens surrounding soil and makes them highly erodible.

As Bromley (1991) has pointed out, resource degradation in developing countries is most often blamed on population growth, but is more usually rooted in the erosion of customary property rights through the imposition of new structures by colonial authorities and subsequent national governments. This point is as valid for China as it is for anywhere else. In 1956, the so-called Higher Agricultural Producers' Cooperatives (HAPCs), the predecessor of the People's Communes, were established. From that point, all grassland that was formerly owned by landlords or

small communities yet commonly managed, became nationalised and managed by the State through the collective. The collectivisation of agriculture destroyed the customary right structures that existed before 1956 and had extremely important implications in terms of the regulation of grazing on Chinese rangelands.

REGULATIONS OF GRAZING – FROM PAST TO PRESENT

Vast and abundant: The period before 1956

Historical records indicate that animal husbandry developed very early in Guyuan County, an area first inhabited by nomadic peoples belonging to ethnic minorities. By 179–143 BC (Han dynasty) the Chinese imperial government had established horse ranches which survived until the early days of the Chinese Republic (Wang 1987; Chen and Song 1993). Yanchi County was populated much later by Mongolian herdsmen in the Qing dynasty (1644–1911) (YXBWB 1983).

Traditional range management in Ningxia relied heavily on livestock mobility (migratory movements are described in Box 2), but by the turn of the 19th century transhumant pastoralism had all but disappeared – primarily due to the influx of new populations during the second half of the Qing dynasty and the early days of the Republic.

Box 2 – Traditional migratory movements in Ningxia

Pastoral nomadism in China was traditionally based on the extensive use of pastures, which implied not only seasonal migrations from one grazing area to another, but also fairly rapid movement over each pasture area (Hu *et al.* 1992). Summer grazing (mid-May to mid-August) was mostly restricted to the mountains and high shady slopes, where the weather was relatively cool and the supply of forage and water ample. Autumn grazing was practised on the middle elevations of the mountains or highlands from late August to November. Winter and spring grazing lands were located in the relatively warm lowland areas (basins, valleys and sand dune areas). This system was constrained by the availability of winter and spring grazing. These are the seasons of gestation and birth for the grazing animals, and an adequate supply of forage is crucial to avoid mass starvation at these times (Hu *et al.* 1992).

Today's Muslim Hui minority, who reside mainly in southern Ningxia, were driven there during the military campaigns of the Qing government.¹ A significant proportion of the Han Chinese farmers were landless peasants or refugees who were settled in remote areas especially designated by the Nationalist government for land reclamation in the 1920s and 1930s. Others had fled because of famine (*e.g.* the 1899 famine in Gansu Province) and opened up their own land. During this period Ningxia was frequently in a state of war, and life was generally turbulent until the end of the 1930s when the Shaan-Gan-Ning border region was established (Zhang 1991; Wu and Lui 1993).

The landless farmers and refugees of war (Han, Hui and other ethnic minorities alike) who immigrated to Ningxia were not livestock farmers and were not familiar with transhumant practices. Instead they led a settled life on farms and set up mixed farming systems incorporating crop agriculture and animal husbandry. As the grasslands were vast and abundant and the population scarce, the mechanisms for resource use these migrants introduced were highly appropriate. It was only after the Communist Revolution in 1949 and the introduction of the People's Communes in 1958, that certain characteristics of the regulatory framework proved to be destructive.

From the last century of the Qing dynasty to the establishment of the rural cooperatives in 1956, the rangelands were generally owned by landlords or small communities, but commonly used by livestock farmers. During the time that Ningxia partly belonged to the Shaan-Gan-Ning border region (1936–1949), an initial land reform was carried out under which some areas of grassland were redistributed from landlords to individual farmers (Zhang 1989; Lui and Huang 1993). A second wave of land reforms after the Communist Revolution (1950–52) redistributed all remaining agricultural and grazing land in the same way. On the ground, however, range management practices remained pretty much the same throughout the 1911–1956 period, with property rights remaining vested with individual users, lineages or the village community as a whole (Yang 1964; GXBWB 1981; YXBWB 1983). Authority for delegating grazing rights for specific plots rested with village elders, heads of the clans, individual owners of the

¹ Small communities of 'Hui Hui' – as the Hui Muslims were called – used to live in the Yellow River basin in the 12th century (Yuan dynasty). After the great uprising of Jin Jibao in the Qing dynasty the Hui of Ningxia and the neighbouring provinces were driven away from their original dwellings to remote and poor places such as Guyuan County on the Loess Plateau (Lai 1992).

grassland and, in exceptional cases involving outsiders, the ward head (or *bao* head).

Unlike regions where pastoral nomadism was practised, there was no detailed regulated system of grazing (such as rotational, seasonal or deferred grazing) in place in Ningxia (GXBWB 1981; YXBWB 1983; Zhang 1986; GDDB 1987). In principle, everybody in the village was free to use the range, while between neighbouring villages a tradition of overlapping grazing (*chuanmu*) existed (NHZN 1964). Outsiders could use grazing land only with the permission of the head of the *bao*, who was also responsible for the resolution of conflicts over grazing and water use.

At the time, these arrangements were deemed appropriate for a relatively abundant resource base whose productivity was highly variable because of erratic rainfall, and which benefited more from flexible boundaries than from fixed ones. When elderly farmers in Guyuan and Yanchi were asked about the period before collectives, they unanimously responded that the grasslands were so abundant and vast that they simply did not need additional regulations such as deferred or rotational grazing. The absence of these forms of grazing implies that the rangelands in Ningxia could formerly renew themselves continually. Furthermore, the needs that the grasslands had to satisfy were not yet determined by market demand, but were rather constantly adjusted and limited within the local social system itself (see The Ecologist 1992).

However, after the foundation of the People's Republic, grazing areas became more restrictive, as rangelands became increasingly the target of reclamation for crop agriculture. Between 1949 and 1956 more than 5 300 km² of grassland was opened up in this way. The way in which rangelands were managed – which has remained pretty much unchanged until that time – was also about to be radically altered.

After the land reforms of 1950–1952, the Chinese government set itself the task of collectivising agriculture – a process which passed through several overlapping stages. The first (1950–55) saw the establishment of the Mutual Aid Teams (MATs), which were based on the traditional peasant custom of helping each other in their farming activities. Under the MAT, individual ownership of land and the other major means of production remained unchanged, and households continued to receive the produce from their own farms. In the second stage (1952–1956), Lower Agricultural Producers' Cooperatives (LAPCs) were established. These pooled land, labour and capital in units of 20–25 farm households, with the income workers received reflecting the amount of land, capital and labour they contributed. The establishment of MATs and LAPCs had no direct or profound consequences for

the way rangeland was managed.² It was the establishment of the HAPCs (1956) and the People's Communes (1958), on a backdrop of increasing livestock numbers and the Cultural Revolution campaigns of the 1960s and 1970s that would prove calamitous for the grazing areas of Ningxia.

² For more details on rural institutions during the period 1949–1956, see Chen and Buckwell (1991).

Box 3 – Acronyms

Reforms in China since 1950 have created numerous organisations responsible for rangeland management. Organisations referred to in this paper are listed below, along with the dates of their operation.

MATs – Mutual Aid Teams, established 1952–56 as an initial stage in the collectivisation process. Peasant households continued to control productive assets and the disposal of agricultural produce.

LAPCs – Lower Agricultural Producers' Cooperatives, established 1952–56 for the pooling of land, labour and capital among 20–25 households.

HAPCs – Higher Agricultural Producers' Cooperatives, established in 1956 in pastoral areas for the collectivisation of rangeland use and ownership.

HCRS – Household Contract Responsibility System, initiated in the early 1980s and extended to rangeland areas in 1985 as part of the de-collectivisation process.

GMSs – Grassland Management Stations, the State regulatory authorities responsible for rangeland management at the local level; established in 1958, disbanded in 1967 and then re-established in 1978.

SAH – Section for Animal Husbandry, the State department responsible for the management and protection of rangelands through GMSs. The SAH became part of the Department of Agriculture and Animal Husbandry from 1960-84, and then became the Bureau of Animal Husbandry (see below).

BAH – The Bureau of Animal Husbandry is the government department currently supervising rangeland management; it is one part of the Ministry of Agriculture.

The failure of collectivism: 1956–1978

With the establishment of HAPCs in 1956, all rangelands became nationalised and land and livestock became collective property.³ To expand the decision-making unit of the HAPCs to the township level, the government executed a radical reorganisation in which 740 000 HAPCs were merged into around 23 000 People's Communes, with an average of 5 440 households per commune (Chen and Buckwell 1991). The excessive size of the communes, the lack of producer incentives and the total abolition of the private sector created serious problems in the agricultural sector. These were not helped by a series of severe natural disasters during 1959–61 which resulted in nation-wide famine. Subsequently the Central Committee of the Communist Party reversed its decision, and ordered further reorganisation of the communes.

In 1961, the system of 'three-level ownerships with the team as the basic unit' was established. From then on every peasant household belonged to a production team (the present 'natural village' with 100–150 persons), which was headed by a team leader selected by the Party. Several production teams together formed a production brigade (the present administrative village, with 200–400 households), and a number of production brigades made up a commune (usually comprising a small market town with its surrounding villages).

Under the People's Communes the property rights of rangeland were vested in the commune, while the production brigade effectively owned the livestock. The production team owned farm implements, and was responsible for livestock production. Within the production team a pasture group was formed which was charged with herding the flock. Private initiative was once more encouraged through a production responsibility system that allowed households to contract livestock. Each team member was rewarded with work points for the amount of labour done, the production of livestock and investments he had made for the means of production (fodder, construction of corrals *etc.*). The work points were calculated in cash value to cover the ration expenses that were distributed to the households, while surplus in cash value was paid in money (Oi 1989; Chen and Buckwell 1991; Chan *et al.* 1992; Croll 1994).

The Section for Animal Husbandry (SAH) was responsible for the management and protection of rangeland. In the Autonomous Region these responsibilities were delegated to so-called County Grassland Management Stations (GMS) from 1958. These were disbanded in 1967 and then re-established again much later in 1978. There was no authority responsible for management within the commune itself, other than a veterinary station. The SAH was later subsumed into

³ A small private sector was retained, however, in which farmers could raise some poultry, hogs or sheep and goats for their own use. Private plots (with a maximum of 5% of the arable area) were also allowed.

the Department for Agriculture and Animal Husbandry (1960–1984), and then re-emerged as the Bureau of Animal Husbandry. Veterinary tasks were left with separate institutions, such as the County Veterinary Stations and the Veterinary Stations in each commune.

The lull before the storm: 1956–1966

Between 1956 and 1966 rangeland management remained relatively unaffected by political campaigns, and animal husbandry went through a stable development. After People's Communes had been established in 1958, the government of Ningxia sought to increase agricultural productivity, with special emphasis on the livestock sector. The ruminant population rose rapidly in this period, and between 1958 and 1965 total numbers of sheep and goats in Ningxia increased by 91.5 % (GTZ 1990). This reversed a slight downward trend in sheep and goat numbers which had been in evidence since 1954 (Figure 1).

Figure 1. Ruminant populations in Ningxia, 1949–1989 (Source: GTZ 1990).

The human population of Ningxia also grew substantially during this period – from 1 200 000 in 1949 to 2 270 000 in 1965, notwithstanding a slight fall of 14 000 between 1960 and 1962 (Figure 2).⁴

Figure 2. Human population in Ningxia, 1949–1989 (Source: GTZ 1990).

The combined increase in human and animal numbers created an unprecedented level of land scarcity, and increased the need (both perceived and real) for the regulation of rangeland use.⁵ In the early 1960s, the government of Ningxia promulgated the ‘Order on the Protection of Grazing Lands’, under which neighbouring communes or production brigades were required to form special organisations to manage, use and protect grazing areas commonly. At the same time new grazing techniques, such as deferred and rotational grazing, were introduced and land reclamation and the digging of medicinal herbs became more strictly

⁴ The statistics compiled by the Statistical Bureau of Ningxia in the 1960s differ from GTZ’s; an increase from 1,112,552 (1949) to 1,921,985 (1965) with a fall of 40,000 people in 1960–61 (see NHZT (1966: 2–3)).

⁵ This change in perception is confirmed by both interviews with elderly farmers and the literature (see NHZN 1964; ZKNNZK 1963a).

regulated and in most cases prohibited (ZKNNZK 1963a,b; Lei *et al.* 1964; NHZN 1964; YXBWB 1983).

During this period, institutions such as SAH and the Department for Agriculture attempted to develop new approaches for sustainable use of rangelands. Small scale experiments, including the use of fencing, were carried out in counties where animal husbandry was most important. In Yanchi County, however, the scale of this experiment was very modest – by 1956 only 4.5 % of the natural grassland area had been fenced, and by 1963 researchers were still calling for these areas to be expanded (Lei *et al.* 1964; YXBWB 1983). The figure rose to 18 % at the beginning of the Cultural Revolution in 1966, but by 1976 had fallen again to 4.2 % (YXBWB 1983; Zhang 1986). Other measures introduced to improve range utilisation included the sinking of new wells to mitigate the concentration of grazing around existing wells and pathways, and the establishment of artificial forage areas to help alleviate fodder shortages in winter and spring.

In many ways, these attempts to improve (and sustain) livestock productivity through capital investments and improved common property management were destined to fail in their objectives. This was true for several reasons:

UNCLEAR MANAGEMENT RESPONSIBILITIES – Attempts to effect ‘collective maintenance, collective management and collective usage’ by the production team conflicted with the existing property rights structure. In principle it was the commune rather than the individual user (*i.e.* members of the production team) which owned the grassland. Therefore, the term ‘collective’ did not refer to one institutional level, but three; the production team, the production brigade and the commune. Ownership of the grassland was vested in the commune, the ownership of livestock in the brigade, while the team was only charged with herding the flock. Under these arrangements individual users had no interest in using the range in a sustainable way, as it was not perceived as being their own.

AMBIGUOUS TERRITORIAL BOUNDARIES – The tradition of overlapped grazing in Ningxia prevailed throughout the time of the People’s Communes. The attempts to introduce enclosure not only contradicted this tradition, but arguably were unsuited to the management of Chinese rangelands which are characterised by highly variable productivity. These grasslands benefit more from flexible arrangements than from rigid ones and it is hardly surprising that fencing experiments failed. If formal agreement did exist between the communes over the various boundaries of the grassland under their jurisdiction, the boundary rules would still be void as the communes lacked the authority structures to enforce them.

OPEN GROUP MEMBERSHIP – In essence everyone was automatically a member of a commune, and designated to a certain production team. There was no restriction on the number of sheep, nor were participants excluded from the team if

pastures were threatened with overgrazing. In some cases capital investments were made to augment the productivity of the pastures. Yet, as there were no rules for allocation, nor for the boundaries of the natural resource, the grasslands continued to be squandered, and these capital investments were in vain.

POOR ENFORCEMENT OF RULES – The enforcement of rules was left to GMSs under the SAH. These institutions were short of money and were seriously understaffed.⁶ They were also subject to the political wind, which was reflected in the number of reorganisations, mergers and disbandments that took place (GMSs were completely abolished between 1967 and 1978). Within the brigade or team there were no formal structures that could have taken on the job of enforcing sanctions on resource use. The only organisation that could have done so – the Poor and Lower-Middle Peasant Association – was essentially defunct (there had been no new elections, although incumbents retained their title) and played only a minor role in consultations about village affairs (Chan *et al.* 1992).

POOR COMMUNICATIONS – External information was scarce in the commune as information had to be filtered through the village cadres – putting them in a more privileged position than the peasants (Croll 1994). This situation was hardly conducive to the horizontal flow of information between users needed for effective natural resource management in common property management systems.

In sum, overlapped grazing actually persisted throughout the period of the communes. The only difference was that the previous systems of rangeland allocation within the villages was replaced by the institutional structure of the communes. But the communes could never be effective in the management and protection of grassland because of the organisational set-up described above. The authority for the enforcement of herding rules should have been vested in the production team, and not in the commune or brigade.

The signs were bad: The available area of grassland per ruminant had decreased dramatically, and the property regime that ensued was one of open access, or nobody's land. Unfortunately, there was also no chance for any improvement in grassland management; a period of political instability and of great destruction to China's grasslands was about to begin.

The consequences of the grain-first policy: 1966–1978

During the Great Proletarian Cultural Revolution the so-called 'grain-first' policy, which had its origins in the greatest famine in human history, was formulated (Smil

⁶ Between 1958 and 1967 the Grassland Management Stations of Yanchi County employed seven staff to manage an area of 3 170 km² (YXBWB 1983: 42).

1987). After the famine (which was itself the result of the disastrous ‘Great Leap Forward’ of 1958) the Chinese government became preoccupied with attaining self-sufficiency in cereal production. This led to the reclamation of vast areas of wasteland, forests and rangelands, much of which was unsuitable for agriculture. Policies for the livestock sector were geared to increasing ruminant numbers, rather than their productivity or quality. GMSs and Veterinary Stations were disbanded and the piece-rate system, as well as household sideline activities, were branded as ‘capitalist tails’ and abolished. The rhetoric of ‘planting crops in the middle of lakes and on the top of mountains’ was accompanied by serious pasture degradation and a fall in forage production.⁷ Many grazing animals died from starvation. A third of the combined herd in Yanchi County died between 1966 and 1976 (Zhang *et al.* 1986: 156), while Ningxia’s ruminant population fell by 28.5% over the same period (GTZ 1990: 897; see also Figure 1).

The political struggle campaigns of the Cultural Revolution also had profound psychological and social consequences for those living in the communes (Chan *et al.* 1992; Croll 1994).⁸ Campaigns were often geared less to their apparent political aims than to the manipulation of patron-client relations within and outside the village. These campaigns provided the breeding ground for conflict, social division, repression and manipulation – weakening the peer-group social pressures essential for successful common property management. Farmers grew tired of Maoist visions of a new moral order based on dedication, altruism and cooperation. The abolition of the piece-rate system had also taken away the production incentives of farmers, leading to an overall atmosphere of accepted free-riding at the cost of production. As Croll put it:

‘... individuals in China frequently felt themselves divorced from collective performance, which ultimately threatened the existence of the very collective structures – the team, brigades and communes themselves...’

Croll (1994: 13)

⁷ Reports indicate a 170 000 ha (40% of the total area of rangeland) increase in the desertified area of Yanchi County between 1962 and 1976 (Zhang *et al.* 1986: 156). Hu and Hannaway also reported a marked decline in productivity in neighbouring rangeland areas. In Inner Mongolia a decrease of 40%–60% was reported, and in Xinjiang a 50% decrease in the period 1965–75 (Hu *et al.* 1992: 76).

⁸ This is not to say that the intensity and impact of the struggle campaigns were similar for every region in China. Some villages escaped the consequences of political campaigns like the ‘Big Clean Up’ or the ‘Cleansing of the Class Ranks’ (see also Chan *et al.* 1992).

As for the grazing areas, the Chinese government was now looking for new ways of managing them – and was leaning more and more towards privatisation as the limitations of the People’s Communes became increasingly apparent. Yet the situation had changed fundamentally from the time when the Communists took control in 1949. The total area of viable grassland had declined dramatically since the disastrous policies of the 1960s – allowing scarcely any room for political manoeuvre. The need for sustainable utilisation and successful management of the rangelands was more urgent than ever.

Eating from the big rice pot: 1978–present

After the initial successes of rural reform in the early 1980s, privatisation and decentralisation became regarded as magic spells for agriculture. After the abolition of the People’s Communes, an attempt was made to apply the HCRS model used for contracting agricultural land, to grazing lands. Under Article 4 of the 1985 Rangeland Law ‘all rangeland ... assigned to a collective for long-term use may be leased under a contract to a collective or an individual’ (ZCX, 1985: 2). The government thus sought to redistribute responsibility for grasslands to individual farmers.

To implement the HCRS for the grazing areas, grassland areas were classified as ‘good’, ‘average’ or ‘poor’ and then distributed equally to households taking the productivity of the plot into account. In Henan Province, for example, the amount of pasture land distributed to each household varied between 0.06 ha per person in lowland villages to 0.75 ha per person in the highlands (Croll 1994). In Ningxia this parcelling out of land proved to be a rather arduous task – partly because there was more rangeland to deal with (1.3 ha of usable land per person in 1985 according to Liu *et al.* (1993: 59)), and partly because of the mobile manner of grazing. Nevertheless attempts were still made to distribute grassland to individual households, and in only one case did the county government elect to nationalise the rangeland.⁹

In Ningxia the Provincial BAH is responsible for the overall supervision of rangeland management. At the central level the BAH is administered directly by the Bureau of Animal Husbandry and Veterinary Science (BAHVS), which forms a part of the Ministry of Agriculture. The BAHVS consists of 16 different divisions and two offices. The BAH has branches at the municipal and county level. At each respective level there are special stations charged with various tasks such as animal

⁹ The case involved the establishment of the Provincial Yunwu Mountain Nature Reserve in Guyuan County. Grazing is prohibited within the boundaries of the 2330 ha reserve, but farmers may gather forage there during fixed periods.

disease prevention, the improvement of the breed of domestic animals, rangeland improvement and extension. Grassland Management Stations (GMS) are responsible for the management and protection of rangelands at the municipal as well as the county level. In addition, a special police force – the Grassland Police – was set up to enforce the Rangeland Law. Being part of the so-called ‘economic police force’ the Grassland Police can impose fines, but cannot arrest or detain people, or carry weapons. They are stationed at the County GMS.

In principle all rangeland in Ningxia has been contracted to individual users. In 1992 it was reported that 64.3 % of the grassland in Guyuan County had been contracted either to individual farmers, joint households or to collectives (Chen and Song 1993: 414). In principle too, tenants are bound by the regulations contained in the Rangeland Law, and can be held responsible for any damage done to their leased plots.¹⁰ In reality, however, the experience of contracting rangeland to individual households or collectives in Ningxia has been a failure. During an interview the Vice-Director of the BAH stated:

‘The household contract responsibility system is just something on paper, the actual delimitation of land has failed. Therefore the situation in the grasslands in Ningxia is now one of ‘eating from the big rice pot’. You see, nobody feels responsible for the rangelands anymore.’

The failure of the HCRS has seriously undermined the effectiveness of the Rangeland Law, as its premise – the leasing of grassland to collectives, households or joint households – has proven to be untenable. The roles of the BAH and GMSs therefore amount to the supervision of vast areas of ‘nobody’s’ pasture land – of which they are incapable.

The management of the one area of nationalised pasture land (in the Yunwu Mountain Natural Reserve) has also proven problematical. Most farmers in the region still take their flocks into the protected area – defying the Rangeland Law and risking fines. To these farmers, the establishment of the reserve represents the main tangible change in rangeland management since the days of the collectives. Few saw the promulgation of the Rangeland Law as significant, and fewer still were acquainted with its contents. More pressing has been the increasing difficulty of finding pasture for their livestock. One Grassland Police officer stated that

¹⁰ Under Article 10 of the Rangeland Law, ‘.. the rangeland vegetation shall be conserved. Farming of the rangeland and other activities which damage it are strictly forbidden.’

transgressions of the Rangeland Law are frequent, although no accurate figures are available.

Despite the presence of formal user rights, liability rights and inalienability rights, as well as institutions to enforce those regulations, Ningxia rangelands are essentially open access systems. This is reflected most obviously in the number of management conflicts that arise. The Rangeland Law stipulates that in disputes over ownership or use of rangeland, the parties involved may appeal to the BAH. The BAH then has the authority to make absolute judgements and order the payment of compensation. Individuals may also appeal to local courts to file a suit, but in reality conflicts rarely reach the courts. In practice farmers in breach of the law are rarely fined by the Grassland Police, and the nominal penalties imposed tend to be merely symbolic. As one Grassland Police officer put it:

‘We try to teach the farmers that they should abide by the Rangeland Law out of their own interests. Only in the case of serious offences, or when a farmer is not willing to correct his behaviour after repeated warnings, will we give a fine.’

Whether a fine is imposed and the size of the fine are dependent on relations between the farmer and officer concerned. If *guanxi* (personal relations) are good, the farmer will most likely get off with a verbal caution.

According to the head of the GMS in Yanchi, many disputes within or even between villages go unreported. Conflicts are mostly resolved by the villagers themselves or by their representatives. In other cases the feud may be left unresolved for years out of fear of retaliation by the other party. The BAH sees the under-reporting of disputes as a real problem, as (to them) it indicates the failure of national law. But as far as it indicates an evolving common property system, the evidence can be viewed more positively.

Of the disputes that have been reported in Guyuan County, many concern wells and paths used for herding. Conflicts also arise from the illegal conversion of grassland into agricultural land. Grain farmers frequently encroach onto rangeland, which they regard as nobody’s land. In one of the villages visited, a farmer had reclaimed grassland around a well, thereby preventing the herdsman from watering their flocks. The dispute had been going on for three years before the Grassland Police knew anything about it.

THE FRUSTRATION OF REFORM

The Rangeland Law does not contain specific regulations limiting the number of livestock on a given plot, nor does it provide a solid basis for users to assume

responsibility for managing the natural resource. Questions have to be asked, therefore, about the political motives behind its promulgation. Is it merely a symbolic law? Or did the motives of the policy makers who supported it change between the time the law was drafted and its execution? In China, where politics are at best 'opaque' these questions are difficult to answer.

There are several reasons why the HCRS system failed in places like Ningxia. The most obvious is the way in which a blanket HCRS policy was applied universally, regardless of variations in local conditions. Local opposition to the HCRS reforms, which came mainly from officials whose careers were rooted in the collectivist system, became increasingly quiet as the reforms gathered momentum. By the time the HCRS had become generally accepted, opposition to reform had become stigmatised as 'leftist obstruction.' As a result the new agricultural policies were – in true Maoist fashion – imposed nationally without considering local variations (White 1993). Most importantly, policies were transferred wholesale from agricultural areas to rangelands, despite the obvious technical and physical differences between the systems. The HCRS went against 'traditional' grazing strategies in places like Ningxia, which required flexible boundaries (and indeed overlapping boundaries) to function. Past experiences with fences were also ignored: The failure of deferred grazing experiments in the 1950s and 1960s had come about when plots, closed from grazing by one village, were used by flocks from surrounding villages.

The lack of appropriate property rights structures under the HCRS has also contributed to the failure of reform. The existing system of property rights has its origin in a fundamental disagreement between reformists and conservatives over the role of the market. Reformists pushed for private land ownership and a *de facto* land market, while conservatives tried to strengthen those State institutions undermined by rural reforms, and re-establish certain principles of central planning (see White (1993) for more on this). Property rights under the HCRS therefore turned out to be something of a political fudge. In areas like Ningxia, where clear property rights are necessary for effective range management, this political compromise is inadequate. The current system has all the trappings of a (Maoist) State property regime, with property rights being vested in the village collective and rangeland management and protection being overseen by external bodies (the BAH and County GMSs). It is difficult to envisage how users can take any interest in making long-term investments to maintain the grasslands when property rights are not vested in organisations which they regard as their own.

Institutional factors

Shue (1990) talked of a 'thickening of the State' in the Chinese countryside, as a result of the rapidly changing social, economic and political situation:

‘As society becomes more differentiated and complex, local State organisations are challenged to do the same. Many have begun to introduce greater differentiation into their own procedures and services. The structural sameness and the near uniformity of interests, of responsibilities and of wealth that were characteristics of the old commune-brigade-team organisation are now past.’

Shue (1990)

However, those institutions in Ningxia responsible for managing the grasslands were hardly equipped to handle their new task in a de-collectivised economy and were still too ‘thin’ in their organisation and services. As White (1993) pointed out, there is an inevitable trade off between streamlining bureaucracy on the one hand, and raising levels of functional specialisation and technical expertise of local cadres on the other. The BAH, for example, has hardly any extension services for farmers, while veterinary services only include the inoculation of livestock. The Grassland Police are seriously understaffed, and are incapable of patrolling the vast areas under their jurisdiction. As for the village heads (or ‘team leaders’ as they are still referred to in many cases), their powers became denuded when the brigades and teams were disbanded, and they now seem unable to play a significant role in the management of rangelands. In many cases their positions are made untenable by the conflicting interests of the State and the local community.¹¹ The village head is a part of the village community in which he lives and is not replaced over time like county or township officials. Thus for social reasons he is not always willing to implement national policy measures too stringently. In this way village heads have been accused of obstructing government efforts to impose quotas on sheep numbers.

Economic factors

The villages in the mountainous and desert/steppe regions of Ningxia have few income-generating activities and have significant problems in terms of infrastructure, public health and water supply (Shen and Steinbach 1993). Though agriculture is dominated by animal husbandry, the livestock sector lags behind the agricultural sector – a situation which is aggravated by low meat prices at State supply and marketing cooperatives (Pang 1993). For these reasons local government is likely to favour industrial development (including rural industry) over agricultural development, because it can yield quicker and greater economic returns. In addition, local governments have also been encouraged to develop the industrial

¹¹ Personal communication, Vice-Director of the Provincial Bureau of Animal Husbandry.

sector by central government (White 1993). In comparison, the management and protection of pastoral areas rank low on the local government's political agenda.

PRIVATISATION: THE ONE AND ONLY SOLUTION?

Ever since the Communist Party conceded that 'the little private parcels of land of commune members, the rural workshops and the village markets are necessary complements of the socialist economy', the BAH and the village collectives have been caught in an awkward situation. On the one hand, there is an obvious tendency in politics towards privatisation of the grasslands. On the other, there are compelling arguments in favour of developing common property arrangements for grassland management. The latter point is especially true when one realises that the reason for opting for privatisation stems from a false analysis of the past. It is not true that the grasslands degraded because of common property regimes under the People's Communes, but because the sort of common property regime instituted by government was nothing more than 'eating from the big rice pot.'

All too often, common property systems are confused with open-access systems. As Bromley (1991) reminds us, common property resource management implies private property for a group – members of which have rights as well as duties regarding the resource. It is exactly these rights and duties that the People's Communes failed to create or enforce, mainly because of a political fear to vest property rights clearly in either individual users or groups of users.

Nevertheless, there are several compelling reasons for questioning current privatisation policies. First, establishing a private property system is an expensive process. The administrative cost involved in setting up, and then continually updating, a cadastre of individual plots is extremely high. Material costs, especially where new fencing is required, may also be high – as are the costs of enforcing new grazing regulations. While there are costs associated with common property systems,¹² the cost of privatisation may be far higher. To be feasible, privatisation must yield economic returns which exceed the administrative and material costs involved. In Ningxia, however, the potential financial benefits of a private property regime are not that obvious. The variability of natural environment over time means that income streams are at best uncertain. The application of labour and capital per unit land is low, as are the economic returns. The average carrying capacity of Chinese pastures is around 0.8 sheep ha⁻¹, compared to 30 in the former USSR, nearly 50 in the USA, and over 110 in New Zealand (Smil 1994: 65).

¹²The transaction costs for bargaining in common property arrangements are often high as meetings among village members are needed to discuss issues such as who can use the resource, how conflicts over use are resolved *etc.*

Even if it were financially viable, the management drawbacks associated with privatisation are considerable. Most importantly, management flexibility, which is vital for the effective management of a highly variable resource, is lost. Under relatively rigid private property arrangements it is much more difficult for users to collaborate to overcome the effects of natural disasters. Also, given the current constraints on the Grassland Police in Ningxia, new private arrangements under the Rangeland Law cannot be effectively enforced. As one of the local cadres put it:

‘The grassland is too vast, and the police force too small in order to make the law effective. No, instead of a rangeland management enforced by the grassland police, we need to organise the farmers to manage the grasslands by themselves, to enforce rules of grazing by themselves.’

Considering the local and central government’s current fear of illegal land reclamation under private property arrangements, there is much to be said for a common property system in which users are organised into flock owners’ associations and are responsible for the management of the grazing areas. This would certainly take much of the pressure off the BAH and Grassland Police, as boundary rules, membership rules, input rules, allocation rules and penalty rules would be set and upheld by the flock owners’ associations themselves.

SUMMARY AND CONCLUSIONS

The reasons for rangeland degradation in China are too often couched in technical and demographical terms – with the institutional environment being ignored. In practice, however, technical considerations about deferred and rotational grazing, carrying capacity and stocking rates have little meaning if they do not adequately incorporate institutional arrangements which provide the incentives for collective action.

Rangeland degradation in Ningxia cannot be blamed solely on population growth, overgrazing or reclamation of marginal land. Rather, it has its roots in the failure of successive Chinese governments to create conditions under which collective management could be effective. The initial nationalisation of China’s grasslands undermined the legitimacy of local customary right systems over the use of the range. As the central and local government failed to encourage mutual cooperation, the management of grasslands evolved into an open access system. Two sets of factors were most important in creating this ‘free-rider’ situation; property right structures and institutional arrangements.

In 1956 the Chinese rangeland management entered a new era as individual ownership of the grasslands was replaced by collective ownership. However, the ownership rights under the People's Communes were not well defined and were divided between the commune, the production brigade and the production team. Membership and boundary rules were non-existent, while rules for resource allocation were more concerned with livestock production than the resource base. Sanctions to prevent the squandering of the rangeland, and its daily management were the responsibility of external institutions.

After the communes were disbanded and new reforms introduced in the late 1970s, central government tried to privatise the grasslands through the HCRS. The wisdom of this move was dubious, especially as the contract system was simply extended – after it had become the political norm – from agriculture to the livestock sector without observing local variations and the specific natural resource requirements of livestock production. The contract system itself was also rather ambiguous – the result of a political compromise between reformists and the traditional centralists. Although individual farm households were given usufruct rights and livestock ownership rights under the HCRS, land ownership rights and the responsibility for ensuring appropriate grassland management were entrusted to external institutions. But the BAH and the village collectives failed to provide farmers with the necessary incentives to coordinate use of rangeland in a changing and more complex socio-economic environment. As a result, the pattern of resource use that emerged was essentially similar to that under the communes. Nor did the proclamation of the Rangeland Law in 1985, and the establishment of the Grassland Police make any real difference. The areas under Grassland Police control were simply too vast to enforce the law effectively.

Despite its obvious attractiveness, the establishment of a common property regime is not a panacea, and does involve risks of failure. Transaction costs will be high, and the number of livestock and users of rangeland will still have to be curbed. Nevertheless, efforts to restrict the number of ruminants and users would have a better chance of success than under a State or a private property regime, as a common property regime draws on support from a broader layer of the society. Only by embedding a common property regime in a larger institutional framework can one hope to reverse the legacy of the free-rider problem that originated in a collectivist past, and work towards a sustainable use of China's pastoral areas.

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