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**SOCIAL AND ECONOMIC CONSIDERATIONS
OF SHEEP AND GOAT PRODUCTION AND
MARKETING IN BALOCHISTAN, PAKISTAN**

by

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**SOCIAL AND ECONOMIC CONSIDERATIONS OF SHEEP AND GOAT
PRODUCTION AND MARKETING IN BALOCHISTAN, PAKISTAN¹**

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Introduction

Balochistan is the largest province of Pakistan, with 34.5 million ha (45% of the total area), 4.3 million people in 1981 and an estimated population of 7.1 million in 1990 (van Giles and Baig, 1991). It is located in the western part of Pakistan, sharing borders with Iran to the west and Afghanistan to the north. The livestock sub-sector of Balochistan contributes 25% to the Gross Agricultural Product (FAO, 1983). Most of the economic value of agriculture is contributed by fruit and vegetables produced under irrigated conditions. While the value of crop production has been increased mainly through the intensification of input use (i.e., irrigation, fertilizer and pesticides), the value of livestock production has increased mainly because of the larger numbers of animals, mostly small ruminants and camels. Balochistan has 11.3 million sheep and 7.4 million goats, 0.8 million cattle, and 0.24 million camels. Using figures provided by Mahmood and Rodríguez (1991), the estimated provincial annual offtake of small ruminants is 56,000 tons of meat with a market value of Rs2,840 million (\$130 million, using \$1 = Rs21.8). Adding the value of edible and non-edible by-products, this figure increases to Rs3,336 million or \$153 million.

The annual rate of increase in Balochistan's small ruminant population from 1972 to 1986 was 6.5% and the annual rate of increase in the human population from 1972 to 1981 was 7%. This exacerbated the already excessively high pressure on the rangeland resources. The percentage of income from sheep and goats as a percentage of agricultural income ranges from 40-50% for transhumants in the northern areas of highland Balochistan to 100% in the case of nomadic

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pastoralists. Most of the people in the province are illiterate and womenfolk especially are socially disadvantaged. The current status of the rangeland resources and the structural and social problems of resource distribution pose serious questions about the short-term sustainability of this sub-sector.

Population

Out of 4.3 million people living in Balochistan in 1981, 16% were located in urban areas while the rest were in rural areas (GOB, 1989). During 1972-1981 the population grew at 7% per year, and this was more or less equally divided between net immigration of Afghan refugees and internal growth. This average growth rate is well above the alarmingly high national average (3.1%). It is estimated that the population in 1990 was 7.1 million and that by the end of the century it will be 10.7 million. Balochistan's share of the national population is 5.1%, and it is expected to increase to 8.5% by the year 2010 (van Giles and Baig, 1991).

Family planning is not known or is incomprehensible for most of the population, and children are perceived as wealth and a future source of labor. About 50% of the population is below 15 years. The sex ratio is 112 males to 100 females. This is possibly due to the lower life expectancy of women resulting in part from an extremely high maternal mortality rate, a characteristic that Pakistan shares with other countries in the subcontinent. However, this ratio could be due perhaps to erroneous census results. Women do not appear readily outside the house, census enumerators are not permitted into the women's quarters, and men do not even like to talk about their women (van Giles and Baig, 1991).

The literacy rate in rural areas is 9.8% for males and 1.8% for females, while in the urban areas it is 42.4% for males and 18.5% for females. In rural areas 77% of the population work in agriculture, animal husbandry or forestry; in the urban areas this proportion is 13% (1981 Census Report of Balochistan Province, as reported by Massod *et al.*, 1988).

Social Organization

The majority of the rural population in Balochistan is either Baloch or Pashtun, with a social organization based on traditional tribal lines. These two groups have some differences, but their main social organizations are fairly similar. "Each tribe (*Qaum* in Baloch/*Kaam* in Pashtun) is divided into clans (*Takar/Shakh*)

which are in turn divided into sections (*Pasha/Shalwar*) and sub-sections (*Tabar/Khel*). Starting from a family at the bottom of the system there is a hierarchical leadership pattern, at the top of which is the tribal chief or *Sardar*. The decision making process is decentralized and most of the petty disputes regarding personal matters, property rights and resource use are settled between their respective leaders. At all levels there are councils of elders called *Jirga*, to decide matters and enforce tribal customary laws" (Buzdar *et al.*, 1989).

The cooperation of all members of the community is needed to attain a sustainable resource utilization and to avoid misuse. Where the tribe or section closes its rangelands for part of the year, it is necessary to discontinue all grazing activities. These types of cooperative activities for the good of the entire group must be enforced, even if that requires the use of force or sanctions. Other types of cooperation entail voluntary monetary contributions or loans of animals when a member of the community has lost livestock due to natural hazards (Buzdar *et al.*, 1989).

Rangeland Resources and Property Regimes

Only 10 million ha of Balochistan (30%) can be considered as usable rangeland. "The often quoted figure of 90-93% is a gross overestimate and obtained by subtracting the cultivated land (4-5%) and forests (a few %) from the total land surface" (van Giles and Baig, 1991). However, many mountain slopes are practically barren and useless for livestock foraging. Good rangelands in Balochistan (15% of the provincial area) produce 200-300 kg DM/ha/year and the other 15% produces less than 100 kg/DM/ha/year. About 2 ha of good rangeland are required per sheep for sedentary (year around) grazing and 1 ha for summer (nomadic/transhumant grazing). For the remaining rangeland the grazing capacity would be two to three times lower (van Giles and Baig, 1991).

Balochistan rangelands are generally degraded by both reduction of their standing biomass and degeneration into unpalatable vegetation. Similarly degraded rangelands are common in Southwest Asia and North Africa, and are the result of over-exploitation for forage and fuelwood. The range degradation on the mountain slopes will be largely irreversible on a time scale of decades, but range rehabilitation on the gravelly fans and terraces (22% of the area) is quicker, taking five to ten years when full protection against any usage is

imposed. Full protection will not suffice everywhere, and planting of forage shrubs and trees is locally required (van Giles and Baig, 1991).

Some inferences about the rate of rangeland degradation (Cossins, 1988) have been made based upon the increasing goat population. However, there is a need to quantify these degradation, deterioration or desertification processes in a time scale of 5 to 30 years by taking field measurements. Camels are often ignored as another source of grazing pressure. Assuming that the average camel in Balochistan weighs 300 kg and the average small ruminant weighs 30 kg, the camel population is equivalent to another 2.35 million sheep and goats. The frequently cited report by FAO (1983), used as the baseline study of Balochistan's vegetation, was based on scattered samplings during the summer of 1982. Even though there is evidence of the widespread distribution of unpalatable range species, which are found in lower densities in relictus (climax) vegetation, it is not possible to know how long it took for the vegetation to change to the present situation or what were the causes.

There are two types of rangelands in Balochistan depending on property regimes: common and open rangelands. Common rangelands are traditionally owned by tribes, with customary institutional arrangements for their sustainability and effective management. Open rangelands have unrestricted access and are free to all and are usually deteriorated rangelands that used to be commonly owned. At some point in time, the group or tribe makes a decision as to whether a rangeland is so degraded that it should not be considered anymore as a common rangeland. Open rangelands have been increasing in area as the more exclusive common rangelands have lost the ability to sustain the animals' grazing needs and are abandoned by their owners (Buzdar *et al.*, 1989).

Two factors have caused rangeland degradation: excessive population growth and external social and economic forces. An example is provided by Cossins (1988):

"In 1980, war in Afghanistan caused massive migrations to Pakistan. At least 3 million refugees fled into Pakistan with their livestock, 600,000 people with 4.8 million sheep and goats to Balochistan alone. Because they have been largely concentrated in a number of camps along the border areas, their presence has resulted in extremes of degradation in the neighborhoods of their camps in northern Balochistan. The effect of a sudden increase equivalent to 14% of the total livestock and human population in Balochistan on the already saturated and fragile environment has been drastic."

No specific example is provided by Buzdar *et al.* (1989) to characterize these external forces or how the social deterioration process has occurred. Bromley and Cernea (1989) suggested that the dissolution of community based institutional arrangements often arose from a combination of interference by powerful rulers at some remove from the village, and the rise of the nation state.

"The dissolution of common property institutions has also been a result of the socio-economic differentiation and growing stratification process within communities that initially were much more homogeneous. With differentiation, the similarity and convergence in members' interests gradually gave way to increased divergence of interest and unequal concentration of power. This, in turn, enabled the more powerful families to press for exclusionary use and de facto appropriation of common resources, gradually subverting and eroding the corporate communal institutional arrangements. After independence, however, the ascending national governments in most developing countries have not created a working alternative to these former community-based resource management regimes" (Bromley and Cernea, pp. 7-8).

The presence of irrigation water in certain areas of Balochistan has encouraged an increase in the livestock population because of the presence of stubble and fodder. At the same time, when the stubble and fodder are not available for grazing or foraging, the animals are turned out on the common or open rangelands without appropriate management. Depletion of the vegetation cover has reduced the ability of the watersheds to retain rainfall, and this in turn leads to less recharging of ground water. Extraction has increased greatly, for irrigation and for the growing towns and villages. For example, the Water Power Development Authority estimated that the annual decline in the water table in the Quetta valley was 0.15 m during 1900-1960, 0.24 m during 1960-1980 and 3.05 m during 1980-1990 (van Giles and Baig, 1991).

Grazing Systems

The three major grazing systems in Balochistan are nomadic, transhumant and sedentary; these depend on the lifestyle of the animal owner and the rangeland property regime.

True nomadic grazing systems. The true nomads follow the seasonal patterns of forage production, spending the summers in the cold highlands in Central Asia and winters in the warmer lowlands of Pakistan and India. They move across the open rangelands where they spend a few days, or sometimes weeks if range vegetation is abundant. They can pass through the tribal common rangelands, but cannot prolong their sojourn. In the lowlands of the Indus valley they have contacts with local farmers, from whom they buy stubble grazing rights, straw and other feed for their animals and sell their own labor and animals and their by-products in exchange. Their arrival in the lowlands must coincide with the harvesting season, so they can sell their labor and buy cheap feed for their animals. Likewise, their return to the highlands in the spring and summer must coincide with the growth of palatable forage resources and with seasonal labor requirements (Buzdar *et al.*, 1989).

Thirty percent of the small ruminants in Balochistan follow this type of grazing system (FAO, 1983). Nomadic families own 80-100 head of sheep and goats, with about 20 animals per male family member. Three or four families keep their livestock together, making up flocks of about 300 animals. A nomadic flock of 100 animals, of which 85 are sheep and 15 are goats, usually has 45 breeding ewes and 8 does (FAO, 1983, Table 7 Annex 3). The annual gross income, in 1991 rupees [one rupee of 1982 used in the FAO (1983) model is 1.82 times one rupee of 1991], would be approximately Rs18,473, of which sales of livestock comprise 80%, sales of wool and skins comprise 8%, and the remaining 12% is the value of family consumption (meat, milk, wool and hair). Annual production costs are about Rs910. These figures are very low considering that this is the family income of 3 or 4 adults. The estimated daily income of one adult is Rs12 per day, which is one quarter of the urban daily wage of Rs50. Data on health and education are not available for these nomads, but it is easy to deduce that basic services are not available or are well below the provincial average. Given this extreme poverty, it seems unrealistic to design livestock development schemes before greatly improving the welfare of this sector of the population.

Transhumant grazing systems. Buzdar *et al.* (1989) distinguished between transhumants with land ownership (semi-sedentary transhumants) and those without it (semi-nomadic transhumants). The semi-sedentary transhumants raise rainfed crops, mainly winter wheat. Each winter they move from the central highlands of Balochistan to the warmer areas of the Indus valley. When they are in the lowlands, they behave like the truly nomadic population, selling their labor, animals and by-products to the crop farmers and buying from them grains and feed for their animals.

The semi-nomadic transhumants are almost completely dependent on their small ruminants. They are co-owners in the common tribal rangelands, and in most cases their movements take place only within the limits of their tribal lands. They move from commonly owned rangelands to the open rangelands as forage availability fluctuates, and they usually return to their permanent dwellings in the rangelands during the summer months. In years of drought, some of them take their families and animals to the nearby agricultural valleys, where the family sells its labor, and their animals graze stubble or grasses in and around the fields. They possess camels and donkeys, which are used for transportation of crops and other goods. They earn enough money by these means to buy wheat grain and other supplies (Buzdar *et al.*, 1989). Transhumant flock sizes range from 20 to 80 sheep and goats. Sixty-five percent of the sheep and 50% of the goats are managed as transhumant flocks (FAO, 1983).

Sedentary grazing systems. Most of the people living in the agricultural villages in Balochistan raise a few animals. This supplementary animal raising sometimes accounts for a major portion of the household income and helps increase farm productivity. Women play a major role, not only in the raising of these animals, but also in converting their by-products into useful food and saleable items like carpets. Usually a shepherd is employed to take care of all the animals in a village as a single flock. As the agricultural villages are normally inhabited by members of the same lineage or clan group, they have use rights over the rangelands adjacent to the village (Buzdar *et al.*, 1989).

Since the mid 70's there has been a steady decrease in the number of transhumant herds; many flocks are becoming increasingly sedentary as communities settle around the permanent water from new tubewells, and as former shepherds increasingly find alternative work opportunities (Cossins, 1988).

Socio-economic influences might change the structure of Balochistan society in the coming years and allow more control over rangelands, but this change may not occur fast enough to slow down the degradation of the range vegetation (Nagy *et al.*, 1991). The only examples of sustainable range management with the traditional tribal structure are under conditions of low population pressure (Buzdar *et al.*, 1989), conditions which are now almost non-existent in Balochistan. It seems unnecessary to conduct even more research to study the existing political, tribal, and village structures before trying to improve rangeland management, as suggested by Nagy *et al.* (1991); it is time to take action, even though it may be very difficult.

Resource endowment of the semi-sedentary transhumants and sedentary livestock producers

Because of the problems associated with surveying nomads who do not have a permanent home base, there is more information about the semi-sedentary transhumants and the sedentary households.

Ninety percent of the farms in Balochistan range between 1-20 ha in size, while in highland Balochistan this figure is 93%. (GOP 1981 Census of Agriculture, as reported by Massod *et al.*, 1988). The average number of sheep per household in Balochistan is 60 sheep and 32 goats, while 80% of the sheep and 88% of the goats are in flocks that range between 3 and 170 animals. A few owners (12-20%) possess flocks of more than 400 head (GOP, 1989). In highland Balochistan, the overall average sheep flock size is 29.5 with an average of 16.8 breeding ewes. The average goat herd size is 22.2, with an average of 12.2 breeding does. The sheep to goat ratio for 50% of the mixed flocks is 1.8 (Nagy *et al.*, 1991). Thirty percent of sheep and 20% of goats are used for household consumption, or social purposes such as gifts to relatives, bridal price or sacrifices (Buzdar *et al.*, 1989). Most of the goat hair and about 55% of the wool is used at home, usually to make coarse carpets, and the rest of the fleeces are marketed.

The percentage of income (cash and credit) from sheep and goats as a percentage of agricultural income ranges from 40-50% in the northern areas of highland Balochistan to 70-60% in the southern areas (Nagy *et al.*, 1991). Off-farm income is also becoming more important for farm families and there is a trend of increasing migration to larger centers, and even for men to go to work

in the Persian Gulf. The importance of off-farm income is strongly related to the weather conditions. In good rainfall years 10-15% of the total income is off-farm, but in bad rainfall years the off-farm income ranges from 35 to 65% (Rees *et al.*, 1987).

Credit could be used by livestock producers for diverse purposes: to offset the effects of poor agricultural years, to improve animal husbandry practices, to improve the rangeland condition (deferred grazing), to initiate fodder banks (fourwing saltbush), to shorten the marketing chain or to fulfill social obligations. However, data compiled by Massod *et al.* (1988) shows that credit is not readily available for small land-owners, and only 12% of the households had borrowed from the Agricultural Development Bank. Large land-owners took 38% of the loans while farmers with 5-20 ha were granted 62% of the loans. Sheep and goats alleviate this constraint since they are used as a "store of wealth", and can be used as collateral to obtain credit from money lenders. When cash is required, usually in poor agricultural years or for special social occasions, money is borrowed and paid back in kind (sheep or goats) in better agricultural years. Interest, if calculated, on money borrowed against live animals can be excessive, and much greater than the interest charged at banks. However, farmers indicated that they do not trust banks. Bank regulations dictate foreclosure when a farmer cannot pay back the loan, whereas money lenders can afford to be more lenient. Also, banks do not take small ruminants as collateral (Nagy *et al.*, 1991).

Marketing of Livestock, Meat and Skins

Not many producers can afford to travel long distances ranging from 20-50 km to intermediary markets or 40-150 km to terminal markets, to sell their livestock. Most of them do not have money for transportation, and they lack the connections or information that could help them to take advantage of the supply and demand situation when the decision to sell is made. About 69% of the retail value of small ruminants (meat, and edible and non-edible by-products) is received by the producers in highland Balochistan, while the remaining 31% represents the value of the services provided by village dealers, commission agents, *beoparis* (wholesalers) and butchers involved in the marketing chain from producer to consumer (Mahmood and Rodríguez, 1991).

Livestock and meat grading is absent, but there is government regulation of retail prices. Thus, consumers do not have ways to convey their degree of dissatisfaction to producers through the intermediaries in the marketing chain. This major structural problem at the provincial and national level does not encourage production and market efficiency. The intricate marketing chain could be improved for the benefit of producers and consumers; overall volume of the market could be higher, the quality of the meat could be improved, and some marketing costs could be reduced (Mahmood and Rodríguez, 1991).

After mutton (meat from both sheep or goats), skins are the second major source of wealth in the small ruminant component of the livestock sub-sector. It is estimated that 2.9 million skins are produced in Balochistan and shipped to tanneries in Punjab and Sindh. A complex network of merchants has evolved to process and distribute the provincial production. Even importation of skins from Afghanistan and Iran is flourishing in Quetta City market. Improvement of the quality of the skins produced in Balochistan can be achieved by reducing the presence of tears and cuts and by better nutrition. Producers should adopt better shearing practices to avoid the risk of damaging the skins. Increasing the protein content of the animals' diet might increase the skin thickness but would require cost-effective improvement of nutrition.

A major question is how the livestock producers can take advantage of the potential production and market opportunities. Deficient extension services and low literacy rates explain why there has been little progress with livestock producers. Extension services, when available, have focussed on the physical aspects of production (flushing, vaccination, supplementation, breeding, etc.) while neglecting the social and economic aspects. There are no easy ways to improve the welfare of the livestock producers. Institutional research requires better financial support to carry out a comprehensive agenda on livestock development. Perhaps the most important deficiency among government agencies and the international donor community is that there is no strategic social and economic planning, at national or provincial levels, which addresses the needs of the livestock sub-sector.

Conclusions

The contribution of the small ruminant component in the livestock sub-sector to the provincial economy, 25% of the Agricultural Product, is not likely to

increase in the near future. Forage resources are deteriorating due to demographic pressures and deficient resource management. There are no market incentives for livestock producers to improve offtake since there is a ceiling price for mutton and there is a lack of livestock grading systems.

Nomadic pastoralists, with no grazing rights, respond to fluctuations in forage resources and cope with the risk of droughts by moving. In contrast, transhumant pastoralists and sedentary livestock producers have allowed their flocks to grow close to or above the feeding capacity of rainfed cereal crops. These livestock producers, who have grazing rights, are responsible for the abandonment of common rangelands and converting them into less productive open rangelands.

The population growth in the tribes of Balochistan, along with external economic and social forces has played an important role in the weakening of the traditional, common property, range management. This weakening needs to be taken into consideration in designing operational alternatives for Balochistan's pastoralists to help them to take advantage of modern techniques of range management or to recreate traditional management schemes.

Our knowledge about the livestock producers is unbalanced and incomplete. More is known about producers who own land than those who do not. It is obvious that social and economic inequity limits the ability of alternative resource management techniques to sustain current production levels. Little improvement can be expected until the current illiteracy rates are greatly reduced, the social handicaps on women are decreased, access to credit is made more easy and equitable, and roads and health care services are improved.

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