# RATIONAL DELIVERY OF PRIVATE LIVESTOCK EXTENSION SERVICES – INTERVENTIONS

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Livestock extension services have been traditionally funded, managed and delivered by the public sector in India until recently. Since the early 1990's economic reforms, the public sector monopoly came under increasing threat as many started questioning the economic and efficiency grounds. Financial stringency and increasing private and voluntary agency involvement in the service provision have accelerated the process of limiting the role of the State in livestock extension. Decentralization, costs sharing, cost recovery, withdrawal from selected services and contracting are some of the options suggested. This paper focus is on rationalization of services keeping in view the interests of the stakeholders, externalities and withdrawal of state from selected services.

## Delineation of Services

Livestock services can be classified into two broad categories: health and production. Health services include curative and preventive services whereas production services include livestock research and extension and supply of inputs (Fig. 1). The curative services include diagnosis and treatment. The preventive health services include immunization, vector control and disease control. The production services, which can also be called as promotive services, include research and extension including artificial insemination. All the major stakeholders are either directly or indirectly related to these services.

The major stakeholders in livestock extension services are the individual owners of the livestock, public veterinary doctors and the consumers for whose benefit animals are kept and their products are marketed.

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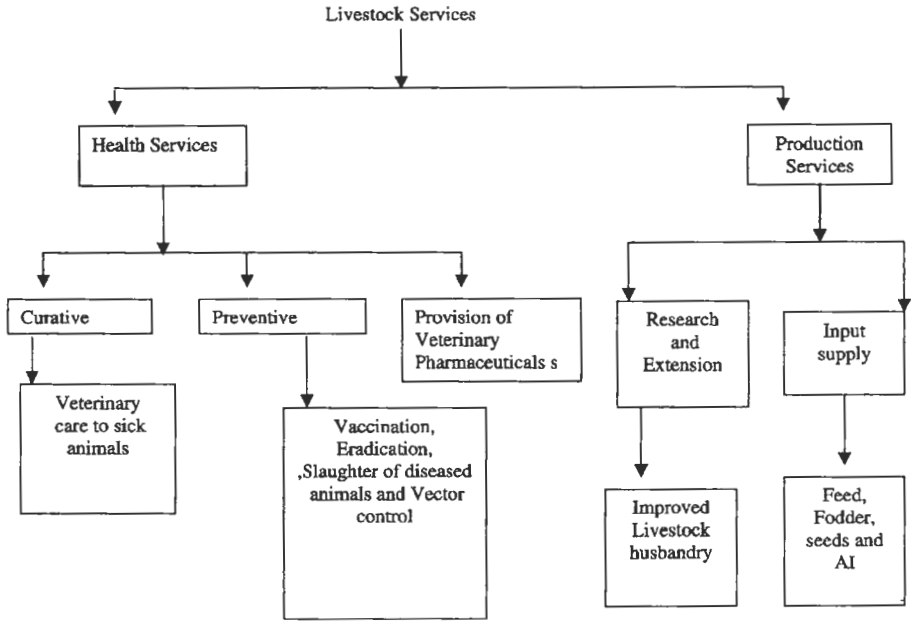
**Fig: Classification of Livestock services**




Source: JPS Associates, 1994

## Livestock owners

About three-fourths of India's population and poor live in rural areas, and over 70 per cent of them own livestock. A large majority of them comprises small and marginal farmers and land less households (Table 1). Overall, the distribution of livestock is much more equitable than that of land, the bottom 60 per cent of rural households own 65 per cent of all milch animals, leading to more equitable sharing of gains from livestock production. On an average the farmers are willing to pay between Rs.600-700 per year for veterinary services in Gujarat and Rajasthan and about Rs.300 in Kerala. For the service at the hospital, the farmers are willing to pay approximately Rs.300-350 in Rajasthan and Rs.140-150 per annum in Kerala. Analysis of determinants showed that willingness to pay was lower for poor households ( Ahuja, Vinod et.al.,2000). When livestock extension services are privatized, livestock keepers with small herds of one or two animals are more likely than larger farmers

to be deferred from using a service for which they have to pay. This is not because they value their animals any less (indeed they value them more as a single animal might be the only source of wealth for a small farmer), but simply because they are less able to pay, since the costs of servicing them in remote areas are likely to be higher (Gros, 1994). In India, most of the

**Table 1: Distribution of cattle and buffaloes according to the size of land holding**

| S. No. | Size of land holding | % of cattle and buffaloes |
|---|---|---|
| 1 | < 1 hectare | 28 |
| 2 | 1 – 2 hectare | 18 |
| 3 | 2 – 4 hectare | 31 |
| 4 | 4 – 9 hectare | 16 |
| 5 | > 10 hectare | 7 |

Source : Ahuja, Vinod *et al.* (2000)

small farmers own traditional, rather than modern crossbreeds or graded buffaloes, which are in general less susceptible to diseases. Their more extensive production systems and lower number of animals will further reduces the risk of contagious diseases. Poorer people besides owning the large ruminants, greater proportion of them own small ruminants and poultry and for them curative and preventive services are more important than production services. To the extent that problems relating to these animals are ignored, poorer people fail to benefit from change. However, there is an increasing recognition of the need for change, which may improve the prospects of poorer people in over longrun, subsistence livestock farming of small holders may not absorb the short-term immediate adverse effects.

## Consumers

The consumers are the ultimate beneficiaries for whose benefit the animals are kept and their products marketed. They are indirectly involved in the rationalization process as taxpayers and from those taxes producers are offered subsidies. From the consumer's point of view, it is imperative that concerted efforts of the other stakeholders results in sufficient output of good quality products at reasonable prices.

## Public Veterinary Personnel

In the public sector, the focus throughout the past planning periods has been on enhancing the supply of veterinary services by strengthening the capabilities and coverage of the State Animal Husbandry Departments ( SAHDs). The number of state run veterinary institutions grew from about 2,000 in 1951 to over 50,000 at the end of 1997-98. There were 7,415 veterinary hospitals/ polyclinics, 14,573 veterinary dispensaries, and 23,682 veterinary aid centres including mobile dispensaries and 43,782 Artificial Insemination (AI) centers. Despite that, however there was only one veterinary institution per 10,000 animals. Only Tripura, Punjab, Haryana, Himachal Pradesh and Kerala had one institution for 5,000 animals as recommended by the National Commission on Agriculture (1976). The comparable figures for West Bengal and Rajasthan were 20,000 – 25,000 (GOI, 1997). On the AI side, there were about 4.2 centers per 10,000 breedable bovines with Kerala appearing on the top of the list with 10.3 AI centers. Comparable figures for Gujarat and Rajasthan were 7.2 and 2.4 respectively. AI programmes cover only 17 million cattle and buffaloes, which comprises of about 15 per cent of breedable population. The only exception is Kerala, where coverage is more than 50 per cent. (Table 2).

**Table 2 : Veterinary institutions and AI centers in India**

| State | Vetrinary institutions/ 1000 livestock | AI centers/ 1000 bovines | AI centers / 1000 breedable bovines |
|---|---|---|---|
| Andhra Pradesh | 0.14 | 0.18 | 0.48 |
| Assam | 0.11 | 0.07 | 0.22 |
| Bihar | 0.07 | 0.06 | 0.21 |
| Gujarat | 0.09 | 0.31 | 0.72 |
| Haryana | 0.24 | 0.35 | 0.78 |
| Himachal Pradesh | 0.23 | 0.31 | 0.75 |
| Jammu& Kashmir | 0.09 | 0.15 | 0.38 |
| Karnataka | 0.10 | 0.34 | 0.96 |
| Kerala | 0.19 | 0.49 | 1.03 |
| Madhya Pradesh | 0.07 | 0.08 | 0.24 |
| Maharashtra | 0.09 | 0.18 | 0.45 |
| Orrissa | 0.15 | 0.11 | 0.35 |
| Punjab | 0.26 | 0.26 | 0.53 |
| Rajasthan | 0.05 | 0.11 | 0.24 |
| Tamilnadu | 0.12 | 0.29 | 0.72 |
| Tripura | 0.27 | 0.14 | 0.43 |
| Uttar Pradesh | 0.08 | 0.06 | 0.16 |
| WestBengal | 0.04 | 0.16 | 0.49 |
| All India | 0.10 | 0.15 | 0.42 |

Source: GOI, 1997

Overall, the impact of government breeding programmes has been limited, thus making a strong case for rationalization of the services.

**Table 3: Expenditure on animal Husbandry, 1996 – 98**

| S. No. | Service / activity | % expenditure |
|---|---|---|
| 1 | Health services | 38 |
| 2 | Breeding and genetic improvement | 30 |
| 3 | Extension activities | 10 |
| 4 | Feed and fodder development | 8 |
| 5 | Technology development | 3 |
| 6 | Education | 2 |
| 7 | Miscellaneous | 9 |

Source: GOI (1998)

The share of total agricultural spending allocated to animal husbandry and dairying activities ranged from 5.5 per cent in the first five-year plan to 6.6 per cent in the fourth five-year plan. During the seventh five year plan the investment declined sharply to 4.3 per cent and then marginally increased to about 5 per cent in the subsequent plans (GOI, 1998). Animal health services received the largest portion of the budgets followed by breeding and genetic improvement services. The feed and fodder development, extension and training activities, which are very important to sustain / enhance the productivity of livestock, received limited budget allocations (Table 3). Further over 75 per cent of the staff either provided curative health services or implemented other livestock development schemes including cross breeding. The share of professional staff responsible for disease investigation and control was a meager 3.5 per cent, supplemented by a limited disease prevention role of the animal health service in the field (Table 4).

Thus, the primary emphasis is on clinical services, and as a result endemic diseases are still prevalent in India. According to some estimates, India suffers a loss of Rs.50 billion in annual production as a result of neglect of disease prevention and control. Indeed, the limited emphasis on preventive services contributes to India's inability to eradicate animal disease epidemics, which cuts the country's competitive advantage at the global

**Table 4: Functional distribution of livestock extension officers under public sector**

| S. No. | Function | Percentage |
|---|---|---|
| 1 | Administration | 15.50 |
| 2 | Veterinary / animal health services | 56.40 |
| 3 | Livestock development schemes | 20.00 |
| 4 | Disease control | 2.70 |
| 5 | Extension / training | 3.30 |
| 6 | Disease investigation | 0.80 |
| 7 | Production of biological products | 1.20 |
| 8 | Veterinary research | 0.20 |

Source: VCI (1995)

level. Due to prevalence of some diseases, the sanitary and phyto-sanitary regulations of many countries deny entry of Indian livestock products, despite the 'minimum access clause' of the world trade order. Curative veterinary services, delivered to the farmers with heavy subsidies, have been characterized by poor quality. Of the 51,000 veterinary institutions in the country, very few are equipped with clinical diagnosis facilities and those that do exist are very old. Lack of facilities for clinical diagnosis is atleast in part responsible for indiscriminate use of antibiotics and antiinfectives leading to higher cost of drugs and medicines besides inducing drug resistance.

Since, the early 1990s, continuing this model of animal health delivery system has been seriously discussed by the policy makers and funding agencies. The steering group constituted by the GOI noted that free veterinary and AI services have resulted in an infrastructure that is vast and expensive, which the state governments are finding extremely difficult to sustain (GOI, 1996). Low levels of cost recovery have further limited the revenue generating capacity of SAHDs to meet their operational needs, making it difficult to provide high quality service. The budgetary difficulties in SAHDs are further exacerbated by the tightening fiscal situation in part a result of the low cost recovery in the system. This viscious cycle of limited cost recovery, contributing to budgetary constraints that, in turn, limit the availability and quality of public veterinary services called for rationalization of delivery of the services keeping in view of the interests of each stakeholder.

## Economic analysis of the Services and their Externalities

The principles of excludability and subtractability determine whether a service is closer to being public or private (Fig. 2). The two types of services, which are closest to being pure private services, are Production services, curative health services and the provision of veterinary pharmaceuticals that often go together. In receiving treatment for a sick animal the owner reduces the stock of the drugs available to others (subtractability) and at least at first sight, is the sole beneficiary (excludability) of the services. For instance in Andhra Pradesh, drugs worth of Rs.1000 /- per annum are provided by the Government for each panchayat under

**Fig2. Economic analysis of Livestock extension services**

| Subtractability | Excludability: Low | Excludability: High |
|---|---|---|
| Low | **Public goods** | **Toll goods** |
| High | **Common pool goods** | **Private goods** |

Source: Adapted from Umali and Schwarrtz, 1994 and Beynon et al, 1998

a public veterinary dispensary. These drugs hardly meet the treatment requirements of animals for less than one-month period. Here the principles of subtractability and excludability matter much to the livestock owners. A pure public livestock service provides benefits that are non-excludable and non-rival. In contrast, the benefits provided by a pure private veterinary service is fully excludable and rival. The services such as disease surveillance, quarantine and food hygiene/inspection comes under pure public services, and clinical diagnosis, prescription and AI comes under private services. Due to the characteristics of non-rivalry and non-excludability, the free access tends to under provide public veterinary services since the provider cannot appropriate the full profits. Thus, it becomes the obligation of the Government to provide these services. The private practitioners at a socially

optimal level on the other hand provide private goods, if there are no externalities. Between the two extremes of pure public and pure private goods lies a whole continuum based on the degree of excludability and rivalry (Fig. 3).

**Fig. 3: Division of responsibilities between private and public sector**

| Public Sector | Shared Responsibilities | Private Sector |
|---|---|---|
| ☛ Disease survivalence | ☛ Disease diagnosis and reporting | ☛ Clinical diagnosis/treatment, |
| ☛ Compliance monitoring | ☛ Compulsory testing, accreditation | ☛ Drug/vaccine production/ distribution, |
| ☛ Quarantine | ☛ Diagnostic support, animal welfare | ☛ Artificial Insemination |
| ☛ Drug/vaccine quality control | ☛ Notified disease control | ☛ Herd health and production programmes |
| ☛ Food hygiene/inspection | ☛ Disease emergency response, zoonosis control | ☛ Marketing livestock and products, |
| ☛ Export inspection and certification | ☛ Research advice and extension | |
| ☛ Accreditation of personnel | | |
| ☛ Planning for emergencies. | | |

Source: FAO (1992)

Among curative services, diagnosis involves externalities because by making diagnosis and communicating it to the animal owner, the veterinarian is increasing the overall level of knowledge in the social system – especially important if the illness in question might grow to epidemic proportions (Gros, 1994). Treatment only involves externalities where the illness in question is infectious and can be cured, thereby reducing the risk of other livestock owners. Despite all these externalities, public provision of curative livestock extension services is not justified to all sections of livestock keepers. Gros (1994) concurs with this, but gave more emphasis to the private nature of curative services on account of two factors. First no body but the owner of the animal receives immediate economic benefit from the treatment. Second, most of the curative treatment does not involve infectious diseases. Preventive health services also largely involve externalities through which the social benefits are much higher than individual benefits. In order to maximize social benefits, the Government will have to intervene in the production of preventive goods. If it does not directly provide the goods it self, then it will have to pay subsidies to the providers.

Therefore, the extent of public sector intervention should depend upon the type of externality involved and the degree to which the private sector can internalize it. Pure public provision is only justified under special economic circumstances such as for zoonotic diseases, foot and mouth disease, which might affect exports of livestock products. Otherwise, the public sector should support the primary efforts of the private sector through for example sub sidizing private provision or monitoring compliance. Because both clinical and preventive services are provided by the same individuals, any subsidy to preventive services might unavoidably spill over to clinical services. This might also be used to usher in subsidies to the clinical sector by the backdoor. Leonard (1985) opined that optimum coverage of preventive services could be achieved economically by financing them out of taxation. Otherwise, since each individual has an incentive not to inoculate due to slight risk of doing so, all individuals will attempt to free ride, and inoculated population percentage will be sub-optimal, thus, leading to violate the rationality assumptions of economic actions. This can be attributed to the livestock owners' preference to cash in hand today, rather than benefits in the future. James and Upton (1995) believe that preventive medicine lies somewhere along the public – private service continuum, but lean towards delivery as a public service since, external benefits are greater than private benefits. This is true when the diseases to be prevented are zoonotic and are communicable to humans.

## The frame work for rationalization- Case of India

Since large number of veterinarians and para-veterinarians are working as regular employees, total privatization of veterinary services in the near future is not a feasible option. It is not an advisable action as the government has an important, though a changing role in view of economic, professional, technical and social welfare obligations. Therefore, the technical framework for rationalization should take into account these factors besides the stakeholders' issues. For a long time to come, government sector presence in the livestock service delivery is inevitable. However, private delivery of those services that are private goods, should be the goal. The issue, therefore, is protecting the interests of disadvantaged stakeholders in the transition process. The suggested framework for rationalization draws heavily from FAO (1992)

and Umali *et al.* (1992) and was modified to the Indian conditions ( Fig.3).

Public funded veterinary services are expected to be responsible for providing services where no free market incentives justifies or create a demand for a service. In public health services, there is a free market incentive but there are economies of scale, externalities or professional or biological determinants which dictate how best to deliver specific services, viz., disease eradication by area wide vaccination. Further services are provided based on the need for specific services and how much the public is willing to pay for them. Public sector veterinary services should also direct their activities in accordance with national development policies for investment, poverty alleviation, food security, environmental protection, support for disadvantaged groups, sustainable livestock production and other socially desirable goals. Where these principles do not apply, selected services can be legitimately diverted to the private sector.

## Conclusion

Until recently the provision of livestock outreach services have essentially been the responsibility of the government. However, the emphasis in recent years is on cost recovery due to cut downs in budgetary allocations. Rationalization in the delivery of services has been advocated as a means of improving the supply of veterinary services to the end users. One major intention of rationalization is to allocate costs where individual benefits are expected more, i.e. increased production is to be paid for by the livestock owners. Overall environmental and public health aspects remain Government responsibilities, and thus Government operational capacity and effectiveness can be improved by rationalizing the delivery of public veterinary services, while diverting those services which can be commercialized and ultimately benefit individual owners of livestock.

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