Draft Power in South Asian Food Grain Production: Analysis of the Problem and Suggestions for Policy

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The Context of the Problem

This study takes a look at the energy, land, and food connections as they express themselves in one major area of rural energy use — that of mechanical energy for agricultural production. Specifically, we focus on the use of draft animals in agriculture. In order to keep the scope of the study, we limit specific examples to four countries in South Asia: Bangladesh, India, Nepal, and Pakistan.

We analyze this problem by taking into account the multiple resource constraints which rural people face and the situations of considerable economic and social tension and conflict within which these constraints are located. The intention is to draw some lessons for rural energy policy in the Third World in regard to the provision of adequate mechanical power for agriculture, and possible roles for U.S. policy.

Draft animals are the primary source of mechanical energy for agriculture in Asia, as well as much of Africa and Latin America. Therefore, this is a matter which affects the lives of billions of people who are dependent on the agricultural production both for sustenance and for income. They have gained additional importance and urgency in recent years because they are linked to the growing concern over the accumulation of greenhouse gases, especially methane. For instance, the Environmental Protection Agency recently issued a report entitled *Reducing Methane Emissions from Livestock: Opportunities and Issues*, which considered in detail the topic of cattle as they affect methane accumulations.

While most greenhouse gas accumulations are due to activities which take place in the industrialized countries, emissions of methane from cattle and from traditional rice culture are thought to be substantial. Thus, the problem of providing adequate, reliable and economical draft power, which was already very difficult and complex, now has yet another dimension: the problem of methane accumulations.

A great deal of the problem of policy is to try and locate energy problems involving traditional energy sources in the context of the overall economic and social situation in which rural people find themselves. This is not a simple setting. It involves constraints on many resources besides energy. It involves conflicts and tensions which range from gender issues within the family to class issues within villages to problems arising from the working of national and international economic systems.

The problem of adequate draft power for agriculture is connected to that of land and the priorities for its use, adequate feed to get optimum use of the draft animal population, distributional questions, such as lack of capital for the poorer section of farmers, and so on. The overall resource, economic and social considerations include the following:

- Land: this includes land for food crops, for traditional energy sources (non-monetized fuelwood, grazing land), for monetized crops (including fuel-crops) which are destined for export from rural areas.
- Labor: peak labor requirements for agriculture and domestic work, including gathering and preparation of energy supplies; cash requirements, requiring people to perform monetized labor.
- Gender considerations: women and children perform much of the labor and the overwhelming proportion of the non-monetized labor in the Third World, the more so in rural areas. In these circumstances, investments which reduce the burden of women's work or which demand money resources generally controlled by men often confront a low priority among those with power over resources.
- Urban-rural aspects: the general tendency for investments to be concentrated in urban areas. This tendency is very strong in the Third World, and even within urban areas, large investments are narrowly focused towards the elite.
- Allocation of financial and foreign exchange resources: investments in the energy sector, including rural energy, are often constrained by shortages of capital, including foreign exchange. These shortages are exacerbated by the strong class and urban bias in investment patterns and in the spending of the foreign exchange which is available.

Evidently, the compass of these issues is large. Our focus here is the nexus between land, energy for traction, and agricultural production. We will only touch upon the other issues in passing, and only as they apply to the problem of mechanical energy in South Asian agriculture.