

# MANAGEMENT

## Leapfrogging from Rural Hubs to New Markets

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Poverty in developing countries is predominantly rural and its alleviation can be best achieved through agricultural growth. Thus, the improvement of agricultural marketing is the key to rural poverty alleviation. This requires not only well maintained roads and good transport services, but also logistical chains, telecommunications facilities and intermediate means of transport. This article, based on a World Bank paper (Sieber, 2009), shows how, with an integrated planning approach, appropriate structures may be created that improve market access for smallholder farmers and thus alleviate rural poverty.

Agricultural markets in developing countries have a dualistic structure – with a ‘traditional’ sector focusing on food staples and traditional export products; and modern markets for high value foods, such as fresh fruits and horticultural and dairy produce. While the first sector is dominated by ‘traditional’ transport activities, modern markets require modern supply and logistic chains.

### Inefficient ‘traditional’ freight transport

Presently, traditional rural freight transport is primarily related to the evacuation of agricultural produce from the fields to domestic and international markets. The first mile is conducted on local paths and tracks, mainly by headloading, which is the most expensive means of transport (Sieber, 1999). Inefficiencies currently dominate rural transport operations in many developing countries, especially in Sub-Saharan Africa: Bad roads, low quality and unreliable services, monopolistic transport markets and high charges are the most important problems.

Since bad market access hampers development, rural roads generate strong impacts on agricultural production and marketing, and thus contribute to poverty alleviation. However, roads are not enough due to their rather permissive character, so transport services and modes have to be taken into account as well. Intermediate Means of

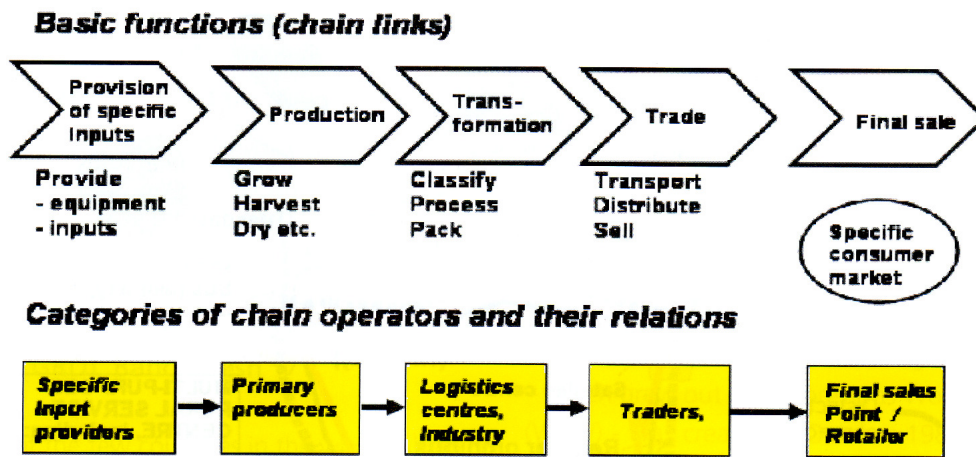
Transport (IMT) can reduce transport costs significantly, if multimodal transport chains are used. While IMT can efficiently carry small quantities on local infrastructures, trucks operate cost efficiently over longer distances, on good roads and when fully loaded. The multimodal approach uses the comparative advantages of each mode in the transport chain from the field to the market (Sieber, 1998). Thus, the promotion of IMT for multimodal transport is an essential component for the improvement of rural freight transport.

### New opportunities through emerging agricultural markets

Flowers from Kenya, cherry tomatoes from Senegal, green beans from Niger, organic cucumbers from China are offered more and more in the supermarkets of industrialised countries. A tremendous growth in world food trade has been observed over the past decade. Exports of horticulture, livestock, fish, cut flowers and organic products now make up 47% of all developing country exports; far more than the 21% for traditional tropical products such as coffee, tea and cotton.

Additionally, in many developing countries, a rapid rise in the number of supermarkets since the 1980s has determined the structure and logistics of agricultural markets. In Latin America, supermarkets are buying 2.5 times more fruits and vegetables from local producers than all the exports of produce from the region to the rest of the World. Future agricultural markets in middle-income countries will be dominated by supermarkets; while in poorer countries they are still in their infancy.

The new markets create diversified opportunities for developing countries, not only to supply high-value produce, but also to carry out value-adding processes such as washing, pre-packing, mixing, labelling and bar coding. Consequently, many new economic activities may be undertaken within developing countries; thus increasing the rural value added dimension. For example, in Bangladesh, when exporting French beans, more value is added through transport, handling and packaging than by the original farming activities. The new paradigm that emerged from such developments on the world market was that, if producers were more closely linked to their



Basic features of an agricultural Supply Chain

markets, they would increase their revenues and improve their livelihoods.

### Supply chains and modern transport logistics

The emerging agricultural markets for high value products entail severe impacts on marketing, procurement processes, quality control, warehousing, packaging, logistic chains and transport. For such products, modern supply chains are necessary – covering upstream processes, such as the provision of inputs, as well as downstream transport logistics from the producer to the final consumer (Figure 1). Thus, they call for high-quality transport services that, in turn, require major investments in facilities, transport equipment and management capacity.

In order to satisfy the demand from customers and adhere to quality standards, produce has to undergo a number of processes, such as pre-cooling, pack line operations, ripening, degreening and labelling. A well-equipped and hygienically maintained infrastructural base is a pivotal support element of the chain. The technological level must be appropriate to the needs of the target market and the length and complexity of the chain. For simple chains, such as where the producer is within hours of the market, a simple infrastructural base consisting of packing and well-ventilated transportation facilities is adequate. For longer, more complex chains, packing houses, cooling systems and logistical infrastructure – such as refrigerated transportation, storage/warehousing and containerisation, supported by appropriate logistical operations – are required.

Pre-cooling prior to shipment is needed to prevent quality loss and wilting. Cooling is not a domain reserved

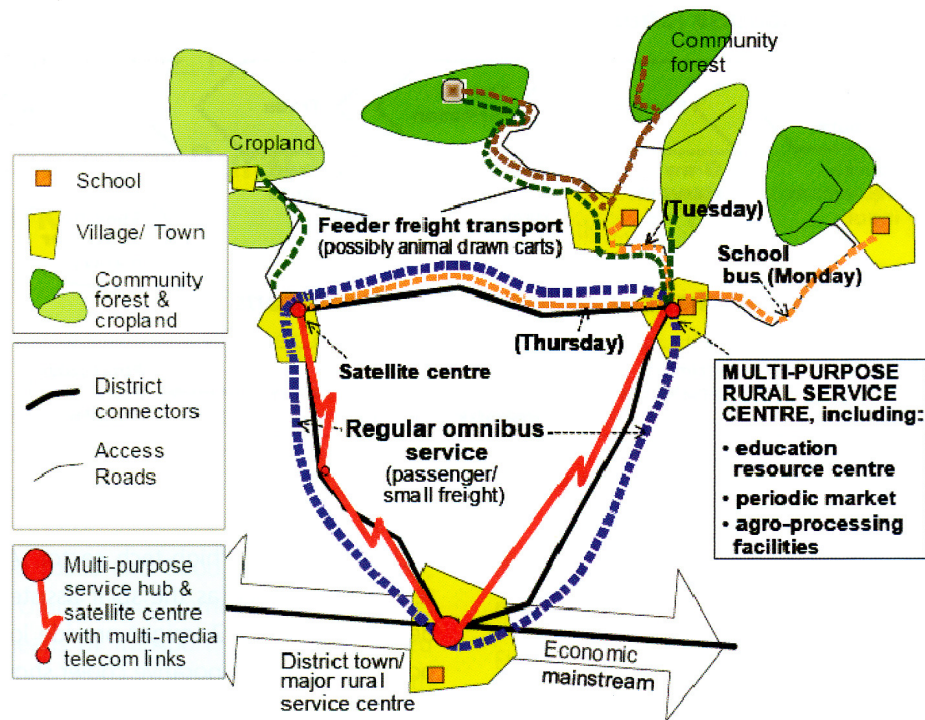
exclusively for the high-tech sector. Appropriate cooling technologies, such as the solar assisted cooling chamber depicted in Figure 2, might provide low-cost solutions in poor areas. The evaporative cooler shown can prolong the life of fresh fruit by two to three weeks.



Appropriate cooling technologies in Low-Income Countries

### A new concept for regional and transport planning

How can modern supply chains be implemented in a traditional rural transport market? The answer is through an integrated regional planning approach that encompasses disciplines such as agriculture, logistics, manufacturing, transport and business development. On the regional level, conventional and modern transport chains may be



The concept of rural Central Locations in the Master Plan of South Africa

planned using the approach of 'basic access' provided by multimodal transport, embedded in the concept of central locations and combined with modern communication infrastructures.

In this concept, central locations form a hierarchical system of rural development nodes, as shown in Figure 3, which is derived from the Master Plan in South Africa. Over the first mile, agricultural produce is transported by IMT, using low-cost tracks and roads. The hubs are used to tranship cargoes onto motorised goods vehicles, from where they travel on well-maintained rural roads. The rural hubs are placed in central locations that function as buying points or local markets and provide communication and agricultural extension services for rural producers. In these rural hubs, facilities for modern supply chains – such as cooling, refrigeration, processing and packaging – may be provided. Superior centres provide additional transport hiring or brokering services. For regional planning, an interdisciplinary approach and the involvement of stakeholders, especially the private sector, is a must.

Multimodal basic access, combined with telecommunications, the development of central locations and modern supply chains, enable poor farmers to leapfrog from rural hubs to new markets and, thereby, escape the poverty trap.

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*This publication is part of the World Bank's Freight Transport Toolkit. The full paper may be downloaded from the author's website <http://www.niklas-sieber.de>.*

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