ESTABLISHMENT OF VIABLE RURAL SUPPLY CHAINS, MARKETS, AND ASSOCIATED ECONOMIC OPPORTUNITIES

ANDRIES H. NAUDÉ and SIPHO KHUMALO*

CSIR Transportek, P.O Box320, Stellenbosch , 7599
*CSIR Transportek, P.O Box395, Pretoria, 0001.

The paper documents the results of research, case studies and development work aimed at identifying effective strategies for the establishment of viable rural supply chains, logistical services, markets and associated income-earning opportunities. Most of the case studies and development work were undertaken as part of a recently completed study into rural access issues undertaken as a joint venture between the National Department of Transport (NDOT) and the CSIR.

Problem statement

There are formidable logistical difficulties with rural social service delivery, as well as the production and marketing of foodstuffs, other agriculturally based products, construction materials etc. Many of these have to do with the following factors:

- relatively low densities and economies of scale;
- the large distances that have to be traversed, mostly involving the use of poor roads or tracks;
- low rates of private vehicular mobility and tele-connectivity;
- under-developed market facilities, storage and other logistical infrastructure.

The combined effect is that logistical services (such as to store and take produce to markets, or to order and deliver critical inputs such as seed and spare parts) is often prohibitively expensive, thereby marginalising and excluding many potential producers (e.g. small-scale agriculturalists, craft producers or community foresters) from "mainstream" supply chains.

Current "coping strategies" and their limitations

By buying their logistical services from the ubiquitous rural 'bakkie-operators' and the network of village stores (many of which now host postal and telephone services) some rural producers are obviously coping with at least some of their logistical requirements. Moreover, many of the provincial and district road authorities are probably doing all that is financially feasible to address the issue of poor roads.

Given the formidable logistical difficulties outlined above, the implicit "coping strategies" are thus not necessarily inefficient and developmentally ineffective. Besides the mere fact that there *are* public and private sector structures in place to provide logistical support services and undertake road upgrading, the use of informal, or labour-intensive delivery methods means that many entrepreneurial and employment opportunities are being created.

If one also starts to examine how the current pension pay-out routes interfaces with the network of village stores, and how many mobile traders have latched onto these "pension routes" to sell their wares, it is evident that established periodic markets are already in operation in most rural areas.

The problem with coping strategies, however, is that they only aim to make best of a given situation rather than helping to transform that situation. And then there are also many who are not really coping, locked into a survivalist poverty cycle and a high level of dependence on state welfare grants (such as the pension pay-outs) or urban-rural remittances. Many of these are often also highly

indebted to local traders, and at the same time excluded from participation in local production and commercial activities.

Structural economic divides

Seen from a broader rural economic development perspective, the present set of circumstances in rural areas is not only a function of their physical remoteness, and the attendant logistical problems such as long distances, poor roads, relatively low densities and market thresholds. The present situation is, fundamentally, also a function of the apartheid history, and a range of factors that are perpetuating an unacceptably high degree of *economic dualism and dependence* (Naudé, et al,1998).

One of the factors is economic globalisation and the accompanying increase in competition, as well as associated *structural economic barriers* (such as the digital divide). These barriers can be seen to operate at different levels, creating a series of divides between those places or groups that are better positioned to compete in the *globalised, mainstream economic circuits* and, and those who are reliant on *subsistence activities* or small, segmented, and over-traded *local economic circuits* (a distinction based on the *upper-lower circuit* differentiation described in Santos, 1975).

Understanding the different operating principles

There are no easy answers to the problem of crossing or working across these divides. A useful starting point would be to clarify the different operating principles or core *logic* of the different circuits. Mainstream economic circuits are based on the underlying logic that resources, products and services are only valuable if they can be brought to the right production complex or market, at the right time and in the right combinations (Naudé, et al,1998). An allied guiding principle is to invest heavily in information and logistical support systems, so that the right markets can be targeted, and products can be delivered when prices are best.

In contrast to the implicit assumption that the mainstream logic is inherently superior, and that the "mainstreaming' of rural economies is inherently desirable, a more appropriate approach might be also to recognise the logic of *local self reliance or resourcefulness*. This, indeed, is the logic which underlies many of the survival strategies described above, and which also forms the core principle of most forms of subsistence economic activity. In contrast to the mainstream logic, local resources are valued in their own right, not only in terms of their market value or competitiveness in the "open market". And instead of pushing increased sales or turnover as the only or primary means of achieving economic viability, the emphasis is to economise on the use of external inputs, transport and logistics.

The LED and sustainable livelihoods approaches

Increased recognition of the logic of local resourcefulness has in recent years led to a number of development approaches that emphasise the need for *integrated local economic initiatives to strengthen and employ local people and other resources.*

The above focus closely describes that of *LED*, or local economic development, although this approach is also characterised by a strong emphasis on private-public partnerships, community development corporations, and similar institutions.

A slightly different set of concepts are promoted as part of the *sustainable livelihoods approach*, which was first developed by Britain's DFID (Department for International Development), in response some of the perceived failures of the integrated rural development (IRD) approach of the 1970s (DFID, 1999). However, instead of using the term *resources,* the livelihoods approach emphasises different forms of *capital* (social, human financial, physical, and natural). And instead of referring only to *economic initiatives,* the livelihoods approach stresses the need to consider a much wider range of *livelihood strategies*.

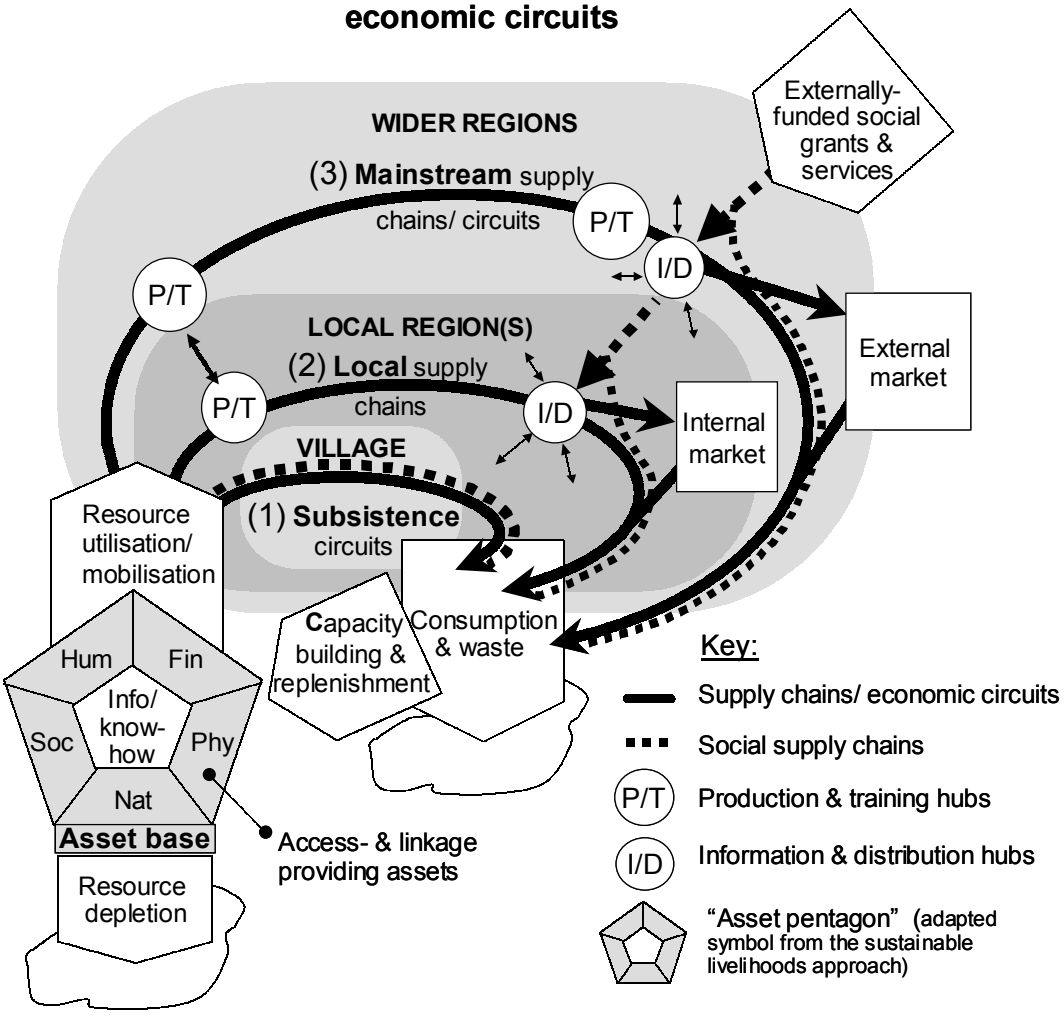
Towards a dual-logic, multi-level approach

Whilst recognising (and decrying) the various divisions, inequalities and other negative consequences of economic dualism, it may be possible to turn some of these "negatives" into "positives". Based on the discussion of the different operating logics of mainstream and local economic circuits, as well as the brief review of the LED and sustainable livelihoods approaches, one may postulate that this may be achieved through a *dual-logic, multi-level approach*.

What this could mean in the current South African rural context can be best described with the aid of a diagram or conceptual model. In Figure 1 we show three levels of supply chains or circuits, all originating with the utilisation of a multi-dimensional asset base, or with externally funded social grants and services.

Using the diagram as an explanatory tool, we will argue that rural communities, SMME and other enterprises should be facilitated to operate across all three levels, but that particular emphasis should be placed on strengthening their ability to create and participate in *local supply circuits* occurring at a sub-regional scale (i.e. within local regions ranging from a sub-district area with about 30 000 people to an inter-linked set of such areas in a district with as much as 2 million people) (see, Ruddle and Rodinelli ,1983, for a similar approach).

Figure 1. Conceptual model of rural supply chains and economic circuits



To further explain the three levels of supply circuits shown in Figure 1, it should first be noted "economic" is used in a generic sense, i.e. to refer to any resource transformation, value-addition and exchange process. A full circuit actually consists of two distinguishable supply chains, one moving towards the distribution centres or markets, where some form of exchange may occur. Purchased goods and services then flow in the opposite direction to be consumed, or used for (asset) capacity building and maintenance. Importantly, economic resource transformation processes should also be seen to apply to human resources, where education and training are obvious value-adding or skill development processes, and labour is exchanged in job markets for financial capital, consumption goods, etc.

The diagram also shows how externally funded social grants and services contribute to consumption and capacity building. These, together with the remittances of labour employed in external markets tend to create the pattern of rural dependence referred to earlier.

The key assets

The typical rural asset base is shown with the same type of pentagonal symbol and dimensions as in the sustainable livelihoods literature, i.e. as comprising social, human, financial, physical, and natural capital. However, we indicate an additional type of asset, namely information, combined with knowledge or know-how, situated at the centre of this asset base.

As part of the physical asset base we highlight *access and linkage- providing assets* (*linkage assets* for short). These are the basic means of linking different stages of resource transformation – i.e. extraction, production, and distribution - over time and space, and therefore enabling the creation of supply chains or circuits. The following main categories can be distinguished:

- *Central place facilities*[1]*;* comprising the facilities from which health, education, population registration, welfare, information, financial, trade, postal, police and fire protection services are provided.
- *Linkage infrastructure*, comprising transportation, information and communication infrastructure, as well as storage and transhipment facilities.
- *All means of transport and traction* (MTT), including non-motorised transport (NMT) modes (bicycles, wheelbarrows; hand and animal-drawn carts horses, donkeys, etc) other intermediate means of transport (IMT) (tractor-trailers, second-hand light delivery vehicles and motorcycles, etc) and all conventional modes of transport (trucks, buses, cars, railways, aeroplanes, etc.) and means of agricultural traction and road construction (oxen, tractors, graders, bulldozers etc) (Riverson and Carpetis, 1991).

The rest of the physical asset base (shown in Figure 1) is of less importance for the present discussion, but it can be briefly noted that it includes all (capital) means of production, ranging from machines to livestock and factory buildings; reticulation infrastructure (mainly water and sanitation, electricity and gas, and residential streets); and residential infrastructure.

Besides linkage assets and logistical services, the other key resources and support services needed at different stages in the supply chain are indicated in the following table.

Stage in supply chain	**Critical resources and support services (other than linkage assets and logistical services)**
Procurement/ extraction	Land, livestock, water, labour, finance,
Product transformation	Labour, finance, energy, machinery, business support services
Market development and distribution	Labour, finance, business support

[1] Some goods and services are provided to individuals who travel to the facilities (education from schools; health care from clinics and hospitals; recreation from parks and libraries; child care from day-care centres), whereas others are distributed from the facilities to consumers who may be scattered far and wide (police and fire protection).

Pivotal investment and spatial organisation issues

Given that at least some investment in linkage assets and logistical services is required to create supply circuits (especially at Levels 2 and 3 shown in Figure 1) one of the pivotal issues is how to choose or substitute among different assets/ services (at each level). At the subsistence or local level, there are obvious trade-offs, such as between motorised and non-motorised modes of transport. Other, less obvious ones are to choose, say, between investing in village-level facilities or improved transport services to the nearest town or sub-regional service centre.

This type of question – in particular whether, where and how to focus investment in linkage assets and logistical services on certain *nodes or hubs* - brings us to a range of spatial organisation issues that should be highlighted.

At the broad district or wider regional level, the spatial hierarchy of major and minor towns is typically well developed, as is the network of major and minor roads connecting them. Below that, there is typically very little obvious differentiation in the centrality or hierarchical status of different villages. One of the consequences, then, is the apparently haphazard dispersal of lower- order central place facilities among these villages.

A related, very important consequence, from our point of view, is the relatively big jump from the village (and its ubiquitous store or local school) to the town centre. For most small or embryonic enterprises that do not have their own transport and telephone (e.g. a 'bakkie" and cell-phone) the combined transport and transaction costs are often too great to viably deliver (and sell) any surplus produce. Similarly, for many youths or adults who may have had no or poor schooling, or wish to invest in the development of improved business and other skills, the 'jump" to ABET centres (Adult Basic Education and Training) or specialist training centres in the nearest town is typically also too great.

Pro-active development of local supply circuits and hubs

Against this background, one may explore the strategies that should ideally be employed for pro-active development of local supply circuits and "hubs"- and the possible use of these as springboards for accessing mainstream circuits.

The conceptual model illustrated by Figure 1 highlights two general types of hubs:

- production and training hubs (providing skills-oriented training as well as specialist education)
- information and distribution hubs, ideally linked to small or periodic markets.

In recent years many strategies have been initiated, and investment funds provided to develop such or similar hubs - also known as various types of *multi-purpose centres* (MPCs) (Bester, 2000, Butcher,1998). The main principles underlying these initiatives can be summarised as follows:

- clustering (under one roof, yard or in the same local area or "node"),
- one-stop access,
- sharing of resources, and
- harnessing of (new) information and communication technologies (ICT).

The principle of a *service centre hierarchy* - with bigger/higher order facilities located at centrally located nodes, hubs or high-demand areas, linked to smaller, lower-order nodes or satellites serving individual communities, peripheral or low-demand areas – is sometimes also followed.

Recent experience with MPCs, however, indicates that many of these initiatives are still uncoordinated and unable to achieve the necessary "critical mass", resulting in sub-critical efforts that are difficult to sustain and support, and poor utilisation of facilities and human resources (van Rensburg, 2000). Sustainability problems are also caused by inadequate involvement of community structures and the lack of capacity to develop locally tailored interventions, which take account of the unique contexts in which they will be implemented (Butcher,1998).

If the current initiatives are evaluated specifically in terms of the logistical needs of small-scale rural producers, and the associated need for the pro-active development of local supply circuits, it is evident that there is:

- Too much focus on *information* and *meeting-related* functions in comparison with other *logistical* functions (such as storage, the supply of micro-containers, freight forwarding and the development of appropriate modes of transport);
- Too much emphasis on the *infrastructural* aspects, in comparison with *locational* or spatial planning, *operational* and *institution building* aspects.

The preferred approach would be to plan the deployment of MPCs as part of a *coordinated nodal and linkage development strategy*. The following should be considered as guiding principles or key success factors:

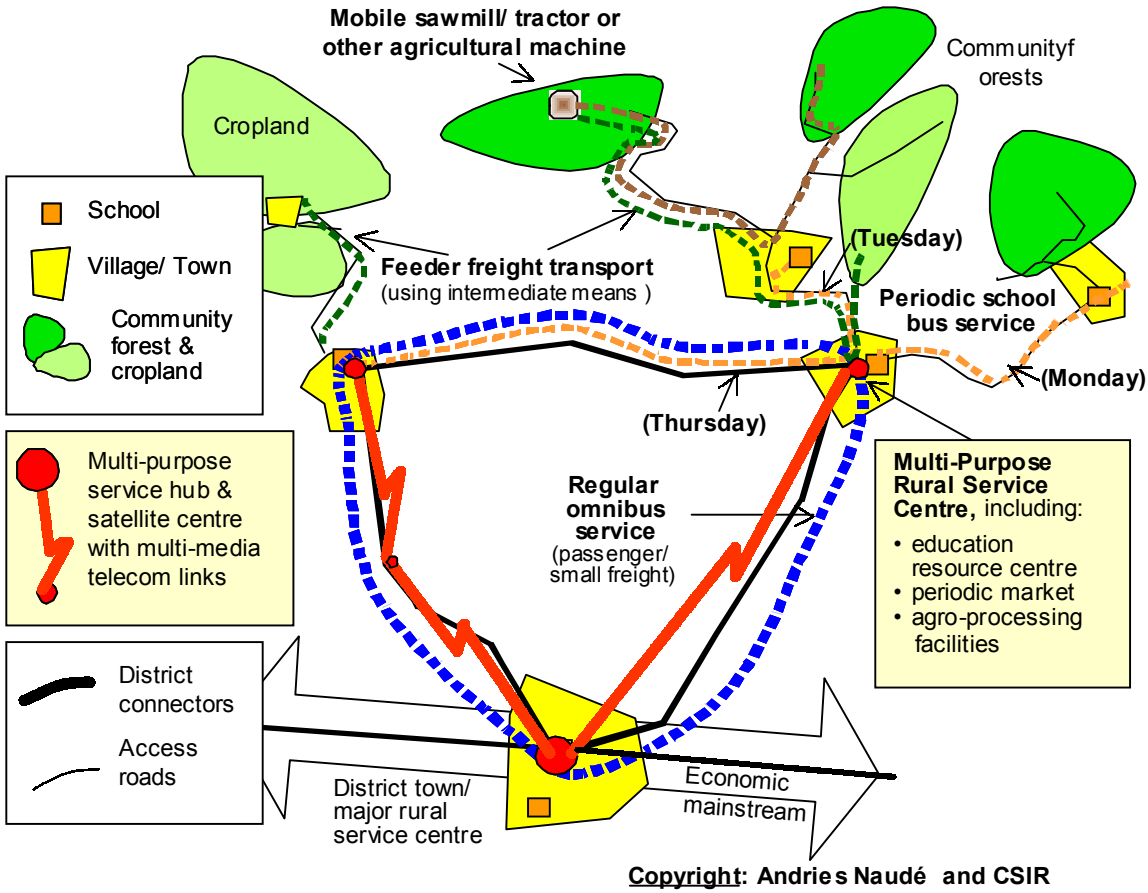
1. Establishment of logistical services as one of a range of services provided by *rural multi-purpose centres* (MPCs), focussing particularly on freight collection/ distribution services for incipient agro-forestry and tourism enterprises.
2. The development of MPCs and logistical services within the context of a *periodic market system*, giving particular attention to pension pay-out schedules, and the coordination of transport, periodic service provision and market schedules (including aspects such as routes, stopping places and service times).
3. *Information provision, regulation and selective subsidisation* in support of the coordinated schedules, centres and services, giving particular attention to opportunities for transforming subsidised passenger transport services into *"omnibus" communications, transport and storage/exchange services*.
4. The exploitation of opportunities arising from the ongoing rapid advancements in *communications and information technologies* (ICT) to create a range of hub-satellite arrangements with ICT linkages between the hub and satellite centres.
5. *Coordinated planning of "linkage infrastructure*" (ICT-, transport and allied nodal infrastructure) aimed at providing an appropriate, integrated infrastructure platform for rural logistics services, periodic markets and other nodal development activities.
6. *Capacity building of district councils* to undertake linkage development planning, establish public-private partnerships and/or issue contracts for the provision of integrated rural logistics services.

Possible outcomes

The combined result of these and LED-focused interventions (such as the establishment of local development cooperatives) could be a range of hub-satellite arrangements where up-to-date learning and resource processing occurs on a geographically dispersed basis, whilst also allowing for people and products to periodically come together for the necessary face-to-face interchanges and/or utilisation of sophisticated / high-cost facilities.
Figure 2 illustrates the possible outcomes of the following interventions:

1. Sustained investment in, and maintenance of district and access roads;
2. Establishment of multi-purpose service hub and satellite centres, linked with multi-media telecom links; and supported by the development of periodic markets, education resource centres, etc;
3. Transformation of current (passenger) bus services into *omnibus*, or mixed passenger and freight services;
4. Special contracts for two types of *periodic access services* : namely (i) a *periodic scholar bus service* that would bring pupils on alternate days from surrounding schools to the education resource centre; (ii) *periodic market access service,* which would operating on a roving basis to transport people to and from surrounding areas for the one or more days when a periodic market is in operation.
5. Promotion of multi-use *tractor-trailers,* or *other intermediate means of* hinterland–village transport and agricultural traction.
6. Spot improvements to tracks and other off-road transport infrastructure (such as suspension bridges).

Figure 2. Possible outcome of a coordinated nodal and linkage development strategy



Example of multi-purpose centres (MPCs)

As part of the aforementioned case studies, the Tombo node - situated on the main road between Umtata and Port St Johns – was visited. As indicated by Figure 3, this is a good example of a loosely-structured MPC where a tele-centre and a wide range of government-related services have been brought together within a Multi-purpose *Community* Centre, but other facilities – such as a transport interchange and its associated market facilities, a cultural centre, and a local shopping centre, have developed separately. The establishment of this MP*C*C was coordinated by the Government Communication and Information Service (GCIS) as one of four pilot projects (Sigidi and Seti, 2000).

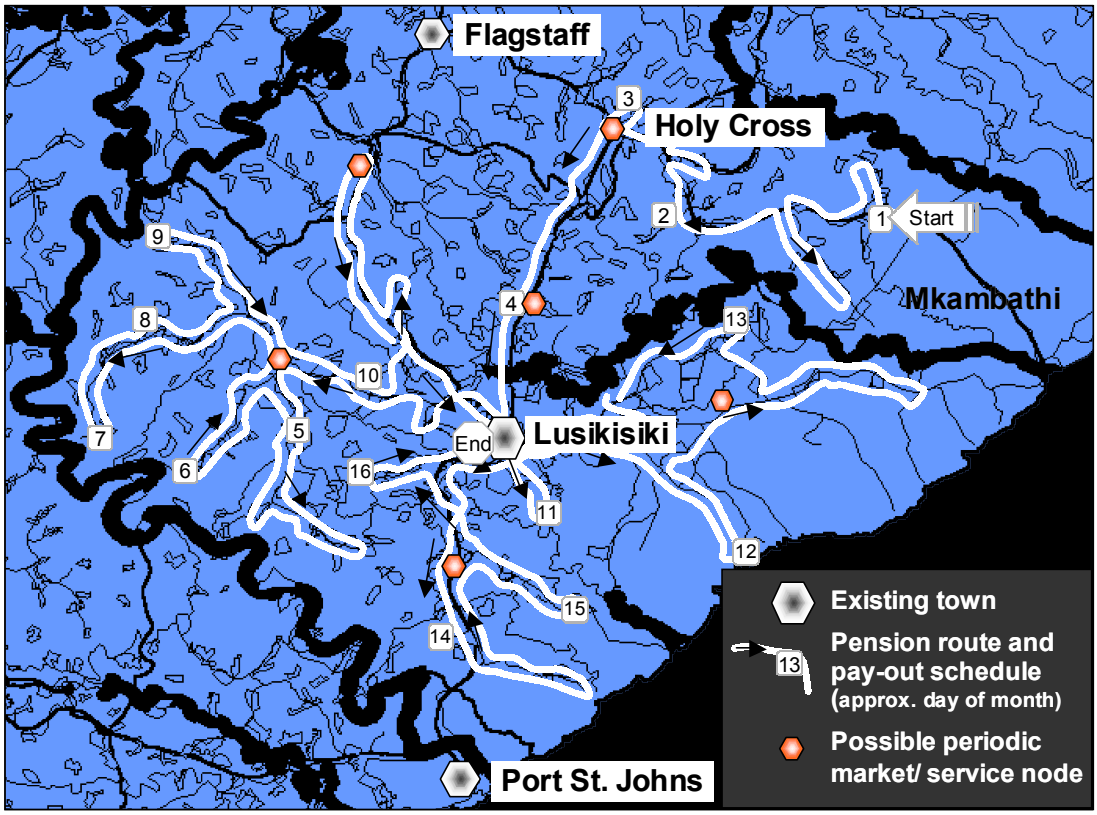
Fig 3. Example of a loosely - clustered MPC
(Diagram based on Tombo MPC, Eastern Cape)

Example of a possible periodic market system

A coordinated periodic market system, together with small-enterprise logistical support (e.g. storage facilities, mini-containers, and transport brokers located at a multi-purpose centres) could create opportunities for enterprises in different micro-regions to specialise and cost-effectively market their produce within the whole district or region. Figure 4 is a concept plan of such a periodic market system that was developed for the Lusikisiki district in the Eastern Cape. The line of argument that informed this concept plan can be stated as follows:

- It should be accepted that pension pay-outs should occur as near as possible to existing communities.
- However, this means about 6 stops a day, mostly at local stores which tend to have a spatial monopoly on purchases, subject to competition only from mobile traders.
- The apparent answer is to retain the existing pension pay-out system, but also develop a *two-to-four day market system*, synchonised to occur during and just after pay outs in a particular sub-district
- •As pensions tend to be paid out in the first half of the month, each market locality can be visited for a second time during the month, implying that local SMMEs will have bi-monthly access to a periodic market within about 15 km, or at most, 25 km of their home location.

Figure 4: Concept plan of a periodic market system in the Lusikisiki municipal area



Conclusion

The paper has argued for a multi-level, dual logic approach to the creation of rural supply chains, markets and associated income-earning opportunities. In essence, the approach is to:

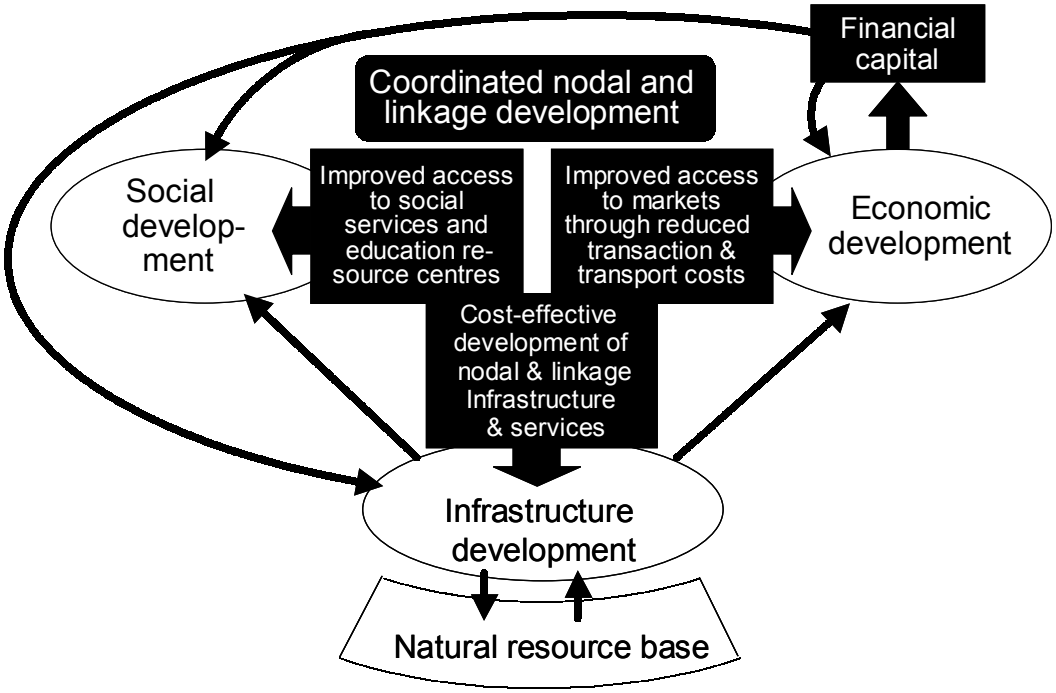
- strengthen and, where appropriate, transform *local economic circuits*, and associated livelihood strategies;
- utilise the skills and thresholds created in the local circuits as a springboard for accessing the *mainstream circuits*.

The catalyst, in essence, would be to change from a focus on multi-purpose service *centres* to a focus on ***multi-purpose service networks and-circuits with a strengthened logistical and operational focus.*** In other words, equal emphasis is placed on the nodes or centres, and the linkages, routes or schedules that make up the whole service network or circuit of periodic services.

As shown below (Figure 5), the outcome of these arrangements and related interventions could be a mutually reinforcing improvement in the effectiveness and sustainability of infrastructure development, economic development, and social development in rural areas.

Seen within the context of the Integrated and Sustainable Rural Development Strategy, which is currently one of four core national priority areas (Mbeki, 2001), this means that coordinated nodal and linkage development programmes and projects could play a very significant role.

Figure 5. Developmental impacts of coordinated nodal and linkage development



Acknowledgements

A large proportion of the material in this paper is based on the results of:

- The "*Rural Access*" joint venture project between the National Department of Transport and the CSIR:Transportek, which resulted in the production of a CD-ROM Guide to Rural Transport, Nodal and Linkage Development (Naudé et.al., 2001).
- An exploratory research project on *Integrated Rural Logistics Services*, undertaken as joint venture between CSIR's ***i***comtek and Transportk divisions (Naudé and Van Rensburg., 2001)

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ANDRIES H. NAUDÉ and SIPHO KHUMALO*

CSIR Transportek, P.O Box320, Stellenbosch , 7599
*CSIR Transportek, P.O Box395, Pretoria, 0001.

CURRICULUM VITAE : SIPHO KHUMALO

PERSONAL PARTICULARS

Nationality:	South African
Designation:	Programme Manager – Traffic Safety
Specialization:	Road Transport Practitioner
Languages:	English/Afrikaans English – speak, write & read excellently IsiZulu – speak, write & read excellently IsiXhosa & Siswati – speak & read fairly Sesotho – speak & understands poorly
Joined the CSIR:	1998

KEY QUALIFICATIONS

- Strategic Planning & Management, Specialising in road transport safety, Project Management & Evaluation, Development Economics, Trade & Industry Policy, Labour Market Economics, Change Management, People skills.

EDUCATION AND PROFESSIONAL STATUS

- B.A Honours (Linguistics) University of Witwatersrand)
- Masters in Management (University of Witwatersrand)
- Management of Technology and Development (Project Management)
- Masters in Management (Public & Development Management), Faculty of Management, Wits (1997-1999)
- BA Hons, Faculty of Arts, Wits (1991)
- BA, Faculty of Arts, Vista (1988-1990)

EMPLOYMENT AND EXPERIENCE RECORD

1991-1991 Vista University (Student Tutor)
1992-1994 Vista University (Lecturer)
1994-1995 Union of Democratic University Staff Associations (General Secretary)
1996-1996 Department of Transport (Deputy Director – Research & Development)
1997-1998 CSIR Transportek, Transport Operations & Logistics (Project Manager)
1998 to date CSIR Transportek (Programme Manager)

PUBLICATIONS

Full publication list supplied on request.