

5 Forests-Based Livelihoods and Poverty Reduction: Paths from Local to Global Development

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Abstract: The central role of forests in rural livelihoods, especially for the poor and the marginalized, suggests that when exploited to full potential these resources could facilitate rural poverty alleviation. However, this is constrained by the factors that characterize the poor, including low levels of education, low levels of asset holding, poor health, lack of power and opportunities to be heard, weak local institutions and unfavourable institutional frameworks. In some areas, forests have lifted rural people out of poverty by enabling significant income generation, mobilization of savings, capital accumulation, and asset-building. This chapter highlights promising opportunities for forest-based poverty alleviation, and the prerequisites for their exploitation. Much of the evidence suggests that sustained welfare gains for the great majority of forest dependent people will require broader macro-level investments beyond forests and natural resources. Multi-scale, integrated and holistic development approaches will be needed to achieve poverty alleviation at the scale of the Millennium Development Goals.

Keywords: Rural livelihoods; forest-based development; poverty alleviation; integrated approaches; timber trade; payment for environmental services; small enterprises; devolution.



5.1 Introduction

Forests constitute about 90% of terrestrial biodiversity and contribute to the livelihoods of over 1.2 billion people. The majority of these people are poor and depend significantly on forests for their livelihood (World Bank 2002). Timber and non-timber forest products provide these households with energy, food, structural materials and medicines, both for their own subsistence and for sale. Traditional biomass fuels like fuelwood and charcoal are the main sources of energy for an estimated 2 billion people around the world. According to the World Health Organization, 2 billion people rely on traditional medicines from forests for their health. In 62 developing countries, forest-based activities such as hunting and fishing provide over 20% of household protein requirements (Kaimowitz 2003). A range of fruits, vegetables and mushrooms collected from natural forests are important components of the diet

in rural areas, especially for poor households or during times of food shortage.

Forests also contribute significantly to national and regional economies, although this is usually underestimated in national income accounts. In developing countries, forest-based enterprises provide about 13–35% of all rural non-farm employment, equivalent to 17 million formal sector and 30 million informal sector jobs (Angelsen and Wunder 2003). The timber industry in these countries produces something in the order of USD 30–40 billion worth of timber and processed wood products each year, although only a small portion currently benefits poor households. In 1999, Sub-Saharan Africa exported nearly USD 3 billion worth of forest products, representing about 5% of regional exports.

Forested landscapes also provide a range of environmental services, including watershed protection, biodiversity conservation, carbon sequestration and landscape preservation. These environmental ser-

vices are highly valuable to both forest dependent households and off-site beneficiaries (those that live far from the forests) whose activities depend on the continued production of these services. During the past decade, these environmental services have gained recognition as vital functions of forested landscapes but little progress has been made in rewarding resources managers who ensure the continued supply of these services.

World population has been estimated to reach 7.7 billion by 2020, with over 80% in developing countries. More than 1.1 billion people live within the world's 25 biodiversity hotspots and population growth in tropical wilderness areas is 3.1% per year, almost twice the global average. Thus, dependence on forest resources in the hotspots could grow very quickly if alternative livelihoods are not found (McNeely and Sheer 2001).

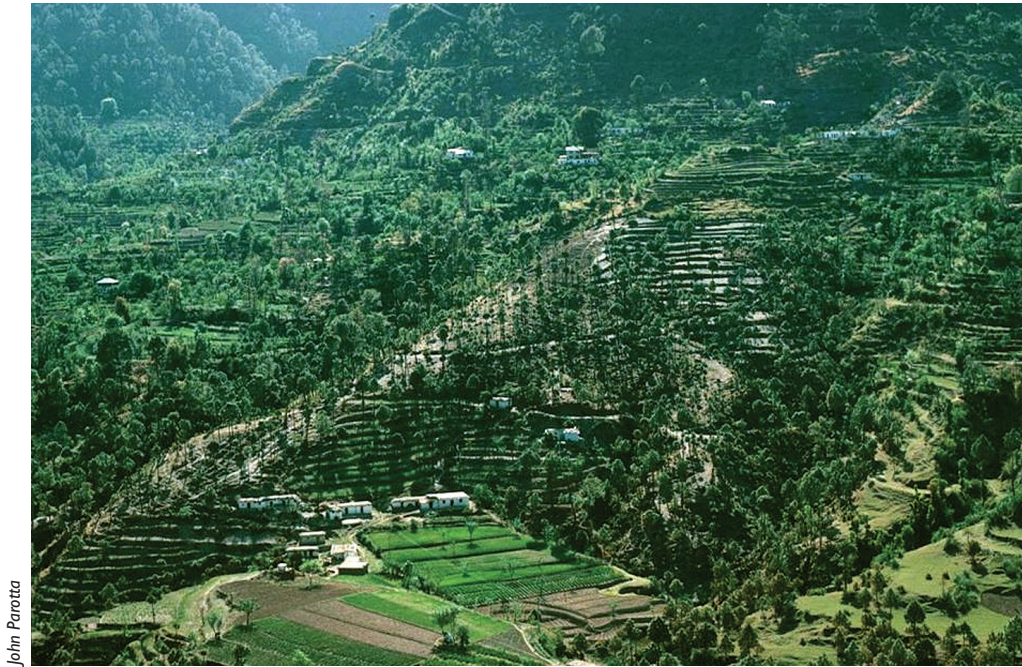
Despite the central role of forest resources in both local and global welfare, forested landscapes coincide to a large extent with high incidences of poverty among the local people. Not only are the local people deprived in terms of material income, they are highly vulnerable and prone to risk because they often lack key livelihood assets, have low levels of education and health, and also lack power and opportunities to be heard. Prevailing unfavourable tenure arrangements and other institutional weaknesses also expose local people to the danger of losing access to multiple components of biodiversity (e.g. bush meat, wild fruits and vegetables, and medicinal plants). Local people are often faced with a diminishing resource base as well as limited capacity to engage in more rewarding livelihood activities. For these communities, forests act as the employer of last resort, ensuring poverty avoidance or mitigation (Angelsen and Wunder 2003; Sunderlin et al. 2003). Forests serve as safety nets that prevent these economically marginalised groups from slipping deeper into extreme poverty. Does this suggest that forested landscapes are poverty traps or offer few pathways out of poverty for local people? Whether sustainable utilisation of forests has potential to lift rural people out of poverty by enabling significant income generation, mobilisation of savings, and asset-building, is a subject of heated debate.

Very little empirical evidence is available to suggest that forest-based activities could lead to sustained welfare gains for large numbers of people across many areas in developing countries. There are several reasons why the role of natural forests in the lives of the poor is currently underestimated or even ignored in macroeconomic development programs: lack of basic data on forest-poverty relations, weak understanding among decision makers of the links between forestry and poverty alleviation, and lack of concrete proposals for policy reforms and investment (Oksanen et al. 2003). For example, many developing countries are in the process of developing Poverty Reduction Strategy Papers (PRSPs); unfortunately, most of the first versions of the PRSPs hardly rec-

ognized the potential of forests in poverty alleviation. However, as countries continue to implement subsequent iterations of their PRSPs, the potential of forests in poverty alleviation is increasingly receiving attention and articulation in national development plans.

The current global focus on poverty issues has revived the debate on how significant improvements in the well-being of forest dependent poor people can be achieved while conserving forest biodiversity. A number of studies have documented the deficiencies of previous efforts to conserve landscapes and improve livelihoods, and the need to adopt new approaches to natural resource problems (McNeely and Sheer 2001). Most international conservation initiatives and development agencies, such as the World Bank, the United Nations Convention on Biological Diversity, the Global Environmental Facility and the UN Convention to Combat Desertification, have policies that strongly commit to new approaches to environmental and livelihood issues. For example, the World Bank noted that to meet the UN Millennium Summit target of halving extreme poverty by 2015, forests must play a far greater role in new approaches to eradicating poverty (World Bank 2001).

This chapter discusses some of the current ideas and approaches to understanding the forest-poverty nexus. Key issues on the subject of forest-based poverty alleviation are also brought to the fore by exploring the potential of available options and some emerging approaches to capturing the full value of forest goods and services to support local livelihoods. Understanding rural livelihood systems, the subject of Section 5.2, is a *sine qua non* for formulating concrete proposals for pro-poor economic development strategies in developing countries. The widely used Sustainable Livelihoods approach to understanding rural livelihoods is critically reviewed in this section, using experiences from various studies. Global and bigger-picture issues that shape forestry business, and the implications for forest use and people's livelihoods, are discussed in Section 5.3. We devote considerable attention to current arguments on forest-based poverty alleviation and critically assess promising options. On-going debate suggests that forest-based poverty alleviation can be achieved in three ways: by preventing the forest resource base from shrinking, by redistributing forest resources and by making them more accessible, and by increasing the value of forest production (Sunderlin et al. 2003). According to this argument, some of the forest-based activities that may contribute to poverty alleviation include exploitation of timber (Section 5.4) and NT-FPs (Section 5.5); rural labour employment (Section 5.6); payment for environmental services (Section 5.7); conversion of forests to arable lands (Section 5.8); and devolution of forest resources to local communities (Section 5.9). We also argue that to meet the challenges of the Millennium Development Goals societies will need to go well beyond forests and natural resources (Section 5.10).



John Parrotta

Agricultural land, agroforestry systems, forest and trees outside forests are an essential part of the natural assets in Himachal Pradesh, Northern India.

5.2 Understanding Livelihoods and Poverty

Sustainable Livelihoods Approach

The notion of sustainability provides a key approach to understanding livelihoods. The “sustainable livelihoods” approach was developed by the UK’s Department for International Development (DFID) in the late 1990s to provide an analytical tool for thinking about poverty in a holistic manner, and for identifying entry points for poverty reduction initiatives. While the framework was developed by DFID, it now builds on the work of a range of organizations, from research groups such as the Institute for Development Studies to NGOs such as CARE and Oxfam and to other development agencies such as UNDP (Carney 1998). The work of Chambers and Conway in the early 1990s, drawing to a large extent on participatory research practices and ideas, contributed to the formulation of this framework. The key word in the framework is “livelihood”, which according to Chambers and Conway (1991) comprises the capabilities, assets (including material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from shocks and stresses and maintain or enhance its capabilities and assets both now and in the future, whilst not undermining the natural resource base. According to the framework, household assets and entitlements are categorized into “five capitals” namely natural, physical, financial, human and social capital.

The framework places people at its centre and seeks to highlight the complex and dynamic ways in which individuals’ well-being is determined. Emphasis is placed on the sustainability of people’s asset base, which may include natural, physical, social, financial and human capital. The approach also promotes a multi-dimensional understanding of well-being, which includes income, health, education, and vulnerability. Critically, the framework makes explicit the role played by context in determining the extent to which sustainability and welfare goals are achieved (Landell-Mills and Porras 2002).

The concept of sustainable livelihoods is now widely applied by scholars and practitioners in different aspects of development policy formulation and planning. Ellis (2000) and Farrington (2001) articulate the value of the approach as a means of fully understanding the components of livelihoods. Campbell et al. (2002) used the sustainable livelihoods framework as the entry point for data collection and analysis in Southern Zimbabwe. The authors conclude that using the framework to guide analysis and intervention leads to the search for integrated development options, and that this approach is more appropriate than *ad hoc* piecemeal approaches. However, the authors express concern with the lack of logic and consistency in the framework regarding scale. For instance, physical assets can be household assets (such as ploughs) and district-level assets (such as road infrastructure), while social capital is largely a “community” level construct. In contrast, institutional arrangements at district and higher levels are not part of “capital” but are considered in the “institutions” component of the framework as part

of the processes that mediate the conversion of assets into livelihood outcomes. Angelsen and Wunder (2003) and Campbell et al. (2002) argue that social capital appears better placed under the “institutions” component of the framework (“transforming structures and processes”) than as a capital asset. They conclude that “social capital” is better perceived as one of the many factors that influence the deployment and transformation of financial, natural, physical and human capital.

A number of authors argue that the use of the term “human capital” is problematic because of its narrow focus on the productivity of labour, though this is largely a problem of application rather than conception (Sen 1997; Campbell et al. 2002; Angelsen and Wunder 2003). They suggest that the focus should instead be on enhancing “human capability”, that is, the ability of people to change their circumstances, and where necessary on empowering people to exploit opportunities. From this viewpoint, human capital becomes a means to deploying and transforming financial, natural and physical capital, rather than a capital asset in itself.

Work conducted by Scoones et al. (1996), Mortimore (1998), and Campbell et al. (2002) with various communities reveals that households constantly have to deal with a whole host of shocks and stresses. Foremost amongst these are the often-marginal environmental conditions for many forms of agriculture, created by low and erratic rainfall, frequent droughts, and generally poor soils (Scoones et al. 1996; Mortimore 1998; Frost and Mandondo 1999). In addition to poor agro-ecological conditions, most rural livelihood activities are adversely affected by a range of socio-economic factors that include underdeveloped and inaccessible markets, lack of access to credit, poorly developed and maintained infrastructure, limited access to appropriate extension advice, and non-functional institutional arrangements for environmental resource management. According to the sustainable livelihoods literature, a livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Chambers and Conway 1991).

Despite the countless adverse factors that impinge on livelihoods of rural households, these households have “coped” and continue to “cope.” Although there have been reductions in some components of the system, especially natural capital, this is not necessarily a problem as processes of redeployment and conversion of one asset form into another are merely intermediate steps (Boserup 1965). Thus, on the basis of the definition of sustainable livelihoods, households who have lived through these shocks and stresses could be said to have “sustainable livelihoods”, or if they have not achieved sustainable livelihoods yet, it may be argued that it is only a matter of time before they develop along the Boserupian pathway. However, widespread and unacceptable poverty is still com-

mon. This suggests that research and development endeavours that aim for “sustainable livelihoods” appear to set the target too low. Eliminating poverty will require bold approaches that go beyond just sustaining livelihoods. Key elements of these new approaches include the need to support local people’s “adaptive capacity” (ability to drive and adapt to change) (Lynam et al. 2002; Sayer and Campbell 2004), rather than focusing on productivity gains; multiple scales of intervention (from local to international where appropriate); and bridging the gap between research, extension and development (through action research). Embracing these elements will also require new kinds of organizations to deal with complex systems without getting lost in the details. A range of specifically forest sector elements would also need to be addressed, including market and skill development for forest product and services delivery; development and integration of forest-and-wood-product supply chains; and increased competitiveness of the forest sector in general.

Definitions of Poverty and Its Alleviation

This review would be incomplete without a discussion of the concepts of poverty and poverty alleviation that have shaped the debate on forest dependency and rural livelihoods. The simplest conception of poverty that dominated traditional thinking on the subject is summarized in Webster’s Dictionary, which defines poverty as “the lack, or relative lack of money or material possessions.” Until recently, poverty was largely perceived within this materialistic construct that emphasized income and wealth as the measure of well-being. The growing focus on issues of poverty worldwide has seen substantial evolution in the scope of the concept to include a number of human development aspects (such as education, health, food security and nutrition), and more recently, empowerment and institutional aspects like freedom of choice, control and security, and self identity (Angelsen and Wunder 2003). This broader conception has enriched the analysis of forest-poverty linkages, especially given the critical constraints of forest dependent populations such as poor integration with markets due to remote locations, low levels of education and health, unfavourable institutional factors, and lack of power to make decisions that shape local livelihoods (Campbell et al. 2002). Although measurability and comparability of the “soft” aspects of poverty still present problems to practitioners, the concepts have proved to be extremely valuable in understanding rural livelihoods and identifying possible pathways out of poverty.

Other widely used terminologies related to poverty and forest dependent populations include poverty reduction, poverty prevention, and poverty alleviation. Angelsen and Wunder (2003) use the term poverty reduction to describe a situation where

people are “lifted out of poverty”, climbing above a predefined poverty line and thereby becoming measurably better off over time, in absolute or relative terms. The term poverty prevention is used in relation to the role of forests in helping people to maintain a minimum standard of living (even when this is below a given poverty line) and helping them to avoid slipping deeper into poverty. Poverty prevention in this respect thus refers to the “insurance” or “safety net” functions of forests in mitigating against extreme poverty. Achieving both poverty mitigation and lifting people out of poverty constitutes what has been referred to as poverty alleviation (Angelsen and Wunder 2003; Sunderlin et al. 2003).

5.3 Globalisation and New Opportunities

Key Trends

Development theories that guide the development of human welfare are continuously shaping the contribution of forests to rural livelihoods. In the 1960s and 1970s, economic development was largely guided by the Keynesian approach that placed great emphasis on growth centres, the industry and multiplier effects. Macroeconomic and other public policies were largely designed to promote economic development through industrial growth (Tikkanen et al. 2003).

However in the last three decades developments in institutions, technology and innovation, as well as in environmental consciousness, have significantly modified the Keynesian approach. They have changed the way the world conducts business, and have far reaching implications on the poor. For example during this period, macroeconomic policies in many countries in the tropics encouraged increased private sector participation in production and commerce and less government involvement in these areas. Markets and trade were extensively liberalized, with the market increasingly becoming a tool for allocating resources for economic development. The world economy is also becoming more globalised; it has become evident that the livelihoods of individuals and the fate of local communities cannot be viewed in isolation of national and international structures and processes (Hyden 1997). Other key trends include the devolution of forests to local communities, with a concomitant advance of community forestry; increased global trade and advance of bi- and multilateral free trade agreements with direct and indirect impacts on trade in timber and other forest products; increased market transparency through new information and communication technologies; and increased importance of environmental services provided by forests (though related payment schemes are still in their infancy).

On the other hand, the World Bank (1997) reports that interest in rural development has been declining

mainly due to the waning interest of international institutions in rural issues, poor commitment and capacity of relevant countries, and poor commitment and weak performance of the Bank itself. The international community’s external assistance to agriculture is also reported to have declined by about 50% since 1986, partly due to donor fatigue; the assistance has been mainly for process issues like economic and institutional reforms and less for production. For example, World Bank credit to agriculture in Africa amounted to 39% in 1978, but dropped to 12% in 1996 and to 7% in 2000 (NEPAD 2001).

Further, the impact of the “green revolution (1960–2000)” in developing countries has been minimal for Sub-Saharan Africa. The subcontinent benefited little from the development of modern or high-yielding crop varieties, an effort that has been championed mainly by international agricultural centres in collaboration with national agricultural institutions. Yield growth made only marginal contributions to growth in crop production, and the share of improved crop varieties to yield growth was also low. Production growth is reported to have been almost entirely based on extending the area under cultivation (Evenson and Gollin 2003).

Implications for Forests’ Role in Economic Development

With increased markets and trade in forest products, as well as globalisation of the world economy, some new opportunities are emerging for enhancing the contribution of forests to local economies. However, some characteristics of forest resources and distribution of markets appear to be decisive in exploiting such potential.

Approximately half of the wood production in the world is used as fuelwood, the rest being used as timber or industry wood. However, the percentage distribution among these uses can be utterly different at country level. Indeed, about 80 % of the wood consumption in many developing tropical countries is for energy. Furthermore, since the 1960s the wood consumption of developing countries has continuously increased from 1.2 to 2 billion m³/year today; this is directly linked to population increase. By contrast, in developed countries consumption has stabilized since the 1980s below 1.5 billion m³/year, and energy uses constitute only 20 % of wood consumption. (Roda 2001; FAO 2004).

Conversely, less than 30% of non-tropical woods but more than 80% of tropical woods (approximately 1.3 billion m³) are used for energy purposes. In other words, tropics provide more than 70% of the fuelwood in the world, and less than 20% (approximately 0.28 billion m³) of the timber or industry wood (Valeix et al. 2003).

The reason for this divide between tropical and non-tropical timber lays in the fact that roundwood and less processed (semi-processed) wood products



Markku Kaminen

Small-scale forest-based enterprises can contribute significantly to local livelihoods and poverty reduction.

are heavy and essentially consumed on the spot, and have very limited potential for international trade. For instance, less than 1% of the non-tropical fuelwood and less than 0.1% of the tropical is exported. As well, nearly 9% of tropical and 7% of non-tropical raw timber and industrial wood is exported. The international trade in tropical logs, sawn timber, and plywood remains low, and represents only 3 to 4% of world consumption (in roundwood equivalent) (Roda 2002).

There is also a significant differentiation between markets and demand along the tropical and non-tropical timber divide. For instance, with respect to hardwoods, Asia and Latin America (altogether accounting for approximately 55% of the world population) consume 92%, 90% and 80% of tropical logs, sawn timbers and plywood respectively. Even if Europe and North America are theoretically more lucrative markets for tropical forest products, these markets are increasingly becoming selective and competitive, and the global demand for these products is relatively low. At the same time, industries within tropical countries often experience an unfavourable industrial investment climate, lack qualified labour, and public infrastructures are often weak and insufficient. In such conditions, these industries ideally can gain more from selling to Asian markets, since these markets are less demanding in terms of product quality, specifications, level of processing, and at times even deadlines for deliveries.

On the other hand, the key trends described earlier are “disrupting” the classical and old-fashioned views on global forest economics, by dramatically changing the approaches forestry can use to enhance livelihoods. Economic development based on the Keynesian approach in the 1960s and 1970s limited the forest sector’s contribution to economic devel-

opment mainly to industrial timber harvesting and processing, thus ignoring development based on non-industrial forest products that support the livelihoods of many forest dependent communities.

Technology and innovation have increased the menu of products from forests and forest industries, pushing forward the market frontier for industrial forest products as well as the investment envelope in forestry. They have also increased labour productivity; this has led to labour retrenchments in older establishments and/or reduced employment in some product lines.

Environmental concerns, largely due to deforestation and industrial growth, have raised the profile of international public goods and services the forests can produce. The emphasis on developing new and improving existing national and local institutions, in tandem with growing state democratic processes, have precipitated a large number of stakeholders in forestry, as well as a growing necessity to involve stakeholders in decision making. The institutional emphasis has seen the emergence of local communities as forest owners and partners in forest management. Further, property rights and equitable distribution or sharing of forestry wealth are receiving more weight. All these factors have combined to shift the focus in forestry away from trees and forests to meeting the many demands of local people and the community at large.

Macroeconomic policies, and especially economic reforms implemented by many developing countries since the 1980s, have at times increased rural poverty, deforestation and environmental degradation. For example, in the Sahelian region of Africa these policies have eliminated many public agricultural support programmes (and the private sector has not filled this vacuum). They have also made it

difficult for Sahelian farmers to access agricultural inputs due to their high costs, and have therefore stalled or reduced their use in increasing agricultural productivity on already poor land. This has reduced food security and incomes to farmers and has encouraged farmers to resort to coping measures, such as increasing peanut seeding densities to improve yields and incomes, which in the absence of fertilizers leads to soil mining and jeopardizes seed quality over time. This creates a vicious cycle that entrenches poverty (Reardon et al. 1997). In Sub-Saharan Africa fertiliser price increases could either increase deforestation (especially for subsistence farmers) or reduce it, while in Latin America they may reduce deforestation. As well, in Latin America increased availability of agricultural credit, especially for cattle, appears to be positively correlated with deforestation (Kaimowitz and Angelsen 1998).

The increasing globalisation of the world economy comes with mixed results. Wade (2003) notes that evidence from many years of globalisation confirms the neo-liberal economic theory, which asserts that more open economies are more prosperous and that those economies that liberalise progress faster while those that resist economic liberalization usually act out of vested or rent-seeking interests. The World Bank (2002) claims that over the last two decades the number of people living on less than USD 1 a day has fallen by 200 million, after rising steadily for 200 years. The same view is echoed by Dollar and Kraay (2002), who claim that globalisation has promoted economic equality and reduced poverty. However, Mazur (2000) cited in Wade (2003) reports that globalisation has dramatically increased inequality among and within nations. Wade (2003) shares this view.

The combined result of the developments characteristic of the key trends is that rural poverty has increased in many tropical countries and it has been accompanied with increasing dependency on natural forest resources for survival through consumption and income from the forest products and/or exercising forestland for increased crop production. The market led economies generally fail to recognise many forest products and services that are important to rural livelihoods. Further, in the tropics the natural forest estate has declined due to massive deforestation for both industrial and domestic consumption, increasing the scarcity of the natural forest resources. In compiling the State of the World's Forests 2003 the FAO (2003) notes that in about 70% of the countries surveyed agricultural land was expanding, and in two thirds of these countries forest area was decreasing. Growing populations and rural poverty, increasing demand on diminishing natural forest resources, and industrial pollution, have all combined to exacerbate environmental problems, including global warming, droughts and floods. These events have the potential to create a vicious cycle that entrenches poverty, especially as it may mean that forest resources have less capacity to serve as safety nets.

5.4 Will Timber Trade Improve Livelihoods?

Asia as an Engine of the Tropical Forestry Sector

Trade in tropical timbers has consisted of imports by industrialized countries of primary products coming from the rest of the world. This situation has been changing rapidly, mainly because of worldwide competition for labour together with the growing capacity in developing countries to supply and demand manufactured goods. This change has led to growth in the production of secondary processed products based on tropical wood in exporting countries. This development has been notable after the Second World War and particularly with the economic recovery in Eastern Asia. Japan was the nucleus for phenomenal growth in wood trade until its imports peaked in the 1970s. For example, in 1974, Japan accounted for 55% of world imports of tropical logs and primary/semi-processed products. Until the beginning of the 1990s, Japan was the essential driver of the demand for tropical woods, while Malaysia, Indonesia and the Philippines were the main suppliers. Since the 1990s large scale industries, that were essentially the monopoly of Japan and Korea, were re-located to Malaysia, Indonesia and India (Roda 2003; FAO 2004).

In the last two decades, European consumption of tropical woods has been relatively low (between 4 and 5% of world consumption of tropical logs, sawn timbers and plywood, in roundwood equivalent, hovering around 11 million m³/year), while trade in these products continues to evolve in the context of globalization of the world economy. Developing countries or countries in transition (and Asia in particular) largely dominate the scene, with Brazil being the highest consumer of tropical sawn timber, and the second for tropical logs after Indonesia. Nevertheless Asia dominates the use of tropical wood, since it consumes nearly 70% of raw wood or products of primary process (in roundwood equivalent). Yet imports of raw tropical wood for the relatively developed Asian countries have decreased since the 1980s, due to decreasing availability of the resource in tropical Asia (that is, increased scarcity of natural forests of high value in terms of commercial timber species). Despite this, demand has not decreased. For example, since the market reforms in China in 1993, imports from developing Asian countries have grown exponentially, notwithstanding the Asian financial crisis in 1998. The increased demand in Asia continues to affect world trade and has promoted increased timber exports from Africa or South America to Asia, which is increasingly becoming the worldwide crossroad for trade in tropical timbers (that is, raw products imports and final products exports) (Roda 2003; FAO 2004). The development of the new pattern and conditions of international trade fuels the

development of firms and industrial networks. These latter, in addition to their flexible and competitive characteristics, bring forest-based livelihoods closer to the global scale. For example in Kalimantan, the complex network of brokers who collect the natural latex from local people allows them to be as competitive on the global market as industrial companies and their plantations (Gouyon 1995).

Timber Harvesting

Timber is one of the most valuable products from forests. In 1998 the value of internationally traded roundwood, sawnwood and wood panels from developing countries was estimated at about USD 10 billion (FAO 2001). Sub-Saharan Africa produces some 65 million cubic meters of industrial roundwood annually, employing an estimated 300 000 people. Annual exports of timber and other forest products from the region are estimated at about USD 3 billion. Despite the high value derived from forests in developing countries, local forest dependent communities have not benefited significantly. They have been excluded from the timber industry, both as a result of unfavourable policies and also by what have been termed “anti-poor” characteristics of the industry (Angelsen and Wunder 2003; Sunderlin et al. 2003).

The capital, technology, and skill intensive nature of the timber industry makes small-scale operations unviable. Lack of secure tenure over forests by most poor communities, and the continued reluctance of some governments to devolve control over forests to local communities, also reduce incentives for long-term investments that are required in the timber industry. Invariably, poor local communities which lack power and voice in decision-making have been excluded from the lucrative timber industry by rich and influential outsiders. These trends are beginning to change as governments are under pressure to pass pro-poor forest tenure regimes that are intended to grant local communities access to the timber trade. In a few cases where genuine devolution of control over resources has occurred, weak local institutional frameworks for resource management have allowed local elites and even outsiders to appropriate most of the benefits. The more sophisticated down-stream activities (processing, marketing), which capture most of the benefits, remain out of reach for local communities. In areas where significant forests with high quality timber still remain, prospects for forest-based poverty alleviation are bright provided barriers to entry into the lucrative timber industry are overcome.

Radically New Evolution – Firms and Industrial Networks

The phenomenon described in the preceding section arises out of two different dynamics. First is the growth of the middle class in small and big transition countries, which increases local demand for construction timber, as well as for medium quality and affordable wooden furniture. The local industry has reliable and efficient infrastructure and a skilled workforce that is still cheap. Second is the role of people in diaspora acting as middlemen in passing on to other countries the demands of their home countries. This is done through commercial and industrial networks specific to these communities. For example, Indian and Chinese communities living overseas facilitate putting Asian tropical wood demands in global perspective. However Brazil, which has its own growth dynamics and its own gigantic supply pool, functions in quasi autarky, in that its enormous local supply directly feeds its huge demand, while in Asia the demand is partly met from sources outside the region.

At the same time, globalization of the world economy is gradually materializing through trade in various goods among the nations. However, some of the decision-making parameters are gradually slipping out of individual state control, and are increasingly becoming decentralized to disparate groups of economic and/or non-governmental organizations. Tropical forest resources and products are particularly sensitive to this evolution, and are subject to increased competition for their control.

With regard to trade in tropical forest products, western countries are increasingly facing competition from countries that produce cheaply. However, such countries are in turn disadvantaged by the low quality of their products. Consequently, while western markets for raw tropical forest products are evolving into specific market niches, Africa is increasingly dependent on Asian markets, many of which can accept “all qualities” of raw material. This increased dependency on Asia becomes even more important when western non-tariff barriers develop faster than the competitiveness of African systems of production.

Furthermore, the increased interdependence of timber markets, their fast evolution, and their difficult predictability in the short-term, favour certain modes of production systems based on the optimization of information exchanges, as demonstrated by the growing importance of firm or industrial networks in the tropical forest sector. These networks are flexible and mobile, and therefore perfectly adapted to current conditions. They consist of small and medium scale enterprises (SMEs) cooperating with bigger companies. Instead of being organized into localized “industrial districts”, as was observed in many industrial sectors throughout the world since the “second industrial divide”, these groups of firms

BOX 5.1 DISCOVERING A NEW SOURCE OF INCOME*Manyewu Mutamba*

Twenty or thirty years ago people thought most poor rural families earned their living by farming. Then studies showed that off-farm income from wage labour, craft work, small-scale trading, and money sent by relatives was actually more important. That cast rural poverty in a rather different light. Now, a new World Bank report called "Counting on the Environment, Forest Incomes, and the Rural Poor" (Vedeld et al. 2004) has highlighted a third major source of income – collecting fuelwood, wild foods, and other forest products. On average, such activities provide roughly one fifth of poor rural families' income.

A number of other studies have also show that income from forests is more important to rural livelihoods than previously perceived. In Sub-Saharan Africa alone, an estimated 15 million people earn a major portion of their cash incomes from forest-related activities (Arnold and Townson 1998; Kaimowitz 2003). The work of Cavendish (1997) Campbell et al. (2002) in semi-arid Africa reveal that rural populations depend on forest activities for up to a third of their income, with the poorer households having the highest share of their income from forests. Monela et al. (1999) also found that wild honey, charcoal, fuelwood, and wild fruits contributed 58% of farmers' total cash income in six Tanzanian villages. A report by Munishi et al. (1997) revealed that two thirds of all Tanzanian households in seven administrative regions studied obtained at least 15% of their incomes from forest products. In South Africa, Shackleton and Shackleton (2000) found that woodland resources also contributed significantly to the incomes of small farmers in three rural settlements.

The report by Vedeld et al. (2004) synthesizes data from 54 household income studies from 17 countries, mostly in East and Southern Africa and South Asia. Wet, semi-humid, and dry forest areas were about equally represented among the studies, although most humid forest cases involved indigenous peoples in Latin America. About two-fifths of the income from forests comes from harvesting wild foods (bushmeat, insects, and wild fruits and vegetables), while another third comes from fuelwood. Fodder, medicinal plants, and timber provided much of the rest. The income is about evenly split between cash and products consumed directly. Wealthier families harvest more forest products. However, these activities generate a much higher proportion of poorer families' total income. Villages farther away from markets and with lower educational levels get more of their income from forests.

Despite the seemingly low income share of forest products, reviews by Byron and Arnolds (1999) argue that for most users the importance of forest products income is usually more in the way it fills gaps and compliments other income sources, than in its absolute magnitude or share of average household income. Forest products are especially crucial to poor rural households in periods of hardship. During these periods, forest foods often become one of households' main sources of sustenance, particularly for women and children (Kaimowitz 2003).

Many authors acknowledge the fact that many of the studies reviewed had weak methodologies and say more high-quality work is needed. That will require additional funding. Nonetheless, based on what we know already there is little doubt that rural incomes are higher than existing statistics suggest. Poverty Reduction Strategies need to help ensure that rural households don't lose this crucial source of income.

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are organized into strong service and sub-contracting networks that become diluted or less prominent at the trans-continental or global levels.

The members of these networks benefit from accelerated and extended information exchanges, which bring them strong comparative advantages when competing with other companies. These advantages are determining factors when economic and institutional predictability is difficult, and thus where the level of information asymmetry between sellers and buyers is high, as is often the case in many tropical countries, where the need for flexibility of production is also very high.

At the same time, such networks have complex links with sustainable management principles. The producer countries are in many cases politically or economically unstable, making these networks' search for quick profit a rational undertaking. This essentially induces a predatory behaviour in the networks. However, when they are confronted with situations where the future of their investments can be ensured in the long term, these networks follow a path of sustainable development and management. This is, for example, now the case in Malaysia.

The overseas Indian and Chinese communities, whose propensity to form "ethnic businesses" is an

BOX 5.2 MARKETS IN THE TRADE OF NON-WOOD FOREST PRODUCTS

Paul Vantomme, L. Alberto Gonzáles, Lou Yiping, Hiroyasu Oka and Majella Clarke

NWFPs have received increasing attention from international organisations and regional bodies, in an effort to use their benefits to enhance forest community livelihoods and implement poverty alleviation strategies. Moreover, NWFPs have been identified as an important area requiring concerted action to maximise their potential for contributing to economic development, employment, and income generation, in an environmentally sustainable manner. Given the vast array of possible products that could be included or excluded in the definition of a NWFP, it is important to put the definition in a context that aligns with the objectives and focus of the discussion. This box will focus on the market characteristics, information, and commercialisation of the NWFPs sector.

Many terms have been used to capture the wide range of forest-based plants and animals from which products, other than timber or wood, and services are derived. *Non-timber forest products* encompass all biological materials other than timber, which are extracted from forests for human use (De Beer and McDermott 1989). *Non-wood forest products* consist of goods of biological origin other than wood, derived from forests, other wooded land, and trees outside forests (FAO 1999).

The primary difference between NWFPs and NTFPs is that NWFPs exclude chips, charcoal, and fuelwood, small woods used for tools, household equipment and carvings, as well as environmental services (Vantomme cited in Belcher 2003). NWFPs include for example honey, nuts, mushrooms, truffles, spices, fish, wild meat, grasses and roots, plants for medicinal purposes, oils for pharmaceuticals and cosmetic products, as well as rattan manufactured goods.

Currently, there is a lack of information about the value and use of NWFPs. As exploratory research continues, the information on the variety of NWFPs is also expected to increase. Small enterprises and subsistence use of NWFPs continue to escape statistical recording systems and thus quantitative information on NWFPs' informal sector is quite sparse (Arnold 1995). The economic valuation of these products can also be problematic. Some studies on the economic importance of certain NWFPs have produced different results even in the same areas (Gram 2001). Other problems include a lack of market transparency and insufficient quality standards. The lack of information contributes to the major intricacies in this sector, i.e. the neglect of NWFPs in developing policy, legal rights, incentives, health and safety considerations, as well as capacity and administrative support (Chandrasekharan 1994).

Markets

NWFPs are sold in a variety of markets at local, regional, national, and international levels. In less developed countries, local markets are often small, informal, and imperfect, lacking the infrastructure necessary to give a formal framework to business practices. Informal and imperfect market characteristics mean that these markets often occur mostly in rural areas, where transport is limited. The products that are sold are diverse, vary in quality, and are collected in small quantities. Prices depend solely on a few buyers, which leads to difficulties in regulating markets to ensure a "minimum unit price" payment to primary collectors (Mahapatra and Mitchell 1997). In informal markets, taxes and wages are also difficult to regulate and enforce.

In contrast to a formal market, informal markets lack form (Eatwell et al. 1988), and are therefore often perceived as irregular and unpredictable. Price formulation for NWFPs within the informal market is quite different from the formal market. Often prices are formulated through a process of bargaining and haggling between the collector (seller) and the trader (buyer). The collectors' bargaining power will depend on several factors (Ndoye et al. 1997):

- ❑ Whether the product is perishable or not
- ❑ The quantity of NWFPs available at the markets
- ❑ The sellers' financial needs (immediate income vs. extra income)
- ❑ The number of traders present at the market
- ❑ Prices that prevailed on previous market days

Seasonality of the product is an important factor in determining the size and characteristics of the market. For example, in South Africa local informal markets for Marula beer (made from Marula fruit) only exist from December to mid-March, and the number of traders depends on the location of the market and the time of day (Shackleton 2004).

The role of the "middleman" is quite important and can make or break small scale producers of NWFPs. Middlemen can provide small scale NWFPs producers with three essential services: immediate credit, speedy and non-bureaucratic payment for products, and good organisation. They can also centralise supply among a diversified group of producers and absorb the risk in markets, which require product volumes that are too large for individual producers to supply. However, middlemen can also act against the producers if they exploit the producer's lack of price awareness (FAO 1995).

The existing information on NWFPs is found in highly relevant formal markets where NWFPs are traded and processed. However, the formal market also consists of products originating from the informal market. An example of this is presented in Figure A. Indonesia is the main producer of rattan, and the forest department regulates rattan harvesting through licensing. About 40% of the price of rattan goes to cover the traders' cost of handling and transportation (Iqbal 1993).

There are a variety of problems inherent in the valuation methods for NWFPs. However, some information exists for important products at a national level. The potential value of NWFPs also varies considerably according to conditions like geography, climate, soil etc. and generalizations are thus difficult. For example, according to a study of dry deciduous forests in East India, the timber harvested was estimated to have a potential revenue of USD 268/ha. It was also estimated that the value of NWFPs in the form of plant species only, was USD 1016/ha in the coastal areas, and USD 1348/ha in inland areas. It was concluded that NWFPs had a competitive advantage over timber, and that there is a need to develop a new valuation protocol for allocating land to alternative uses (Mahapatra and Tewari 2005). In another study in the Peruvian Amazon on two local villages' extraction of NWFPs, the yearly per hectare values ranged between USD 9–USD 17. These figures could be higher if they included unrecorded results of townspeople's extracting NWFPs. Overall generalisations are difficult as the per-hectare values depend very much on the locality (Gram 2001).

International Trade

Some NWFPs are export commodities, and data on their trade is included in international trade statistics (Comtrade UNSD 2004). These NWFPs include rattan, bamboo, cork, forest nuts and mushrooms, gum Arabic, essential oils, and medicinal plants. An overview of selected important commodities traded internationally that can be considered as, or include, NWFPs is displayed in Table 1. Most of these commodities are exported in a raw or semi-processed form by developing countries. The main trend in the flow of NWFPs is from developing to developed countries. The USA, EC, and Japan import approximately 60% of the total value of NWFPs.

The declared value of NWFPs by importing countries is usually double the declared value by the exporting countries; this is usually because exporters understate export values in

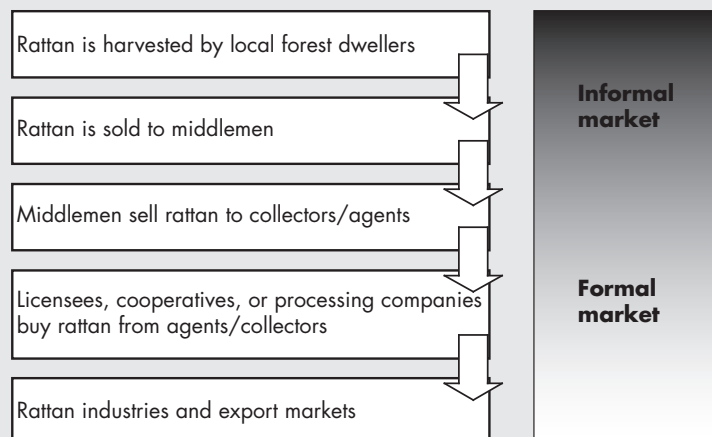


Figure A. Market chain for commercial rattan in Indonesia (Iqbal 1993)

Table A. Global import values of selected NWFPs for 1992 and 2002 (FAO 2005)

Commodity description	Global import value (USD x 1000)	
	1992	2002
Mosses and lichens for bouquets, ornamental purposes	9 352	25 476
Truffles, fresh or chilled	4 201	23 656
Mushrooms other than <i>Agaricus</i> , fresh or chilled	n.a.	364 412
Mushrooms (excl. 071331/33) & truffles, dried	n.a.	219 458
Plants & parts, pharmacy, perfume, insecticide use	689 926	777 980
Rattan used primarily for plaiting	118 987	51 327
Maple sugar and maple syrup	43 632	116 202
Ginseng roots	389 345	221 435
Palm hearts, otherwise prepared or preserved	16 082	67 514
Oak or chestnut extract	8 653	917*
Gum Arabic	101 312	105 510
Natural cork, raw or simply prepared	7 874	110 702

order to evade taxes. In the case of Indonesian rattan, for example, these reporting discrepancies are of the magnitude of 91.3% (Iqbal 1993). Thus, import data is considered as a more accurate indicator of the trade values and volumes for some products. The values of internationally traded NWFPs listed in Table A should be used with much caution, and they can undervalue the real contribution of NWFPs to international trade for several reasons, such as:

- ✘ Only a small number of NWFPs are listed separately as commodities, the rest are grouped with other, mostly farm-based, products;
- ✘ Countries do not report their exports/imports for a given commodity;
- ✘ Mostly NWFPs used as raw materials are reported in the international trade commodity descriptions, and it is not possible to assess NWFPs that are a part of semi-processed goods;
- ✘ The international commodity descriptions do not differentiate the origin of products, i.e. between production from forests or from farms.

The relative declining value of NWFPs in international trade corresponds to the preliminary findings of declining produc-

tion at the national levels. Many NWFPs are “local” products, occurring in a few countries only, while international trade is increasingly becoming global. Global trade requires products in quantities and qualities that can no longer be met through local/artisan production schemes. Thus, a clear fragmentation is an inevitable feature in the NWFPs sector. NWFPs will continue to be traded in domestic informal markets, while on the other hand those NWFPs that have become commercial face competition from farmed and synthetic products. For the production of commercially viable NWFPs, there are two distinct options:

- ✘ Extraction and harvesting based on natural regeneration
- ✘ Domestication through cultivations such as plantations or agroforestry systems

In Table A, the value of Oak/Chestnut extract has declined significantly because of its substitution with synthesised products. Truffles on the other hand, are a delicacy (price range of about USD 2000/Kg) harvested mainly in the wild. The current wild supply is not meeting the current market demand, and thus the price for truffles has increased. Cultivations of inoculated trees can take several years to produce truffles after inoculation occurs, but since cultivation methods are improving, they may replace the wild harvest in years to come ((New World Truffleries 2003). Natural cork, raw or simply prepared is an

essential component in the wine industry, and 60% of the cork market is devoted to stoppers for wine bottles. While the cork industry has benefitted from a growing wine industry, it is also at risk of being replaced in the near future (FAO 1999).

Sudan produces 70–80% of the world's supply of gum arabic. Many of the major users of the substance have switched to newly developed modified starches, because of the unstable gum arabic production base that has been affected by droughts; as a consequence, the demand for the substance has been steadily declining over the last 20 years (Iqbal 1993). Ginseng is an example of how cultivation can slowly influence the price of the product, in order to prevent over-harvesting. The price of wild dried ginseng roots has actually doubled over the last decade; however, the price of cultivated ginseng roots has declined by 75% over the past 10 years. The major reason for the price decline on the ginseng market is that China has increased its production of cultivated ginseng roots (Hankins 2000).

Commercialisation and Outlook for the NWFP Sector

The potential of NWFPs to enhance livelihoods and to contribute to poverty alleviation has received increasing attention. To capture the potential of contributing to economic development, employment, and income generation in an environmentally sustainable manner requires holistic development of the NWFP sector. Markets, trade, information, and commercialisation of the NWFPs sector are crucial factors in this process.

One of the drawbacks experienced in the NWFPs sector is that once a product has achieved commercial importance, the industry has often replaced supply from wild resources with supply from plantations or synthetics in an effort to acquire market power while minimising production cost; as a consequence, prices fall and the market for the product declines (Arnold 1995). However, Ruiz-Pérez et al. (2004) found that cultivations have higher values for labour, use more intense technology in production, and produce more per hectare. Moreover, it was found that situations where cultivation was used generally enjoyed a stable resource base in comparison with situations, frequently associated with declining resources, where natural extraction was used.

Commercialisation of NWFPs has caused a dilemma in how to proceed in the most sustainable manner, taking into account social, ecological, and economic values. On one hand commercialisation is a way in which products can be recognised in the formal market, but ultimately it can lead to adverse environmental impacts. Commercialisation can lead to overexploitation by collectors and traders when market demand is high, and thus compromise the sustainability of production (Mahapatra and Mitchell 1997). Wild harvesting appears viable only in cases where a strong regulatory framework exists and is enforced. Enrichment plantings are recommended for replacing the trees lost to harvest (Stewart 2003). The factors undermining success for commercialising NTFPs are discussed in Chapter 12.

The domestication of NWFPs can alleviate over-exploitation, but may also have impact on local livelihoods, if the product is domesticated in a different locality and the benefits are redistributed. Several studies conclude that balance lies in diversification of NWFP harvest management strategies. A combination of protection of wild populations, enrichment plantings within forests, and small to large scale cultivation techniques, is necessary to meet current and potential market demand (Stewart 2003). Moreover, agroforestry systems integrating suitable species must be promoted for the commercialisation of NWFPs to provide social benefits to communities (Mahapatra and Mitchell 1997).

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BOX 5.3 JIRI FOREST CONSERVATION IN NERUMEDZO, BIKITA DISTRICT, ZIMBABWE

Abisha Mapendembe

The Nerumedzo area in the Bikita district of southeastern Zimbabwe is a typical communal area. Communities in the area extract edible stinkbug (*Encosternum delegorguei*) from communal woodland. The stinkbug contributes significantly to the livelihoods of the communities, not only as a safety net for the poor but also as a significant source of household income.

The Jiri Forest showcases an alternative model of protection, albeit under the direction of customary rules. In legal terms, like all communal lands, the Nerumedzo area is neither completely state-owned nor completely customary. Because of its status as a reservoir of an important resource, local rules designate the forest as a protected area in which no cultivation is allowed. Several measures are in place to ensure sustainable extraction of the resource. At the start of the harvesting season, one of the local headmen is elected as the custodian of the forest. A representative cadre of over 30 guards is also elected from the surrounding 30 villages to take residence in the woodland together with the elected custodian. The woodland is then divided into seventeen divisions to ensure equitable access and to spread the pressure of extraction. During each bug-extraction trip, the monitors remind and advise extractors of prudent harvesting techniques. The rules prohibit the felling or damaging of trees in order to gain enhanced access to the bugs. The monitors are accorded privileged access to the bugs as an incentive.

The locus of use and benefit is the individual household. The magnitude of benefit at the household level is conceivably high enough to mitigate the transaction and other costs associated with the collective management of the woodland in which the

resource occurs. On average, the community of 30 villages gets between Z\$ 20–26 million (USD 3770 to 4900) per year, with the average household income from the bugs amounting to about Z\$ 1 million (USD 190) per year. By Zimbabwean peasant standards, this is considerable income; it is not surprising that the relevant rural district council is reportedly considering imposing a bug levy on those commercializing the product. So far, the marketing chain spans from the local through the national to the international levels, with the last being mainly the northern province of South Africa.

In summary, the system appears to be working mainly because it is demand driven, it is attuned to the intricacies of local social capital, and it results in accrual of benefits at the individual household level. Unfortunately, such a system still lacks unequivocal legal recognition by way of decentralized powers. The Nerumedzo case is a clear example of a working *de facto* decentralization initiative that still lacks *de jure* acknowledgment and legitimation. The role of external actors in production and regulation is less emphasized, with such actors appearing to be more emphasized in processing, storage and marketing.

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ancient one, are naturally the principal nurseries of firm and industrial networks with global strategies. These networks have significant potential for most of the tropical forest industry in the world. On this basis, the industrial evolution could be due to the Asian domination of tropical timber economics.

However, one could note that many of the performing and competitive companies of the forest sector are implicated in networks of similar organization, but with different cultural influences. In west and central Africa, for example, the members of the Lebanese and Italian communities form the main part of the firm and industrial networks, operating exactly as described above. There may be a cultural denominator in these networks, but all of them essentially arise from communities inclined to networking and cooperation. The development of these networks goes beyond the initial specific cultural area, and in particular tends to include local SMEs in its exchanges of services and subcontracting, even when some of them do not share the “initial culture” of the network that created them. In Latin America such networks already exist and have been studied in detail in different sectors (e.g. footwear), but not in the forest sector. In this sector Asian networks have an increasing influence, especially in the Amazon.

One can also note that the majority of these firm or industrial networks are connected to pre-existing industrial districts, located thousands of kilometres away, where industrial processing does not take place. For example, the majority of the Italian firms in the woodworking sector which are installed in tropical countries, are all without exception connected to the same industrial districts in northern Italy that provided the material for a great part of the literature about “post-Fordism” and the “second industrial revolution”. In the same way, the Sino-Malaysian, Indian, or Lebanese firms are also connected to different but similar industrial districts.

There are many unknowns about these networks. For example, is the “second industrial divide” only extending to the forest sector? Or is it a new system of production with transcontinental groups of firms directly connecting local SMEs to the international market? Will these systems, which certainly provide opportunities for the economic development of local SMEs, be able to reconcile competitiveness and sustainable management?

5.5 Non-Timber Forest Products and Local Livelihoods

Considerable literature exists on the relationship between forest resources and local livelihoods (Box 5.1). For example, Wollenberg and Ingles (1999) document methods for assessing forest uses and their potential impact, with a view to conserve and develop these resources. FAO (2001) reports on approaches for assessing the forest resources that contribute mostly to rural livelihoods, specifically the non-wood forest products. Colfer and Byron (2001) add the link between these forest resources and human well-being and resource sustainability, specifically raising the profile of gender and diversity, rights, and access to forest resources in forest management. The commercialisation of NTFPs is very well documented (see for example Neumann and Hirsch 2000, Shanley et al. 2002). Kusters and Belcher (2004), Sunderland and Ndoye (2004), and Ruiz-Perez et al. (2004) provide global accounts of important patterns and key issues regarding non-timber forest products. This literature collectively serves as an important starting point in understanding the resource base and its sustainable exploitation in ways that improve human welfare. They add much value to earlier studies, like that by Townson (1995), which document traditional uses of forests in livelihood support.

NTFPs are the most accessible forest products for poor communities because their utilization requires little or no capital. For most communities, NTFPs are freely available in communally owned forestlands with few or no collection restrictions. A number of studies have documented how households rely on NTFPs for both subsistence use and cash income generation (Cavendish 1999; Campbell et al. 2002). Unfortunately, much of the work shows that most of these products (with some exceptions) do not take households very far on the poverty alleviation path. Angelsen and Wunder (2003) note that the very same characteristics that make NTFPs important and attractive to the poor in the first place also limit the potential for further income growth. Moreover, most of the measures designed to elevate the poverty reduction potential of NTFPs usually result in marginalization of the poor, as they lose their comparative advantage as suppliers. Well-resourced competitors are bound to take over from poorer households as soon as NTFPs become more valuable.

Foremost among the weaknesses of NTFP-based development is the lack of well-developed markets on which these products can be traded, so that these products often fetch low prices (see Box 5.2). Cheap and more formally marketed substitutes for some of the forest products have also forced the price of NTFPs down. The remoteness of most locations where NTFPs are found makes access to lucrative urban markets more complicated, especially for individual households operating with small volumes. Only more organized and well-resourced outsiders

are capable of penetrating urban and foreign markets where marketing margins are significantly higher than in local markets. The seasonal nature of most of these products also makes market development more difficult and income flows inconsistent, as supply is not guaranteed. Most households only allocate their time to extraction of NTFPs when they are not engaged in other enterprises that are regarded as more lucrative, like cropping. Although some NTFPs have potential to *significantly* improve livelihoods of local communities, these remain isolated cases involving a few villages. Significant poverty alleviation for poor forest dependant communities through extraction and trade of NTFPs is likely to remain limited to a few unique cases. The example in Box 5.3 demonstrates how NTFP extraction can co-exist with forest conservation.

5.6 New Approaches to Small Enterprises Support

In an intellectual and policy-making context, dominated by theories that assumed that large-scale mass production of standardized commodities for large homogeneous markets was the key to economic productivity and growth, the “discovery” of the exceptional success of small industrial districts in Northern Italy and in other parts of the world has attracted considerable attention. The districts, and later industrial clusters and networked production systems (localized or not, spread into almost all the possible economic sectors, including woodworking and forestry), excited the interest of social scientists and policymakers all over the world for several reasons. First, because they seemed to demonstrate the viability of alternative models of economic success and their prospects even in advanced industrial countries. Second, the industrial districts showed that certain kinds of small firms and specializations could survive in a world of rapid technological change and growing international competition. Indeed, these networks of cooperating and competing small producers seemed especially versatile at achieving what large-scale “Fordist” industries could not do well: satisfying consumer demand in affluent societies for more diverse and higher-quality goods. These industrial districts, clusters, or networked production systems, are important because they challenge prevailing assumptions about how societies gain competitive advantages.

Finally, these production systems attract interest because they are seen both as alternatives to large-scale modes of production and as more humanly satisfying forms of social order. In contrast to inequalities of income and power and the steeply hierarchical authority ladders of the “Fordist” system, the networked production systems represent, at least in the eyes of some of their observers, a more

egalitarian set of arrangements, with more cooperative relations between labour and capital.

Taking into account these new insights about what can be seen as a significant change in the necessary conditions for increasing economic productivity and improvement of livelihoods of all the actors, the neoclassical economic theory has received updates from various contributors. Examples include: Piore and Sabel (1984) highlighting the “flexible specialization” new paradigm in their book “the second industrial divide” (...virtual networks emerging among rival firms, and that manage to cooperate...); Mills (1992) with his views on spatial externalities and agglomeration economies; Saxenian (1990) with her analysis of “networks of relationships rather than a collection of atomistic firms”; and Porter (1990) with his generalization of the concept, among others. All these “updates”, theorizing upon rivalry and information flows, path dependency and technologic lock-ins, market discontinuities, venture capital, dynamic externalities, etc. form a “post-neoclassical cluster theory” that aims to identify the potentials for development brought by network-based industrial systems.

In order to seize the opportunities for development that these new insights have made possible, development agencies, policy makers, and researchers have since the 1990s tried to develop new methodologies and approaches that could take into account the complexities and integration of all the factors and stages that characterize such systems. This goes beyond just sustaining livelihoods, because it develops relationships among most of the actors of a local system (that is included in a macro-system). It also goes beyond just forest livelihoods, because it combines livelihoods and economics in all the production systems, that is, from the local forest and its dependent communities to the final international markets, policy environment, actors, and customers.

Various approaches have been developed. Among the better known are:

- ✘ the “industry cluster” approach (a group of business enterprises and non-business organizations for whom membership within the group is an important element of each members firm’s individual competitiveness – binding the cluster together are the buyer/supplier relationships, common technologies, common buyers or distribution channels, or common labour pools),
- ✘ the “regional cluster” approach (a group whose elements share a common regional location, where region is defined as a metropolitan area, labour market, or other functional economic unit),
- ✘ the “value-chain” approach (a group identified as an extended input/output or buyer/supplier chain – it includes final market producers, and first, second and third tier suppliers that directly and indirectly engage in trade and is comprised of multiple sectors or industries)
- ✘ the “business-network” approach (a group of firms with restricted membership and specific and often contractual business objectives likely to result in mutual financial gains – networks develop more readily within clusters, particularly where multiple business transactions have created familiarity and build trust)
- ✘ the “actor-network” approach (a group of visible and hidden actors whose cooperation – competition interactions form a coherent socio-complex of collective efficiency, flexibility and international competitiveness – it includes a multi-scale set of interactions from global to local levels, and localized as much as non-localized networks).

All these approaches have in common the fact that they encompass a wide variety of factors of the livelihoods and societies that they try to develop. In that sense, these approaches are integrated, multi-scale, holistic, or a combination of these qualities.

These approaches have been developed for various sectors of activity, and only the “actor-network” approach has had a special focus on the forest sector. Within the forest sector, the network-based economies have seldom been studied, and even fewer development projects following this new paradigm exist. For instance, the database of the Harvard Institute for Strategy and Competitiveness inventories 874 clusters or cluster development projects known in detail throughout the world, among which only 21 belong to the forestry or forest products sector, and 20 belong to the wooden furniture sub-sector. While these approaches can be traced back to the 1970s in some sectors, such as footwear or textile, there is still room for development of the concept with respect to forest livelihoods. The complex relationships between environment, societies, and economics present many contexts for forest-based livelihood opportunities under various modalities, types, and extent of interventions. A few experiments already exist, some projects are ongoing, and some are completed. We need to examine the potential for their replicability and their impacts, and assess their efficiency.

Although millions of people are employed in the forestry sector worldwide, local people have largely been engaged as informal workers, while more lucrative opportunities in downstream industries have rarely been accessible to local people. It is highly unlikely that significant numbers of rural households could lift themselves out of poverty through gaining employment in local forestry activities. In Sub-Saharan Africa, the rapid growth in the number of small-scale forest-based enterprises suggests that they could contribute significantly to local livelihoods and poverty reduction. Unfortunately, high capital and technology requirements have limited the number of entrants to better-off households and individuals. If deliberate policies and programs are put in place to support these rural based enterprises with credit and training, significant growth in this sector could potentially benefit large numbers of rural households.

5.7 Payment for Environmental Services

The search for solutions to problems of persistent rural poverty and continuing loss of unique forest ecosystems in the tropics remains one of humanity's most daunting challenges. In recent years, it has become increasingly clear that natural "win-win" situations in tackling these interlinked problems are the exception rather than the rule (Angelsen and Wunder 2003). In order to satisfy basic livelihood needs, the only feasible land use options to many local people will result in the clearance or degradation of forest. Increasing forest conservation will secure forest environmental services for both the global and local beneficiaries, but this often comes at a high cost to local people, either in terms of resources invested or in terms of foregone opportunities. Yet if the potential gains from forest conservation are large enough, the winners can afford to compensate the losers. This has led to emerging payments for four types of services: carbon sequestration, watershed protection, biodiversity, and aesthetic values. The basic principle of payments for environmental services (PES) is that forests provide positive externalities that off-site beneficiaries value, but which may not be taken into account by on-site landowners or users unless the beneficiaries pay them. However, off-site beneficiaries will only pay forest owners who continue to provide the services, which are monitored on a periodic basis.

PES schemes thus have the potential to turn "win-lose" or "lose-win" into "win-win" situations. Local people stand to benefit from their investment in the conservation of forested catchments. The huge potential offered by forest-based tourism could be tapped to benefit local households who maintain the forests. The increasing scarcity of resources, such as water, will also encourage downstream users to compensate upstream catchment managers in order to guarantee both the quantity and quality of water supply. Besides benefiting directly from the compensation payments, households also stand to benefit from better managed forest landscapes.

Payments for environmental services have the potential to improve the livelihoods of forest dependant households and contribute to poverty alleviation if some of the challenges of implementing these schemes are overcome. Recent reviews of existing schemes reveal that a number of problems need to be overcome in order to effectively develop markets for environmental services (Smith and Scherr 2002; Angelsen and Wunder 2003). Some of the challenges to be overcome include: how to minimise trading risk, especially in the face of weak local institutional arrangements and powerful offsite beneficiaries of environmental services; building genuine partnerships among stakeholders; drawing up agreements that are both equitable and flexible enough to deal with changes in social and economic circumstances

and environmental conditions; reducing the transaction costs of setting up and fostering PES schemes; dealing with unclear and sometimes insecure property rights over forests; creating relevant institutions at different scales to ensure equitable distribution of benefits; demonstrating the links between people's activities and provision of environmental services; and changing the attitude of stakeholders who have always benefited without paying for environmental services (Angelsen and Wunder 2003).

The big question is whether PES will lead to poverty alleviation for significant numbers of people. As already pointed out, the success of PES schemes will hinge on establishment of functional institutional frameworks at various scales to deal with tenure issues and distributional problems, and to enforce commitments of various stakeholders. The transaction costs of establishing PES for smallholders could be enormous. In areas where extensive degradation has already occurred, prospects of local people benefiting from PES are low, as massive investments may have to be made in restoration of the landscape before offsite beneficiaries can start compensating for environmental services.

5.8 Can Deforestation Improve Livelihoods?

Forests continue to give way to crop and livestock production. Ramankutty and Foley (1999) estimate that since 1980, global expansion of croplands has converted some 6 million km² of forests and woodlands and about 4 to 7 million km² of savannas, grasslands and steppes. McNeely and Scherr (2001) report that about half of all tropical forests were cleared in the last four centuries for agriculture and other human activities. They also report that in Southeast Asia cropland expansion from the early 1980s to the early 1990s was by 11 million hectares, mainly excised from the forests, and that since 1972 about 13% of the entire Amazon region (some half a million square kilometres) has been converted to crops and pastures. Forests are important in supporting wetlands that are essential to irrigated agriculture. However, wetland conversion to cropland and pastureland has changed the condition of wetlands in more than half of the 1000 Wetlands of International Importance listed under the Ramsar Convention (McNeely and Scherr 2001), and therefore undermined irrigated agriculture.

Further, the suitability of forestland for crops is questionable in some cases. For example, the woodlands and dry forests of Africa are on fragile soils of low inherent fertility, in areas characterized by low and erratic rainfall and long dry seasons, which limit surface water and soil moisture and encourage migration of animals and people. These conditions dictate low agricultural potential, and as a result agricultural production in these areas is risk-prone and less likely

to result in significant improvements in the livelihoods of large numbers of people. Whereas an initial crop following forest clearing could be good, successive crops will need many inputs that the poor communities can hardly afford. These factors, combined with reduced water supplies that often accompany forest-clearing, further limit the scope for irrigated agriculture to complement extensive rain-fed agriculture. Generally, clearing forestland for agriculture might boost crop production in the short term, but it has, in some cases, the potential to undermine agricultural production in the long term.

In most cases the remaining forested landscapes also provide vital support functions to agriculture (e.g. grazing and browse for livestock and wildlife). Converting these forests to agricultural land could have adverse effects on some vital components of livelihood portfolios. For most households, the use of products from the forest (fuelwood, construction materials, and medicines) is the only strategy for meeting basic livelihood needs, and clearing forests would seriously undermine their welfare. In most circumstances therefore, prospects for poverty alleviation through conversion of forests into agricultural lands seem rather unlikely. Rather, improving productivity on existing arable lands could result in more sustained welfare gains.

5.9 Devolution of Forest Resources to Local Communities

Until relatively recently, forestry in many parts of the world largely took the form of top-down government programmes and projects that centred on the introduction of new technologies. Frequently, especially in developing countries, this involved establishing village woodlots, planting fast growing species, and demarcation of protected forest areas from which local people were excluded. Indigenous species, local agroforestry systems, and traditional resource management practices, as well as institutions for communal forest stewardship, were often ignored. Typically, decisions about forest management were taken in centralized government offices, far from the people affected by changes in forest management.

In the last few decades, social issues and the need for communities to assume more active roles in resource management have come to the fore. Social forestry emerged, challenging conventional management regimes that relied on the authority of the state to hold unilateral power over management decision-making. With increasing pressures on forest resources and fiscal constraints on government forest agencies, it is now clear that many governments in developing countries are no longer able to manage and protect public forestlands on their own. Forest dependent communities are often the best positioned logistically to develop and impose the intensified use controls needed to sustain natural forest ecosys-

tems. At the same time, worldwide trends towards democratization and decentralization have put the spotlight on communities' demands to play a central role in forest management. While conventional management approaches emphasized exclusion and marginalization of local communities and indigenous peoples from forest programmes, current approaches now centre on active involvement of forest dependent communities and incorporation of local people's social and cultural concerns in decision-making on all aspects of forest management.

Governments worldwide are beginning to recognize the legitimate rights of forest dependent peoples, ancestral domain claims, and the opportunities community involvement provides in helping sustain natural forest ecosystems. The motives for these moves to decentralize vary, but most stakeholders hope that the process will help reduce bureaucracy, make decision-making more democratic, distribute the benefits derived from exploiting resources more fairly, and make their use and exploitation more efficient.

While there is an observable worldwide shift to policies and programmes supportive of community involvement and decentralization in forest management, the challenge has often been to determine how this transition should take. Critical to this transition is the establishment of adaptive institutional arrangements, policies, and programmes to facilitate devolution of greater authority to forest dependent communities while supporting new partnerships among communities, governments, and the private sector. In practice, community involvement would have to move beyond "invited" participation, which frequently means invitation to comply with preset objectives. The challenge is to move beyond rhetoric and encourage management approaches that do not obscure the experiences, perspectives, and political and material interests of the poorest forest users.

Through strengthened participation, not just in policy but also in science, poorer forest users can genuinely shape forestry and conservation agendas. This could take the form of participatory research strategies and deliberative procedures in which poorer forest users help to set agendas and questions, allowing perspectives from local settings to feed upwards into and shape terms of policy debate. Such procedures would need to promote aspects of political and legal culture that enable critique, build people's confidence and adaptive skills, and make space for people's own perspectives, knowledge and interests to inform policy debates.

Although the last two decades have witnessed a paradigm shift in conservation and natural resource management (NRM) away from costly state-centred control towards approaches in which local people play a much more active role, the reality rarely reflects this rhetoric (Shackleton et al. 2002). In a detailed study based on cases from three Asian countries and eight southern African countries, Shackleton and others (2002) examined the extent to which devolution has transferred control over NRM deci-

BOX 5.4 IMPROVING DEVOLUTION POLICIES

Sheona Shackleton

Shackleton et al. (2002), drawing on case studies from Africa and Asia, drew up suggestions for promoting positive livelihood outcomes from devolution efforts:

- ✘ Start with what resource users know and do. All too often, “community-based” projects are driven by the interests of the external agencies.
- ✘ Promote flexible approaches rather than tightly worded contractual agreements. Because local people are able to implement or take control over projects, a good deal of trial and error is necessary. Tightly worded contractual arrangements can limit the options of local people.
- ✘ Create opportunities for pluralistic decision-making by establishing platforms for discussion, debate, and planning. Such forums can facilitate the interaction of local people with the various decision makers.
- ✘ Improve legal literacy so that local people can make informed responses to existing policy. Local people have to come to understand the legal frameworks that govern their actions.
- ✘ Improve larger-scale popular mobilization over natural resource issues by, for example, encouraging the formation of federations. All too often, local people have low capacity to influence decision makers. Federations can help alleviate this constraint.
- ✘ Assure accountability of local organisations and assist in conflict management. External agents of change need to develop the capacity of local organizations.
- ✘ Monitor policy impacts so that constraints and opportunities can be identified.
- ✘ Create fuller and clearer property rights at a local level. Problems associated with property rights are often the root cause of failure in local initiatives.
- ✘ Make livelihoods enhancement central to devolution policies. Short-term benefits are imperative in community-based natural resources management, and thus livelihood options must be part of the development initiative.
- ✘ Build local capacity in technical skills, marketing, organizational development, communications, and political mobilization. Two areas needing particular attention are: dealing with local inequalities and exploitative social relations, and addressing inter-community problems and opportunities.
- ✘ Shift focus of state and NGO interventions to issues of political process and away from technical and managerial aspects. Support the building of democratic organizations that are representative, accountable, and transparent. Technical choice in natural resource management should be left to users.

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sion-making to local people, created the space to accommodate local interests and livelihood needs, and empowered resource users to benefit from and influence the outcomes of these new policies.

The study recognizes that the state has a legitimate role in devolved NRM, but questions whether in practice a balance has been achieved between local and “wider” interests and objectives. The authors observe that too often the notion of conservation as a “public interest” area or the need to achieve national economic development goals have been manipulated to serve the interests of NR departments and to legitimize their actions, usually to the detriment of local livelihood systems and the real choices available to people. “Scientific management” is often used to justify continued central control over valuable resources, when it is really about controlling profitable opportunities, often for individuals who are not entitled to them (Shackleton et al. 2002).

Across most sites in Asia and southern Africa, local people’s views were that devolution policies had yielded only limited benefit for them. In most instances, the state provided benefits as an incentive

to encourage people to support activities that met government revenue or conservation interests rather than local livelihood needs. Thus, although access to some subsistence products improved, access to other important local resources such as fuelwood, timber, or game often continued to be restricted. The bias towards products and species favoured by forestry departments (e.g. timber) at the expense of species valued by poor people for medicine, fodder, craft materials and wild foods, was usually promoted. In most cases, the lack of authority to make decisions locally to deal with various issues was a major area of local discontent.

Financial benefits from devolved management generally fell short of local expectations. Income distribution shares were generally decided at the central level, but governments often failed to deliver on their promised share of incomes, or returns were far less than anticipated and inadequate to maintain local enthusiasm. In cases where financial benefits accrued from revenues, licences, permits, and leases, a disproportionate amount of this income was retained by the state at district or higher levels, or it was captured

BOX 5.5 ELEMENTS OF AN APPROACH FOR COMPLEX LANDSCAPES AND LIVELIHOODS ISSUES

Jeff Sayer

Integrated approaches to research on agriculture, resource management, livelihood improvement, and landscapes have to accomplish seven critical changes in order to achieve a paradigm shift to both increase poverty reduction and enhance ecosystem and human health.

- ☒ *Acknowledge and analyse the complexity of natural resource systems:* We must acknowledge systems complexity and bring to bear the concepts and tools of systems analysis to deal with complexity.
- ☒ *Use action research – become actors in the system:* We must become part of the system in a cycle of action research.
- ☒ *Consider effects at higher and lower scales:* We must routinely conduct cross-scale analysis and action. This means that our action research will invariably consist of cycles within cycles, and we will have to interface these with simulations of longer-term processes.
- ☒ *Use models to build shared understanding and as negotiating tools:* We must confront complexity with conceptual and systems models, but a new type of model is needed. We must have models that can facilitate discussion and stakeholder interaction – “working” models that may be thrown away after a short period of use.
- ☒ *Be realistic about potential for dissemination and uptake:* Is the detailed knowledge about a specific research and development site of any significance beyond the site? Anderson (1998) believes not. He has portrayed

natural resource management as an area for research of little strategic value, unlikely to produce internationally useful public goods and not worthy of significant levels of public sector investment. We believe otherwise – dissemination of the processes involved in successful integrated approaches will yield widespread benefits.

- ☒ *Use performance indicators for learning and adaptation:* We need tools to monitor and evaluate system performance. But this is not “impact assessment” as envisaged for “transfer of technology”. Performance indicators will be essential in the learning process of adaptive management.
- ☒ *Break down the barriers between science and resource users:* We will have to change the organisation of science. Elite, monolithic research centres will be of less value for integrated research. Research organisations will need to reflect on their *modus operandi* and scientific culture (including scientist incentive systems), and rise to the challenge of re-organising for maximum effectiveness in a more inter-connected world.

Our contention is that the case for more “integrated” approaches to natural resource management is compelling. The ultimate integration of the elements of management of any natural resource may not be achievable. However, an attempt to modify existing research and development efforts to achieve higher levels of integration does, on balance, seem to be a sensible thing to do.

by local and outsider élites. Only in a few cases did communities receive substantial financial benefits.

Despite the various weaknesses, devolution brought a number of positive changes that included: recognition of local people previously considered poachers, criminals and squatters as legitimate resource users; opened channels for rural dwellers to communicate their priorities to government decision-makers and in some places improved community-government relations (although in many sites suspicion continued to exist); contributed to villagers’ organisational capacity and political capital by encouraging local people to join new networks and forge new relationships; in areas where devolution has been in place longer, local populations were demanding more autonomy, bringing about reforms that promote local people’s interests; addressing equity issues and making inroads to enhancing participation of marginalized groups and women in decision-making.

Negative impacts of devolution policies in some countries included: damaging existing organizational capacity, local enterprise, and equitable social relations; decreasing local participation in “community-based” NRM, as disillusionment set in as bureaucra-

cies failed to meet the expectations raised by new devolution policies; curtailing local rights and *de facto* access to resources. Box 5.4 summarises the recommendations of the study for improving the outcomes of devolution.

5.10 Going beyond Natural Resources for Poverty Reduction

The last three decades have seen significant and promising outcomes for world development. In order to consolidate these, and contain the shortcomings of previous policies, a Millennium Declaration was signed by 189 countries in 2000 that led to the adoption of the Millennium Development Goals (MDG). These goals facilitated setting clear targets for eradicating poverty and other sources of human deprivation, among other commitments (World Bank 2004). It is in this context that livelihoods support from forests has to be examined. To facilitate this at global level, a number of processes exist, notably the United Nations Forum on Forests, which is a successor to the Intergovernmental Panel on Forests

(1995–1997) and the Intergovernmental Forum on Forests (1997–2000). These are all forums employed by the United Nations Commission on Sustainable Development, and have all along focussed on livelihood contributions of forest resources (Chipeta and Kowero 2004). The UNFF processes have to contribute to the achievement of the MDG.

Much of the focus in improving well-being of forest dependent people has been on increasing their incomes. However, there are also non-income dimensions to well-being. These are more of the nature of public goods and include access and rights to natural forest resources. They should be emphasized in the poverty reduction equation so that when we improve well-being through natural forest resources we at the same time increase the different components that constitute it. In this way improving livelihoods of rural people using forest resources essentially becomes a component of a larger rural development undertaking.

The contribution of forests and other natural resources to rural livelihoods is unquestionable. These resources have helped large numbers of poor people to avoid extreme poverty, or even eliminate poverty in some cases. Research efforts should enable identification and development of promising opportunities for forest-based poverty alleviation and circumstances under which these are applicable. Innovative ways of overcoming obstacles to realizing greater livelihood gains from resources should also be pursued where possible. Where forest-based poverty alleviation is clearly unlikely, this should be emphasized to avoid poor people being drawn in initiatives that could keep them in the poverty circle.

It is clear that concentrating efforts in the search for poverty alleviation on limited rural based development options will not be enough. Investments to achieve widespread poverty elimination at the scale of MDG will have to go beyond forests and natural resources. The strong links between rural livelihoods and the urban sector (through off-farm employment, markets) means that a vibrant urban sector will generally lead to positive links with the rural sector. Rural non-farm investments will also help overcome some of the barriers to successful natural resource-based initiatives. Rather than emphasizing forestry, natural resources, or rural development as separate agendas, successful development endeavours will have to be all encompassing. Integrated, multi-scale interventions from the local through to regional and global scales are required to lift significant numbers of poor people out of poverty. Successes of such approaches have been acknowledged in different sectors, as in the Indian knitwear sector or in the Nicaraguan agro-industrial sector (UNIDO 2001).

To understand the full complexity of livelihoods in landscapes, and to develop appropriate interventions, is a massive challenge. There are currently huge efforts in diverse fields to move towards approaches that capture the complexity of livelihoods and landscapes, such as the ecosystem approach,

the landscape approach, and integrated natural resource management (see Sayer and Campbell 2004 for a review). But we have to recognise that many attempts to integrate complex sets of knowledge and the interests of diverse sets of actors into a common framework have yielded disappointing results. The desire to achieve integration persists, but our seeming inability to translate the theories of integration into practical achievements on the ground is leading to widespread disillusion. In frustration, we abandon one set of integrative buzzwords and replace them with others. What is surprising is not the improvement of integrative methods over the past 40 years – rather it is their fundamental similarity. The words have changed but the paradigm remains similar (Sayer and Campbell 2004).

Getting researchers from different disciplines to work together with resource managers from different sectors seems sensible and easy enough. In practice, however, there seem to be language and cultural barriers that often bedevil attempts to get diverse groups of people to work together on a common problem. This is not the case in all areas of human endeavour. Large teams of diverse scientists collaborate to launch space probes, develop stunningly complex computer technology, and unravel the complexity of life-threatening diseases.

The elements necessary for successfully tackling large complex problems dealing with landscapes and livelihoods are outlined in Box 5.5. While a focus on livelihoods is essential, to achieve success one needs to go well beyond the sustainable livelihoods approach into fields of systems analysis, social learning, organizational management, etc.

5.11 Conclusion

The sustainable livelihoods approach has arguably been one of the most important approaches to realign research and development towards having a clear livelihoods focus. The arguments presented above indicate that there is room for moving well beyond this approach and well beyond the forestry sector if we are to tackle the big challenges facing humanity.

Although there are trade-offs between the goal of eliminating poverty among the millions of people who depend on forests and conserving the unique biodiversity of these forested landscapes, opportunities exist for achieving both targets. In many areas the poor local communities are prevented from capturing the full benefits of forest-based economic activities due to a range of unfavourable circumstances that include their lack of power, voice and capital assets, and restrictive institutional frameworks. Many of the developing countries are actively engaging with a number of processes that could lead to pro-poor forest management regimes.

There are several promising approaches that can be used to focus attention on forest commodities,

including, for example, the “value-chain” and “actor-network” approach. These kinds of approaches make our analyses more integrated, multiscale, and holistic, and give focus to more than local livelihoods. With such approaches, we begin to examine the multiple sectors or industries, the business networks, and the multiple actors centred around particular forest commodities. This gets us into analyses, for example, of social capital that go well beyond the social capital at a local community level.

The central role of forests in rural livelihoods, especially for the poor, demands that successful macro-level strategies to alleviate poverty in the developing world must identify concrete pathways through which the full potential of forests in improving rural well-being can be captured. Although some promising forest-based options are available for improving the well-being of forest dependent communities, getting many people out of poverty in many areas will require approaches that go beyond the limited focus on either forests or natural resources or rural development. Research and development endeavours for poverty alleviation that aim to merely sustain local livelihoods are unlikely to achieve meaningful improvements in people’s well-being. Rather, new approaches that emphasize integration of key sectors, from local to global scales, could produce better results. We call for a new brand of research that requires the reorganization of research, changed incentives for scientists, and the embrace of complexity.

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