

Developing improved farming and marketing systems in rainfed regions of southern Lao PDR (forage–livestock subproject)

Tassilo Tiemann^{1*}, Souksamlane Khamphoumee²
and Viengsavanh Phimpachanhvongsod³

Abstract

Livestock production in South-East Asia cannot meet the rapidly increasing demand for meat in the region. Transnational livestock trade opens opportunities to smallholders but also brings threats such as disease spread, competition and stock drain. To counteract these threats, governments tend to act to protect national producers or consumers in ways that, despite good intentions, often inhibit developing market chains or discourage entrepreneurial activities. Smallholder farmers' understanding and knowledge is insufficient to judge potential opportunities and threats and there are few mechanisms in place to provide smallholders with the information needed or with visions of new approaches. Thus, change needs to occur at an institutional and organisational level to expose people to new methods and technologies and to provide the means to implement them. Such changes most urgently require education at the level of decision-makers, who themselves often also have limited knowledge and information. There is a need for systems that allow farmers to access resources, such as knowledge, credit and agricultural inputs, and that provide a market environment that encourages people to take the risk of exploring new opportunities.

Social and economic shifts: a regional perspective

Currently, South-East Asia comprises some of the most rapidly changing countries and fastest growing economies in the world. It encompasses countries, and regions within countries, at very different levels of development, resulting in diverse stresses at regional, national and subnational levels. These stresses include economic push–pull effects

on demand and supply, increased competition for securing resources, increasing inequity between rural and urban centres, and many more. Economically, two major forces set the scene: China's booming economy and the Association of Southeast Asian Nations (ASEAN). The latter is aiming to accelerate economic growth, social progress and cultural development among its members. The resulting interaction between countries and increasing porosity of international borders and associated movements of material goods, human resources, and cultural and political influences can be both a benefit and a burden. The current development status, political vision and leadership of the governments of each country will be important determinants of how each country responds to these challenges.

The rapid expansion of industry and service sectors has fuelled the region's impressive economic growth during the past three to four decades. The

¹ Tropical Forages Program, International Center for Tropical Agriculture, Vientiane, Lao PDR

² Livestock Research Centre, National Agriculture and Forestry Research Institute, Ministry of Agriculture and Forestry, Lao PDR

³ Department of Planning and Cooperation, National Agriculture and Forestry Research Institute, Vientiane, Lao PDR

* Corresponding author: t.tiemann@cgiar.org

lure of new employment opportunities has catalysed large demographic shifts from rural areas to urban centres, resulting in a large share of the rural labour force abandoning agriculture in favour of off-farm jobs. This phenomenon of peaking and declining of the agricultural labour force is common in countries with an abundant rural population and the beginning of what economists describe as reaching a structural transformation turning point (Tomich et al. 1995). Usually, the juncture in this process is reached when the national labour force working in agriculture declines to about 50%, a point that marks the transformation from an agrarian to an industrialised economy. To take advantage of the potential opportunities of such change, farmers need to realise a serious transformation. This requires change to their approach to farming systems, new thinking and improved management skills.

Drivers of and challenges to systems change

Growth in national economies has important implications for agriculture, including animal production. From the demand side, an expanding middle class devotes more of its disposable income to more-expensive food products, causing an upsurge in consumption of animal products and other high-value agricultural products, but also a shift towards increased demand for product quality (e.g. lean pork, tender beef or veal). This new demand is both an opportunity and a challenge for farmers. The transformation from being livestock keepers (with occasional sales to cover immediate expenses) to livestock producers (with the aim of optimising outputs for given inputs) confronts smallholders with the challenge of a major systems change. This is much more than only a technical change from an extensive, free-grazing or scavenging system with few or no inputs to a well-managed crop–livestock production system. Livestock, especially large ruminants, are perceived as assets and can act as an investment for money earned through other activities, especially where banks are absent and theft can be a problem. The offspring are seen as interest on investment in this asset and a welcome benefit rather than a major productive output. Hence, turning livestock into a commodity in a managed production system requires careful integration into the existing agricultural and social framework, with far-reaching consequences for individual households and, eventually, entire

communities. To support this process, a good understanding of the traditional system is required on which advice and initial investment decisions can be based.

However, the way smallholder farmers think, especially in remote areas of continental South-East Asia, is often not yet shaped by modern economic concepts, such as profit maximisation, value of time, business models and thinking long term. Their reasons for changing or deciding not to change their existing system are often not obvious. The suggested change may not be convincing to farmers and their willingness to change their traditional approach is limited. Nonetheless, in South-East Asia, there are strong drivers in favour of, or even demanding, systems change:

- *Less time, less labour*—a diminishing rural population forces farmers to consider adoption of labour-saving technologies and intensification.
- *Initial investments*—new technologies often imply mechanisation and infrastructure, requiring monetary investment. As in other parts of the world, investment decisions often don't follow the objectively most profitable option but are influenced by desires, life pathways and social pressures.
- *Generational split*—most younger members of smallholder farmer households aspire to leave agriculture and enter a socially more accepted and resilient occupation. Off-farm labour is common for younger family members and smallholder farmers commonly invest in education to give their children more options. As a consequence, women and children are less available to take care of livestock and the elderly have to cope with higher workloads.
- *Land availability*—with increasing population densities, the carrying capacity of farm land is exceeded. Historical strategies of migrating into unclaimed forest frontiers are now less tenable as governments exert firmer control over state land and demand from smallholders to adhere to centrally developed land-use plans. This forces subdivision of the finite agricultural land base into smaller farm sizes.
- *New rules*—land management involving fire and fallow is sanctioned and remnant wildlands are declared protected areas (although in practice such declarations may not always be enforced).
- *Degradation*—in upland systems, swidden degradation is occurring at various degrees of severity. Shortened fallows and lengthened cropping

periods push swidden systems past their point of ecological resilience, as demonstrated by declining crop yields and decreased soil stability.

- *Climate change*—less predictable rainfall patterns and the emergence of vector-borne and other climate-sensitive diseases increase the risk of farming.

These drivers force farmers to find new ways of making a living from their land. Adopting livestock production can be one way that increases resilience to both economic and ecological shocks.

Livestock market opportunities

In traditional farming systems in Laos, Cambodia and Thailand, smallholders generally keep small numbers of livestock (e.g. 2–20 head). Livestock systems include free-range management, supplementary feeding and full confinement for fattening or breeding.

For large livestock, outputs are low due to long production cycles and poor management with such small animal numbers. The move to more continuous production requires an increase in animal numbers, and an associated increase in additional inputs and knowledge.

Large ruminants require a substantial amount of good-quality feed to grow fast, entailing a cut-and-carry system with a minimum of about 1,000 m² of well-managed improved grasses per animal. The initial establishment is labour-intensive and manageable for only a limited number of animals before grazing systems become the preferable option. However, once established, these systems require low monetary input and are quite time efficient, so that profit margins per animal are high. The technical knowledge required for the transition from traditional to more sophisticated animal production is little, making cattle the preferred entry point for remote areas with year-round available land. Its biggest downside is the necessity to fence off relatively large areas, which may be constrained by factors such as village regulations or the availability of labour or materials.

For smaller livestock such as pigs, goats and poultry, systems vary markedly between countries and areas depending on their overall economic, market access and policy environment. In more traditional systems, these species are often kept in small numbers for home consumption and occasional sales in low-input low-output systems. Monogastric livestock require higher quality feeds, with low fibre

and high protein content, competing with human food production and limiting the options of perennial or longstanding feed crops. Although the price of crops such as soybean, maize or cassava is far below the price of meat, avoiding the risk of loss through animal diseases, feed scarcity or low animal prices at the time of sale makes it worthwhile for farmers to consider the best options for them. As high-quality crops often also demand more care (which translates into higher costs for agrochemicals, fertiliser, labour etc.), input costs for feeding monogastric animals are higher and profit margins lower. Compensating for low margins by raising large numbers of animals is hardly a feasible option for any smallholder outside a contract-farming situation.

The demand for animal products is constantly increasing (FAO 2012). In China, Vietnam and Thailand (and, to a much lesser extent, Cambodia and Laos), intensive fattening systems by peri-urban smallholders using exotic breeds is common. Although traditional systems cannot compete with these systems in terms of price and reliability of supply, the total demand is so high that traditional smallholder production can still supply value chains if the market infrastructure allows linking them to buyers. In some areas, especially in Laos, the development of production systems is often hampered by trade monopsonies (markets in which only one buyer interfaces with many sellers), export restrictions and control-oriented policies, as well as by limitations in physical and organisational infrastructure, including availability of vaccines, feed supplements and other inputs. However, during the past few years, considerable effort has been put into reducing these constraints, and change is gradually becoming visible.

Cross-border livestock trade in the region is significant and increasing. Trade directions, especially for large ruminants, are strongly affected by currency exchange rates. Depending on the rates between Burmese kyat, Thai baht, Cambodian riel, Lao kip, Vietnamese dong and Chinese yuan, the trade routes and directions may vary very quickly, even within a few weeks (ACIAR 2011). This creates a difficult market environment for farmers, which reduces the incentive to invest in, or even focus on, livestock production.

Policies to support smallholders

Farmer communities organise the management and use of their environment in a communal way,

which influences many decisions and development pathways. Adopting new strategies is thus often constrained by communal rules. Although traditional smallholder animal production techniques may seem rudimentary and flawed, they are arguably rational in the context of the constraints and opportunities inherent in remote areas. Free-range grazing and scavenging by livestock allow farmers to capitalise on available feed resources and convert them into animal products with few additional labour inputs. However, this requires communal rules that make this possible without threatening other endeavours, especially crop growing. Village fencing rules are the most common measures and can often present an obstacle to forage-based livestock systems. Here, policy changes have to occur on a village level, which normally requires a critical mass of beneficiaries from improved livestock production.

One of the most important advantages livestock rearing has over growing crops is its versatility in terms of market timing, combined with constantly increasing prices. Unfavourable terms of sale can be rejected and marketing can be delayed more readily for livestock than for most crops. However, this requires that there are competitive market structures that allow farmers to sell to the highest bidder. Physical access is an important factor that often leads to reduced price offers for more livestock in remotely located villages. In Laos, local authorities commonly try to control the situation with the aim of protecting farmers from exploitation and consumers from rising prices. However, limiting negotiability of sales conditions often leads traders to buy livestock elsewhere, creating a lose–lose situation. Avoiding exploitation of farmers by strengthening their voice through farmer production groups has been proven more successful, although their creation often requires considerable facilitation. Farmers in more remote areas of Savannakhet province, Champassak province and elsewhere also face difficulties with accessing credit.

Linking livestock production to crop or processing residues, such as stalks, distillers' grain, oil cakes and cassava waste, presents an opportunity to improve resource use through livestock with many potential win–win situations. This also includes management of manure, which can play an important role in accumulating and recycling nutrients or in producing biogas for household consumption, especially where the cost of fuel and fertiliser is high. An enabling environment that links producers and processors and shows the potential benefits for both groups could

enhance the efficiency of livestock and farming systems as well as increase profits in the value chain as a whole.

Two major problems of livestock intensification are biosecurity and food safety. Increased livestock production and trade increases the risk of disease spreading by livestock traders as well as by farmers themselves. The causes of disease, and its treatment and prevention (e.g. by vaccination), are not well understood by smallholder farmers. With extension services, drugs and vaccines often not readily available, livestock intensification can be a risky business. Appropriate policies and infrastructure (such as cool chains for drugs and vaccines) are needed to overcome these constraints and give farmers confidence in the endeavour. Food safety is relevant for the consumer and its absence closes premium market segments that depend heavily on reliable product quality, including food safety. For example, pork and chicken from capital-intensive farms in Thailand are generally preferred by restaurants in Laos that target the tourist and expatriate sector because the meats are perceived as safe and of more uniform quality.

Conclusion

Demand for livestock products in South-East Asia outstrips supply and leads to rising prices and potential income gains for farmers. The major constraints to smallholders taking advantage of this opportunity are direct institutional barriers and access to knowledge and exposure to new ideas—both problems can be solved by strengthening and redesigning the institutional framework within which farmers have to act. This includes village regulation, support by extension services, improved capacity of extension services to deliver appropriate knowledge and technologies, provision of other sources of information, a competitive and enabling market environment, and the availability of inputs, such as seeds, planting material, fertiliser and machinery, at affordable prices. However, animal diseases and product safety are still widespread problems that increase risk, reducing the attractiveness of smallholder livestock production and posing threats to other livestock keepers and consumers, respectively. Intensive educational advertising and training, combined with accessible solutions, must be an integrated part of the organisational and institutional reforms needed to provide a market environment that encourages farmers to explore new opportunities.

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