

Industrial Bamboo in North West Viet Nam and North East Lao PDR

Practical Steps to Large-Scale Poverty Impacts

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Introduction¹

Mekong Bamboo, Prosperity Initiative's sector development programme for the bamboo industry, is now entering its scale-up stage in the Industrial Bamboo Sector in North West Viet Nam and North East Lao PDR. This builds on the successful completion of an opportunity "Identification" stage in 2006 and a "Proving" stage from mid 2006 to 2008.

This note summarizes Prosperity Initiative's understanding of the industry based on the past 3 years working with local and international businesses, farmers, government authorities, and other agencies.

It sets out a clear rationale and priority actions for achieving measurable large-scale impact on poverty in the coming years. It provides evidence-based estimates of the scale and scope of expected impacts, as well as interim milestones against which to judge progress.

The Global Industrial Bamboo Sector – A brief overview

The bamboo industry can be divided into three main segments: handicrafts, edible shoots and industrial manufactured products. Industrial bamboo products are a new development in the industry and are, in essence, direct timber and wood fibre substitutes such as flooring, panels and paper. These products now compete in mainstream timber and wood fibre markets.

Today, the world demand for bamboo products is estimated as more than USD 11 billion per year, up from USD 7 billion in 2005. By 2018, the market is projected to grow to USD 15-20 billion per year.

Conventional products currently dominate the market - such as handicrafts (including traditional bamboo furniture), blinds and edible shoots. These segments collectively represent about 95% of the industry but are largely domestic, already mature and have limited growth potential.

Industrial bamboo products that compete with mainstream timber products have only emerged on a commercial scale in the last 10 years (excluding simple products like paper and chopsticks). Current global consumption is only approximately USD 500 million per year, compared to the overall export market of USD 80 billion per year for secondary processed wood products, which has grown by an average of more than 12% per year since 2000. With the growth in export markets for processed wood products and increasing penetration of bamboo products into these markets, the industrial bamboo market could grow to USD 4-8 billion over the next 10 years.

This strong growth potential is based around the competitiveness of engineered bamboo products against timber equivalents, especially hardwoods. Engineered bamboo provides a lower-cost alternative to most hardwoods, with savings of 30% or more, while at the same time providing comparable or better technical performance in terms of hardness, stability and strength. Combined with environmental sustainability and good aesthetics, it is an increasingly competitive product in mainstream timber markets. There also appear to be good opportunities in the Vietnamese market for timber import substitution for products such as door frames, window frames and other similar construction materials.

China is currently the world's bamboo superpower: it produces over 80% of global output and accounts for over 60% of global consumption.

Viet Nam has the potential to out-compete China. The secret to competitiveness is in increasing the value-added per unit of raw bamboo processed by the industry. By this measure, China is currently 2-3

¹ For a short video introducing this project please go to: <http://www.prosperityinitiative.org/video/video.html>

times ahead of NW Viet Nam. Yet China's competitiveness and industry success has led to increasingly higher costs of production, namely raw bamboo and labour. These are the two biggest costs in the industrial bamboo industry and represent approximately 60% and 20% of the total cost of production, respectively.

In China today, bamboo and labour costs are more than 3 times higher than in NW Viet Nam. This could mean a 50% cost advantage for finished products made in NW Viet Nam.

Viet Nam can out-compete China in the growing global and regional marketplace for industrial bamboo products. This market opportunity is the foundation for this project.

The Local Industry

The industrial bamboo sector in NW Viet Nam is relatively small and unsophisticated but growing. There are now 80-90 processors making medium and high-value products, but less than one third have a turnover greater than USD 500,000 per year. Of these, only a small number of companies (less than 5) produce high-value products such as flooring or panels. As a result, the industry overall adds limited value to the raw material and has high waste rates (typically greater than 75%).

Less than one third of the bamboo harvested is actually processed for industrial bamboo products, even with 80-90 processors. The remaining 68% is used for low-value purposes such as construction or pulp for paper. This is another lost opportunity for creating more value from the industry for the local economy.

A summary analysis of the local industry is illustrated in Annex 1.

Connecting Poor Households to the Market

Bamboo is produced almost exclusively by small-scale farmers on their own land in mountainous areas in NW Viet Nam. In 2006, in the 3 districts of the Thanh Hoa Province pilot project, 60% of bamboo farmers were poor and 90% were ethnic minorities. In addition, income from bamboo was of greatest benefit for the poorest two-thirds of the population, both in absolute and relative terms.

There are approximately 59,000 households in NW Viet Nam with an estimated 90,000 hectares of planted bamboo suitable for supplying the industrial bamboo sector. Of these, around 53,000 households are currently active in the market, accounting for around 60,000 hectares of bamboo production.

Income from selling bamboo is 33% of household income for fully 70% of households in the typical bamboo growing areas of the pilot project. Increases in price and/or volume of raw bamboo sold by farmers are the most important mechanisms for the industry to raise household incomes and reduce poverty for large numbers of people.

However, in NE Lao PDR, farmers rarely own the land from which bamboo is harvested as only limited land allocation to households has so far been completed. The majority of bamboo that is harvested for sale is taken from natural forests under quotas issued by the government.

Bamboo plays an important wider role in many mountainous communities, both in Viet Nam and Lao PDR. It is an important store of wealth that can be easily accessed by households when they are in need. It provides excellent return on labour and yet is a flexible income source throughout the year. Bamboo forests also provide a productive and sustainable use of sloping lands, protecting soils and improving local watershed management.

The Opportunity for Impact

In summary, industrial bamboo makes sense because:

- There is a strong market opportunity for industrial bamboo products worldwide;
- NW Viet Nam has the opportunity to compete with the bamboo superpower, China;
- The industry is currently an important income for at least 53,000 farming households, 60% of which are poor and a large majority from ethnic minorities.

The local industry's strong roots in poor communities, as well as good market opportunities for higher value-added products, create a realistic market-driven opportunity for large-scale poverty impact.

From the facts underlying this analysis, we have developed estimates of the poverty impact for different industry development scenarios.

Raising the competitiveness and value-added of the local industry should lead to a corresponding rise in farm-gate prices, as has happened in China. Based on our in-depth knowledge of the relationship between bamboo land holdings and household incomes, we estimate the following impacts for the 70% of farming households with existing bamboo plantations from among a total population of 400,000 in the upland districts of the industry:

- **126,000 people will move over the poverty line when prices reach 40%** (USD40/tonne) of current China prices. A total of USD 43 million per year of smallholder income will be generated, and poverty rates across this population will reduce from around 65% in 2004 to 34%.
- **163,000 people will move over the poverty line when prices reach 80%** (USD80/tonne) of current China prices. A total of USD 86 million per year of smallholder income will be generated, and poverty rates across this population will reduce from around 65% in 2004 to 24%.

These estimates are from a 2004 base of around USD 11 million per year of smallholder bamboo income generated. It also holds all other income sources at stable levels compared to 2004 levels.

The natural effect of price increases will be to induce further planting and supply by neighbouring (poor) districts into the market. Based on our analysis of agricultural, economic and poverty conditions in similar adjoining poor districts, we conservatively estimate that an additional area equal to 50% of the current plantation area will come into production because of the attractiveness of the market. This effectively expands the target population to **a community of 600,000, from which we estimate 250,000 will move over the poverty line.**

Priorities for Action

To sustainably raise farm-gate prices and achieve the impact outlined above, the following four priorities are essential:

1. **Securing investment in new manufacturing plants** for high- and medium-value finished products.
2. **Raising value added per bamboo culm across the industry** (especially among primary processors) by identifying market opportunities for alternative higher value products and assisting small- and medium-enterprises (SMEs) to supply them.
3. **Establishing sustainable buying mechanisms** between buyers and farmers to ensure the sustainable exploitation of bamboo resources while meeting the needs of a growing industry.
4. **Ensuring poor farmers own the bamboo** and therefore can benefit from rising prices and demand.

The first three priorities represent the Impact Priorities for the overall project and are where resources and activities are focused. The fourth, ownership of bamboo, is a major issue in the border province of

Houaphan in Lao PDR, and is therefore an additional priority there. However, in the majority of industrial bamboo districts of NW Viet Nam, land allocation and usage rights have been largely resolved and so will not be addressed as a main priority in these districts.

These priorities and how they drive poverty impacts are illustrated in Annex 2.

Progress So Far

Over the last three years, progress has already been made on the Impact Priorities above.

1: Securing Investment

The first priority is to facilitate new investments in manufacturing plants for high and medium value-added products (primarily through raising awareness of business opportunities, technical assistance in design and execution of investments and facilitating access to finance). This is a key step in raising farm prices of bamboo, growing the industry and moving to a more diverse and resilient industry. Progress has already been made:

- The first major investment case was completed in July 2008 with a leading flooring company and is currently being negotiated with commercial finance providers.
- The second major investment case is currently being developed with the largest bamboo business in Viet Nam and will be executed in 2009.
- Firm requests for similar investment support have already been received from other major bamboo businesses in Viet Nam.
- The Mekong Bamboo team has developed good contacts with four investment funds and financiers with available capital and interest in the sector in the region.

The immediate priorities for the first half of 2009 are to: finalise the detailed investment plans with the largest bamboo business in Viet Nam; conduct technical tests of the new high-value strand woven product linked to the above investment; identify the next 2-4 prospective investors from among Viet Nam-based businesses and begin developing investment proposals; complete the “green field” investment case for a strand woven factory with full by-product utilization (including a local energy generation module using waste bamboo); expand the network of potential financiers from the current group of four funds. The target is to secure two new USD1+ million investments during 2009 and 4-6 investments by 2011, collectively consuming about 10% of raw material supply. This level of raw material consumption, and the prices these businesses can pay due to the value of their end products, is sufficient to drive-up the price of bamboo across the local market.

2: Raising Value Added per Culm

The second priority is to identify market opportunities for alternative higher value products and assist SMEs to supply these new markets, thereby increasing the value created per culm.

Good progress has been made with a small number of primary processing SMEs. With the support of the project, five primary processing SMEs have been established with improved processing techniques producing higher value added semi-finished products supplying high- and medium-value markets. New products made from processing wastes (such as fuel pellets and charcoal from sawdust) have also been studied to identify business opportunities. These opportunities were identified through Prosperity Initiative’s engagement with the industry in China and its support to technology and policy transfer.

The engagement with the broader cluster of 80-90 SMEs involved in industrial processing in NW Viet Nam has also been scaled up through a series of sector-level activities, specifically:

- A Bamboo Industry Outlook Day, which shared information on the market outlook, opportunities and challenges in the bamboo sector. This provided an opportunity for businesses,

experts and policy makers to exchange experiences and learn about recent developments in bamboo markets and processing technologies.

- A Bamboo Business Database in Vietnamese and English has been published, providing information on nearly 300 major bamboo-related businesses across the country to facilitate industry efficiencies.

The immediate priorities for the first half of 2009 are: setting-up a commercial market test with a local SME using Vietnamese equipment to produce fuel pellets from bamboo sawdust for sale to the domestic market; providing technical support to progressive SMEs in developing investment plans, sourcing equipment and executing investments for new higher-value products; raising the awareness of business managers of market opportunities through visits to the Chinese industry and potential buyers in Viet Nam; and strengthening local business networks and associations.

3: Sustainability

The third priority is to establish sustainable buying mechanisms between farmers and buyers to ensure the sustainable exploitation of bamboo resources while meeting the needs of a growing industry. This requires the coordinated actions of farmers, traders, primary and secondary processors and local authorities. Commercial-scale pilots will be implemented in 2009, for wider roll-out in 2010.

A detailed research mission has been completed to fact-check the Chinese system and learn from its successful supply chain and sustainable management of bamboo resources. From this, a commercial pilot based on a Cluster Development Initiative has been designed with a phased approach to implementation.

The priority for 2009 is to set-up the first of these commercial pilots for sustainable buying. This will be centered around the supply chain of 1 larger secondary processing business, 1 primary processing workshop, and 2 cluster groups of farmers supplying raw material. In addition to these groups, the pilot will involve the local authorities with the Mekong Bamboo team acting as key facilitators and providing technical assistance.

4: Ownership

The final priority is to develop mechanisms for ensuring smallholder land and resource ownership. This is the most essential step to ensuring that poor households benefit from the growing demand and rising prices of bamboo. Without it, industry growth will have only minimal poverty impact. In NW Viet Nam this has, so far, not been a major issue among the majority of industrial bamboo districts where land allocation and usage rights have been largely resolved.

However, it remains a serious impediment to farmers in NE Lao PDR who would otherwise benefit from the expansion of the industry into Houaphan province. A great opportunity for very poor Lao farmers is to link the supply of their bamboo into the Viet Nam industrial system, but first their ownership of the resource must be established. Activities scheduled for the coming months in Houaphan include working with local authorities on:

- Preparing community forest management plans in 2 priority districts;
- Establishing smallholder bamboo plantations in 20 villages with short term intercrops;
- Piloting land or quota allocations to villages or households in 2 districts;
- Conducting a series of farmer awareness events on these issues and on the industry opportunity.

5: Mekong Bamboo Platform

Important progress has been made over the last three years in establishing a network of partners including businesses,



government agencies, farmer groups and development agencies willing to collaborate to foster the growth of the industry.

A key part of this has been the establishment of Mekong Bamboo to facilitate the necessary actions for industry growth. Mekong Bamboo is now supported by a fully staffed team managed by Prosperity Initiative. Support to the Industrial Bamboo Sector in NW Viet Nam and NE Lao PDR is a priority for Mekong Bamboo as part of its mission to promote the bamboo industry in Viet Nam, Lao PDR and Cambodia for large-scale poverty impacts.

Budget

The budget is approximately USD 2 million per year for 2009-2013, scaling back to an average of USD 1 million for 2014-2018: a total budget of approximately USD 15 million over ten years.

Conclusion

This project targets the growing opportunity for industrial bamboo products in the global, regional and domestic markets and the potential for the industry in NW Viet Nam and NE Lao PDR to compete strongly with China, the industry leader.

The project will increase the competitiveness and value created by the industry in NW Viet Nam and NE Lao PDR and, as a direct result, lead to sustainable increases in farm-gate prices and demand, as has happened in China.

The industry is estimated to achieve the following impacts when bamboo prices reach 80% (USD80/tonne) of current China prices, based on a detailed analysis of household bamboo land holdings and income patterns:

- **160,000 – 250,000 people** will move over the poverty line;
- **USD 85 million – USD 125 million per year of smallholder income** will be generated;
- **Poverty rates will reduce from around 65% in 2004 to 24%** across the target population.

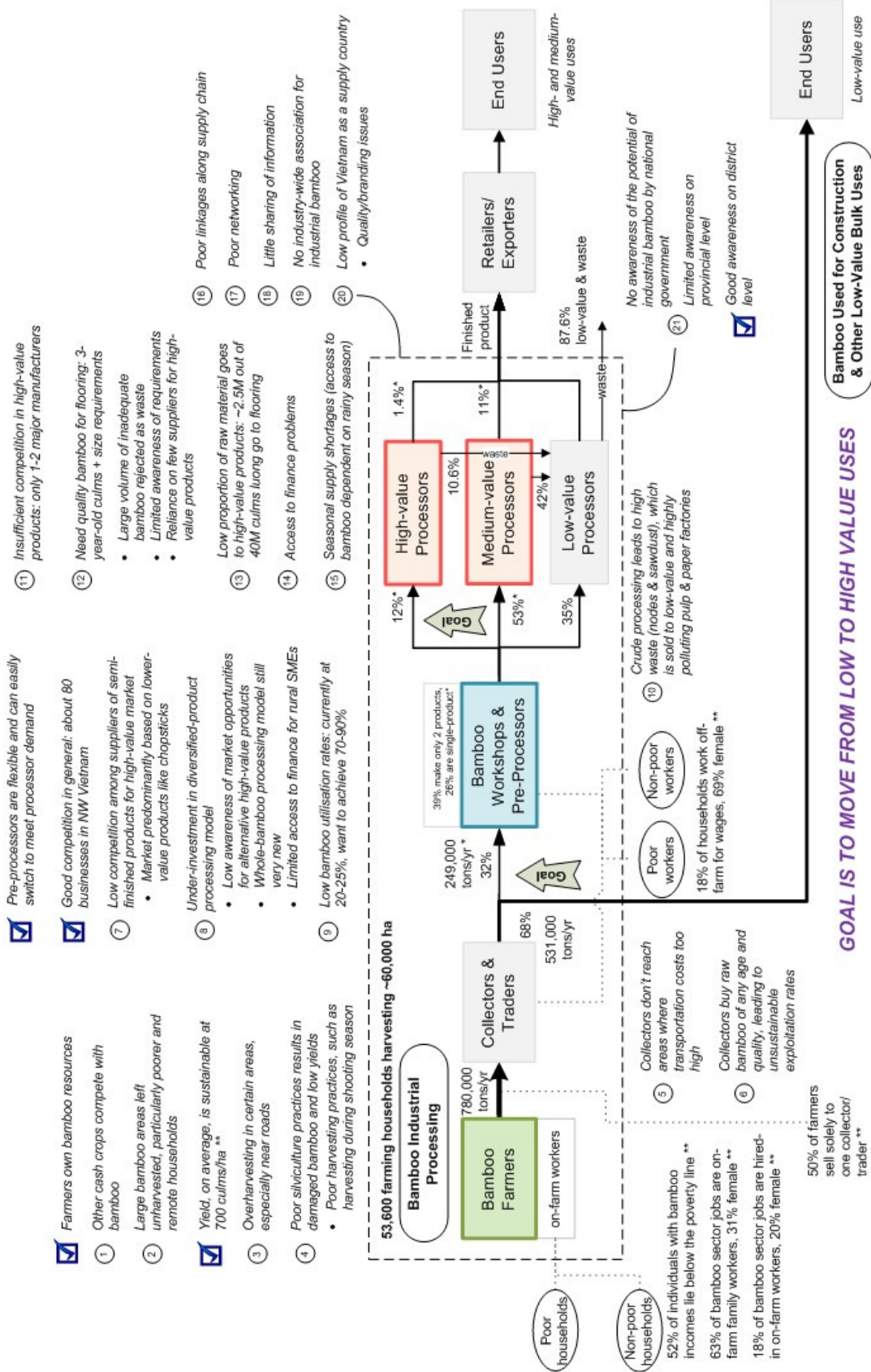
To achieve this:

1. **New private sector investment must be secured for 4-6 larger factories** making higher value products and consuming around 10% of raw bamboo supply;
2. **Primary processing SMEs must create more value from the raw material** by expanding their range of value-added products and reducing their waste rates;
3. **Sustainable buying mechanisms need to be widely adopted** between farmers and processors to ensure the sustainable exploitation of bamboo resources while meeting the needs of a growing industry;
4. **Farmers must own the bamboo** being used by the industry so that they benefit directly from rising demand and rising prices.

The cost of the project is approximately USD 15 million over its full 10-year lifecycle.

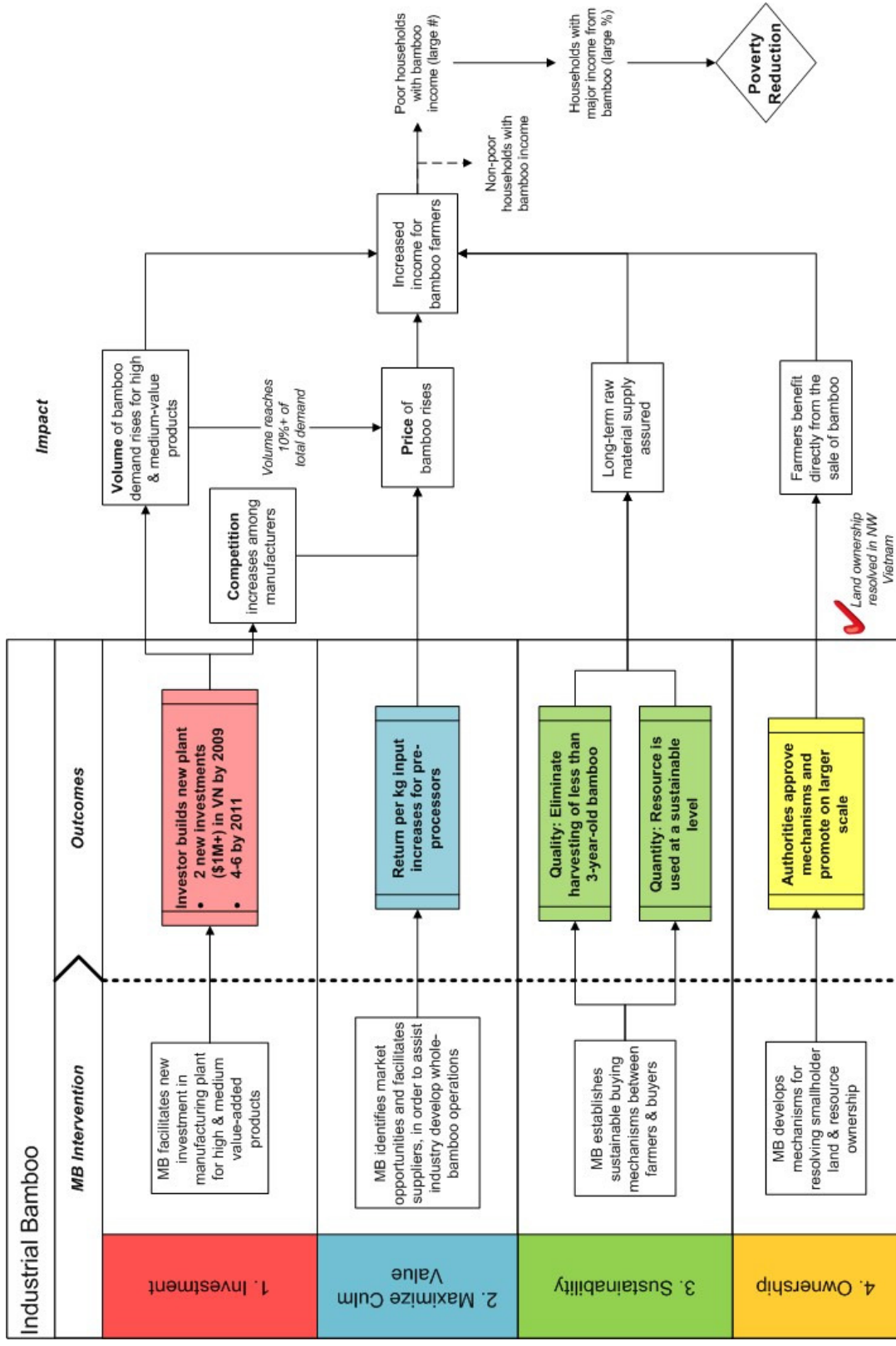
The return on investment (ROI) of public funds is USD 60 – 95 per person lifted out of poverty.

Annex 1: Overview of the Industrial Bamboo Sector in NW Viet Nam



* 2008 Bamboo Business Database
 ** 2008 Thanh Hoa impact assessment report (2006 incomes)

Annex 2: Impact Priorities



Annex 3. Activities for 2009

The table below provides a summary of the main activities for 2009 planned for the development of the Industrial Bamboo sector in NW Viet Nam and NE Lao PDR. This first wave of activities will be subject to periodic review and adjustment to ensure the project is responsive to emerging opportunities and issues.

Each activity is briefly described in the first column and the Impact Priorities and Management areas to which it is most relevant are indicated in the adjacent columns.

Activity	Impact Priorities				Management	
	1: Investment	2: Maximize Value	3: Sustainability	4: Ownership	Impact Monitoring	Management
BAMBOO						
Business Investment & Market Development						
• Investment plan finalization with the largest bamboo business in Viet Nam;	1					
• Technical testing of the new high-value strand woven product linked to the above investment;	1					
• Identification of next 2-4 prospective investors from among Viet Nam-based businesses and prepare investment proposals	1	2				
• Completion of a “green field” investment case for a strand woven factory with full by-product utilization	1	2				
• Conduct market reviews of: <ul style="list-style-type: none"> ○ Chinese domestic bamboo market ○ Viet Nam construction market ○ Global industrial bamboo product market (update) 	1	2				
• International buyer and financier network development	1	2				
• Annual Bamboo Business Survey and Database update	1	2			IM	
• Technology & Supply Chain Demonstrations of improved processing or management practices	1	2				
• Commercial market test of producing fuel pellets from bamboo sawdust for sale to the domestic market		2				
• Technical support to progressive SMEs in developing investment plans, sourcing equipment and executing investments for new higher-value products;		2				
• Trade and investment visits to the Chinese industry and/or potential buyers in Viet Nam	1	2				
Field activities with farmers, traders and small rural businesses						
In Thanh Hoa, Phu Tho, Yen Bai, and Hoa Binh Provinces						
• Dissemination of good practices and market opportunity information to farmers & rural SMEs		2	3			
• Local industry action plan preparation with local authorities and industry stakeholders		2	3			

Activity	Impact Priorities				Management	
	1: Investment	2: Maximize Value	3: Sustainability	4: Ownership	Impact Monitoring	Management
BAMBOO						
• Strengthening local business networks and associations		2	3			
• Field trials for improved bamboo production practices			3			
In Houaphan Province, in addition to the above:						
• Preparing community forest management plans in 2 priority districts;			3	4		
• Establishing smallholder bamboo plantations in 20 villages, with short term intercroppings;			3	4		
• Piloting land or quota allocations to villages or households in 2 districts;			3	4		
• Conducting a series of farmer awareness events on these issues and on the industry opportunity.			3	4		
Sustainable Supply System						
• Set-up the first commercial pilot for sustainable buying centered around the supply chain of 1 larger secondary processing business, 1 primary processing workshop, and 2 cluster groups of farmers			3			
• Preparation of extension materials and booklets for farmers including topics such as intercropping & forest management			3			
Sector Enabling Environment						
• Annual Industry Outlook Day and regular Thematic Knowledge Sharing days with industry participants	1	2	3			
• Study tours to Chinese industry for business managers and policy makers	1	2	3			
• Research and publish China Case Study Book – documenting key lessons from China’s experience	1	2	3	4		
• Research gender impacts of industry and prepare action plan					IM	M
• Communications: Study Tour Video production	1	2	3	4		M
• Communications: Conference attendance to disseminate experience and build networks	1	2	3	4		M
• Communications: industry information product preparation and dissemination	1	2	3			M
Capacity Building						
• Support to development of local Bamboo Association(s)	1	2	3			
• Local partner training on technical and management issues						M
Impact Surveys						
• Houaphan Household Impact Survey - Baseline					IM	M
• Thanh Hoa Household Impact Survey – 2 nd Bi-annual survey					IM	M