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Strategic assessment of the Eastern Plains Landscape Bamboo Market System

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CONTENTS

1 Introduction.. 1

2 Overview of the EPL bamboo market system 1

3 Key sensitivities within the bamboo market system.......................9

4 Prioritisation of issues...14

5 Recommendations 17

Annex 1: People Interviewed...21

Annex 2: The bamboo trade in Cambodia, Asia and FSC certification...22

Executive Summary

This report provides a strategic, structural assessment of WWF's bamboo pilot project in the Eastern Plains Landscape (EPL), Cambodia. The report focuses on the proposed market system, and identifies key sensitivities within it.

WWF have put many important building blocks in place to make this pilot work. These strengths include a long-term commitment to the EPL, apparently good relationships with the community, and significant investments in setting up community Bamboo Enterprise Groups, conducting an inventory of the bamboo resource, and training the Groups on bamboo management. Bambusa Global Ventures appears to be an excellent choice as a purchaser of bamboo and bamboo products from the community Groups. All of these are solid foundations for a successful project.

There are a number of structural sensitivities in the way the pilot has been set up, however. The ones that present the most risk to WWF's strategic conservation goals, where that risk is most immediate, and where the issue is tractable for WWF are:

Capacity of the Bamboo Enterprise Groups. WWF staff are well aware of the low capacity of the Bamboo Enterprise Groups, and work hard to increase it. This emphasis should be maintained. However, with bamboo harvesting about to start, and significant training on sustainable bamboo management already delivered, it is recommended that the emphasis shift towards further building the Groups' capacities as businesses: group organisation, enterprise management, and social aspects of the Groups' structure. This shift provides a good opportunity for WWF to review what skills and capacities it needs to best support the Bamboo Enterprise Groups.

Reliance on one purchaser. WWF has made what looks like an excellent choice to link Bambusa GV to the community Bamboo Enterprise Groups. Bambusa GV is an energetic company that clearly knows their business and is committed to the communities as a source of bamboo. It is no criticism of anyone to point out that a great deal of practice in international development – from organisations for whom creating and nurturing community enterprise is a core function – shows that new enterprises that are reliant on one purchaser are more exposed to risk and more likely to fail than those that are set up with multiple purchasers. It is recommended that WWF should facilitate contracts between the community Bamboo Enterprise Groups and at least one other purchaser.

Mondulkiri Forest Ventures. Mondulkiri Forest Ventures (MFV) is expected to transfer money from Bambusa GV to the community Bamboo Enterprise Groups, a role that provides minimal value in the current market system. Yet MFV *could* be an important part of the market system if it had the capacity to promote the community Bamboo Enterprise Groups with other buyers, concluding contracts for orders, developing products, etc. To play this sort of worthwhile and active role, MFV – an enterprise itself – need to be headed by an entrepreneur: someone who will be relentless in searching out opportunities and closing deals. It is recommended that WWF reconceptualise MFV and recruit an entrepreneur to run it.

Conservation Outcomes. Positive conservation outcomes are the strategic purpose for the bamboo pilot project, within the context of the other conservation activities that WWF conducts within the EPL. Improved conservation from the bamboo pilot is possible, but the current theory of change relies heavily on the notion that increased community income will lead to a reduction in the current threats to wildlife (hunting, logging, illegal land conversion). The scientific evidence is that additional nature-based livelihoods projects rarely produce such outcomes. There is therefore a risk that the bamboo pilot might work counter to some of the other conservation activities in the EPL. It is recommended that WWF reflect on and refine the Theory of Change for how the bamboo pilot project will yield conservation outcomes, and build in mechanisms that directly reward positive conservation activities and directly penalise activities that threaten conservation.

A further group of issues can be dealt with in the medium-term, because they present less immediate risk to WWF's strategic purpose. These include: supporting the community Bamboo Enterprise Groups on the transition from *project dependency for market services* (e.g., finance, equipment, technical support) *to sourcing them commercially;* and investing in *FSC certification once the community groups are functioning enterprises* (not before), and when a clear market for FSC certified bamboo products exists.

1 INTRODUCTION

1.1 Background to WWF's Bamboo pilot project

WWF is in the process of establishing a pilot community bamboo project in the Eastern Plains Landscape, Mondulkiri Province, Cambodia. The essence of the project is to create a sustainable source of income for the communities who live in Community Protected Areas (CPAs) adjacent to the Phnum Prech Wildlife Sanctuary. WWF's hope is that by gaining a stable and lucrative income from the naturally occurring bamboo within the CPA, the communities will preserve the forest for wildlife. This builds upon WWF's existing and more advanced community livelihoods projects for wild honey and resin, and is part of WWF's suite of conservation activities within the Eastern Plains Landscape.

The pilot is at an early stage. Community Bamboo Enterprise Groups have been set up in two villages, Chi Khlorb, and Sre Thom. The Bamboo Enterprise Groups have received some basic capacity building on their organization, and training on bamboo harvesting and management. A detailed inventory of the bamboo resource within the CPAs has been conducted, which concluded there are four species with (differing) commercial potential. WWF are considering supporting the community Bamboo Enterprise Groups to achieve FSC certification to support sustainable bamboo management and potentially to create market opportunities.

One purchaser of the bamboo, Bambusa Global Ventures has been identified. Bambusa GV is installing a factory in Kaoh Nhek that will process the bamboo into a range of products. Mondulkiri Forest Ventures (an enterprise set up by WWF and partners) is expected to play a role in marketing. Bambusa GV have a strong commitment to the pilot, partly because the community Bamboo Enterprise Groups are an important source of raw material for them, and partly because their business includes a sense of social purpose.

1.2 Purpose of this report

This report presents a strategic analysis of the key structural strengths and sensitivities within the bamboo pilot. The assessment examines the key structural issues with the pilot: issues on which the pilot is likely to succeed or fail by in the medium to long-term. The intended audience for the report is the WWF Cambodia managers responsible for the bamboo pilot, and it is intended to support their strategic decisions.

2 OVERVIEW OF THE EPL BAMBOO MARKET SYSTEM

This section provides a structural overview of the EPL bamboo market system: the value chain, the market services that the community Bamboo Enterprise Groups will rely upon, and the enabling environment that affects their enterprises.

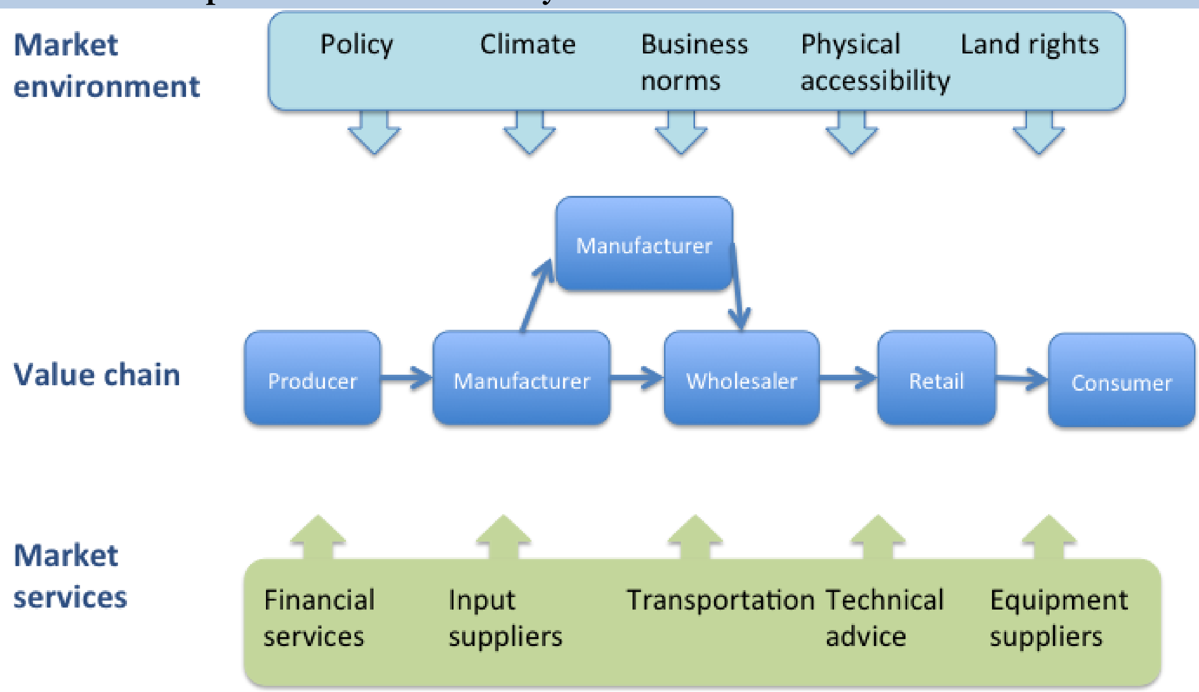
The market system (Box 1) is used as the basic analytical approach in this report, because if the pilot is to be successful, the Bamboo Enterprise Groups will have to function within a market system, not just provide materials for a value chain. Understanding the EPL bamboo market system on a strategic level should provide a useful guide to next steps for WWF. It does not include detailed flows of products and money because (a) there are more fundamental issues at stake, and (b) at the time that the research for this report was conducted there was no existing value chain: no bamboo had yet been harvested other than the for household use.

Box 1: A brief introduction to market systems

In the last decade or so, organisations setting up enterprises have increasingly moved away from a simple value chain approach to thinking and intervening in the 'market system'. This change recognises that any enterprise, however well conceived, is part of – and dependent upon – a wider system. There are three basic elements of the market system, on which any enterprise is dependent (Figure 1):

- **The value chain**: this is the flow of goods, money (and power) from producer to consumer.
- **Market services**: these are the services on which the value chain relies, and typically includes finance, inputs for production, equipment, transportation, storage, technical advice, and non-physical elements of the product such as design and marketing. Most are provided by businesses, although governments and NGOs can be important providers of (especially) technical services.
- **The enabling environment**: these are the wide ranging suite of factors that are not directly part of the business of producing, buying or selling but which affect interactions within the value chain. These include climate and weather, the policy environment, land rights, taxation systems, the specific ways business is conducted, physical accessibility to markets, licences, etc.

A schematic representation of market systems



1.3 Key elements of the EPL value chain

The fundamental elements of the proposed bamboo value chain are illustrated in Figure 1. Note that the right-hand side of the diagram has been simplified, and in reality Bambusa GV will sell numerous products to a range of other companies.

Members of the community Bamboo Enterprise Groups expect to harvest bamboo, and transport it to village holding stations. Members are paid by the group according to their harvest.

Bambusa GV will collect the bamboo poles from these holding stations and transport it to their factory near Kaoh Nhek where processing (e.g., straightening) and manufacture will take place. A wide range of products is expected to be manufactured at the factory, including bamboo screens, plywood and other building materials.

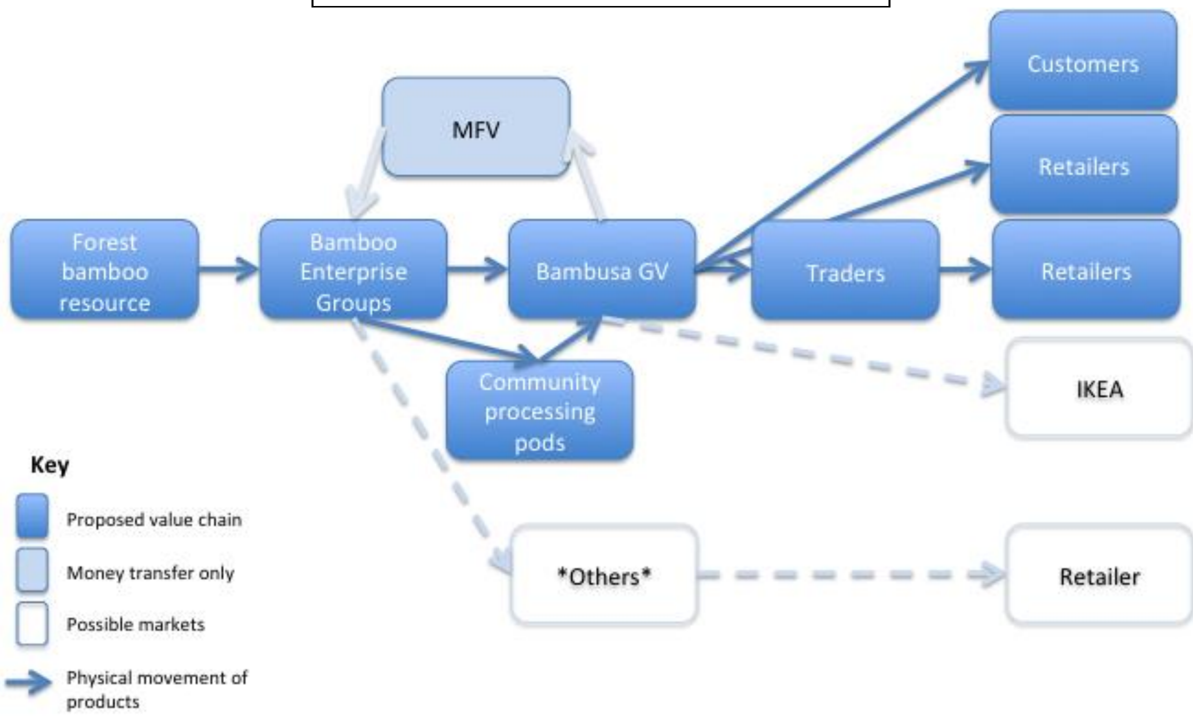
The intention is that some products, including biochar, organic fertiliser, and home and garden accessories will be made by community members in village workshops and then purchased by Bambusa GV.

Bambusa will then sell the various products to various traders, retailers and corporate customers within Cambodia. Export is not being sought in the near term but remains a strong possibility for future market growth.

The interaction between the community Bamboo Enterprise Groups and Bambusa GV is mediated by Mondulkiri Forest Ventures, who receive the payment from Bambusa GV and disburse it to the community Bamboo Enterprise Groups but who do not take physical ownership of the bamboo. Mondulkiri Forest Ventures is registered as a Private Limited Company, and is owned by 13 community NTFP collector groups (honey, resin and bamboo).

At the present time Bambusa GV is the only proposed purchaser of bamboo from the community Bamboo Enterprise Groups. Other possibilities that WWF are exploring include IKEA (via Bambusa or potentially via IKEA's suppliers in Vietnam) and enterprises within the Rattan Association of Cambodia. Given the myriad end uses of bamboo, other potential purchasers could be identified.

Figure 1. Overview of the EPL value chain



The key observations about the value chain are as follows:

1.3.1 The bamboo resource

The inventory of the CPAs showed that there are four bamboo species with commercial potential: Russey Roleak and Russey Prey, Russey Khley, and Russey Tronung Moin. All species are concentrated along streams and low-lying areas (Figure 3). These species have differing end uses: Russey Roleak and Russey Prey can be used for a variety of products ranging from household utensils to paper, pulp and ply wood, whereas Russey Tronung Moin and Russey Khley can be used for furniture frames and structural materials, such as roof battens, hoe and broom handles, and black pepper supports.

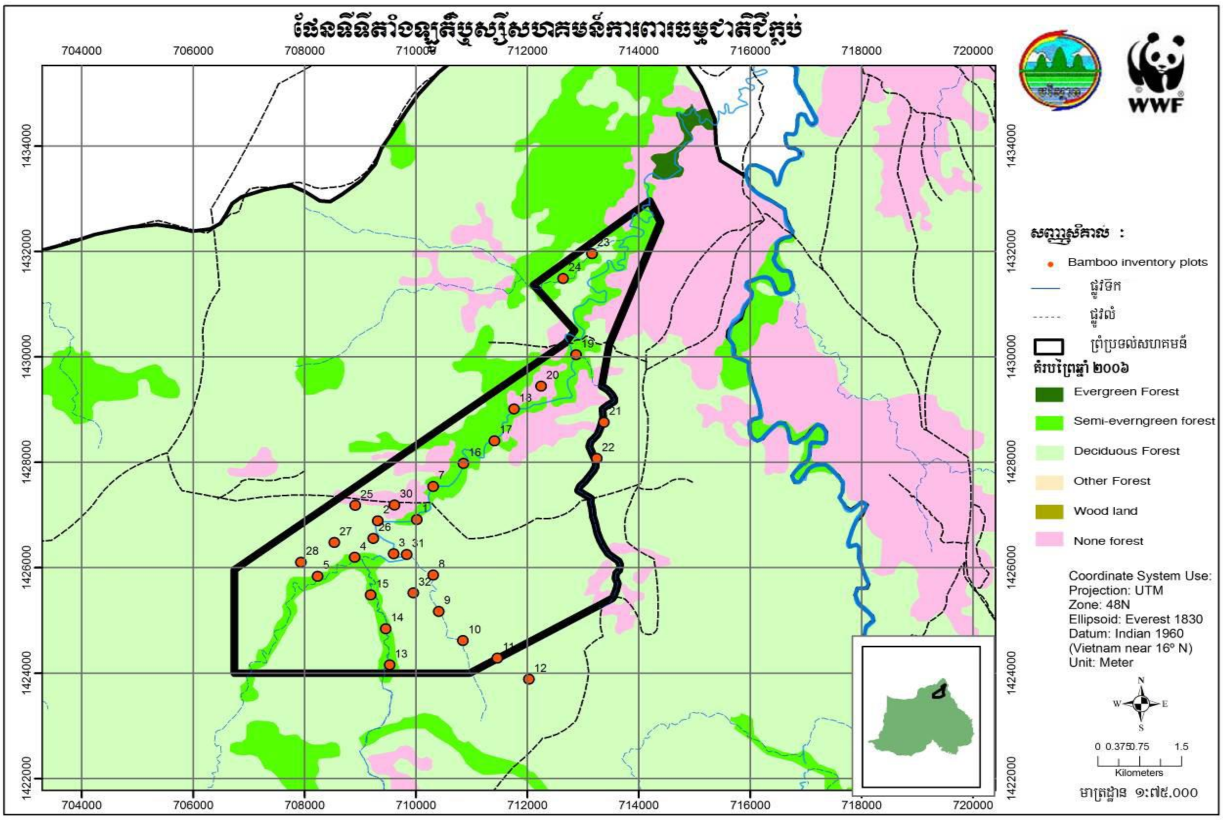
The total area of harvestable bamboo stands in Chi Khlorb CPA is estimated at 230 ha and 150 ha in Sre Thom CPA, with additional stands outside the CPAs. The initial harvest is estimated at approximately 737,000 culms of Russey Roleak and Russey Prey, 37,000 culms of Russey Khley, and 9,000 culms of Russey Tronung Moin. Following this, a sustainable annual cut of 339,000 culms of

Russey Roleak; 133,000 culms of Russey Prey; 7,000 culms of Russey Tronung Moin, and 23,963 culms of Russey Khley should be achievable[1].

The current expectation from Bambusa GV is to purchase as 9000 poles per month from the community Bamboo Enterprise Groups (108,000 per year). This is below both the initial harvest and the estimated annual sustainable harvest rates in subsequent years.

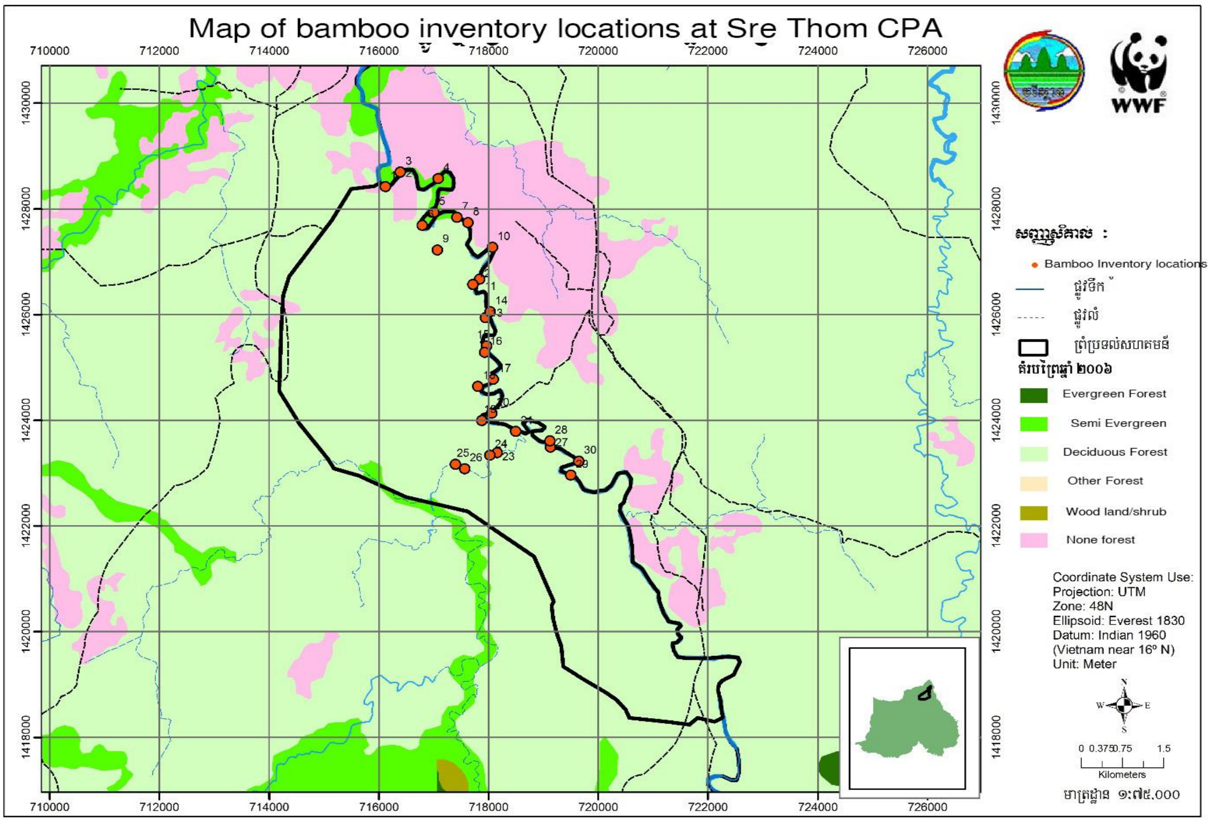
Figure 2. Forest types within the Community Protected Areas (bamboo inventory plots are marked with red dots)

A. Chi Khlorb Community Protected Area



[1] WWF (2014). Participatory Assessment of Bamboo Resources in Sre Thom and Chiklob CPAs and Sre Huy CPF, Mondulkiri Province

B. Sre Thom Community Protected Area



1.3.2 Long-term commitment

The bamboo pilot is one part of WWF's long-term strategic commitment to the EPL. This long-term commitment provides a real opportunity to make the most of the foundations already laid in the bamboo pilot. Setting up new community enterprises is difficult and the experience of organisations whose core function includes enterprise development is that a period of 3-5 years engagement is often needed before an enterprise is viable. WWF commitment to conservation in the EPL makes the work less dependent on immediate results and short-term project funding, and more able to adapt and refine the project as it progresses.

1.3.3 Relationship with the communities

WWF work with the communities in various ways, having helped to establish the CPAs, working with the communities to patrol and protect them[2], and creating additional forest-based livelihoods from the bamboo, honey, and resin livelihoods projects. From the admittedly limited perspective that it was possible to gain in this project, it does appear that the communities trust WWF and value their work with them. A good relationship between WWF and the communities is fundamental to the success of the work.

1.3.4 The capacity of community groups

Each group has a leader and a deputy. Community members join the Group by buying a notional share. There are 68 Group members in Chi Khlorb, and 60 in Sre Thom. The Bamboo Enterprise Groups are only recently formed. As such they would be expected to be some way short of the capacity

[2] WWF Cambodia (2012). Law Enforcement Against Forest Crime In The Eastern Plains Of Cambodia 2006 – 2011.

needed to manage bamboo enterprises. WWF are well aware of this and devote significant effort and time to building the Groups' capacity. Some key observations on the capacity of the Bamboo Enterprise Groups are:

- **Basics of enterprise management.** Bamboo will be harvested by members of each Group. The members of the Bamboo Enterprise Groups interviewed were not clear on how much the group as a whole could harvest, how harvest volumes would be allotted to individuals, whether their harvesting share could be transferred to others, who decides such issues, or how disputes were resolved. A lack of clarity of such basics points to the significant shortfall in their business management capacity. Their limited basic management skills, understanding of the bamboo business, financial and other record keeping and so on mean that there is some way to go before they are able to function as viable, stand-alone enterprises.
- **Social aspects**. Experienced practitioners in Cambodia warn that community enterprises often fail because of divisions within the community, centered on the historical political affiliations of the group leadership. I was not able to determine from the WWF staff the political history of the group leaders, and so this may or may not become a problem, but it certainly needs to be clarified and addressed if necessary.
- **Self-identity and existing livelihoods**. Both communities are predominantly rice farmers. They were clear that they prioritise farming, and that at the busy times of year (transplanting and harvesting) they were unsure that they would have time to harvest bamboo. Indeed, although they were supposed to begin harvesting bamboo during early November, apparently (as of 9th December) they are still fully occupied with the rice harvest and have yet to sell any bamboo to Bambusa GV. Farming is part of their cultural identity of the communities as much as it is their main economic activity. They are thus unlikely to drop farming for bamboo harvesting, even if bamboo is more lucrative, because doing so would affect their self-identity. This may result in bamboo harvesting not being a year-round activity for the communities, as their current market demands, unless ways are found to balance the two livelihoods activities (e.g., additional harvest and storage of bamboo in the farming off season).
- **Harvesting**. The Groups have received training on good harvesting practice, although they are yet to harvest bamboo.

At a very rough estimate, the Bamboo Enterprise Groups can probably be though of as being about one third of the way to being viable enterprises: they have a saleable resource (bamboo), are trained in managing it, but have limited business management capacity and have yet to encounter the practicalities of their business (e.g., harvesting).

1.3.5 Bambusa GV

Bambusa GV is an energetic and innovative company that clearly knows their business. They are committed to the communities as a major source of bamboo for their business, and have a sense of social purpose. Although the current reliance of the Bamboo Enterprise Groups on a single purchaser does present some risks (see below), as a starting point, Bambusa GV appear to be an excellent choice of partner for WWF.

1.3.6 The number of buyers

One obvious feature of the emerging EPL value chain is that there is only one proposed purchaser for the community Bamboo Enterprise Groups' bamboo. Although other options have been mentioned, including possible export to IKEA's suppliers in Vietnam, and the Rattan Association of Cambodia, these relationships have not yet been developed into commercial contracts. Cambodia is a net importer of bamboo products, and the import data suggests that there is demand for bamboo panels, bamboo flooring, and increasingly, bamboo shoots (Annex 2).

1.3.7 Value addition

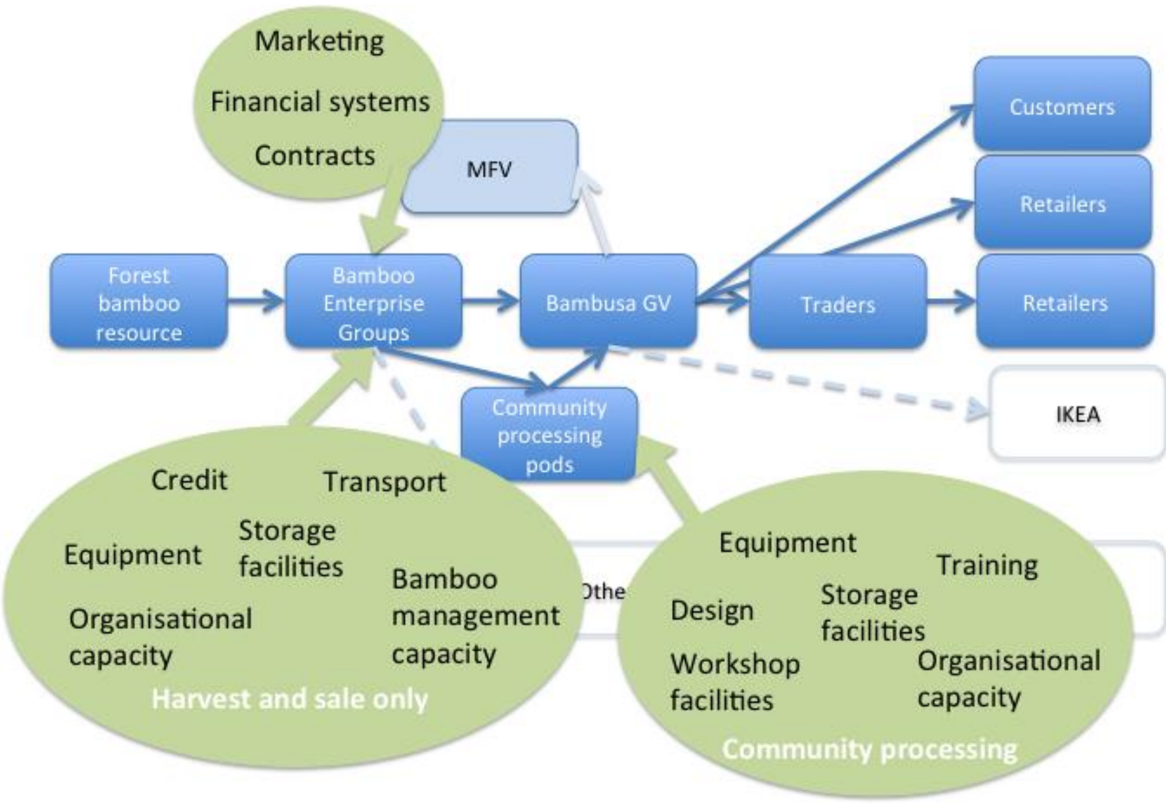
The communities are beginning to engage in value addition, with women community members producing chopsticks at the nearby Bambusa GV factory in Kaoh Nhek. However, competition in the market for disposable chopsticks means that their production is likely to be discontinued.

Bambusa GV has plans for several other lines of value added products that the community groups can make in low-tech workshops within villages themselves. These include biochar, organic fertiliser and home and garden products. Bambusa are committed to supporting these production pods, and will purchase directly from them.

1.4 Key market services for EPL bamboo

The main market services on which economically viable Bamboo Enterprise Groups will depend are illustrated in Figure 3.

Figure 3. Overview of key market services needed by the Bamboo Enterprise Groups



The community Bamboo Enterprise Groups require a suite of market services in order to function as sustainable enterprises: financial services (banking, credit); transport; storage facilities; technical advice on sustainable bamboo management; support on their own capacity as businesses (from book keeping to management skills), equipment and specialist maintenance (e.g., of chain saws).

Transport of bamboo from forest to the villages and temporary storage of it in the village collection will be carried out by the community members themselves. Onward transport is done by Bambusa GV, and other market services, including training on sustainable bamboo management, organisational and business capacity of the Bamboo Enterprise Groups are currently provided by WWF and Bambusa GV.

Mondulkiri Forest Ventures (MFV) is the conduit for exchange of money between the community Bamboo Enterprise Groups and Bambusa GV. As such, they require financial systems and the ability to create and sign contracts on behalf of the community Bamboo Enterprise Groups. MFV are intended to also establish marketing opportunities for the Bamboo Enterprise Groups, and may in future retail any bamboo products produced by the communities.

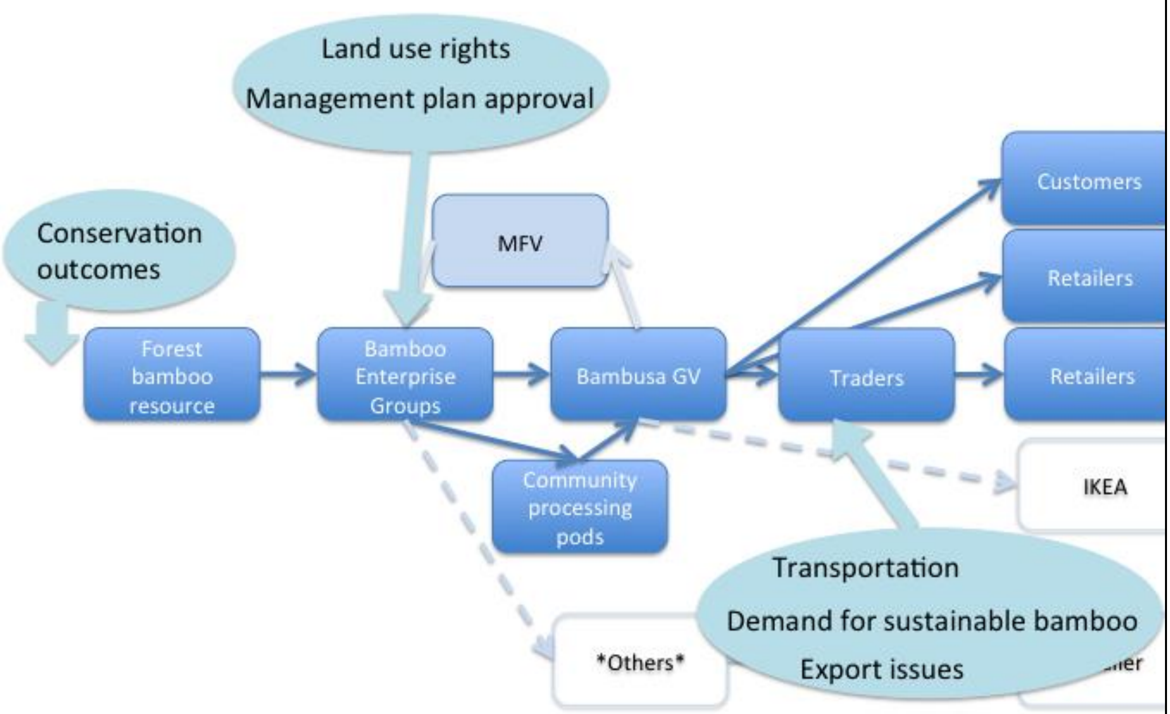
If the community Bamboo Enterprise Groups are in future to add value to the bamboo they harvest (e.g., by producing chopsticks or furniture themselves) then they will require a second suite of market services. These will include manufacturing facilities and equipment, storage facilities, professional support on product design and manufacturing techniques, along with additional organisational capacity to manage processing and sales. Bambusa GV intends to provide these services to the community groups, and buy and sell their products.

1.5 The enabling environment for EPL bamboo

Figure 4 illustrates the key elements of the enabling on which the community Bamboo Enterprise Groups depend. These include retaining the rights to harvest bamboo and having government approved management plans to do so.

It also includes the impact of factors that add cost to the further down the supply chain, and which therefore affect the competitiveness of bamboo and bamboo products coming from the EPL: the slow and costly export procedures, transport tax and the relative remoteness of the communities from the centres of demand.

Figure 4. Key elements of the enabling environment on which the community Bamboo Enterprise Groups are reliant



WWF sees FSC certification as a key mechanism for ensuring sustainability of the bamboo resource management. The community Bamboo Enterprise Groups would quality for the simplified 'Small, Low Intensity Managed Forest' (SLIMF) certification procedures as only bamboo is being harvested[3]. Even so, FSC certification is a complicated and difficult process. It is also costly: including pre-audit,

[3] Forest Stewardship Council (2004). SLIMF Eligibility Criteria FSC-STD-01-003 (V1-0) EN. The criteria state that "A forest management unit consisting of natural forest in which only NTFPs are harvested would, therefore, qualify as a 'low intensity' FMU"

certification audit and annual surveillance audits the process could cost in the region of US$30-40,000 for a 5 year certification period. Market demand for FSC certified bamboo products is therefore an important component of the enabling environment for sustainable bamboo production if the costs of certification are to be covered.

Whilst not strictly speaking part of the commercial activities of the value chain, improved conservation is the rationale for WWF setting up the bamboo pilot and therefore underlies all WWF's activities within the market system. The bamboo pilot should complement and not counteract WWF's other interventions in the EPL, such as enforcement of forest protection. WWF staff articulate the belief that by gaining a good income from bamboo, honey and resin, and gaining social status from running successful businesses, the communities will place higher value on the forest, and therefore conserve it.

Finally, there are many other aspects of the enabling environment – including implementation of government policies on enterprises, risks from extreme weather and climate change, the presence of organised forest crime, amongst others – that could potentially affect the viability of the community Bamboo Enterprise Groups. A comprehensive assessment of all these potential factors is unfortunately outside the scope of this report, but some existing analyses are available[4].

3 KEY SENSITIVITIES WITHIN THE BAMBOO MARKET SYSTEM

This section contains a strategic assessment of the sensitivities of the market system: issues that are critical to the strategic and practical success of the project over the long term. It identifies nine key sensitivities.

1.6 Sensitivities within the value chain

Two key sensitivities are identified within the bamboo value chain: the capacity of the community groups to run sustainable bamboo enterprises and the total reliance on one purchaser (Figure 5).

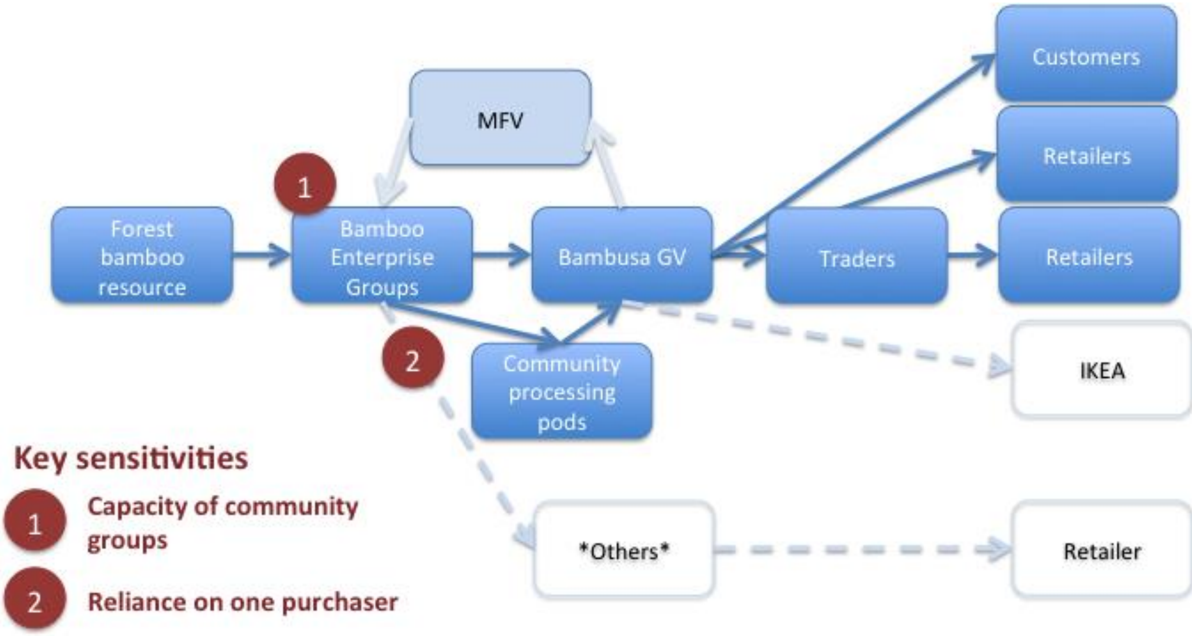
1.6.1 Capacity of community groups

As described in the section above, the community Bamboo Enterprise Groups are newly formed, have yet to begin trading, and are still understandably a long way from being viable, self sustaining community enterprises.

WWF staff are aware of how much support the community Bamboo Enterprise Groups will need. As well as supporting the formation of the groups, WWF have provided significant support on sustainable bamboo harvesting and management. Far more work remains to be done to build the Groups' business capacity.

[4] For example, ILO (2014). *Enabling Environment for Sustainable Enterprises in Cambodia*; and Government of Cambodia (2014). *National Strategic Development Plan 2014 – 2018*. July 2014 (English Translation) - http://www.mop.gov.kh/Home/NSDP/NSDP20142018/tabid/216/Default.aspx

Figure 5. Key sensitivities within the EPL bamboo value chain



1.6.2 Reliance on one purchaser

Abundant experience from the practice international development organisations shows that emergent community enterprises that are reliant on one purchaser rarely survive for long. Ensuring community enterprises have more than one purchaser is considered a basic step by development practitioners because it significantly reduces risk to the enterprise, and reduces the power differential between seller and buyers.

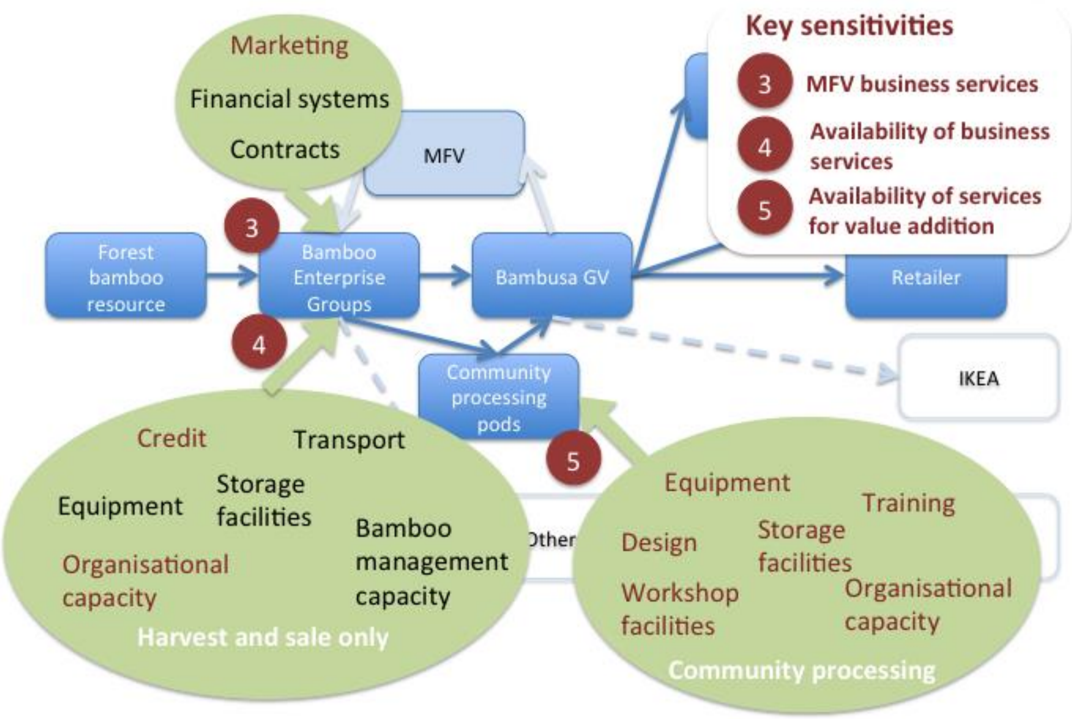
Consultation with the Rattan Association of Cambodia revealed limited scope for bamboo furniture domestically: they doubted a significant demand as timber furniture is strongly favoured, bamboo furniture not well known, and there is little appetite for new materials amongst the Cambodian public.

The multiple end-uses of bamboo do provide a degree of insurance against having a unique purchaser for the products. However, the absence of multiple purchasing enterprises still represents a risk to the long-term viability of the community Bamboo Enterprise Groups.

1.7 Sensitivities within market services

Three key groups of sensitivities are identified amongst the market services on which the community Bamboo Enterprise Groups will ultimately depend (Figure 6). These are the capacity of Mondulkiri Forest Ventures, and the availability of and engagement with key business support and financial services. If the community Bamboo Enterprise Groups are to engage in significant value addition, another suite of services will have to be present to support manufacturing.

Figure 6. Key sensitivities within bamboo market services.



1.7.1 Mondulkiri Forest Ventures

Mondulkiri Forest Ventures is intended to bring all NTFPs from the EPL – honey, resin and bamboo – under the same umbrella. Within the bamboo market system, the role of Mondulkiri Forest Ventures at the current time appears to be confined to receiving money from Bambusa GV and transferring it to the community Bamboo Enterprise Groups. It is not clear what value this service adds.

The Mondulkiri Forest Ventures shop in Senmonorom contains mainly honey and honey products. The shop has few customers. It is expecting to retail bamboo products, but, with few customers, is unlikely to sell a significant volume of community-made bamboo products.

Mondulkiri Forest Ventures could in theory play an active role in marketing for the community Bamboo Enterprise Groups: finding new purchasers, developing products, etc. Mondulkiri Forest Ventures are currently unable to perform this sort of active role for the community Bamboo Enterprise groups, and it is not clear whether they have the capital, entrepreneurial and business skills to do so. The development of Mondulkiri Forest Ventures has been held back by the failed recruitment of a business manager.

1.7.2 Availability of business services

Most of the services required to transform the community Bamboo Enterprise groups into functioning enterprises are currently supplied by WWF. This is in economic terms a form of subsidy to the bamboo market system, which is unlikely to be sustainable in the long term. Experience from other sectors suggests that, once a community enterprise is up and running, these market services are better provided by businesses rather than by NGOs. Many actors in the international development sector now prefer to use existing service providers or set up independent businesses to provide these services rather than do it themselves.

1.7.3 Availability of services for value addition

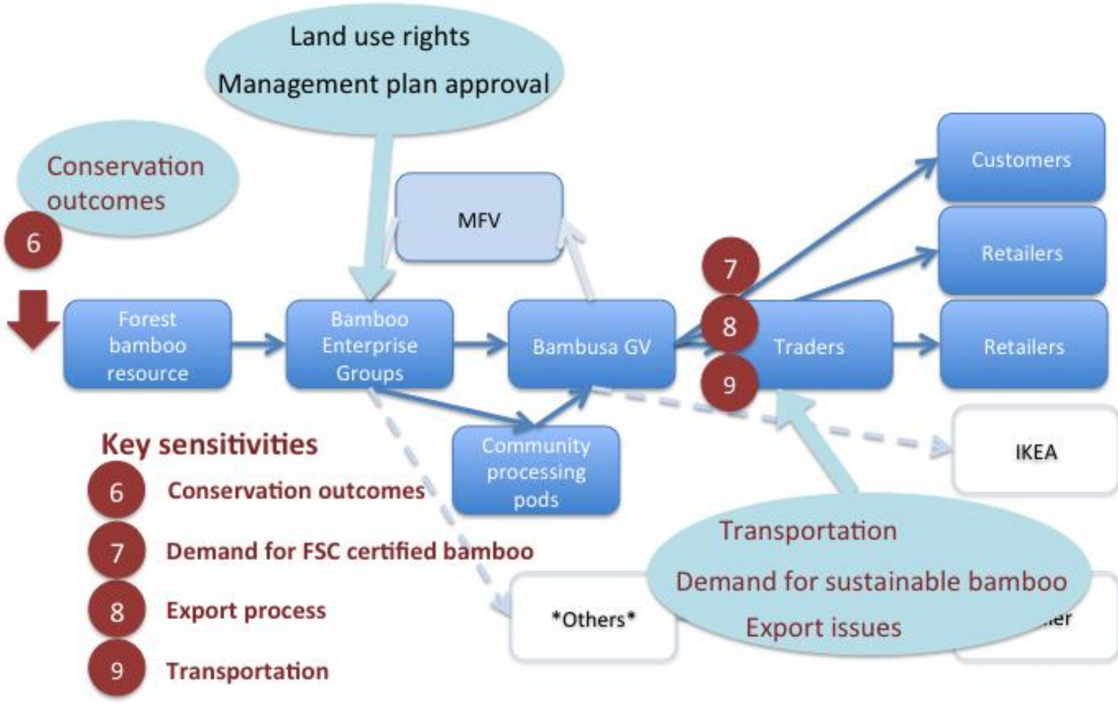
As currently planned, Bambusa GV intends to supply training, product design, equipment, etc., to the communities for processing and manufacture of bamboo products. There is no problem with this in the short term, as Bambusa GV has a business need to make the value chain work and a commitment to support the communities. However, it emphasises again the reliance of the community Bamboo

Enterprise Groups on a single company. It is also questionable how much Bambusa GV will want to 'hold the hands' of community processing groups in the long-term: their principal commercial role is buying bamboo, manufacturing and selling bamboo products rather than providing day-to-day business and technical support to producers.

1.8 Sensitivities within the enabling environment

Four sensitivities are identified within the enabling environment are identified. These are the conservation outcomes of the bamboo pilot, the demand for FSC certified bamboo products, export processes and transport tax (Figure 7).

Figure 7. Key sensitivities within the enabling environment



1.8.1 Conservation outcomes

WWF's strategic objective is to conserve nature. The bamboo pilot is one intervention that WWF are undertaking within the EPL landscape, with others including honey and resin collection, and supporting law enforcement against activities such as illegal land clearance and logging. The CPAs are intended to form a buffer zone against such illegal activities, within which sustainable use of forest resources can provide a viable income for the communities living there.

Providing alternative or additional forest based livelihoods is a common approach within conservation NGOs. It is also problematic. The issue of how well the bamboo pilot is set up to deliver positive conservation outcomes within the current WWF EPL programme is therefore the single most important issue within the bamboo pilot project:

- The Fifth IUCN World Conservation Congress in 2012 passed a motion calling for a critical review of the biodiversity benefits of alternative livelihood projects[5]. This was driven by the understanding that such projects attract significant amounts of donor

[5] International Union for the Conservation of Nature (IUCN): Motion 145. World Conservation Congress, 6–15th September 2012; Jeju, Korea; 2012. Accessed online June 2015.

funding, but that there is little evidence that they are effective in delivering conservation outcomes.

- An increasing amount scientific evidence shows that it is rare for improved livelihoods to result in positive conservation outcomes. In the most robust recent study, a systematic review of 106 projects that aimed to create alternative and additional livelihoods for communities, only one was found to have delivered improved conservation[6]. Whilst this is partly because conservation outcomes are often poorly monitored, it is also partly because the incentives and disincentives for conservation are often indirect and weak. The same study found several livelihoods projects that had negative impacts on biodiversity or on communities' attitude to conservation.
- In the case of the EPL bamboo pilot, cutting bamboo will have a negative conservation impact compared with the current situation where communities cut only a small amount of bamboo for home use. The increased presence of people, noise from chainsaws, access trails, and other consequences of commercial harvesting will all negatively affect the forest.
- The conservation benefits of the pilot will therefore have to outweigh the negative impacts of harvesting bamboo – or at least not work against the other conservation activities in the EPL landscape. The main conservation threats identified by consultees included forest clearance for agriculture, hunting, and illegal logging. There is no direct relationship (incentive or penalty) between harvesting bamboo and any of these threats, and indeed it is not clear that the community could entirely control these activities if carried out by other more powerful elements of society.
- There are also no direct incentives or disincentives to prevent overharvesting of bamboo: if a trader comes to the communities (and especially if they offer a better price), there is nothing to stop the communities from realising their considerable bamboo asset.
- A disincentive for overharvesting, illegal logging, land clearance and hunting that is proposed by WWF is FSC certification. Certainly, FSC certification precludes these activities, and detection of them could result in loss of a certificate. However, certification audits and annual surveillance audits are designed to look at many aspects of sustainability (the FSC forest management standard has 10 Principles and 70 Criteria) and so are not always able to detect these activities. With the demand for FSC certification weak, and premiums for FSC products far from guaranteed[7], the disincentive of loosing a certificate may not be effective.

1.8.2 Demand for FSC certified bamboo

As mentioned in Section above, WWF is partly reliant on the community Bamboo Enterprise Groups gaining FSC certification as a means of incentivising sustainable management of the forest.

None of the people interviewed believed that there was any interest in or demand for FSC certified bamboo products in the domestic market. FSC certification is, however, virtually a prerequisite for certain markets, such as exporting to the EU, and for selling to some companies with international supply chains (e.g., IKEA). There are currently 41 FSC Forest Management certificates and 1,801 Chain of Custody Certificates for bamboo and bamboo products globally[8] (Annex 2). Bambusa GV also expressed an interest in FSC certification as they see it as a way to access export markets in the future. In most cases the cost of certification is borne by the producer with little or no market premium paid, and indeed some companies such as IKEA believe that producers *should* bear this cost as their business improves as a result of the certification process.

[6] Roe, D., Booker, F., Day, M., Zhou, W., Allebourne-Webb, S., Hill, N.A.O., Kumpel, N., Petrokofsky, G., Redford, K., Russell, D., Shepherd, G., Wright, J. & Sunderland, T.C.H (2015). Are alternative livelihood projects effective at reducing local threats to specified elements of biodiversity and/or improving or maintaining the conservation status of those elements? Environmental Evidence; 4:22.

[7] There are of course examples of premiums from FSC certification being paid to forest management enterprises, such as the WWF rattan project in Laos, but research by the author suggests that this happens in less than 25% of cases.

[8] http://info.fsc.org/certificate.php Last accessed 21 January 2016.

1.8.3 Export processes

Exporting bamboo and bamboo products from Cambodia is more difficult than in many countries in Asia. As a Non-timber Forest Product (NTFP) export is restricted, and a permit needed. The process for obtaining this permission is extremely slow, unless government officials are paid to speed up the process. However, the procedure can be simplified in two circumstances, which provide important opportunities to reduce the otherwise negative impact of export processes. Firstly, large exporters can apply for an annual quota rather than needing to apply for permissions for each individual consignment. Secondly, lightweight finished products can be exported as normal because they no longer class as an NTFP.

In addition, the Government of Cambodia does not grant exemption from export duty for enterprises during the first years of export, unlike governments in some other bamboo exporting countries such as Malaysia and Vietnam.

All of these factors combine to put some Cambodian bamboo products at a competitive disadvantage compared with similar products from many other bamboo-producing countries in Asia. This indirectly affects the community Bamboo Enterprise Groups by reducing the demand for bamboo and bamboo products from Cambodia.

1.8.4 Transportation

With no functioning value chain as yet, it was not possible to assess issues of transportation of bamboo and bamboo products from the EPL. However, bamboo is likely to be broadly similar to rattan, where few traders obtain transport permits and even those that so have to make payments to various officials (government and armed forces) as the products are moved from one part of the country to another. With rattan, these payments may reach over 12% of the value of the transported material[9], but the comparative figure for bamboo is unknown. In addition, Mondulkiri is relatively distant from the main customer base and export hubs in Cambodia.

These transportation issues serve to put EPL bamboo products at a competitive disadvantage compared with similar bamboo products from many other bamboo producing countries in Asia. As with the issues surrounding exportation, this will serve to generally reduce demand for Cambodian bamboo.

2 Prioritisation of issues

This section presents a prioritisation of the sensitivities in the bamboo market system that were described in the preceding section. The highest priority issues are conservation outcomes, capacity of the community Bamboo Enterprise Groups, reliance on one purchaser, and the capacity of Mondulkiri Forest Ventures. Additional issues that will require attention in the medium-term include the availability of market services for the community Bamboo Enterprise Groups and any value addition they attempt, and FSC certification.

The nine issues identified as sensitivities to the EPL bamboo project will all have consequences for the project as it continues. However, they are not all of equal importance. It is therefore necessary to prioritise them.

The following criteria are used to prioritise the nine sensitivities:

- **Risk to WWF's strategic objectives**. WWF's ultimate objective is to conserve wildlife, with an additional proximate objective in the context of the bamboo pilot of creating sustainable community bamboo enterprises. Each sensitivity is scored as low, medium or high risk to this strategic objective.

[9] Ros, S (2010). Policy Gap Analysis on Rattan Trades in Cambodia. WWF Greater Mekong and WWF Cambodia.

- **Immediacy of risk**. The sensitivities are scored as immediate risk, medium or longer-term, according to how immediate the risk is to WWF's objectives.
- **Tractability**. Some of the sensitivities in the market ecosystem are within WWF's capacity and mandate to mitigate, others less so. Sensitivities are scored as high if they could be reasonably expected to be dealt with under a project, to low if they are outside WWF's influence.

Table 1 describes the prioritisation.

Four of the identified sensitivities score high or medium on risk, immediacy and tractability. It is suggested that these form the priority as WWF recalibrates the project. These are:

- **Capacity of community Bamboo Enterprise Groups.** WWF staff have only recently set up the Groups, and are well aware of their limited capacity. It is perfectly normal at this stage in the development of a community enterprise that the capacity to run a business is limited, and on-going investment in their capacity is necessary if they are to become viable enterprises.
- **Reliance on one purchaser.** Evidence from a myriad of international development projects shows the long-term risk of having a community enterprise that is wholly dependent on a single purchaser. Fortunately, Bambusa GV are highly committed to the project, have an ethical mindset, and bamboo has multiple end uses, which helps to spread some of the risk across numerous value chains. Nonetheless, there is risk, and one that can easily be mitigated by facilitating linkages with other purchasers.
- **The capacity of Mondulkiri Forest Ventures**. MFV currently act as a conduit for money between Bambusa GV and the community Bamboo Enterprise Groups. As described in Section 3, they are not convincing as either an outlet for community made bamboo products or as an enterprise that would be effective in finding additional markets for the community Bamboo Enterprise Groups. The absence of this support presents a medium- to long-term term risk to the community Groups, but one that is within WWF's capacity to resolve.

Table 1. Prioritisation of the key market system sensitivities

Key sensitivities		Risk to objective	Immediacy of risk	Tractability
1	**Capacity of community groups**	High: capacity to manage an bamboo enterprise is fundamental to the pilot	High: An ongoing risk, hence this being a main focus of WWF's input to date	High: WWF have staff dedicated to supporting the community groups
2	**Reliance on one purchaser**	Medium: reliance on one purchaser creates risks to the enterprise groups	Medium: the risk – should it happen – is likely to be within years not months	High: there are sufficient end uses for bamboo that additional purchasers should be identifiable
3	**MFV capacity**	High – MFV do not have the capacity to play a long-term role in the viability of the bamboo Groups	Medium: in the immediate term, MFV are playing little role in the market system	High: reconceptualising what MFV needs and hiring the right staff is within WWF's role
4	**Availability of business services**	Medium: without a constellation of business services enterprises often struggle to last long beyond projects.	Medium: Risk of dependency on WWF and Bambusa is medium-term	Medium: Some business services will be available, others perhaps not
5	**Availability of services for value addition**	Medium: without a constellation of business services enterprises often struggle to last long beyond projects.	Medium: Risk of dependency on WWF and Bambusa is medium-term	Medium: Some business services will be available, others perhaps not
6	**Conservation outcomes**	High: positive conservation outcomes is the sole purpose of WWF's project	High: mechanisms to guarantee conservation outcomes are much more likely to succeed if embedded at the outset	High: developing a rigorous Theory of Change is well within WWF's mandate and competency
7	**Demand for FSC certified bamboo**	Medium: FSC certification is currently a proposed mechanism for incentivising conservation but with minimal demand the cost may outweigh the benefit for the Enterprise Groups.	Low: The community Bamboo Enterprise Groups are not ready for full certification in the near term.	Low: WWF are unlikely to be able to stimulate significant national demand from customers or retailers
8	**Export process**	Medium: Can add cost and time to export markets, but for some products and exporters the procedure is relatively straightforward.	Low: No export is planned in the short-term	Low: The responsibility of trading companies to resolve
9	**Transportation process**	Medium: Adds cost to any bamboo products coming from EPL, but the additional cost may be relatively small	Medium: will affect all products	Low: The responsibility of trading companies to deal with

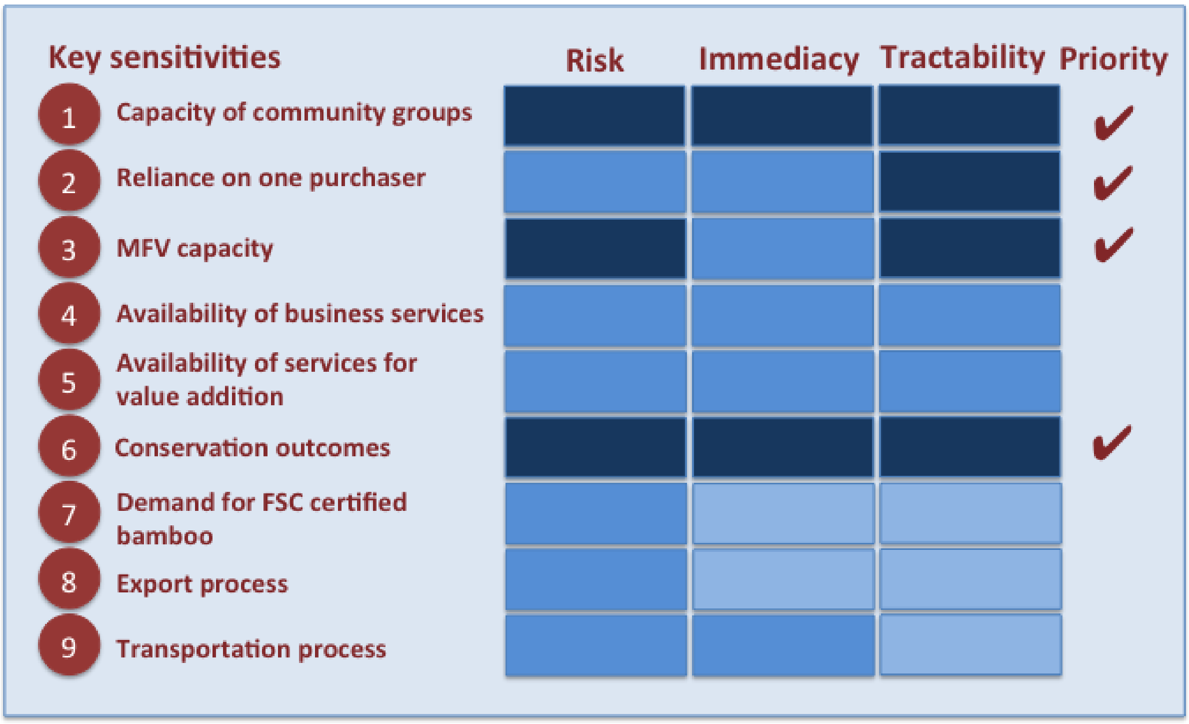
- **Conservation outcomes**. As noted earlier, there is no direct link between the activity of harvesting bamboo and the main conservation threats of illegal land clearance, logging and hunting. Furthermore, the track record of additional or alternative livelihoods projects resulting in positive conservation outcomes is weak. The bamboo pilot is only one of a suite of WWF's conservation activities within the EPL, but WWF need to be confident that it will contribute positively to the broader conservation outcomes.

The remaining sensitivities can be divided conveniently into those that will create a long term risk to the viability of the community Bamboo Enterprise Groups about which WWF can build towards over the next 2-3 years, and those that either have to be just 'lived with' or for which other actors are responsible:

- **Issues for the medium- to long-term.** This includes the availability of market services (financial, technical and business) for the community Bamboo Enterprise Groups and any value addition they attempt. It also includes linking the Bamboo Enterprise Groups to those markets where there is a demand for FSC certified bamboo products (e.g., Europe).
- **Low priority Issues.** The slow and costly procedure for exporting some types of bamboo products from Cambodia, the cost of transportation and relative remoteness of the EPL from centres of demand are issues that add cost to, and therefore will reduce the competitiveness of, bamboo products fro the EPL. These issues are created by a combination of government policy, corruption and the physical location of the communities, and hence are not issues that WWF can easily resolve. Besides, they are issues that fall under the responsibility of trading companies, rather than WWF, and hence it is businesses such as Bambusa GV that will find the most efficient ways of minimising these risks.

The priorities are summarised in Table 2.

Table 2. Summary of prioritisation on the key market system sensitivities



3 RECOMMENDATIONS

This section provides recommendations for how WWF can address the priority issues within the EPL bamboo market system.

3.1 Overview

WWF's bamboo pilot project in the Eastern Plains landscape is built on the back of WWF's long-term commitment to the EPL, and forms part of the interaction between WWF and the communities to foster conservation and protect wildlife in the CPAs and adjoining protected area. In addition to these undoubted strengths, WWF has identified a company, Bambusa Global Ventures, that is energetic, has a strong commitment to the community Bamboo Enterprise Groups, and which combines an ethical mind-set alongside its commercial imperatives. These are significant strengths on which to build a successful conservation project. The task at hand is to make sure that these foundations are used to maximise conservation and social benefits.

This section provides recommendations on the four prioritised market system sensitivities, with broader recommendations about the three medium- to long-term issues.

3.2 Capacity of the Bamboo Enterprise Groups

Recommendation 1: WWF continues to prioritise capacity development of the community Bamboo Enterprise Groups, ensuring that it has the right capacities itself to do so.

WWF staff are well aware of the low capacity of the Bamboo Enterprise Groups, and work hard to build their capacity. This emphasis should be maintained. However, with bamboo harvesting about to start, and significant training on sustainable bamboo management already delivered, the emphasis can shift towards building the Groups' capacities as businesses: group organisation, enterprise management, social aspects of the Groups' structure and helping them to balancing farming and bamboo (see Section 2). This shift provides a good opportunity for WWF to review what skills and capacities it needs to best support the Bamboo Enterprise Groups. It also provides a convenient 'window' to start bringing other actors into the market system, to provide long-term, sustainable market services to the Bamboo Enterprise Groups (Recommendation 5).

The suggested process here of reviewing the Bamboo Enterprise Groups needs, planning how to deliver them, reviewing WWF's capacity to deliver them, increasing internal capacity and identifying organisations to partner with can be done over the next 3-6 months.

3.3 Reliance on one purchaser

Recommendation 2: WWF should facilitate contracts between the community Bamboo Enterprise Groups and at least one other purchaser.

WWF has made what looks like an excellent choice to link Bambusa GV to the community Enterprise groups. Bambusa GV is an energetic company that clearly knows their business and is committed to the communities as a source of bamboo. It is no criticism of anyone to point out that a great deal of practice in international development – from organisations for whom creating and nurturing community enterprise is a core function – shows that new enterprises that are reliant on one purchaser are more exposed to risk and more likely to fail than those that are set up with multiple purchasers.

Negotiating multiple purchasers often meets with resistance from the initial buyer, who understandably wants a secure source of materials and products. However, having multiple buyers is critical to the long-term viability of the community Bamboo Enterprise Groups, and therefore should also be seen as in the buyers long-term interest.

Of the additional purchasers that WWF have relationships with, IKEA seems a more long-term possibility, and would need a manufacturer such as Bambusa GV as an intermediary between the company and the community groups. The enterprises within the Rattan Association of Cambodia may provide a small market. However, there are other companies in Cambodia who make high-end products that are more likely to see the value of supporting conservation and may provide larger additional markets. WWF should pursue these options over the next 3-12 months.

3.4 Mondulkiri Forest Ventures

Recommendation 3: WWF reconceptualise MFV and recruit an entrepreneur to run it.

Mondulkiri Forest Ventures (MFV) is expected to transfer money from Bambusa GV to the community Bamboo Enterprise Groups, a role that provides minimal value in the current market structure. Yet MFV *could* be an important part of the market system if they had the capacity to promote the community Bamboo Enterprise Groups with other buyers, concluding contracts for orders, developing products, etc. To play this sort of worthwhile and active role, MFV – an enterprise itself – need to be headed by an entrepreneur: someone who will be relentless searching out opportunities and closing deals. This will require WWF to reconsider what MFV is, and find and recruit the right sort of person. The recent failed recruitment of a business manager for MFV can be seen to have presented an opportunity for this, and that role should be now be thought of as the director of a small enterprise. Repurposing MFV in this way should be achievable within the next 3-6 months.

3.5 Conservation outcomes

Recommendation 4: WWF explicitly reflect on the Theory of Change for how the bamboo pilot project will yield conservation outcomes, and build in mechanisms that directly reward positive conservation activities and directly penalise activities that threaten conservation.

Positive conservation outcomes are the strategic purpose for the EPL bamboo pilot project. Improved conservation is possible, but the current theory of change relies heavily on the notion that increased community income will lead to a reduction in the current threats to wildlife (hunting, logging, land conversion). There is scant scientific evidence that additional nature-based livelihoods projects commonly produce such outcomes. There is therefore a danger that the bamboo pilot might work against the other conservation activities that WWF is undertsking in the EPL landscape.

WWF need to devote time and thought to examining, and if necessary re-designing, the theory of change behind the bamboo pilot. This will entail no more than a small workshop, preferably including some external people to provide different points of view. A further recommendation would be that the project design includes livelihoods activities that are directly linked to conservation outcomes (Box 2). This provides the best opportunity of ensuring that improved livelihoods will generate positive conservation outcomes. Finally, WWF need to consider how to invest in monitoring the conservation outcomes of the bamboo pilot.

Box 2. Linking community income to conservation outcomes

Development impact bonds for forest conservation — Development impact bonds (DIBs) provide private upfront funding for development programmes. If the development programme delivers on a set of pre-agreed outcomes, then the private investors are remunerated by donors or host-country governments. Therefore development impact bonds facilitate a results based approach and performance risk is transferred to the private sector. A forest impact bond is a contract between a private investor and the public sector, committing to pay for environmental and social outcomes, which could include forest management, poverty alleviation, health and education, all tied to conservation of forests. Financial returns are contingent on forest protection. For certain threats, such as forest clearance or illegal logging, performance could be monitored cheaply through remote sensing. The Rockefeller Foundation has supported the development of the concept of 'Forest

Resilient Impact Bonds' through their Zero Gap Portfolio.

Giant Ibis Ecotourism[10] – The Wildlife Conservation society set up an ecotourism project in the Northern Plains of Cambodia. Tourists – who are principally birdwatchers – are encouraged to pay a premium if they are successful in seeing a giant ibis. The premium goes to a community fund, and hence all members of the community benefit from conserving the breeding, roosting and feeding habitats of the ibis. There is therefore a direct link between conservation and the additional income gained by communities.

3.6 Issues for the medium- to long-term

Recommendation 5: WWF support the community Bamboo Enterprise Groups to access market services for themselves, gradually reducing their project dependency for market services.

The first recommendation for the medium- to long-term relates to the need to have a suite of market services (financial, technical and business) for the community Bamboo Enterprise Groups and any value addition they attempt. This is necessary for the long-term viability of any enterprise, and particularly after the NGO project cycle comes to an end. This is not to suggest that WWF 'abandon' the community Bamboo Enterprise Groups at such an early stage in their development: they still need significant support. However, WWF can begin to introduce existing actors (businesses and government services) into the market system over the next 1-3 years, so that the Groups' can begin to buy in the financing, technical and business support, equipment and other services they require from businesses and the government rather than remaining wholly dependent on WWF and Bambusa GV. This is closely related to Recommendation 2.

Recommendation 6: FSC certification should be pursued if there is clear market demand, but a more important focus in the short term is ensuring that the community Bamboo Enterprise Groups become viable businesses.

FCS certification is complex and costly, even for well-established and professional businesses. At present, there is little market demand for FSC certified bamboo products within Cambodia and no definite external market for bamboo from the EPL that would demand FSC certification and cover the additional costs of certification.

Moreover, there is a danger that focusing heavily on certification now might divert energy away from some of the 'business basics' of creating viable enterprises (i.e., Recommendations 1, 2 and 3) at a time when the community Bamboo Enterprise Groups and Mondulkiri Forest Ventures are at a very early stage in their development.

FSC certification plays another role in WWF's thinking, as a mechanism for incentivising conservation measures and penalising poor conservation. This is pushing the purpose of FSC certification to its intended limits and emphasises the need for further reflection on the Theory of Change underpinning the bamboo pilot (Recommendation 4).

In the longer term, potential export markets (e.g., to the European Union) may provide a strong demand for FSC certified bamboo products. Linking the community Bamboo Enterprise Groups to these markets (e.g., via Bambusa GV) should remain an area for WWF and commercial partners to explore, and if definite market opportunities arise then FSC certification will then become an increasing priority.

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[10] Clements, T., John, A., Nielsen, K., An, D., Tan, S., & Milner-Gulland E.J. (2010). Payments for biodiversity conservation in the context of weak institutions: Comparison of three programs from Cambodia. Ecological Economics 69; 1283–1291

ANNEX 1. PEOPLE INTERVIEWED

Organization	Person
Bamboo Enterprise Group, Chi Khlorb,	Various
Bamboo Enterprise Group, Sre Thom	Various
Bambusa Global Ventures	Richard Dansey *CEO*
Rattan Association of Cambodia	Sovann Piseth *RAC Chairman*
Bureau Veritas	Vo Thuy Huong *Business Development Department*
Wildlife Conservation Society (Cambodia)	Alex Diment *Senior Technical Advisor*
	Ashish John *Community Conservation Management Advisor*
WWF	Mr. Tam Le Viet *Regional Rattan and Bamboo Project Manager*
	Koulang Chey *Senior Rattan & Bamboo Project Officer*
	Mr. Chey Theb *Livelihood Project Officer*
	Sophoeun Khorn *Senior Project Officer*
Grandis Timber Company	*Nico Strydom* *CEO*
	Ms. Hong Lina, FSC Officer
Consultant	Mr. Khou Eanghourt, *Senior Forestry Expert*
Consultant	Mr. Ros Sotha, *Senior Policy Expert*
Consultant	Lun Yeng, *Business Expert*
Mondulkiri Forest Ventures	Neou Noketh

ANNEX 2: THE BAMBOO TRADE IN CAMBODIA, ASIA AND FSC CERTIFICATION

Globally, China dominates the bamboo trade in terms of value of exports. Outside of Asia, the EU is by far the biggest importer, followed by the USA and Japan. Cambodia's largest bamboo export product is bamboo basketwork, which has declined in recent years (Fig. A1.). The import of bamboo shoots, panels, and flooring has increased significantly in recent years, reflecting an increasing demand for these products, although there is considerable volatility in the trade (Fig. A2).

Figure A1. Bamboo products export value (USD) from Cambodia to the world, 2007–2014 (Data source: http://trade.inbar.int/

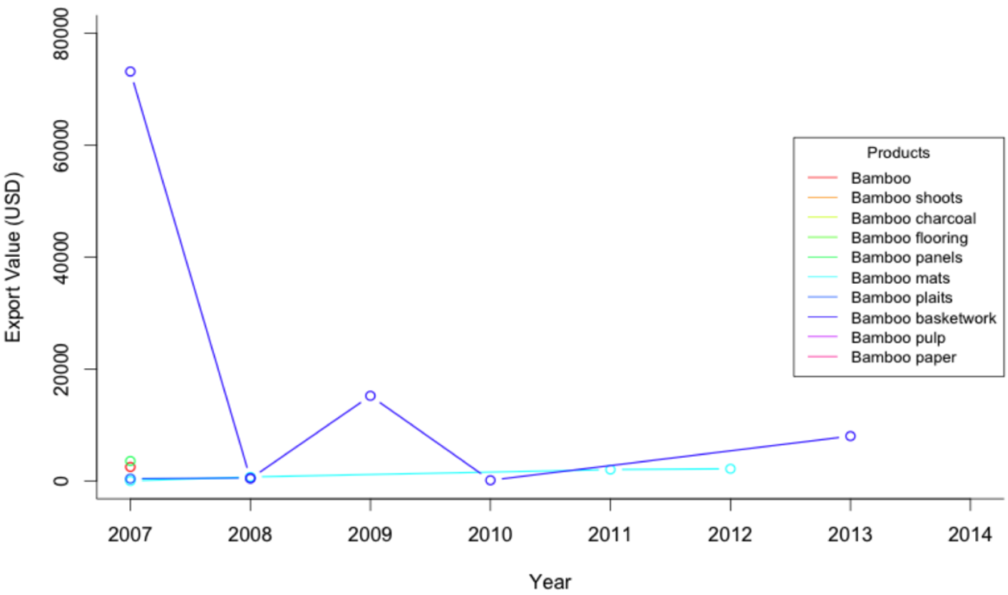
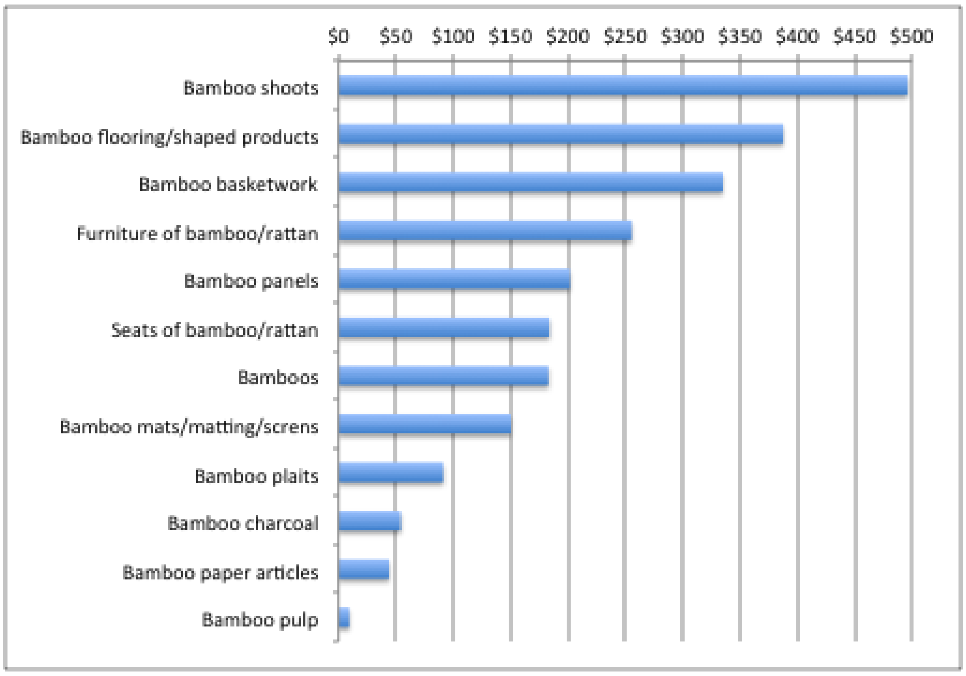


Figure A2. Bamboo products import value (USD) to Cambodia from the world, 2007–2014. (Data source: http://trade.inbar.int/)

Bamboo trade within Asia is large, with imports and exports within the region totalling US$2.39 billion in 2014. The trade is also diverse, reflecting the wide range of end uses of bamboo (Fig. A3), however, over 50% of the value of bamboo imported and exported within Asia is from just three product categories: bamboo shoots, bamboo flooring and shaped products and bamboo basketwork.

Figure A3. The value in million US$ of bamboo products imported and exported within Asia in 2014. (Data source: http://trade.inbar.int/)



Although comparative data is not available, FSC certified bamboo products are likely to be only a very minor component of the global bamboo trade. At the moment, there are only 37 FSC Forest Management/Chain of Custody Certificates within Asia[11], with another 4 in Colombia. Two of these are in India, the rest are in China and no other country within the region has FSC certified bamboo forests. The total area of these certified forest management units in Asia is 135,019 ha[12] compared to a total bamboo resource in Asia estimated at 23,620,000 ha[13]. At a crude estimate, the FSC certified area is therefore about 0.5% of the bamboo resource in Asia: in reality it is less than this because many of the FSC certified forest management units include timber as well as bamboo and hence the area of FSC certified bamboo forest is an over-estimate.

There are currently 1801 valid FSC Chain of Custody certificates. Approximately 29% of these are owned by companies from the Netherlands (reflecting Rotterdam's critical role in imports to the EU) and another 21% by Chinese companies (including Hong Kong). Unfortunately the information on what product categories are FSC certified is not consistently reported.

[11] Data from http://info.fsc.org/certificate.php Last accessed 21 January 2016.
[12] To avoid double counting, where both producer associations and their individual members are certified, only the total area is included.
[13] Lobovikov, M, Paudel, S., Piazza, M, Ren, H., Wu, J. (2007). World Bamboo Resources: A thematic study prepared in the Framework of the Global Forest Resources Assessment 2005. FAO.

STRATEGIC ASSESSMENT OF THE EASTERN PLAINS LANDSCAPE BAMBOO MARKET SYSTEM 2016

WWF

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To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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