



Export Market for Thai Saa Paper (Mulberry Paper)

Analysis and Recommendations

Bangkok/Chiang Mai, July 2005



DEQP (Department of
Environmental Quality Promotion)



Deutsche Gesellschaft für Technische
Zusammenarbeit (GTZ) GmbH
German Technical Cooperation

Cover photograph:
Thai Saa Paper from Chiang Mai

GTZ (ed.): Export Market for Thai Saa Paper (Mulberry Paper). Analysis and Recommendations. Bangkok/Chiang Mai, July 2005.

Prepared by Southeast Asia Consult & Resource Company Limited



Mr. Karl Segschneider, Mr. Prachit Thimakham, Mr. Romlee Maeroh and Mr. Thanthong Thongkreng

GTZ, German Technical Cooperation, Bangkok
Burghard Rauschelbach

Thai-German Programme for Enterprise Competitiveness on behalf of German Ministry for Economic Cooperation and Development (BMZ)

GTZ Office Bangkok
193/63 Lake Rajada Office Complex, 16th floor,
New Ratchadapisek Road, Klongtoey, Bangkok 10112, Thailand
PO-Box 11-1485, Nana, Bangkok 10112, Thailand.
GTZ-Office Bkk: T: +66- (0) 2 661-9273, Fax: -9282
E: gtz-thailand@gtz.de

Summary

This export analysis of the Thai Saa paper industry finds that

- ⇒ Environmental factors of production/product become increasingly important for customer decision on product purchases for import into their countries.
- ⇒ The demand-structure of the Saa paper market needs flexibility as the extent of orders can fluctuate with seasons and is fashion dependent.
- ⇒ Community and cottage industry involvement remain a main production factor.
- ⇒ The Thai Saa paper production industry expects a good to very good expanding export market for their products in the near future.
- ⇒ However, industry-, administration- and product-related structural weaknesses of the industry pose a potential mid-term problem for the producers.

To strengthen the industry four main local policy options can address weaknesses in particular or in an overall fashion:

1. The introduction of standards
2. An increase in technology transfer
3. A streamlining of industry structure
4. Government laws, regulations and incentives

To implement activities under the policies, five basic facilities are proposed as a result of this analysis:

1. Regional Saa Paper Center
2. Saa Paper Standard Board
3. Saa Paper Color Bank
4. Saa Paper Raw Material Bank
5. Saa Paper Eco-Efficiency Promotion Center/Division

Services and training to support future eco-efficient growth of the industry are plentiful. However, they lack a common center for coordination, management and cooperation of the support-structure with the industry.

Analysis primary study target groups Number of target-groups and companies	Analysis secondary study target groups Other groups/companies/organizations interviewed
<ul style="list-style-type: none"> • 19 export companies (4 visited for Semi Structured Interviews) • 5 SME factories and exporters (5 visited for SSI) • 10 community groups/organizations with direct exporting activities (2 visited for SSI) • 7 community groups/organizations – no export activities (1 visited for SSI) 	<ul style="list-style-type: none"> • Industrial Promotion Center Region 1 • Export Promotion Center (OTOP) • Northern Handicrafts Manufacturers and Exporters Association (NOHMEX) • Chiang Mai University • Kasetsart University • Kasetsart Agricultural and Agro-Industrial Product Improvement Institute (KAPI)

Contents	Page
Summary, Study target groups	i
Acronyms (Database of abbreviations)	iii
List of graphs	iv
List of tables	iv
1. Background information <ul style="list-style-type: none"> • <u>General background</u> • <u>The current situation:</u> 	1
2. A preliminary and indicative Thai Saa Paper Industry (TSPI) analysis with focus on export <ul style="list-style-type: none"> 2.1 <u>The SPPC structure</u> 2.2 <u>Saa-paper production and management principles</u> 2.3 <u>Locally available knowledge on other than the commonly used saa paper production methods</u> 2.4 <u>Demand-structure of saa-paper importers</u> 2.5 <u>Future saa paper export developments/expectations from a TSPI perspective</u> 2.6 <u>The importance of environmental issues and priorities for buyers, i.e. importers, of TSPI products</u> 	2 4 5 7 8 8
3. Local policy options for the GTZ to support eco-efficiency of TSPI export products	9
4. Recommended intervention tools to improve eco-efficiency for the TSPI in the context of the Programme for Enterprise Competitiveness <ul style="list-style-type: none"> 4.1 Recommendations and suggestions 4.2 Facilities to improve eco-efficiency for the TSPI <ul style="list-style-type: none"> <u>Facility 1: Regional Saa Paper Center</u> <u>Facility 2: Saa Paper Standard Board</u> <u>Facility 3: Saa Paper Color Bank for Communities</u> <u>Facility 4: Saa Paper Raw Material Bank</u> <u>Facility 5: Saa Paper Eco-Efficiency Promotion Center/Division</u> 	12 17 18 19 20 20 21

Attachments :	
<ul style="list-style-type: none"> • Bibliography 	I

Acronyms (Database of Abbreviations)

Abbreviation	Full Name/Expression
CBC	Color Bank for Communities
CE	Community Entrepreneur
CMU	Chiang Mai University
DEP	Department of Export Promotion
DEQP	Department of Environmental Quality Promotion
EEP	Eco – Efficiency Program
EMS	Environment Management Systems
GTZ	German Technical Cooperation
IT	Information Technology
KAPI	Kasetsart Agricultural and Agro-Industrial Product Improvement Institute
KU	Kasertsart University
MES	Mulberry Export Standards
MoNRE	Ministry of Natural Resources and Environment
MPS	Mulberry Product Standards
NOHMEX	Northern Handicrafts Manufacturers and Exporters Association
OTOP	One Tumbon One Product
PDR Laos	People’s Democratic Republic of Laos
PPP	Public Private Partnership
PPS	Pulp & Paper Standards
PR	Public Relations
PREMA	Profitable Environment Management
SEA-C.R.	Southeast Asia consult & Resource Company Limited
SIP	Sustainable Incentive Principle
SMEs	Small and Medium Enterprises
SPPC	Saa Paper Production Chain
SPSB	Saa Paper Standard Board
SSI	Semi Structured Interviews
TOR	Terms Of Reference
TSPI	Thai Saa Paper Industry
WS	Workshop

List of Tables

Table	Content	Page
Table 1a:	Available services that result in increased/new product marketing options	5
Table 1b:	Available services that result in increased/new product marketing options	6
Table 1c:	Available services that result in increased/new product marketing options	6
Table 2:	Available production technologies that result in increased/new product marketing options	7
Table 3:	Future saa paper export developments/expectations from a TSPI perspective	8
Table 4:	Environmental indicators influencing purchasing behavior of importers of saa-paper raw materials and products	8
Table 5:	Possible standards for the TSPI	9
Table 5a:	Possible standards for the TSPI – focus export market	10
Table 6:	Technology transfer options to strengthen the TSPI	10
Table 7:	Summary of options to adapting TSPI structure to increase eco-efficiency	11
Table 7a:	Possible incentive strategies to support the TSPI	11

List of Graphs

Table	Content	Page
Graph 1:	Saa paper production chain in Thailand	2
Graph 2:	Saa Paper Standard Board	14
Graph 3:	Saa Paper Color Bank	15
Graph 4:	Saa Paper Color Bank	16

1. Background information:

General background:

Compliance with international environmental standards and intelligent management has increasingly become a pivot for competitiveness in the global market. The Thai German Partnership Programme for Enterprise Competitiveness combines both approaches in its eco-efficiency in industry component.

Programme activities center on the Thai agro-industry as a major stakeholder in the country's future market development options. Here, a special focus to enhance competitiveness of SMEs is improving business development services and eco-efficiency. To implement the programme five main sectors were identified for activities: The shrimp-farming, palm-oil, tangerines, longans, leeches and mulberry paper. The latter sector is focus of this study.

The current situation:

The Thai Saa (Mulberry) Paper Industry (further referred to as TSPI) has experienced steady annual growth of 10-20% over the last 25 years. Its products have shifted from goods for basic local needs to luxurious goods, with between 65% and 80% of the products being exported. The TSPI niche-market generates approximate annual export revenues of 50-70 million US\$.

TSPI relies heavily on imported raw materials, totaling 85% of all dried mulberry bark used in production. About 300 Thai families that are engaged in paper production depend on just two raw material traders/importers. Highest grade raw material (Super A), which is almost exclusively harvested in Laos PDR, is mostly exported for processing outside of Southeast Asia. About 5000 families working in the paper-handicraft production rely mainly on 6 larger companies for export of finished products. Competitive advantages and future growth of TSPI increasingly depend on non-mulberry raw materials and product trends in the export markets. A cheap labor force remains instrumental for the production chain from raw material to finished product.

The current structures of TSPI and the Saa Paper Production Chain (further referred to as SPPC) have a number of obstacles and weaknesses. These have to be overcome to reach eco-efficient saa-paper production and processing/finishing. Therefore, the Department of Environmental Quality Promotion (DEQP) of the Thai Ministry of Natural Resources and Environment (MoNRE) has in the past actively promoted the development of this sector. Strong efforts have been made to increase TSPI's competitiveness through applying advanced production technologies and improved knowledge dissemination. An additional dimension currently being added to those efforts is that of product-analysis and how product characteristics can positively impact on TSPI and SPPC development options, especially with regard to the Saa Paper Export Market.

This is also the overall context of the following market analysis under the following objective:

- ⇒ Analyze and outline the Thai Saa Paper Industry and their production chains with regard to export.
- ⇒ Indicate and outline strategies for further decisions on implementation
- ⇒ Sketch intervention tools

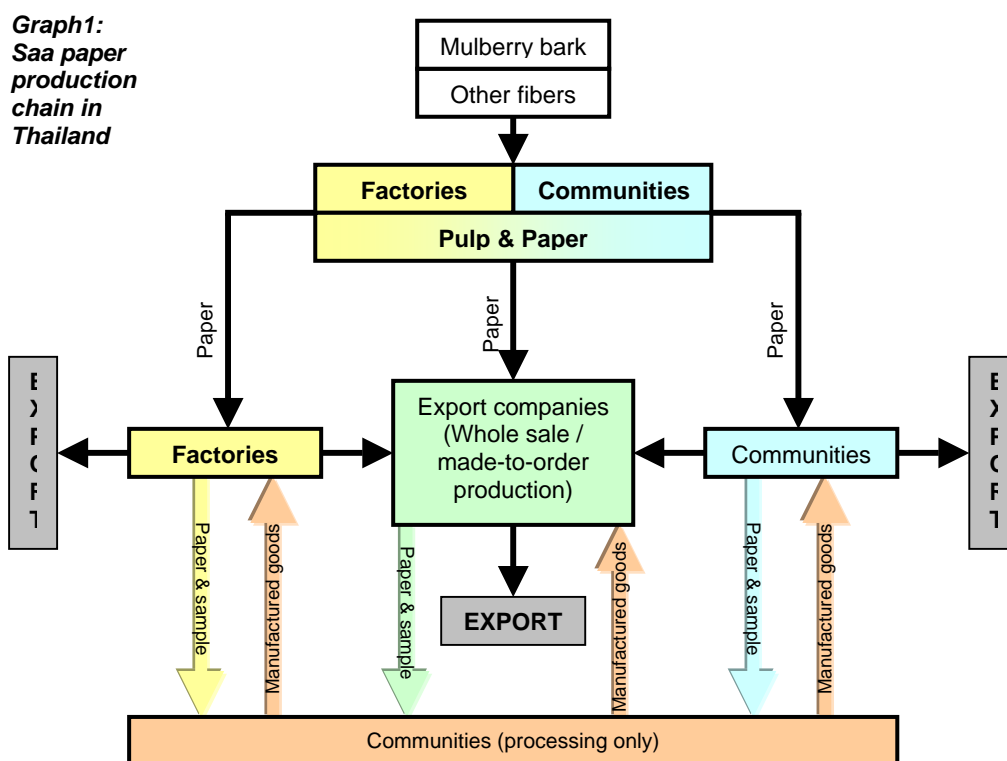
2. A summative and descriptive Thai Saa Paper Industry (TSPI) analysis with focus on export

2.1 The Saa Paper Production Chain (SPPC):

Stakeholders and their relationship

The saa paper production chain has **five main direct stakeholder groups**, i.e.:

- Raw-material importers
- SME saa paper factories (production, processing, distribution and sales)
- SME-like saa paper communities (production, processing, distribution and sales)
- Saa paper processing communities
- SME saa paper exporters (and retailers)



Groups of interest

The interests of these five main groups are often diametrically opposed to each other¹. This creates factions within the industry and makes the introduction of changes difficult. However, currently all 5 stakeholders represent a necessary part of the production chain. Divisions on how best to approach industry improvement/development seem mostly to depend on the size of the enterprise, and not whether it involves a company or a community.

¹ Own observations supported by information published during the 'International Seminar on Environmental Management for APEC Micro Enterprises'. 17th of June, 2005. Bangkok, Thailand. Especially – but not exclusively - regarding data presented during the "economic and Social Session", case study 1 (S3-1).

Environmental problems

As a rule of thumb, with regard to the environment, it can be said that the larger the company, the less environmental problems, while the smaller the company the more environmental problems. This does not necessarily mean that the larger companies are more eco-efficient or vice versa.

Administration related structural weaknesses

- Missing standards
- Lacking environmental law-enforcement due to weak Sustainable Incentive Principle (SIP) in environmental management
- No tax or other incentives for eco-efficient production
- Limited information flow/exchange between responsible departments
- Centralized budgeting / decision-making in industry support organizations
- Hindering cash-flow regulations

Industry related structural weaknesses

- Labor costs in Thailand
- Production chain is not mirrored by chain of responsibility
- Missing coherent support structure for eco-efficient industry development
- Little control over raw material
- Industry dependent services are located logistically inconvenient
- Limited use of IT and off-shoring conform structures and institutions

Product related weaknesses

- Weak product development/design
- No apparent branding
- Growing competition from other hand-made papers
- Most top quality saa paper is produced in import countries, e.g. Japan
- Traditional, i.e. original craft is disappearing fast

New technology

The use of new technology among the target groups almost always depends on:

- ⇒ Access to the engineering knowledge
- ⇒ Need and demand for such technology, as well as
- ⇒ Financial resources, and
- ⇒ Willingness of the market to pay higher prices

The use of the latest technology employed by SMEs for increased eco-efficiency is almost always customer driven. Only based on the knowledge that companies can gain access to increased and extended markets abroad and successfully sell their dearer product can financial resources be mobilized to install the latest technology. Thus, the four conditions for the introduction of new technology given above are inseparable. Any advances in technology transfer need to offer packages guaranteeing the consideration of all four conditions.

2.2 Saa-paper production and management principles:

The main production principle is to a large degree still based on outsourcing of major production steps (see also 2.4, demand structure). Thus the introduction of eco-efficiency measures to the TSPI as a whole has to be appropriate for a decentralized and at times geographically scattered production environment.

The (still) overriding management principle of the majority of the industry is profit-maximizing over environmental protection. However, fundamental changes are currently taking place:

- ⇒ Customer-driven consideration and application of environmentally sound production is taking hold
- ⇒ Environmental impact of saa paper production is felt locally much more than before due to the amount of paper produced. Thus a need arises for immediate local solutions to introduce eco-efficiency
- ⇒ Demand for Management trainings supporting eco-efficiency is increasing and services become increasingly available

PREMA (**P**rofitable **E**nvironment **M**anagement) trainings and EMS (**E**nvironment **M**anagement **S**ystems) applications are disseminated at an increasing rate and contribute very positively to increased eco-efficiency in the sector. Government incentives are as yet not rewarded for participants of PREMA workshops².

Main challenge in eco-efficient management

During the interviews and during the presentation of the interim report to this analysis the target group stated that the main management challenge with regard to eco-efficiency is either

- ⇒ To achieve an environmentally conform product at market-conform attractive price, or
- ⇒ Gain access to an export market that is willing to pay the higher price for an environmentally conform product.

² PREMA is a training developed by the GTZ Pilot Programme for the Environmental Management in the Private Sector of Developing Countries (P3U) for micro, small and medium-sized companies. It aims at practically implementing measures designed to substantially reduce cost of production, improve environmental performance and to enhance organizational capabilities. An initial round of trainings has been held successfully in Chiang Mai in June 2005. Participating companies are still in the process of fully incorporating the PREMA concept in their production and are able to improve their environmental performance considerably.

2.3 Locally available knowledge on other than the commonly used saa paper production methods:

The services available to TSPI are numerous and the wide range of service topics (see below) addresses most of the current problems of the TSPI. However, their use by the sector is still limited, as the services are scattered among a number of different support organizations and as yet not centralized in one location or at least offered through a single support organization.

New technology able to alleviate eco-efficiency shortcomings of TSPI is available in Thailand. However, the information dissemination about such technology is not sufficiently developed. Practical demonstrations of new inventions/technology occur at a slowly increasing frequency.

Technology transfer is at times hindered by the public relation policies of support organizations that often expect their clientele (customer) to contact them if they have questions or want to address production problems. A pro-active service attitude is still the exception within the TSPI support organizations.

Some of the support organizations are limited in their flexible response to problem issues by their budgeting process being centralized in Bangkok. Streamlining and decentralizing budgeting administration could greatly enhance the work of local support organizations.

Table 1a: Available services that result in increased/new product marketing options

Organization	Objective	Measures/Tools/Services	Target groups
Available Services (selective)			
Export Promotion Center in Chiang Mai (OTOP)	<ul style="list-style-type: none"> ➤ Strengthen design capabilities ➤ Product and product development ➤ Market development ➤ Knowledge mediator between market and producer 	<p>Measures: Provide practical trainings and knowledge dissemination</p> <p>Tools: WS, Networking, Consulting, information management</p> <p>Services:</p> <ul style="list-style-type: none"> ✓ Regular WS under the name 'Design-Clinic' ✓ Consulting for individual customers under the OTOP support program ✓ Knowledge dissemination and information services for Center clients ✓ Product exhibitions in- and outside of Thailand ✓ Marketing support services (information based) 	<p><i>Primary:</i> Especially SMEs</p> <p><i>Secondary:</i> TSPI</p>

Table 1b: Available services that result in increased/new product marketing options

Organization	Objective	Measures/Tools/Services	Target groups
Available Services (selective)			
Industrial Promotion Center Region 1	<ul style="list-style-type: none"> ➢ Develop the production process ➢ Support SMEs ➢ Information service center for the industry ➢ Develop new businesses ➢ Support entrepreneurs 	<p>Measures: Provide trainings, research, information management, knowledge dissemination</p> <p>Tools: Training, WS, Consulting, information management</p> <p>Services:</p> <ul style="list-style-type: none"> ✓ Practical and information assistance on production and production processes ✓ Tool & Die related services ✓ Production machinery and technology related services ✓ Product design support center ✓ Business start-up consultancy and partnerships ✓ Library and documentation services ✓ Marketing and sales support 	<p><i>Primary:</i> All industry and SMEs</p> <p><i>Secondary:</i> TSPI</p>

Table 1c: Available services that result in increased/new product marketing options

Organization	Objective	Measures/Tools/Services	Target groups
Available Services (selective)			
Northern Handicrafts Manufacturers and Exporters Association (NOHMEX)	<ul style="list-style-type: none"> ➢ Develop design talent ➢ Reduce investment costs ➢ Increase international presence of Thai companies ➢ Develop human resources ➢ Financial services ➢ Improve production processes 	<p>Measures: Promote SPPC common activities to address industry problems</p> <p>Tools: WS, Networking, competitions, projects</p> <p>Services:</p> <ul style="list-style-type: none"> ✓ Company representation services at foreign and local trade fairs ✓ Design training for competitions ✓ PREMA and other environmental projects ✓ News reports on foreign product and market developments ✓ Standard development for human resource development ✓ Cluster building support ✓ Support project for research and development for products and production ✓ Financial consulting and coordination/management services for members 	<p><i>Primary:</i> TSPI and SPPC</p>

Table 2: Available production technologies that result in increased/new product marketing options

<i>Organization</i>	<i>Technologies available</i>	<i>Source</i>	<i>Target groups</i>
Available Technology for Saa Paper production			
Chiang Mai University	<ul style="list-style-type: none"> ➤ Reduction in use of bleach ➤ Clean technology to increase efficiency in saa paper production 	<ul style="list-style-type: none"> ➤ Own research ➤ Technology transfer 	SPPC
Kasertsart University	<ul style="list-style-type: none"> ➤ Pollution reduction technologies ➤ Improved production tools and machinery ➤ Alternative production technologies in coloring ➤ Clean industry plant design for saa paper production 	<ul style="list-style-type: none"> ➤ Own research ➤ Technology transfer 	SPPC
Cooperation	We were told of a number of various but unspecified studies currently being conducted by both universities and cooperation partners		SPPC

2.4 Demand-structure of saa-paper importers

The demand structure for saa-paper and its products is

- ⇒ Seasonal and fashion dependent and, thus,
- ⇒ Fluctuating.

At the same time it strongly demands

- ⇒ quality of product,
- ⇒ consistency of workmanship, and
- ⇒ timely deliveries.

The demand is to a very high degree

- ⇒ price sensitive, and to a lesser but increasing degree
- ⇒ environmentally sensitive

Due to this structure problems of eco-efficiency are more difficult to address. The industry has found a balance in cooperation between the five main stakeholders to service the market in accordance with this specific demand structure. Certain production is supervised by larger SMEs or community entrepreneurs³ (CE) even when the production itself is partially or entirely outsourced. This would be the case for products that are, for example, dependent on coordinated supervision to ensure product conformity.

³ This analysis suggests the introduction of a new term, the 'community entrepreneur' or short CE. A CE can be described as the dominant economic entrepreneur within a community for one specific product or service. For example, the Saa paper industry has many exporters acting as CE. They have limited or no company premises in the community but during high demand can easily employ up to five hundred workers temporarily within a community. The market development needs of a CE can be fundamentally different from an SME or a community organization.

Other steps, where for example quality standard, environmental standards or timely delivery is not a key issue, are left in their entirety to local communities. However, the less conform or lower standard products currently achieve a lower sales price and thus a lower income and profit margin for the producer. This leaves the weakest eco-efficiency link in the production chain with least financial resources to introduce eco-efficiency.

2.5 Saa paper export developments/expectations from a TSPI perspective

Table 3: Future saa paper export developments/expectations from a TSPI perspective

Product type market development expectation	Very good		Good		Less than good
	Export market	Total market	Export market	Total market	
Paper-sheets					NONE
Set paper and gift items					
Interior design products					
Saa paper office/household products					

2.6 The importance of environmental issues and priorities for TSPI customers

Table 4: Environmental indicators influencing purchasing behavior of importers of saa-paper raw materials and products

Environmental concern	Impact on customer purchase decision				Reason
	Always	Often	Some-times	Not yet	
Production methods (certified or not certified)					This depends on items purchased, especially from Europe, for example goods for children or food-related items
Bleaching					Depends on the product and product end-use
Coloring agent					Especially for Europe an important issue
Other Chemicals					Depends on the product and product end-use
Water use					This issue is very important for the European market
Energy use					
Impact on raw-material sources (forests)					This issue becomes slowly more important for export
Fair trade aspects					Happens in singular cases

3. Local policy options to support eco-efficiency of TSPI export products

The main problems of the TSPI sector are concerning cost-effective production, environmental management, product development and shortcomings of the legal and organizational support structure of the industry. Policy options contributing to appropriate solutions should be able to stand alone or be applied as a package. Through semi-structured interviews, discussions and a short seminar this analysis has identified four main foci for policy options. The four foci are:

1. The introduction of standards
2. An increase in technology transfer
3. A streamlining of industry structure
4. Government laws, regulations and incentives

Introduce standards

The introduction of standards is paramount for a continued export to especially Europe, the United States and Japan. By compliance with standards of the importers countries trade-barriers can be taken. New marketing options based on and addressing country-specific environmental consciousness of customers become available for Thai products. Standards need to be enforced throughout the industry and by the industry or otherwise unfair trade practices will favor non-compliant producers.

Table 5: Possible standards for the TSPI (Optional standard names based on proposals of interviewees)

	Raw-material based	Production based	Paper processing based
Standards	<p>Raw -Material Standards:</p> <p>RMS 1: Environmental</p> <ul style="list-style-type: none"> ▪ Harvesting source ▪ Harvesting method ▪ Transportation <p>RMS 2: Material</p> <ul style="list-style-type: none"> ▪ Grade of bark ▪ Purity of bark <p>RMS 3: Marketing</p> <ul style="list-style-type: none"> ▪ Direct purchase ▪ Dealer-based purchase <p>RMS 4: Origin</p> <ul style="list-style-type: none"> ▪ Thailand ▪ Foreign (Laos, Burma et al) ▪ Mixed 	<p>Pulp & Paper Standards:</p> <p>PPS 1: Environmental</p> <ul style="list-style-type: none"> ▪ Water and waste water treatment ▪ Coloring ▪ Bleaching ▪ Energy efficiency <p>PPS 2: Pulp composition</p> <ul style="list-style-type: none"> ▪ Pure mulberry pulp ▪ Mixed pulp <i>grade A</i> (at least 80% saa) to <i>grade D</i> (not less than 20% saa) <p>PPS 3: Paper-production</p> <ul style="list-style-type: none"> ▪ 100% hand-made ▪ 100% machine made ▪ Manufactured <p>PPS 4: Paper grain</p> <ul style="list-style-type: none"> ▪ Very fine ▪ Fine ▪ Medium ▪ Decorative 	<p>Mulberry Product Standards:</p> <p>MPS 1: Environmental</p> <ul style="list-style-type: none"> ▪ Water and waste water treatment ▪ Coloring ▪ Energy efficiency ▪ Chemicals <p>MPS 2: Processing</p> <ul style="list-style-type: none"> ▪ 100% hand-made ▪ 100% machine made ▪ Manufactured <p>MPS 3: Product</p> <ul style="list-style-type: none"> ▪ 100% mulberry paper ▪ Mulberry paper product (less than 35% other materials used for product) ▪ Mixed media

Table 5a: Possible standards for the TSPI – focus export market

Export market based: Link products with international standards (function related standards)
<p>Mulberry Export Standards (MES): MES 1: Export Quality MES 2: EU paper standard conform</p> <p>MES 3: Conform with EU function based standards</p> <p>MES 4: etc....(Optional standard names based on proposals of interviewees)</p>

Increase technology transfer (national and international)

Technology transfer will allow producers to better conform to eco-efficient production. However, technology considered has to introduce an acceptable cost/benefit ratio that allows companies and/or communities to stay competitive with product pricing. Technology transfer in itself is not a sufficiently effective tool to increase eco-efficiency.

Technology transfer should always be considered in line with training/education to improve eco-efficiency in management and production with existing applied technology, for example through profitable environmental management (PREMA) to strengthen one aspect of eco-efficiency in production.

Table 6: Technology transfer options to strengthen the TSPI

	Raw-material based	Production based	Paper processing based	Export market based
Technology	<ul style="list-style-type: none"> ▪ Collection and harvesting methods 	<ul style="list-style-type: none"> ▪ Water and waste water treatment ▪ Coloring ▪ Bleaching ▪ Substitution fiber ▪ Hand made production techniques ▪ Machine production techniques ▪ Energy efficiency 	<ul style="list-style-type: none"> ▪ Water and waste water treatment ▪ Coloring ▪ Tools and techniques ▪ Energy efficiency ▪ Product design ▪ Mixed technologies (e.g.: carpentry and mulberry paper) ▪ Storage 	<ul style="list-style-type: none"> ▪ Support IT based export initiatives

Streamline industry structure and government laws, regulations and incentives

Due to the industry structure of TSPI, environmental responsibility is not distributed equally. The smaller producer is often at a disadvantage if it comes to the ratio of profit/environmental management cost. Focusing on the structure of the industry can remedy some of these shortcomings.

In addition, a streamlining of the industry’s administrative support structure could improve information flows, efficiency and export options through new information technology tools (IT). Structural and government policy measures are very much dependent on a holistic approach, the creation of win-win situations and clear and open rules and regulations.

The analysis found a considerable skeptical attitude of the TSPI towards government organizations, but especially so with the medium and smaller sized SMEs. By increasingly considering their clientele rather as customers and apply a pro-active customer service attitude - like it is standard in the open market - government organizations could correct this situation.

Table 7: Summary of options to adapting TSPI structure to increase eco-efficiency

	Raw-material based	Production based	Paper processing based	Export market based
Structure	<ul style="list-style-type: none"> ▪ Build additional options for direct raw material purchase and import ▪ Increase locally harvested raw material 	<ul style="list-style-type: none"> ▪ Apply the Sustainability Incentive Principle (SIP) at the ownership level 	<ul style="list-style-type: none"> ▪ Better distribute production capital ownership 	<ul style="list-style-type: none"> ▪ Increase competition ▪ Increase access to IT tools
	General measures	<ul style="list-style-type: none"> ▪ Introduce the concept of ‘responsibility chain’ parallel to ‘production chain’ <ul style="list-style-type: none"> ▪ Harmonize cooperation between members of the production chain <ul style="list-style-type: none"> ▪ Ease administrative procedures ▪ Improve service attitude of administrative support structure <ul style="list-style-type: none"> ▪ Ease logistical procedures ▪ Increase agency cooperation 		

Table 7a: Possible incentive strategies to support the TSPI

	Raw-material based	Production based	Paper processing based	Export market based
Incentives	<ul style="list-style-type: none"> ▪ Regulating laws and improved law-enforcement 			
	<ul style="list-style-type: none"> ▪ Taxes ▪ Financial and credit regulations 	<ul style="list-style-type: none"> ▪ Taxes ▪ Environmental subsidies / incentives ▪ Social and health, technology and energy incentives 	<ul style="list-style-type: none"> ▪ Taxes ▪ Environmental subsidies / incentives ▪ Technology incentives 	<ul style="list-style-type: none"> ▪ Taxes ▪ Export-support / subsidies

4. Recommended facilities to improve eco-efficiency for the TSPI in the context of the Programme for Enterprise Competitiveness

Holistic approach

The strong involvement of communities in the TSPI necessitates a holistic approach in introducing eco-efficiency to the industry, considering and incorporating economical, social, political and ecological factors. Recommendations are also based on the vision of the TSPI support structure becoming more pro-active approaching their clientele as customers. In the following the analysis summarizes and outlines 5 main facilities that unite some of the policy options given above under consideration of the TSPI structure. Each facility can be approached and implemented individually, in combination with other facilities or in a series from 1-5.

4.1 Recommendations and suggestions

During the interviews many recommendations and suggestions to improve the TSPI were developed together with both the secondary and primary target groups. Of those ideas, twenty two were selected for this study based on at least one of the following criteria:

- Urgent need for implementation as expressed by the target groups
- Willingness to actively participate in the implementation
- Potential for PPP-based implementation

The list below summarizes the ideas in loose order.

1. Saa Paper Standard Board

The lack of standards is one of the main detrimental factors in promoting TSPI export products. Standards not only impact on the quality and safety of the product itself, but also on the safety, work-conditions and environment of producers and their location of manufacture. Standards are only meaningful if they are applied throughout the TSPI.

This, in turn, makes it necessary that the standards are developed together with the industry to ensure that manufacturers can actually comply with the standards. One single overseeing body with representatives of all stakeholders would be ideal to manage the development, implementation and maintenance of production-and product-standards.

2. Collection of Thai raw material to create special Thai paper product

Organize and coordinate the local collection of choice raw material from Thailand to create a special saa paper brand. The resulting saa paper should be comparable to a cuvee of wine or a special tobacco. It can be reserved for the best writing papers or top of the line decorative items.

3. Give special tax incentives for products based on local fibers (Mulberry and others)

The TSPI is currently dependent on import of raw-materials from neighboring countries (up to 85 % of total). However, Mulberry trees and their bark are plenty in Thailand, but labor and transportation costs are too high to locally harvest Thai raw material at a competitive price. Tax incentives would allow increased use of Thai mulberry bark in the production of Saa paper.

4. Create a raw-material bank

A raw material bank assists in purchase, quality control, transportation and storage.

Possible financing strategy for bank:

There are currently two main importers of raw-material, not only for their own production, but also as dealer for others. The raw-material bank could gradually establish itself as middle-man/dealer with a nominal fee for their services.

A raw-material bank could compete with Japanese companies for 'Super A' grade raw material from Laos. With regular access to large quantities, aided by technical support for the producers, Thailand could establish itself as the leading location for top of the range mulberry paper. Distribution is managed via O-TOP and private companies.

5. Replace old frames with new formats

The traditional frames for making the individual mulberry sheets in hand-made production are not conforming to international standard measurements. The standard sheet size for Europe would be A1: 84x59 cm and AO: 113.9x81.7 cm. By adopting these standard sizes marketing, (production related) outsourcing, cutting and design could be substantially improved.

6. Preserve production of traditional indigenous paper

The original craft of mulberry paper making is quickly disappearing from local knowledge. To keep the traditional hand-made paper making process alive means to preserve a cultural aspect of Thailand and the Northern Lanna culture.

7. Create a 'color-bank'

The coloring of Saa paper or Saa paper products is a process that – like the garment industry – relies mostly on chemical dyes to achieve identical color schemes for product lines. Many dyes currently used are strong pollutants, especially those of the family of azo-dyes. They are used throughout Thailand, as they are available in small amounts and at a low-cost price.

Environmentally friendly chemical dyes are available locally. However, these dyes are considerably more expensive or are only sold in larger quantities. Thus, their use is mostly restricted to larger and financially strong companies that can bind capital in one specific color in

advance of production. Smaller producers and/or the cottage industry find this difficult. A color-bank would enable those smaller producers access to a variety of environmentally friendly dies they could otherwise not afford.

8. Introduce optional wetlands for waste water management to Saa Paper villages

The well developed wet-land technique for waste water management can to some degree be adapted to villages engaged in the saa-paper production. Conditions for a possible immediate implementation – as the technology as already successful in Thailand - is that

- ⇒ Communities get government support (TAO) to build wetlands
- ⇒ Saa paper companies outsourcing to villages must partake in financing schemes for the waste water management solutions (chain of responsibility)
- ⇒ Production standards have to be applied and upheld

9. Offer regular awards for innovations in the Saa Paper Industry

A bi-annual competition for hand and machine made saa papers with a substantial reward for

- ⇒ The best and most innovative saa bark substitute
- ⇒ The highest quality saa paper
- ⇒ The most innovative product design
- ⇒ The most eco-friendly product

10. Promote existing design development programs

Programs and projects to improve skills in local industries are offered by a number of organizations in Thailand. The three relevant institutions for the northern Saa paper industry are One Tambon One Product (OTOP), the Industrial Promotion Center Region 1 and Northern Handicrafts Manufacturers and Exporters Association (NOHMEX).

All three organizations combined provide a very good design development package. However, their services lack active promotion and are often only known to larger exporting companies. A promotion campaign could effectively disseminate knowledge on the existence of the programs throughout the TSPI.

11. Offer PREMA and EMS services/WS

PREMA (profitable environment management) has been used successfully in Ton Pau, a Saa paper producing community in Chiang Mai. Its distribution to other stakeholders of the TSPI would instantly profit their overall eco-efficiency performance in production and distribution/sales. Medium-term reduction in production costs can easily reach 20% and more. This would not only improve the environmental performance of the TSPI, but also improve options and margins in product pricing.

12. Introduce Thai Saa paper branding

As yet there is no specific 'Thai' Saa paper on the market. Instead locally made paper is competing on the export market with hand-made or other Saa papers from countries in the region. As labor and production costs in Thailand are slowly but surely rising, it is becoming increasingly difficult to sell a product at a good price or to provide enough profit to afford environmentally sound production.

Branding would allow the Thai Saa paper product to 'stand out in the crowd', i.e. to potentially give it a marketing advantage. Branding would also contribute positively to the introduction of standards. With rising production costs and simultaneously increasing demands to protect the environment, branding might be instrumental in guaranteeing the Thai product a share on the future export market.

13. Provide locally available lab

The North of Thailand is the center of Saa paper production in Thailand. However, standard certificates needed for export still rely on services located in Bangkok or in other countries. The process of lab-tests in Bangkok delays the export of Saa paper products from the North considerably and – in case samples have to be tested abroad – increase overall costs. A local lab that is able to test the products close to the producer and issue certificates, would ease logistical procedures, aid the introduction of standards and positively impact on the product profit margin.

14. Tourism

Northern Thailand is one of the tourist centers of the country. Especially its traditional Lanna culture is famous for its art, architecture, handicrafts and refinement of the senses. The traditional production process and products of Saa paper are part of this culture. Especially related cottage industry has the potential to market their handicraft and skills for tourism. The following initial three steps can help to gain access to an upper scale tourism market.

Introduce a standard for traditional production methods

Link up with ecotourism and educational travel tour operators (for example: Studiosus)

Introduce incentive tours to traditional Saa Paper manufacturing

15. Student/crafts exchange

Make Thai Saa paper a standard feature of interior design of countries of the export markets, i.e. aim for a special market niche with a higher price for hand-made papers. This goal could be achieved in the mid-term through inviting, for example, European interior design students to learn the craft of Saa Paper production in Thailand. Once familiar with the subtleties of hand-made paper production and the differences in the product, the exchange students might use

Saa paper as a feature of their interior design more often⁴. Thus advertising especially Thai Saa paper and helping to create a demand for special high quality design-papers.

Through establishing a network between European design universities and local producers, Thai students or apprentices in the context of Saa paper could in exchange learn about Europe specific design features. This would help the TSPI to develop a better export product.

16. Build a Saa Paper counterpart organization in Europe

Efforts of the local TSPI to improve their product could be quickly and cost-effectively related to the potential export market if a permanent organization could help to represent TSPI interests abroad. This could be achieved through existing bodies/companies, for example the Thai chamber of commerce or a local service provider for fairs and exhibitions.

17. Regional/National Saa-Paper Information Exchange and Communication Center

A regional or national Saa paper center could become a one-stop information center for Saa paper producers and retailers. Once a center is established its development and activity options are numerous under the aim of increasing and improving coordination and cooperation. For example, bi-focal regular information exchange and centrally organized WS and other forms of information dissemination will bring the TSPI and its public support structure closer together.

The center would be ideal for PR of support agencies and producers, alike. For example, measures and policies of government agencies can be introduced for discussion to make them appropriate for the industry. The industry could talk directly to representatives of various support agencies without the need to travel to Bangkok. If such a Center could be build, the following four main sectors of the production chain could be the first focus of an information and communication exchange:

Sectors:

- Pulp & Paper Center
- Product Center
- Design Center
- Technical information center

18. International hand-made paper exchange

The Information and Communication exchange could in its latter stages be developed into an IT based hand-made paper exchange. Such an exchange would encourage **the trade** with local and non-local hand-made papers, as opposed to concentrating on production, only.

⁴ Recommended universities for such a project could be the 'Bauhaus Design Academy' in Germany and the 'Rijtfeld Academy' in Amsterdam. Initial contacts have been made.

19. Support off-shoring tendencies of foreign importers

Current off-shoring tendencies of foreign Saa paper importers could be actively supported to establish the North of Thailand as a center for hand-made paper trade with easy access to resources and labor for to quality production, manufacturing and processing.

20. Adapt and improve cash-flow regulations for exporters/importers

21. Improve/strengthen community cooperation/networking

22. Regional/National Saa-Paper SME Service Center

Like the regional or national Saa paper center for information, as described under point 17, the Saa Paper Service Center could become a one-stop service center for the industry. Close cooperation with universities and the existing support structure would be needed to give the center knowledge about and access to the latest innovative and appropriate technologies concerning paper production.

Services needed:

- Provide technical innovation assistance
- Provide environmental solutions
- Lab
- Technical cooperation assistance
- Business transaction assistance

4.2 Facilities to improve eco-efficiency for the TSPI

The twenty recommendations and suggestions above are at times very different in character and extent. While for example point 18 suggests the building of a center, i.e. the building of an additional support structure for TSPI, point 9 proposes a simple activity.

To give all of the suggestions an appropriate frame and function as an intervention instrument the analysis organizes all ideas under facilities. Each facility addresses a specific problem area of the current TSPI and represents an additional TSPI support structure. The advantage of placing the suggestions structurally in a smaller number of facilities is that it increases implementation options by giving simple activities or marketing ideas an organizational structure to implement them from.

The following intervention facilities address five main issues

1. Information and services
2. TSPI standards

3. Color bank
4. Raw material bank
5. Eco-efficiency promotion center

Facility 1: Regional Saa Paper Center

Components for information and services uniting suggestions 6, 9, 10, 11, 13, 17 and 22:

⇒ **Saa Paper phone-link**

Function: Promote target-group/eco-efficiency program relationship

Measures: Follow-up calls after program activities, problem hotline with contacts and referral service, PR line

TSPI development objective: Support intra-industrial cooperation and information exchange

Expected impact (performance indicator): Better participation of target group in EEP activities - Easier definition and analysis of industry problems - Improved TSPI/support organization relationship

⇒ **Information Center**

Function: Streamline information access for target group

Tools: Library and information services on pulp & paper, production, product and product design/development

TSPI development objective: Increase knowledge transfer and quality standards

Expected impact (performance indicator): Improved communication between TSPI and its government support structure

⇒ **Service Center**

Function: Direct and centralized access to technology, consulting services, trainings etc.

Tools: Human Resources to provide practical technical innovation assistance, environmental solutions, a lab, technical cooperation assistance and business transaction assistance

TSPI development objective: Increase technology transfer, management-, production-, and product-standards, enhance TSPI product competitiveness

Expected impact: Increasing acceptance, application and utilization of eco-efficiency principles - Increase of environmentally sound products

The Regional Saa Paper Center could offer additional activities that approach the creativity of the sector and/or directly support the TSPI. For example,

⇒ ***Preserve production of traditional indigenous paper***

⇒ ***Offer regular awards for innovations in the Saa Paper Industry***

⇒ ***Offer PREMA and EMS services/WS***

⇒ ***Provide locally available lab***

Facility 2: Saa Paper Standard Board

Components for TSPI standards uniting suggestions 1, 5, 12, 15 and 16:

⇒ **Standard development**

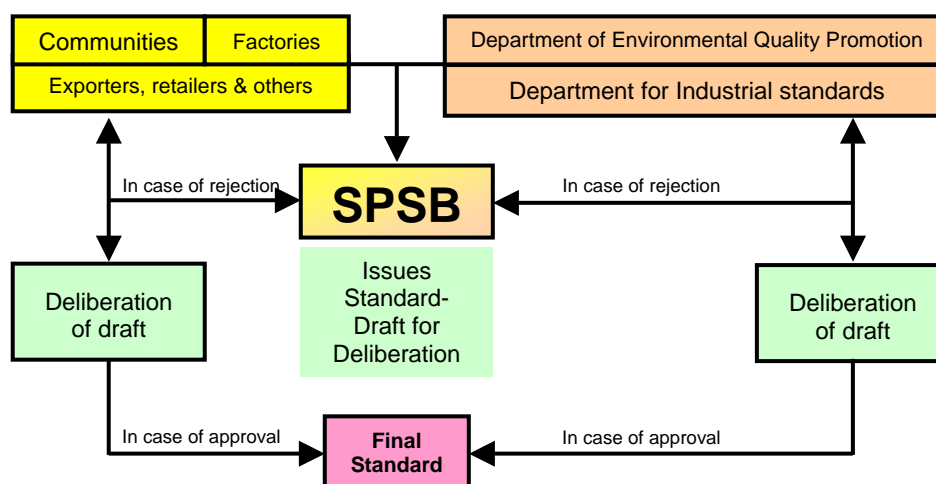
⇒ **Branding approval**

Function: Aid the development of **working** standards, aid standard implementation, link with international standards, regulate branding, and approve brands and specific product types for certification

Tools: Saa Paper Standard Board

TSPI development objective: Standardize management principles, production methods and products, and **certifiably** introduce eco-efficiency principles in production.

Expected impact: Improve marketing and export options for Thai Saa paper products - Thai products are linked with international standards and gain easier access to protected markets, or markets for specialized products



Graph 2: Saa Paper Standard Board
 (Optional organizational structure)

The Regional Saa Paper Standard Board can initiate activities that enhance the application of standards within the sector and directly support active involvement of target groups to promote the standard quality of the Thai Saa paper product. For example,

⇒ **Replace old frames with new formats**

⇒ **Student/crafts exchange**

⇒ **Introduce Thai Saa paper branding**

⇒ **Build a Saa paper counterpart organization in Europe**

Facility 3: Saa Paper Color Bank for Communities

Component is based on suggestion 7:

- ⇒ **Purchasing Division**
- ⇒ **Stocking Division**
- ⇒ **Financing Division**

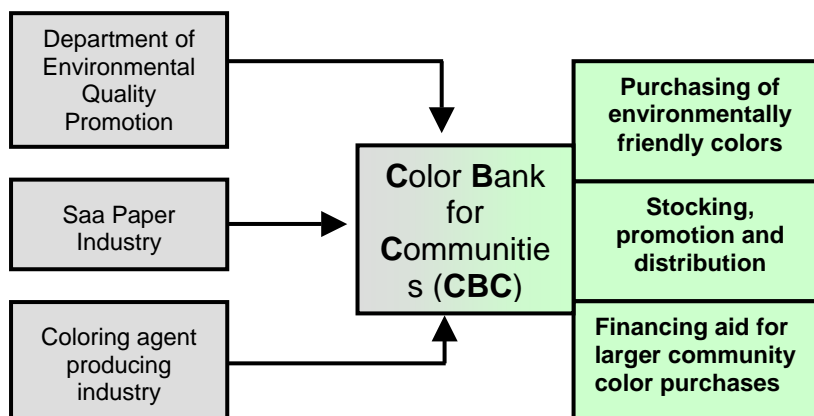
Function: Act as an agent to enable especially smaller SMEs and communities to use environmentally friendly color and bleaching agents for Saa paper production and products

Tools: Saa Paper Color Bank

TSPI development objective: Technology transfer, standardization, TSPI structure improvements

Expected impact: Reduced environmental impact of TSPI, especially with regard to water resources - Fundamental decrease in purchase of toxic dies (especially azo-dies) - The introduction and application of color standards also for medium and small producers is markedly improved

Graph 3: Saa Paper Color Bank
(Optional organizational structure)



Facility 4: Saa Paper Raw Material Bank

Components for the raw material bank are based on suggestions 2 and 4:

- ⇒ **Purchasing Division**
- ⇒ **Stocking Division**
- ⇒ **Financing Division**
- ⇒ **R&D Division**

Function: Act as an agent to assist in purchase, quality control, transportation and storage of raw material. Support the promotion of new material developments and storing options ***in the SMEs and communities.***

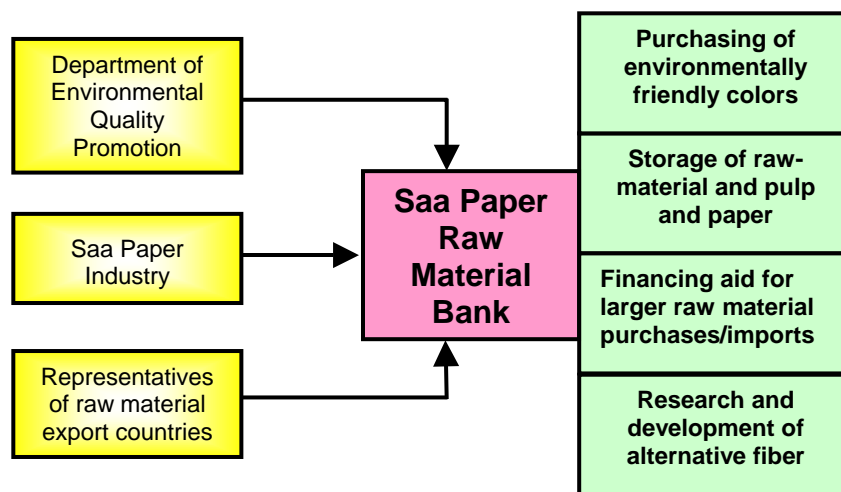
Tools: Saa Paper Raw Material Bank

TSPI development objective: Technology transfer, standardization, TSPI structure improvements

Expected impact: Reduced environmental impact of raw material collection – Less dependence on raw material imports – Introduction/application a Thai Saa Paper brand(s)

The Raw Material Bank could introduce, manage and coordinate activities to support eco-efficiency policies by tapping into the creative knowledge of the target group. For example, by starting a project on the

⇒ **Collection of Thai raw material to create special Thai product**



Graph 4: Saa Paper Color Bank
 (Optional organizational structure)

Facility 5: Saa Paper Eco-efficiency Promotion Center/Division

Almost one third of the suggestions and recommendations, namely No 3, 8, 14, 18, 19, 20 and 21, either require direct government approval or are concerning laws, rules and regulations. They need an implementation frame that is directly established under a ministry / ministries.

An optional and desirable form for an implementation structure of some of the suggestions - or even one of the facilities 1 to 4 proposed above - would be Public Private Partnership. Such a cooperation frame can ensure co-financing by the private sector for some of the suggestions. This would be especially useful for long-term activities or very cost-intensive measures. For example the introduction of a color bank would be a long-term undertaking that needs private sector expertise on non-toxic dyes for the industry, their source, import and distribution in Thailand. The bank constitutes a business opportunity for the private sector, as the non-toxic colors are sold to the end-users.

Other components, like for example the introduction of wetlands, are linked to more than one responsible government body. In the case of water management it would be the local Tambon Administrative Organization (TAO), the regional water-board, probably the DEQP and possibly the ministry of industry. Components like this need an initial owner on the government level that can promote eco-efficiency relevant measures until a legal project ownership is clarified or an appropriate network established.

For cases like the ones outlined above, the study suggests as facility 5 a **Saa Paper Eco-efficiency Promotion Center**. The center would be established under ministry guidance and have the following tasks:

- To responsibly initiate activities supporting eco-efficiency that are still in the process of defining (project) ownership
- Lobby for adaptations of government rules and regulations
- To manage and coordinate activities with a specific PPP focus
- To initiate activities with a specific long-term focus

Components:

- ⇒ **Rules and regulations board**
- ⇒ **Eco-Efficiency Sponsorship Board** (for overlapping and new projects)
- ⇒ **PPP board**

Function: Act as an organization that actively supports/initiates and coordinates eco-efficiency related measures/activities in need of a larger network, also among government organizations. Promote PPP as a frame of cooperation for the introduction of eco-efficiency

Tools: Saa Paper Eco-efficiency Promotion Center/Division

TSPI development objective: TSPI structure improvements and development, incentives, export market development

Expected impact: Increase in TSPI-wide and overlapping activities – More long-term projects to support future export options of the TSPI - Lobbying for change of laws

Some examples of activities that would be under the responsibility of the center:

- ⇒ **Give special tax incentives for products based on local fibers (Mulberry and others)**
- ⇒ **Adapt and improve cash-flow regulations for exporters/importers**
- ⇒ **Introduce optional wetlands for waste water management to Saa Paper villages**
- ⇒ **International exchange for hand-made paper**
- ⇒ **Support and encourage off-shoring tendencies of foreign importers**
- ⇒ **Tourism**
- ⇒ **Improve/strengthen community cooperation/networking**

Attachment

A. Bibliography

- ชนันต์ จูริมาศ และ เนติรัฐ น้อมธรรม. การลดโซเดียมไฮดรอกไซด์ในกระบวนการต้มเยื่อสา. พิมพ์ครั้งที่ 1. เชียงใหม่: คณะวิศวกรรมศาสตร์ มหาวิทยาลัยเชียงใหม่, 2547
- ปริศนา สิริอาษา และ สุมิตรตา ชูไกรไทย และ พิมพ์ฉวี ไวถนอมสัจด์. งานวิจัยและพัฒนาเกี่ยวกับการผลิตเยื่อและกระดาษจากปอสา. พิมพ์ครั้งที่ 2. กรุงเทพฯ: สถาบันคั่นคว้าและพัฒนาผลิตผลทางการเกษตรและอุตสาหกรรมเกษตร มหาวิทยาลัยเกษตรศาสตร์, 2547
- พงษ์ศักดิ์ ชัยศิริประเสริฐ และ วราภรณ์ อภิวัตนาภิวัด และ ปริศนา สิริอาษา. คู่มือสารเคมีที่ใช้ในกระบวนการผลิตเยื่อและกระดาษสา. พิมพ์ครั้งที่ 2. กรุงเทพฯ: สถาบันคั่นคว้าและพัฒนาผลิตผลทางการเกษตรและอุตสาหกรรมเกษตร มหาวิทยาลัยเกษตรศาสตร์, 2547
- ดร.โยชินาริ โคบายาชิ. การปลูกและแปรรูปปอสา. พิมพ์ครั้งที่ 1 .กรุงเทพฯ : องค์การความร่วมมือระหว่างประเทศญี่ปุ่น, 2543
- สถาบันคั่นคว้าและพัฒนาผลิตผลทางการเกษตรและอุตสาหกรรมเกษตรมหาวิทยาลัยเกษตรศาสตร์. เอกสารเผยแพร่ทางวิชาการชุดโครงการถ่ายทอดงานวิจัยเพื่ออุตสาหกรรมเยื่อและกระดาษจากปอสา. กรุงเทพฯ: มหาวิทยาลัยเกษตรศาสตร์, 2547
- Andreas Stamm, Deutsches Institut für Entwicklung spolitik (DIE). Wertschöpfungsketten entwicklungspolitisch gestalten. Eschborn, 2004
- Good Governance of Social Development and the Environment Institute Foundation, Office of Small and Medium Enterprises Promotion. Environmental Management for APCE micro Enterprises. Bangkok: Good Governance of Social Development, 2005
- Japan international Co-operation Agency (JICA) and Kasetsart Agricultural and Agro-Industrial Project Improvement Institute (KAPI), Kasetsart University. Paper Mulberry and Hand-Made Paper for Rural Development. Bangkok: Aksorn Siam Publishing Company, 2001
- Kasetsart University Research and Development Institute (KURDI) and Kasetsart Agricultural and Agro-Industrial Project Improvement Institute (KAPI). Final Report of the Research Project for Higher Utilization of Forestry and Agricultural Plant Materials in Thailand (HUFA) 1996-2001 Volume I. Bangkok: Aksorn Siam Publishing Company, 2001
- Kasetsart University Research and Development Institute (KURDI) and Kasetsart Agricultural and Agro-Industrial Project Improvement Institute (KAPI). Final Report of the Research Project for Higher Utilization of Forestry and Agricultural Plant Materials in Thailand (HUFA) 1996-2001 Volume II. Bangkok: Aksorn Siam Publishing Company, 2001
- The eureka consulting led consortium . Final Report Selection of Subsectors withim Agro-industry Phase2a. Bangkok: Eureka Solutions, 2005

Information from the Internet

Web site from Thailand Institute of Scientific and Technological Research with Kasetsart University

<http://ku-numthai.rdi.ku.ac.th/index2544.htm>

Television and Radio Programs about Thai Agriculture

<http://radio.ku.ac.th/video/>

Web site from Department of Export Promotion (Chiang Mai)

www.depthai.go.th
www.thaitrade.com

Web site from Northern Handicrafts Manufacturers And Exporters Association

www.nohmex.com

Web site from Chiang Mai University

<http://www.cmu.ac.th/>

Web site from Kasetsart University

<http://www.ku.ac.th/>

Web site from Maejo University

<http://www.mju.ac.th/>

Web site from Payup University

<http://www.payap.ac.th/>