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THE IMPACT OF MULBERRY SERICIN SOAP PRODUCTION ON HUMAN WELL-BEING AND SERICULTURAL ECOSYSTEM SERVICES IN THAILAND



Presented by

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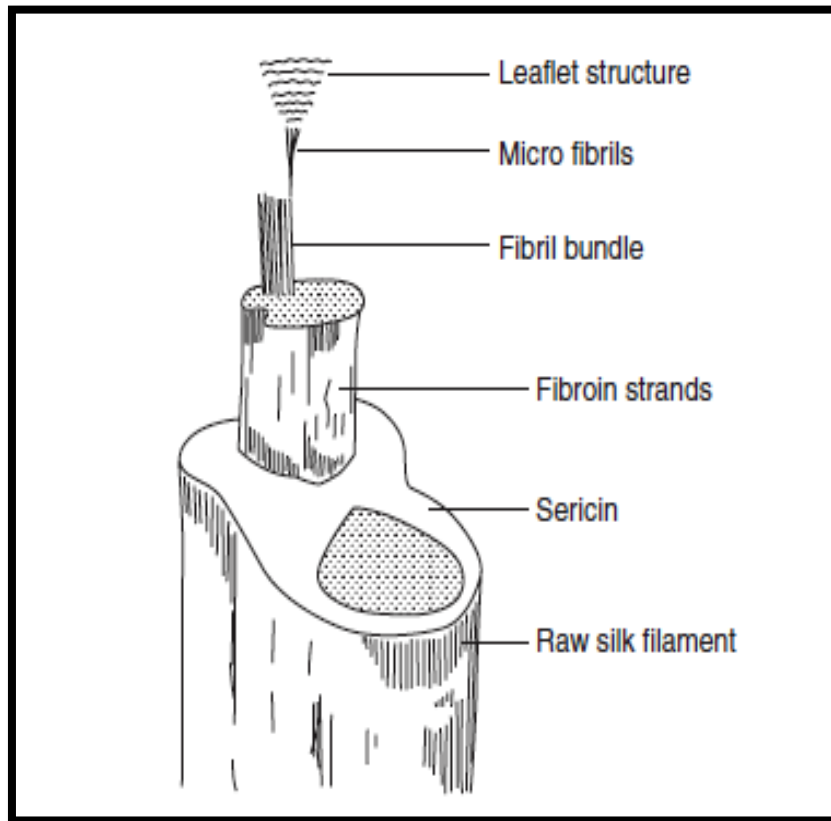


Fig. 1 The structure of a silk filament.
Source: (Tanaka et al. 1999)

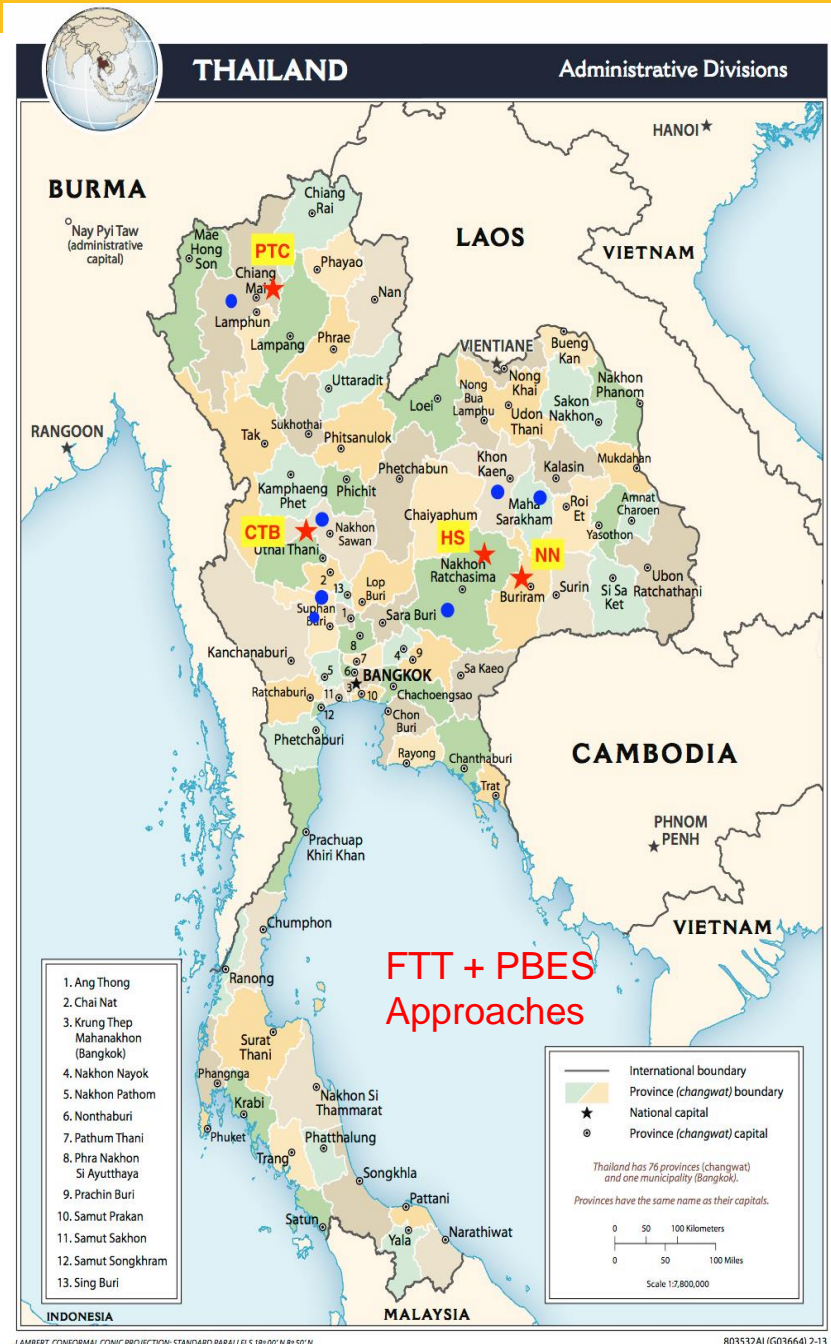
Silk wastewater can cause water pollutions due to **sericin degradation** that requires high oxygen demand (Fabiani et al. 1996) .

- $\text{BOD} = 4,840 \text{ mgL}^{-1}$
- $\text{COD} = 8,870 \text{ mgL}^{-1}$

Geography of Sericulture Community Enterprises in Thailand

Community Enterprise Criteria:

- 1) It must be part of the commodity chain of mulberry sericin soaps.
- 2) It must carry out sericulture activities by themselves.
- 3) It must be operated for at least five years to ensure its ongoing operations.
- 4) It must register their business as 'Small and Micro Community Enterprise (SMCE)' under the Thai legislation.



Source: (U.S. Central Intelligence Agency, n.d.)

Community Backgrounds



Livestocks at Huaysai (HS) community



Rice farming at Poethong Charoen Community

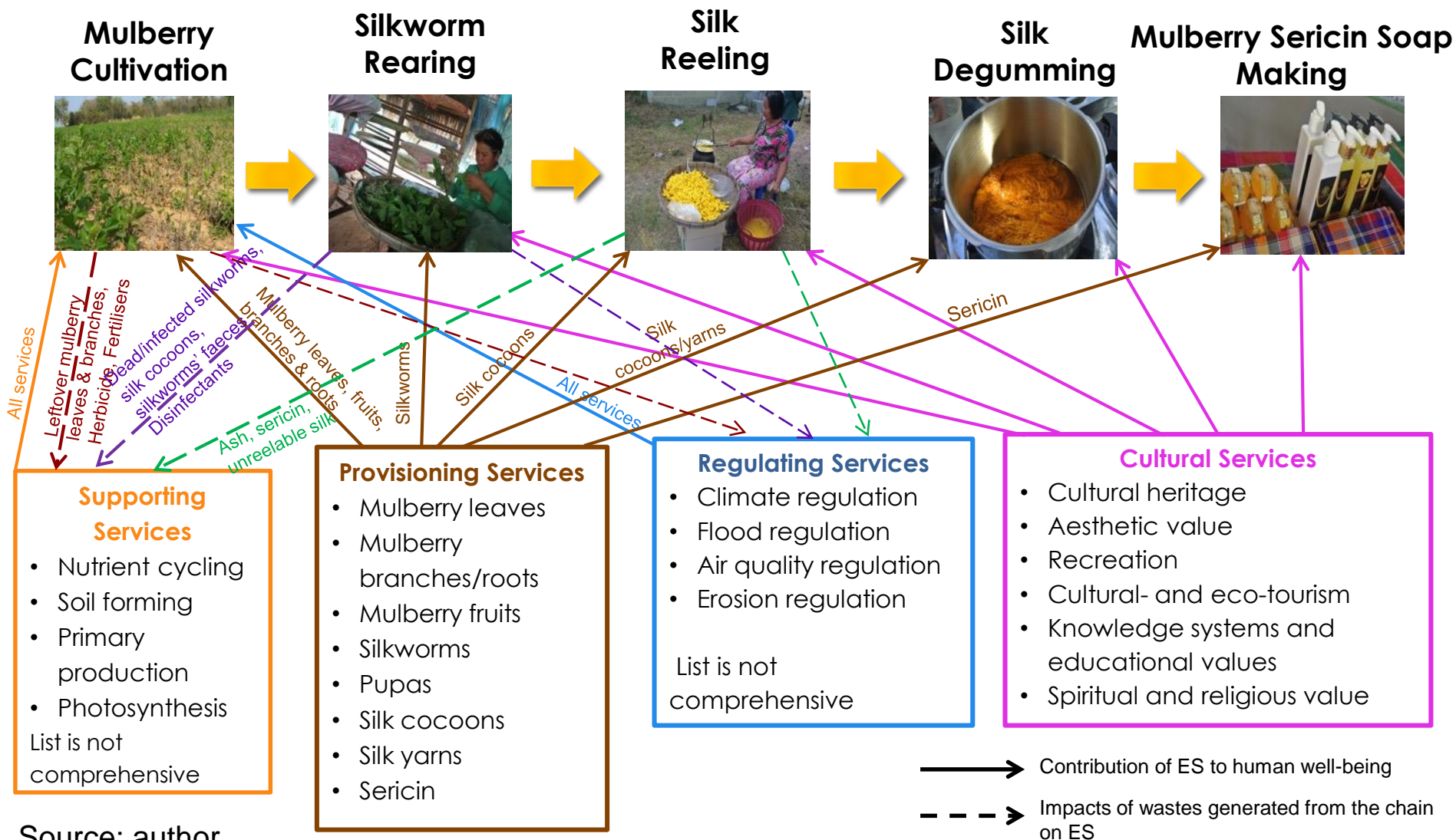


Sericulturist's house at Chumtabong community



Cassava farm at Nayaw-NaUdom communities

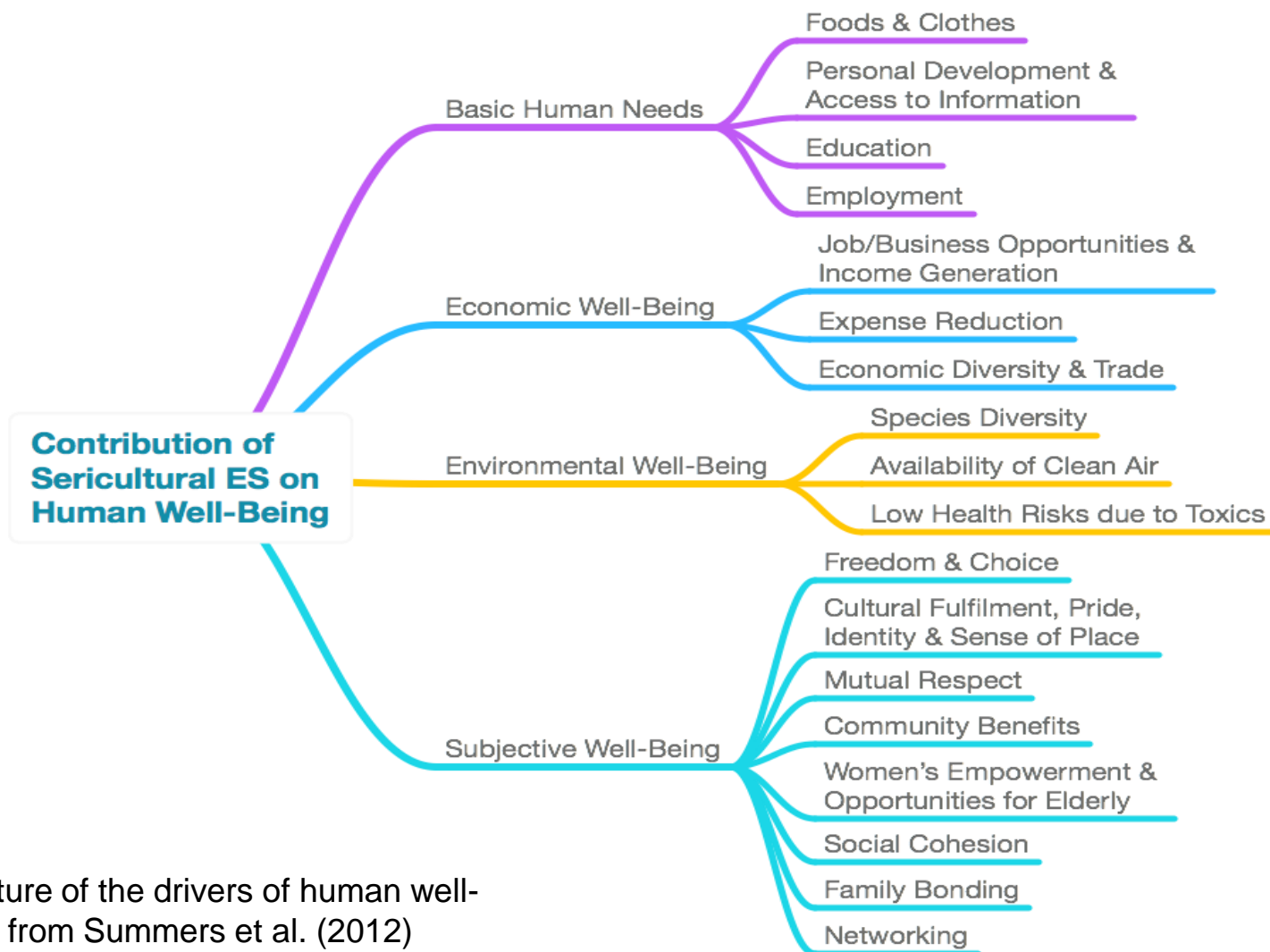
Relationship between Mulberry Sericin Soap Production & Sericultural Ecosystem Services



Impacts of Mulberry Sericin Soap Production on Sericultural Ecosystem Services

Sericultural Ecosystem Services	Additives & Wastes from Mulberry Sericin Soap Production				
	Mulberry Cultivation	Silkworm Rearing	Silk Reeling	Silk Degumming	Mulberry Sericin Soap Making
Regulating	<ul style="list-style-type: none"> Herbicides (Glyphosate & Paraquat) Compost & artificial fertilisers Leftover mulberry leaves & branches 	<ul style="list-style-type: none"> Disinfectants Dead or infected silkworms/ cocoons Silkworms' faeces 	<ul style="list-style-type: none"> Silk wastewater (sericin) Ashes Unreelable silk 	-	-
Provisioning	-	-	-	-	-
Supporting	Same as regulating services	Same as regulating services	Same as regulating services	-	-
Cultural	-	-	-	-	-

Contribution of Sericultural Ecosystem Services on Human Well-Being at the Local Scale in Thailand



Structure of the drivers of human well-being from Summers et al. (2012)

1. Basic Human Needs

1.1) Foods & Clothes



Mulberry Farm



Silk cocoons & pupas



Silk clothes and
silk-based cosmetics



NE local wearing silk dress

1.2) Personal Development & Access to Information

1.3) Education



Free training to publics &
knowledge sharing nationally



Locals' learning process in silk
production and weaving

2. Economic Well-Being

2.1) Job/Business Opportunities & Income Generation



Mulberry leaves sold to make tea & cosmetics



Regular income compared to farming jobs

2.2) Expense Reduction



Using their handmade silk-based cosmetics and textiles

3. Environmental Well-Being

3.1) Diverse Varieties



Polyvoltine silk cocoons



Bivoltsine silk cocoons

Various silkworm & mulberry varieties available for
sericulturists to utilise

3.2) Availability of Clean Air

- Mulberry farms provide more oxygen and shades.



Mulberry Farm

3.3) Low Health Risks due to Toxics

- No insecticides used at mulberry farms.
- Low amount of herbicides applied at mulberry farm 1-2 times a year or none at all.
- Fewer chemical additives used in the mulberry sericin soap production compared to other cropfarms (e.g. rice, cassava, sugarcanes) in communities.



Sugarcane Farm

4. Subjective Well-Being

4.1) Freedom & Choice

- Flexible working hours
- Can work individually or as a group

4.2) Cultural Fulfillment, Pride, Identity & Sense of Place

- Fulfil culture and traditions of Northeastern Thais who use silk to represent their identity and pride.

4.3) Mutual Respect

- Gain respect for each other because of their expertise & knowledge in silk production and diversifying process



Sericulturists choosing silk cocoons for reeling



Silk reeling process



A group of female silkworm rearers from NN community

"I like working in sericulture and silk weaving because I cannot work anywhere else now. I cannot work in farms already so I have to do something related to silk."

– sericulturist from NN

4.4) Women's Empowerment & Opportunities for Elderly



A female elderly from CTB community who has her main income from selling silk cocoons & silk textiles

4.5) Community Benefits

- Government funding & knowledge transfer to support sericulture communities.
- Sericulture brings reputation to local Thai communities.

4.6) Social Cohesion

- Sericulture and silk-diversifying product activities allow sericulturists to interact with one another.

4.7) Family Bonding

- Family members assist in sericulture process and sericin soap production.

4.8) Networking

- Sericulture communities join government programs e.g. Clinic Technology & BEDO.

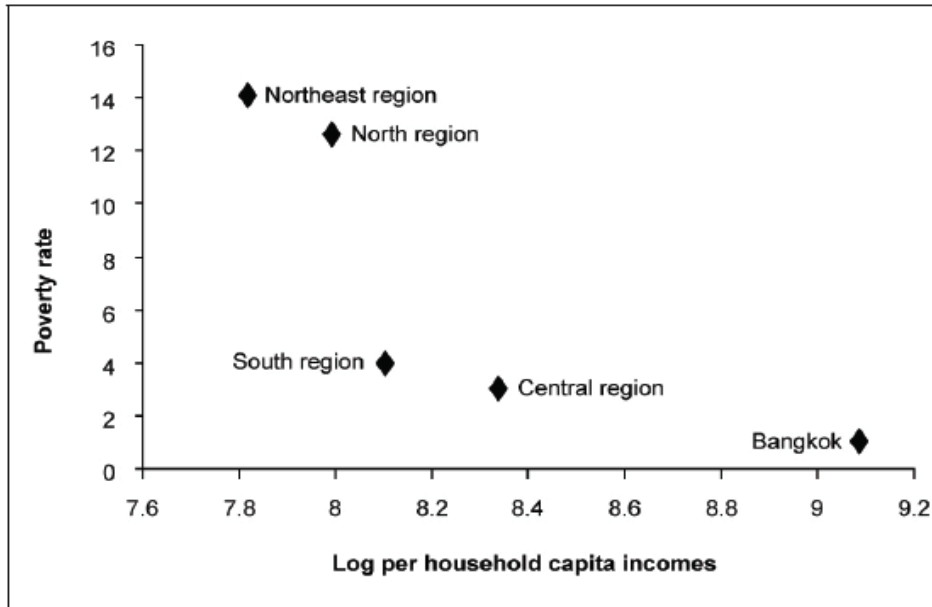


Communities become more well-known because of sericulture activities.



TV broadcasting of green sericulture community at Huaysai village.

Conclusions



Source: NESDB. 2008. Household Socio-Economic Survey 2008.

Poverty rate and per capital incomes –
subnational comparison of Thailand (Bird et al.
2011)

Sericulture & the use of sericulture by-products can **alleviate poverty** and **disparity issues** in Thailand.

They support not only the **economic well-being**, but also the **environment conditions** and **fulfil cultural traditions** in Thailand.

- The impacts of **wastes** generated from the mulberry sericin soap production and **additives** used in this process can counter balance the benefits reaped by sericultural community enterprises.
- To move towards '**the green sericulture**' sector, it requires both '**zero waste**' and '**environmentally friendly production**' of both silk and silk-related products.



THANK YOU

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