



University of Tsukuba, Japan
Master's Program in Environmental Sciences

Sustainable Wastewater Management from Paper Producing Activities in Vietnam

Case Study in Phong Khe Craft Village, Bac Ninh province

JDS seminar (28th -29th August 2012)

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A craft village

- A residential community in suburb and rural area;
- More than a half of households in the village working in non-agricultural production activity;
- Produce of handicraft products;
- Bring economic value and maintain traditional cultural value;

Phong Khe craft village



Phong Khe craft village: 1 of 6 communes and 13 wards of Bac Ninh city, Bac Ninh Province.

- Area: 5.49 km²,
- Population: 9,522 people and 2,227 households (2010)
- Pop density: 1,348 people/km²
- Convenient transportation to 2 national highways, far from Hanoi 26 km.
- Weather: Northern East wind (Oct-Mar), Southern East wind (Apr-Sep)

Phong Khe craft village

- Long history- 1450
- In the past, paper was made by hand
100%- family know hows-father to son
- Nowaday, in line with changing in paper
using demands, waste paper are collected
and used as input for paper recycling
activities: better technologies, extention of
production scale, bring more incomes for
residents.

Paper making Workshops in PK village

Ngo Khe Hamlet

1 production

HH/162 HH (1
machines)

Industry cluster
(70 machines)

Dao Xa Hamlet

34 production HH/322 HH
(36 machines)

Cham Khe Hamlet

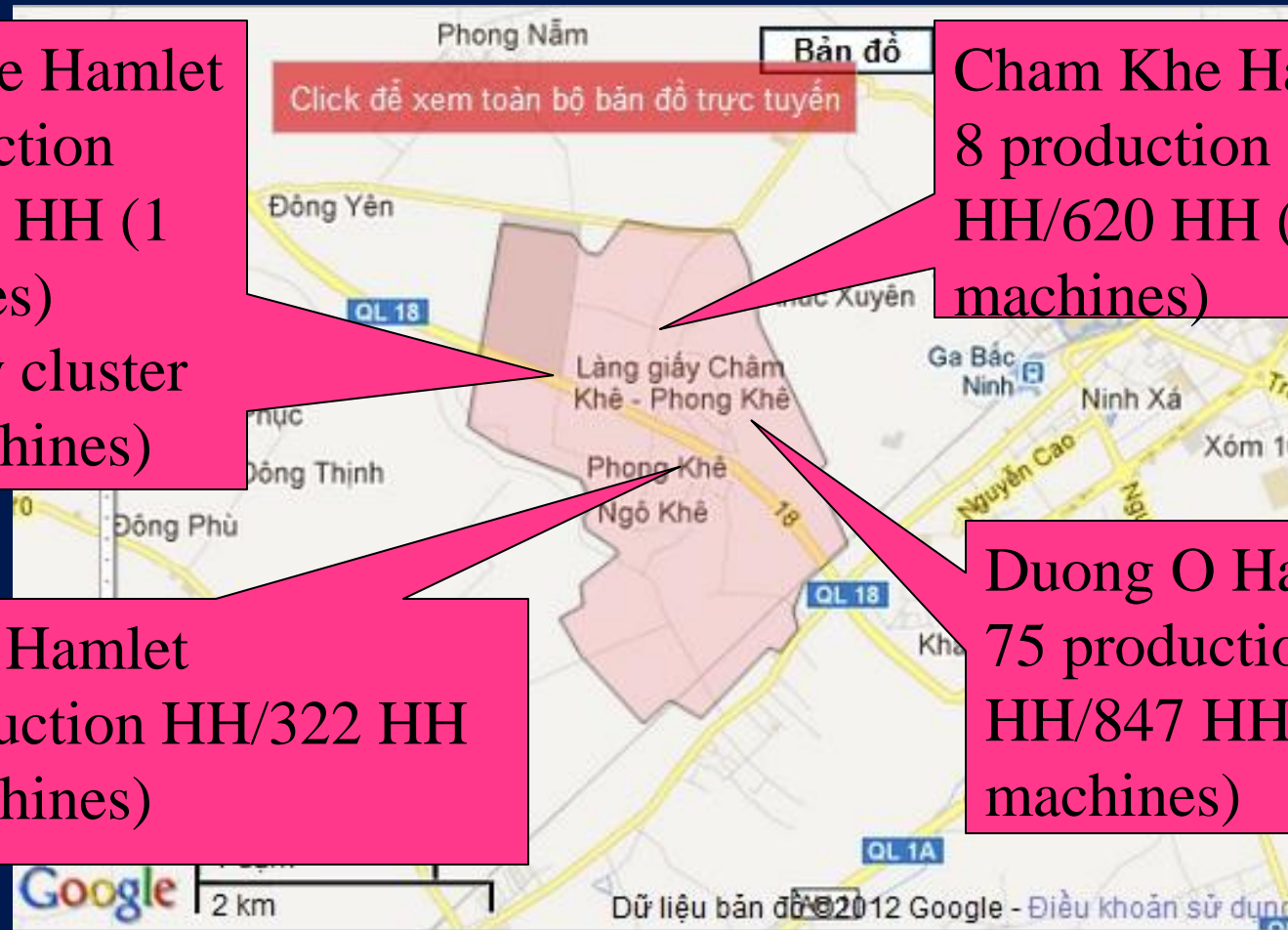
8 production

HH/620 HH (10
machines)

Duong O Hamlet

75 production

HH/847 HH (93
machines)



Study Area

Objectives

Data &
Methods

Expected
Results

The Paper Making Process

Tissue paper



Kraft paper



Pupil paper



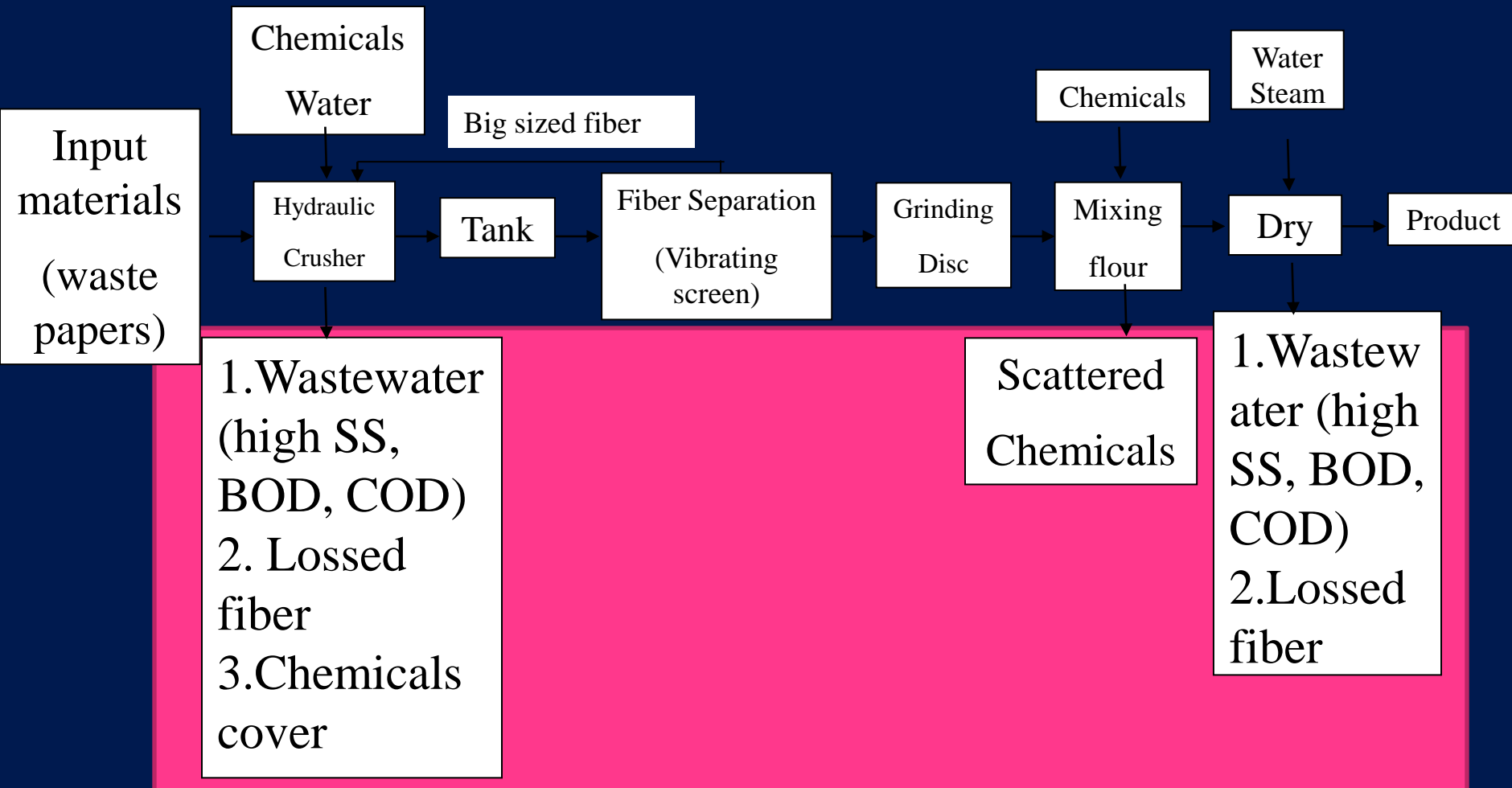
Toilet paper



Votive paper



The Paper Making Process



Water Environment Status



Water Environment Status

Mix Wastewater from production and daily life

Water pollution

But

No water separated drainage system

No wastewater treatment plants

Non effective environmental policies

No monitoring system

- (i) Provide an overview of the **waste paper recycling activities** in Phong Khe Village;
- (ii) Identify **environmental consequences**;
- (iii) Assess the cost-effectiveness of **wastewater pollution control**;
- (iv) Draw **policy implications** for pollution control activities.

- **A cost-effectiveness assessment (CEA)** to evaluate three options of pollution control including:
 - (1) a small treatment plant for every household;
 - (2) a treatment plant for a group of processing households;
 - (3) a treatment plant for the whole village.
- Group discussion
- Consultation with technical experts

- **Secondary data:** related and a vailable reports of various agencies, current total population, number of households and labours engage in paper recycling activities, wastewater amount, total productions.
- **Primary data:**
 - (i) Survey at workshops
 - (ii) Group discussion
 - (iii) Technical expert consultant

- Determine the most cost effective and environmentally friendly option;
- Policy recommendations for an effective wastewater management system in Vietnam on planning, management, environmental education and raising awareness, etc.

Future Works

1. Summary and Analysis the primary and secondary data;
2. Study more on CEA methods and technologies of wastewater treatment;
3. Caculate different options and decide the most appropriate one;
4. Provide policy implications for improvements.

A photograph of a dirt road in a logging area. Large piles of cut logs line both sides of the road. In the distance, two people are riding bicycles away from the camera. The sky is overcast and grey. The text "Thank you for your attention!" is overlaid in orange.

**Thank you
for your attention!**