CONTENT

1. Self-introduction
2. Undergraduate study
3. Current study in Vietnam
4. Study plan at GSGES - Kyoto university

Student: Do Thi Phuong Thao
Supervisor: Prof. Shigeo FUJII - GSGES

Kyoto, 24th April, 2013
1. SELF-INTRODUCTION

Full name: Do Thi Phuong Thao
Nationality: Vietnamese
Occupation: Officer at Hanoi Department of Natural Resources & Environment/Department of Water Resources & Meteo-hydrology

Academic: M2 student - Hanoi University of Science and Technology (HUST) – School of Environmental Science and Technology/Department of Environmental Management

- Study duration at GSGES: 6 months (4th April ~ 26th September, 2013)
- Supervisor at GSGES: Prof. Shigeo FUJII
- Supervisor at HUST: Dr. Van Dieu Anh
2. UNDERGRADUATE STUDY

- **Thesis:** Potential recovery of starch from starch waste in cassava production process to produce foodstuff for cattle (A case study: Duong Lieu craft-village, Hoai Duc district, Ha Tay province)

- **Objective:** To evaluate recovery possibility of starch from cassava production process

- **Methodology:** using *Endomycopsis fibuliger* yeast to synthesize protein from starch waste

**Result:**

- **Generation 1**
  - Starch waste & rice bran
  - 48h, 30°C, pH: 4~5
  - (50% starch waste + 50% rice bran): 89.757%A
  - (NH₂)₂CO (0.243% A), *Endomycopsis* (10%A)
  - Product: Starch: 2.95%; Protein: 0.65% (48% starch was synthesized)

- **Generation 2**
  - Starch waste & rice bran
  - 48h, 30°C, pH: 4~5
  - (50% starch waste + 50% rice bran): 89.757%B (NH₂)₂CO (0.243% B), Generation 1 (10%B)
  - Product: Starch: 3.63%; Protein: 0.62% (36% starch was synthesized)

**Conclusion and recommendation:**
- It is possible to produce foodstuff for cattle from starch waste (need further research)
- It helps to reduce generated amount of solid waste as well as make benefit
3. CURRENT STUDY IN VIETNAM

Wastewater inventory at Nhue-Day river basin (A case study: Tu Liem district, Hanoi, Vietnam)

3.1 Background of Nhue-Day river basin

- Located in the south-west of the Northern Plain, on the right bank of Hong river. 5 provinces are relevant to the basin: Ha Noi, Hoa Binh, Ha Nam, Ninh Binh, Nam Dinh.
- To supply important water sources serving agricultural and industrial production.
- Serve as a drainage system, especially in the flood season.

However
- Be suffering strongly from wastewater of domestic, industrial, agriculture
- Many parameters have exceeded permitted standards for surface water such as COD, BOD$_5$, Coliform…

Inventory the contribution of pollution sources to Nhue-Day river basin is needed

The percentage of wastewater sources in Nhue-Day river basin

3.2 Objectives:
- Objective 1: To identify all pollution sources
- Objective 2: To calculate pollution load
- Objective 3: To estimate contribution of pollution load of Tu Liem district to Nhue-Day river basin

3.3 Methodology:
- Definition: Wastewater inventory is an accounting of the amount of water pollutants from all activities discharged into one reception source in specific period
- Site study: Tu Liem district, Hanoi province, Vietnam
  - Located in the western gate of Ha Noi
  - Natural area: 75.15 km²
  - Population: 550,000
  - Activities: industry, agriculture, domestic
3. CURRENT STUDY IN VIETNAM

Wastewater inventory at Nhue-Day river basin (A case study: Tu Liem district, Hanoi, Vietnam)

3.3 Methodology (cont.)

**OBJECTIVE**

**METHODOLOGY**

Objective 1: To identify all pollution sources

- Field survey
- Secondary data collection

Objective 2: To calculate pollution load

\[ PL = \sum V_i C_i \]

- Sampling and analysis (BOD$_5$, COD, SS, flow rate)
- Secondary data collection

Objective 3: To estimate contribution of pollution load of Tu Liem district to Nhue-Day river basin

- River survey (flow rate survey, sampling and analysis)
- Secondary data collection

Objective 1, 2 → Study and experiment in Vietnam

Objective 3 → Study and experiment in Kyoto university
4. STUDY PLAN AT GSGES – KYOTO UNIVERSITY
Study on wastewater management techniques in Japan

4.1 Study content:
- **Objective:** To estimate contribution of pollution load for BOD$_5$, COD
- **Methodology:**
  - Study site: Kamo river
  - River survey (measure flow rate, take sample and analysis)
  - Calculate according to “Material Flow Analysis – MFA”
  - Secondary data analysis (if having data)

4.2 Expected outcome:
- Be able to do river survey professionally
- Be able to apply MFA to wastewater inventory
4.3 Benefit from studying in Kyoto university:

- Approach new and effective environmental technology as well as environmental management tools
- Obtain more knowledge about environmental issues, share and learn experience among various countries
- Learn methodologies and procedures to do river survey as well as calculate pollution load

4.4 How the study in Kyoto university can be useful for the study in Vietnam:

- Supplement new methodologies to calculate pollution load exactly
- Use gained experiment from river survey at Kamo river to apply for wastewater inventory in Vietnam
4.5 Detailed study schedule:

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<th>May</th>
<th>Jun</th>
<th>Jul</th>
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<td>24th</td>
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<td>Study at lab and do survey at Kamo river</td>
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THANK YOU FOR YOUR ATTENTION!