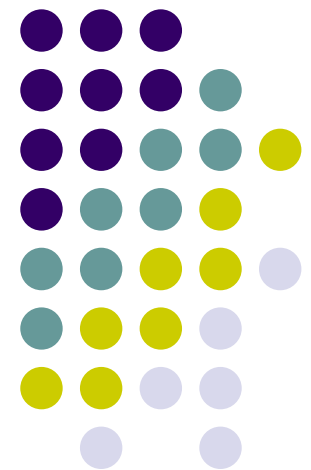


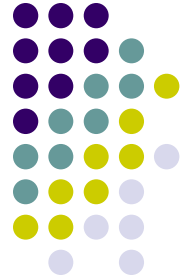
ASSESSING THE IMPACTS OF ENVIRONMENTAL REGULATIONS ON FOOD PROCESSING INDUSTRY IN VIETNAM: The case of Environmental Protection Fees (Decree 67) on industrial wastewater

**Le Ha Thanh,
NEU & Vietnam Development Forum**

EEPSEA Research Grant



Structure



WHY?

- Situation
- Policy

WHAT FOR?

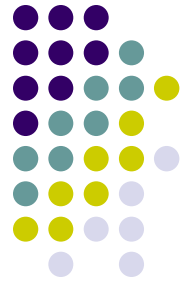
HOW?

- Data
- Methodology

FINDINGS and DISCUSSIONS



The situation



Industrial wastewater pollution is the main obstacle for development process

- High economic growth rate vs. growing environmental problem (esp. water pollution)
- Industrial sector is the main contributor to environmental degradation, produces more than 60-70% of total pollution load
- Vietnam still uses obsolete and outmoded technology
- 90% of firms do not have wastewater treatment facility
- The survey of Mol: Of 105 food processing firms only 10% have WWTF that ensure acceptable standards



Key notes

- Vietnam continues to emphasize the role of industrialization
- need for improving environmental policy formulation to keep industrial companies comply with wastewater standards has increased

In this context

Environmental protection Fees (Decree 67) are one possible policy approach to manage the situation

Environmental protection fees – Decree 67



- Signed on June 13th 2003
- Officially effective from January 01st 2004
- For industrial wastewater the fee level is regulated for 7 pollutants: BOD, COD, TSS, Mercury, Lead, Arsenic and Cadmium
- Replaced later on by Decree 04 from January 08th 2007 with 3 minor changes (1) remove the BOD parameter and (2) change the use of fee collected and (3) establish emission coefficients for different industrial sectors

Environmental protection fees: Targeted Groups



Domestic wastewater *(Cir. 125, Section 1, Art. 1b)*

Includes:

- Households
- State's Institutions and agencies;
- Military bases and units;
- Headquarters, branches, and offices of organizations and/or private ownership;
- Automobile and motorbike washing units
- Hospitals, health and medical services;
- Hotels and restaurants;
- Other production and trade services;
- Other groups discharging domestic wastewater.

Industrial wastewater *(Cir. 125, Section 1, Art. 1a)*

Includes:

- Industrial production establishments;
- Agricultural, forestry, food and sea product processing units;
- Slaughter house;
- Beverage production;
- Leather processing and leather factories
- Industrialized husbandry establishments;
- Handicraft production units in craft villages;
- Intensive automobile and motorbike engineering and repairing units;
- Mineral exploiting and processing units;
- Aquaculture farms;
- Water supply firms;
- Wastewater treatment facilities.



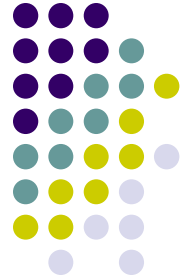
The main goals of Decree 67

- (1) To limit the environmental pollution cause by wastewater
- (2) To use economically clean water
- (3) To create fund for environmental activities

The calculation

Total fees paid (VND) = Volume of discharged wastewater (m³) X amount of pollutants in wastewater (mg/l) X charge rate for industrial wastewater discharged into respective receiving environment (VND/kg)/1000

The rates of Environmental Protection Fees (VND/kg)



| Pollutants | Medium A | Medium B | Medium C | Medium D |
|------------|------------|------------|------------|------------|
| BOD | 300 | 250 | 200 | 100 |
| COD | 300 | 250 | 200 | 100 |
| TSS | 400 | 350 | 300 | 150 |
| Mercury | 20 000 000 | 18 000 000 | 15 000 000 | 10 000 000 |
| Lead | 500 000 | 450 000 | 400 000 | 300 000 |
| Arsenic | 1 000 000 | 900 000 | 800 000 | 600 000 |
| Cadmium | 1 000 000 | 900 000 | 800 000 | 600 000 |



Policy implication

- Primary results of 3 years implementation Decree 67 are positive in terms of
 - raising public awareness
 - creating fund for environmental activities
- **But not all the firms pay the fees**

BECAUSE OF

- absence of clear direction and methodology
- lack of capacity at local level
- existence some confusions

**Right approach, but weak implementation
→ Low efficiency → Need to revise**

.... HOWEVER

Current understanding about effectiveness of Decree 67 from firms' perspective is insufficient



- Local authorities seem to be more concerned about how to implement the Decree 67 and how much revenues they can collect than by how much pollution can be reduced.
- No study on impacts of Decree 67 on firms' environmental behavior

AS A RESULTS:

- Lack of firms' feedback information in policy making process → Relevant authorities are less likely to effectively respond to the problems arise from the growing industrial pollution

Research Objectives



- To determine the level of awareness of Vietnamese enterprises on environmental problems and environmental regulations, especially Decree 67.
- To assess the effectiveness of Decree 67 in inducing the change in environmental behavior of the firms.
- To identify factors affecting firms' environmental behavior.
- To provide some recommendations to policy-makers to improve the quality of environmental policy in general and pollution fee system in particular.

Specific Research Questions



- Are the firms aware of environmental regulations and Decree 67?
- What's is firms' perception about Decree 67?
- Does Decree 67 provide any incentive for firms to improve their environmental performance?
- What are the other factors can best explain the environmental performance of the firms?

And after all, what policy recommendations?

Scope of the study



- **Sector: Food processing industry**

WHY? --high growth rate

--very polluted industry with high organic content

--pollution reduction easily possible

--water intensive user

- **Location: Hanoi (HN) and Hochiminh City (HCMC)**

WHY? --high concentration of food processing factories and highly polluted

--more or less successful in implementing Decree

67

- **Pollution measures: COD and TSS**



Data

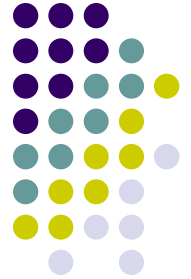


PRIMARY DATA

- Firm's survey using a standard questionnaire
- 5 components in questionnaire:
 - firm's profile
 - production capacity
 - input information
 - output information
 - firm's opinion on self assessing its environmental performance and Decree 67

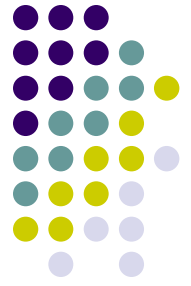
SECONDARY DATA

- GSO enterprises' survey for the year 2004
- Reports from various agencies incl. MONRE, MOF, and provincial Department of Env. and Natural Resources, Industry, Trade, Taxation etc.



Methodology

Qualitative analytical tool



- The qualitative analysis captures
 - how firms perceive the wastewater fees and other sources of pressure for pollution abatement and
 - how these perceptions affect or influence actions related to the firms' environmental performance

Findings



Main focuses:

- The role of food processing industry
- The implementation of Decree 67
- Firms' environmental performance
- Firms' perception toward Decree 67

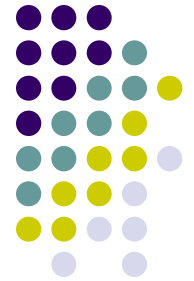
The role of food processing industry in Vietnam



- Experienced high growth rate of 34% in the period 2000-2004 and attracted significant amount of FDI.
- In 2005 accounted for 4% of GDP, 21% of agricultural value added and 37% of total export
- SOE is still a the dominant player... BUT private sector is playing increasingly important role
 - accounts for around 50% of total food processing outputs
 - provides a lot of jobs
- Main products are seafood products, meat products, instant noodles, sauce, beer, soft drinks, cigarettes, milk and milk products ...
- Most companies have poor technologies and equipments

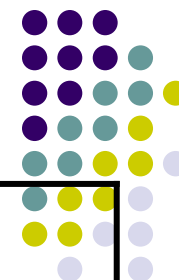
→ Known as most polluting industries with high organic pollution

Characteristics of wastewater from food processing industry



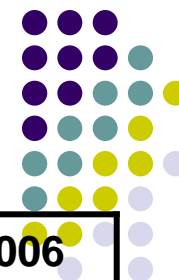
| Parameter | Brewery factory | Beverage factory | Sea food factory | TCVN Class B |
|-----------|-----------------|------------------|------------------|--------------|
| pH | 5.7 – 11,7 | 5.4 - 8.3 | 6.5 – 7.5 | 5.5-9 |
| BOD | 750 – 2,500 | 50 – 200 | 800-1000 | 50 |
| COD | 1,200 – 4,700 | 100 – 1,400 | 900-1,300 | 100 |
| N total | 20-190 | | 130-170 | |
| P total | 2-18 | | 15-40 | 6 |
| SS | 300 – 7,000 | 30 – 100 | 80-170 | 100 |

Implementation of Decree 67: Hanoi vs. Hochiminh city



| | HANOI | HCMC |
|--|--|---|
| Starting time | May 2004 | January 2004 |
| Pollution parameters | 6 (excl. BOD) | 7 |
| Supporting materials | Decree 67; Circular 125; Simple software | Decree 67; Circular 125; A manual for implementations |
| Organization responsible for the implementing Decree 67 | Env. Division (DONRE HN) , water supply companies, IP/IZ management Board | Env. protection Division (DONRE HCMC) , water supply companies, IP/IZ management Board |
| Number of staffs involved in ENV. Division | 3 | 15 |
| Total firms should pay the fee | More than 20,000 | More than 30,000 |
| Total firms pays the fees | 127 | 3574 |
| Total collected fee (VND) for the period from 2004-2006 | 995,596,529 | 11,065,850,683 |
| Average fee paid by firms (VND) | 7,939,342 | 3,096,208 |

Wastewater fee paid by all industrial firms in Hanoi (as of October 2006)



| | Year 2004 | Year 2005 | Year 2006 |
|--|-------------|-------------|-------------|
| Firms received writing notice from Hanoi DoNRE related amount of wastewater fee to be paid | 453 | 453 | 453 |
| Firms paid for wastewater fee | 76 | 28 | 23 |
| Firms did not pay for wastewater | 364 | 378 | 398 |
| Total assessed fee (VND) | 689,040,733 | 610,040,733 | 414,020,592 |
| Total collected fee (VND) | 683,611,214 | 249,349,661 | 62,635,654 |
| Rate of collection efficiency (%) | 99.2 | 24.8 | 13.5 |
| Average fee paid by firms (VND) | 8,994,884 | 8,905,345 | 2,723,289 |



Wastewater fee paid by food processing firms in Hanoi (as of October 2006)

| | Year 2004 | Year 2005 | Year 2006 |
|--|-------------|-------------|------------|
| Total fee paid by all sectors (VND) | 683,611,214 | 249,349,661 | 62,635,654 |
| Amount of fee paid by food processing industry (VND) | 426,514,078 | 65,720,682 | 26,936,059 |
| Contribution rate of food processing industry (%) | 62 | 26 | 43 |
| Average fee paid by food processing firms (VND) | 53,314,259 | 10,953,447 | 6,734,014 |

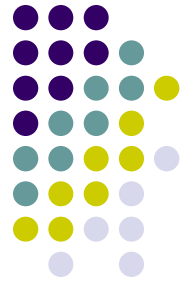


Wastewater fee paid by all industrial firms in HCMC

| | Year 2004 | Year 2005 | Year 2006 |
|-------------------------------------|-------------|---------------|---------------|
| Total fee paid by all sectors (VND) | 294,929,541 | 4,716,455,486 | 6,054,465,653 |
| Number of firms | 129 | 1851 | 1594 |
| Average fee paid by firm (VND) | 2,286,276 | 2,548,058 | 3,798,285 |

* No available data for Wastewater fee paid of food processing industry in HCMC

Remarks



For whole industry

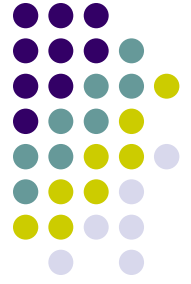
- The coverage of Decree 67 was 33% of total potentially polluting firms, of which just 22% make a transfer to state budget
- The ratio of actual collection to total assessed fee was 58%
- Decreasing trend in total and average fee paid by firms

For food processing industry (only in HN)

- The contribution of fee paid 52%
- The same declining trend in total and average wastewater fee paid
- After 3 years the maximum wastewater fee paid by a firm dropped by 22 times, the average fee paid - by 8 times
- 01 firm installed WWTP

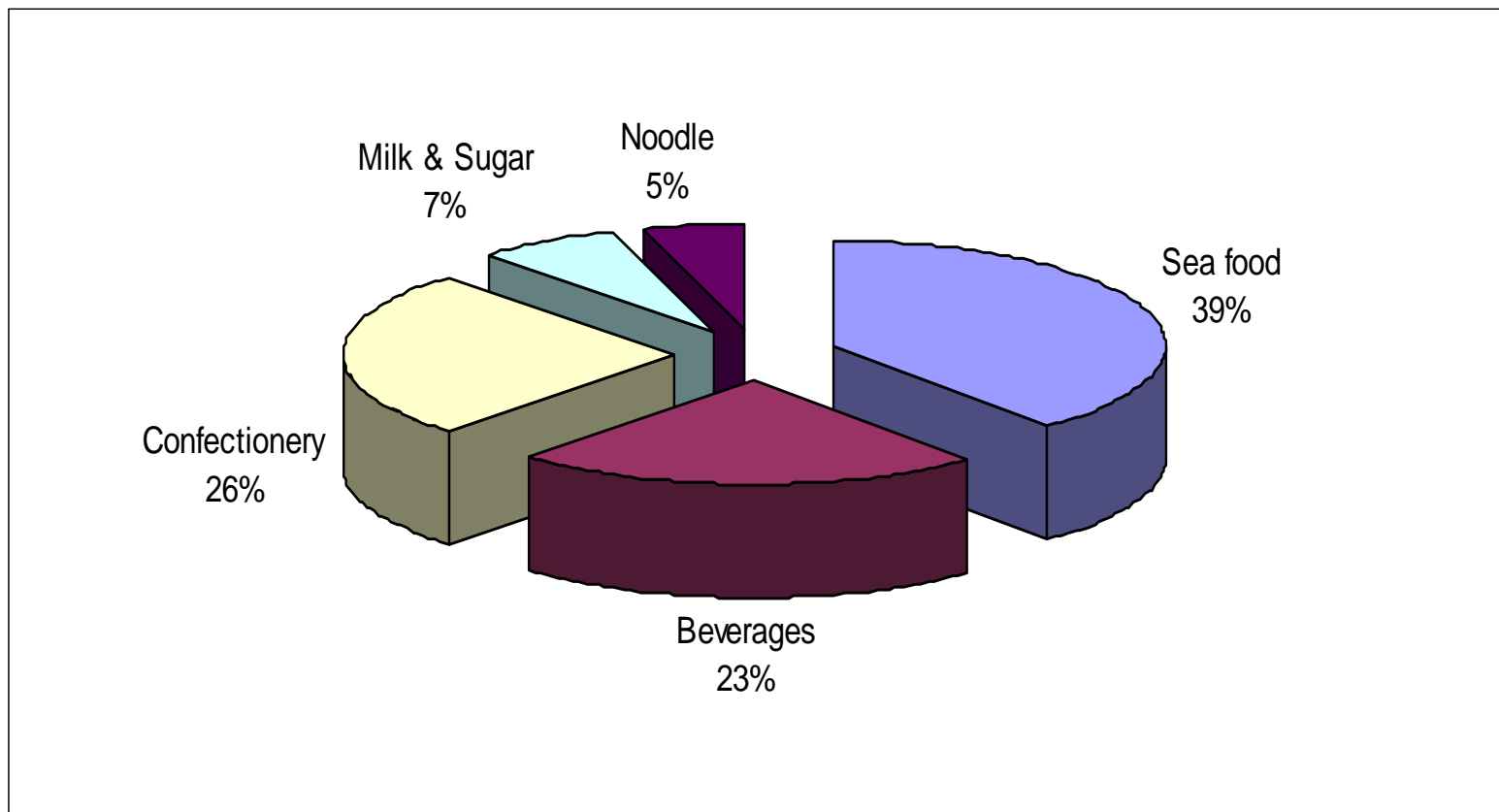
**→ The positive impacts of Decree 67 exists
.... but still weak**

Firms' environmental performance: The survey's results

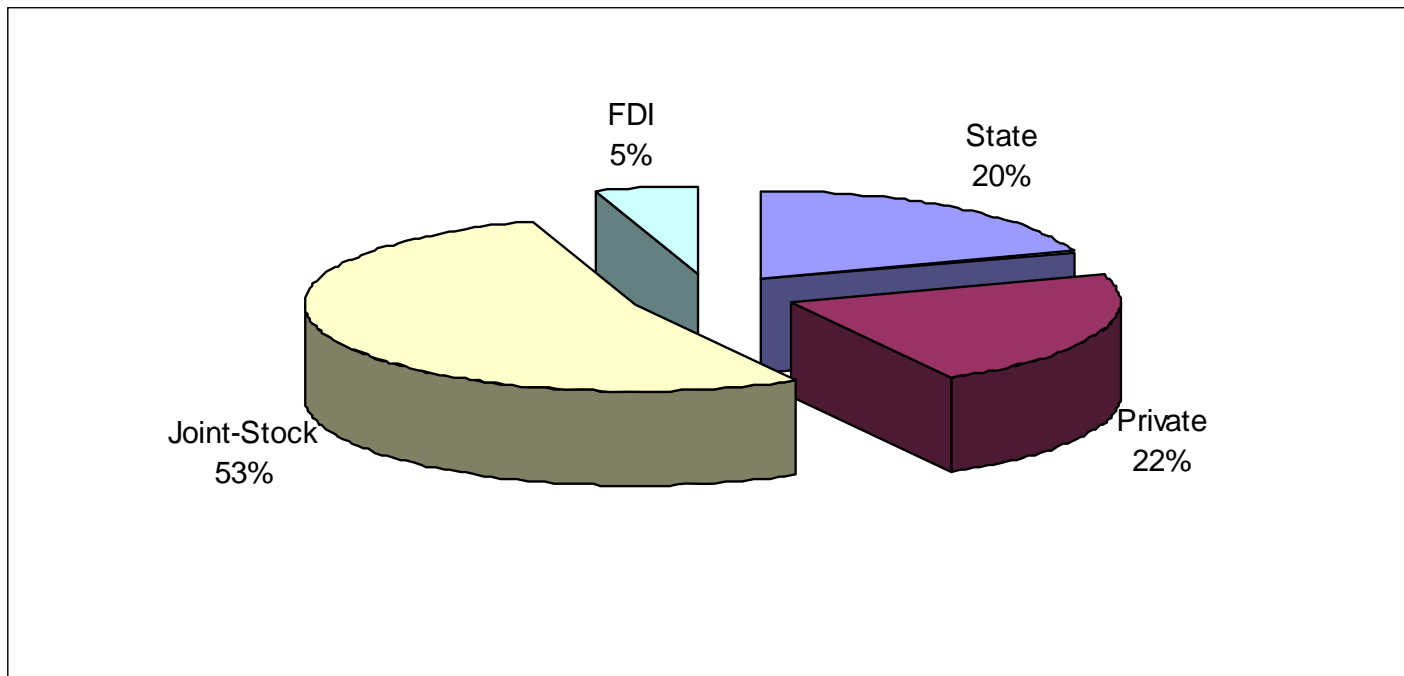
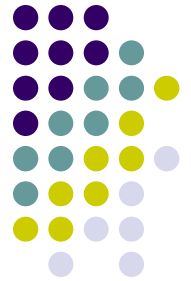


- Total surveyed firms: 119 of which 55 firms in HN and other 64 firms in HCMC
- 61% firms are SME
- 91% of firms located within residential areas, 9% located in IP/IZ of HCMC
- 59 firms recorded quality of wastewater
- 14 firms met env. Standards class B for COD and 34 firms met env. Standards for TSS.
- No firm has separate environmental unit and experts
- 24 firms have so-called wastewater treatment facility withlow effectiveness

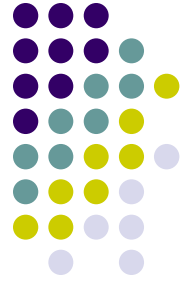
Firms distribution by industrial subsector



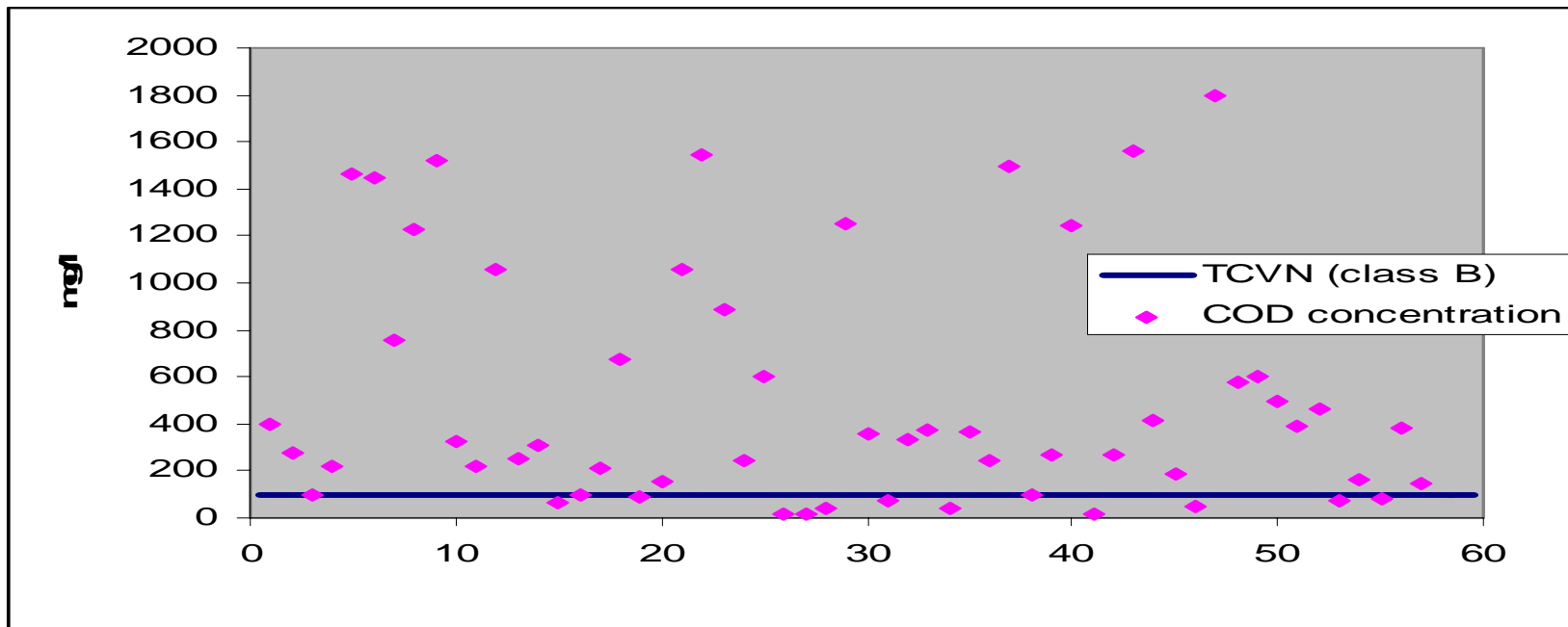
Firms classification by type of ownership



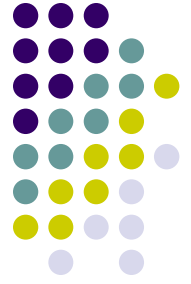
Characteristics of wastewater of interviewed firms



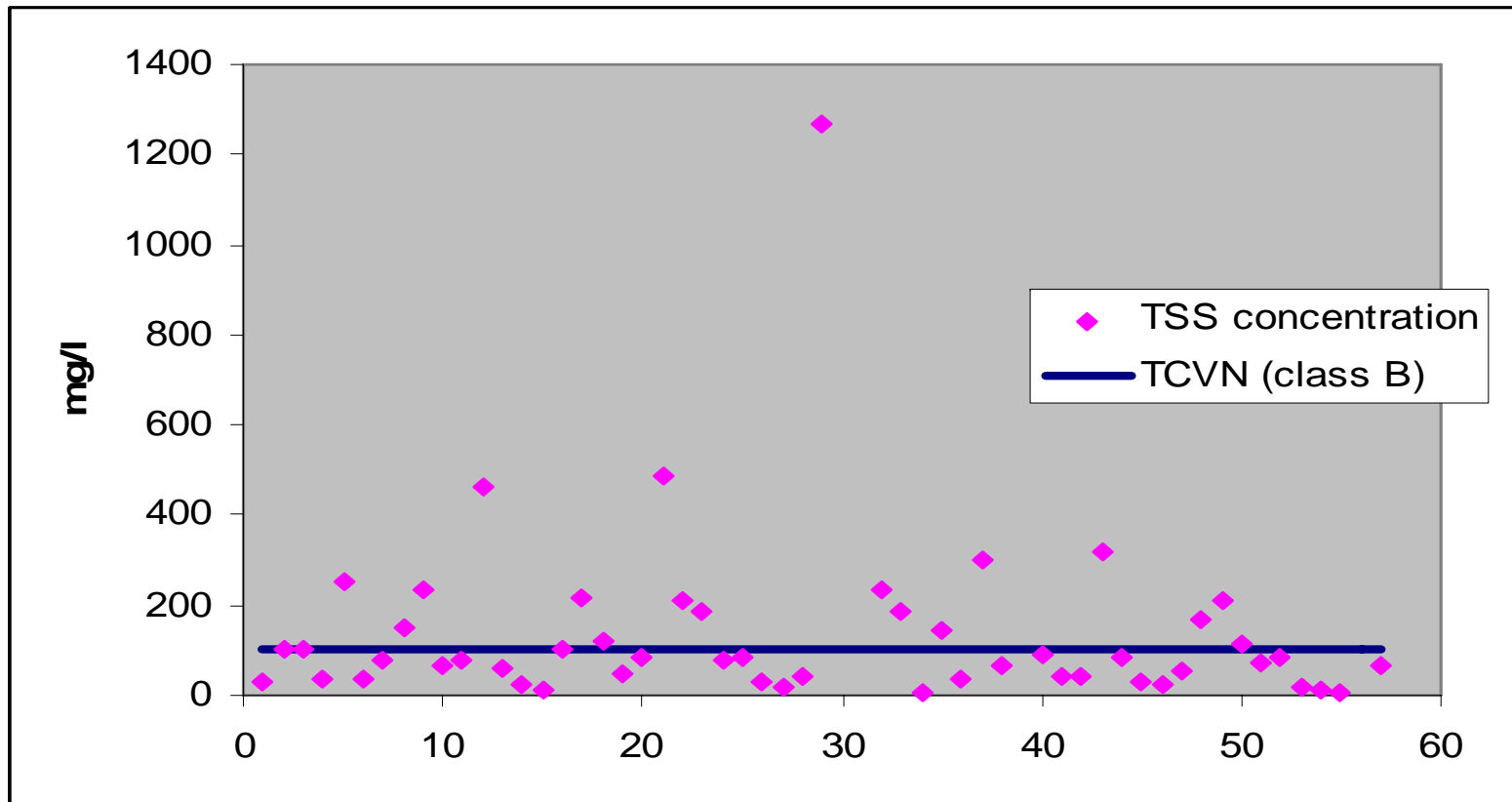
COD concentration



Characteristics of wastewater of interviewed firms



TSS concentration



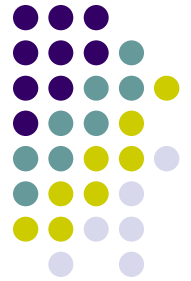
How the pollution should be explained?



| Subsector | Beverages | Confectionairy | Milk & Sugar | Noodle | Sea food |
|-----------------------------|------------------|-----------------------|-------------------------|----------------|-----------------|
| Average COD concentration | 396 | 715 | 164 | 639 | 485 |
| Average TSS concentration | 86 | 152 | 226 | 143 | 167 |
| Type of ownership | State | Private | JV | FDI | |
| Average COD concentration | 469 | 614 | 501 | 322 | |
| Average TSS concentration | 89 | 102 | 180 | 93 | |
| Export activities | Yes | No | | | |
| Average COD concentration | 460 | 458 | | | |
| Average TSS concentration | 102 | 176 | | | |
| Relocation | Yes | No | | | |
| Average COD concentration | 453 | 562 | | | |
| Average TSS concentration | 158 | 135 | | | |
| Number of inspection | 1 time | 2 times | 3 times | 4 times | |
| Average COD concentration | 382 | 571 | 317 | 934 | |
| Average TSS concentration | 136 | 163 | 95 | 212 | |

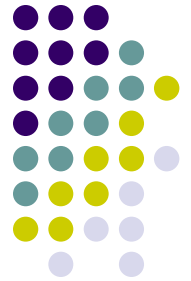
Pollution depends on firms internal and external factors

Pressures for pollution control as perceived by firms' manager



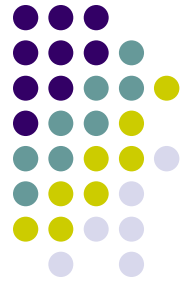
| | 1 st source | 2 nd source | 3 rd source |
|-----------------------------------|------------------------|------------------------|------------------------|
| Government (national regulations) | 119 | 0 | 0 |
| Suppliers | 0 | 0 | 0 |
| Customers | 0 | 45 | 51 |
| Community commitment | 0 | 37 | 54 |
| Wastewater fees | 0 | 7 | 9 |
| Participation in special program | 0 | 0 | 5 |
| Other | 0 | 20 | 0 |

Pressures for pollution control as perceived by firms



- National regulations and enforcement are most influential factors. However inspection have no/little impacts on firms performance → problems of ‘envelope’ or bribery
- Complaints from local communities play important role ...but the voice of local people still weak
- Requirements from foreign partners is very potential factor

Firms perception toward Decree 67



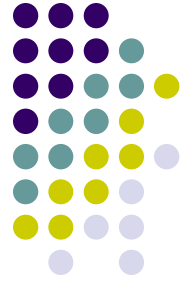
Advantages:

- Raising environmental awareness

Disadvantages:

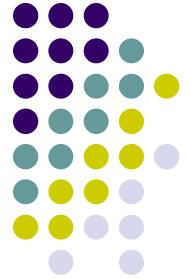
- Not sufficiently clear and detailed
- Difficult to get access the information from authorities
- Not fair among the business firms (why some should pay but others not?)
- The calculation of fee is not accurate
- Some parameters are identical
- Double payment

Conclusions



- Charging the cost of polluting the environment is right approach
- Decree 67 is successful in raising environmental awareness and inducing the change in environmental behaviour of polluting firms.
- There are many weaknesses of implementing process like lack of knowledge, low awareness, weak cooperation among the stakeholders.

Recommendations



1. Who should be targeted?

Big firms in specific industrial sectors with high pollution intensity like paper, garment, leather and shoes, chemical beverages, seafood sugarcane, milk ...

2. What pollution parameters should be covered?

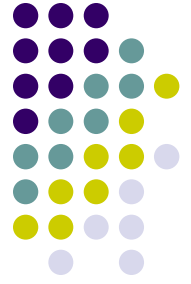
Mainly COD, TSS and 1 heavy metal

3. How the fee structure should be?

To separate the needs for revenue generation from the needs to create incentives for pollution control → Use the **Two part fee system**: Fixed and variable fees

4. What the fee level should be set?

Roadmap: start with low level, raise the fee on an annual basis on a given date by the value of the consumer price index, revise every 5 years



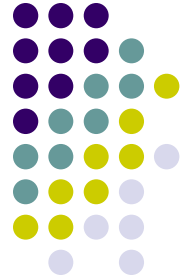
Recommendations (Cont.)

5. Who should be responsible for fee collection and management?

- **Special division** under DONRE with strong knowledge and skill on finance and environment → Formulate a plan for improved staffing and prepare a staff development program in the DONRE
- Specify **clearly function** of water supply or water sanitation company and management Board of IP/IZ to avoid double payment

6. Other issues

- Establish electronic **database and standardized** Vietnamese industrial classification code when listing the industrial sectors subjected to the EPFIW
- Set up a system of **finances and penalties** for noncompliance firms
- Use the **annual payment** scheme
- Issue the list of high **qualified labs** and make a recommendations to the enterprises
- Continue the **awareness** raising activities



Thank you for your attention!