

# Methods for Valuing Beneficiary Willingness to Pay: Contingent Valuation of Marine Turtles in East and Southeast Asia

IWLEARN Regional Workshop on Payments for  
Environmental Services

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# What is the value of environmental goods?

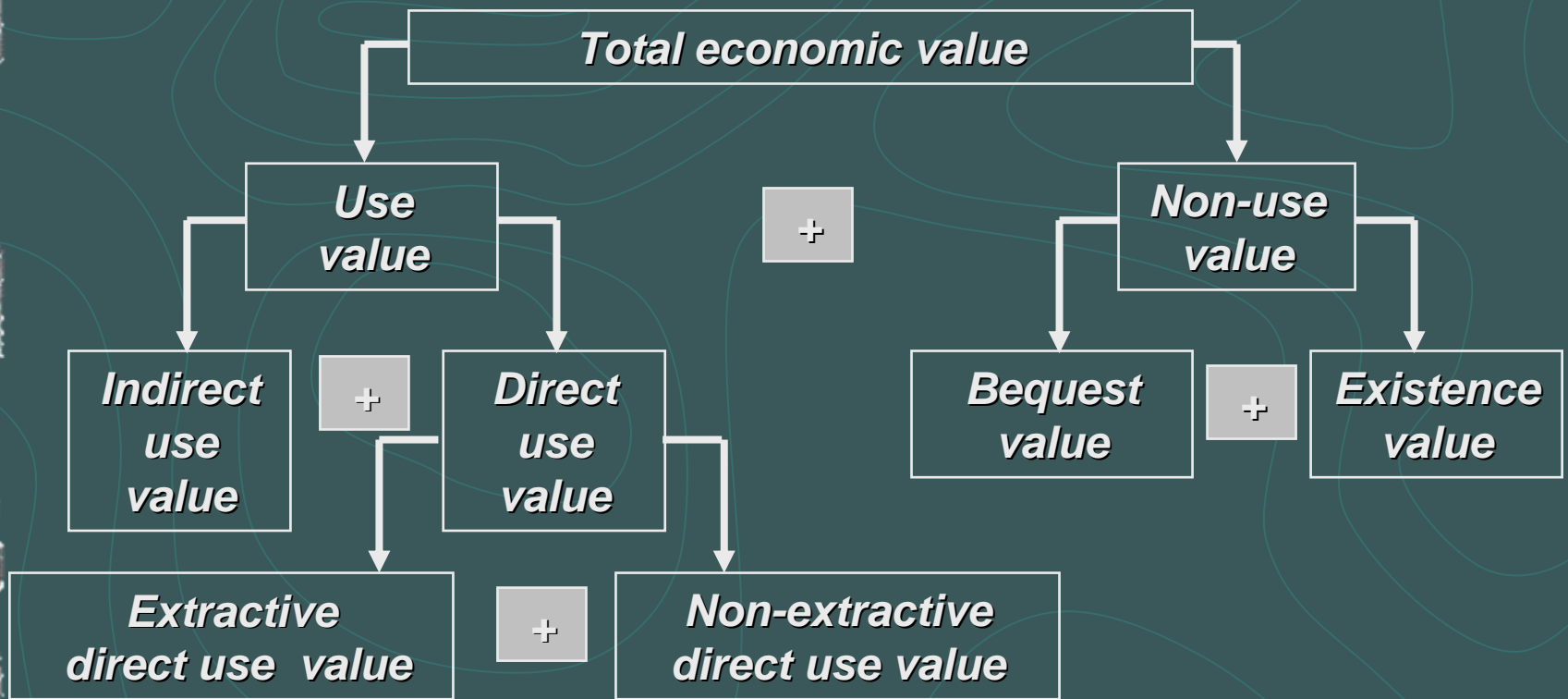




## ...most environmental goods

- ... are ... are not traded in the market
- un-priced  
(economic values are not easy to observe)
- Environmental goods have public goods characteristics: non-exclusive and Non-divisible/non-rival
  - Non-exclusive: cannot isolate those who pay
  - Non-rival: ones consumption does not reduce consumption of others
- Problems of free-riding

# *The concept of total economic value*



Among **use value**, we also add: **Option value**

# Direct use: consumptive





Direct use:  
non-extractive







Both extractive and non-extractive





## Indirect use

Top soil cover

Carbon  
sequester

Regulating  
Stream-flow





# Non-use..passive value

## Existence value:

value you attach for the turtle to exist regardless of whether or you you'll ever get to see it or benefit from it in any way



## Bequest value:

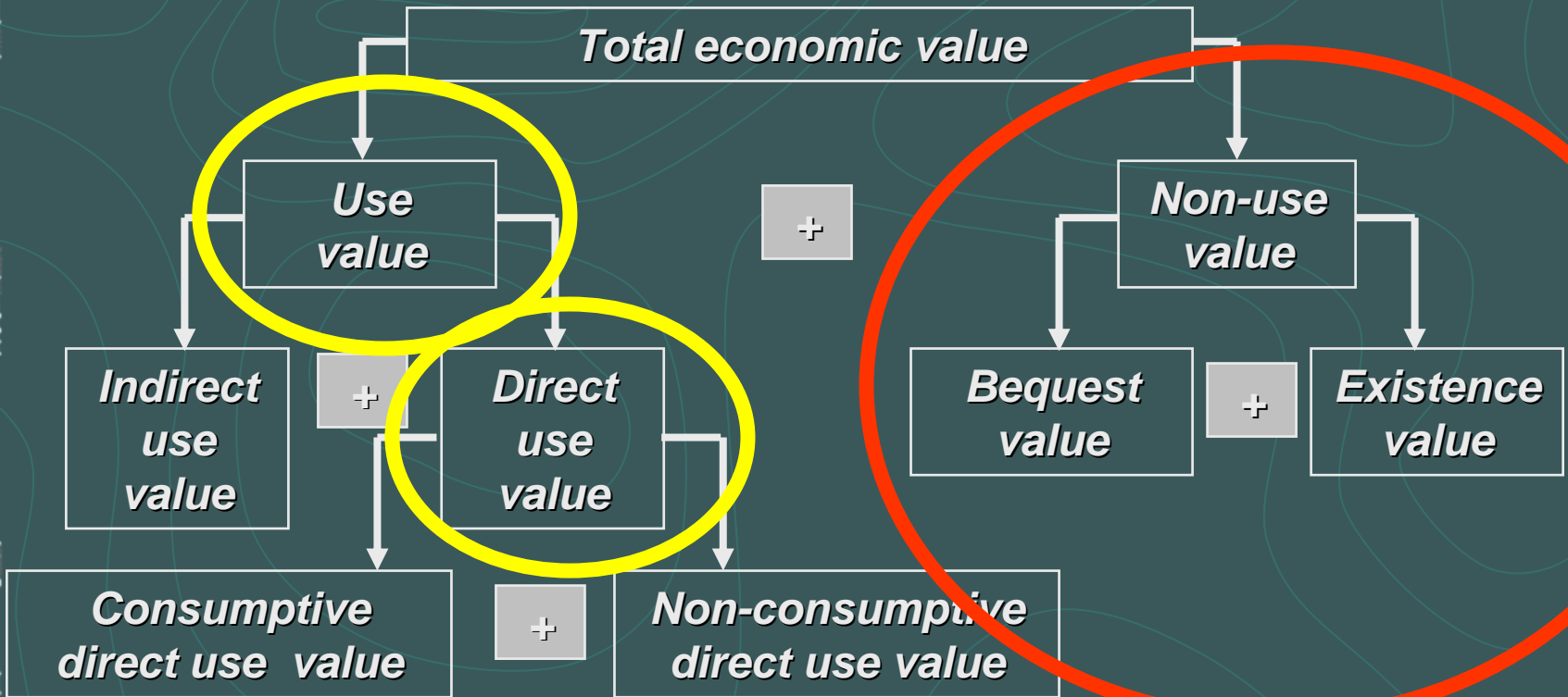
value you attach for the turtle to exist so that your children, grand-children, Great grandchildren and the future generations will be able to see or  
Regardless of whether or you yourself will ever get to see the turtle or benefit from it in any way

# What is this plant worth?





# *The concept of total economic value*



Among **use value**, we also add: **Option value**



The economic concept of value → how changes in environment and natural resource systems affect HUMAN WELFARE.

- The basic premise in welfare economics is: each individual is the best judge of how well-off he or she is in a given situation.

Economic Value of Good → Willingness to Pay (WTP)

WTP is the maximum sum of money the individual would be willing to pay rather than do without the increase in environmental amenity.





What would pay to prevent this

*Jana district,  
Southern Thailand*

from turning  
Into this?





..... into this ?



What would you be WTP to turning this...



**Mobilizing  
Resources for  
Marine Turtle  
Conservation in  
Asia:  
A Cross-Country  
Perspective**



Economy and Environment Program for Southeast  
Asia (EEPSEA) [www.eepsea.org](http://www.eepsea.org)



## ● Ecological Importance

- Serve as environmental indicator
  - ‘Gardeners of the oceans’ as agent for dispersal of plants & nutrients----migratory nature---
- Six, out of the 7 species are classified by IUCN as either critically endangered or endangered.
- Various threats continue to confront and endanger marine turtles. There are existing conservation efforts but. . .minimal signs of recovery for most species



# What have we already learned?

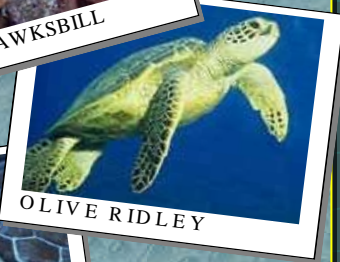
- Laws alone don't work
- International collaboration is vital but it still needs to be expanded and strengthened
- Most Asian governments can't afford. . . Tap corporate social responsibility & solicit help of local community
- Still. . .available resources & program effects are limited
- Why not tap contributions from urban population?



LOGGERHEAD



HAWKSBILL



OLIVE RIDLEY



GREEN TURTLE



LEATHERBACK



We want to know. . .

Are Asians in urban areas willing to be involved? Are they willing to pay?



In Asia, there are large urban populations with growing wealth. . .

- Can that wealth be tapped?
- How? With what payment scheme?
- Will it cover regional-scale programs?



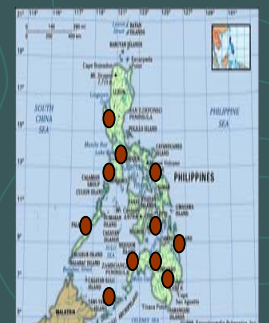
We set out to do. . .



Contingent valuation method (CVM)  
study in 4 Asian developing countries  
to assess Asian attitudes and  
willingness to pay to conserve marine  
turtle.



China



Philippines



Thailand



Vietnam





# Objectives of the Project

**Policy**

Information

Potential revenue of the Conservation Program

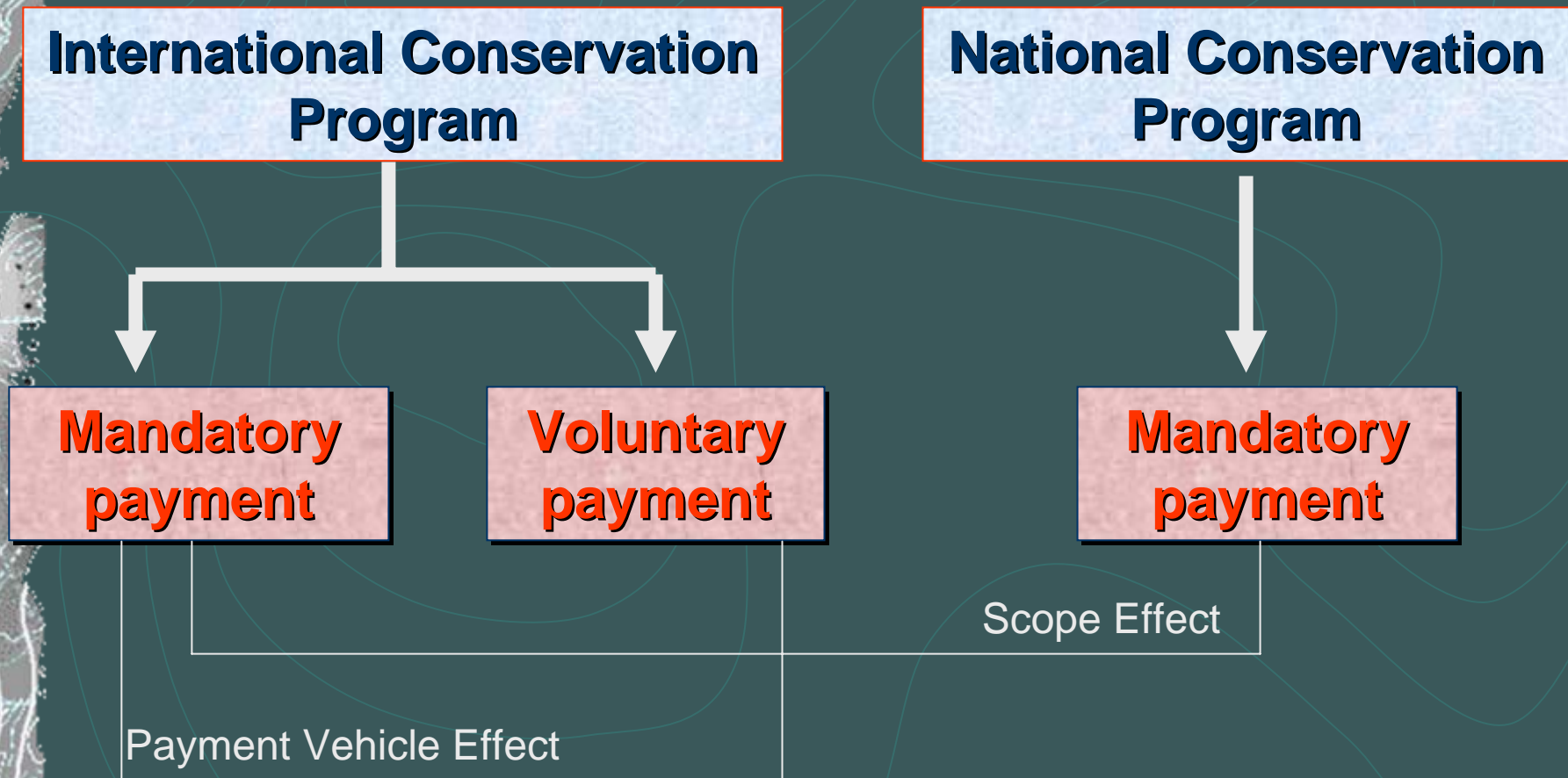
Factors that affect people's willingness to support conservation

Options for management

**Methodological/  
Academic**

Comparative Tests

# Conservation Program Scenarios/ Methodological Issues





# Who among the Asians?

Table 1

	China	Philippines	Thailand	Vietnam
Population (Mil.)*	1,296.2	81.6	63.7	82.2
Population Study sites (mil.)*	15.36 Beijing	1.15 Davao City	6.72 Bangkok	11 Hanoi/ HCMC
GNP per capita (\$US)*	1,500	1,170	2,490	540

\*World Bank Country Statistics: [www.worldbank.org](http://www.worldbank.org)

# We presented. . .



- Drop off survey method
- Regional Marine Turtle Conservation Program (based on existing programs & KIIs/FGDs)
  - o Expansion & establishment of new protected areas (nesting sites)
  - o Regional Marine Turtle Conservation Center
    - o Coordination
    - o Regional Information System
    - o Research Program
  - o Turtle Specialist Group
  - o IEC
  - o Marine Turtle Trust Fund
- Sample Size (3,670)
- Bids (5 with 3 common bids of US\$ .02, 1 and 5)
- Payment through surcharge in electricity bill
  - o Mandatory vs. Voluntary



# Questionnaire

	Description
1	Problems facing the country
2	Attitude on conservation & knowledge about marine turtles
3	Proposed Conservation Plan for Marine Turtles
4	Socio-Economic
5	Debriefing

- Series of FGD and pre-test surveys

- Cheap Talk

- Back translation

- Colored pictures, booklet type

# What did we find out?

Table 2

	Beijing N = 600	Davao City N = 847	Bangkok N = 789	Ho Chi Minh/ Hanoi N = 1,444
Env't not taken cared of	76%	85%	87%	79%
<b>Major National Problems</b>				
1 <sup>st</sup>	Economic	Economic	Economic	Economic
2 <sup>nd</sup>	Governance	Poverty	Poverty	Governance
3 <sup>rd</sup>	Environment	Governance	Governance	Education



# Is endangered species issue a major environmental concern?

Table 3

	Beijing N = 600	Davao City N = 847	Bangkok N = 789	Ho Chi Minh/Hanoi N = 1444
1 <sup>st</sup>	Air pollution	Deforestation	Traffic congestion	Air Pollution
2 <sup>nd</sup>	Water pollution	Solid waste	Deforestation	Water Pollution
3 <sup>rd</sup>	Traffic Congestion	Air pollution	Air pollution	Deforestation

Table 4

% of total respondent who Strongly Agree

What do they think?	Beijing N = 600	Davao City N = 847	Bangkok N = 789	Ho Chi Minh/ Hanoi N = 1444
It is everyone's duty to ensure that plants and animals as we know them today will exist for mankind in the future ( <b>Bequest Value</b> )	57	65	59	34
Endangered species are important even if I never get to see them ( <b>Existence Value</b> )	36	30	35	19
Government should raise taxes for more endangered species protection	13	4	12	5
Government should invest in helping people before it spends money on ES	18	27	15	21



# Which species they prefer to protect?

Table 5

	Beijing N = 600	Davao City N = 847	Bangkok N = 789	Ho Chi Minh/Hanoi N = 1444
1 <sup>st</sup>	Marine turtles	Marine turtles	Dugong	Javan Rhino
2 <sup>nd</sup>	Dugong	Philippine eagle	Marine turtles	Marine turtles
3 <sup>rd</sup>	Whale shark	Dugong	Whale shark	Dugong

# Familiarity breeds concern?

% of respondents

Table 6

	Beijing N=600	Davao City N=847	Bangkok N=789	Ho Chi Minh/ Hanoi N=1,444
Seen live turtles	53	67	57	24
Watched documentaries, NG, Discovery	81	79	98	78

# A knowledge question

% of correct responses

Table 7

	Beijing N=600	Davao City N=847	Bangkok N=789	Ho Chi Minh/Hanoi N=1,444
Marine turtles lay eggs on land	80	77	85	84



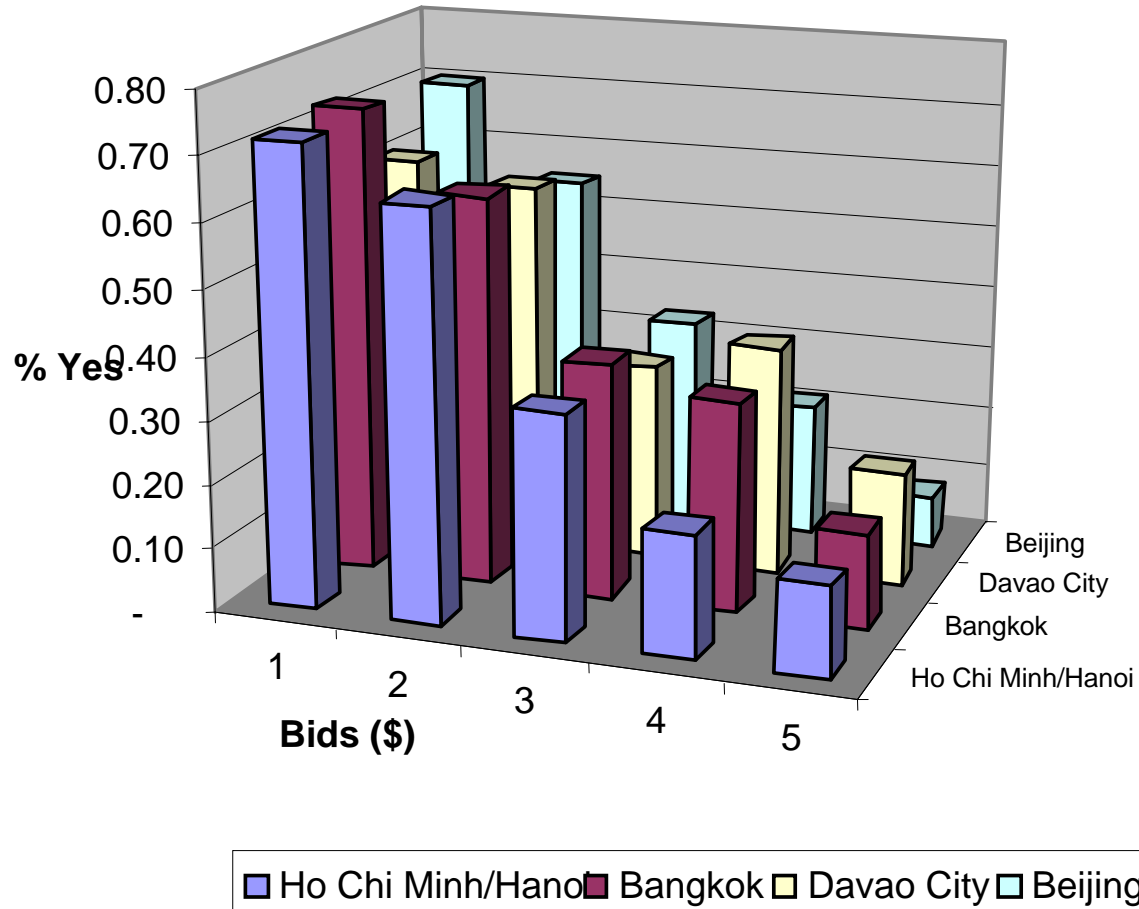
# Willingness to pay for what?



Suppose the Regional Marine Turtle Conservation Program would mean that you and other households in Asia would pay a fixed monthly surcharge of <bid> as a surcharge on your electricity bill. Remember the surcharge would be added to your electricity bill every month for 5 years. The money raised would go to the Marine Turtle Trust Fund described above.

**Would you vote for or against the Regional Marine Turtle Conservation Program?**

## % Yes WTP, all bids



Common bids were: 0.02 USD, 1 USD, 5 USD



Table 8: WTP under Regional Mandatory Program

(% yes in each split sample)

Bid (USD/month /hh	Beijing N=600	Davao City N=847	Bangkok N=789	Ho Chi Minh/ Hanoi N=1,444
0.02	75	56	67	81
1	40	28	36	44
5	20	20	13	17

Table 9: Mean WTP Estimate for Regional Conservation Program, in US\$/household/month

Beijing, China	1.16
Davao City, Philippines	0.17
Bangkok, Thailand	1.41
Ho Chi Minh/Hanoi, Vietnam	0.83

Table 10: Comparison of WTP by payment vehicle, in US\$/household/month

Mode of Payment	Beijing	Davao City	Bangkok	Ho Chi Minh/Hanoi
Mandatory	1.16	0.17	1.41	0.83
Voluntary	1.45	0.66	1.68	0.00



Table 11: Comparison of WTP by scope per country, in US\$/household/month

Marine Turtle Conservation Program	Beijing	Davao City	Bangkok	Ho Chi Minh/Hanoi
International	1.06	0.28	0.99	0.84
National	1.32	0	0.90	0.04



# Table 12: Potential Revenue of Regional Conservation Program

	Potential Revenue (million \$/yr)/ Mean WTP (\$/mo/household)			
	Low Y Households	Middle Y Households	High Y Households	Total
Beijing	0	93.32	11.62	104.94
	0	2.77	4.20	
Davao City	0	1.09	0.32	1.40
	0	0.66	3.02	
Bangkok	6.84	16.41	3.43	26.69
	0.74	1.21	1.50	
Ho Chi Minh/Hanoi	0	3.26	3.17	6.44
	0	0.49	0.69	
<b>TOTAL</b>	6.84	114.08	18.54	139.47

## Table 13: WTP for Conservation of Other Species

Species	Survey Area	Willingness to Pay (US\$)	
		Lump	Annual
Marine Turtle	Asian Countries		3.60-15.36/HH
Spoonbill	Macau, China		14.28/HH
Whale shark	Sorsogon, Phil		6/HH
Whooping Crane	Texas		49.92/visitor
Gray Wolf		107/US visitor	
Bald Eagle	California	63/HH	
No. Spotted Owl	US households		95.42/HH
Gray-blue whale	California		33.33/HH



# Table 14: Proportion of WTP to total HH Income

US\$/household/month and %

Beijing	1.16
Davao City	0.17
Bangkok	1.41
Ho Chi Minh/Hanoi	0.83

% of WTP to total household Income



0.21%
0.10%
0.22%
0.38%

# Table 15: Regression Results

Variables	Beijing	Davao City	Bangkok	Ho Chi Minh/Hanoi	Pooled (All countries)
Bid	- 0.44***	-0.42***	-0.50***	-0.51***	-0.46***
Hhsize	0.05	-0	0.05	-0.06*	0
Age	-0.00	-0.01*	0	0	-0.01*
Gender	-0.10	0.12	0.02	0.05	0.08
Education	0.04	-0.02	0.04	0.03**	0.03***
Income	1.3***	1.99***	0	1.04***	6.56***
Marriage	0.42	0.06	0.05	-0.40***	-0.02
Member	0.55	0.77***	0.46	0.24	0.58***
Cn					0.22*
Ph					0.12
Th					0.07
Pseudo R <sup>2</sup>	0.22	0.10	0.12	0.11	0.12

# Table 16: Reasons for 'Not Willing to Pay'

(% respondents)

Reasons	Beijing (No=362)	Davao City (No=516)	Bangkok (No=316)	Ho Chi Minh/H anoi (No=841)
I cannot afford that amount	39	36	13	27
I do not trust the institutions that will handle the money for this conservation work	20	5	14	19
I do not believe paying will solve the problem	18	5	4	11
It should be the government's responsibility since it already has money from my tax revenues	7	27	41	10



# Table 17: Reasons for 'Willing to Pay'

(% respondents)

Reasons	Beijing (Yes=234)	Davao City (Yes=323)	Bangkok (Yes=345)	Ho Chi Minh/Hanoi (Yes=579)
The marine turtle is a special animal and should be protected	48	41	39	34
I believe that marine turtles can only be protected through the collaboration of several countries	19	6	10	29
It is high time that the people in Asia do something concrete about protecting the marine turtles - since this is the center of illegal trade in the world	4	16	9	9
This initiative can lead to more protection efforts for other endangered species in the region, and I really care more about other species than I do about marine turtles	22	15	21	9

What does this mean in terms of the potential to mobilize funds?

139 million US\$/year under the Mandatory Regional Program





# Table 18: Potential Revenue vis-a-vis Use Value & Conservation Budget

	International Conservation Program		
	Potential Revenue (M\$/yr)	Total Global Program Cost <sup>2</sup>	Average Use Value (global estimate) <sup>2</sup>
	Major City <sup>1</sup> (Study Site)		
All 4-Countries	132.62	\$20 M/yr	\$ 581,815/yr
China	104.94		
Philippines	1.40		
Thailand	19.84		
Vietnam	6.44		

<sup>1</sup> Includes middle & high income households.

<sup>2</sup> Source: Troeng & Drews 2002



But.....

only at the  
lowest bids  
would a  
referendum  
pass in all  
four  
countries



**0.02 USD/hh/month**

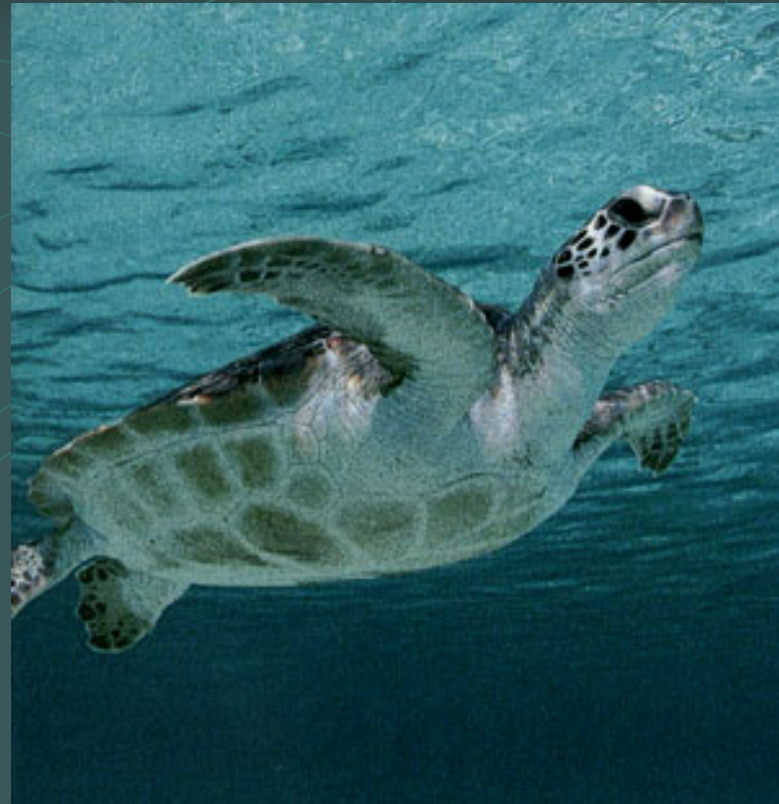
So, is there no hope ?



# Some...

A sizeable percentage of respondents in all four countries agree to voluntarily contribute

The amount?...



50 million US\$/year under Regional Voluntary Program based on percentage of population in the cities surveyed paying 1US\$/month



# Table 21: Potential sum mobilized under Regional Voluntary Program

City	% of 'yes' to 1\$/hh/month	Amount Mil US\$/month	Amount Mil US\$/year
Beijing	50	2.6	31.2
Davao City	33	0.075	0.9
Bangkok	35	0.588	7.056
Ho Chi Minh/Hanoi	29	1.1	13.2
Total		4.3	51.6

# Utility surcharge can be a means of funds mobilization

- The good thing is, it involves minimum extra administrative costs
- Voluntary tick-offs is convenient for consumers
- No one is forced to pay



# And there are other possibilities....



- House phones and mobile-phones bills
- Pre-paid phone-cards
- Water utility bills



# And intensification of on-going efforts

- Voluntary tick-offs on hotel bills
- Nest adoption
- Volunteer turtle-based eco-tourism
- Self-paid volunteer programs
- Appeal to private businesses for matching funds (pay 1 USD extra charge and company pays 1USD for marine turtle conservation)

# But it's an up-hill climb

- The majority of the respondents were not willing to pay
- A percentage of the general public may be potential partners but, tapping their contribution would require resources, manpower and strategy

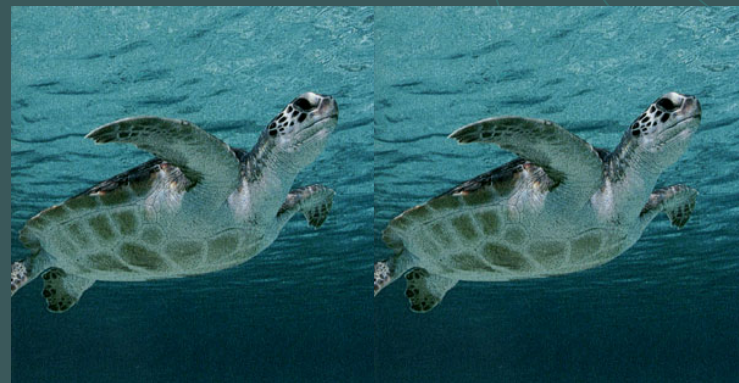


# The strategy has to...

● focus on those who are most likely to contribute

- The higher income
- The more educated
- The younger people
- Those who are already members of environmental organizations

Address the credibility and trustworthiness of the collecting agency and the institutions to manage the fund  
Bringing private partnerships





# And the role of international community essential



- Marine turtles is a global goods
- The trans-boundary nature of life cycle requires international collaboration
- Until nations reach a point where they can mobilize sufficient resources to finance their own conservation programs, international financial support will be essential.
- One contribution area is to assist countries mobilize resources to reach the potential contributors

# Many issues need to be addressed...

- But despite the constraints, we've shown that there is a potential source of funding in the cities of Asia



But it would require resources to reach them

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**Thank you... for your attention!**



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