

Stakeholders Analysis in Environmental and Maritime Sectors



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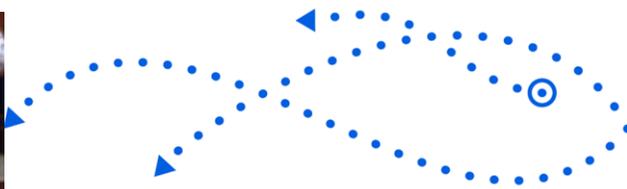
The beginning

2014 – World Bank’s Project HEQCIP : SGA 009, Creation of Maritime and Inland Waterways Observatory at NUM

Many challenges and big hopes !!! → DOCKSIDE !!!



International Symposium (2015), successful implementation of SGA 009


**Maritime
& Inland
Waterways
Observatory**



Data collection: (2014), Mr. Jeremy Pantet and Mr. Nikola Kutin (First UN interns at NUM)

Stakeholders' Analysis

“any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Freeman, 1984).

Stakeholders are individuals or groups who depend on the organization to fulfill their own goals and on whom, in turn, the organization depends (Johnson and Scholes 1993).

As a result, stakeholder analysis has become increasingly popular with a wide range of organizations in many different fields, and it is now used by policy-makers, regulators, governmental and nongovernmental organizations, businesses and the media (Friedman and Miles, 2006).



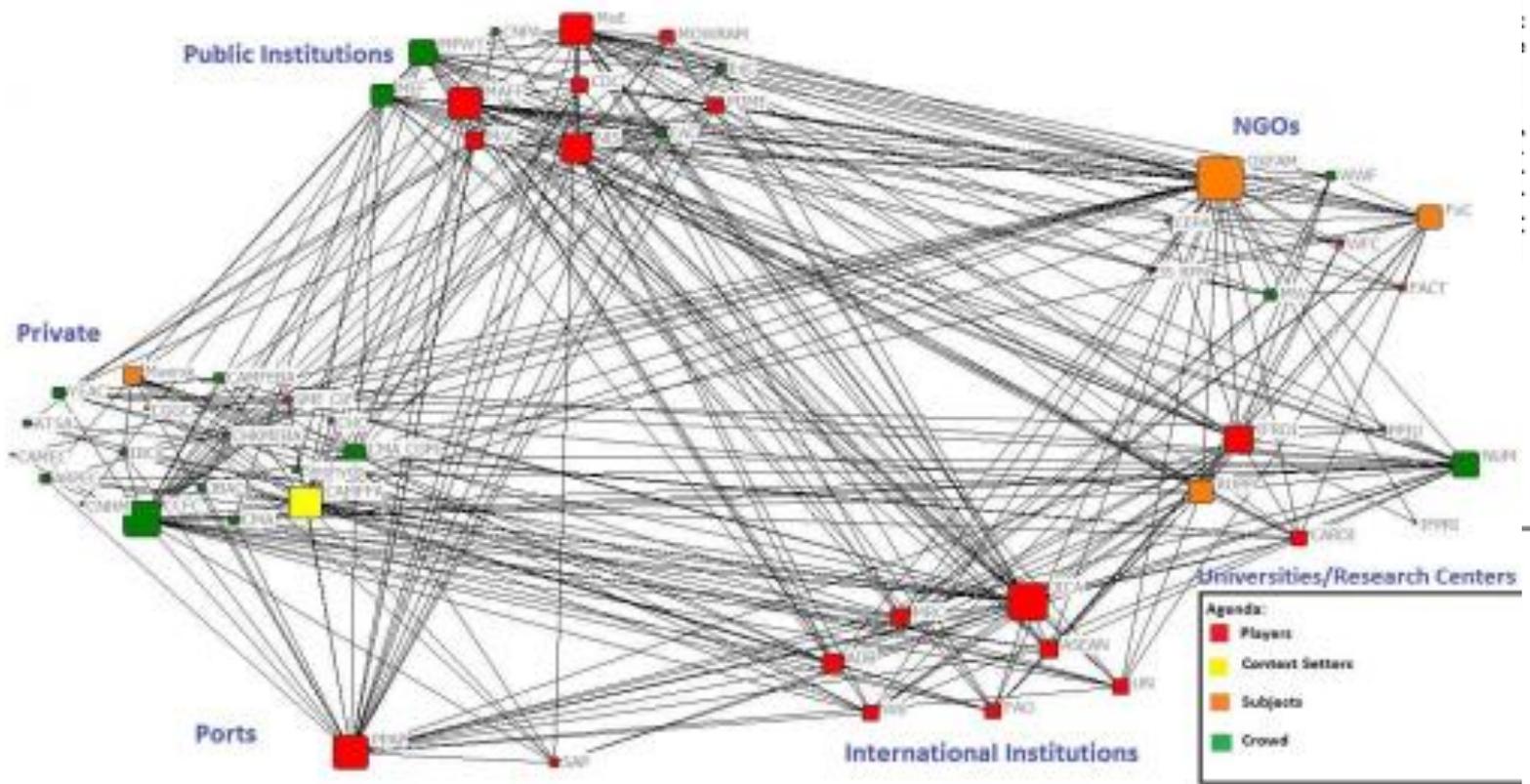
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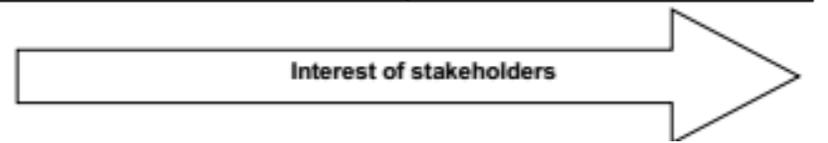


Kutin et al. (2015) → *Stakeholders' Analysis in the Context of MIWOC*

SNA methodology and Mendelow' power grid



<p><u>CONTEXT SETTERS</u> (High power and low interest) These stakeholders should be convinced that a partnership with the Observatory would be beneficial for them. They have data and important information that could be shared. Therefore the Research Team should analyze carefully their activities and needs.</p>	<p><u>PLAYERS</u> (High power and high interest) Partnership with these stakeholders shouldn't be a big challenge for the research team. Players should be interested in the project and furthermore they have data and information that they want to share. However, these stakeholders have to be convinced that the project will be beneficial for them and for the country's development.</p>
<p><u>CROWD</u> (Low power and low interest) These stakeholders are the least important for the Observatory because they have neither the capacity to provide data nor interest in the Observatory's work.</p>	<p><u>SUBJECTS</u> (Low power and high interest) These stakeholders deserve significant and regular attention. They should be regularly informed of events and reports from the Observatory because they are potential clients. Partnerships with these stakeholders will contribute to the long term sustainability of the project.</p>



Aims of the study:

- Define topics of research where the collaborations between researchers and doctoral students can take place.
- Analyze the view related to environmental and maritime issues (compare them) of students and representatives of stakeholders
- Analyze the positive and **negative links** (collaboration) between stakeholders.
- Identify the key stakeholders in environmental and maritime fields



Q-Methodology

- Measures subjectivity of a persons viewpoint
- This methodology takes a series of statements(variables) and ranks them in what called a Q- sort.
- It's all about RANKING!
- PQ Method



Origins:

The Q-methodology analyzes the subjectivity of individuals in a structured way and in a statistically interpretable form.

Invented in the 1930s by William Stephenson (English physicist and psychologist).

Used in a wide range of fields such as political science, geography and health economics, and is increasingly being used in stakeholder analysis in the fields of sustainable development, renewable energy and the management of natural resources.



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Table 1: Q-methodology framework

Q sample	A set of statements printed on card. Value attributed to the statements based on the opinions of each respondent (prioritize the statements), (+) values (agree), (-) values (disagree)
Q-sort	This is the sorting that every respondent does on a pre-graded grid with a scale of agreements and disagreements degrees.
P-sample	This is the group of participants selected to sort the statements
Factor Analysis	These are the archetypes identified with the statistical analysis that will also be called discourses or points of view.



Step 1: Selection of statements

Initially, a Q-sample of 67 statements was prepared based on strategic plans of public and international organizations in Cambodia on the following topics:

- Energy and depletion of natural resources
- Fisheries problems
- Biodiversity
- Food safety
- Port infrastructure
- Climate change and the environment
- Political Responsibilities
- Education and research

Step 2: Internal discussion and selection

We limited the number of statements to 47.



Step 3: Meeting with stakeholders and testing the survey

Methodology of the report has been validated following a workshop in June, 2017 in the National University of Management.

The following institutions tested the survey:

- Fisheries Administration; IReDI, MoEYS,
- Open Development Cambodia, French Embassy in PP
- RULE, NUM, UBB and RUA



Step 4: Validation of the survey

- 1 State should impose more regulations on the use of agricultural land.
- 2 A good farmer is a farmer that has a high productivity.
- 3 Intensive livestock production is a source of ecological problems and needs to be reformed.
- 4 Whenever possible, farm labor should be replaced by more efficient machines and technologies.
- 5 Poor health is related to low quality food.
- 6 Government should ban the use of chemicals in agriculture.
- 7 Wildlife conservation should only be considered once financial objectives have been reached.
- 8 Government protects efficiently the natural parks of Cambodia.
- 9 Cambodia should intensively exploit offshore petroleum resources to be more energy-independent
- 10 Nowadays, it is impossible to develop renewable energy in Cambodia.
- 11 Nuclear plant could be a good way to produce energy without damaging the environment.
- 12 Dams have a negative impact on the fisheries along the Mekong River and its tributaries.
- 13 Aquaculture should be further developed in Cambodia.
- 15 In the last years, fishermen's working conditions have improved.
- 16 Port activities have a negative effect on fisheries.
- 17 The ports infrastructure in Cambodia is well developed.
- 18 Administrative procedures and security checking should be reduced to improve the ports' efficiency.
- 19 The price to transport goods in Cambodia is higher than the neighboring countries.
- 20 Cars and motorbikes emissions are the biggest cause of environmental and health problems in Cambodia
- 21 In Cambodia, public transportation is not as developed as it should be.
- 22 Most of the future environmental problems will be solved by the technological progress.
- 23 Multinational companies are the main threat to the environment in Cambodia.
- 24 Cambodian economic growth and living standards are more important than environment.
- 25 No one puts pressure on government in term of environmental issues in Cambodia.
- 26 People would agree on paying a tax to get environmental improvements.
- 27 Cambodia people are aware of consequences of climate change.
- 28 We must ban plastic bags.

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	1	2	3	4	5	6	7	8	9	10	11	12
University	State should impose more regulations on the use of agricultural land.	A good farmer is a farmer that has a high productivity.	Intensive livestock production is a source of ecological problems and needs to be reformed.	Whenever possible, farm labor should be replaced by more efficient machines and technologies.	Poor health is related to low quality food.	Government should ban the use of chemicals in agriculture.	Wildlife conservation should only be considered once financial objectives have been reached.	Government protects efficiently the natural parks of Cambodia.	Cambodia should intensively exploit offshore petroleum resources to be more energy-independent.	Nowadays, it is impossible to develop renewable energy in Cambodia.	Nuclear plant could be a good way to produce energy without damaging the environment.	Dams have a negative impact on the fisheries along the Mekong River and its tributaries.
NUM	3	2	0	-1	3	-1	0	-2	0	0	-3	-2
NUM	0	1	-2	3	1	3	-3	0	0	0	-2	-3
NUM	3	3	0	2	2	-2	-1	-1	-2	-1	-1	-2
NUM	2	1	-2	0	2	3	-2	1	-1	-3	-1	0
NUM	1	-1	-1	2	3	0	0	1	0	2	-3	1
NUM	0	3	-3	2	0	1	0	2	-2	-3	-1	2
NUM	0	0	0	0	-1	1	1	2	1	-3	0	2
NUM	3	0	1	0	0	0	-2	-3	0	-3	0	2
NUM	1	-1	0	0	0	1	-1	-2	0	-3	-3	3
RUA	2	0	0	3	0	-2	0	-2	3	0	0	1
RUA	2	-3	0	0	3	2	-2	-2	2	1	0	3
RUA	3	2	-3	1	2	0	-2	0	0	-1	-1	2
RUA	2	0	1	3	1	0	-1	-2	1	-1	-3	2
RUA	0	0	-1	0	1	-2	-3	-3	2	-1	0	1
RUA	3	0	0	3	1	0	2	-1	2	0	2	1
RUA	-3	0	3	2	1	-1	-1	-3	0	-2	0	1
RUA	-2	0	0	1	3	3	-1	-1	0	-2	0	1

Step 5: Data collection

DOCKSIDE - Stakeholder English version / Step 1 of 1...



Drag the following item into one of the boxes below:

Yes

- 1 State should impose more regulations on the use of agricultural land.
- 2 A good farmer is a farmer that has a high productivity.
- 3 Intensive livestock production is a source of ecological problems and needs to be reformed.
- 4 Whenever possible, farm labor should be replaced by more efficient machines and technologies.
- 5 Poor health is related to low quality food.
- 6 Government should ban the use of chemicals in agriculture.
- 7 Wildlife conservation should only be considered once financial objectives have been reached.
- 8 Government protects efficiently the natural parks of Cambodia.
- 9 Cambodia should intensively exploit offshore petroleum resources to be more energy-independent.
- 10 Nowadays, it is impossible to develop renewable energy in Cambodia.
- 11 Cars and motorbikes emissions are the biggest cause of environmental and health problems in Cambodia
- 12 In Cambodia, public transportation is not as developed as it should be.
- 13 Cambodian people are aware of consequences of climate change.
- 14 We must ban plastic bags.

No opinion

- 1 Nuclear plant could be a good way to produce energy without damaging the environment.
- 2 Dams have a negative impact on the fisheries along the Mekong River and its tributaries.
- 3 Aquaculture should be further developed in Cambodia.
- 4 Administrative procedures and security checking should be reduced to improve the ports' efficiency.
- 5 The price to transport goods in Cambodia is higher than the neighboring countries.

No

- 1 Community Fisheries successfully manage to ensure long term sustainability of the fish stock.
- 2 In the last years, fishermen's working conditions have improved.
- 3 Port activities have a negative effect on fisheries.
- 4 The ports infrastructure in Cambodia is well developed.
- 5 Most of future environmental problems will be solved by the technological progress.
- 6 Multinational companies are the main threats to the environment in Cambodia.
- 7 Cambodian economic growth and living standards are more important than environment.
- 8 No one puts pressure on Cambodian government in terms of environmental issues.
- 9 People would agree on paying a tax to get environmental improvements

Continue



Among the *YES* section, select the two you agree the most with, and place it in the extreme left box below. From the remaining statements, the one you agree on the most will go in the second box from the left and so on... Do the exact same thing with the *NO* section, until the pyramidal grid is filled.

The numbers between brackets represent the number of statement to put in each box.

Drag the items to the boxes below:

Yes	No opinion	No
1 State should impose more regulations on the use of agricultural land.	1 Intensive livestock production is a source of ecological problems and needs to be reformed.	1 A good farmer is a farmer that has a high productivity.
2 Nowadays, it is impossible to develop renewable energy in Cambodia.	2 Poor health is related to low quality food.	2 Wildlife conservation should only be considered once financial objectives have been reached.
	3 Government should ban the use of chemicals in agriculture.	3 Government protects efficiently the natural parks of Cambodia.
		4 In the last years, fishermen's working conditions have improved.
		5 We must ban plastic bags.

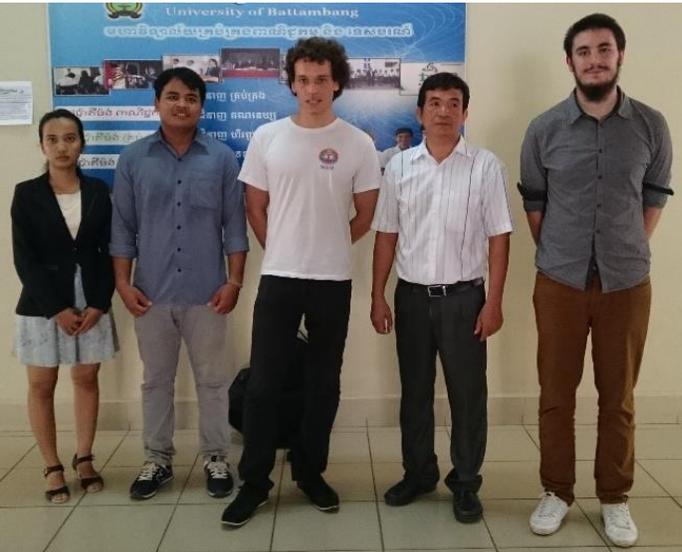
AGREE (2)	(3)	(4)	(5)	(5)	(4)	(3)	DISAGREE (2)
1 Cambodia should intensively exploit offshore petroleum resources to be more energy-independent.	1 Port activities have a negative effect on fisheries.	1 Administrative procedures and security checking should be reduced to improve the ports' efficiency.	1 Community Fisheries successfully manage to ensure long term sustainability of the fish stock.	1 Multinational companies are the main threats to the environment in Cambodia.	1 No one puts pressure on Cambodian government in terms of environmental issues.	1 Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	
2 Whenever possible, farm labor should be replaced by more efficient machines and technologies.	2 People would agree on paying a tax to get environmental improvements	2 The ports infrastructure in Cambodia is well developed.	2 In Cambodia, public transportation is not as developed as it should be.	2 Aquaculture should be further developed in Cambodia.			
3 Nuclear plant could be a good way to produce energy	3 Cambodian people are aware of consequences of climate change.	3 The price to transport goods in Cambodia is higher than the neighboring	3 Most of future environmental problems will be	3 Cars and motorbikes emissions are the biggest cause of environmental and health problems in			
Too many items	OK!	1 item(s) missing	1 item(s) missing	2 item(s) missing	3 item(s) missing	2 item(s) missing	2 item(s) missing

Continue



Data collection: students

We have collected data from 65 Master and PhD students (RULE, UBB, NUM, RUA)



Stakeholders Identification

- The identification process included all actors who could have an interest in the project, including also actors outside the Environmental and Maritime sector that could affect or be affected by the project.
- International/donors
- Public Institutions
- Commercial or private for-profit
- NGOs



Stakeholder Engagement Process

- appointments set 1–2 weeks in advance by the working group members.
- Interviews scheduled at the time and place most convenient for the stakeholder (Phnom Penh, Siem Reap, Sihanoukville and Battambang)
- Face to face/video communication interviews



Conduct Interviews and Record Notes



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Stakeholders Description and Meetings

Information gathered



Government and Ministries

Ministry of Planning; Ministry of Economy and Finance; Ministry of Mines and Energy; Ministry of Public works and Transport; Ministry of Environment; Ministry of Health; Ministry of Agriculture Forestry & Fisheries; Ministry of Education, Youth and Sports

Budget

Transparency

Students
Commitment and
Dedication



Regional and Local Authorities



Archaeological protection, Water supply and Port authorities, Regional delegations



World heritage conservation, Water management, Community well-being and development, Forest and landscape development and Environmental management and tourism activities



Lack of human resources, Khmer staffs skills and time



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Private Companies

Banks, International companies and local companies

Cambodian students' mentality, lack of interest and commitment

Cambodian Universities lack of focal oriented programs

More cooperation between NGOs, public and private organizations and students



NGOs and Foundations

Waste management,
Biodiversity conservation,
Education, Business
consulting, Sustainable
development and Healthy
issues

Disconnection
between
research and
policy

Lack of funds

Mentality of
Cambodian
students



Data collection: stakeholders

49 organizations involved in maritime and environmental fields (not everyone filled in the survey)



Phnom Penh Water Supply



GIZ Cambodia



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Ministry of Mines and Energy

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Ministry of Public works and Transport



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Institut de recherche pour le
développement (IRD)



Open Development Cambodia



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Meeting with H.E. Dr. Hang Chuon Naron, Minister of Education Youth and Sport
August 19, 2017



World Fish Center



Heinrich Böll Stiftung Cambodia



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Phnom Penh Autonomous Port



Ministry of Health



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Sihanoukville Autonomous Port



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Fisheries Administration, MAFF



Ministry of Information



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We thank everyone for your time and support !!!



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Step 6 Data Analysis:

- Correlation analysis (matrix)
- Factor analysis
- Factors rotation

PQMethod software gives the possibility to analyze the factors either by the method of the centroids or by the analysis in principal components.



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Results Q methodology, Students



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Q-SORTS OF FACTOR OBTAINED

N°	STATEMENTS	Factor 1	Factor 2	Factor 3
1	State should impose more regulations on the use of agricultural land.	2*	-1*	3*
2	A good farmer is a farmer that has a high productivity.	1*	2*	0*
3	Intensive livestock production is a source of ecological problems and needs to be reformed.	0	0	0
4	Whenever possible, farm labor should be replaced by more efficient machines and technologies.	2	2	3*
5	Poor health is related to low quality food.	3*	2*	1*
6	Government should ban the use of chemicals in agriculture.	3*	-1*	-3*
7	Wildlife conservation should only be considered once financial objectives have been reached.	-1	-3*	-1*
8	Government protects efficiently thenatural parks of Cambodia.	-2	-3*	-2
9	Cambodia should intensively exploit offshore petroleum resources to be more energy-independent	0	0	2*
10	Nowadays, it is impossible to develop renewable energy in Cambodia.	-2	-2	-3
11	Nuclear plant could be a good way to produce energy without damaging the environment.	-3	-2	1*
12	Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	1	1	2*
13	Aquaculture should be further developed in Cambodia.	1	1	1
14	Community Fisheries successfully manage to ensure long term sustainability of the fish stock.	0	0	0
15	In the last years, fishermen's working conditions have improved.	-1	-1	-1
16	Port activities have a negative effect on fisheries.	0	0	-1
17	The ports infrastructure in Cambodia is well developed.	-1	-2	-2
18	Administrative procedures and security checking should be reduced to improve the ports' efficiency.	-2	0*	-1
19	The price to transport goods in Cambodia is higher than the neighboring countries.	0*	3*	2*
20	Cars and motorbikesemissions are the biggest cause of environmental and health problems in Cambodia	0	0	0
21	In Cambodia, public transportation is not as developed as it should be.	0	3*	0
22	Most of the future environmental problems will be solved by the technological progress.	-1*	1	0
23	Multinational companies are the main threat to the environment in Cambodia.	0	-1*	0
24	Cambodian economic growth and living standards are more important than environment.	-3*	0*	-2*
25	No one puts pressure on government in term of environmental issues in Cambodia.	0	0	0
26	People would agree on paying a tax to get environmental improvements.	0	0	0
27	Cambodia people are aware of consequences of climate change.	1	0*	0
28	We must ban plastic bags.	2	1	1

N°	CONSENSUS STATEMENTS	Factor 1	Factor 2	Factor 3
3*	Intensive livestock production is a source of ecological problems and needs to be reformed.	0	0	0
13*	Aquaculture should be further developed in Cambodia.	1	1	1
14*	Community Fisheries successfully manage to ensure long term sustainability of the fish stock.	0	0	0
15*	In the last years, fishermen's working conditions have improved	-1	-1	-1
16*	Port activities have a negative effect on fisheries.	0	0	-1
17*	The ports infrastructure in Cambodia is well developed.	-1	-2	-2
25*	No one puts pressure on government in term of environmental issues in Cambodia.	0	0	0

	Factor 1	Factor 2	Factor 3
	10.18	7.71	7.54
% of explained variance	16%	12%	12%

Tableau 7 : Factors correlations

FACTORS	1	2	3
1	1,0000	0,3583	0,4250
2	0,3583	1,0000	0,4616
3	0,4250	0,4616	1,0000

Group 1: Social-democrat environmentalists

Factor 1						
Agree			No opinion	Disagree		
3	2	1	0	-1	-2	-3
Poor health is related to low quality food.	State should impose more regulations on the use of agricultural land.	A good farmer is a farmer that has a high productivity.	Intensive livestock production is a source of ecological problems and needs to be reformed.	Wildlife conservation should only be considered once financial objectives have been reached.	Government protects efficiently the natural parks of Cambodia.	Nuclear plant could be a good way to produce energy without damaging the environment.
Government should ban the use of chemicals in agriculture.	Whenever possible, farm labor should be replaced by more efficient machines and technologies.	Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	Cambodia should intensively exploit offshore petroleum resources to be more energy-independent	In the last years, fishermen's working conditions have improved.	Nowadays, it is impossible to develop renewable energy in Cambodia.	Cambodian economic growth and living standards are more important than environment.
	We must ban plastic bags.	Aquaculture should be further developed in Cambodia.	Community Fisheries successfully manage to ensure long term sustainability of the fish stock.	The ports infrastructure in Cambodia is well developed.	Administrative procedures and security checking should be reduced to improve the ports' efficiency.	
		Cambodia people are aware of consequences of climate change.	Port activities have a negative effect on fisheries.	Most of the future environmental problems will be solved by the technological progress.		

Group 2: Pro-business

FACTEUR ARCHETYPE 2						
	Agree		No opinion	Disagree		
3	2	1	0	-1	-2	-3
19 The price to transport goods in Cambodia is higher than the neighboring countries.	2 A good farmer is a farmer that has a high productivity.	12 Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	3 Intensive livestock production is a source of ecological problems and needs to be reformed.	1 State should impose more regulations on the use of agricultural land.	10 Nowadays, it is impossible to develop renewable energy in Cambodia.	7 Wildlife conservation should only be considered once financial objectives have been reached.
21 In Cambodia, public transportation is not as developed as it should be.	4 Whenever possible, farm labor should be replaced by more efficient machines and technologies.	13 Aquaculture should be further developed in Cambodia.	9 Cambodia should intensively exploit offshore petroleum resources to be more energy-independent	6 Government should ban the use of chemicals in agriculture.	11 Nuclear plant could be a good way to produce energy without damaging the environment.	8 Government protects efficiently the natural parks of Cambodia.
	5 Poor health is related to low quality food.	22 Most of the future environmental problems will be solved by the technological progress.	14 Community Fisheries successfully manage to ensure long term sustainability of the fish stock.	15 In the last years, fishermen's working conditions have improved.	17 The ports infrastructure in Cambodia is well developed.	

Group 3: Pro-business environmentalists

FACTEUR ARCHETYPE 3						
Agree			No Opinion	Disagree		
3	2	1	0	-1	-2	-3
1 State should impose more regulations on the use of agricultural land.	9 Cambodia should intensively exploit offshore petroleum resources to be more energy-independent	5 Poor health is related to low quality food.	2 A good farmer is a farmer that has a high productivity.	7 Wildlife conservation should only be considered once financial objectives have been reached.	8 Government protects efficiently thenatural parks of Cambodia.	6 Government should ban the use of chemicals in agriculture.
4 Whenever possible, farm labor should be replaced by more efficient machines and technologies.	12 Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	11 Nuclear plant could be a good way to produce energy without damaging the environment.	3 Intensive livestock production is a source of ecological problems and needs to be reformed.	15 In the last years, fishermen's working conditions have improved.	17 The ports infrastructure in Cambodia is well developed.	10 Nowadays, it is impossible to develop renewable energy in Cambodia.
	19 The price to transport goods in Cambodia is higher than the neighboring countries.	13 Aquaculture should be further developed in Cambodia.	14 Community Fisheries successfully manage to ensure long term sustainability of the fish stock.	16 Port activities have a negative effect on fisheries.	24 Cambodian economic growth and living standards are more important than environment.	
		28 We must ban plastic bags.	20 Cars and motorbikesemissions are the biggest cause of environmental and health problems in Cambodia	18 Administrative procedures and security checking should be reduced to improve the ports' efficiency.		

Results Q methodology, Stakeholders



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No.	Statement	Factor 1	Factor 2	Factor 3	Factor 4
1	State should impose more regulations on the use of agricultural land.	3*	0	0	2*
2	A good farmer is a farmer that has a high productivity.	0	(-2*)	0	2*
3	Intensive livestock production is a source of ecological problems and needs to be reformed.	1*	2*	0	(-3*)
4	Whenever possible, farm labor should be replaced by more efficient machines and technologies.	1	1	0	2*
5	Poor health is related to low quality food.	2*	1	3*	0
6	Government should ban the use of chemicals in agriculture.	3*	(-1*)	2*	(-3*)
7	Wildlife conservation should only be considered once financial objectives have been reached.	-3	-2	-1	-1
8	Government protects efficiently thenatural parks of Cambodia.	-1	-3	-2	-2
9	Cambodia should intensively exploit offshore petroleum resources to be more energy-independent	0	0	(-1*)	3*
10	Nowadays, it is impossible to develop renewable energy in Cambodia.	-2	-2	(-3*)	-2
11	Nuclear plant could be a good way to produce energy without damaging the environment.	-2	(-3*)	-2	1*
12	Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	0	3*	2	1
13	Aquaculture should be further developed in Cambodia.	0*	2*	1	1
14	Community Fisheries successfully manage to ensure long term sustainability of the fish stock.	0	0	3*	0
15	In the last years, fishermen's working conditions have improved.	-1	0	(-3*)	0
16	Port activities have a negative effect on fisheries.	-1	1*	0	-1
17	The ports infrastructure in Cambodia is well developed.	0	0	-1	-1
18	Administrative procedures and security checking should be reduced to improve the ports' efficiency.	-1	0	0	0
19	The price to transport goods in Cambodia is higher than the neighboring countries.	1	1	1	0
20	Cars and motorbikesemissions are the biggest cause of environmental and health problems in Cambodia	0	0	0	-1
21	In Cambodia, public transportation is not as developed as it should be.	2	3	1	3
22	Most of the future environmental problems will be solved by the technological progress.	1	0	0	0
23	Multinational companies are the main threat to the environment in Cambodia.	0	-1	-1	0
24	Cambodian economic growth and living standards are more important than environment.	(-3*)	-1	1*	0
25	No one puts pressure on government in term of environmental issues in Cambodia.	0*	0	-2	-2
26	People would agree on paying a tax to get environmental improvements.	0	-1	0	0
27	Cambodia people are aware of consequences of climate change.	(-2*)	0	0	1
28	We must ban plastic bags.	2	2	2	0*

	Factor 1	Factor 2	Factor 3	Factor 4
% of explained Variance explained	16	14	13	8

Correlation between Factors scores

	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	1	0.4896	0.5337	0.1468
Factor 2	0.4896	1	0.5536	0.2437
Factor 3	0.5337	0.5536	1	0.1891
Factor 4	0.1468	0.2437	0.1891	1

Consensus Statements

Government should ban the use of chemicals in agriculture.	3*	(-1*)	2*	(-3*)
Intensive livestock production is a source of ecological problems and needs to be reformed.	1*	2*	0	(-3*)



Group 1: Social environmentalists

Agree			No Opinion	Disagree		
3	2	1	0	-1	-2	-3
State should impose more regulations on the use of agricultural land.	Poor health is related to low quality food.	Intensive livestock production is a source of ecological problems and needs to be reformed.	A good farmer is a farmer that has a high productivity.	Government protects efficiently the natural parks of Cambodia.	Nowadays, it is impossible to develop renewable energy in Cambodia.	Wildlife conservation should only be considered once financial objectives have been reached.
Government should ban the use of chemicals in agriculture.	We must ban plastic bags.	Whenever possible, farm labor should be replaced by more efficient machines and technologies.	Cambodia should intensively exploit offshore petroleum resources to be more energy-independent	In the last years, fishermen's working conditions have improved.	Nuclear plant could be a good way to produce energy without damaging the environment.	Cambodian economic growth and living standards are more important than environment.
	In Cambodia, public transportation is not as developed as it should be.	The price to transport goods in Cambodia is higher than the neighboring countries.	Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	Port activities have a negative effect on fisheries.	Cambodia people are aware of consequences of climate change.	
		Most of the future environmental problems will be solved by the technological	Aquaculture should be further developed in Cambodia.	Administrative procedures and security checking should be reduced to improve the ports'		

Group 2: Ecologists

Agree			No Opinion	Disagree		
3	2	1	0	-1	-2	-3
Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	Intensive livestock production is a source of ecological problems and needs to be reformed.	Whenever possible, farm labor should be replaced by more efficient machines and technologies.	State should impose more regulations on the use of agricultural land.	Government should ban the use of chemicals in agriculture.	A good farmer is a farmer that has a high productivity.	Government protects efficiently the natural parks of Cambodia.
In Cambodia, public transportation is not as developed as it should be.	Aquaculture should be further developed in Cambodia.	Poor health is related to low quality food.	Cambodia people are aware of consequences of climate change.	Multinational companies are the main threat to the environment in Cambodia.	Wildlife conservation should only be considered once financial objectives have been reached.	Nuclear plant could be a good way to produce energy without damaging the environment.
	We must ban plastic bags.	Port activities have a negative effect on fisheries.	Cambodia should intensively exploit offshore petroleum resources to be more energy-independent	Cambodian economic growth and living standards are more important than environment.	Nowadays, it is impossible to develop renewable energy in Cambodia.	
		The price to transport goods in Cambodia is higher than the neighboring	Community Fisheries successfully manage to ensure long term sustainability of the	People would agree on paying a tax to get environmental improvements		

Group 3: Maritime social environmentalists

Factor 3						
Agree			No Opinion	Disagree		
3	2	1	0	-1	-2	-3
Poor health is related to low quality food.	Government should ban the use of chemicals in agriculture.	In Cambodia, public transportation is not as developed as it should be.	State should impose more regulations on the use of agricultural land.	Wildlife conservation should only be considered once financial objectives have been reached.	Government protects efficiently the natural parks of Cambodia.	Nowadays, it is impossible to develop renewable energy in Cambodia.
Community Fisheries successfully manage to ensure long term sustainability of the fish stock.	Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	Aquaculture should be further developed in Cambodia.	A good farmer is a farmer that has a high productivity.	Cambodia should intensively exploit offshore petroleum resources to be more energy-independent	Nuclear plant could be a good way to produce energy without damaging the environment.	In the last years, fishermen's working conditions have improved.
	We must ban plastic bags.	The price to transport goods in Cambodia is higher than the neighboring countries.	Intensive livestock production is a source of ecological problems and needs to be reformed.	The ports infrastructure in Cambodia is well developed.	No one puts pressure on government in term of environmental issues in Cambodia.	
		Cambodian economic growth and living standards are more important than environment.	Whenever possible, farm labor should be replaced by more efficient machines and technologies.	Multinational companies are the main threat to the environment in Cambodia.		

Group 4: Productivists

Factor 4						
Agree			No Opinion	Disagree		
3	2	1	0	-1	-2	-3
Cambodia should intensively exploit offshore petroleum resources to be more energy-independent	State should impose more regulations on the use of agricultural land.	Nuclear plant could be a good way to produce energy without damaging the environment.	Poor health is related to low quality food.	Wildlife conservation should only be considered once financial objectives have been reached.	Government protects efficiently the natural parks of Cambodia.	Intensive livestock production is a source of ecological problems and needs to be reformed.
In Cambodia, public transportation is not as developed as it should be.	A good farmer is a farmer that has a high productivity.	Dams have a negative impact on the fisheries along the Mekong River and its tributaries.	Community Fisheries successfully manage to ensure long term sustainability of the fish stock.	Port activities have a negative effect on fisheries.	Nowadays, it is impossible to develop renewable energy in Cambodia.	Government should ban the use of chemicals in agriculture.
	Whenever possible, farm labor should be replaced by more efficient machines and technologies.	Aquaculture should be further developed in Cambodia.	In the last years, fishermen's working conditions have improved.	The ports infrastructure in Cambodia is well developed.	No one puts pressure on government in term of environmental issues in Cambodia.	
		Cambodia people are aware of consequences of climate change	Administrative procedures and security checking should be reduced to improve the ports'	Cars and motorbikes emissions are the biggest cause of environmental and health problems in		

Q-methodology results: Stakeholders vs Students



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Statements, strongly agree

Statements, most of the stakeholders agree:

- Poor health is related to low quality food.
- We must ban plastic bags.
- In Cambodia, public transportation is not as developed as it should be.
- State should impose more regulations on the use of agricultural land.
- Whenever possible, farm labor should be replaced by more efficient machines and technologies.
- Aquaculture should be further developed in Cambodia.

Statements, most of the students agree:

- Poor health is related to low quality food.
- State should impose more regulations on the use of agricultural land.
- Whenever possible, farm labor should be replaced by more efficient machines and technologies.
- In Cambodia, public transportation is not as developed as it should be.
- Dams have a negative impact on the fisheries along the Mekong River and its tributaries.
- We must ban plastic bags.

Statements, strongly disagree

Statements, most of the stakeholders disagree:

- Nuclear plant could be a good way to produce energy without damaging the environment.
- Nowadays, it is impossible to develop renewable energy in Cambodia.
- Wildlife conservation should only be considered once financial objectives have been reached.
- Government protects efficiently the natural parks of Cambodia.
- Cambodian economic growth and living standards are more important than environment.
- In the last years, fishermen's working conditions have improved.
- The ports infrastructure in Cambodia is well developed.

Statements, most of the students disagree:

- Government protects efficiently the natural parks of Cambodia.
- Nowadays, it is impossible to develop renewable energy in Cambodia.
- Cambodian economic growth and living standards are more important than environment.
- Wildlife conservation should only be considered once financial objectives have been reached.
- The ports infrastructure in Cambodia is well developed.
- In the last years, fishermen's working conditions have improved.

Controversial statements

Controversial statements (stakeholders):

- Cambodia should intensively exploit offshore petroleum resources to be more energy-independent.
- Cars and motorbikes emissions are the biggest cause of environmental and health problems in Cambodia
- Most of the future environmental problems will be solved by the technological progress.
- A good farmer is a farmer that has a high productivity.

Controversial statements (students):

- Cambodia people are aware of consequences of climate change.
- Most of the future environmental problems will be solved by the technological progress.
- No one puts pressure on government in term of environmental issues in Cambodia.
- Intensive livestock production is a source of ecological problems and needs to be reformed.



Social Network Analysis



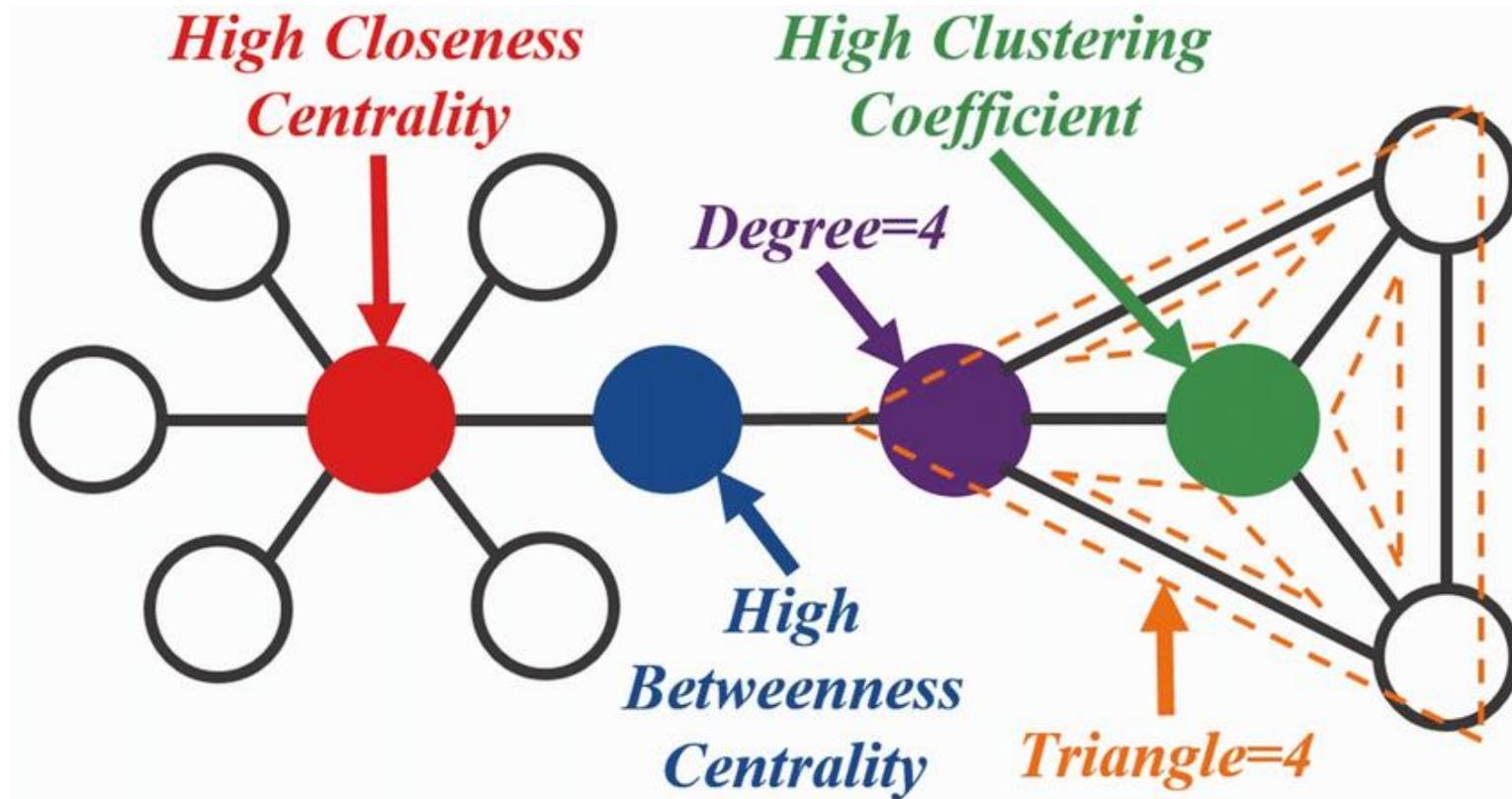
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Jackson, (2010) classified centrality measures into four main groups:

- i) degree centrality - assessing how a node is connected to others,
- ii) closeness centrality - showing how easily a node can be reached by other nodes
- iii) betweenness centrality - describing how important a node is in terms of connecting other nodes, and
- iv) eigenvector centrality measure (or the Bonacich centrality) - referring to how important, central, influential, and tightly clustered a node's neighbors are.



Environmental Maritime Network !!!

HOW CAN WE MAKE IT WORK ?

**HOW CAN WE BUILD LONG TERM COOPERATION
BETWEEN RESEARCHERS in EU and Cambodia ?**



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Thank you for your attention



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