ANSWERS TO THE QUESTIONS

EXAM TB-211 PROBLEM STRUCTURING METHODS: MULTI-ACTOR SYSTEMS
JULY 3RD 2013, 09.00 – 12.00

PART I - MULTIPLE CHOICE QUESTIONS - ANSWERS
Below you will find 30 multiple choice questions. Each of the questions only has one correct answer.

1) A good issue paper, as used in this course:
   a. Provides the problem owner with insight into possible policy analysis research that benefits decision making
   b. Provides the problem owner with insight into possible process management techniques
   c. Is an accurate report of the steps taken to structure a complex problem
   d. Is an accurate report of several partial analyses

Lecture 1, slide 17: "What makes a good issue paper? When a problem owner after reading it: …,…., is convinced that the research plan will yield the knowledge that is required for supporting a correct decision"

2) In this course the predominant style of policy analysis is:
   a. Interactive style
   b. Participatory style
   c. Process style
   d. Rational style

The styles stem from the "hexagon model" by Mayer, Van Daalen and Bots. In this course, mainly the rational style (and client-advice style, which was not listed in the question), book Chapter 1, p.22

3) The following form: "How can the client achieve *X*, without (too much) *Y?*" can be used to help in formulating an appropriate problem statement. What is normally indicated by "Y" in a problem statement that uses this form?
   a. Focal objective
   b. Side effect
   c. Shadow objective
   d. Sub-objective

Side effect. "X" marks the focal objective. A dilemma arises from the fact that resources that aid in reaching this focal objective often have undesirable side effects. You would preferably want to avoid these side effects, Y. In other words, How X, without Y? "Sub-objectives" are made visible in an objectives tree, but are not part of a problem definition, as used in this course. The term "shadow objective" is not used in this course. See website tutorial "Problem Demarcation", Course book section 3.3.1 and further, or slides of the Introduction lecture.

4) What is not a typical property of a so-called “wicked problem”?
   a. Uncertainty is present in technical understanding of cause and effect
   b. Multiple (conflicting) interests are involved
   c. Independent research is necessary to inform decision making
   d. Several parties have different visions on what the problem is

In “wicked problems” independent research does not provide a decisive answer, because of the many uncertainties and differing visions and interests of the involved parties. C. is, therefore, not a typical property (which does not mean that independent research cannot influence in wicked problems!). See the materials with theory on roles of Policy Analysis (e.g. Chapter 2 course-book).

5) Consider the actor table presented above. Which cell contains the so-called "sleeping dogs"?
   a. Cell 1
   b. Cell 2
   c. Cell 3
   d. Cell 4

Sleeping dogs are critical actors that possess important resources, but have conflicting interests. For now, they do not show a lot of interest for the problem (in other words: they are not committed). If they were to “wake up” and develop an interest for the problem, they are an important adversary. Website tutorial Actor Analysis; p.99 of the book.

6) Consider the actor table presented above. A power/interest matrix could be used to depict the same information. What would the name be of the group shown in **Cell 2**?
   a. Context Setters
   b. Crowd
   c. Key Players
   d. Subjects

Cell 2 contains the non-critical but committed actors. In terms of power and interest, this translates to relatively low power and high interest. These are the “subjects”, who have to be informed, but who are not essential to the success or failure of possible solutions. Website tutorial Actor Analysis; Book p.101; Article Bryson 2004

7) Mayer, Van Daalen and Bots describe several styles of policy analysis in their 2004 article. Based on these styles, several roles of policy analysts can be discerned. Each of the roles has a positive as well as a negative connotation. What role possesses the negative label of a “technocrat”?
   a. Research and analyze
   b. Design and recommend
   c. Clarify values and arguments
   d. Advise strategically

See article Mayer, Van Daalen and Bots, or Course book: Table 1.1, p.22.

8) The Provincial Representative stated the following about vacancy of housing in Kerkrade: "We have to prevent the emergence of ghost towns." This statement is a good illustration of the following policy theory:
   a. Advocacy Coalition Framework
   b. Garbage Can Model
   c. Rounds Model
   d. Stream Model

"Ghost town" is an example of using rhetoric as part of the argumentation, which you could expect to be part of an explanation based on the ACF: "Compared to the previous theories, …, the ACF assigns a bigger role to the argumentative dimension of policy processes" (Course book, p.43)

9) In its report, the *Economic Institute for the Construction Industry* states the following: "Municipalities with shrinking populations that do not apply policy adjustments, will see an increase in expenses on care and welfare because of the aging of their remaining population." Based on which future exploration method can such a statement be made? Select the method that is most appropriate:
   a. Policy scenarios
   b. Analogies
   c. Delphi method
   d. Trend extrapolation

The reference to the absence of policy adjustments indicates that policy choices are included in the scenarios, which is most indicative of policy scenarios.

10) The following statement is extracted from the newspaper article: "The number of inhabitants of South-Limburg is expected to drop by 15% over the next seventeen years." Based on which future exploration method can such a statement be made? Pick the method that is most appropriate:
   a. Policy scenarios
   b. Contextual scenarios
   c. Delphi method
   d. Trend extrapolation

These kinds of expectations are usually based on trend extrapolations. For the use of scenarios multiple possible developments would be considered (and mentioned), Delphi methods are expert-based and usually are not used for such precise quantitative expectations of specific variables.

The following questions relate to the perception diagrams given in the exam assignments. Base your answers to these questions solely on the information presented in these diagrams. Do NOT make any additional assumptions!

11) Which of the actors is facing a dilemma, according to the diagrams listed above?
   a. The province
   b. The municipality
   c. The inhabitants
   d. All of these actors

The municipality is facing a dilemma. The easiest dilemma to spot in its diagram, is related to the "Concentration of public facilities". If the municipality implements this option, this will reduce the factor "Budget deficit" (via a "-" and a "+" relation), in line with its goals. However, implementation of this option will also reduce "Attractiveness of the municipality", and this conflicts with its goals.

12) Consider the two following statements.
Statement 1: The province is strongly dependent on the municipality.
Statement 2: The municipality is dependent on the inhabitants.
Which of these statements is correct? When answering the question, limit yourself to the diagrams above.
a. Only Statement 1
b. Only Statement 2
c. Statements 1 and 2
d. Neither of the statements

Statement 1 is not correct. Municipalities have no means to influence the objectives in the perception of the Province, so the Province does not "see" any dependency. This perception might be considered "wrong", but even when taking the other shown perception into account, from the municipality and the inhabitants, any influence of the municipalities on "Amount of vacant houses in districts" (the only outcome of interest for the province, according to the diagrams) can be nullified by the obligatory coupling between the construction of new houses and demolition of existing ones.
Statement 2 is not correct. Inhabitants do not have any means of their own, not in any of the diagrams. This means that none of the other actors has any dependency on them. Again, according to the logic and information contained in the three diagrams.

13) Which of the following statements is NOT correct? When answering the question, limit yourself to the diagrams above.
a. The province takes the interests of inhabitants into account
b. It is attractive for municipalities to make more land available for new building projects
c. National government actively supports the province
d. Inhabitants take the interests of the province into account

There is no perception diagram provided for national government, making it difficult to make a correct statement on their attitude and support. There are means by National Government, shown in the causal map that depicts the perception of the Province, but if National Government uses this instrument, (Limit housing corporations to their core task), this can only have a negative effect (on the availability of housing in the middle segment). So, also from this point of view, at most passive support from national government is possible, by NOT doing anything. And, as noted, one cannot be sure about the likely decision of the National Government, in the absence of a diagram on their perception.

14) Listed below is the scorecard for the municipality, based on the perception diagram presented before. What should be printed in Cell 1?
a. +
b. -
c. +/-
d. Nothing, the cell should be empty

15) What should be printed in Cell 2?
a. +
b. -/+
c. -/+/+
d. +/-/-

Explanation of the answer of the two previous questions: Follow the paths from means to objective in the diagram of the Municipality, shown in the exam assignment.

Scorecard Municipality

	Budget deficit municipality	**Attractiveness municipality**
Budget cuts [Nat'l government]	Cell 1	
Concentration of public facilities [Municipality]	Cell 2	-
Issuing land for construction [Municipality]	-	
Increase local real estate taxes [Municipality]	+/+/-	-

16) In the case description, elderly in need of public health care form a vulnerable group. John Bryson presents several techniques for stakeholder identification in his 2004 article. The use of which technique involves the biggest risk of *overlooking* a vulnerable group like the group of the elderly in need of care?
    a. Ethical analysis grid
    b. Participation planning matrix
    c. Power versus interest grid
    d. Stakeholder-issue interrelationship diagram

    See the article by Bryson (2004) for the aforementioned techniques. In a power/interest grid, elderly in need of care will be readily classified as having little power; they will be classified as "subjects" or "crowd", suggesting that they can be kept out of the *active* decision-making and will at most need to be "informed". The other techniques in the list focus more on the interest of stakeholders in an 'issue' and less on their influence and resources. Therefore, the risk of vulnerable groups being overlooked decreases.

17) For the case described above, what would be a *driving force* when setting up contextual scenarios for the municipality?
    a. Budget deficit municipality
    b. Average age inhabitants
    c. Life expectancy at birth
    d. Job opportunities in the region

'Average age inhabitants' is already mentioned in the perception diagram of the municipalities as being an external factor. Therefore, it is an external factor for use in contextual scenario development, but it is NOT a driving force. A driving force is typically found on a higher level of abstraction, as force that influences the developments in external factors. Life expectancy at birth influences the average age of inhabitants, and therefore is a relevant driving force. A decreased in 'budget deficit' is mentioned in the diagram as being the objective of the municipality, so certainly not 'contextual' driving force. 'Job opportunities in the region' can, possibly indirectly, be influenced by the municipality and, thus, cannot be considered completely external. See tutorial or Course book chapter on Exploring the future.

When answering the following questions, only use the information provided in the text above. *(text box: "Power plant Rotterdam superfluous, shipped to Asia", given in exam assignments)*

18) Which of the following research questions is *certainly* being answered in the cited PwC report?
    a. How can the Netherlands produce more green power?
    b. How can the profitability of Dutch energy production be improved, without increasing CO2 emissions?
    c. What is the marginal value of a kilowatt-hour of produced energy?
    d. What is the efficiency of gas plants in the Netherlands?

The correct answer is option c: "What is the marginal value of…" Only one research outcome is mentioned in the text, and this deals with the profitability (loss) of each generated kilowatt-hour. The other aspects mentioned in the other questions are not discussed, so it is impossible to say whether these are answered. Also, in this course, questions of the form "How can...without..." refer to a problem statement, a policy problem to be addressed, instead of a research question that calls for more descriptive research.

19) Which of the factors listed below could have been, judging from the text, used directly as a criterion in the problem that Eneco wanted to solve by constructing the Enecogen plant?
    a. Market share
    b. Production capacity North-western Europe
    c. Stability energy production
    d. Demand for electricity

The text states: "The gas plant would be ideal to compensate the fluctuations in wind energy". This indicates that the stability of the energy production has been important.

20) Which of the factors listed below is an external factor in the problem that Eneco would have wanted to solve by constructing the Enecogen plant? (Note: in this course, the terms external factor and context factor are considered to be synonymous)
    a. Share of wind energy in production
    b. Market share
    c. Stability energy production
    d. Demand for electricity

"However, the financial crisis caused the demand for power to collapse" The collapse in demand for electricity, which is bigger than expected, caused the current overcapacity that requires the Enecogen plant to be dismantled again.

21) Which of the following statements is NOT a conclusion that can be drawn from the provided text regarding resource dependency?
    a. Eneco is resource dependent on Japanese buyers of gas turbines
    b. Eneco is resource dependent on PwC
    c. Japanese energy companies are resource dependent on Eneco
    d. The Danish Dong company is resource dependent on Eneco

All the mentioned actors are involved in a cooperation/trade relationship with Eneco, which indicates that one actor's resources can (in some way) help the other. The extent to which this applies can vary, but even weak resource dependence (for example with replaceable resources) qualifies as "resource dependence". The only relation not mentioned in the article is that between PwC and Eneco.

22) Which of the following statements is correct?
    a. By using contextual scenarios, Eneco could have predicted the collapse in demand for power caused by the financial crisis
    b. By using future scenarios, Eneco could have prepared for events like the financial crisis and collapse of the demand for power
    c. Expert consultations using the Delphi method could have predicted the collapse in demand for power caused by the financial crisis
    d. Had policy scenarios been used, Eneco would not have built the Enecogen plant

Scenario scan be used to prepare for events that may seem improbable at first. Future explorations do not help in "predicting" events; Therefore, answers that mention predictions are incorrect. It can neither be said that the use of scenarios would have led to different outcomes; Even if the collapse in demand would have been taken into account, construction might have taken place anyway – for example considering the even longer term, or because other scenarios would have resulted in an even bigger loss without the plant.

23) Which of the following policy theories best fits the sale of gas turbines off the Enecogen plant to power producers in tsunami-stricken Japan?
    a. Advocacy Coalition Framework
    b. The phase model
    c. The streams model
    d. The garbage can model

Refer to Chapter 2 for explanation of these theoretical models. It is clear that policy processes are capricious and unpredictable. This constant and unpredictability of change is emphasized in the garbage can model and the streams model. The streams model places a relatively high emphasis on the role of actors in connecting individual 'streams' and 'political events'. The garbage can model leaves (even) more room for unpredictability, such as the consequences of an unforeseen natural disaster. Hence, this garbage can model is the better fit.

24) Which of the following statements is NOT correct? The system diagram as used in this course:
    a. Provides insight into dependencies between actors
    b. Provides insight into the workings of the system that is relevant to the problem
    c. Provides insight into the underlying interests of the problem owner
    d. Shows which developments are outside of the sphere of influence of the problem owner

The criteria in the system diagram provide insight into the objectives of the problem owner, but not necessarily into the underlying interests. These can fall beyond the demarcation (which otherwise would become too wide, for example) and in those cases are invisible in the system diagram. The means-ends diagram is used to visualize the underlying interests.
NB: In a multi-actor context, as used in this course, the system diagram does provide insight into important dependencies between actors, especially by indicating the means of the different actors and visualizing their effect on objectives that also are important to different actors. See the website tutorial Systems Analysis Part 2.

25) The main function of the means-ends diagram in this course is:
    a. Choosing an initial problem demarcation
    b. Defining measurable criteria
    c. Identifying alternatives
    d. Visualising the most important causal relations within a problem

See the assignments, website tutorial Problem Demarcation and paragraph 3.3.1 of the Course book, starting from p.58. Note that a means-ends diagram can also be used to identify alternatives, but this is not its main function in this course. Alternatives are identified once the initial problem demarcation has been selected, and here, causal map, system diagram, actor analysis and scenario analysis will also help, during the iterative analysis process.

26) In a correct objectives tree, as used in this course, can a higher level objective have only one sub-objective? (In other words: are one-on-one relations allowed?)
    a. Yes, as this also helps in further specifying objectives
    b. No, if that happens an extra sub-objective has to be found in order to preserve the tree structure
    c. No, if that happens the higher level objective has to be replaced by the more specific objective underneath. This forces an analyst to keep the diagram as simple as possible.
    d. No, because this often leads to causal relations and overlap between criteria.

Page 65 of the book, nr.3 in the list

27) In this module, an actor analysis is conducted using several intermediate steps. This results in a final overview table in which actors are divided based on (amongst others) “similar/supportive interests and objectives” or “conflicting interests and objectives”. Which diagram or which table, produced in an earlier step of the actor analysis procedure, provides the information needed to classify the actors as having “similar/supportive” or “conflicting” interest and objectives?
    a. The formal chart
    b. The power/interest matrix
    c. The resource dependency table
    d. The overview table of actors’ problem formulations

Website Actor analysis tutorial, Chapter 4 of the book (Tables mentioned correspond to Textbox 4.4 and Tables 4.3, 4.4 and Figure 4.1. Table 4.3 is the overview table of actors’ problem formulations and indicates for each actor, amongst other things, what their interest is, as well as the desired situation and the preferred solution. This information helps to judge if their objectives are conflicting or not.

28) In a good issue paper:
    a. Knowledge gaps provide the link between problem analysis and research proposal
    b. Knowledge gaps provide a nuance for the predominant recommendations
    c. Many knowledge gaps can be foreseen based on the problem statement in the introduction
    d. Knowledge gaps are identical to the sub-questions for further research

Chapter 8 of the Course book, for example p.169 bullet 4 in the list. Website tutorial Synthesis and Storyline

29) When developing contextual scenarios, a scenario describes:
    a. The most extreme conceivable situation
    b. The most probable future situations
    c. A point in a space that is spanned by the defined scenario-logic
    d. A quadrant in the defined scenario-logic

Refer to Tutorial Future Exploration on website

30) What is NOT a known limitation of actor analyses? Actor analyses:
    a. Only provide a snap-shot of a dynamical phenomenon
    b. May lead to self-fulfilling prophecies
    c. Increase the risk of potential critical opponents being overlooked
    d. Are often difficult to ground in reliable sources of information

Limitations are mentioned in the book on pages 102 and 104, as well as on the course website Tutorial Actor Analysis (Step 6 Implications). C. is not in those materials. In fact, the contrary should be true: A good actor analysis decreases the risk of potential critical opponents being overlooked – even if a certain residual risk, of course, always remains.

This concludes the multiple choice questions of this exam.
Do not forget to answer the subsequent open questions!

ANSWERS TO THE QUESTIONS

EXAM TB-211 PROBLEM STRUCTURING METHODS: MULTI-ACTOR SYSTEMS
July 3rd 2013, 09.00 – 12.00

PART II – OPEN QUESTIONS - ANSWERS

Problem 1

(10 points)

VEGETATED FORESHORES

(Extensive case description provided with exam assignments)

The World Wildlife Fund (WWF) is also involved in water and environment in the Netherlands. The World Wildlife Fund strives for more and better natural environment in the Netherlands, in which integration into the landscape and clever combinations of the environment with societal functions are key. The WWF would like to support an increased use of vegetated foreshores but only has few resources to directly control or change the management of water systems in the Netherlands.

How could the WWF still fulfil its wishes for more vegetated foreshores by lobbying other parties? **You are requested to help the WWF in exploring possible lobbying strategies.**

Questions:

a. Describe the main interests of the following four actors that are mentioned in this case: the water board, nature organization (managing nature areas, like Staatsbosbeheer), municipality, farmer. *(1 point)*

Actor	Main Interests
Water Board	• "Dry feet" (flood protection, flood safety, or something similar) • Nature development (as required by European directives, mentioned in case description) • *(Costs*, Control over water defense structures (dikes)***)
Nature management organization (Staatsbosbeheer, Natuurmonumenten)	• Nature development • Societal support (Recreation is part of this) • *(Costs)**
Municipality	• Local economic development (specifically agriculture, recreation)
Farmer	• Sufficient farmland (or: healthy agricultural business operations/room for agriculture, or something similar)

* Costs are not mentioned in relation to water boards and nature management organizations in the case description, but it is quite logical to expect these to be part of their interest as well. Answers that do not mention costs for these actors are also accepted as correct.
** "Control over water defense structures" is mentioned for water boards, but is actually more of a means-objective than an underlying interest. It is acceptable if mentioned.

b. Developing a useful lobby-strategy requires a structured approach. Provide a **method** for developing a useful lobby-strategy. Distinguish different steps in your method and describe how you can use the results of the different analyses from this course as parts of this method.
Describe your method clearly in steps and indicate specifically (for each step, if at all possible) what information from analyses in this course you have used (in other words: which elements from the means-ends diagram, system diagram, actor tables, etc) *(4 points)*

Lobbying means that one trues to persuade others to agree on one's preferred strategy. In this case, the WWF want to persuade other actors to support the realization of nature foreshores. Hence, the main structure for a methods to develope a useful lobby-strategy is outlined by identifying the relevant questions that need to answered::

I. **Why**? What is your underlying objective in lobbying others? (for WWF: realizing more natural foreshores). Analysis methods: means-ends diagram to identify underlying objectives, objectives tree to further specify criteria to measure realization of focal objective.
II. **Who & what for**? Who do you need to lobby? And what should or could you lobby for, with each actor? Think of the resources and means an actor has, that are useful to realize the objective that triggered your lobby. Do these means have a large impact on these objectives, and are they replaceable? Analysis methods: Actor analysis to identify resource dependencies. Systems diagram to explore how means of others influence the realization of objectives.
III. **How** can you lobby this actor? What are the arguments you could use, what are the objectives of these other actors that you could link to the interests that your lobby serves, are their resources or means that you could offer to others as an attractive means of compensation or to create synergy? Analysis methods: Actor analysis. Problem formulation table for the identification of convincing arguments and interests of others. Formal chart for identification of means to influence them. Systems analysis also for identification of means to influence objectives of interest to these others.
IV. Based on the above: what is promising strategy**, taking into account practical conditions and constraints**, of the lobbying organization. The resources they have(available finances, staff, expertise, access to the target actors, etcetera) and the importance of the issue to this organization.

c. Apply the method you described previously to develop a lobby-strategy for the WWF, based on the given case description. Include the actors listed in the first question in your analysis. Support your answer with arguments! *(3 points)*

Step I: Why?

Lobbying to realize more natural foreshores – appropriately designed and constructed, and managed/maintenance in a nature friendly way.
This objective was mentioned as a starting point for the assignment. Given the limits of the case description and this examination assignment, constructing a means-ends diagram is not required.

Step II: Who? Resource dependency

Resource dependency table for four actors (example, other variants are also possible):

Actor	Important resources	Dependency? (impact on realization of foreshores)	Replaceable?	Critical actor? (rangorde?)
Water boards	Control/management of dikes, formal decision-making authority on dike reinforcements, contribution to maintenance foreshores as part of water defense and/or nature values, issues permit required for constructing natural foreshores	Large (Construction and maintenance)	No*	Yes (1)
Nature land management organizations	Management and maintenance of (many) locations where natural foreshores could be realized	Large (Construction and maintenance)	No*	Yes (2)
Municipalities	Issues permit required for the Construction of foreshore	Limited (permit checks mainly against existing regulations)	No*	Yes (3)
Farmers/Agricultural sector	Management of some of the locations that border foreshores (which then need to be managed in a 'nature friendly' way. For instance, no damaging pesticides or fertilizers in the buffer zone; Can object against permits when results in loss of (agricultural) productive land area.	Limited	Yes	No (4)

* At the national level, resources of all four actors are somewhat replaceable; There are multiple water boards, nature management organizations and municipalities, and farmers. In any given location, all three critical actors will need to cooperate, but there are several possible locations within the Netherlands. In the next step, therefore, it is useful to include an inventory of the positions of the (larger) representatives in the different regions for each of these three actor categories. Some water boards may be more supportive of foreshores than others – for historic reasons, organization culture or area characteristics. The same may be true for nature management organizations and municipalities (and farmers).

Step III: How?

The next table contains an example; it may be preceded by a "problem formulation table" from the actor analysis (Table 4.3. in Course book).

Actor	Means and desired use	Interests actor	Supportive?	Arguments	Means WWF to influence actor
Water boards	Support Construction and (financial) contribution to maintenance activities	Safety and nature development	Possibly, doubts, especially on safety aspects	Foreshores help to combine both interests. Uncertainties on safety can be managed jointly, through clear collaborative agreements. Successes of recent "Room for the River" experiences	Facilitate process to reach (contractual) guarantees *with nature management organizations* about unforeseen adaptations in future regarding safety Pressure by calling attention to importance of realizing nature goals Europe (via EC, national decision-makers or province)
Nature land management organizations	Construction and maintenance of foreshores (evt guarantees to persuade water boards, see above)	Nature & recreation	Yes	Foreshores help to combine both interests	Share information and facilitate agreements between nature organizations and water boards and possibly external funding agencies (national government?)
Municipalities	Permits for the Construction of foreshores	Local economic development: recreation, agriculture, (safety, but rely on water boards)	Attitude differs (per municipality)	Recreational value of natural foreshores, societal embedding/acceptation of green agriculture, successes elsewhere (foreshores as 'best practice')	Little direct influence, mainly through mobilizing other parties, especially vocal citizens, local 'green' entrepreneurs and recreation-sector, province and national government agencies (possibly with support of nature management organizations and water boards)
Farmers/Agricultural sector	Don't protest against construction, support nature friendly maintenance	Agriculture (sufficient area and profitable business operations)	Not always, often not?	Social/societal responsibilities & support, love of farmers for nature and rural landscape, safety	Mainly through others. Image support via open public supportt WWF for 'green farmers'

Step IV: Strategy

Based on the elaboration of the previous steps, it seems wise to start with the mobilization of support from the natural allies among nature management organizations, and to use their support to jointly approach water boards. In approaching water boards, the WWF/nature coalition can emphasis the combination of safety with nature values. Also, they should take concerns raised by a water board seriously, and try to find solutions for those by looking at the "guarentees" or agreements on adaptations, mentioned in the previous table.

Starting with approaching nature organizations will probably fit well with the existing contacts and network of WWF, if we assume some existing collaboration among nature organizations. Subsequently, the more locally active nature organizations can be expected to have existing ties with their local water boards, providing entry points for the next step.

When there are sufficient locations where there is some support among water boards and nature organizations, these can enter into dialogue with municipalities and farmers. These groups may be more difficult to convince. Logical starting points here are the more 'promising' municipalities. Municipalities known to be supportive of nature development. Afterwards, it may be easier to convince 'enemies', simply by pointing out the successes elsewhere.

WWF can systematically map promising municipalities and farming communities, when some resources are available, or this can be done more ad-hoc, based on the "promising" locations as they are known within the coalition ofWWF, nature management organizations and water boards.

d. Besides several parties being involved, the use of more vegetated foreshores is also influenced strongly by several uncertainties. Which future exploration method would you use to provide the WWF with more insight into possibilities for dealing with uncertainties? Motivate your answer, based on the case description (*2 points*)

- **Delphi-method** (expert-consultation). Expert-consultation can be used because several uncertainties are involved that require system knowledge and insights into the expected developments in fields as ecology, strength of water defenses, and effects of climate change. A condition for use of this method is that sufficient experts can be found with knowledge of the different aspects of natural water defense structures, and that there are sufficient means (staff time, expertise and financial resources) to design and execute the consultation properly.
- **Contextual scenarios** could also be used, using the aforementioned contextual/driving forces as starting point (developments in ecology, effects of climate change, possibly complemented with economic/demografic developments that affect nature development and the need for flood safety). This enables the exploration of scenarios, as combinations of uncertain developments, which is precisely what needs to be done here.
- **Other methods are less suitable**. Trends and policy scenarios are more of a 'forecasting' character, but there are insufficiënt experiences and time-series data available, at least for the ecological issues.

This concludes the exam.