

## **Dilemma of the Earth Sciences group**

A survey is made in an environmentally protected area. The researcher responsible for the analysis finds result that point to the existence of an oil reservoir in the area.

What should the researcher do now?

## **Ethics, internal relations and relations to society at large**

**Will there be any ethical problems or conflicts in the context, in the organization or in the group where your project or the results of it will be applied or used?**

Depending on how much of the result that is presented future funding can be affected. This could lead to a conflict within the research group on how to act. Present all result with emphasis on the oil resource could benefit future funding because it is a sensational result that will make our research group famous. Present the results but with focus on other geological features which will make the results less sensational but could lead to a continued preservation of the nature in the area.

**Will your project or the results of it cause any ethical problems or conflicts?**

The results from the survey performed in the environmentally protected area shows that there is potential of a future oil deposit in the area. Thus, there is a conflict between preserving the nature in the area and extracting the oil.

**What groups, individuals, organizations, etc, will in any way be affected by or have a stake in the development, use or mere existence of your project or the results of it? (Including society at large and the environment.)**

The inhabitants in the area will be affected if the oil will be extracted. The nature and animals in the area will be affected. The industry (an oil company) that could start to extract the oil. The public that could be affected if the nature and animals in the area disappears as well as of an economic change if a new industry is started. The researcher and the research community.

**What values, interests, duties, standpoints and attitudes are involved in the use of your project or the results of it?**

The value of untouched nature and preservation of animals and plants that are threatened of extinction. The interest of making money of the oil resource. The benefits and disadvantages for the inhabitants in the area and close to it. The duty to tell the truth as a researcher and human being.

**What effects will your project or the results of it have on each of these values, etc? Will your project or the results of it fit certain values and conflict with others? What values and how?**

The result could lead to a new site of oil extraction that would take place in the protected area. This would destroy the nature in the area and force the animals to move away or extinct them. It would also benefit an oil company that makes the extraction as well as an opportunity for new jobs in the area. It is a conflict between these values; the nature and the money making and work opportunity in industry.

**What will you do to make sure that the use of your project or the results of it will be optimal with regards to ethical aspects? For instance if it is an IT system, adapt the design of the product, user training, organizational changes, inform stakeholders, etc? How exactly are you going to succeed with this?**

**Present the results with emphasize on the values in the area.**

Since the survey is already made and the results are found that point to an oil reservoir, the researcher has to present this to keep to the value of honesty.

**Problem owner:** Researcher in the field of Earth Sciences

**The dilemma:** A survey is made in an environmentally protected area. The researcher responsible for the analysis finds result that point to the existence of an oil reservoir in the area.

<p style="text-align: center;"><b>Heteronomy</b> <b>Authoritarian and constrained thoughts</b></p>	<p style="text-align: center;"><b>Autonomy</b> <b>Systematic, critical and holistic searching</b></p>
<p style="text-align: center;"><b>Reflexes or emotional reactions</b> <b>(Dominated by one automatic thought)</b></p> <p style="text-align: center;">Catastrophy if the result comes out! Nothing will happen people will continue to respect the nature. I have to think of my career! I can be rich! This will save the worlds problem with lack of oil! Pumping up more oil will lead us into an overheated globe! I must tell the truth!</p>	<p style="text-align: center;"><b>Valid, relevant values, interests etc.</b> <b>(Who is affected? What are their values?)</b></p> <p style="text-align: center;">How will life of inhabitants in the area be affected? Is the nature in the area valuable to preserve? What happens to my career? How does it affect the supply of energy? What happens with global warming? What happens to the trust to research results?</p>
<p style="text-align: center;"><b>Dogmatic and uncritical thoughts</b> <b>(Fixation to one important principle)</b></p> <p style="text-align: center;">The oil is the most important. The nature must be preserved. My career is my chance to a good life. We only have one Earth that must be saved.</p>	<p style="text-align: center;"><b>Possible actions and values</b> <b>(What can be done? How are all values affected?)</b></p> <p style="text-align: center;">Present all results. Present all result and emphasize the possibility of this resource. Present nothing. Present parts of the results. Present in one of the above ways and destroy the data.</p>

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Autonomous thinking		All principles, values, interests, duties, feelings, needs etc. of all involved parts					
		Life of inhabitants	Nature in the area	Career of researcher	Oil company	The public	Trust of research results
All reasonable alternative actions to solve the problem	Present all results	<b>Possibilities:</b> Work opportunity in industry <b>Risks:</b> Have to move because the area will be exploited	<b>Possibilities:</b> The resource not deployed because of nature reserve <b>Risks:</b> Destroyed	<b>Possibilities:</b> Could give benefits for the career <b>Risks:</b> -	<b>Possibilities:</b> start new oil site <b>Risks:</b> -	<b>Possibilities:</b> new job opportunities in industry <b>Risks:</b> lost of nature reserve	<b>Possibilities:</b> People's trust in researcher increases <b>Risks:</b> -
	Present all and stress the use of resources	<b>Possibilities:</b> Work opportunity in industry <b>Risks:</b> Have to move because the area will be exploited	<b>Possibilities:</b> The resource not deployed because of nature reserve <b>Risks:</b> Destroyed	<b>Possibilities:</b> Could give benefits for the career <b>Risks:</b> Questioned by conservationists	<b>Possibilities:</b> start new oil site <b>Risks:</b> -	<b>Possibilities:</b> new job opportunities in industry <b>Risks:</b> lost of nature reserve	<b>Possibilities:</b> Increase of trust <b>Risks:</b> Decrease of trust because results should be presented without comments
	Present nothing	<b>Possibilities:</b> Continue usual life. Stay in their homes. <b>Risks:</b> Lack of income if no job	<b>Possibilities:</b> Can stay protected as before <b>Risks:</b> -	<b>Possibilities:</b> - <b>Risks:</b> More difficult to get funding without sensational result	<b>Possibilities:</b> - <b>Risks:</b> -	<b>Possibilities:</b> nature reserve kept as it is <b>Risks:</b> -	<b>Possibilities:</b> - <b>Risks:</b> Decrease of trust if a project gives no result
	Present parts of the results but skip the resource	<b>Possibilities:</b> Continue usual life. Stay in their homes. <b>Risks:</b> Lack of income if no job	<b>Possibilities:</b> Can stay protected as before <b>Risks:</b> -	<b>Possibilities:</b> - <b>Risks:</b> More difficult to get funding without sensational result	<b>Possibilities:</b> - <b>Risks:</b> -	<b>Possibilities:</b> nature reserve kept <b>Risks:</b> loose trust of research	<b>Possibilities:</b> - <b>Risks:</b> Decrease of trust if later discovered that results were missing
	Present nothing and destroy the data	<b>Possibilities:</b> Continue usual life. Stay in their homes. <b>Risks:</b> Lack of income if no job	<b>Possibilities:</b> Can stay protected as before <b>Risks:</b> -	<b>Possibilities:</b> New career in other field <b>Risks:</b> No funding and kicked because of misconduct	<b>Possibilities:</b> - <b>Risks:</b> -	<b>Possibilities:</b> nature reserve kept <b>Risks:</b> loose trust in research	<b>Possibilities:</b> - <b>Risks:</b> Decrease of trust if discovered

## **Evaluation of ethical tools**

All four tools helped to investigate the problem. To various extents, they simplified in identifying stakeholders and their interests, listing options and alternatives, finding possibilities, and assessing risks. After using the tools, the problem is dismantled into small parts. It is similar to a detailed and structured analysis. The tools helped in giving a good overview. After the analysis, a decision could be made with comfortableness and reasonable explanation, that is to say, interests of the involved individuals/groups are weighted and the decision could be well justified.

In the group we were all helped by splitting the dilemma into a tabular format. Therefore, we would probably choose EthXpert next time we encounter a complex dilemma. It was very good and easy to use. We think EthXpert can be used not only in moral situations, but also in comparing options for important decisions in life. Autonomous thinking (AT) is very similar to EthXpert, but just another format.

# Evaluation questionnaire

## OLE, HA, AT and EthXpert

### 1. Which tool did you use first after OLE?:

HA       AT       EthXpert

### 2. How good was the tool in identifying:

(Rate 1 to 5, 1=Bad, 5=Good)

	OLE	HA	AT	EthXpert
Stakeholders	2	3	4	5
Values/interests	2	3	4	5
Options/alternatives	2	2	4	4
Possibilities	2	2	4	4
Risks	2	2	4	4

### 3. Did it help you to:

(Rate 1 to 5, 1=No, 5=Yes)

	OLE	HA	AT	EthXpert
Get a good overview?	3	3	4	4
Understand the problem?	3	3	4	5
Make a decision?	2	2	3	4
Get confidence with the decision made?	2	2	4	4
Explain and defend the decision?	2	2	3	4
Get prepared for dialog?	3	3	4	4

### 4. How do you feel about the tool:

(Rate 1 to 5, 1=No, 5=Yes)

	OLE	HA	AT	EthXpert
Does it work?	2	3	4	5
Do you understand how to use it?	5	5	5	5
Is it easy to use?	4	3	4	4
Does it support achievement of your goals?	3	3	4	4
Does it help you make a morally better decision?	3	3	4	5