

Read the text and answer the questions.

1) Science plays a crucial role in identifying problems related to how natural systems function and deteriorate, particularly when they are affected by an external factor. In turn, scientific findings shape the policies introduced to protect such systems where necessary. Experts are frequently called upon by politicians to provide evidence which can be used to make scientifically sound, or at least scientifically justifiable policy decisions.

2) Issues arise as there are frequent disagreements between experts over the way data is gathered and interpreted. An example of the former is the first scientific evidence of a hole in the ozone layer by the British Antarctic Survey. (1) The findings were at first greeted by the scientific community with scepticism, as the British Antarctic Survey was not yet an established scientific community. (2) Moreover, it was generally believed that satellites would have picked up such ozone losses if they were indeed occurring. (3) It was not until the methodology of NASA's Goddard Space Flight Center was reviewed that it became apparent that data had been overlooked. (4)

3) With regards to the latter, controversy between scientists may arise where data analysis appears to support one policy over another. In 1991, the World Resource Institute (WRI) published estimates of net emissions and sinks of greenhouse gases for a number of countries, including India. The report provoked criticisms among Indian scientists who argued that the figures had failed to take some significant factors into account, leading to overestimated emission values. The WRI was accused of blaming less economically developed countries for global warming; a stance which, if accepted, could impede industrialisation and sustain, even widen, the wealth gap.

4) Problems regarding the scientific method are well documented and it is widely accepted by the scientific community that, however consistent scientists are in their procedures, the results born under different circumstances can vary markedly. A number of factors influence research, among them the organisation of a laboratory, the influence of prevailing theories, financial constraints and the peer review process. Consequently, scientists tend to believe they are not in a position to bear universal truths but to reveal tendencies.

5) However, this is countered by two factors. Firstly, certain scientific institutions wish to maintain a degree of status as 'bearers of truth'. Further, policy makers uphold this

understanding by requesting scientific certainties in order to legitimise their policy decisions. According to a number of authors who have documented this process, decision makers do not necessarily try to obtain all the information which is or could be made available regarding an issue. Rather, they select that information which is necessary to fulfil their goals, information termed as 'half-knowledge'. Attempts to underplay transboundary issues such as water provision and pollution are cases in point. Politicians clearly cannot pretend that certain data do not exist if they are well-known in scientific communities or national borders, but some discretion is evident, especially where there is controversy and uncertainty.

6) It is important to note that policies regarding scientific issues are influenced in no small part by societal factors. These include the relative importance of certain environmental issues, the degree of trust in the institutions conducting the research, and not least the social standing of those affected by the issue. In other words, environmental problems are in many ways socially constructed according to the prevailing cultural, economic and political conditions within a society. It has been suggested, for example, that contemporary 'post-materialist' Western societies pay greater attention to 'quality' - including environmental quality - than 'quantity'. This theory does not necessarily assume that people of low-income countries have no interest in environmental protection, as the example of the Chipko movement in India clearly demonstrates, but demonstrates that the way a resource is valued varies widely among different communities.

7) Finally, it cannot be denied that the 'issue of the day' changes constantly. One issue becomes more or less urgent than another, based on current events. Concurrently, new issues enter the political agenda. It has been noted that it often takes a 'policy entrepreneur', someone who dedicates time, energy and financial resources to a certain issue, to raise its profile. Furthermore, whether an issue is taken up by political, environmental or media groups, depends very much on the degree to which it suits their particular agenda, not to mention budget.

1 With reference to paragraph 1, which of the following pieces of research would be NOT be relevant to this article?

the effect of climate change on weather patterns in Africa

whether or not low level radiation increases the risk of cancer

how acid rain impacts species within a lake ecosystem

a comparison of the species present in two areas of woodland

2 What is the purpose of the example of ozone data given in paragraph 2?

to show that NASA's Goddard Space Flight Center used unreliable methods of gathering scientific data

to show how data gathering methods and the status of scientists may affect the way data is regarded

to prove that it is wrong to dismiss evidence which comes from a non-established source

to show how NASA and the British Antarctic Survey disagreed over the correct way to gather ozone data.

3 Where in paragraph 2 does this sentence best fit?

This was because of the way their computers had been programmed to discard any readings which appeared anomalous.

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4 Paragraph 3 gives an example of a dispute over...

which country was most responsible for producing greenhouse gases

the pollution caused by multinational companies in India.

how statistics were interpreted and presented.

erroneous data which resulted from a poorly-funded experiment.

5 In paragraph 5, 'this' refers to...

the scientific method and its inherent problems.

the belief that scientists cannot reveal universal truths.

the variation in scientific results under different circumstances.

the list of factors which influence scientific research.

6 What is meant by this sentence?

'Further, policy makers uphold this understanding by requesting scientific certainties in order to legitimise their policy decisions.'

Politicians when seeking evidence for policy-making, do not understand the fact that scientists are unable to act as 'bearers of truth'.

Politicians consider the scientific research that supports their policies as more legitimate than other research.

Scientific institutions encourage politicians to use them for policy-making in order to improve their status.

Politicians, when seeking evidence for policy-making, encourage the belief that scientists can produce incontestable facts.

7 Which sentence best sums up the ideas in paragraph 4?

Scientists are aware that their work cannot present incontrovertible facts.

If scientists were more consistent, they could create more reliable evidence.

Variations in how research is conducted often affect its validity.

Scientists spend more time documenting problems than conducting research.

8 Why are 'transboundary issues such as water provision and pollution' referred to in paragraph 5?

to illustrate situations in which politicians pretend that certain data does not exist

to illustrate situations in which incorrect information is given by scientific institutions keen to maintain their status.

to illustrate situations in which politicians are selective with regards to what data they gather

to illustrate situations in which policy makers request scientists to present them with scientific certainties, even though none exist.

9 What can be inferred about the Chipko movement?

It was an example of how people in low-income countries have little interest in environmental protection.

It was an example of how different people within a community valued a resource differently.

It was an example of how people in a low-income community showed interest in protecting the environment.

It was an example of how people in a low-income community valued quantity over quality.

10 Which of the following arguments is NOT presented in paragraph 7?

An issue only get political or media attention if someone with a high profile is supporting it.

Politicians are only interested in environmental issues if it benefits them.

Issues don't get public attention unless a particular person advocates it strongly.

Issues may be overlooked if there are other significant events happening at the time.

