Environmental Investigations: getting to the heart of the problem

Contents

Who, what, where, and why?

Investigations are fundamental to environmental campaigns and often are essential first steps in identifying whether campaigns are necessary and to define subsequent campaign pathways. They can range from undercover investigations of companies, facilities and activities in order to expose those responsible for environmental crimes to taking water, air, or soil samples in order to bring polluters to account, to the use of satellite mapping data and drone video capture to inform media releases in order to uncover an environmental scandal.

A number of large ENGOs, such as Greenpeace,[1] Environmental Investigation Agency[2], and Global Witness[3] rely on investigations to identify targets for campaigns, progress campaign plans and to generate media attention. The results of investigations can be used to enforce regulations, to bring environmental criminals to court, as well as to harness public opinion, and embarrass governments and corporations into taking action or to stop or mitigate environmental impact.

But you don't need to be a big NGO to conduct and environmental investigation to fuel your campaign. Grassroots collectives can and have used investigations to win major environmental campaigns.

Tactical and strategic investigations

Tactical investigations are those that are carried out on-the-fly. In other words either when coming across something in the course of another activity or in response to an incident when deliberate planning and consideration is not an option. Tactical investigations are most often photographic or video capture, interviews and post investigative research. Due to their immediacy, they are most successful when exposed in a media release and/or a complaint to relevant authorities.

Strategic investigations are designed with a particular outcome or objective in mind. They most often require resources, planning and research before they are commenced. They are most successful when documented in a report with a coordinated media, market, political, or legal strategy.

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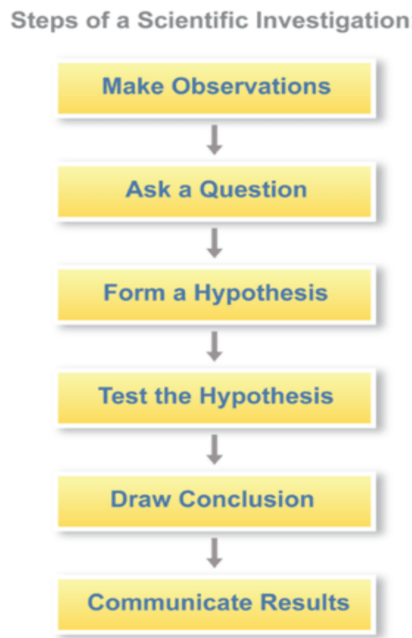
1 https://www.greenpeace.org.uk/about/how-we-make-change-happen/investigations/),
2 https://eia-international.org/about-us/what-we-do/
3 https://www.globalwitness.org/ru/about-us/

Citizen science and the investigation process



Strategic environmental investigations aren't necessarily all scientific investigations, but they all need to be carried out methodically and the results need to be documented in a clear and compelling way. They do have to be planned and the process that they commonly follow is the scientific method. Indeed citizen science is a compelling mobilisation tactic, and getting up-to-speed on the science of your campaign issue can be invaluable for your lobbying and communication.

The scientific method starts with observations and questioning, and finishes with testing hypotheses, drawing conclusions and reporting.

Example of scientific investigation method

Observation - Dead fish are observed floating on a river and we question the cause.

Hypothesis - We think that discharge from an industrial facility upstream is polluting the waterway and killing the fish.

Hypothesis testing - Water testing of the discharge is undertaken and found to have a pH of 10 and a temperature of 38 degrees.

Conclusion drawn - The high pH and temperature is killing fish

Steps for strategic investigations

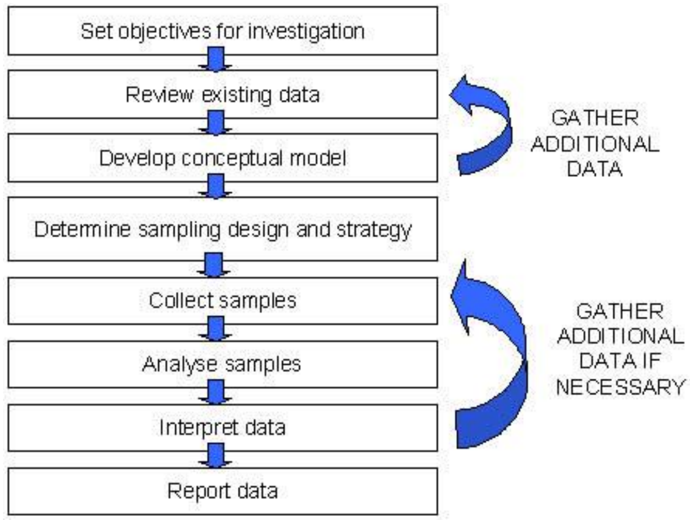
For any strategic investigation the main steps are;

- **Step** 1– Planning
- **Step** 2 – Data collection.
- **Step** 3 – Data analysis.
- **Step** 4 – Reporting.

Step 1: Investigation planning

The investigation plan is important, particularly if we are intending to work with others and communicate the results to the public. The plan lends credibility to the investigation that might otherwise be criticised for not following proper procedures or for not being conducted by professionals. It also allows us to stick to the program and lessens the chance that we will be distracted by interesting side issues and often can be useful content in the final report.

The investigation plan requires an objective. For example, "the identification, quantification, and sources of heavy metal pollution in the Hunter River", or "determining the impacts on endangered species of logging Stewarts Brook State Forest." Knowing your objective helps you keep on track.



The next step is to **review the existing data** on the issue. A review of existing data may reveal that field investigations and further primary data is unnecessary. Such data is not always available to the general public and may require accessing documents under freedom of information or through other means.

A lot of data can be gathered through internet searches of scientific journals, monitoring data on company websites, government authority websites such as the Environmental Protection Agency Licence searches and the Department of Planning major projects page etc. Newspaper archives and university libraries can reveal important information and data that might not be available on the internet. Old Environmental Impact Statements (EIS), for example, can often be found in a nearby university library stack or sometimes in city library archives. Remember to document the references (author, date, title, organization and web address if available) of all relevant documents for reporting.

Summarising your review of the literature (journal articles, government and company documents, EISs, EPA Licence limits etc) with a **bibliography** is the best way of recording all the relevant information and can help us to focus on the main issues and data gaps. It is also a good start to the final report and can help identify experts in the field who can help us with the issue we are working on.

Once we have all the data and information we can access, preferably in a summary, we need a **methodology**. If we intend to carry out a scientific investigation, such as water testing or biodiversity assessment, we need a method that others can replicate and which can let readers of the report follow how our conclusions were drawn. Keeping it simple and clear is key.

For example, identifying, quantifying and finding the source of pollution in a river needs

- water samples upstream ("control" or "background" samples) and downstream of possible sources of pollution for comparison.
- consideration of how many water or sediment samples
- a laboratory that will analyse samples for us

- consideration of what environmental parameters we will be testing for and the process for the identification of those parameters.
- knowledge of the government regulations or licence condition limits that have been set for the parameters we are looking for.

Finally, before we do any scientific field work, we need a **field plan** in maps or google earth screen-shots of the area at small and large scale. These maps should show the target facilities, major geographic features, population centres and any other relevant feature, as well as the samples sites clearly marked and labeled. Sites and orientation of photographs or videos we intend to take can also be marked on these maps.

Even if we are not intending to carry out a scientific investigation in the field, we need a map of any field work that can show the readers of the report where we have been and what we were investigating.

Step 2: Data collection

Data is a collection of facts, such as values or measurements, observations, survey responses, records of events or even just descriptions of things or photographs and videos. The kind of data we're collecting determines how we go about collecting it as does the research being done and the experience and capacity of the researcher.

Data collection is usually only required **if we have no other way of getting the data we want**. It is often better to use secondary data collected by governments and companies, as these are harder to dismiss. However, gathering primary data can have much greater impact, particularly if it reveals a new scandal or previously unknown environmental impact. Primary data is also often more current than secondary data.

Data collection can be as simple as making a phone call to a company or government agency, or a questionnaire designed to determine community opinion, or as complex as a full blown scientific or financial investigation with undercover operations, field investigations and comprehensive research, analyses, and reporting.

The capture of data can be **longitudinal** from a specific time period to another which can allow a trend or pattern in data, or **cross-sectional** conducted at a particular time period across a target sample which is a design for understanding a specific subject at a definite time period

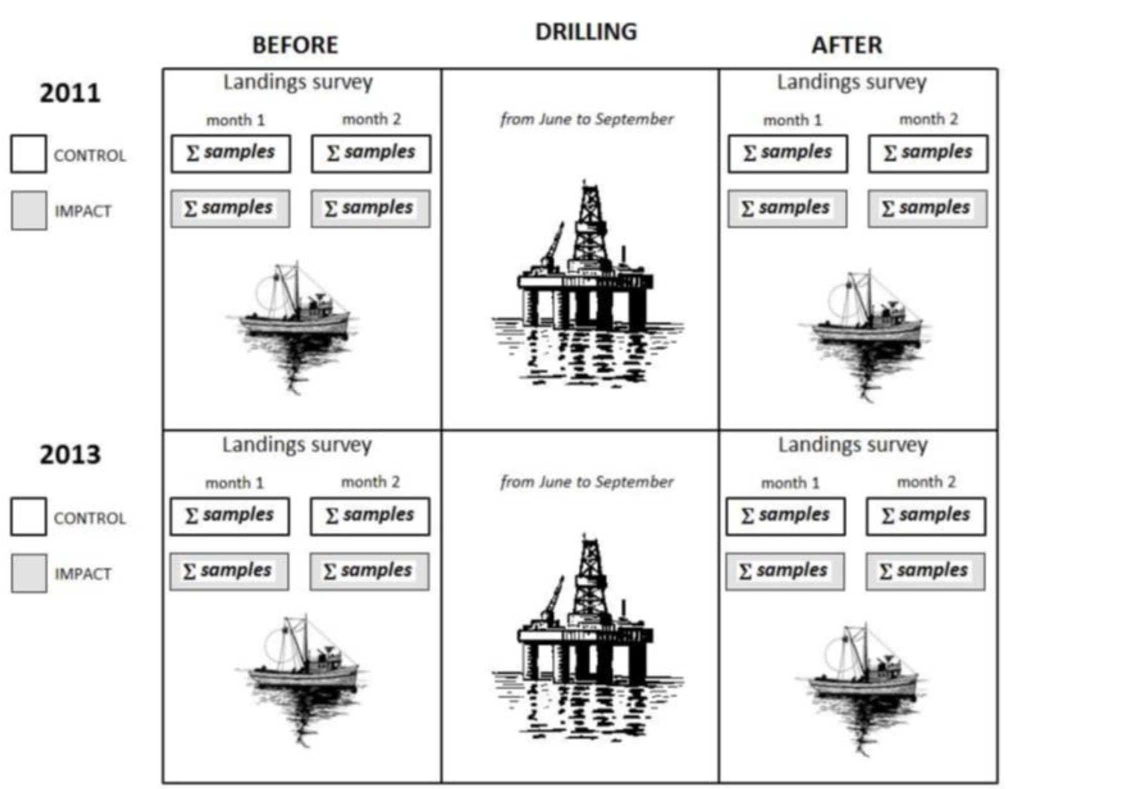
Data can be also be divided into **qualitative** and **quantitative**.

Qualitative data is data that is mainly words, sounds or images. Unlike quantitative data which are numbers or "hard data", qualitative information tends to be "soft," meaning it can't always be reduced to something definite. That is in some ways a weakness, but it's also a strength. A number may tell you the impact on a particular threatened species by the logging of a forest, the emotional impact this may have on a community, however, may be even more important to stopping the logging. That evocative image of a logged forest or dead fish floating on the surface of a lake or the results of a questionnaire can't always be translated to a number, nor can a community's knowledge of the environmental issue, or how it effects them. That interpretation may be far more valuable in helping to stop the environmental impact than knowing what the impacts are.

Quantitative data is used to answer questions such as "How many?" "How often?" "How much?" This data can be verified and can also be conveniently evaluated using simple mathematical techniques such as mean, median, mode and frequency, minimum, maximum and percentages etc.

Environmental investigations are often designed to evaluate the **effects of a particular input or disturbance (tree removal or pollution discharge, for example)** and to do that effectively we often need to show a comparison of some kind. Think about what you're trying to show: is it about a "before and after" change from a logging event?

Or a comparison between two places that are the same, except for the activity you're monitoring? What kind of data do you need to collect to show that? Or, are you trying to show environmental recovery or lack of it – like the persistence of pollution in soils for years after a spill event at a CSG site. In each case, think about the variables that might affect your hypothesis and collect data that lets you draw the comparison needed to demonstrate your conclusions.



A more complex study design is a **before, after, control and impact** were the change (impact) compared to a control (no impact) is compared to sites both before and after the impact occurred. Data from more variables allows more complex and more rigorous statistics to be performed on the data.

No matter which data capture design is chosen, all quantitative data (numbers) must be recorded in a table for analysis.

Step 3: Data analysis

For quantitative data, raw information has to presented in a meaningful way and analysed to find evidential data that can help in the investigation, answer the question posed or test the hypothesis.

Raw data must be entered into a spreadsheet and arranged in proper order, or measurement scale. This is the categorising of the variables in the data in columns and rows that present the data in a way that can be analysed.

Descriptive statistics encapsulate the available data to establish a pattern. Some widely used descriptive statistics are:

Mean: An average of values for a specific variable

Median: A midpoint of the value scale for a variable

Mode: For a variable, the most common value

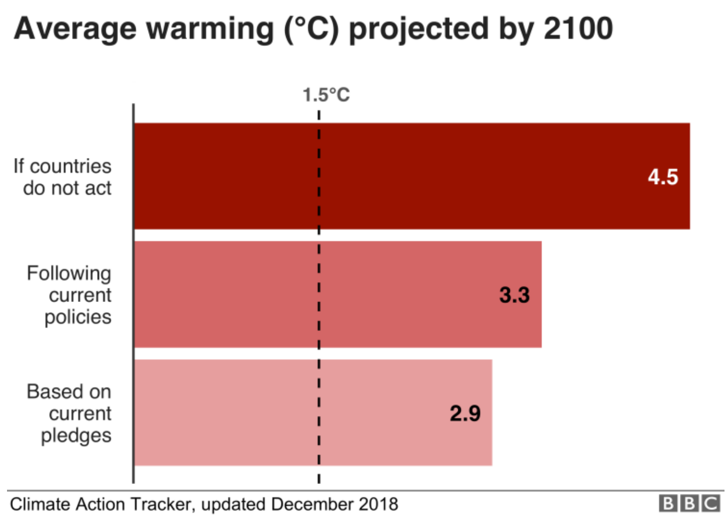
Frequency: Number of times a particular value is observed in the scale

Minimum and **Maximum** Values: Lowest and highest values for a scale

Percentages: allows you to express values proportionately, to aid understanding.

The final data should be presented in tables or charts to enable conclusions to be drawn.

Fortunately, spreadsheet programs have in-built functions that allow you to calculate these with ease.



Step 4: Reporting

Reporting of your literature review, methods, results, conclusion, and recommendations can be an arduous process and there is always a temptation to present too much information. Short, simple, easily consumed reports are always the most successful in progressing your campaign objectives. Long, complex, text heavy reports are often left unread by the majority of the community people and decision makers who we are trying to convince.

Reports should therefore focus on a small subset of the most important conclusions with easily understood recommendations. Attractive and well-designed reports with simple, clearly articulated conclusions and recommendations interspersed with lots of emotive photos and easily understood graphics and tables will more likely be read, and more importantly understood by those who do read it.