

Identifying Driving Forces

A Causal Layered Analysis Approach*

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In a scenario exercise, the “driving forces” are those factors that determine how the system under study will evolve in the future. Once the driving forces have been identified, they can be used to structure a set of narratives and guide scenario development. They are also an important input to the quantitative analysis.

This paper describes a brainstorming approach to generating driving forces during a scenario workshop. It draws on many sources for inspiration, but most heavily on the work of Sohail Inayatullah, and his methodology of “Causal Layered Analysis” (CLA).¹ In this approach, the driving forces are not identified directly. Instead, a layered exploration of the problem space leads indirectly to an identification of driving forces.

The activity can either be carried out using either paper and pen or using the Driving Force software, available from <http://scentools.sourceforge.net/drivingforce.html>. Driving Force is free and open source. One advantage of the software is that the output from different breakout groups can be combined into one file.

The Activity

In this activity, the scenario narrative team indirectly generates a set of driving forces by exploring the problem space using a layered analysis. The layers explored are:²

- Symptoms
- Social Causes
- Explicit Worldviews
- Deep cultural currents

There are many ways to carry out the analysis. The activity described in this paper has three parts:

1. A facilitator-led introduction carried out in plenary.
2. An activity carried out by participants in breakout groups.

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- 1 It is helpful if the facilitator has some understanding of the CLA approach. For a summary, see http://scenariosforsustainability.org/howto_recipes.php#cla.
- 2 The four layers are parallel to the *litany*, *social causes*, *worldview* and *myth and metaphor* layers of CLA.

3. A reporting session, where breakout groups report in plenary, followed by a discussion and analysis activity that results in a list of key driving forces for the scenarios.

Materials

- Large sheets of paper with the “Driving Force Classification Diagram” drawn or printed on them (see Illustration 1 at the end of this paper), one for each breakout group, **or**
- The Driving Force software installed on a laptop, one for each breakout group.
- Additional paper (for example, flip charts).
- Flip-chart markers (markers that won’t bleed through, such as water-based markers).
- Sticky notes and pens.
- Additional paper or pads for note-taking.

Procedure

Facilitator-Led Plenary Session

GOAL: LIST OF PROBLEMS AREAS

The instructions in this section are directed at the facilitator.

Before the session starts, put a few large sheets of paper on the wall, and provide all participants with sticky notes and pens. Label all but one of the large sheets, “Symptoms”. Leave the other blank.

1. Introduce the idea of driving forces and give an overview of the exercise.
2. Ask participants, to brainstorm the issues they feel must be addressed. The goal at this stage is to focus on *symptoms*, rather than underlying problems or solutions. Direct them to write their answers on the sticky notes and place them on the large sheets.

Example: “Increasing urban demand for water is competing with agricultural water use.”

3. Group the Symptoms into clusters of similar problems.
4. If the facilitator placed some comments on the unlabeled sheet, he or she should explain why those comments do not fall under the “Symptoms” heading.

Note: The most common way to go beyond the Perceived Problem level is the suggestion of solutions.

5. Discuss the grouping of Symptoms into clusters. Identify a few key problems to focus on in breakout groups.

Breakout Session

GOAL: CLASSIFIED LIST OF DRIVING FORCES

Groups move to the areas where they will hold their breakout session. In addition to markers and sticky notes, each group should have:

- A Driving Forces Classification Diagram (Illustration 1, below) **or**
- The Driving Force software installed on a laptop
- A sheet labeled “Social Causes”
- A sheet labeled “Explicit Worldviews”
- A sheet labeled “Deep Cultural Currents”

The rest of the instructions in this section are for the participants in the breakout groups.

1. Brainstorm answers to the following questions and list the comments on the **Social Causes** sheet using sticky notes.

Note: The questions can either be answered one after the other, or all questions can be considered together.

- How and why did this cluster of symptoms arise?
 - Why do they persist as a problem?
 - What are alternative ways to cast the problem?
2. Brainstorm answers to the following questions and list the comments on the **Explicit Worldviews** sheet using sticky notes.
 - Who are the stakeholders? Who talks/lobbies about this issue?
 - What do they stand to lose or gain?
 - What are their values?
 - Who has the most control over this issue?
 3. Brainstorm answers to the following questions and list the comments on the **Deep Cultural Currents** sheet using sticky notes.
 - What is an image or phrase that captures this issue?
 - What work of literature, art, popular culture, religious text, etc. evokes an image of the problem?
 - What commonly-held assumptions, things that “everyone knows” are evident in the discussion of this problem?
 4. Discuss any causal connections between layers, going from the Deep Cultural Currents level up to the Social Causes level.
 5. Discuss the appropriate level for identifying driving forces for the study.

Note: For most studies, this will be at the Social Causes level. In general, the deeper the level, the longer the time scale on which the driving forces operate.

6. Examine the lists at all levels and identify key *driving forces* – that is, factors that influence how the system under study changes over time. Transfer the sticky notes for these driving forces to the **Driving Forces Classification Diagram**.

Note: If some of the driving forces do not fall neatly into one of the quadrants, then place them on one of the lines dividing the quadrants. The classification scheme is to help organize thoughts, not to impose a structure.

7. Consolidate the driving forces. This may involve discarding some items or rewording them.

Discussion and Analysis in Plenary

GOAL: DECIDE ON KEY DRIVING FORCES THAT WILL SHAPE THE SCENARIO EXERCISE

Participants join together in plenary to discuss the results of their breakout sessions.

1. Each group reports on its list of classified driving forces.
2. Direct the participants to look at the right-hand side of the Driving Forces Classification Diagram for each issue.
 - The top right (high impact, high certainty) are the **major drivers** that will strongly shape the scenarios.
 - The bottom right (high impact, low certainty) are the **critical uncertainties** whose outcome will lead to one scenario or another.
3. Pick a manageable set of major drivers (typically, ten or fewer) that will form a common basis for all of the scenarios. The list of major drivers should be of importance for most of the issues listed. The scenario narratives will be focused on how these drivers affect outcomes.
4. Pick two or three critical uncertainties. These will form “axes” with which the scenarios can be classified.

Wrap-Up

At the end of the activity, the group should have the following artifacts that serve as records of decisions taken in the scenario development process:

- A list of major drivers that will feature prominently in the scenario narratives.
- A classification scheme for the scenario set based on two or three critical uncertainties.

In addition, the group will have the following incidental products, which may be useful later as the scenarios are developed:

- A partial Causal Layered Analysis of the key issues.
- An extended list of driving forces.

These incidental products can be used to enrich the narratives and inform the quantitative analysis.

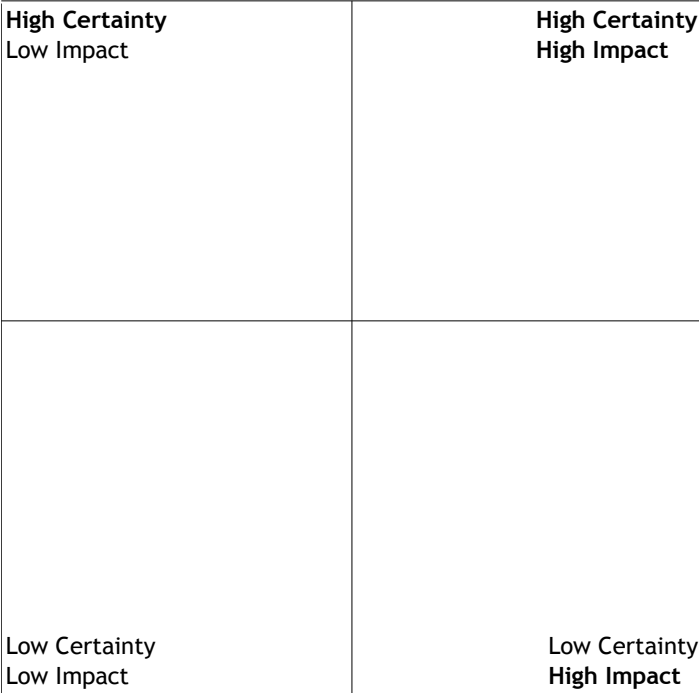


Illustration 1. Driving Forces Classification Diagram