

## Guide to Causal Diagrams, a Tiny Tool

Version 1.3

[www.ngo-ideas.net](http://www.ngo-ideas.net)

### INTRODUCTION

NGO-IDEAS develops tools for communities and NGOs to measure change and understand what contributed to change. Some tools are described in the Impact Toolbox. Other tools for communities to reflect on change around them are collected in “Tiny Tools - An Overview”. They are all handy and relatively easy to apply. One of these Tiny Tools is the Causal Diagram (also called cause-and-effect-diagram). More about NGO-IDEAS and its tools: [www.ngo-ideas.net](http://www.ngo-ideas.net). We would appreciate feedback and suggestions for improvements. Please contact Bernward Causemann ([bc@causemann.org](mailto:bc@causemann.org)) or Eberhard Gohl ([gohl@impact-plus.de](mailto:gohl@impact-plus.de)).

#### Our Vision for Causal Diagrams

Communities assess the change that happens around them. Through structured reflection with tools like this, they

- realise what change happened,
- come to understand what led to this change and how they contributed to it,
- become aware of how they can influence developments, and act on this.

This happens initially with the facilitation from NGOs or other outsiders. This process also provides NGOs with a better understanding of the dynamics and priorities in a community.

### A. PURPOSE OF THE CAUSAL DIAGRAM

With Causal Diagrams, communities compare different project interventions and visualise interconnections between activities and effects in a complex, dynamic, non-linear way. They can assess the relative importance of different causes. Community members can also draw conclusions regarding the relative importance and sustainability of the operations, if they assign a number of counters to their diagram.

### B. WHEN TO USE CAUSAL DIAGRAMS

There are many possible situations when to use a Causal Diagram whenever there is a community that is prepared to reflect on its situation:

- ✓ when there is a need to (re-) consider development efforts in the community,
- ✓ when the NGO wants to introduce other tools for monitoring change, to open up the community and NGO-staff for looking at change,
- ✓ for an evaluation or impact study,
- ✓ to know more about the effects of specific development work

#### Links and References

Burn, R.W.: Quantifying and Combining Causal Diagrams, Theme Paper 6, SSC/NRI, Reading, undated  
[www.reading.ac.uk/ssc/n/resources/Docs/QQA/tp6\\_caus.pdf](http://www.reading.ac.uk/ssc/n/resources/Docs/QQA/tp6_caus.pdf)  
 Chambers, Robert 2008: Revolutions in Development Inquiry, Earthscan, London  
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 Kim, Daniel H.: Guidelines for Drawing Causal Loop Diagrams. In: The System Thinker Vol. 3, Nr.1.  
[thesystemthinker.com/tstgdlines.html](http://thesystemthinker.com/tstgdlines.html)  
 Tools Together Now!  
[www.aidsalliance.org/includes/Publication/Tools\\_Together\\_Now\\_2009.pdf](http://www.aidsalliance.org/includes/Publication/Tools_Together_Now_2009.pdf), p82

### C. REQUIREMENTS: THIS IS WHAT I NEED

- ✓ **Participants:** About 5-25, either an existing group or a cross-section of a community. If the group is bigger it will take more time, but that is also possible. If the group is smaller, we run the risk that important sections of the community are not present and cannot share their views.
- ✓ **Material:** Either a flipchart / big paper and markers, or local materials such as sand / soil to draw a diagram on.
- ✓ **Trust:** The NGO should be familiar with the area and have good relations with the stakeholders.
- ✓ **Facilitation skills and attitude:** The NGO staff needs knowledge and skills in facilitation and application of Participatory Rural Appraisal tools. They need to have an intention to help the community really understand the change and believe in empowering people.
- ✓ **Time:** One to two hours, not counting preparation and the combination of graphs.

- ✓ **Follow-up:** The causal diagram may serve as a reference and reminder, which can be used for monitoring and adjusting project activities or when designing new activities.

## D. HOW TO DO IT

### Step 1 Introduce the tool

Explain the purpose of the exercise to the group or community members present. It is important that participants understand: The Causal Diagram is used to deepen their own understanding; they do not participate only to provide the NGO staff with information. Allow for creativity.

### Step 2 Create a diagram

Determine an appropriate time frame, which is long enough to show cause-effect-relationships. Time should however not be introduced as a causal factor. Create a causal diagram on paper or on the ground so that everybody can see it (see examples). First identify the “core issue” (a problem such as “poor education” or an aim such as “gender equality in education”, or an observed change such as “people have more food”).

In a second step, draw immediate causes of the core issue. Then, include causes for these immediate causes and so on, until you arrive at the root causes, which have no other identifiable causes themselves. Links between the various causes and effects are indicated by arrows. Include not only expected, but also unintended effects. Consider not only project activities, but also coping strategies of the people, external factors and other projects that influence the core issue.

With the analysis of causes, you can also add consequences: What were the effects of the core issue? What were the effects of the effects?

### Step 3 Evaluate the relative importance of each activity or cause

Step 3 is optional and generally more difficult. It can be made a little easier if only a small number of causes and consequences have been noted.

Let the community members rate all of the activities according to their day-to-day relevance and importance for the everyday life of the community. To rate the activities, assign an even number of counters to the core issue (e.g. 10) as the initial score. The initial score is then divided to illustrate the relative importance of the immediate causes (e.g. in a diagram with two immediate causes, one of them is ranked 3 and the other 7). After that, the causes of the immediate causes are rated (in our example by dividing 10 according to importance [=3+7]). Causes which have an effect on more than one other variable are worth the added value of all of its linkages. The relative importance with respect to the root problem can thus be calculated. For an illustration of the calculating process, see the example taken from R.W. Burn.

### Step 4 Participatory Development Planning

Discuss with the group members:

What lessons can be drawn from the Activity List?

What action would they like to take? What do they want to do in the short term to bring about more change? What do they want to achieve in the mid-term?

Finally: Ask for feedback on the methodology: Was the exercise useful? Would they recommend it to others? Could you do this exercise yourselves?

### Step 5 Evaluate on the NGO level

After leaving the community, discuss among the NGO staff:

a) What lessons do you draw from the exercise?

b) What would you do differently next time? c) What immediate action should you take?

d) What should change in the mid-term in your work with this community (or others)?

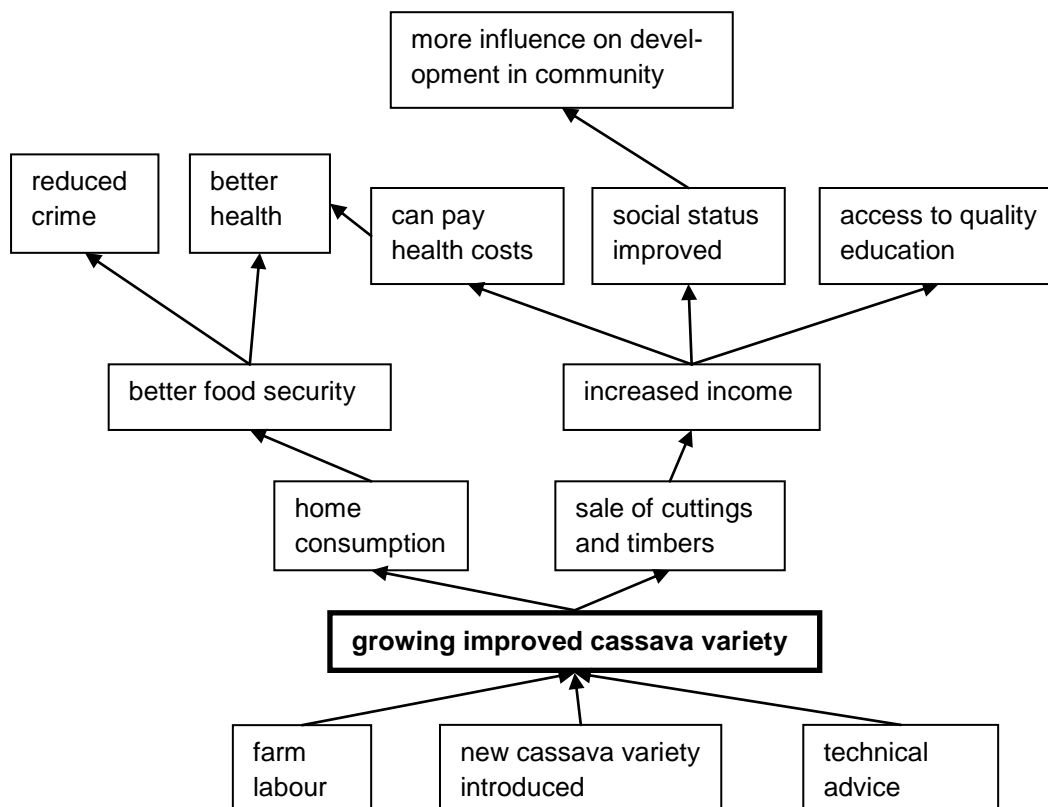
### Step 6 Combination of causal diagrams

It is possible to combine causal diagrams from separate groups or villages to obtain an average. This can be done if step 3 has been done in more than one village. Step 6 is done outside the community, as part of the analysis of data. The diagrams need to address the same “core issue”. Sometimes, however, they do not have exactly the same nodes and links. In order to combine the diagrams, we need to include all of the nodes and links, which are shown in any of the

graphs, in the combined diagram. Then the set of nodes and links in each of the individual diagrams is replaced by the combined set of nodes and links. If a particular node or link was missing in the original diagram, it is included by dotted line and given the score of zero (see example taken from R.W. Burn).

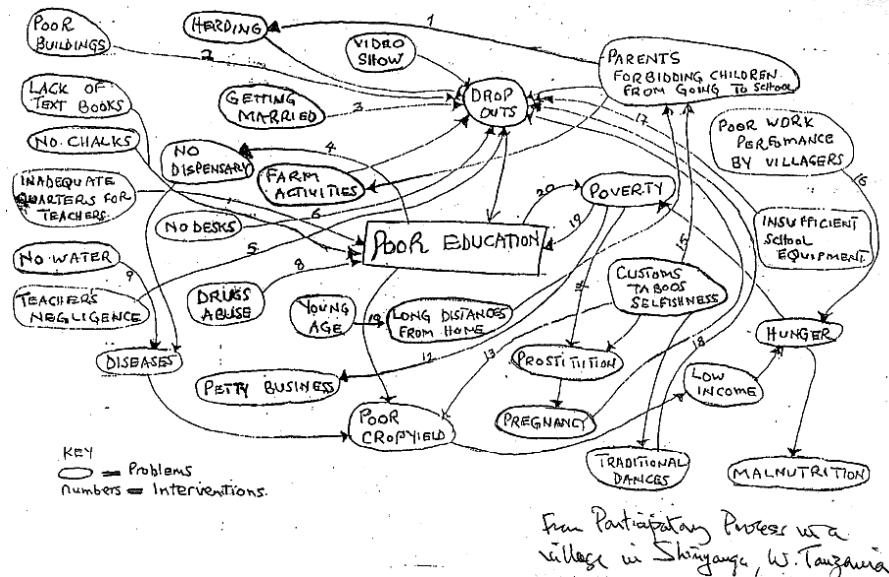
**E. EXAMPLES**

1. The first example is about the effects of the successful introduction of a new cassava variety in a village in Uganda.



2. The example below shows a Causal Diagram drawn by members of a village in Shinyanga, Tanzania. Its core issue is about a problem, not an impact. The diagram shows different linkages causing or contributing to a poor education. In a second graph, the workshop participants collected ideas for possible interventions to cope with the education problems.

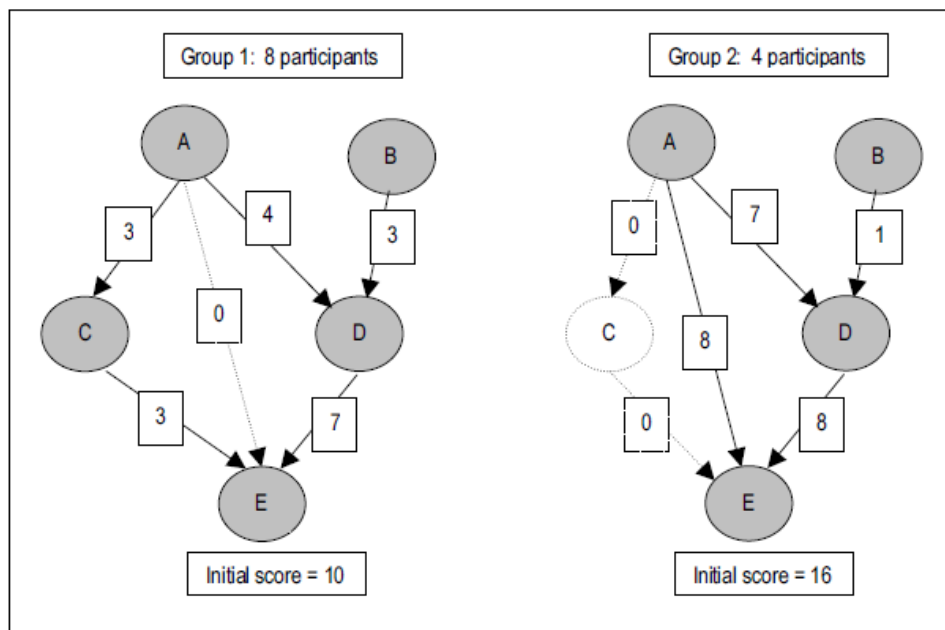
The Causal Diagram “Linkages and Solutions to the Education Problem in Songambebe, Shinyanga, Tanzania” was contributed by courtesy of Robert Chambers.



The following list shows suggestions for the Education Problems in Songambebe. Numbers refer to the numbered lines in the Causal Diagram above.

1. Educate parents on the importance of going to school. Advise parents to look for alternatives for herding.
2. District Executive Director, and village government to build better buildings. Seek support from Donor agencies.
3. By laws strengthening.
4. Adult education, seminars
5. ...

3. The following example shows how to score and combine different diagrams. The node E stands for the core issue (see step 2). C and D are immediate causes, A and B are the root causes. Node C was only mentioned in group 1, therefore it is added with the scores of zero in the graph of group 2. The connection between A and E was only mentioned in the diagram of group 2. It is added with the score zero in the diagram of group 1. The relative importance of A in group 1 was scored seven out of ten and 15 out of 16 in group 2. B was scored three out of ten in group 1 and one out of 16 in group 2. For more guidance, see the paper by RW Burns.



The diagram is taken from “Quantifying and Combining Causal Diagrams” by R.W. Burns, page 8, figure 7.

### F. PRACTICAL HINTS

- ✓ It is sometimes difficult to decide when to stop adding to the diagram as a large number of connections are usually possible. Try to concentrate on an important issue and only add what is critical to this topic.
- ✓ It can help to explain the different ratings with words or symbols (like sad and smiling faces).
- ✓ If people disagree on how to rate a specific activity: We need to help the community to find out the reasons. Maybe someone says that the activity was relevant for the community but for him/her it was not so important. Then it will be possible to agree on an assessment for the majority. It is helpful to document the different arguments. – Maybe developments have been different for different groups: Some have benefited from the new road, others live too far away to profit. Or the year was better for men or for women, for fishermen or for agriculturalists. In that case we can give two values and note the reasons for the differences.
- ✓ It is quite a challenge to do this exercise with the whole community. But if the participants are selected by the community, this could build trust and ensure a broad representation.
- ✓ Keep the causal diagram, or a photo, for combination and as a reference for the next exercise. Note the names of those who participated.

### G. ALTERNATIVES/VARIATIONS

There are many possible variations (e.g. Causal Loop Diagrams, see D Kim). The NGO-IDEAs Impact Toolbox and the Manual Monitoring Self-effectiveness suggest other forms of diagrams ([www.ngo-ideas.net/publications](http://www.ngo-ideas.net/publications)). The “problem tree” concept can be adapted to reflect impact. It is also possible to use more than one core issue. A very simplified form of a causal diagram is the results chain.

**H. SOME WORDS OF CAUTION**

- ✓ It should be emphasised here that this tool requires a genuinely participatory approach: It is designed, most of all, to help community members to better understand the change around them. It is only secondary that it serves the NGO to get more information.
- ✓ The Causal Diagram cannot be used as the only instrument to assess change. It needs triangulation with other tools, as a bias can develop (like with all other tools). It can also be systematically combined with other tools (see reference to Tiny Tools on p.1).
- ✓ How often should a Causal Diagram be drafted? It should not be done every year, but can be repeated after a few years.

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