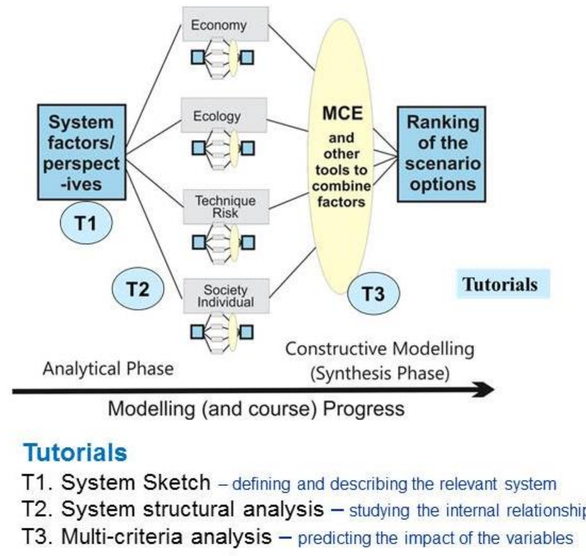
# PLATFORM Project

## Conceptual Model of Stakeholders, Activities and Goals

### BACKGROUND

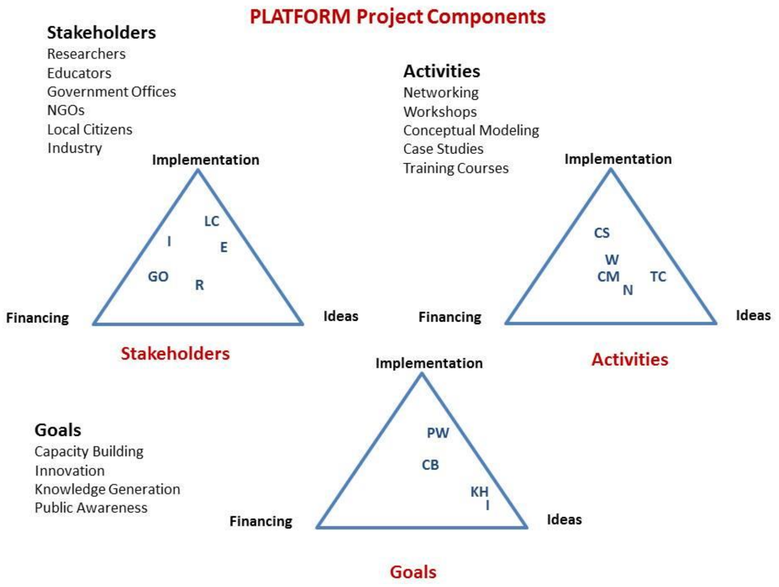
**This example of conceptual modeling is done at the beginning of the PLATFORM project for multi-national cooperation. The project itself intends to use modeling as a common basis for the networking, brain-storming and partner interaction that is particularly important during project initiation. Modeling is also a tool for integrating different types of knowledge from diverse sources, which is typically necessary for complex problems with multi-disciplinary and multi-sectoral aspects.**

**The purpose is to illustrate useful steps in problem analysis, progressing from system characterization (analytical phase) to predictive modeling (synthesis phase), as shown in the diagram to the left. Simplified and assumed conditions are necessary in all modeling, but the results will almost always suggest improvements in both the necessary documentation and theory for understanding system processes.**




**Tutorials**

T1. System Sketch – defining and describing the relevant system
T2. System structural analysis – studying the internal relationships
T3. Multi-criteria analysis – predicting the impact of the variables

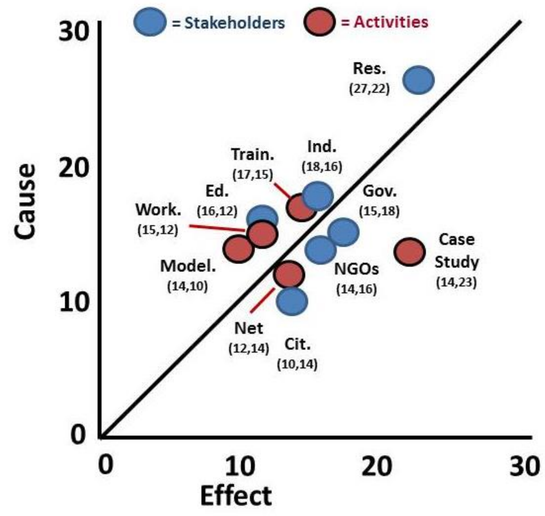



### 1. SYSTEM SKETCH

**A visual representation of the components that are typical for many projects (left): Ideas, Financing and Implementation. Although hypothetical, the Stakeholders, the project Activities and the project Goals are placed in triangles with respect to their relative importance for the typical components. There is not a straightforward logic that can make these relationships valid for all projects, so a specific project would require specific considerations. This is, in fact, the intent of the PLATFORM project, i.e. facilitate such discussion during project initiation.**

### 2. SYSTEM STRUCTURAL ANALYSIS

**The Stakeholder and Activity variables in the System Sketch are further evaluated in this System Structural Analysis step, where the internal system dynamics are illustrated by the impact relationships (using a relative scale of values, 0-4) shown in the matrix below, based on theory, expert experience and literature information. The Cause-Effect plot (right) graphically illustrates the system. This system is characterized by moderately active variables that have very similar importance regarding their influence on each other. The collective interaction between the variables is probably related to the fact the this is an artificially defined system where the variables were initially selected on the basis of their expected importance for the PLATFORM project. The system structural analysis underscores this characteristic.**
**The role of the "Researcher" variable is notably important. It's high influence on the other variables is partly due to the relatively "long-term" perspective taken during the evaluation. Both "Researcher" and "Case Study" variables are vulnerable to change due to the influence of other system variables, making them of special interest in describing the system.**




**Impact Matrix**

| | Res. | Ed. | Gov. | NGOs | Citizen | Ind. | Net. | Worksh | Model | Case St. | Train | sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Researchers | | 3 | 2 | 2 | 1 | 3 | 3 | 3 | 4 | 4 | 2 | 27 |
| Educators | 1 | | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 2 | 3 | 16 |
| Govern. Offices | 2 | 2 | | 2 | 4 | 3 | 1 | 1 | 0 | 2 | 0 | 15 |
| NGOs | 1 | 2 | 2 | | 3 | 2 | 1 | 1 | 0 | 2 | 1 | 14 |
| Local Citizens | 1 | 1 | 2 | 3 | | 1 | 0 | 0 | 0 | 2 | 1 | 10 |
| Industry | 2 | 1 | 4 | 3 | 2 | | 2 | 1 | 1 | 2 | 2 | 18 |
| Networking | 3 | 1 | 2 | 1 | 0 | 1 | | 2 | 1 | 3 | 1 | 12 |
| Workshops | 3 | 0 | 1 | 1 | 0 | 1 | 3 | | 3 | 4 | 2 | 15 |
| Concept. Model. | 3 | 1 | 1 | 0 | 0 | 2 | 2 | 3 | | 3 | 2 | 14 |
| Case Studies | 4 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 2 | | 3 | 22 |
| Training Courses | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 3 | | 17 |
| sum | 22 | 12 | 18 | 16 | 14 | 16 | 14 | 15 | 10 | 23 | 15 | |

**WEIGHTING MATRIX (Relative to the question of "Public Awareness")**

| | STAKEHOLDERS | | | | | | PROJECT ACTIVITIES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Res. | Ed. | Gov. | NGOs | Citizen | Ind. | Net. | Worksh | Model | Case St. | Train | sum |
| Researchers | | 1/5 | 2/7 | 1/5 | 1/5 | 3 | | | | | | 3.9 |
| Educators | 5 | | 1/3 | 1 | 1 | 5 | | | | | | 7.333 |
| Govern. Offices | 3 | 3 | | 1 | 3 | 5 | | | | | | 12 |
| NGOs | 5 | 1 | 1 | | 1 | 5 | | | | | | 8 |
| Local Citizens | 5 | 1 | 1/3 | 1 | | 5 | | | | | | 7.333 |
| Industry | 1/3 | 1/5 | 1/5 | 1/5 | 1/5 | | | | | | | 0.8 |

**SCALE**

| | |
|---|---|
| 9 extremely strongly more important | 1 equally important |
| 7 very strongly more important | 1/3 moderately less important |
| 5 strongly more important | 1/5 strongly less important |
| 3 moderately more important | 1/7 very strongly less important |
| | 1/9 extremely strongly less important |

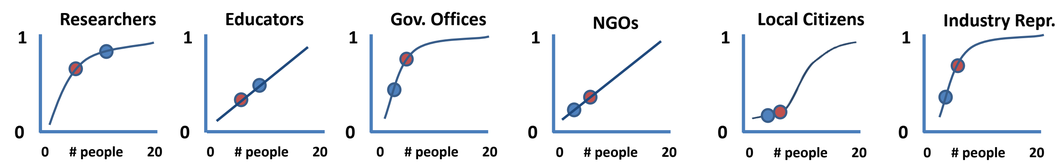
### 3. MULTI-CRITERIA EVALUATION

**The conceptual analytical modeling above can also lead to predictive modeling using, for instance, MCE with the following equation:**

$$\Sigma_i \, w_i \bullet u_i \; = \text{Total "utility"} \qquad \text{(used to rank different scenarios)}$$

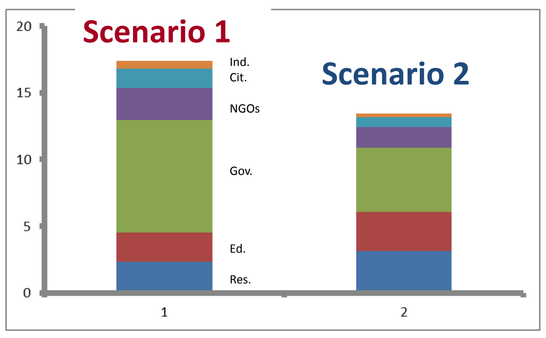
**For each of the parameters considered, the weights (w) are assigned according to their relative importance for the question/issue considered (pair-wise matrix comparisons) and the utility is the impact with the site-specific conditions of each parameter within the range of natural values between alternatives. The best output regarding ""Public Awareness" is for different project partnerships with different stakeholder proportions (number of active participants) by testing specified scenarios for this "system" where the utility values for each stakeholder group vary (below).**

**Utility**




| | Weights | Utility 1 | Utility 2 | W x $U_1$ | W x $U_2$ |
|---|---|---|---|---|---|
| Researchers | 3.9 | 0.6 | 0.8 | 2.34 | 3.12 |
| Educators | 7.3 | 0.3 | 0.4 | 2.19 | 2.92 |
| Gov. Offices | 12 | 0.7 | 0.4 | 8.4 | 4.8 |
| NGOs | 8 | 0.3 | 0.2 | 2.4 | 1.6 |
| Local Citizens | 7.3 | 0.2 | 0.1 | 1.46 | 0.73 |
| Industry Reps | 0.8 | 0.7 | 0.3 | 0.56 | 0.24 |
| | | | sum | 17.85 | 13.41 |

**S 1 S 2**




**Scenario 1** Project with 30 people equally divided between stakeholders.

**Scenario 2** Project with 30 people unevenly divided, as shown.

### CONCLUSIONS

**This approach to system modeling is suitable as a first, desk-top step which will ideally give focus to more detailed documentation, revision and testing. Nevertheless, the MCE scenario utilities (left) suggest that an equal balance between Stakeholders would benefit the "Public Awareness" output of projects with the conditions described here. Also, multiple other Stakeholder compositions in the project partnership should be tests. The other PLATFORM project goals (Capacity Building, Innovation and Knowledge Generation) would need to be evaluated in a similar way as illustrated here by "Public Awareness".**