



**Smarter Regulation of Waste in Europe
(LIFE13 ENV-UK-000549)
LIFE SMART Waste Project**

Action B14:

**Dependency modelling with iDepend –
Getting started
Mini guide 2**

Helping you to make the right decisions in complex environmental situations

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A. Getting Started

A1. Finding iDepend.

iDepend is located on a 'cloud' server owned by the software developer (Cambrensis). To access the tool, type in the web address: <http://idependeu.herokuapp.com>.

Note that iDepend works best on Google Chrome and Mozilla Firefox Browsers.

A2. Getting a new account.

Click on the option "Sign up for a New Account" and follow the onscreen instructions to set up a username and password.

A3. iDepend Manual.

A more comprehensive manual for using iDepend can be found on the Communications Hub.

B. Building a Model

B1. Creating a new model

To begin building a new model, click on "CREATE MODEL" on the DASHBOARD (homepage) and enter the name of your model in the "NAME" box and click "CREATE".

B2. Create entities and arrange them in your model

A model is made up of 'entities' – the building blocks of a model, that are dependent factors. Once on the [Models Page](#), type the names of some "entities" in the left hand "panel". Once you have created a few entities drag them onto the model using your mouse.

The first entity that you enter in a model is usually the goal (what you want to achieve). This is called the 'root' entity. In the 'entities' column on the left-hand side, enter a short description for the goal in the blank box at the top and click on ADD. The entity will be highlighted in yellow. Click and drag into the MODEL area.

The rest of the model consists of entities on which the goal depends (dependencies). These form the 'branches' of the model (see Fig 3). The final dependencies are called 'leaves'. All subsequent entities are added in the same way as the goal, by clicking and dragging into the model.

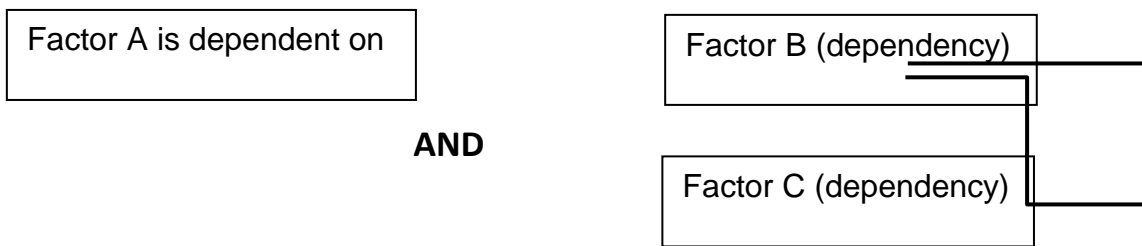
B3. Link entities to build a dependency network

Drag entities onto other entities to create dependency associations (links) and construct your [dependency model](#).

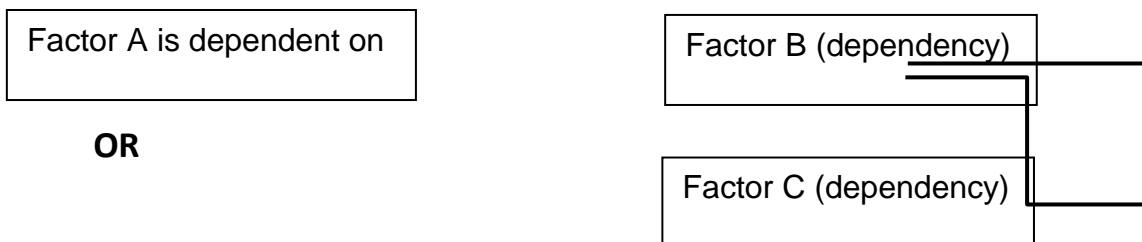
To establish a link, click on the entity and hover over the entity to be linked, until it turns orange, then click again.

When linking entities, there must be a logical structure of two, or more (B and C, below), dependencies for each preceding factor (A, below). Each 'association' between entities is:

Either, an 'AND' association, where for A to occur, both B AND C must occur

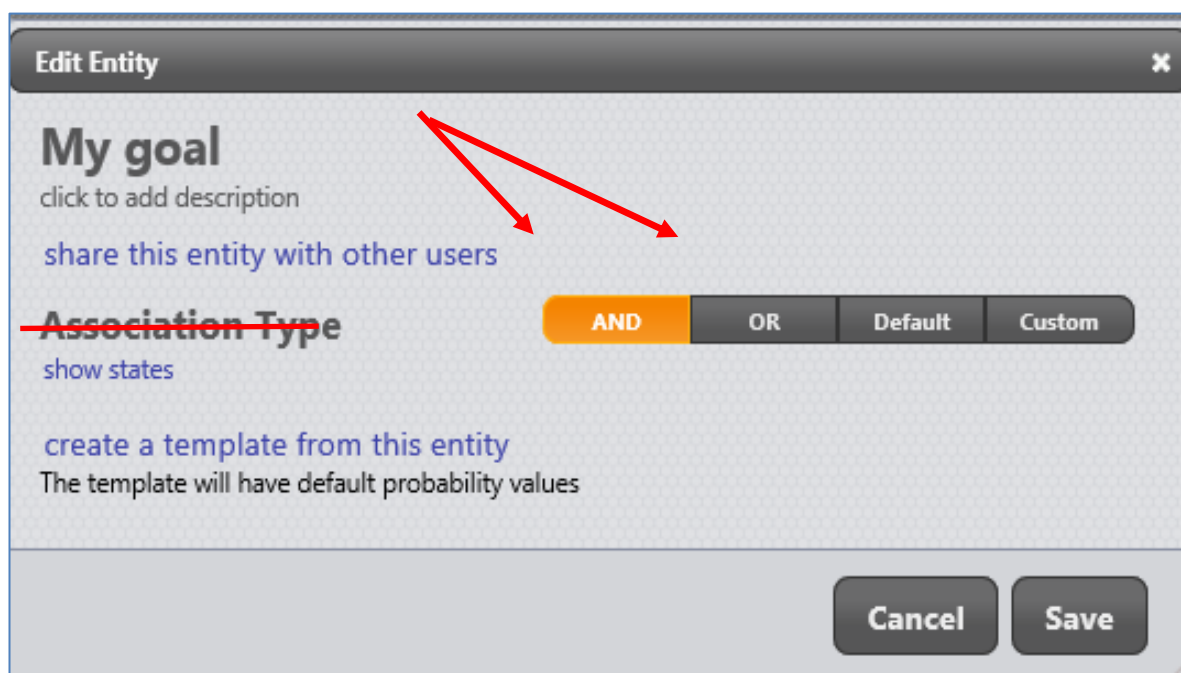


Or, an 'OR' association, where for A to occur, either B OR C must occur



Choose the ASSOCIATION TYPE between dependencies by clicking on 'EDIT' for the left hand one and then choosing the 'AND', or 'OR' button. This is shown by the red arrows below.

Fig 1. Setting associations between entities



B4. Assigning probabilities to dependencies

Once you have added entities to the model and arranged them in a logical order (by setting associations), you need to define probabilities. The last dependencies (the 'leaves') on the right-hand side of the model must be given a probability of occurring (called the STATE). This is done by clicking on 'EDIT' and moving the button on the sliding scale to a value between 0 (0%) and 1 (100%). The further to the right (green) the higher the probability, and the further to the left (red), the lower the probability.

Fig 2. Assigning probabilities



C. Key Features

C1. Editing the model

You can edit the model by moving or deleting entities. To move an entity, click and drag it to link to a different entity. To delete an entity, click on the 'MORE' button of the entity and click on 'DELETE'. Then click 'CONFIRM'. Note that if you delete an entity with dependencies, these will also be deleted. If you wish to retain these, you must move them to link with a different part of the model.

C2. Producing reports

iDepend generates three types of report:

1. **All probabilities**, which shows the probability of success for each element of the model (Fig 8).
2. **Sensitivity analysis**, which shows the dependencies in the order of their effect on the chances of the goal being achieved. An example is shown at Fig 9.
3. **Failure mode**, which shows the dependencies and associations that most reduce the chances of achieving the goal.

Open the Reports Panel by clicking the "REPORTS" link in the upper left of the screen. If your model is ready, ie; you've set probabilities on all leaves and selected associations types on the nodes and root(s), then an "all probabilities" report will appear in this panel. You can make additional reports by clicking "MAKE DEFAULT SET" at the top of the panel. Each report has a "SHOW" link which will either alter the model or display results in a new panel. If you change the model while you have any reports open, the open reports will automatically update.

C3. Exporting and printing models

While showing reports, click on the 'MORE' button and select 'EXPORT'. Choose the 'JPEG' option to export an image of the report being viewed. This can be used in applications such as Word documents or PowerPoint slides.

You can also export the models as 'XML' files, which can be input into a spreadsheet.

C4. Templates and sharing models

Any model can be saved as a template. This can then be used to 'pre-populate' a new model with a similar structure and entities. To share a model, you must:

1. Change the model status from 'PRIVATE' to 'SUBSCRIBER' in the SHARED DATA section of the dashboard.
2. Add iDepend users with whom you want to share models to your 'SUBSCRIBE' list, in the field 'CHANGE WHO YOU ARE SHARING WITH'.
3. Select the model you wish to share and assign subscribers to the model. Each subscriber is then able to view and edit (if given rights) the shared model.

C5. Help and support

1. There is an automated Help Section available in the iDepend tool.
2. LSW iDepend manual (hyperlink)
3. Cambrensis web-site guidance at <http://www.cambrensis.org/dependency-modelling/>
4. LSW project team (email address)

Eradicate use of warehousing in waste crime

LEAVES (% likelihood)

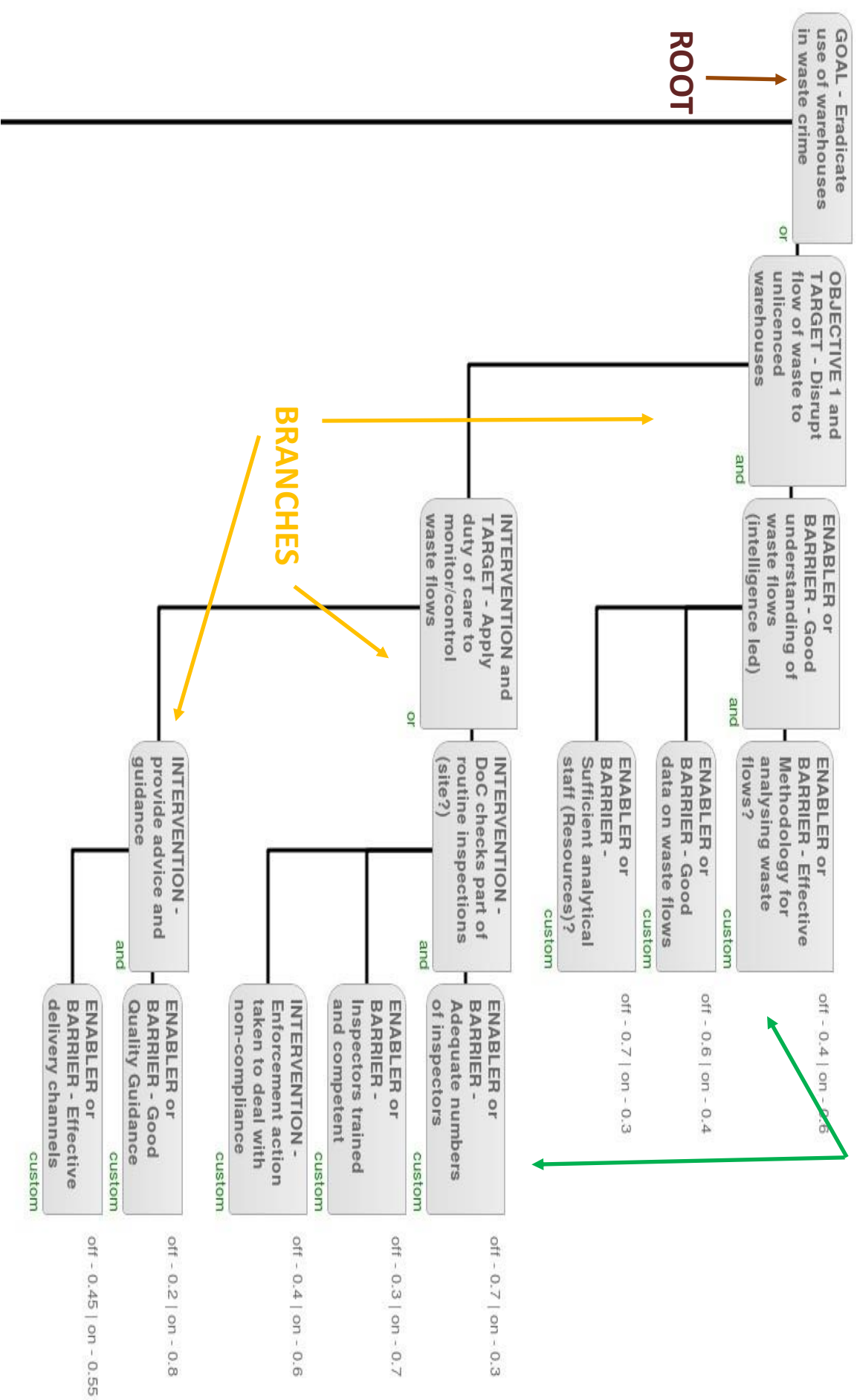
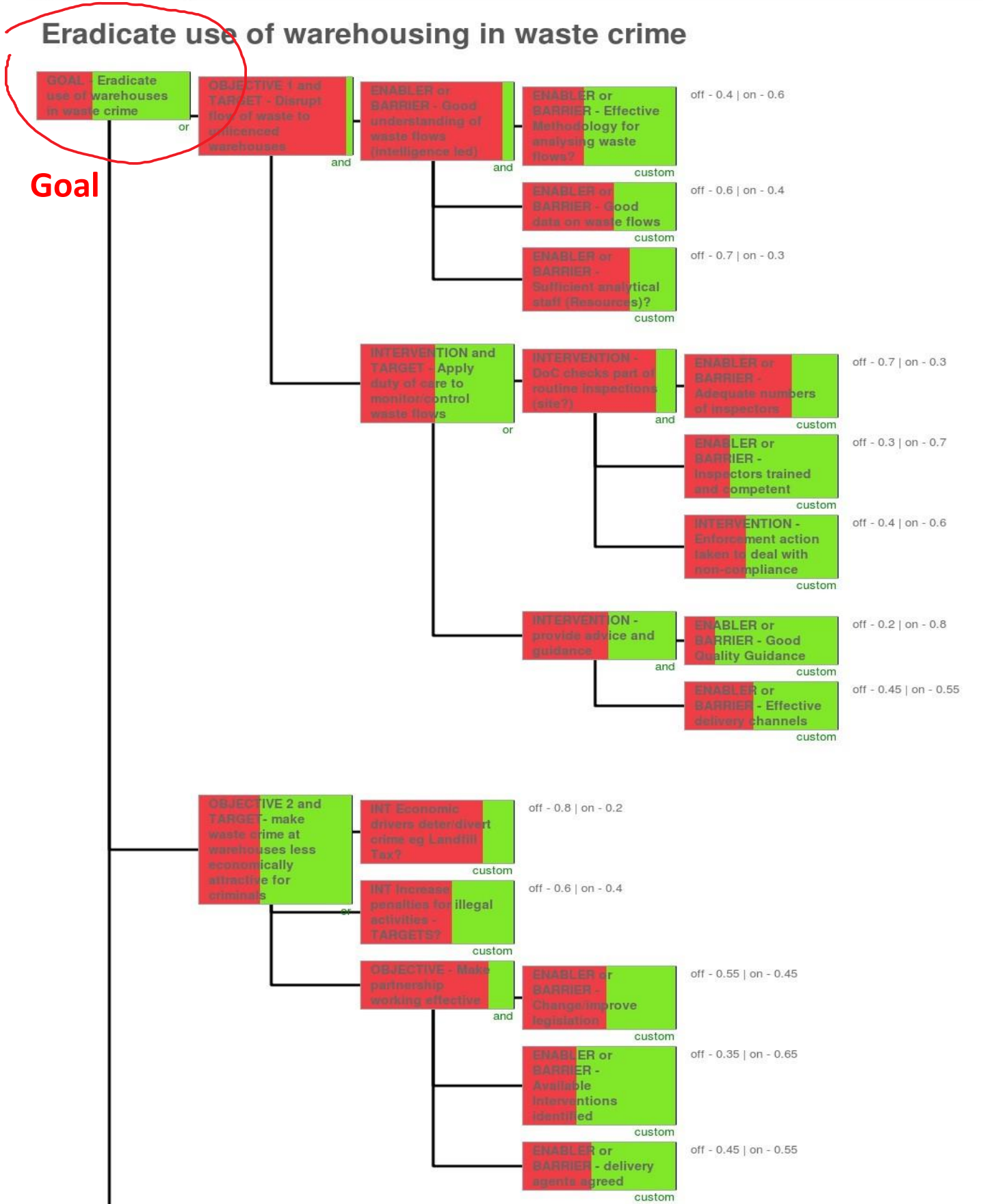


Fig 3. Example Model illustrating 'root', 'branches' and 'leaves'

Fig 4. All Probabilities Report showing probability of achieving goal (more green in each entity, indicates a greater probability of that event occurring/being true)

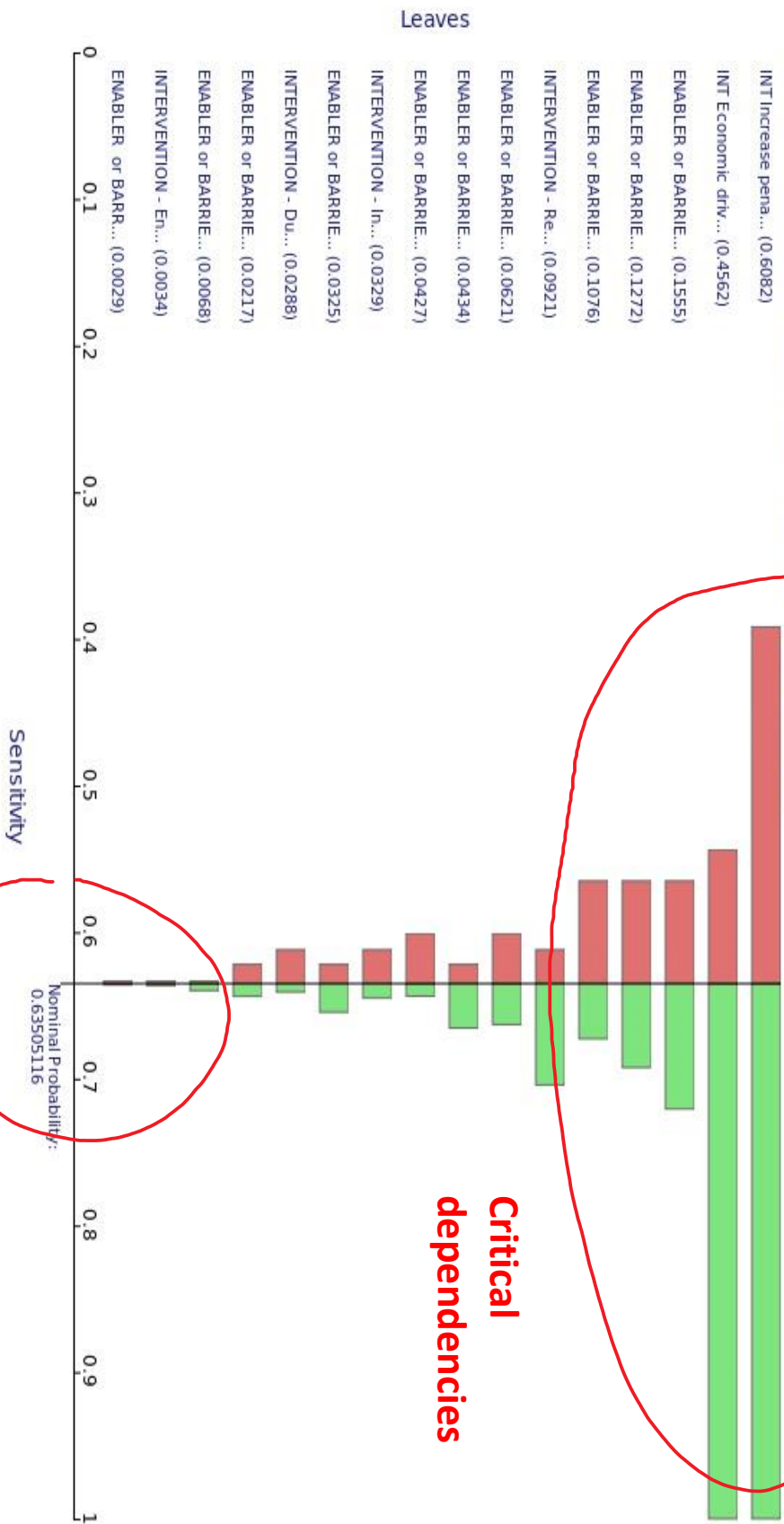
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Eradicate use of warehousing in waste crime



Eradicate use of warehousing in waste crime

3 Point Sensitivity of GOAL - Eradic... to 16 leaves



Critical dependencies

Probability of achieving goal – 63%

Fig 5. Report showing critical dependencies that most influence achieving the goal