



**Foresight and Scenario Planning (SP) workshop for Municipal  
Solid Waste (MSW) Management Strategies in India  
November 18, 2013**



# **Foresight and Scenario Planning (SP)**

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# Scenarios

- Scenario provides strategies with various **possible futures** and not forecast the future
- Scenarios, as a prime technique for future studies, have long been used by **government planners**, corporate managers and military analysts as powerful tools to aid in decision making in the face of uncertainty.
- Scenarios are normally divided into the classical **PEST** factors (political, economic, society and technology). Commercial companies are mainly interested into to the analysis of interrelations between economic and technological factors while keeping social and political factors in the background. There are many different types of scenarios and ways of classifying them.

# 'La Prospective'

**Godet and Roubelat (1996)** classify scenarios as following:

**1. Exploratory Scenarios:** Exploratory means starting from the past and present trends leading to a realisable future

**2. Anticipatory or Normative Scenarios:** Built up on the basis of different visions of the future; they may be either desired or, on the contrary feared

**Exploratory scenarios** are based on four assumptions:

- The future is not only a continuation of the past relationships and dynamics but can also be shaped by human choices and action.
- The future can't be foreseen; however exploration of the future can inform the decisions of the present.
- There is not one possible future only, uncertainty calls for a variety of futures mapping a 'possibility space'.
- The development of scenarios involves both rational analysis and subjective judgement; it therefore requires **interactive and participative methods**.

# THE SCENARIO METHOD

Godet and Roubelat,  
1996

Prospective Workshops

Structural Analysis  
**MICMAC Method**

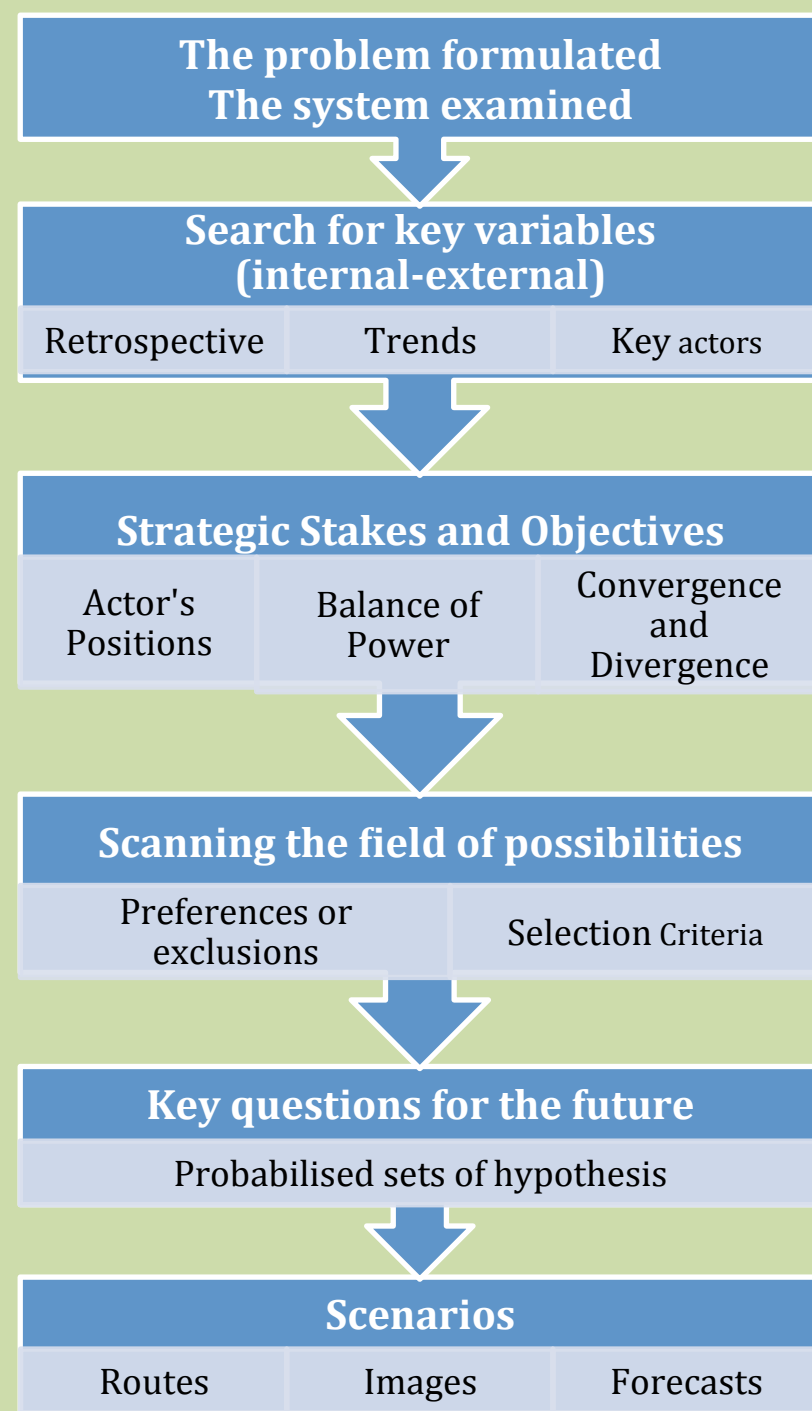
Analysis of Actor's Strategies  
**MACTOR Method**

Morphological Analysis  
**MORPHOL Method**

Expert inquiries  
**Smic-Probe-Expert method**

## The Five Objectives of the Method

- Relevance
- Coherence
- Plausibility
- Importance
- Transparency



List of variables

| N° | Long label                         | Short label | Description | Theme                |
|----|------------------------------------|-------------|-------------|----------------------|
| 1  | Occupational Health                | OH          |             | Environmental Health |
| 2  | Air Quality                        | AQ          |             | Environmental Health |
| 3  | Water Quality                      | WQ          |             | Environmental Health |
| 4  | Public Health                      | PH          |             | Environmental Health |
| 5  | Landfill                           | LF          |             | Technology           |
| 6  | Composting                         | Cop         |             | Technology           |
| 7  | Waste-to-energy                    | WTE         |             | Technology           |
| 8  | Recycling and Reuse                | R&R         |             | Technology           |
| 9  | Biomethanation                     | BM          |             | Technology           |
| 10 | Plasmagasification                 | PLG         |             | Technology           |
| 11 | Refuse Derived Fuel                | RDF         |             | Technology           |
| 12 | Door to Door collection            | DtD         |             | Organisation         |
| 13 | Collection, Transportation and ... | Tr          |             | Organisation         |
| 14 | Public Awareness                   | PA          |             | Organisation         |
| 15 | Labour & Employment                | L&E         |             | Organisation         |

A-Z A-Z

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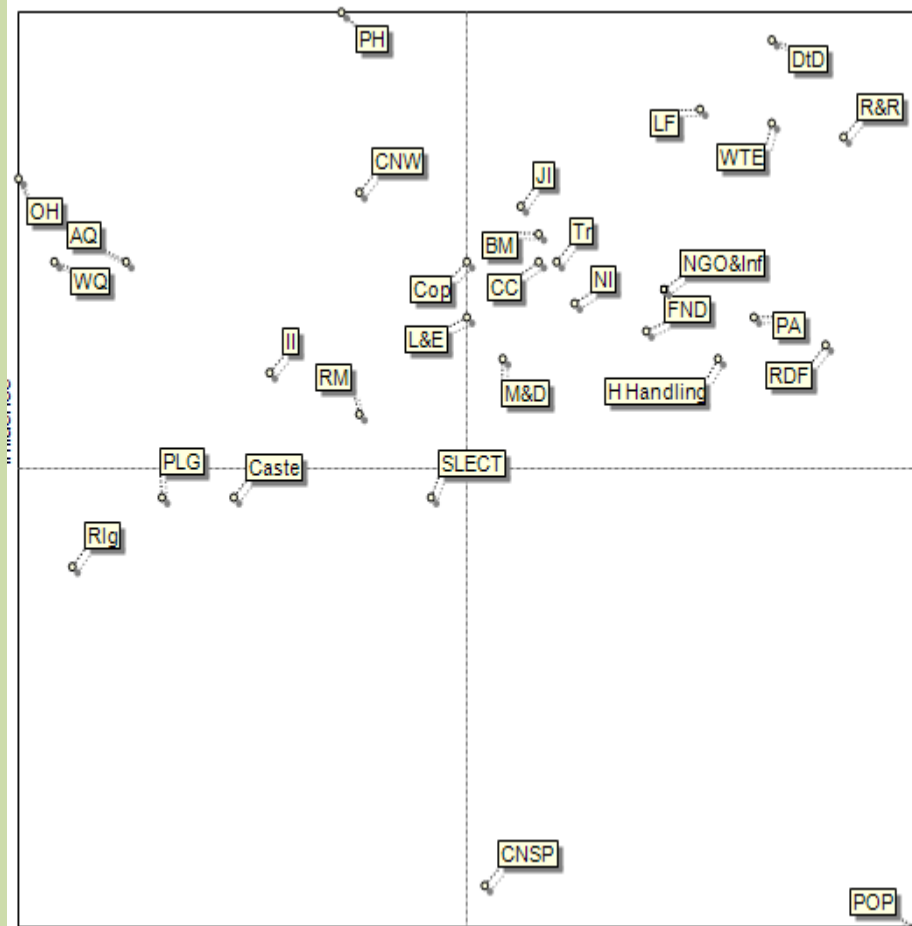
# MICMAC

Matrix of Direct Influences (MDI)

|          | . | 1 : O | 2 : A | 3 : W | 4 : P | 5 : L | 6 : C | 7 : W | 8 : R | 9 : B | 10 : PLG |
|----------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| 1 : OH   | 0 | 3     | 3     | 2     | 3     | 1     | 3     | 2     | 1     | 0     |          |
| 2 : AQ   | 0 | 0     | 0     | 1     | 1     | 2     | 3     | 3     | 1     | 2     |          |
| 3 : WQ   | 0 | 0     | 0     | 1     | 3     | 2     | 2     | 3     | 1     | 1     |          |
| 4 : PH   | 2 | 3     | 3     | 0     | 2     | 2     | 3     | 3     | 2     | 2     |          |
| 5 : LF   | 0 | 0     | 0     | 0     | 0     | 3     | 3     | 3     | 2     | 2     |          |
| 6 : Cop  | 0 | 0     | 0     | 0     | 2     | 0     | 2     | 3     | 3     | 3     |          |
| 7 : WTE  | 0 | 0     | 0     | 0     | 3     | 3     | 0     | 3     | 2     | 2     |          |
| 8 : R&R  | 3 | 0     | 0     | 0     | 2     | 2     | 3     | 0     | 1     | 1     |          |
| 9 : BM   | 0 | 0     | 0     | 0     | 3     | 3     | 3     | 2     | 0     | 3     |          |
| 10 : PLG | 0 | 0     | 0     | 0     | 3     | 3     | 2     | 3     | 3     | 0     |          |

Influences range from 0 to 3, with the possibility to identify potential influences:  
 0: No influence  
 1: Weak  
 2: Moderate influence  
 3: Strong influence  
 P: Potential influences

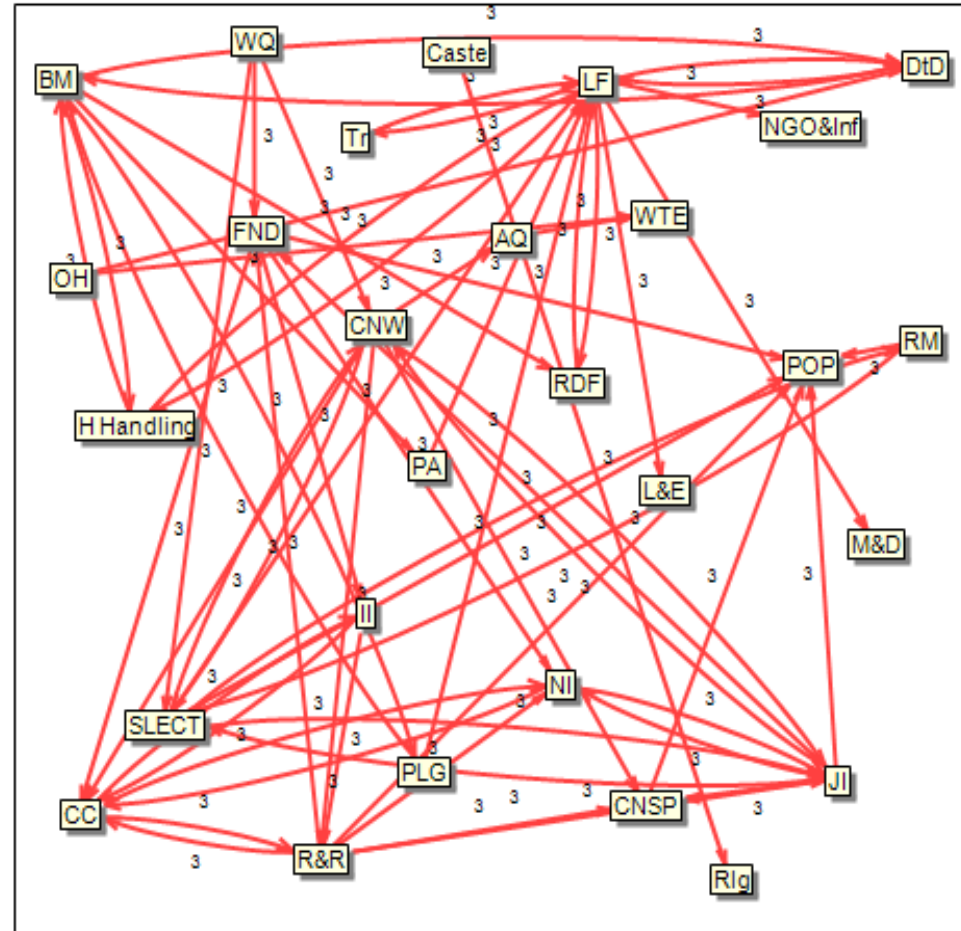
Direct influence/dependence map



dependence

# MICMAC

Direct influence graph



- ..... Weakest influences
- Weak influences
- Moderate influences
- Relatively strong influences
- Strongest influences

# MACTOR

List of actors

| N° | Long label                                 | Short label | Description |
|----|--|-------------|-------------|
| 1  | UN Agencies                                | UN          |             |
| 2  | European Union                             | EU          |             |
| 3  | The Organisation for Economic Co-oper...   | OECD        |             |
| 4  | Asian Development Bank                     | ADB         |             |
| 5  | World Bank                                 | WB          |             |
| 6  | Ministry of Environment and Forest         | MoEF        |             |
| 7  | Central Pollution Control Board            | CPCB        |             |
| 8  | Ministry of Urban Development              | MoUD        |             |
| 9  | Central Public Health and Environment...   | CPHEEO      |             |
| 10 | Ministry of New and Renewable Energy       | MNRE        |             |
| 11 | National Environmental Engineering Re...   | NEERI       |             |
| 12 | National Institute of Urban Affairs        | NIUA        |             |
| 13 | Ministry of Finance - Dept. of Economic... | MoF-DoEA    |             |
| 14 | Planning Commission                        | PC          |             |
| 15 | Judiciary - High Courts, Supreme Courts... | JD          |             |
| 16 | Government of National Capital Teritor...  | GNCTD       |             |
| 17 | Department of Urban Development - G...     | DoUD-GNCTD  |             |
| 18 | Delhi Pollution Control Committee          | DPCC        |             |
| 19 | Municipal Authorities                      | MCD         |             |
| 20 | Urban Local Bodies                         | ULB         |             |

Details Add Delete

List of objectives

| N° | Long label                       | Short label  | Stake | De |
|----|----------------------------------|--------------|-------|----|
| 1  | Environmental Health             | EH           |       |    |
| 2  | Public Health                    | PH           |       |    |
| 3  | Inclusion of informal waste ...  | Inclu. WP    |       |    |
| 4  | Inclusion of Recycle and R...    | 3R           |       |    |
| 5  | Reduce the gap between g...      | Rd G&H Gap   |       |    |
| 6  | Decentralisation of waste pro... | Decnt. Of WP |       |    |
| 7  | Energy Efficient Technolgy       | EET          |       |    |
| 8  | Less Polluting Technologies      | LPT          |       |    |
| 9  | Technologies suitable to In...   | TSIW         |       |    |
| 10 | MSW related specific polluti...  | PN           |       |    |

Details Add

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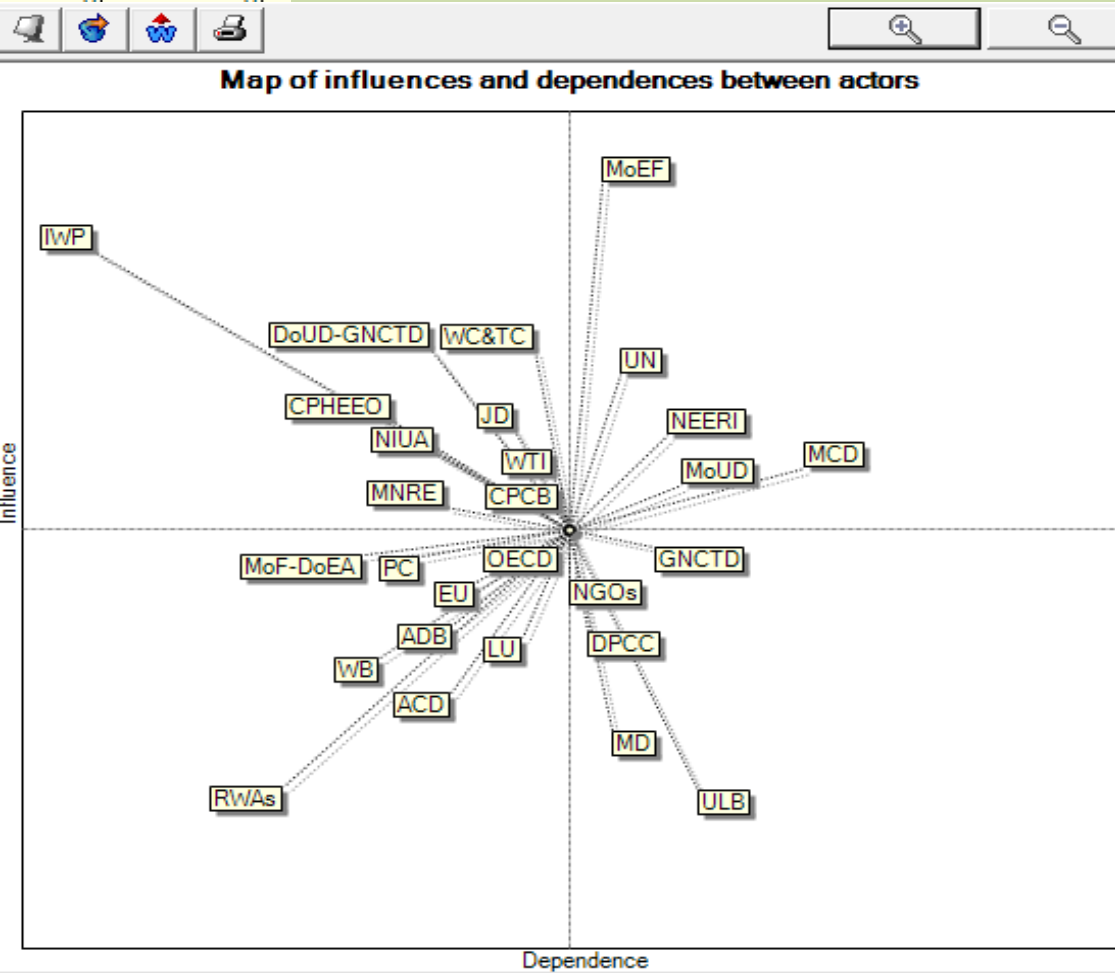
Matrix of Direct Influences (MDI)

|        | UN | EU | OECD | ADB | WB |
|--------|----|----|------|-----|----|
| UN     | 0  | 0  | 0    | 0   | 0  |
| EU     | 0  | 0  | 0    | 0   | 0  |
| OECD   | 0  | 0  | 0    | 0   | 0  |
| ADB    | 0  | 0  | 0    | 0   | 0  |
| WB     | 0  | 0  | 0    | 0   | 0  |
| MoEF   | 0  | 0  | 0    | 0   | 0  |
| CPCB   | 0  | 0  | 0    | 0   | 0  |
| MoUD   | 0  | 0  | 0    | 0   | 0  |
| CPHEEO | 0  | 0  | 0    | 0   | 0  |
| MNRE   | 0  | 0  | 0    | 0   | 0  |
| NEERI  | 0  | 0  | 0    | 0   | 0  |

Influences are graded from 0 to 4 according to the importance of the actor

- 0: No influence
- 1: Operating procedures
- 2: Projects
- 3: Missions
- 4: Existence

# MACTOR





List of domains

| No° | Short label | Long label           |
|-----|-------------|----------------------|
| 1   | EH          | Environmental Health |
| 2   | Tech        | Technology           |
| 3   | So          | Social               |
| 4   | Org         | Organisation         |
| 5   | Eco         | Economic             |
| 6   | Pol         | Political            |

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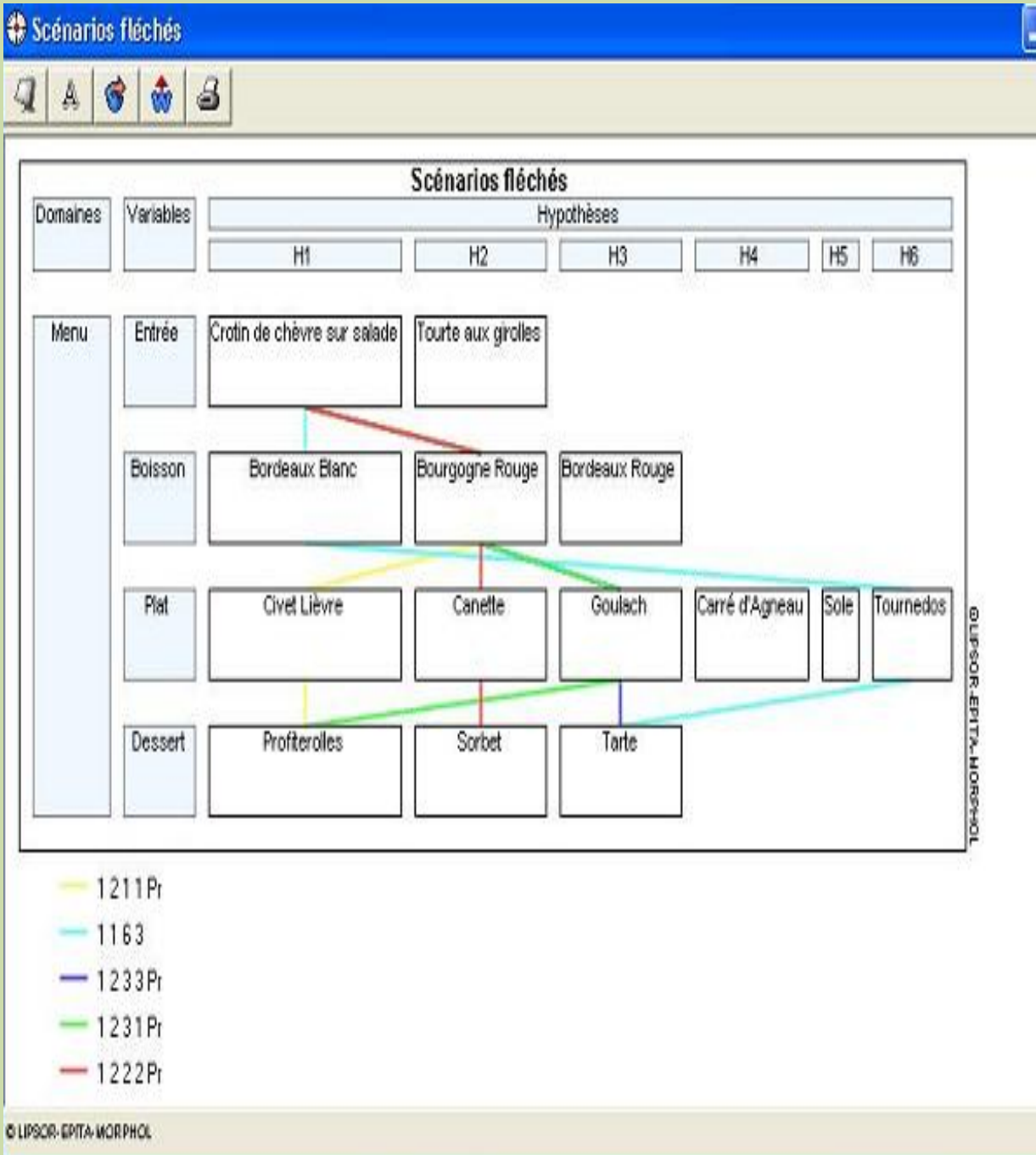
Table of hypotheses

|   | Domain               | Variable        | Hypothesis 1 | Hypothesis 2 | Hypothesis 3 | Hy |
|---|----------------------|-----------------|--------------|--------------|--------------|----|
| ▶ | Economic             | 1 - CNSP        |              |              |              |    |
|   |                      | 2 - FND         |              |              |              |    |
|   | Environmental Health | 3 - AQ          |              |              |              |    |
|   |                      | 4 - CC          |              |              |              |    |
|   |                      | 5 - CNW         |              |              |              |    |
|   |                      | 6 - OH          |              |              |              |    |
|   |                      | 7 - PH          |              |              |              |    |
|   |                      | 8 - WQ          |              |              |              |    |
|   | Organisation         | 9 - Tr          |              |              |              |    |
|   |                      | 10 - DtD        |              |              |              |    |
|   |                      | 11 - NGO&Inf    |              |              |              |    |
|   |                      | 12 - L&E        |              |              |              |    |
|   |                      | 13 - PA         |              |              |              |    |
|   | Political            | 14 - II         |              |              |              |    |
|   |                      | 15 - JI         |              |              |              |    |
|   |                      | 16 - NI         |              |              |              |    |
|   |                      | 17 - RM         |              |              |              |    |
|   | Social               | 18 - Caste      |              |              |              |    |
|   |                      | 19 - POP        |              |              |              |    |
|   |                      | 20 - H Handling |              |              |              |    |
|   |                      | 21 - M&D        |              |              |              |    |
|   |                      | -- --           |              |              |              |    |

# MORPHOL

| Nombre de scénarios                 |        |
|-------------------------------------|--------|
| Description                         | Nombre |
| Nombre total de scénarios           | 108    |
| Nombre de scénarios après exclusion | 99     |
| Nombre de scénarios préférés        | 20     |
| Nombre de scénarios retenus         | 2      |

Fermer



# MORPHOL

**Thank You**