

---

# **Part II**

---

## **Selected CII Methods and Models**

**by Myriam Dunn**

Myriam Dunn is researcher at the Center for Security Studies and Conflict Research at the Swiss Federal Institute of Technology (ETH) Zurich.

# Introduction

---

Part II of the handbook introduces different methods and models employed in the surveyed countries to analyze and evaluate various aspects of their critical information infrastructure (CII).<sup>\*</sup> The selection of methods and models is neither systematic nor comprehensive, but is closely linked to the material available.

Part II has two chapters. The first chapter (“National Efforts for CII Analysis”) illustrates country-specific approaches to the analysis of CII. The second chapter (“Models for CII Analysis”) introduces models that help to analyze diverse aspects of CII in the abstract, detached from a country-specific context. Important concepts, approaches, and terms are included in the “Glossary of Key Terms” in the appendix. Entry in the glossary is marked by an arrow (→).

Table 1 serves as a reading aid for part II. It includes the following information:

- The top part of the table shows all models discussed in the chapter “Models for CII Analysis”,
- The bottom part of the table lists selected methods and models frequently used in the surveyed countries, with entry in the glossary,
- The right column lists those surveyed countries (“National Efforts for CII Analysis”) that use the respective models and methods.

\* Purely IT-security focused models such as the IT Baseline Protection Manual developed by the German Bundesamt für Sicherheit in der Informationstechnik (<http://www.bsi.bund.de/gshb/english/menue.htm>) have been omitted. We also were unable to get information on concrete approaches used in Sweden.

| Models for CII Analysis                        |           | National Efforts for CII Analysis         |                                     |
|------------------------------------------------|-----------|-------------------------------------------|-------------------------------------|
| Technical IT-Security Models,                  | p 146–147 |                                           |                                     |
| Risk Analysis Methodology,                     | p 148–151 |                                           |                                     |
| Infrastructure Risk Analysis Model (IRAM),     | p 152–154 |                                           |                                     |
| Leontief-Based Model of Risks ,                | p 155–157 |                                           |                                     |
| Sector Model,                                  | p 158–159 | Switzerland,                              | p 134–136                           |
| Layer Model,                                   | p 158–159 | Canada,<br>Netherlands,<br>United States, | p 121–126<br>p 127–130<br>p 137–141 |
| Sector Analysis,                               | p 160–162 | Australia,<br>The Netherlands,            | p 118–120<br>p 127–130              |
| Process and Technology Analysis,               | p 163–164 | Switzerland,                              | p 134–136                           |
| Dimensional Interdependency Analysis,          | p 165–166 |                                           |                                     |
| Causal Mapping                                 |           |                                           |                                     |
| Cluster Analysis                               |           |                                           |                                     |
| Dependency/Interdependency Matrix              |           | Canada,                                   | p 121–126                           |
| Event Tree Analysis                            |           |                                           |                                     |
| Expert Assessment/Interviews                   |           |                                           |                                     |
| Fault Tree Analysis                            |           |                                           |                                     |
| Hierarchical Holographic Modeling              |           |                                           |                                     |
| Infrastructure Profiles                        |           | Canada,                                   | p 121–126                           |
| Interdependency/Vulnerability Matrix           |           | Australia,<br>Canada,                     | p 118–120<br>p 121–126              |
| Multi-Criteria Decision Approach               |           | Norway,                                   | p 131–133                           |
| Multi-Objective Trade-off Analysis             |           |                                           |                                     |
| Partitioned Multi-objective Risk Method (PMRM) |           |                                           |                                     |
| Scenario Technique                             |           |                                           |                                     |
| Seminar Games                                  |           |                                           |                                     |
| Vulnerability Assessment Process               |           | Australia,<br>United States,              | p 118–120<br>p 137–141              |
| Vulnerability Rating Table                     |           | Australia,                                | p 118–120                           |
| Vulnerability Profile Chart                    |           | Australia,                                | p 118–120                           |

Table 1: Overview Part II