



# VALESOR

Deliverable 6.6 – WP6

Brochure for Policy makers

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## History of changes

HISTORY OF CHANGES		
Version	Publication date	Change
1.0	11/2025	Initial version
2.0	12/2025	Revised version
3.0	02/2026	Final version

## Project Abstract

VALESOR has contributed to scientific and policy efforts to accommodate economic values of environmental stressors more homogeneously in policy making and planning. The environmental stressors addressed by VALESOR include chemical stressors such as chemicals and air pollutants transmitted via air, water, and soil vectors. VALESOR has developed an innovative website tool for stakeholders to assess the health and economic consequences of planned variations in environmental stressors. The website tool allows for updates and further development as new data and evidence become available. VALESOR has engaged in substantial outreach activities to promote the consideration of environmental stressors in economic decision making and to facilitate the establishment of trans-disciplinary consistency in values used when valuing environmental stressors. VALESOR has developed a state-of-the-art environmental economic model that is as complete as practically possible in its representation of the economic values of pollution. In particular, VALESOR has increased the number of human health endpoints considered in economic welfare assessments of chemical and air pollution in connection with recent results and current projects. Based on earlier research and engagement with other programs, VALESOR has clarified which input knowledge is important prior to calculating economic values associated with pollution. VALESOR has benefited from the experience and knowhow of several of its partners who have already developed models and/or tools targeting air pollution. VALESOR has developed methodological guidance with respect to how key economic well-being values should be used by policy makers.

### Fact box

VALESOR has increased the number of human health endpoints considered in economic welfare assessments of chemical and air pollution in connection with recent results and current projects. Based on earlier research and engagement with other programs, VALESOR has clarified which input knowledge is important prior to calculating economic values associated with pollution.

## People involved

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# Brochure for Policy makers

## Summary

### **VALESOR is a European project that developed:**

- A harmonised methodological framework for assessing and valuing the health impacts of environmental stressors;
- An open-access online tool implementing this framework;
- Safeguards, including Conditions of Use and mechanisms to minimise double counting;
- Applications through European case studies.

### **The framework addresses exposure to:**

- Ambient air pollutants;
- Chemical substances transmitted via air, water and soil.

### **The VALESOR online tool enables:**

- Quantification of attributable health impacts;
- Monetisation of associated economic effects;
- Comparison of baseline and intervention scenarios.

Applications include Environmental Burden of Disease (EBD) assessments, Health Impact Assessments (HIA), and economic evaluation of policy scenarios.

## 1. The VALESOR Project

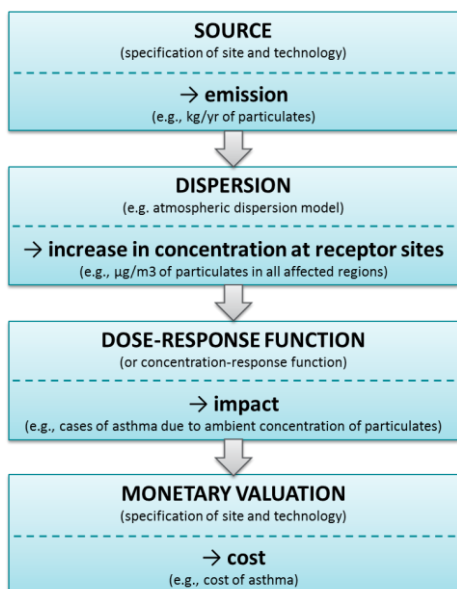
The VALESOR project aimed to:

- Further develop and harmonise economic valuation methods for environmental stressors;
- Expand the number of health endpoints considered in welfare assessments;
- Clarify methodological choices related to exposure–response functions and valuation metrics;
- Translate methodological developments into an operational modelling framework;
- Develop and publish a web-based decision-support tool;
- Test the methodology through case studies implemented in Europe.

→ The project combined methodological development, stakeholder consultation and applied validation.

## 2. Methodological Framework

VALESOR follows a structured methodological sequence linking exposure, health outcomes and economic valuation.



**Figure 1:** The impact pathway approach

## 2.1. Assessment Steps

### 1. Scenario Definition

- Specification of baseline and intervention scenarios;
- Definition of counterfactual exposure levels.

### 2. Risk Estimation

- Application of Concentration-Response Functions (CRFs) for ambient air pollutants;
- Application of Unit Risk Factors (URFs) or Slope Factors (SFs) for chemical substances.

### 3. Estimate the share of health burden attributable to exposure

- Calculation of the proportion of health burden attributable to exposure.

### 4. Estimate the number of attributable cases (mortality and morbidity)

- Estimation of mortality and morbidity cases;
- Calculation of Years of Life Lost (YLL), implemented as YOLL in the VALESOR tool, where applicable
- Optional aggregation using QALY.

### 5. Economic Valuation

- Healthcare costs;
- Productivity losses;
- Utility / Disutility associated with attributable health outcomes
- Mortality valuation metrics (e.g., VSL, VOLY)
- QALY-based valuation approaches, where applicable.

## 2.2. Methodological Features

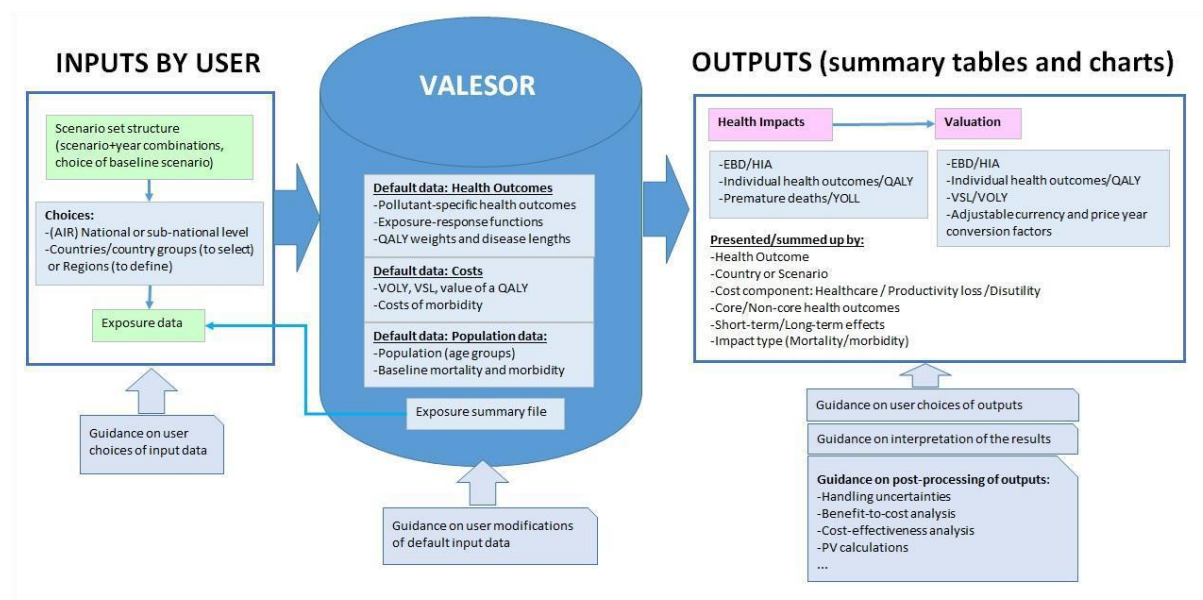
The framework includes:

- Structured selection of exposure–response functions;
- Explicit definition of counterfactual exposure levels;
- Safeguards to minimise double counting;
- Use of alternative parameter values (e.g. low/central/high exposure–response functions) to examine sensitivity of results
- Classification of response functions according to strength of causal evidence (core and non-core functions);
- Documentation of user-made modifications.

These elements aim to support transparency and comparability of results.

### 3. The VALESOR Online Tool

The VALESOR online tool implements the methodological framework developed within the project.



**Figure 2:** Concept of the VALESOR digital tool.

The Valesor online tool calculates health impacts and economic values using:

- Exposure data;
- Population data;
- Exposure–response functions;
- Baseline morbidity and mortality rates;
- Country-specific valuation parameters.

#### 3.1. Default Data

The tool includes default datasets such as:

- Pollutant-specific health outcomes and exposure–response functions;
- Country-specific cost value sets;
- Population data by age group for the modelling period.

#### 3.2. User Flexibility

Users may:

- Modify exposure–response functions;
- Adjust cost values;

- Select valuation metrics;
- Choose currency and price year;
- Select analysis type (EBD or HIA).
- Outputs are provided as downloadable tables and figures.

### 3.3. Modules

#### ❖ VALESOR AIR

Designed for multi-pollutant air pollution assessment, the AIR module allows users to estimate mortality and morbidity impacts attributable to ambient air pollution under baseline and policy scenarios.

It includes:

- Choice between all-cause and cause-specific mortality;
- Long-term and short-term exposure windows;
- Safeguards to minimise double counting;
- Options for alternative mortality valuation metrics (VSL or VOLY);
- Possibility to include core and/or non-core response functions.

#### → Technical scope of the VALESOR AIR module:

- **Time horizon:** 2001–2100
- **Geographic coverage:** 49 UNECE countries organised into 6 country groups
- **Multi-pollutant analysis:** NO<sub>2</sub>, O<sub>3</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>
- **Risk metric used:** Concentration–Response Functions (CRFs) expressed as Relative Risks (RR)
- **Health outcomes:** All-cause or cause-specific mortality and multiple morbidity endpoints
- **Economic valuation:**
  - Morbidity: healthcare costs, productivity loss, disutility
  - Mortality: VSL or VOLY
- **User flexibility:**
  - Modification of ERFs/CRFs,
  - Valuation parameters,
  - Currency and price year
- **Outputs:** Downloadable tables and adjustable figures

#### ❖ VALESOR CHEM

Designed for chemical exposure assessment, including:

- Single-pollutant analysis;
- Inhalation and ingestion exposure routes;
- Flexible modification of baseline and valuation parameters;

- Possibility to modify response functions, health outcomes parameters and valuation inputs.

#### → Technical scope of the VALESOR CHEM module

- **Geographic scope:** UNECE Europe and Central Asia (49 countries)
- **Pollutant-specific analysis:** Single-pollutant assessment per model run
- **Exposure routes:** Inhalation and ingestion
- **Risk metrics used:**
  - Relative Risk (RR)
  - Unit Risk (UR)
  - Slope Factor (SF)
- **Health outcome selection:** Outcomes selected based on strength of causal evidence; classification into core and non-core functions
- **Health impact estimation:** Mortality and morbidity estimated separately
- **Economic valuation:**
  - Morbidity: healthcare costs, productivity loss, disutility
  - Mortality: VSL or VOLY
- **User flexibility:**
  - Modification of response functions
  - Adjustment of valuation parameters
  - Selection of currency and price year
  - Modification of population and baseline health data
- **Outputs:** Downloadable tables and figures; selectable aggregation of health outcomes

## 4. Stakeholder Engagement

Development of the tool was supported by structured stakeholder workshops conducted during the project.

#### ❖ Participants included:

- National and local authorities;
- International organisations;
- Academia and research institutes;
- NGOs;
- Industries
- Advisory Board members.

#### ❖ Workshops were organised at different development stages to:

- Identify user requirements;
- Discuss functionality and design;
- Demonstrate implemented features;

- Collect feedback prior to release.

❖ Stakeholder input contributed to:

- Introduction of Conditions of Use;
- Implementation of safeguards against double counting;
- Integration of counterfactual exposure options;
- Strengthening of user guidance and transparency features.

## 5. Case Studies

**Ten national case studies** were selected across Europe (Denmark, France, Hungary, Italy, Montenegro, Poland, Serbia, Spain, Sweden and the UK) using the VALESOR methodology and online tool and one additional case study was undertaken by VALESOR members (Lombardia region, Italy).

### 5.1. Objectives

**The case studies aimed to:**

- Demonstrate practical application of the framework;
- Test the tool under country-specific conditions;
- Assess health and economic impacts of intervention scenarios;
- Compare outputs with existing national approaches, where applicable.

### 5.2. Scope of Applications

**Applications covered:**

- National air quality policy scenarios;
- Regional and municipal air pollution assessments;
- Health and economic assessment of chemical exposures;
- Alternative emission reduction scenarios.

**Case studies were conducted at:**

- National level;
- Regional level;
- Urban or municipal level.

### 5.3 Analytical Aspects Examined

The case studies explored:

- Alternative exposure–response functions;

- Short-term and long-term exposure windows;
- Different mortality valuation metrics;
- Sensitivity of results to methodological assumptions.

They also supported knowledge transfer and analytical capacity building.

## 6. Policy Use

The VALESOR framework and tool support:

- Environmental Burden of Disease assessments;
- Health Impact Assessments of policy measures;
- Economic evaluation of regulatory options;
- Scenario comparison in environmental and public health policy contexts.

By combining harmonised methodology, operational modelling and applied testing, VALESOR provides a structured basis for integrating health-economic evidence into environmental decision-making.

## 7. Access and Documentation

The VALESOR online tool and supporting documentation are publicly available via the project website.

- Link to Valesor Website: <https://valesor.eu/>
- Direct link to Valesor Online Tool : <https://tool.valesor.eu/>

Available materials include:

- Methodological guidelines;
- User manual;
- Case study reports ;
- E-learning materials (guidebook and video recordings)