#### ImpactWorld+ Fact Sheet

## What is ImpactWorld+?

ImpactWorld+ is a novel Life Cycle Impact Assessment (LCIA) methodology that extends beyond current regional modelling capabilities to a global level in order to consistently assess regional life cycle emission inventories in the context of a global economy. It will serve both industries and public administrations, through life cycle assessment (LCA) practitioners to support the development of production and consumption policies and to improve the products and services provided, while reducing environmental and health impacts.

## What is life cycle assessment (LCA)?

Life cycle assessment (LCA, also known as life cycle analysis and cradle-to-grave analysis) is a methodology to assess environmental impacts associated with all the stages of a product's life cycle from-cradle-to-grave (i.e., from raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling).

Regulated by the ISO 14040 series [1-2] standards, LCA consists in four distinct phases:

- 1. Goal and scope definition (study model which defines the methodological framework which all other LCA phases must comply with)
- 2. Inventory of all the inputs and outputs related to the product system
- 3. Assessment of the potential impacts associated with these inputs and outputs
- 4. Interpretation of the inventory data and impact assessment results related to the goal and scope of the study.

[1] ISO 14040:1997, Environmental Management: Life Cycle Assessment – Principles and framework, International Organisation for Standardization.

[2] ISO 14040:1997, Goal and Scope; ISO14041 (1998), Life Cycle Inventory Analysis; ISO14042 (2000), Life Cycle Impact Assessment; ISO14043 (2000), Life Cycle Interpretation; ISO14048 (2002), Environmental Management: Life Cycle Assessment – Data documentation format, International Organization for Standardization.

# What is life cycle impact assessment (LCIA)?

Life cycle impact assessment (LCIA) is the third phase in the life cycle assessment (LCA) methodology. This phase of LCA is aimed at evaluating the significance of potential environmental impacts based on the LCI results. Traditional LCIA methods consist of the following mandatory elements:

- Selection of impact categories, category indicators, and characterization models;
- Classification stage, where the inventory parameters are sorted and assigned to specific impact categories; and
- Impact measurement, where the categorized LCI flows are characterized, using one of many possible LCIA methodologies, into common equivalence units that are then summed to provide an overall impact category total.

## How does ImpactWorld+ differ from other LCIA methods?

Current LCIA methods have several drawbacks, which can mislead decision-making (lack of regionalization for impacts, multiple sources of uncertainty including geographical and temporal variability). The ImpactWorld+ LCIA methodology allows better decision-making by increasing the discrimination power of LCA. It leads to more precise and environmentally relevant LCA results by applying more scientifically reliable and state of the art models. ImpactWorld+ integrates uncertainty related to characterization factors and/or impact categories, it uses leading edge characterization modelling. It is also the first global regionalized method, which allows assessing and discriminating a same emission occurring in different geographical locations across the globe.

#### Who works on ImpactWorld+?

The ImpactWorld+ consortium is composed of the following research teams and leading researchers:

- CIRAIG, École Polytechnique de Montréal (Dr Manuele Margni, Dr Cécile Bulle, Dr Valérie Bécaert and Pr. Louise Deschênes);
- Danmarks Tekniske Universitet (DTU) (Pr. Ralph Rosenbaum);
- Quantis International (Dr. Sébastien Humbert);
- École Polytechnique de Lausanne (EPFL) (Dr. Jérôme Payet and Ing. Anna Kounina);
- University of Michigan (UniMich) (Pr. Olivier Jolliet and Shanna Shaked).

### I have more questions on ImpactWorld+, who can I contact?

For any question or comment, you can contact Cécile Bulle, Project leader using the following: cecile.bulle@polymtl.ca.