

Making better decisions with Multiple Criteria Decision Analysis (MCDA)

Build criteria frameworks, apply and develop algorithms, develop software.

Application area	How do we measure? CRITERIA FRAMEWORKS	How do we weigh trade-offs? ALGORITHMS & METHODS	How do we put it to use? SOFTWARE
Medical devices & packaging 3 of 3 ways	Criteria for low-resource settings SSbD criteria pathway for healthcare	Pathway builder for SSbD (healthcare)	ENKORE DSS MCDA-MSS
Energy systems 3 of 3 ways	Resilience indicators for electricity supply	Classification & decision rules Efficiency analysis (DEA) Aggregation & composite indices	MCDA-MSS CIAO MCDA Index Tool
Materials & processes 3 of 3 ways	Sustainability criteria for nanoproducts Lasers4MaaS criteria from interviews	Classification of nanoparticle synthesis Preference disaggregation & sorting Mineral supply-risk sorting (SMAA-TRI) Outranking for welding Composite indicator (emerging tech)	Lasers4MaaS DSS WEMSS MCDA-MSS CIAO MCDA Index Tool
Nature-based solutions 2 of 3 ways	Flood-management criteria from partner interviews		MCDA-MSS
Chemical safety 3 of 3 ways	SSbD criteria and assessment pathway Safety, sustainability, circularity indicators	Preference disaggregation (exposure) Composite indicator for SSbD	ENKORE DSS MCDA-MSS
Contaminated sites 3 of 3 ways	Regulation-consistent remediation criteria	MCDA for contaminated-site remediation	MCDA-MSS
Humanitarian aid 2 of 3 ways	Flood-management criteria review		Spatio-temporal MCDA tool MCDA-MSS



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SOFTWARE • WHAT EACH ONE DOES

MCDA-MSS
Recommends MCDA methods for a decision problem (200+ methods)

WEMSS
Selects weighting methods for life cycle impact assessment

MCDA Index Tool
Builds indices from normalisation × aggregation choices

CIAO
Matlab tool revealing implicit weights in composite indicators

Spatio-temporal MCDA tool
Spatial decisions using dynamic spatial and time data

ENKORE DSS
Integrates performance, sustainability, circularity, cost

Lasers4MaaS DSS
Industry 5.0 and digital-product-passport DSS; ranks welding options

SOFTWARE ANALYSIS • KEY PAPERS

MCDA software for energy transformation
Systematic analysis of existing MCDA software for sustainability assessment

MCDA in software for nature-based solutions
How MCDA supports existing software for nature-based solutions decisions

BUILT ON COLLABORATION

Sustainability and resilience problems need many competencies at once

The DESIRE Initiative has worked and works with several key partners, such as:

Poznań University of Technology

University of Catania

US EPA

TU Delft

EC Joint Research Centre, Ispra

Stanford University

Paul Scherrer Institute (PSI)

ZHAW

University of Coimbra

510 · Netherlands Red Cross

Hover a row, a pill or a software card to trace it. Click any pill or card to open its paper, project or software page.

Developed

In development

Software used in this area

Framework or method

Key paper