



## Data Management Plan (DMP)

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# 1. Objective

SecureChain is a Coordination and Support Action (CSA) promoting market uptake of existing bioenergy technologies and systems in local SMEs. The project has one important research component: a Life Cycle Assessment (LCA) of direct and indirect environmental impacts and energy balances of the promoted SME pilot projects is to be carried out as part of WP4 Sustainability, coordinated by BOKU University of Natural Resources and Life Sciences<sup>1</sup>, Institute of Waste Management in Vienna (Task 4.3). This activity is expected to generate relevant data and new findings exploitable in future research. The project opted therefore to participate in the Horizon 200 Open Research Data Pilot. This Data Management Plan (DMP) describes how research data will be collected, handled, shared and be preserved during the project, following the Guidelines on Data Management in Horizon 2020<sup>2</sup>.

# 2. Research data set

## 2.1 Data set reference and name

SECURECHAIN-LCA: Life Cycle Assessment of [final number of] SME innovation pilot projects promoting sustainable bioenergy supply chains for reduced environmental impacts and efficient energy balances in six European model regions.

## 2.2 Data set description

The SECURECHAIN project promotes sustainable bioenergy chains in the rural area, which fulfil high environmental standards viable for Small and Medium sized Enterprises (SMEs). By means of a Life Cycle Assessment (LCA), sustainability criteria of relevance for SMEs are developed. To countercheck the sustainability concepts implemented in the supply chains, Life Cycle Assessment (LCA) of the pilots, including energy balance and indirect impacts, is performed. Input data are obtained on request from each pilot project team. The modelling follows the consequential approach to include also indirect impacts caused by the assessed scenarios (e.g. effects caused by reducing biomass supplies for other bio-based industries, land use change, local value added and employment). Specific local frameworks and effects are to be considered. As key indicator the contribution of each pilot supply chain to Global Warming / Carbon Mitigation potential is evaluated.

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<sup>1</sup> BOKUs Open-Access strategy was signed by the rectorate in 2015. BOKU endorses open access to scientific literature as signatory of the Berlin Declaration. [www.boku.ac.at/en/bib/open-access-oa/](http://www.boku.ac.at/en/bib/open-access-oa/).

<sup>2</sup> EC 2013. Guidelines on Data Management in Horizon 2020. <https://www.iprhelpdesk.eu/node/2213>  
EC 2013. Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020. [http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/oa\\_pilot/h2020-hi-oa-pilot-guide\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf)

A priori list of potentials is to be investigated: i) Resource efficiency: tapping largely unexplored local biomass sources, e.g. in privately owned forests, small woodlots, riparian greenery, urban biomass, green wastes; ii) Land use: protective functions through enhanced harvesting of biomass, e.g. wind erosion risk > increased landscaping of hedges/linear tree structures, forest fire risk potential > increased forest harvesting levels; iii) Synergies: exploiting different biomass types via cost reduction, substitution of inefficient use of high grade material, high grade mixed fuels, design pellets, high grade wood chips; iv) By-products, e.g. clean ashes as components for fertilizer or bioplastics; v) Complementary bioenergy production: biomass as additional source in renewable fuel mix, e.g. co-generation plants.

### Types of data and characteristics

During Life Cycle Assessment different data are collected, analysed, modelled and produced along the whole supply chain (Figure1).

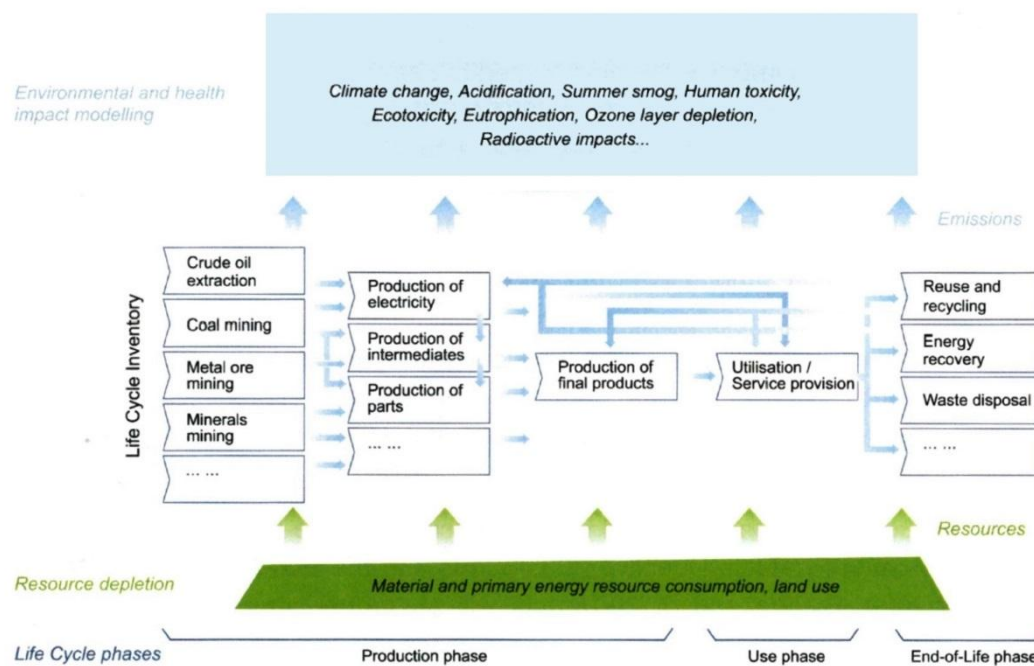


Figure1: Data relevant steps within LCA (Source: <http://eplca.jrc.ec.europa.eu>)

For the Life Cycle Inventory in the first instance company data is collected from participating SMEs covering their inputs and outputs such as used biomass material, energy usage for transports and processing of materials, energy output, emissions to air, water and soil. Secondly data from literature and existing data bases like ecoinvent or GaBi Life Cycle data sets are used to model the impact of the whole life cycle. This includes e.g. datasets on the production of oil and the connected environmental impacts or process specific data. On the basis of this data inventory the impact of the bioenergy supply will be measured according to existing Environmental and Health impact models like ReCiPe, LCM or Ecoinvent.

Additionally data and considerations on allocation (e.g. which part of the impact can be allocated to forest or agricultural waste) and substitution (e.g. which energy is substituted by the new bioenergy) have to be investigated. Finally the environmental impacts of different bioenergy plant types will be modelled and new LCA data sets will be available.

There are three new data types that might be produced within the project: i) Life Cycle Inventory data, ii) Data on allocation and substitution, and iii) LCA datasets. Depending on the type of data (Life Cycle Inventory data, LCA datasets, Live Cycle Impact Assessment Data, Allocation and Substitution data sets or primary produced LCA data-sets), some of these can be made publicly available to a certain extent and under certain conditions (e.g. aggregated sets ensuring confidentiality of enterprise-level information).

#### **i) Life Cycle Inventory data**

If the inventory data can be made public is a case-by-case decision depending on the restrictions of the participating companies.

#### **ii) Data on allocation and substitution**

This Meta Data will be published following the H2020 open access approach. Efforts will be made to ensure open access to peer-reviewed articles not already freely available through the project website. Appropriate peer-reviewed academic journals with open access will be favoured. Otherwise, access rights for publishing articles on the project website will be paid to the respective journals, thus allowing free access to the publication.

#### **iii) LCA datasets**

LCA datasets are the main output of the study. There are different formats available for LCA datasets which which are compatible or can with a certain effort be made compatible to other databases. For LCA studies both open source tools and fee based software is available. Principally, each database in EcoSpold or ILCD format can be directly imported into openLCA. Tools like the openLCA format converter or the EcoSpoldAccess spreadsheet macro formerly provided by the ecoinvent centre can be used to create data in the appropriate formats. A possibility is to create formats which could feed into the European reference Life Cycle Database (ELCD). The ELCD generally provides Life Cycle Inventory (LCI) data from front-running EU-level business associations and other sources for key materials, energy carriers, transport, and waste management. Focus is to freely provide background data that are required in a high percentage of LCAs in a European market context. Coherence and quality are facilitated through compliance with the entry-level requirements of the Life Cycle Data Network (LCDN), as well as through endorsement by the organisations that provide the data.

## 2.3 Standards and metadata

The LCA conducted in the project will be based on ISO14040ff as well as on the handbook and guidelines from the International Reference Life Cycle Data System (ILCD)<sup>3</sup>.

Within the project the produced LCA datasets will follow the ILCD Entry-Level requirements, as far as necessary inventory data are available. An implementation of the data in ILCD is envisaged. Besides, BOKU plans to build up an own Open Access LCA database. Data will also be implemented and made available to the broad public in this BOKU database once this database goes online.

A publication is planned in form of a scientific article, which describes the main project findings on LCA-based sustainability evaluation of local bioenergy chains, to be submitted for peer review to an open access journal in the bioenergy field (D4.4, M36).

## 2.4 Data sharing

The open access data will be shared using a suitable data repository and broadly accessible open data formats. Due protection of personal data will be ensured. Further details will be developed in line with the final open access dataset.

## 2.5 Archiving and preservation

The open access data will be archived using a suitable data repository. Further details will be developed in line with the final open access dataset.

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<sup>3</sup> ILCD Handbook [http://lca.jrc.ec.europa.eu/EPLCA/Deliverables/ILCD\\_handbook.htm](http://lca.jrc.ec.europa.eu/EPLCA/Deliverables/ILCD_handbook.htm)

*Acknowledgement and Disclaimer*

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[www.securechain.eu](http://www.securechain.eu)

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