

Technical Helpdesk for National LCA Databases

Training on Data Acquisition and Dataset Development – Part 7 – Datasets in databases

Content from Andreas Ciroth, GreenDelta

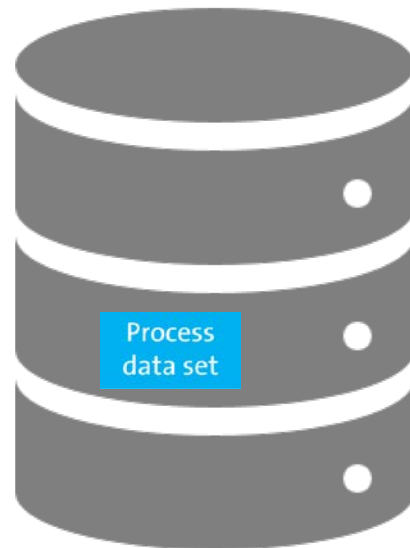
August 2017 Version

Managed by SETAC

Disclaimer

The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the United Nations Environment Programme concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the United Nations Environment Programme, nor does citing of trade names or commercial processes constitute endorsement.

Datasets in databases



Datasets in databases

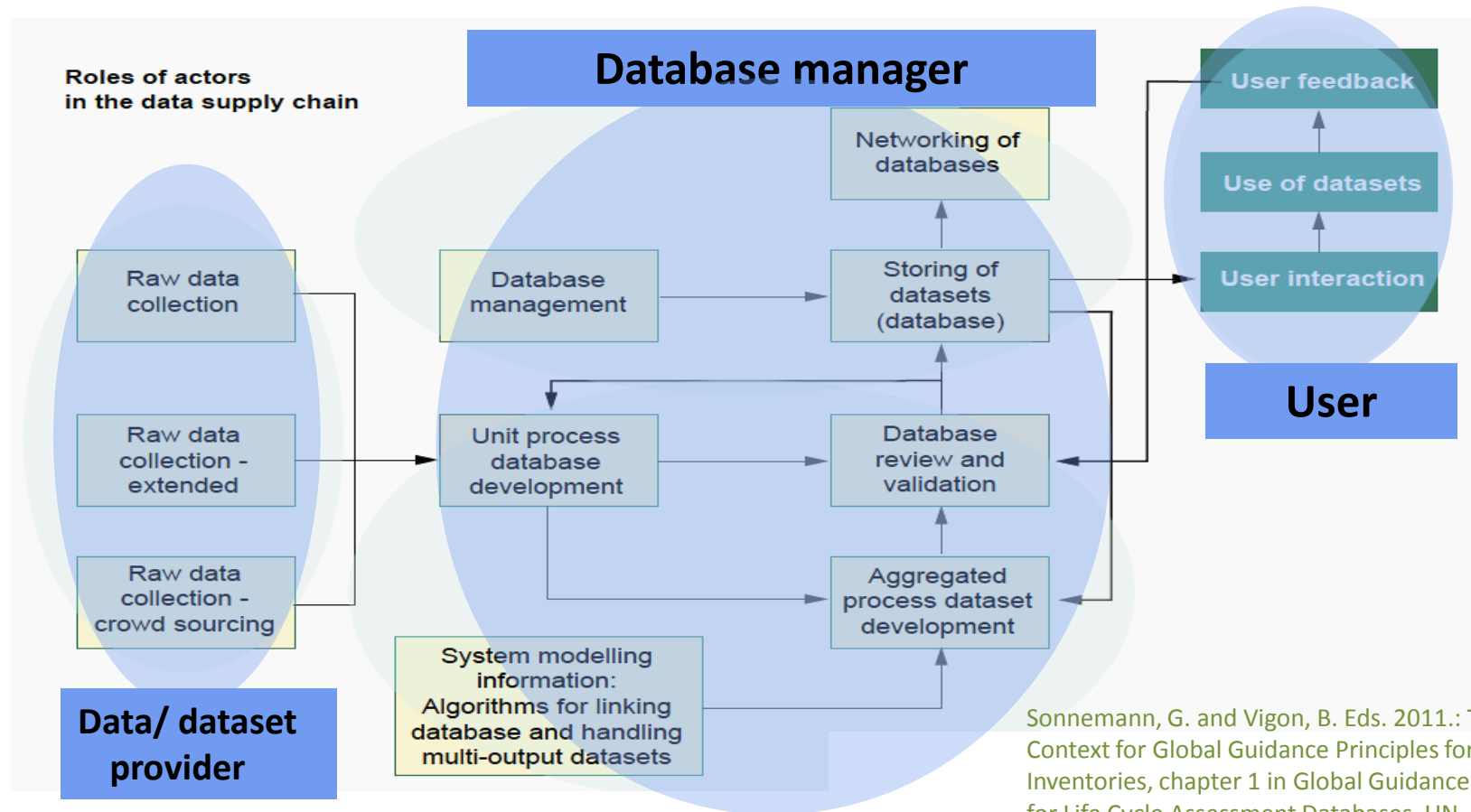
What is the issue?

LCA / LCI database characteristics

- Comprehensive input/output flows for datasets
- Consistent modeling approach and flow nomenclature
- Complete and consistent dataset documentation
- Often, capability beyond storing data, e.g. data collection and submittal support, review, aggregated process creation, ...









Datasets in databases

**The whole picture:
data provider, DB manager, user**



Datasets in databases

Common reference data: ILCD (LCDN, ELCD – JRC)

 contacts	26.05.2017 15:08
 external_docs	26.05.2017 15:08
 flowproperties	26.05.2017 15:08
 flows	07.06.2017 17:33
 lciamethods	26.05.2017 15:08
 processes	07.06.2017 14:58
 sources	26.05.2017 15:08
 unitgroups	26.05.2017 15:08

Datasets in databases

**Common reference data:
ILCD (LCDN, ELCD – JRC)**

Name	Änderungsdatum	Typ
000ef84f-ce43-4e5c-88bf-d5c877aa04b8.x...	20.01.2012 12:41	XML-Dokument
00a1aa9f-2693-4272-bf30-8f34704fcd7b.x...	16.03.2017 15:21	XML-Dokument
00a1e2dd-9b62-4e01-9409-c25177481406...	20.01.2012 12:41	XML-Dokument
00a08e1e-06fc-4911-9d5d-ea9e836b3540....	20.01.2012 12:41	XML-Dokument
00a23df6-190a-47f7-9430-3798bb24eb95....	16.03.2017 15:21	XML-Dokument
00b6b4bc-a3a5-4b12-ba67-4b4e76bd26b...	20.01.2012 12:41	XML-Dokument
00b29ffa-0b33-4759-bb2d-25cd799c0409....	20.01.2012 12:41	XML-Dokument
00b88310-b607-4397-be38-ac238dd2c341....	20.01.2012 12:41	XML-Dokument
00c1a486-bf51-4001-b437-d1e35ec18d70....	20.01.2012 12:41	XML-Dokument
00c8d4ef-911a-43fb-a885-f55b9dd4e76b....	20.01.2012 12:41	XML-Dokument
00c40cd8-a76e-492c-a474-c0aab4239abb...	20.01.2012 12:41	XML-Dokument
00c2562e-8e79-46a5-a0c5-7667c24d3e7f....	20.01.2012 12:41	XML-Dokument
00c9708d-7b33-4cb3-883f-db3880d236d8...	20.01.2012 12:41	XML-Dokument
00d1b956-29b4-4111-b2d5-e4c61bafada9...	20.01.2012 12:41	XML-Dokument
00d4ed55-72c0-4476-a50c-5b2c9bfb2ed9...	20.01.2012 12:41	XML-Dokument
00d8bdb0-3a65-4e77-ae3-452b68d80d9...	20.01.2012 12:41	XML-Dokument
00d268c5-a264-47f9-b90a-beff3ce5e770.x...	20.01.2012 12:41	XML-Dokument
00d99209-2821-44cb-8ba4-f3c288041ff6.x...	20.01.2012 12:41	XML-Dokument
00dc0838-1917-4c02-a11f-5fd0930777ec....	20.01.2012 12:41	XML-Dokument
00dcfe8c-ace3-43f0-a116-976dfe90d7d2....	20.01.2012 12:41	XML-Dokument
00dde73d-52bb-4f47-b673-0011aa4de20...	20.01.2012 12:41	XML-Dokument
00dee7ed-2932-4899-acf6-78d81315c2da....	20.01.2012 12:41	XML-Dokument
00e5c3f3-fa85-4010-acdd-a84ae73d503e....	20.01.2012 12:41	XML-Dokument
00ebcb19-5cda-43f1-b45b-48e3ef6665b7...	20.01.2012 12:41	XML-Dokument
00ec0935-50a9-48ff-a4d6-65d7a7959b36....	20.01.2012 12:41	XML-Dokument
00f052d9-b5ee-465e-9dd2-d3e7aa0482ab...	20.01.2012 12:41	XML-Dokument
00f62b26-9903-49ba-95a0-e91b974388dc....	20.01.2012 12:41	XML-Dokument
00f90c92-fc46-45e8-9192-1914057e3ad4.x...	20.01.2012 12:41	XML-Dokument
00f6719e-fb9f-4571-b5a5-de7b7387f012.x...	16.03.2017 15:21	XML-Dokument
00fdc4bc-724b-4993-ad43-c70df533b092....	16.03.2017 15:21	XML-Dokument
00fec42f-ebaa-4bfc-85d2-e381c1adaf04.x...	20.01.2012 12:41	XML-Dokument
0a0ba345-bba1-411f-84cc-e72b4b7d1027...	20.01.2012 12:42	XML-Dokument
0a0bbf60-f8e3-4c93-b02f-e4783244ec8b....	20.01.2012 12:42	XML-Dokument
0a0c1d5d-a396-49da-8ee0-9d4c2a06ea1f....	20.01.2012 12:42	XML-Dokument
0a0ef0ea-3bcc-4fa1-8d04-c79fed52a2ad....	20.01.2012 12:42	XML-Dokument
0a1cd955-bcab-4068-b2e7-b67d6599b45...	20.01.2012 12:42	XML-Dokument
0a02e818-b8b9-468e-a405-7b684e04e5df....	20.01.2012 12:42	XML-Dokument
0a2a71f2-4f59-4a67-b5f1-d633039ce0ea.x...	20.01.2012 12:42	XML-Dokument
0a2e688c-b9bd-416c-a25f-9446815aefa3....	20.01.2012 12:42	XML-Dokument
0a3eb87e-860d-4cef-b889-c17b2369e9ae....	20.01.2012 12:42	XML-Dokument
0a4f8705-e453-49e7-8ace-6b32feaa151.x...	20.01.2012 12:42	XML-Dokument

41.413 Elemente





















Datasets in databases

Flow data set: benzyl methacrylate (en)							
Flow information							
Data set information							
Name	Base name benzyl methacrylate						
Synonyms	2-Propenoic acid, 2-methyl-, phenylmethyl ester;AC1129LQ;AOJOEFVRHOZDFN-UHFFFAOYSA-;Benzyl 2-methylacrylate;Methacrylic acid benzyl ester;Methacrylic acid, benzyl ester;Poly(benzyl methacrylate);Poly(benzylmethacrylate);ST50825085;benzyl 2-methylprop-2-enoate;phenylmethyl 2-methylprop-2-enoate						
Elementary flow categorization							
Category name	Emissions Emissions to water Emissions to water, unspecified (long-term)						
CAS Number	002495-37-6						
General comment on data set	Reference elementary flow of the International Reference Life Cycle Data System (ILCD).						
Quantitative reference							
Reference flow property	Mass (kg)						
Modelling and validation							
LCI method							
Type of flow	<i>Elementary flow</i>						
Compliance declarations							
Compliance	Compliance system name (source data set) ILCD Data Network - compliance (non-Process)			Approval of overall compliance <i>Fully compliant</i>			
Administrative information							
Data entry by							
Time stamp (last saved)	2012-01-12 15:52:10.309 +01:00						
Data set format(s) (source data set)	ILCD format						
Publication and ownership							
UUID of flow data set	00d99209-2821-44cb-8ba4-f3c288041ff6						
Data set version	03.00.000						
Permanent data set URI	http://lca_irc.ec.europa.eu/lcaifohub/datasets/ilcd/flows/00d99209-2821-44cb-8ba4-f3c288041ff6.xml						
Flow properties							
Flow property	Mean value (of flow property)	Minimum value	Maximum value	Uncertainty distribution type	Relative StdDev In %	Data derivation type / status	
Mass	1.0 kg				%		

Datasets in databases

Common reference data: ecoinvent

> EcoSpold > ecoinvent.version3.120225 > MasterData

Name	Änderungsdatum	Typ
 ActivityIndex.xml	02.02.2012 10:59	XML-Dokumer
 ExchangeActivityIndex.xml	02.02.2012 10:59	XML-Dokumer
 ValidActivityNames.xml	02.02.2012 10:58	XML-Dokumer
 ValidClassificationSystems.xml	02.02.2012 10:57	XML-Dokumer
 ValidCompanies.xml	02.02.2012 10:57	XML-Dokumer
 ValidCompartments.xml	02.02.2012 10:57	XML-Dokumer
 ValidContext.xml	02.02.2012 10:57	XML-Dokumer
 ValidElementaryExchanges.xml	02.02.2012 10:59	XML-Dokumer
 ValidGeographies.xml	02.02.2012 10:57	XML-Dokumer
 ValidIntermediateExchanges.xml	02.02.2012 10:59	XML-Dokumer
 ValidLanguages.xml	02.02.2012 10:57	XML-Dokumer
 ValidMacroEconomicScenarios.xml	02.02.2012 10:57	XML-Dokumer
 ValidParameters.xml	02.02.2012 10:57	XML-Dokumer
 ValidPersons.xml	02.02.2012 10:57	XML-Dokumer
 ValidProperties.xml	02.02.2012 10:57	XML-Dokumer
 ValidSources.xml	02.02.2012 10:57	XML-Dokumer
 ValidSystemModels.xml	02.02.2012 10:57	XML-Dokumer
 ValidTags.xml	02.02.2012 10:57	XML-Dokumer
 ValidUnitConversions.xml	02.02.2012 10:57	XML-Dokumer
 ValidUnits.xml	02.02.2012 10:57	XML-Dokumer

Datasets in databases

Format of the database

- In the past, long discussions in various emerging databases, e.g. Brazil, US, ... about the “right” format
- Discussions are mainly about the exchange format (-> next slot; some few examples, from ecoinvent, JRC/EC, GreenDelta
- For the actual storage, the format is not so important but DB should be able to “deliver” in various broadly used formats
- Format in use for storage:
 - LCDN / EC: ILCD (only!)
 - USDA: openLCA
 - Ecoinvent: unknown

Datasets in databases

Review and QA

- Review “items” (what is reviewed, how)
- Reviewers
- Review workflow and organization



Datasets in databases

Review and QA

- Review “items” (what is reviewed, how)
- Reviewers
- Review workflow and organization
- On which type of processes should the review be performed (unit process, aggregated process?)



Datasets in databases

Review criteria

	Values	Scope		
		data set	flows/ exchanges	any other data set fields
Goal and scope completeness				
Reference time	yes/no	x		
Reference geography	yes/no	x		
Reference technology	yes/no	x		
Reference model completeness	yes/no	x		
Reference sample completeness	yes/no	x		
Sample approach (scientific, or expert-based)	scientific / expert	x		
Supported LCIA methods with version number	text	x		
Conformance				
Time related conformance	1..5		x	x
Geographical conformance	1..5		x	x
Technological conformance	1..5		x	x
Model completeness conformance, flows and documentation	1..5	x		
Sample conformance, correctness and reliability				
Sample conformance	1..5	x		
Accuracy of the provided information	1..5	x		
Precision of the provided information	1..4		x	
Reliability of the provided information	1..5		x	x
Consistency of the provided information	1..5		x	x
Materiality				
Mass- and energy balance in line with goal and scope	1..5	x		
LCIA results in line with goal and scope	1..5	x		
Order of 5 main drivers for main LCIA results in line with goal and scope	1..5	x		
Procedural and meta-information				
# of reviewers and their relation to data provider	1..5	x		
Data access	1, 3, 5	x		

Ciroth, A., , C. Foster., J.,
Hildenbrand, and A.,
Zamagni, 2016.:Life Cycle
Inventory Dataset Review
Criteria Development,
final report

Datasets in databases

Review, software support

- EcoEditor (fully integrated)
 - ILCD validation tool (ILCD, for nomenclature, documentation completeness, ... - not content)
 - openLCA Collaboration Server (fully integrated)
- (maybe more are available)

Datasets in databases

Version Control and Responsible Management Practices

- Typically, database users expect stability in their results
- ..but they also expect updates, bug fixes, extensions of the database



Datasets in databases

Version Control and Responsible Management Practices

- Typically, database users expect stability in their results
- ..but they also expect updates, bug fixes, extensions of the database
- Common practice:
 - Release versions
 - Ecoinvent: **major**, **smaller** release (3.3)
 - GaBi: Annual releases with mid-year update
 - Dataset versioning (e.g. ILCD hubs): each dataset has a version number and can be chosen accordingly

Datasets in databases

Common reference data

Format / storage

Review & QA

- Decisions necessary for creating, and especially for operating a database
- However, avoid “lock-in” – do not build on a solution that is bound to one specific format, provider, application
- Invent something new (new flow list, format, ...) only where really needed

Datasets in databases

Using MS Excel for data collection and for building the database

- + Excel: commonly used and understood; fewer training necessary; flexible
- Excel: very flexible; but inconsistencies and mistakes possible
- Excel: does not follow the LCA object model (obviously); unit/flow/process

For helpdesk assistance –

- Become a Helpdesk member:
 - To access the Helpdesk exchange space (or any other Clearinghouse area), you will need to create an account in the Clearinghouse (www.scpclearinghouse.org):
 - Toward the bottom of the homepage you will see a button labeled ‘Join the Community now’. Click on this link and open a form to allow you to create a login and profile.
 - Once logged in, you can modify or update your profile or explore the various SCP topic areas.
 - Go to ‘About’ and then to ‘Exchange Spaces’ where you will see Lifecycle Approaches in the drop down menu and one menu level below that is the Technical Helpdesk.
 - The Technical Helpdesk space will be available to any visitor, logged in or not. Without being logged in and joining the helpdesk space, any visitor can look at the various sections of the helpdesk space, but cannot contribute any content.
 - In order to become a member of the helpdesk space, on the homepage under the summary, is “Request space membership”. Click here, you will automatically be given rights of a members to contribute content, since it is a public group.
 - For your next login, you go directly to <http://spaces.scpclearinghouse.org/> and then choose the Technical Helpdesk space in the dropdown list.
- Helpdesk Manager - Bruce Vigon, Consultant to SETAC,
- Helpdesk Coordinator – Kristina Bowers, UN Environment, Economy Division