16.1.2017

# Postereiden pitchaus

## ARVIn teemavetäjät
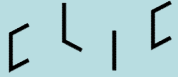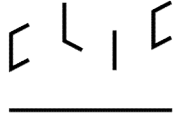
arvi
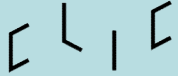Material Value Chains

16.1.2017

# Muovit ja kumi

# Helena Dahlbo, SYKE

# Muovit ja kumi

- **New methods to improve the artificial ageing of recycled plastics** - Mylläri (TUT) et al.

- **Compounding and characterization of recycled multilayer plastic films** - Mylläri (TUT) et al.

- **Functional Polyethylene as a Compatibilizer in Blends of Recycled Polyethylenes and Polyamides** – Mantere (TUT)

- **Plastics from Waste Electrical and Electronic Equipment (WEEE)** – Malin & Tuominen (Kuusakoski)

- **Plastic pyrolysis to liquids (PTL)** – Punkkinen (VTT) et al.

- **Health risk assessment in plastic recycling and product development processes** – Hartikainen (UEF) et al.

- **Wood-polymer composites: a step towards circular economy?** - Judl (SYKE) et al.
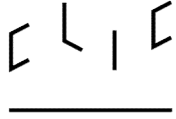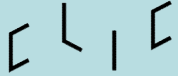
arvi
Material Value Chains

16.1.2017

# Sähkö- ja elektroniikkajäte

# John Bachér, VTT

# Sähkö- ja elektroniikkajäte

- **Thermodynamics of smelting WEEE** – Taskinen (Aalto) et. al.

- **Gold mass balance in PCB dust leaching** – Ollonqvist (VTT)

- **Alternative leaching methods for gold from PCB** – Kavander (Kuusakoski)

- **X-ray micro-tomography for liberation analysis of WEEE** – Friberg (Aalto) et al.

- **Large scale treatment trials of WEEE** – Eskonniemi (Kuusakoski) et al.

- **Dusts, a source of valuables?** – Bachér (VTT) & Eskonniemi (Kuusakoski)

- **WEEE Recycling Simulation Model** – Nevalainen (Aalto/Outotec) et al.
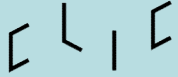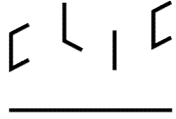
arvi
Material Value Chains

16.1.2017

# Yhdyskuntajäte ja liete

## Mika Horttanainen, LUT

# Yhdyskuntajäte ja liete

- **Improving the environmental impacts of MSW management in Hangzhou by waste refining** – Havukainen (LUT) et al.

- **Steps towards sustainable municipal solid waste management in São Paulo, Brazil** – Liikanen (LUT) et al.

- **Updating and testing of a Finnish method for mixed MSW composition studies** – Liikanen (LUT)

- **Nitrogen recovery from forest industry side streams** – Mustonen & Viitikko (UPM)

- **Second-generation fiber products using sludges and fly ash** - Turunen (JAMK) et al.

- **Effects of biochar addition on anaerobic digestion and comparison of different biochar qualities** – Sinervo (JYU) et al.
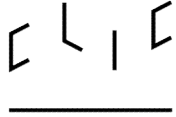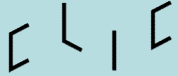
arvi
Material Value Chains

16.1.2017

# Tuhka

## Kirsi Korpijärvi, VTT

# Tuhka

- **Life Cycle Assessment of Municipal Solid Waste Incineration Bottom Ash Utilization with Advanced Treatment** – Deviatkin (LUT) et al.

- **Hydrometallurgical processing of waste gas purification dust** – Lehtola (Aalto) et al.

- **Online laser analysis of elements in fly ash for smart sorting of problematic ashes** – Järvinen & Toivonen (TUT)

- **Refining of municipal solid waste incineration bottom ash fine fractions** – Kaartinen (VTT)

- **Continuous Leaching and Analysis of Ashes** – Vainio (ÅA) et al.

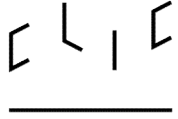arvi
Material Value Chains

arvi
Material Value Chains

16.1.2017

# **Systeeminen kiertotalous**

# Leena Aarikka-Stenroos, TUT

# Systeeminen kiertotalous

- **Business Models in the Circular Economy: A structured multiple case analysis** – Ranta (TUT) et al.

- **Multiple facets of innovation and business ecosystems – Implications to managing CE business** - Aarikka-Stenroos (TUT) et al.

- **Institutional drivers to and barriers for the circular economy** – Ranta (TUT) et al.

- **Value capture in business ecosystems for municipal solid waste management: Comparison between two local environments** – Peltola (TUT) et al.

arvi
Material Value Chains
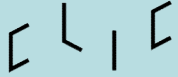
Solution Architect for Global
Bioeconomy & Cleantech Opportunities

arvi
Material Value Chains

16.1.2017

# Tietokanta

## Tuuli Myllymaa, SYKE
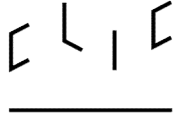
# Open LCA data – a chance for open research and sustainable business

In ARVI, pioneering steps towards open LCA data and transparent research were taken. Example ARVI-results were published in a LCA program and in a database.

Products and materials flow in a chain, in which each company and individual form a link. With their behavior they define the functionality and success of circular economy. This success is supported by an open database, created in ARVI, which disseminates information on the life cycle of each material in different environments.

**Regional data needed for environmental assessments in waste management**

Life-cycle data helps in assessing the environmental performance of products and services. The waste management processes are region specific and average data from central Europe doesn´t absolutely represent Finnish conditions. In ARVI research program it was studied how and where the Finnish life cycle information should be published and shared. Target was to develop a tool and create a database on waste treatment processes studied in ARVI

**OpenLCA and Metadata portal solutions for open data**

Several databases and LCA programs were compared. International OpenLCA application was concluded of being a suitable platform for releasing the Finnish life cycle information. Public Metadata portal for research data, metatieto.ymparisto.fi/geoportal, was chosen as parallel solution. Metadata portal is maintained by Finnish Environment Institute. Both of these platforms fulfill the main demands – they were publicly available and free of charge.

Two datasets from ARVI results were processed and entered into databases: Finnish waste incineration process and a study on manufacturing composite board from recycled plastic and wood fibers. From the composite product, a full life cycle assessment data was published, which is exceptional. Data covers all information from the use of energy to the manufacture of chemicals and transport.

**Open LCA data has a potential to grow from research tool to a future competitive edge for business**

One of the main aims of the ARVI project was to serve the business potential of waste management companies. Business potential for new LCA/open data services was recognized, but the markets are still unsure and so far the open data has more potential for research than making business.

As the awarenes and prenominant atmosphere for sustainable consumption expand, open LCA data could be the tool for convincing demanding customers and companies seeking for sustainable procurement.

In ARVI a large, pioneering step towards open Finnish life cycle inventory and analysis data and more transparent research data has been taken. Results and applications created in ARVI project serve as a good example and bellwether and encourage companies and research organisations to share their life cycle data. In the long term, the target should be to publish all LCAs in database level to enable true data reliability comparison and analysis.

In future, companies and research organizations may provide their data to the LCI database of the Metadata portal.
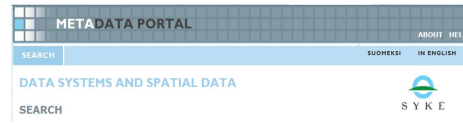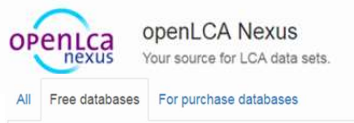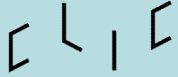
Solution Architect for Global
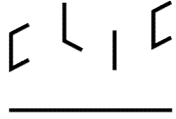Bioeconomy & Cleantech Opportunities

16.1.2017

# Jätevirtojen monitoronti

## Ari Serkkola, Aalto

# Jätevirtojen monitorointi

- **Advanced data analytics for creating information for waste management and collection** – Niska (UEF) & Serkkola (Aalto)

- **Consumption-based billing of solid municipal waste disposal** – Suomi (UTU)

- **Monitoring of waste collection: Case security paper** – Serkkola (Aalto) & Kaskinen (LHJ)

- **Digital consignment note of waste collection** – Serkkola (Aalto) & Oikarinen (Tietomitta)

arvi
Material Value Chains