Transnational Learning Document #1

LCA in environmental and resource efficiency policies

FEBRUARY **2020**

Improved Environmental and Resource Efficiency through use of Life Cycle Instruments for implementation of regional policies of the European Union

LCA4Regions
Interreg Europe

European Union
European Regional Development Fund

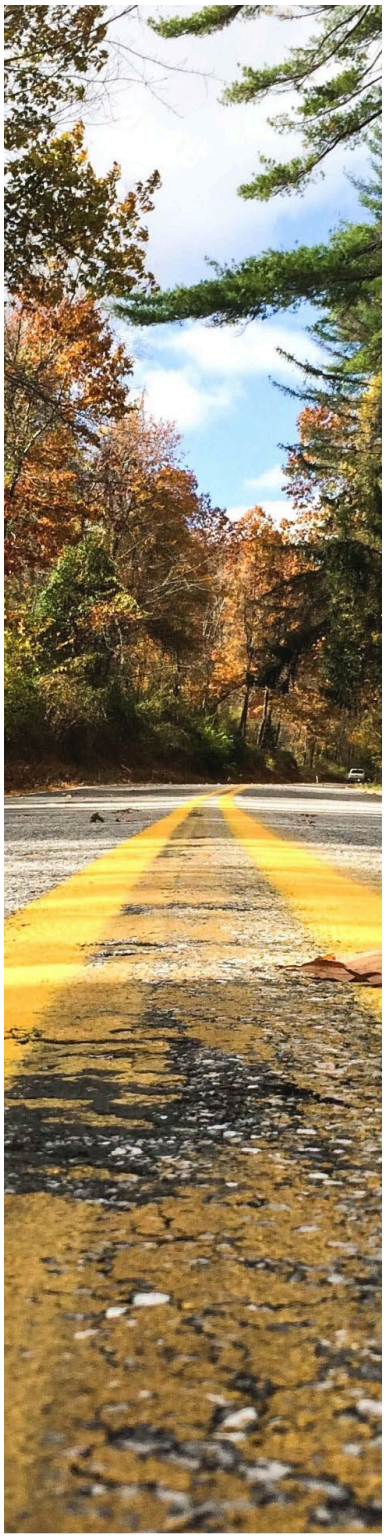
There are many ways of planning for **regional development**.

Traditional methods of *'one issue at a time*' have produced some useful immediate results but have also sometimes had unfortunate side effects, as for example when infrastructure is planned without an 'end of life' component built in.

Life Cycle process

A more systematic way of thinking, taking into account the **entire life cycle of projects and products leads to more effective programmes**, and fewer unwanted secondary impacts. Citizens as well as organisations are increasingly interested in the **« world behind the product »,** something that life cycle methodologies based on key SDGs can reveal. Life cycle thinking is also the basis for the LCA4Regions project where learning life cycle methods from each other improves everyone's development policies and action plans.

Table of Content



Purpose of the document

This is the first of a series of TLJ Learning Documents.
The main aim of this document is to provide an overview of the activities carried out during the Transnational Learning Journey (TLJ) in Lithuania, which is the first destination of the journey of LCA4Regions.

The Transnational Learning Document can also be used as part of the picture where the project stands. This document is intended to show the work we did up to this point. It aims at summarizing the lesson learnt by partners and it also provides some inputs to work on. It proposes some elements to be considered for improving the quality and effectiveness of the next TLJ.

This will be done every six months, after each TLJ. It represents an opportunity for partners to gather opinions, impressions and feelings in order to enhance the exchange of experience, step by step. These documents together will represent a map where to grasp the growth of our project.

The road ahead is still a long way to go, and we are all actively cooperating to get results. Collaborating means making a contribution, but also expressing doubts, perplexities and, above all, being able to listen and offset each other. In order to map and address partners' needs and expectations, a survey have been carried out.

What is a Transnational Learning Journey?

The Transnational Learning Journeys represent the **core** of LCA4Regions, an **opportunity** for **dialogue** between partners and a chance for stakeholders to **join** the project.

A Transnational Leaning Journey (TLJ) is a six-monthly *rendez-vous* in which each time a partner region hosts the others for thematic workshops, site visits and peer reviews. Focusing on one of the project's thematic pillars, a **TLJ brings together partners and stakeholders to share challenges, opportunities and good practices** to improve their regional policy instruments.

During the first phase of the project, the "Interregional Learning", there will be seven TLJs in total: after Kaunas (LT), it will be the turn of Navarra (ES) with a focus on the implementation of Life Cycle Analysis (LCA) for resource efficiency. Shortly after, Satakunta (FI) will organise a TLJ on LCA in waste and material flows. The following meetings will be in Western Slovenia (SI), Lodskie Region (PL) Lombardy (IT), and Baixo Alentejo (PT). Together these seven TLJs make the skeleton of the LCA4Regions, thanks to which the exchange of diverse expertise will happen.

Transnational Learning Journey #1

15-16 January 2020, Kaunas (Lithuania)

Overview

After a five-month incubation period, the LCA4Regions partners departed from Portugal, Spain, Finland, Italy, Slovenia, and Poland to land in Lithuania, more precisely in Kaunas for the first stop of their journey.

The first Transnational Learning Journey (TLJ) took place on 15 and 16 January 2020 in Kaunas, hosted by the Kaunas University of Technology. All passengers on board brought with them the first results of their respective regional analysis. On that occasion, during a thematic workshop entitled "From theory to practice", partners talked about the implementation of LC (Life Cycle) methodologies in **environmental and resource efficiency policies**, which is the thematic pillar targeted by this first Transnational Learning Journey. They focused on practical means to apply LC into practice.

The second part of the workshop was dedicated to the comparison and discussion of the seven regional analysis realized by the regions, including local good practices already identified.
The **benchmarking** highlighted the opportunities and difficulties faced by partners while realizing their analysis. The result of this exchange provided an overview of potential practical tools that could be useful to design the regional action plans.

Peer-to-peer discussions and round tables helped partners and stakeholders understanding the potential application of LC in three of the five LCA4Regions thematic pillars:

- LC for resource efficiency;

- LC in waste and material flows;

- LC in public procurements;

Some representatives of the regional stakeholders' groups joined the thematic workshop. Partners, stakeholders, and external experts participated in the peer review in order to gather ideas to develop future action plans and identifying good practices in the region.

The agenda

First day, 15 January 2020

Welcome and introduction (KTU & GN)

8:30 – 11:30 Thematic Workshop "*From theory to practice*"
(FRITZ BALKAU & PhD STUDENTS)
The workshop focused on theoretical means and practical case studies about the implementation of LCA in environmental and resource efficiency policies.

11:30 – 15:00 RA, GPs identified, and RAB (ALL PARTNERS)
This part of the workshop presented the regional analysis and good practices recognised in the partner regions. The initial information provided by each Regional Analysis was used for a first Benchmarking to establish the opportunities and difficulties to apply the LCA and to identify practical tools to apply it in each partner policy.

15:00 – 16:00 Peer-to-peer talks (ALL PARTNERS AND STAKEHOLDERS)
The seven regions, representatives of the stakeholder group, the advisory partner and external experts participated in the P2P activity. The aim of this exercise was to gather ideas to and to identify the potential of transferability of GP's in the regions to be incorporated in the regional instruments.
3 groups: Round tables talks on LCA4REGIONS's topics Themes:

- LCA for resource efficiency
- LCA in waste and material flows
- LCA in public procurements

16:00 - 19:00 Management session of the Steering Committee (SC) (GN, AIN, ACR+)

- Communication
- Management (Outputs, finances, 1st progress report)

Second day, 16 January 2020
Welcome and introduction (KTU)

8:15-14:00 Study visits in Vilnius (PARTNERS AND STAKEHOLDERS)
KTU organised a study visit to regional policy makers/beneficiaries from the policies and the GP identified. The objective was to provide partners with a deeper understanding of the policies implemented in Lithuania.

- SoliTek
- The public institution "Užstato Sistemos Administratorius"

From theory to practice

This first TLJ started with a **thematic workshop** entitled **"From theory to practice"**, introduced by Fritz Balkau, an external expert on life cycle methodologies for the KTU team and author of the book "Life Cycle Approaches to Sustainable Regional Development".

He introduced the concept of Life Cycle Approach, discussing its fundamental function in promoting sustainability and resource-efficiency, avoiding unwanted secondary impacts, reducing waste, designing and producing sustainable products, and encouraging sustainable social conditions.

He highlighted **key points of LC thinking and applications at regional level**, stressing the importance of both the **upstream** (supply chain) and **downstream** processes for a holistic and effective improvement of regional policy instruments.

He also made partners understand the Iceberg Effect of the LCC (Life Cycle Cost) and he outlined some limits to overcome, as the "cherry picking" tendency, a metaphor to explain the limited set of sustainability goals, which often do not consider the entire LC impact and spill-over effects.

The workshop concluded with an overview of a toolbox that includes elements such as concepts, methods, actions and management tools to properly implement the LC approach.

KUT: the hosting partner

Country: Lithuania

Capital: Vilnius

Population app. 3 million

Policy instrument priority axis: Environment, sustainable use of natural resources and adaptation to climate change

Economy: Manufacturing, Agriculture, ICT

Expectations: use of investments to minimise the damage made by intensive economic activities; support more active monitoring and impact assessment. LCA for existing and new innovations.

Promising pillars: Resource-efficiency, Waste & Material Flows (MF), Training and capacity building

To improve: Public procurement, as well as Resource-efficiency, Waste & Material Flows (MF)

Focus for improvement: structural change, improved governance, new projects

LC experience: resource-efficiency, transport sharing, MF analysis in composting facilities, Eco labels (waste to energy plant), container deposit scheme.

The **Kaunas University of Technology** is the largest technical university in the Baltic States (started in 1922), composed by nine faculties and 8 research institutions. It is situated in Kaunas, the second largest city of Lithuania, which is a significant center of industry, transport, science, and culture.

Welcoming session at KTU

The research areas of the Institute of Environmental Engineering are mainly Sustainable development, Circular economy, Resource efficiency and Cleaner production, Smart and Sustainable cities, Eco design, Life cycle assessment, Energy efficiency and Renewable energy sources, Chemicals risk management, Waste management.

KTU - Team

Prof. Dr. Jolanta Dvarionienė
Leader of the Research Group on Resource efficiency and Cleaner production; an engineer by profession has experience in a number of EU Projects including FP5, FP6, FP7, H2020, LIFE, Interreg IVC, Interreg Europe, Baltic Sea Region, etc.

Dr. Fritz Balkau
External expert responsible for Exchange of Experience in the project; 1999 - 2005 - Head, Sustainable Production & Consumption, United Nations Environment Programme (UNEP) Paris.

CASE STUDIES

As part of the TLJ, KTU introduced two case studies during the workshop "From theory to practice".

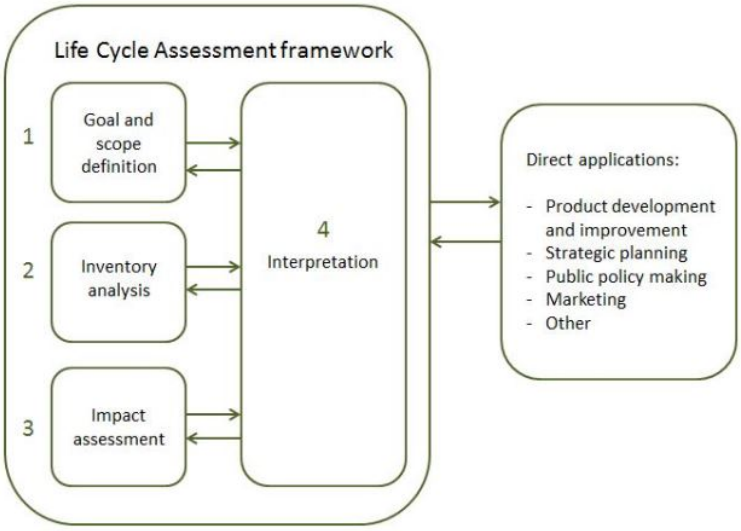
Carried out by PHD environmental engineering students at KTU, they represent two examples of Lithuanian life cycle methodologies.

- ## Environmental Life Cycle Assessment of Electric and Conventional Vehicles

This study, realised by two PHD environmental engineering students, K. Petrauskienė and M. Skvarnavičiūtė, aims at evaluating and comparing the environmental impacts of battery electric vehicle (BEV) and internal combustion engine vehicles (ICEVs) fuelled with diesel and petrol, analysing the BEV's operation stage under different electricity generation scenarios. The goal of this work is to assess the most preferable electricity mix scenario and generation technologies under which the environmental load would be the least.

The scope of this analysis represents a "complete LCA", which includes the fuel cycle as "Well-To-Wheel" analysis and the vehicle life cycle that follows a "Cradle-to-Grave" approach. The results of the LCA are presented in three combined phases: production, use and disposal.

Methodology of the study (1)

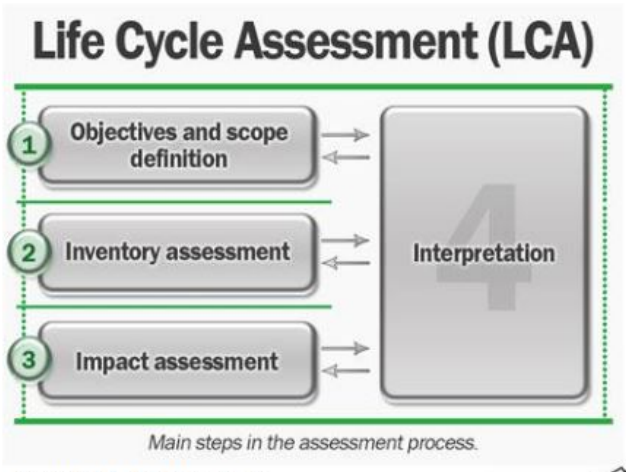


(Source: ISO 14040:2006, 2006)

- **Environmental impact assessment of renovated multi-apartment building using LCA**

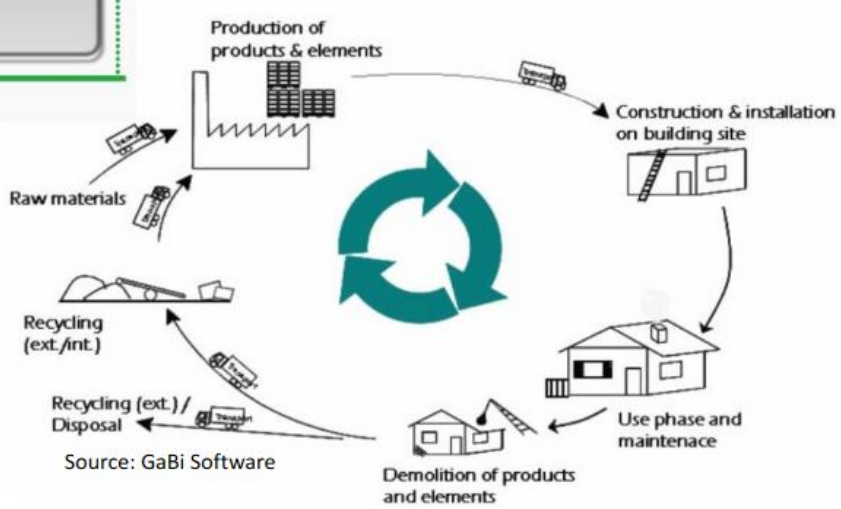
This presentation (by V. Chandrasekaran and A. Vitkutė) offered a first analysis of the Lithuanian context, where the **environmental impact assessment on buildings using life cycle method** is relatively new and there is a limited number of studies (almost none) with existing buildings and assessment with LCA. The study recommends integrating LCA at regional level in order to improve both the decision making and the consumer/builder's awareness in selecting the materials during construction. LCA would help to overcome the standardization of the policies and procurement processes. Studies related to environment impact assessment of the construction industry and materials with life cycle approach are highly recommended in Lithuanian setup.

Methodology of the study (2)



Source: LCA Methodology

- The functional unit for the study is an entire multi-apartment building of 40 years
- SimaPro software is used for the study



Source: GaBi Software

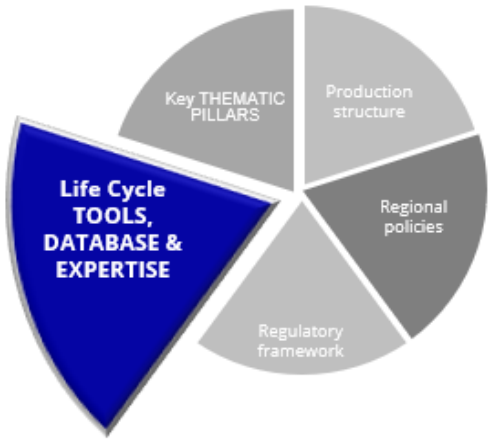
The study suggests to focus on energy consumption, low energy houses, and to **integrate a sustainability framework of buildings** that covers **ecological, economic,** and **social** aspects.

REGIONAL ANALYSIS

Drafts of the 7 regional analysis were presented. Partners presented their regions and the current regional policies. They shared the first results about the identification of LC practices implemented in their regions. Some good practices were shared and will be gradually added.

A last part was dedicated to the benchmark methodology, which aims to find a **degree of similarity** between regions in order to:

- **Identify and address differences between regions;**
- **Favour the Exchange of Experience among the regions** according to the following dimensions:



I. **PRODUCTION STRUCTURE** Economic and industrial sectors (Life Cycle methodologies potential)

II. **REGIONAL POLICIES AND REGULATORY FRAMEWORK** on circular economy

III. **LCA TOOLS, DATABASE & EXPERTISE** already present in the region

IV. **KEY THEMATIC PILLARS** - Field of greater value and relevance where LC approach seems to have the higher potential

The benchmark methodology proposed intends to compare the main information and regional SWOT analysis provided by partners through their regional analysis.

The benchmarking between the data available up to this point suggests that, within the project, the pillar where LCA is more developed is public procurement. This first cross-analysis shows that circular economy actions are already implemented in the regions. It also highlights the independence of some regions in decision making as a strength, and a high availability of life cycle methodologies theory. The weaknesses emerged are a low awareness of LC and lack of technical specialization and market knowledge on LC. The most important obstacles seem to be the high

cost of LCA, the absence of incentives and strategic support as well as production inertia and slow political change.

From this first analysis the project intends to direct its efforts towards the interaction between theory and practice, the integration of life cycle approaches in decision making for key economic sectors and key regional sustainable objectives. The next step concerns the identification of common challenges and opportunities to transfer competences and good practices, which are seen as the "enzymes" that can activate the regional policies transfer process.

The benchmarking is expected to help the project to identify "regional types" to enable the exchange of experience.

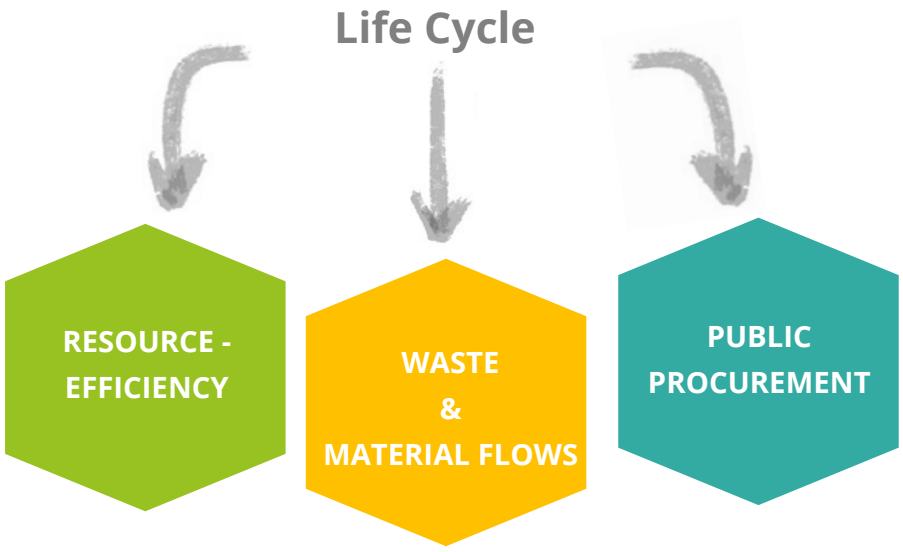
In order to improve regional analysis, the first observations suggest a in improvement in the following elements:

- **SWOT analysis of the LC methodologies** currently implemented (not only a list of tools, but an assessment of their effectiveness). E.g. Finland: a tool is actually used by the 33% of the municipalities;
- **Stakeholders mapping** (including level of engagement), useful to identify: actors that can reinforce some regional weaknesses (ex. innovation --> Research institutions);
- **Strategic pillars identification;**
- **Economic sector where LC could have the most important impact;**
- Share **results** of the existing policy instrument (2014-2020);
- *Know what you want*: list the **needs** of the regions in relation to the more relevant obstacles to implement LC (expectations from the EoE).

PEER2PEER

During the first TLJ, partners had the opportunity to assess a **methodology** to achieve a horizontal **exchange of experience** and to **evaluate each other's regional policies instruments**. This activity led to a more comprehensive knowledge of the different regional experiences on LC and of the status of some of the good practices identified in the different regions.

For this **peer-to-peer (P2P) activity**, partners and stakeholders were divided into three groups, according to three of the five thematic pillars identified by the project:



They shared good practices focused on **practical means to apply LC** in these areas with a focus on results, lessons learned, and actions recommended. Afterwards each group discussed **opportunities of transferability to their respective territories**.

Each group was assigned a moderator and a rapporteur to guide timed discussions and promote interaction among group members. At the end of the session, they presented relevant outputs to the other groups, adding comments and suggestions for the improvement of this methodology.

The results are very positive, partners caught a glimpse of inspiring good practices on LC implementation.

In addition to its stand-alone value, the information gathered during this activity can also help to structure the next peer-to-peer session at TLJ2, and as input for finalizing the 7 Regional Analysis on LC. There are still challenges ahead, as for example in encouraging a more prominent and thoughtful linkage between LCA and Good Practice, seen that the two concepts combine to form the 'raison d'être' of the project.

Life Cycle experiences shared in the P2P Exercise

Below, a summary of Life Cycle good practice methodologies and policy application reported during the P2P activity. It represents a consolidated summary of the experience exchange on individual life cycle good practices methodologies to policy application that occurred during the P2P activity at TLJ1. It indicates:

the various **life cycle methodologies** mentioned by the regions,

their **application to policy** or management areas,

and any **concrete results obtained**.

Not surprisingly for such a condensed workshop exercise, carried out under severe time constraints, the information supplied by partners on their data sheets was not always systematic or complete compared with longer exercises.

Nevertheless the data below gives sufficient overview to be able to take some targetted follow-up decisions. The individual points below would benefit from being discussed in detail, and/or further elaborated during the RAB and future TLJs.

LCA was undertaken in **Lithuania** by KTU to inform policy and action on electric vehicles, and on renovating old buildings for greater energy efficiency. Both studies were PhD projects and regarding the degree of implementation and transfer into wider national policy, they were presented during the meeting at the Ministry of Transport. The research on electric vehicles had indirect influence in the policy change, for the National Energy and Climate Action Plan development which was adopted in the end of 2019.

LCA was also used in **Lombardy** (by the Politecnico of Milano) to identify waste management options for **CDW**[1] and other waste.

Cimbal (by EDIA[2]) and **Lodzkie** (by BRI consultant) reported LCA applications for 'waste to carbon' and building renovation, and lower impact insulation material respectively, but no detailed results or outcomes were described.

Pyhäjärvi Institute mentioned LCC for engineering procurement, but with limited details.

Navarre (done by INITIA) applied LCA to municipal school lunch menus to ensure a healthy diet for children, and linked the LCA to its green procurement policy.

Most of the LCA above was focused on products and materials. Extended LCA procedures such as social LCA, biodiversity and landscape, Life Cycle Sustainability Assessment (LCSA), nor organizational LCA (O-LCA[3]) were mentioned in the written sheets or oral discussions.

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[1] **Construction Demolition Waste:** CDW arises from activities such as the construction of buildings and civil infrastructure, total or partial demolition of buildings and civil infrastructure, road planning and maintenance

[2] Empresa de Desenvolvimento e Infra-estruturas do Alqueva, S. A.

[3] **Organisational LCA:** Life Cycle Assessment is now frequently applied to products, but has not yet been established as common practice in organizations. Several initiatives in the last few years have promoted the use of LCA within an organizational scope, mainly in the assessment of individual environmental impacts such as GHG emissions and water. Those documents and the experience acquired while preparing them laid the ground for moving towards a broader definition of 'LCA of Organizations'.
See https://www.lifecycleinitiative.org/activities/phase-iii/lca-in-organisations/
https://www.lifecycleinitiative.org/download/6060/

Footprints were little mentioned, hinted at only by Pyhäjärvi as related to GHG[4] but without further detail. Footprints were little mentioned, hinted at only by Pyhäjärvi as related to GHG, but without further detail. LCC was mentioned by Pyhäjärvi to optimise civil engineering projects. Information on results was not provided although the need for a better database was mentioned. LCC along with EPD was also used in Slovenia to influence the purchase of cleaner heavy vehicles meeting EU emission standards.

MFA[5] on 'plastics to carbon' was mentioned by Cimbal (EDIA), and by Pyhäjärvi (biomass database) as well as for waste study by Lombardy (Politecnico of Milano)

LCM[6] methods of several types were quoted by five regions (CIMBAL, Slovenia, Navarra, Lombardy, Lodzkie) in the context of policy implementation. Life cycle management methods mentioned included **EPD**[7] (vehicles, Slovenia) and renewable energy (Acciona/Navarra), **PEF**[8] (insulation, Lodzkie) and for manufactured goods (Lombardy), eco-labels, sustainable design (food menu, Navarra), procurement stakeholder agreements for food menus (Navarra). **EPR**[9] was mentioned by Navarra in the context of circular materials management but without giving details. There was little evidence of a holistic

[4] Greenhouse Gas

[5] **Material Flows Analysis:** an analytical method to quantify *flows* and stocks of *materials* or substances in a well-*defined* system. See suggested reading of an already existing GP https://theconversation.com/the-first-step-in-managing-plastic-waste-is-measuring-it-heres-how-we-did-it-for-one-caribbean-country-125547

[6] **Life Cycle Management:** LCM is a business management approach that can be used by all types of business (and other organizations) in order to improve their sustainability performance. LCM is about making life cycle thinking and product sustainability operational for businesses that are aiming for continuous improvement.

[7] **Environmental Product Declaration:** is an independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products.

[8] **Product Environmental Footprint:** A Product Environmental Footprint is a methodology by the European Commission's Joint Research Center (JRC) which is based on Life Cycle Assessment. Its goal is to provide "a common way of measuring environmental performance" for companies within in EU wishing to market their product. The approach is still in its testing phase.

[9] **Extended Producer Responsibility:** is a policy approach under which producers are given a significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products. It discusses the potential benefits and costs associated with EPR.

life cycle approach to an Integrated Waste Management (**IWM**[10]) action, most initiatives being of limited scope focused on disposal options.

The building of useful stakeholder networks or consortiums was especially reported by Navarre, Lombardy, Cimbal.

Green public procurement was used by Navarra (healthy food) and Slovenia (vehicles). Pyhäjärvi referred to the use of LCA as input to procurement for engineering projects.

Life cycle concepts such as circular economy and industrial ecology, cradle to grave were mentioned by several regions (Lombardy, Navarra, Lodzkie, Cimbal) but without any hint of how they are translated into policy or implementation.

The results of the P2P are very positive, partners caught a glimpse of **inspiring good practices on LC implementation**. In addition to its stand-alone value, the information gathered during this activity can also help to structure the next peer-to-peer session at TLJ2, and as input for finalizing the 7-regional analysis on LC. There are still challenges ahead, as for example in encouraging a more prominent and thoughtful linkage between LCA and Good Practice, seen that the two concepts combine to form the 'raison d'être' of the project.

[10] **Integrated Waste Management:** it is a method that if implemented on priority-based, can help reduce the total amount of waste produced, while also ensuring that waste is managed properly.

STAKEHOLDERS

In addition to LCA4Regions partners, relevant stakeholders from Spain, Portugal, and Lithuania joined the meeting: **Acciona**, **GAN-NIK** (environmental management of Navarra), **EDIA** (the public company managing the Alqueva Multipurpose Project), **Castro Verde municipality**, and last but definitely not least, the **Ministry of the Economy and Innovation of Lithuania**.

IT WAS A **VERY ENRICHING EXPERIENCE** TO LEARN ABOUT INITIATIVES IN DIFFERENT REGIONS OF EUROPE. MY **MISSION** IN THE GROUP, **AS A STAKEHOLDER, IS TWOFOLD**. ON THE ONE HAND, TO CONTRIBUTE WITH **EXPERIENCES DEVELOPED IN PRIVATE COMPANIES**, WHICH I BELIEVE CAN BE USEFUL FOR THE PUBLIC SECTOR. ON THE OTHER HAND, TO **LEARN FROM INITIATIVES DEVELOPED IN THE DIFFERENT REGIONS** AND TO ANALYSE THEIR VIABILITY FOR IMPLEMENTATION IN OUR COMPANY.

Peio Basail, *Acciona*

What is your vision of the project? What do you think will be obstacles?

I think it is very positive to incorporate the perspective of the life cycle into decisions and policies of public administrations. Therefore, I think the project can be very enriching both at the level of specific initiatives that can come out of it, as well as in training and awareness of public managers on the subject.
Regarding the risks or obstacles, there is one that I wanted to mention and that is that the ***LCA methodology is a tool****, and as such, I believe that it should be* ***at the service of certain objectives****. In the private sector, we are aware that a tool is only useful if it serves to achieve certain objectives. Therefore, my suggestion is that the LCA strategy of each region should be coordinated with its plan to reduce CO2 emissions.* ***Climate change is the main environmental threat*** *we have today and the* ***LCA could be incorporated as a strategy towards a carbon-neutral horizon*** *both for the public administrations themselves (public procurement, public infrastructure) and in general for the participating regions, including their private and domestic sectors.*

Interesting **GPs** mentioned:

- proposal for recycling agricultural plastics presented by Navarra and Portugal;
- LCA of the electric car in Lithuania;
- calculation of carbon footprint in waste and water management in Navarra.

TLJ SATISFACTION RATE **8/10**

SITE VISITS

This Lithuanian TLJ included two study visits in Vilnius, the capital of the country to provide partners and stakeholders with a deeper understanding of the policies and good practices from the Lithuanian perspective. These two examples stimulated LCA4Regions participants to think more deeply about the life cycle dimension of such projects.

Partners were introduced to SoliTek, a company specialised in **solar cells and panels**, which aims to optimize the resource-efficiency of their production processes through LC. They also learnt more about Užstato Sistemos Administratorius, the public institution managing the entire **deposit refund system for packaging waste**.

USAD - Užstato sistemos administratorius

The first visit took place at the public institution "Užstato Sistemos Administratorius" (Vilnius). They manage the entire **deposit system for packaging waste**, from collection to recycling. It is a non-profit organisation with the objective of managing the deposit system as indicated in the Law on Packaging and Packaging Waste, founded and managed by directly involved industries.

The mandatory deposit system for beverage packages has been launched in Lithuania on 01/02/2016. The targets for 2025 are already achieved and exceeded. Deposit system allows higher recycling targets, than the container system. Before deposit system introduction PET bottles recycling was below 33%. **In the first 3 years the organisation collected 56.000 tonnes of containers (the amount of six Eiffel towers!)**. 100% collected materials are recycled (which is a very high quality of collected materials, clean and well-sorted). What do consumers think? 97% of consumers are satisfied in general with functioning of the deposit system for single use-packaging, and 93% of consumers admitted that the

introduction of the packaging deposit system e**ncouraged them to regard sorting out of all-type waste with more responsibility**.

Since the start of its operation, Lithuania's deposit system has prevented 152.400 t CO2 emissions.

SoliTek

SoliTek is a company that makes researches, develops, manufactures, sells and installs solar cells & panels, specialised in top quality, EU manufactured Glass-Glass panels and design for rooftops, 100% renewable energy in Manufacturing. It plays an important role in the **environmentally friendly global movement**, producing solar panels using only renewable energy, and championing the Glass-Glass solar panel segment, whose production requires less CO2 intense raw materials.

The Lithuanian Incubator of Green and High Technologies (L.I.G.H.T.) hosts SoliTek R&D, manufacturing & head office in Vilnius, Lithuania. In 2013 the company has been recognized by German Chamber of Commerce as the **"Greenest Industrial Building in Europe"**. Production is powered and cooled by renewable energy mix – both solar (150 kW on the roof) and geothermal.

They have started to install residential solar power plants to end customers in 2018. New EU subsidies for the residential market in Lithuania let the solar boom begin. And they are trying to take a big role in it.

STAKEHOLDER'S FEEDBACK FROM ACCIONA:

" **I WOULD LIKE TO KNOW INITIATIVES THAT CAN BE TRANSFERRED TO OUR COMPANY.**

THE VISITS WERE POSITIVE AND CAN HELP TO UNDERSTAND REAL EXAMPLES. IN ANY CASE, I WOULD TRY TO LINK THE VISIT MORE DIRECTLY WITH A CONCRETE EXAMPLE OF PRACTICAL AND REAL APPLICATION OF LIFE CYCLE ANALYSIS.
I THINK THAT THE INVOLVEMENT IS VERY POSITIVE AND WOULD EVEN TRY TO INCORPORATE SOME MORE PRIVATE COMPANY, AS THIS CAN BE ENRICHING FOR ALL PARTIES. "

A review of TLJ1 site visits from a good practice life cycle perspective.

F. Balkau

Two inspirational field visits occurred, to a container collection scheme, and a solar PV manufacturing plant respectively. Both are **leading technologies in their sector and contribute to meeting sustainability challenges in pollution and renewable energy**. But the subsequent de-briefing also raised some issues concerning life cycle performance of policy-making. These are summarized below, with observations on good practice in both life cycle and policy application.

1 The modern **USAD** container recovery facility is part of the Lithuanian deposit system, collecting drink containers for crushing and baling, before sending them to recycling destinations domestically or abroad according to materials and economic conditions. The system has significantly reduced the litter and disposal problems of this particular waste stream. Other plastic, glass and aluminium waste streams not included in the deposit system are not accepted by the facility. The facility's role in a larger deposit system has no doubt limited its operational freedom is some ways. From a life cycle perspective, it shows this limited role, being disconnected from the upstream (container) design aspects, and from the downstream end-of-life waste recycling by its contractors. Note: The frequent diversion of recoverable waste destined for recycling but actually being illegally dumped is well known in the industry, requiring a high level of 'extended producer responsibility' by operators.

This concern was not discussed by the operator during our visit. No mention of EMAS, or of other sustainability management tools such as Organisational Life cycle Assessment (O-LCA.)[11]

[11] see https://www.lifecycleinitiative.org/wp-content/uploads/2015/04/o-lca_24.4.15-web.pdf

Life cycle good practice comments – while the on-site facility itself is well managed and clean, upstream issues of container design and low-impact collection points are not addressed, and downstream end-of-life issues are not addressed. No mention of the ecological footprint of the facility or of its supply and distribution networks, although reduction in carbon emissions is highlighted in their corporate information.

The company is tightly focused on its recycling mission via an efficient on-site operation, but with a low level of incorporation of wider life cycle issues, nor with a formal environment management system in place.

Policy good practice comments – it contributes to waste reduction and resource recovery of drink containers. Limited consideration of resource efficiency in the plant and in logistics. Limited responsibility over its own (recovered) products.

2 The privately owned **SoliTek** plant has an intrinsically high ecological footprint due to its supply chain of complex components, and through the sophisticated on-site assembly process. There is a small amount of manufacturing waste, some of which is recycled on-site. It has attempted to reduce its footprint through the construction of an energy-efficient building partly heated by solar and geothermal energy, and by sourcing some of its components from recovered manufacturing residues. Its products are of advanced design that captures more solar energy than standard components. Logistics of supplies and outgoing products uses a 'green' transport company. Not mentioned are packaging issues. There was no indication of a product take-back scheme, or of end-of-life equipment (the expected service life is 30 years). No mention of EMAS, or of O-LCA.

Life cycle good practice comments – upstream product design and on-site process efficiency are taken into account. Some on-site recovery and recycling take place. On-site building and logistics footprints have been minimized. There's no provision for end-of-life of products.

Policy good practice comments – renewable energy supplier, high standard of operational resource efficiency. No information on procurement or packaging.

Both these examples illustrate well the difference between policy GP and life cycle GP.

TLJ #1 LESSON LEARNT

Partners discussed their successful implementation of good practices, but also their difficulties and challenges in a fuller application. Lessons learned from the partners' actions include the **need for improved regional databases** for assessments, and **access to experts with appropriate life cycle assessment skills**.

There was universal agreement that the accomplishment of LC methodologies depends heavily on effective **stakeholder involvement** and **communication** mechanisms. Where **changes to existing administrative procedures are necessary** e.g. in procurement, an **adequate training of personnel** is essential. Waste management should not be an isolated action, the whole supply chain can contribute to reducing waste, and **waste issues upstream and downstream** also need to be taken into account in a holistic approach. Learning should be based on both good and bad experience, so open admission of any failures can prevent the same mistakes being repeated by others. **Monitoring of the outcomes of life cycle policy projects** and sharing of insights is important. It is important to keep in mind that each region is different, and while LCA procedures are standardized, **LCM mechanisms need to be adapted to the local industrial situation**, and to take into account regulatory bottlenecks.

PARTICIPANTS' FEEDBACK

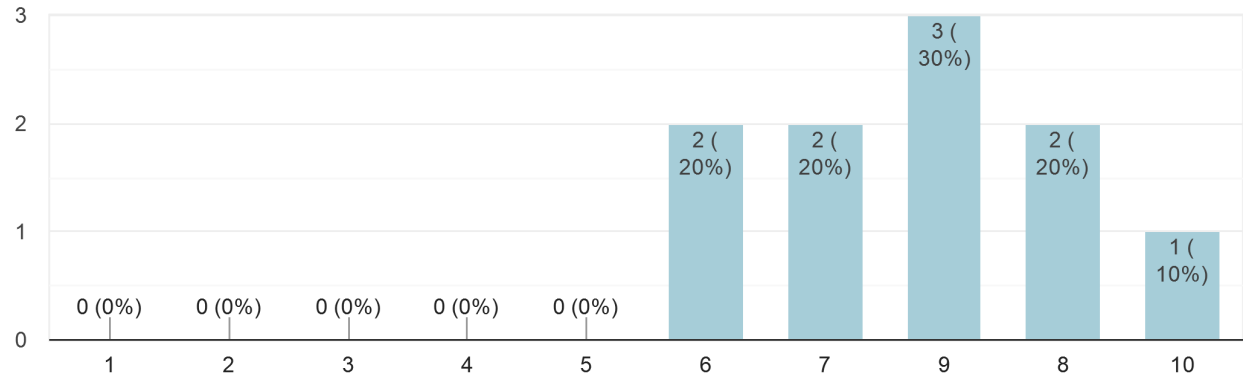
What it examines:

SATISFACTION | TAKE-AWAYS | VISION ON LC | LEARNING EXPECTATIONS | FOLLOW-UP | NEXT TLJ POTENTIAL | STAKEHOLDERS EXPERIENCE | GPs POTENTIAL | RELEVANCE TLJ SESSIONS | FEEDBACK & IMPROVEMENT

Our level of satisfaction

How satisfied were you with the TLJ?

10 responses



What did we learn? What were your key take-aways from this event?

Better understanding of LCA theory

Concept and tools of LCA

LC approach must be considered since the beginning of a strategy designing

Importance of "cradle to cradle" thinking and integrated sustainability approach in regions

Other experiences

LCA opportunities from different regions to improve/adapt

Lithuanian practices (in particular transferibility of the deposit-system)

How do we think about life cycle methods now?

"THERE ARE **DIFFERENT METHODS** FOR LCA AND SOME OF THEM ARE QUITE AFFORDABLE FOR COMPANIES"

"THEY ARE VERY **COMPLICATED AND CHALLENGING** ISSUES"

"WE ARE IMMERSE IN **A LEARNING PROCESS ABOUT LCA** NOT ONLY AS A TOOL BUT AS A **HOLISTIC APPROACH**, AND WE NEED TO WORK MORE IN THE DIRECTION TO BE ABLE TO DEFINE THE ACTION PLANS, BUT BASED ON THE GP IDENTIFIED AMONG THE PARTNERSHIP"

"METHODS ARE **CLEARER** NOW"

"TLJ HAS STRENGTHENED OUR BELIEF THAT WE ARE GOING IN THE **RIGHT DIRECTION**"

"WE ARE MORE AND MORE INTERESTED IN **GOING DEEPER IN LC** TO PREPAIR OUR ACTION PLAN"

"**WE WOULD LIKE TO BE MORE CONFIDENT** WITH LC METHODS"

"LC IS A CORRECT EVALUATION OF **REAL SUSTAINABILITY**"

"LIFE CYCLE METHODS ALLOW DECISION MAKERS TO TACKLE DIFFERENT ANGLES WITH A **MEDIUM-LONG TERM VISION**"

What else would we like to learn about LC?

- How to translate the assessment results into policy implementation;
- More examples of LC in practice and Good Practices;
- Theoretical and practical in-dept immersion in each thematic pillar. Relation between the region in charge of the TLJ and this pillar;
- Learn more about how to concretely and cost-efficiently transfer and apply LC in regional policies.

Partners' TLJ follow-up: what are we doing?

- Spreading information and communicate about our project;
- Keeping in mind the GP presented and shared on how they could be applied in the Region;
- Going through again some materials to use for stakeholder events;
- Preparatory work for RAB;
- Analysing the possibility of launching the deposit waste system in our legal conditions;
- Promoting the idea of linking the regional operational program with LCA, including LC criteria into it;
- Choosing proper best practices for other partners;
- Organising a specific session to exercise in applying LC in different country contest.

What's next? What do we expect to see? Which are the key issues and features to look out for?

Understand the **host region's policy framework** as a starting point

Regions to be familiar with the experiences in LCA & resource-efficiency in their territories

GPs exchange related to the TLJ thematic pillar

Increasing of partners' knowledge with more **practical examples** and **real cases**

Small step back. Develop of **necessary know-how**

Learn more on **Windfarm & Food menu**

Know **stakeholders' point of view**

Sharing & debating the possible **action plan** based on the adoption of existing GP

Provide more **theoretical guidelines to fill-in the P2P**

Deeper **link between study visits and LCA** (+ info provided before)

Learn more on **LC in public processes** (methods in action)

Study visit on a **good practice led by the regional authority**

What do we think about the involvement of the stakeholders? What would we suggest to do to improve their (and our) experience?

Although stakeholder involvement is not always an easy process, it **improves the quality of decisions, enhances support** for those decisions, and makes the **policy-making process more democratic** (give local communities, companies and authorities the power to influence decisions).

Local politicians must adequately represent stakeholder interests.

Results show a concordant and unanimous thinking that stakeholders play a fundamental role in our journey. To give them the right importance, their presence and their contribution should be valued by a greater stakeholders' involvement.

WHY STAKEHOLDERS ARE IMPORTANT:

- ✓ IMPROVE THE **QUALITY OF DECISION MAKING**
- ✓ THEY CONTRIBUTE WITH THEIR **KNOWLEDGE, EXPERIENCES** AND **OPINIONS**
- ✓ THEY ARE COMPLEMENTARY TO THE PARTNERSHIP
- ✓ THEY HAVE AN **ESSENTIAL ROLE** IN THE PROJECT BECAUSE THEY CAN IMPLEMENT LC PRACTICES

HOW TO GIVE THEM IMPORTANCE:

- ✓ THINK ABOUT HOW TO **ATTRACT THEM TO THE PROJECT** AND CREATE GOOD SYNIERGIES EACH OTHER. KEEP IMPROVING THE **STRATEGY TO SELECT THEM** (ACCORDING TO THEIR LEVEL OF "STAKE", POWER, AND INFLUENCE).
- ✓ **STAKEHOLDESR' LISTENING**: CONSULT THEM BEFORE ABOUT THEIR EXPECTATIONS. HOW THEY WANT THE PROJECT TO BE USEFUL FOR THEM.
- ✓ STAKEHOLDERS NEED TO **KNOW** BEFORE THE TLJ **WHAT IS EXPECTED WITH THEIR COLLABORATION** AND THE **CONTENT OF THE STUDY VISITS**
- ✓ THEY COULD **SHARE THEIR EXPERIENCE** MORE. GIVE THEM THE TIME TO **PRESENT THEMSELVES**
- ✓ INCREASE THE NUMBER OF STAKEHOLDERS INVTITED TO THE NEXT TLJS **FROM OTHER REGIONS**
- ✓ ASK THEM **INCONVIENTES AND PROBLEMATICS**
- ✓ INVOLVE THEM IN **BILATERAL CONTACTS**
- ✓ MORE **ACTIVITIES DEDICATED TO THEM**, TO ENRICH THEIR EXPERIENCE
- ✓ **MAKE THEM ACTIVE AROUND SPECIFIC OBJECTIVES** (INVOLVE THEM IN THE PROCESS ACTING AS GOOD PRACTICES)

Is there any GP/s that can be transferred in our regions? Which one/s?

"DEPOSIT SYSTEM FOR BEVERAGE PACKAGING"

"THE USE OF PRODUCTS PROXIMITY IN SCHOOLS' CANTEENS"

"LOCAL/REGIONAL DATABASES RELEVANT TO LC ACTIVITIES"

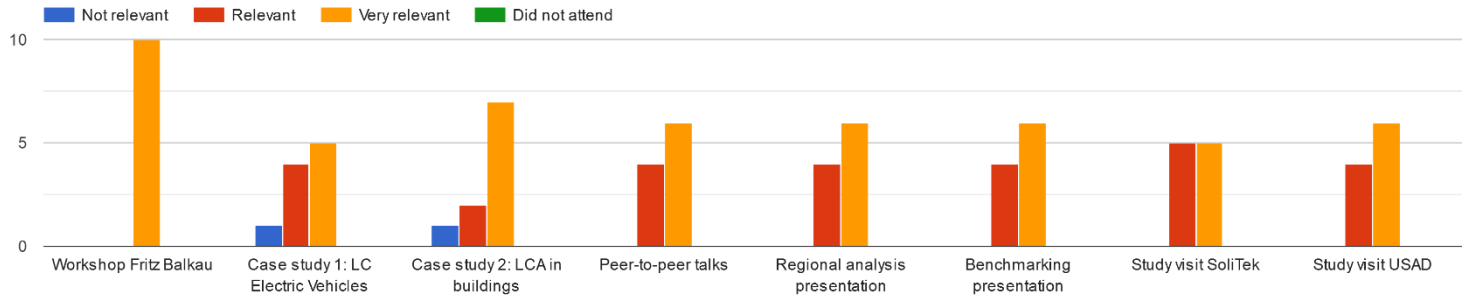
"PUBLIC PROCUREMENT AND WASTE MANAGEMENT PRACTICES"

"PROBABLY MANY, HARD TO SEE IN PRACTICE"

"REGIONAL WASTE PLAN"

"NO CLEAR IDEA"

Which sessions did we find most relevant?



The most relevant session results to be "From theory to practice", the workshop presented by Fritz. 7 respondents out of 7 underlined the relevance of this contribution. The reason leaning behind this is probably to link to the importance for partners to get the wide LC concept clearer. Seen that this was the first TLJ, this workshop played an important role in providing theoretical basis and concrete tools to start mastering the concepts of LC. The two case studies seemed to be considered less relevant.

The other sessions were in general considered more or less relevant, especially the regional analysis and the study visits.

What would you improve?	Partners' participation;
	Moment of exchange of the consortium;
	P2P talks;
	P2P form (difficult to fill-in);
	More theoretical knowledge;
	Policy framework to promote better action plan design;
	Be able to know all GPs presented in the different groups and regions;
	More balanced structure of the days (too long the first day, too short the second one);
	Know more about the regional policy framework and LC;
	More time to refresh before dinner;
	More "group work": More interactivity, less frontal approach, direct involvement of everybody to effectively exchange ideas.

Any overall feedback for the event (logistics, overall agenda, sessions)?

"VERY WELL ORGANIZED, I REALLY ENJOYED THE TLJ IN LITHUANIA AND THE PARTNERS INVOLVEMENT WAS GREAT. THANK YOU TO JOLANTA AND TEAM FOR THE GOOD HOST!"

STAKEHOLDER'S FEEDBACK FROM ACCIONA:

" I THINK THIS PROJECT SHOULD BE **AMBITIOUS**, ESPECIALLY IN TERMS OF **CLIMATE CHANGE**. FOR THIS, THE LIFE CYCLE ANALYSIS TOOL IS A VERY POWERFUL TOOL. FOR EXAMPLE, IN SPAIN AN AMBITIOUS LAW THAT SEEKS CARBON NEUTRALITY BY 2050 IS BEING DEBATED. **IF WE WANT TO BE CARBON NEUTRAL FROM HERE TO 30 YEARS, THE INFRASTRUCTURES AND DECISIONS WE TAKE NOW MUST BE BASED ON THE LIFE CYCLE APPROACH**.
THE BEST TAKE AWAY IS TO BE WITNESS OF THE COLLABORATION FOR CLIMATE BETWEEN REGIONS WITH DIFFERENT CULTURES, I APPRECIATED THE ENVIRONMENTAL COMMITMENT OF THE PARTICIPANTS "

TLJ BEST MOMENTS: what will you remember?

Define the TLJ in one word!

CONCLUSION

This first TLJ was a successful starting point to lay the foundations of a fruitful exchange of experience from which all partners can benefit and which will lead, at the end of the first phase, to the elaboration of 7 Action Plans. A first newsletter issue has also been published summarizing the project's achievements so far.

In the coming months partners will complete their regional analysis and organize events on their territories.

The next TLJ will be hosted by the Government of Navarra in May 2020. The TLJ#2 will focus on the second pillar of LCA4Regions: **LCA for resource-efficiency**.