

The eLCAr logo is centered over a background image of a winding asphalt road that stretches into the distance under a blue sky with light clouds. The road is flanked by green grass. The logo itself consists of the text 'eLCAr' in a dark blue font, with the 'C' being a green circular arrow containing a small blue car icon.

# e-mobility Life Cycle Assessment recommendations

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# Agenda

## Overview

The Project

The Consortium

The Approach

Outlook

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# The Project

## Background

### ■ Key issue

- LCA guidelines lack often comparability or are too detailed for a practical application
- Specifics of electric vehicles are often not sufficiently addressed

### ■ Existing ISO Guidelines

- Rough framework
- Lacks detail → Open questions
- Low practical applicability

### ■ ILCD

- Very long (several hundred pages)
- Fails to address specific problems of e-mobility
- Low practical applicability

# The Project

## Objectives

- Creating LCA guidelines specifically for e-mobility sector
  - ➔ Tailored to the specifics of e-mobility
  - ➔ Easy to work with (for end user application)
  - ➔ Application examples
  
- Creating materials to train people in the application of the guidelines
  - ➔ Guideline handbook
  - ➔ Self learning materials



## The Project

### Fact sheet

- **Name:** E-Mobility Life Cycle Assessment Recommendations
- **Acronym:** eLCAr
- **Framework:** FP7 Cooperation – Supporting Action
- **Start:** 01.02.2012
- **Duration:** 12 months (until 31.01.2013)
- **Focus:** *Creating LCA guidelines for e-mobility based on the ILCD which ensure comparability while maintaining a reasonable level of detail to allow for a practical application*

# Agenda

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## The Consortium

### Roles in the project



#### Responsible for

- Project coordination
- Work package 1 lead
  - ➔ Background Analysis
- Work package 3 lead
  - ➔ Guideline Validation
  - ➔ Impact Assessment



#### Responsible for

- WP 4 lead
  - ➔ Communication platform
  - ➔ E-learning platform
  - ➔ Training scripts
  - ➔ Dissemination



## The Consortium

### Roles in the project



#### Responsible for

- Work package 2 lead
  - ➔ Guidelines
- Overall guideline development, i.p.
  - ➔ Production phase
  - ➔ Use phase



#### Responsible for

- Work package 2
  - ➔ Guidelines
- Overall guideline development, i.p.
  - ➔ End of life phase

# Agenda

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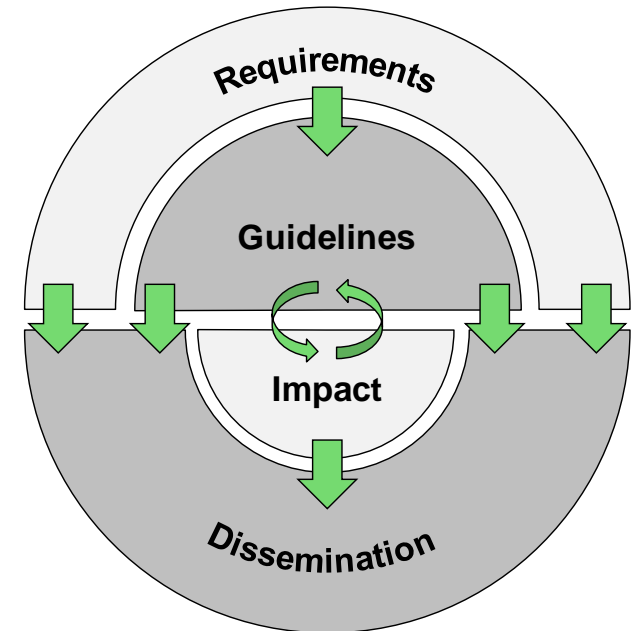
# The project structure

- For main work packages

- ➔ WP1 – Background Analysis
- ➔ WP2 – Guidelines
- ➔ WP3 – Validation and Impact Assessment
- ➔ WP4 – Dissemination

- For the guidelines

- ➔ “Production” phase
- ➔ “Use” phase
- ➔ “End of life” phase



# The Approach

## Work package 1

- Analyses of existing guidelines, in particular the ILCD Handbook
- Review of accomplished LCAs, used guidelines and the requirements of various stakeholders
  - ➔ What have been the weaknesses?
  - ➔ What have been major obstacles?
- Definition of evaluation criteria to estimate the effect on LCAs concerning electric vehicles of the new guidelines
- Identified obstacles (extract):
  - ➔ Data availability
  - ➔ Goal and scope definition
  - ➔ Modeling of the use phase (e.g. consumption measurement, used energy)
  - ➔ Multifunctionality

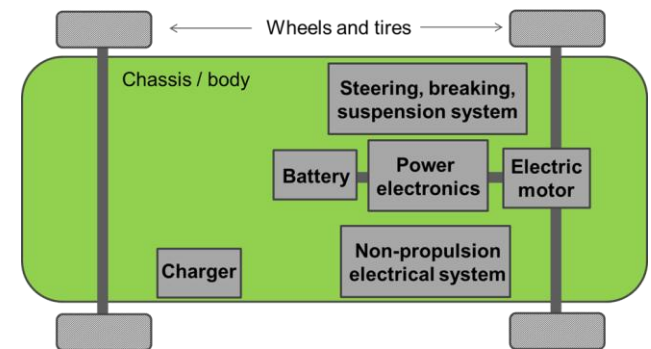
# WP 1

# The Approach

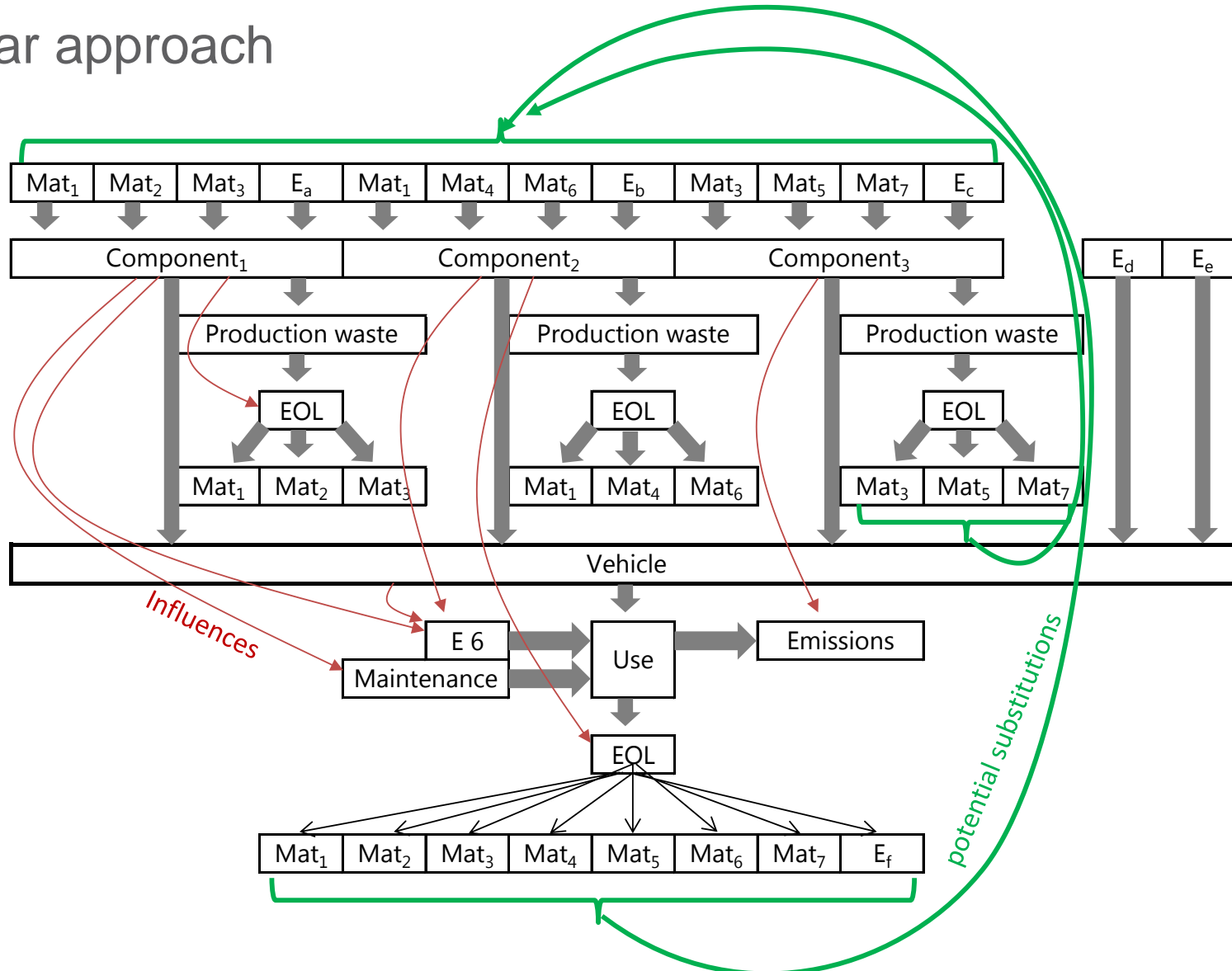
## Work package 2

- Definition of LCA guidelines concerning overarching aspects of electric vehicles
  - ➔ Modular approach
  - ➔ Common parameter platform
  
- Definition of LCA guidelines for different phases in the life of an electric vehicle
  - ➔ “Production” phase
  - ➔ “Use” phase
  - ➔ “End of life” phase

# WP 2



# Modular approach



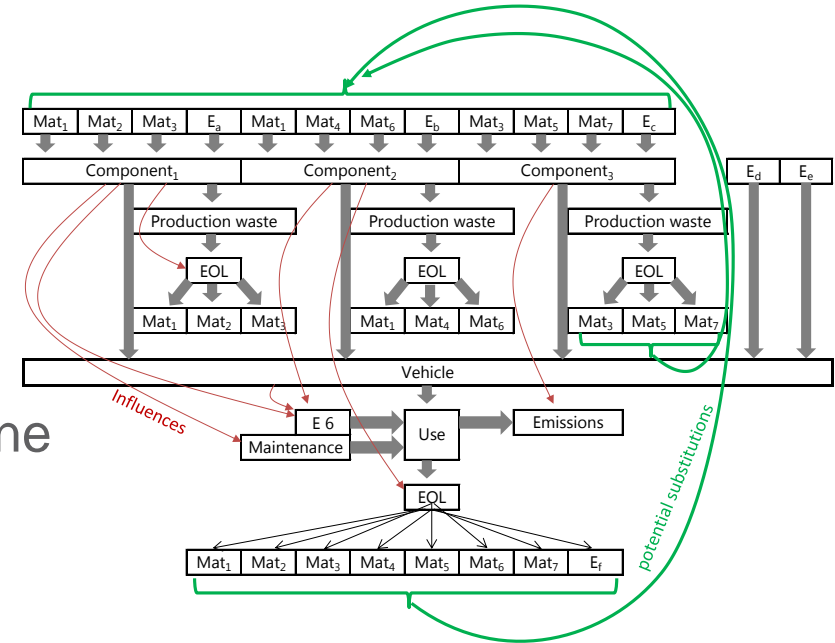
# Modular approach

## Modularity of the specific eLCAr guidelines

- Different components usually have various properties affecting their use in a vehicle
- Environmental comparison of components of the same type of a vehicle can only be done on the level of the use of a vehicle

### ➤ ELCAR modular approach

- a consistent **set of rules** for
  - establishing unit process LCI data of material and component production
  - the use and EOL phase
- Many aspects of Goal and Scope definition (e.g. allocation rules, cut-off criteria, ...) set for an LCA of driving electric vehicles also apply to the LCI of all the component and material productions involved.



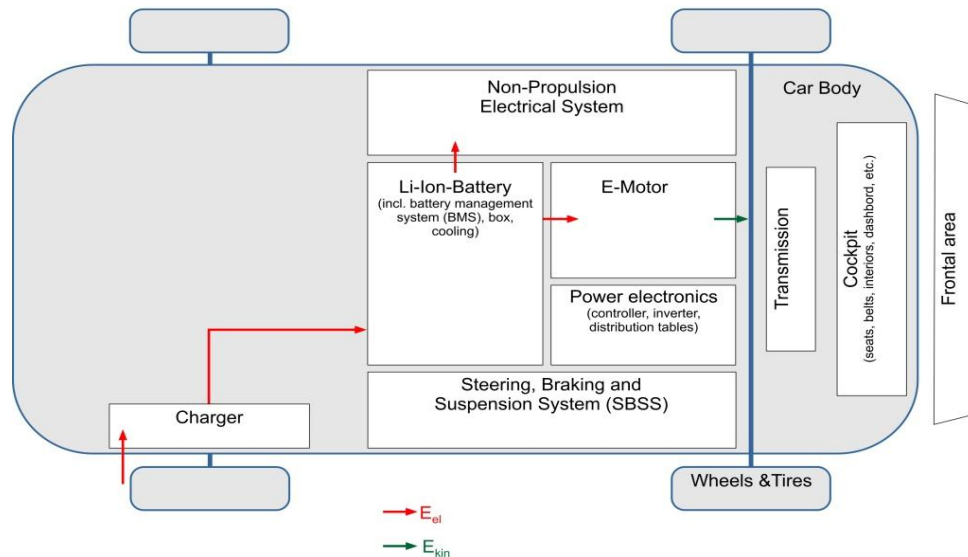
# Modular approach

## Definition of electric vehicle types

- Two different EV types are defined for the specific guidelines
  - Provision of specific data set according the modularity approach
  - Development of a common parameter platform for both EV types

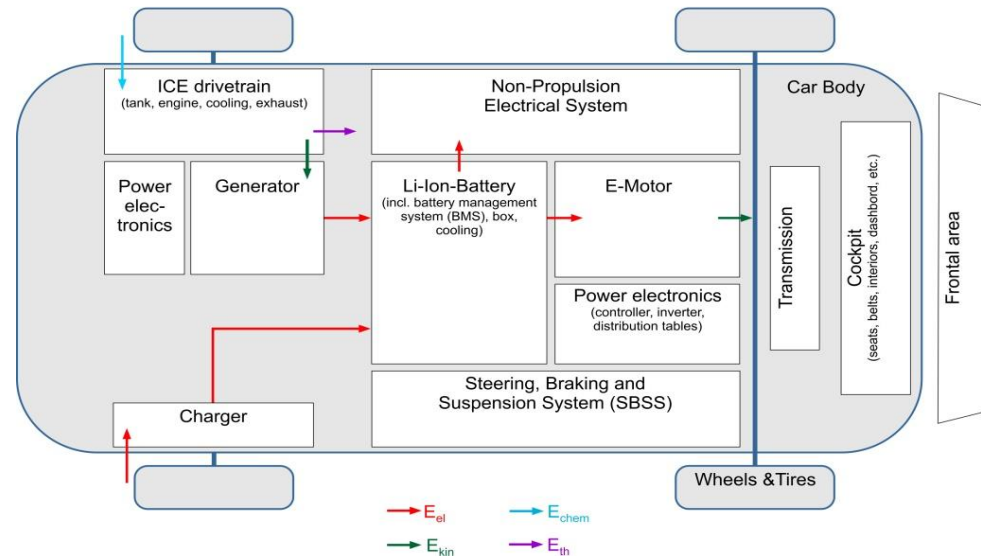
### BEV

BEV - Battery Electric Vehicle



### PHEV (REx)

PHEV- Plug-in Hybrid Electric Vehicle  
(Serial Hybrid with Range Extender)





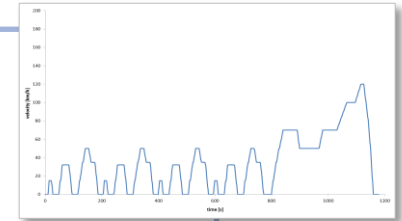
## Development of a common parameter platform (CPP)

- The function of the CPP is to give practitioners **generic values** on key issues for vehicles (e.g. weight, range, ...) and their components (e.g. efficiency, weight, ...) and technologies to be used as standard assumptions in order to enhance the **comparability** of LCA studies on electric vehicles.
- The values are intended as average reference values for building a vehicle modularly.
- Near future scope (2012-2017). They will have to be adapted from time to time in the future.
- Values for different vehicle classes (e.g. micro car, compact car,...) and types (e.g. lightweight vehicles).
- Interdependencies between the vehicle components

# The use phase

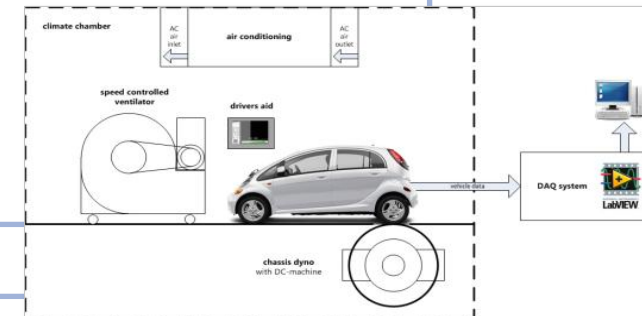
## Open aspects

- Realistic assessment of the utilisation phase of EVs
- Determination of the consumed energy by the vehicle



## Approach

- Main variables with a high impact on the consumption (e.g. driving cycles , use of auxiliaries etc.)
- Determination of the consumption integrating two ways:
  - Measurement on a real vehicle
  - Theoretic calculation



## Guideline

- Simple consumption calculation model for LCA practitioners
- Set of parameter scenarios to define real world scenarios

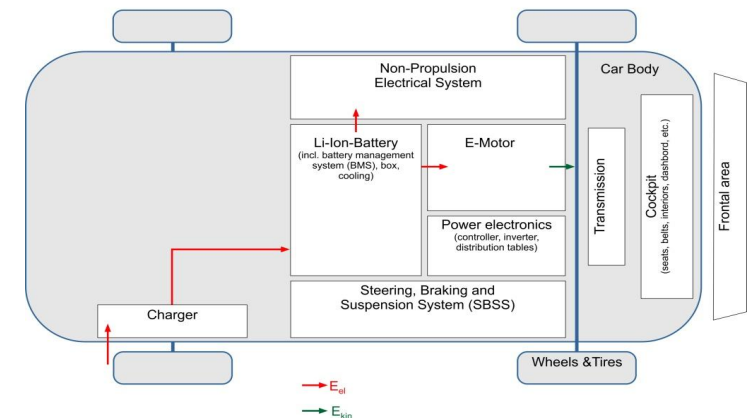
# The Approach

## Work package 3

- Creation of exemplary use cases
  - ➔ Practical examples being representative for a wide range of private and public sector analyses
  - ➔ Can be extracts of existing LCA
  - ➔ Used for test application
  
- Evaluation of guidelines impacts
  - ➔ Assessment of guidelines
  - ➔ Comparison of results with and without guidelines

# WP 3

BEV - Battery Electric Vehicle

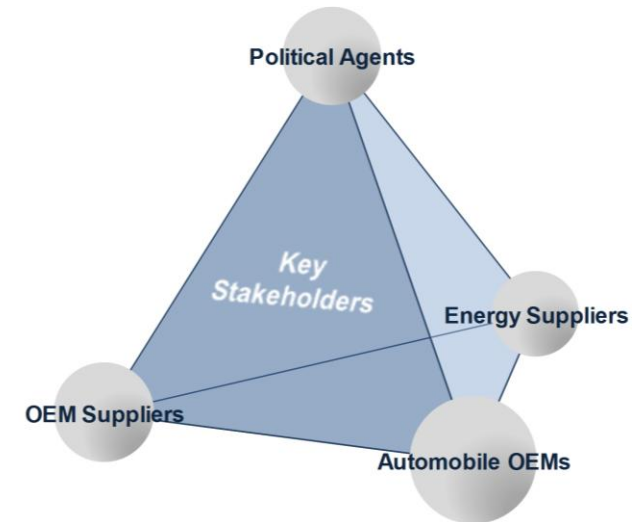


# The Approach

## Work package 4

- Facilitation of stakeholder communication
  - ➔ Project website
  - ➔ Discussion Forum
  - ➔ Newsletter & regular updates
  
- Development of user friendly training materials
  - ➔ eLCAr Guideline handbook
  - ➔ Self learning training scripts
  - ➔ E-learning platform
  - ➔ Presentation during the 3<sup>rd</sup> stakeholder meeting 09.12.2012 in Wolfsburg (Germany)
  
- Dissemination of the project outcomes

# WP 4



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# Outlook

## Participation and upcoming events

- Get in touch with the project via the eLCAr website with regular drafts, updates and the possibility to provide feedback

→ [www.elcar-project.eu](http://www.elcar-project.eu)

- Upcoming 2<sup>nd</sup> stakeholder workshop

→ 9<sup>th</sup> of October 2012

→ Aachen Germany

→ Registration available on the project website



A large version of the eLCAr logo is centered over a background image of a winding asphalt road that stretches into the distance under a blue sky with scattered white clouds. The road is flanked by green grass. The logo itself is semi-transparent, allowing the background to be seen through it.

## Contact

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