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# **Usability of LCA for Corporate Environmental Assessment and Reporting - Experiences from the Automotive Sector**

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## Contents

1. Where we come from - LCA for product development
  - Motivation
  - Organisation
  - Implementation
  - Interim conclusion
  
2. Where we are – Implementing LCA to corporate environmental assessment and reporting
  - Boundary conditions
  - Approach
  - Results
  - Final conclusion



## Motivation: Become the Global Economic and Environmental Leader Among Automobile Manufacturers



Dr. Martin Winterkorn,  
Chairman of the Board of  
Management of Volkswagen AG

### Group Strategy 2018

- Fundamental ecological restructuring of the Volkswagen Group.
- New ecological standards for vehicles, powertrains and lightweight construction.

### More efficiency – Less emissions

- Reduce the CO<sub>2</sub> output of the European new car fleet to < 120 g CO<sub>2</sub>/km by 2015 and to 95 g CO<sub>2</sub>/km by 2020.
- Aim for a 40 % reduction in greenhouse gas emissions associated with production-related energy supplies by 2020.



Environmental improvements over the full life cycle of our products.

# Life Cycle Thinking is Firmly Anchored as a Core Principle for Product Development

## Volkswagen Group



In future, we will develop each model in such a way that, in its entirety, it presents better environmental properties than its predecessor.

As we do so, we will make sure that improvements are attained over the entire product life cycle.

## Volkswagen Brand



## Life Cycle Assessment of Vehicles – Complex but Manageable



The process of conducting a LCA for vehicles is intensive in time and costs.



# Certified LCAs as a Basis for External Communication on the Product Level

## Method

- Presentation of the environmental performance of a vehicle compared to its predecessor model, taking the full life cycle into account.
- Certification of LCA according to ISO 14040/44.

## Channels of communication

- Printed version
- Internet

[www.environmental-commendation.com](http://www.environmental-commendation.com)



## Interim Conclusion

During the last two decades we invested a lot of money and capacities in order to implement the LCA approach to our product development process, e.g.

- Methodology development
- Research activities
- Implementation of tools

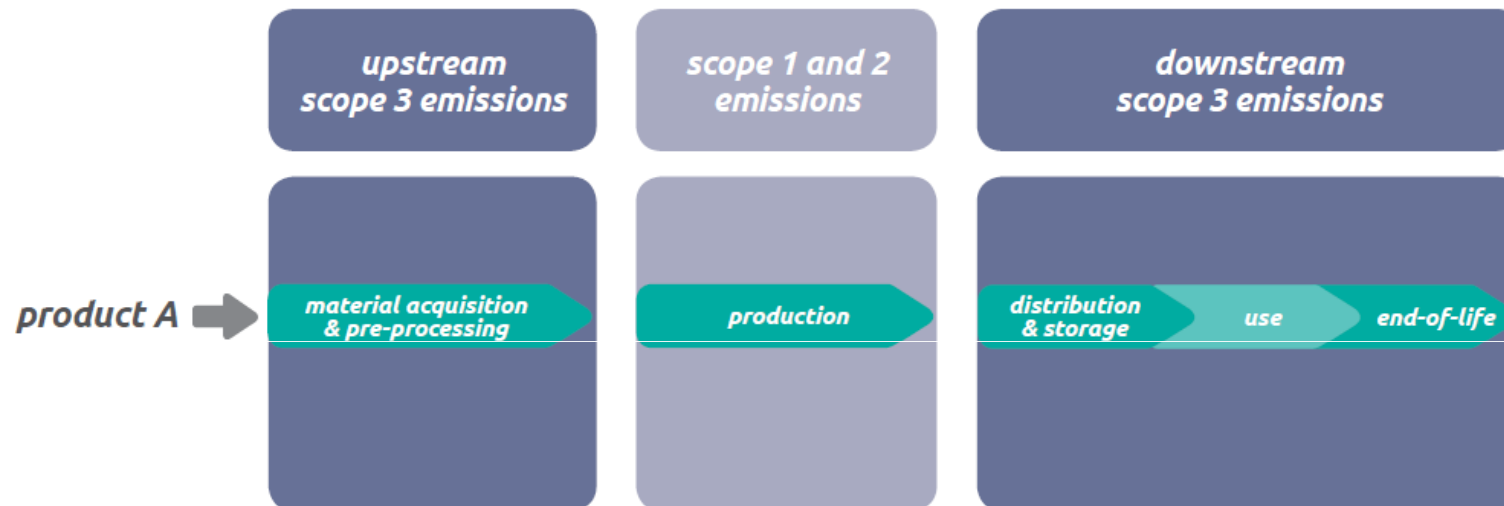
Today LCA is

- an integral part of the company environmental policy.
- applicable to our products – regardless of the degree of complexity.
- used for the decision-making process, e.g. by supporting technology comparison.
- accompanied by a consistent communication strategy.
- still requires reasonable resources.





# Implementing LCA to Corporate Environmental Reporting



- scope 1 and 2 emissions required by the Corporate Standard*
- scope 3 emissions required by the Scope 3 Standard*
- product life cycle emissions required by the Product Standard*

Source:  
Greenhouse Gas Protocol - Corporate Value Chain (Scope 3) Accounting and Reporting Standard



Has LCA the capability to cover all emissions of an organisation like the Volkswagen Group?





## Volkswagen Group - Organisational Boundaries for Environmental Assessment and Reporting

Twelve brands from seven European countries offering a broad range of different products



- Automobiles
- Motorcycles
- Light duty vehicles
- Heavy duty trucks
- Buses
- Large-bore diesel engines
- Turbochargers
- Steam & gas turbines
- Compressors
- Chemical reactors
- Wind turbines

## Volkswagen Group – Relevant Figures for Environmental Assessment and Reporting

Models (Cars)



approx. 280

Production



Ø 37,700 vehicles  
per workingday

Production plants



105 worldwide\*

Suppliers



> 22.000\*\*

\*) as of October 2013  
\*\*) as in 2012.



How to collect the right data for such complex organisational structures in an efficient manner?

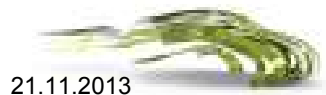


## Volkswagen's Approach for Corporate Environmental Assessment

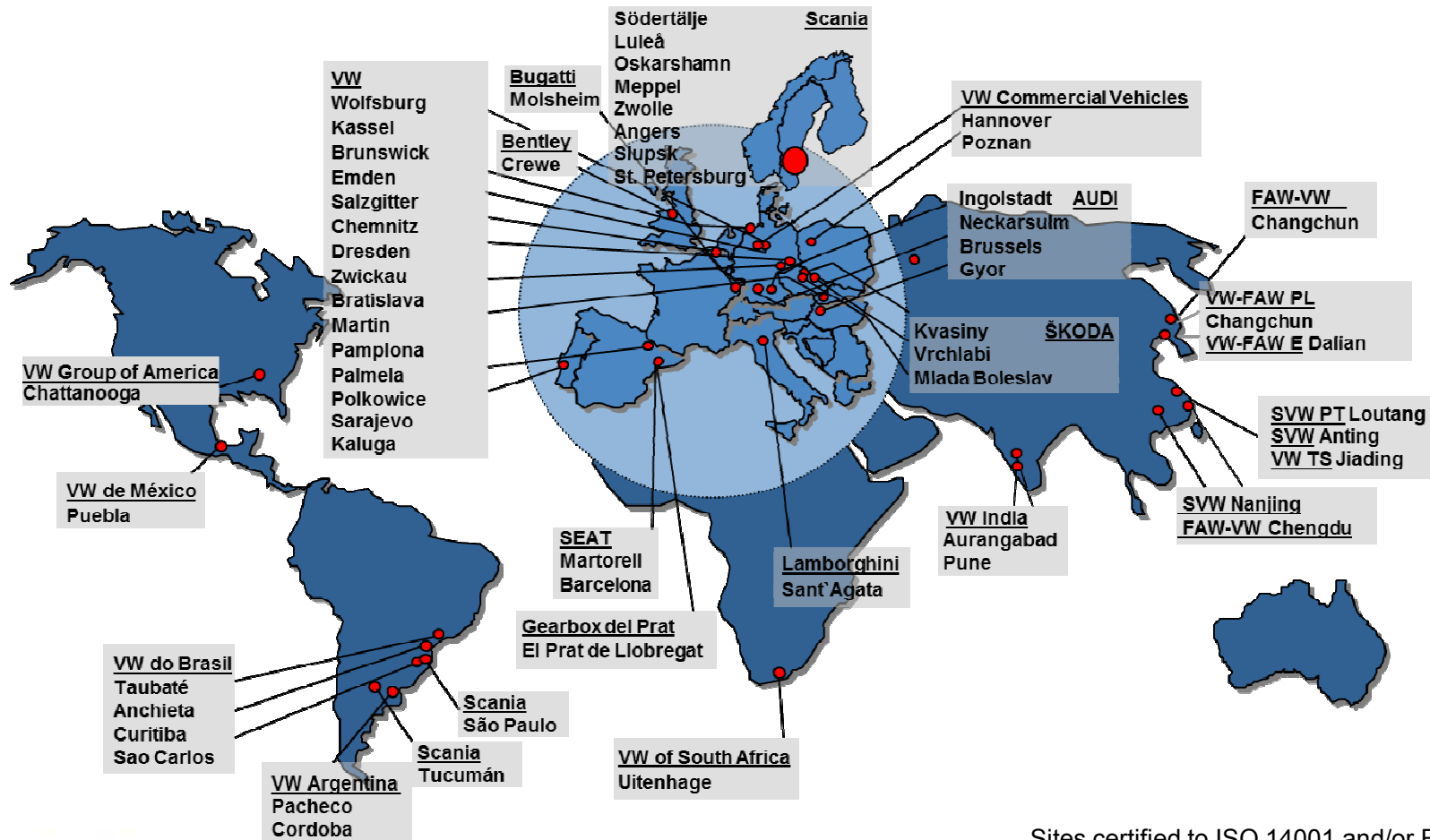
1. Use of data from **existing environmental management systems** for Scope 1 & 2.
2. Use of **existing LCAs** to cover Scope 3 categories that are of high relevance for an OEM in the automotive sector.

Category Nr.	Category Name
1	Purchased Goods & Services
3	Fuel- and Energy- Related Activities Not Included in Scope 1 or 2
4	Transportation & Distribution (Upstream)
5	Waste Generated in Operations
9	Transportation & Distribution (Downstream)
11	Use of Sold Products
12	End-of-Life Treatment of Sold Products

3. Quantification of remaining Scope 3 categories from **other data sources**.

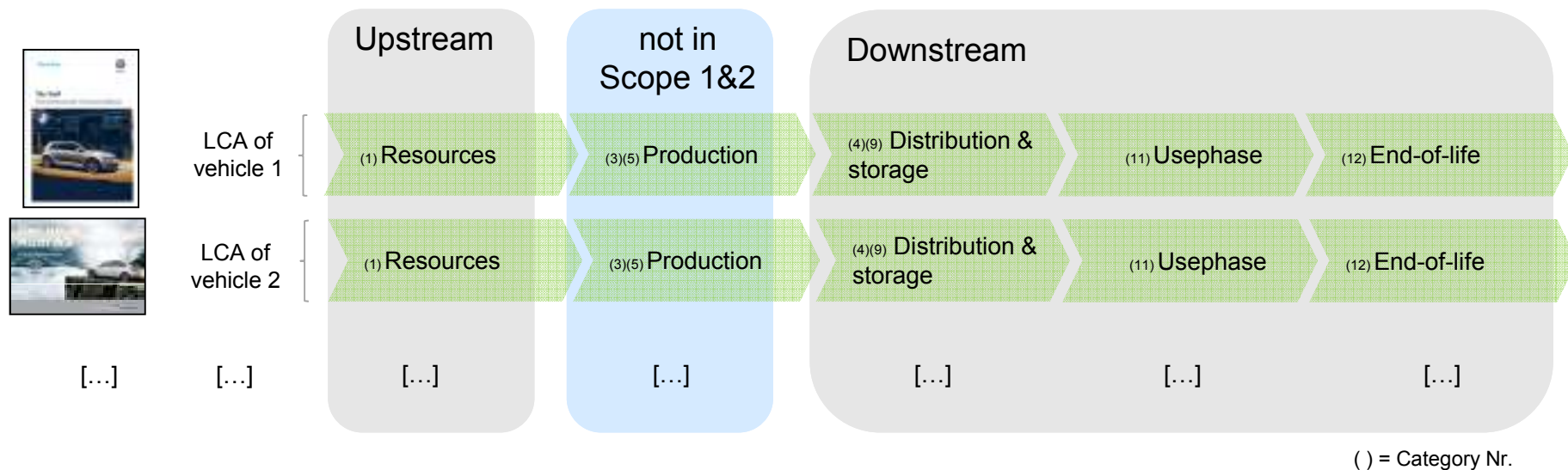


# Scope 1 & 2 Emissions are Reliably Collected by Existing Environmental Management Systems



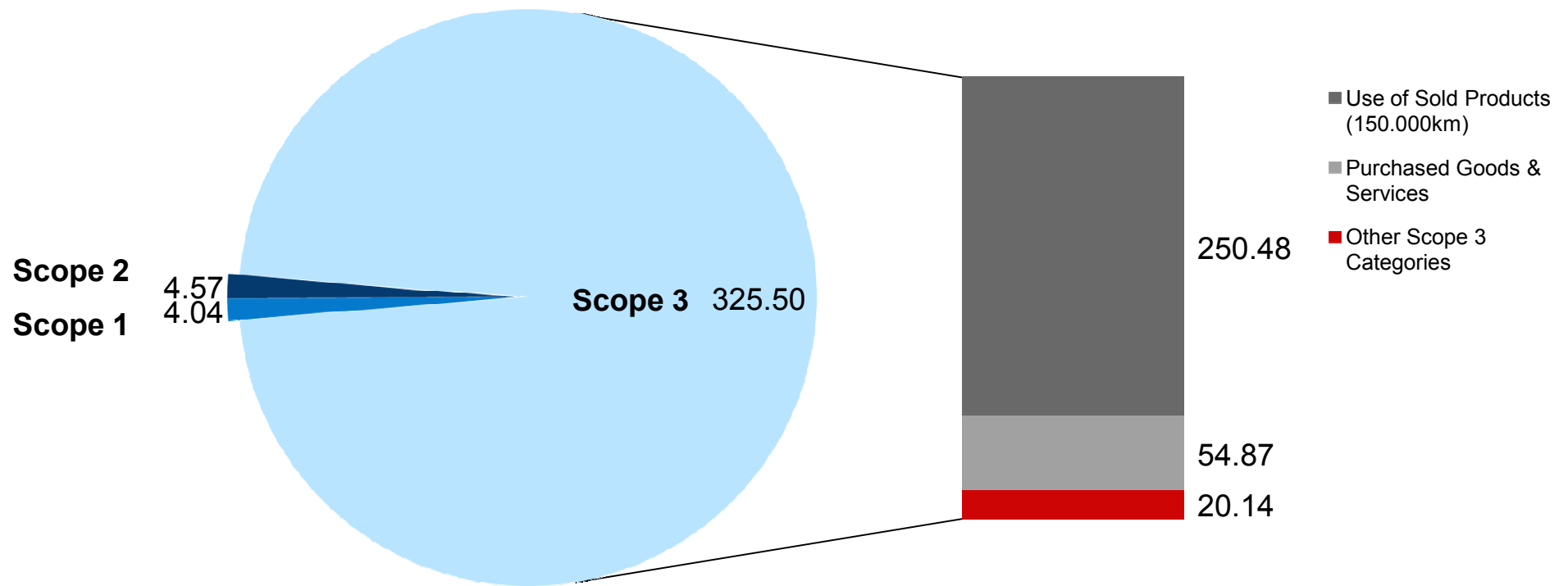
Sites certified to ISO 14001 and/or EMAS

## Existing LCAs are Used to Cover Relevant Scope 3 Categories



- Vehicles for which no specific LCA has been conducted yet, are derived from existing LCA figures from comparable models in the same segment.
- Sales-weighted LCA figures are added up in order to end up with an estimate of the group's inventory.

## Results CDP 2013 Volkswagen Group (CO<sub>2</sub> in million t)



97% of the groups total CO<sub>2</sub> emissions are located in Scope 3.



## Results CDP 2013 Volkswagen Group (Detail Scope 3)

Nr.	Kategorie	t CO <sub>2</sub>	%
1	<b>Purchased Goods &amp; Services</b>	<b>54.871.485</b>	<b>16,9</b>
2	Capital Goods	8.866.872	2,7
3	<b>Fuel and Energy- Related Activities</b>	<b>1.234.636</b>	<b>0,4</b>
4	<b>Transportation &amp; Distribution (Upstream)</b>	<b>3.341.432</b>	<b>1,0</b>
5	<b>Waste Generated in Operations</b>	<b>1.783.630</b>	<b>0,5</b>
6	Business Travel	593.744	0,2
7	Employee Commuting	846.358	0,3
8	Leased Assets (Upstream)	not reported	0,0
9	<b>Transportation &amp; Distribution (Downstream)</b>	<b>not reported</b>	<b>0,0</b>
10	Processing of Sold Products	5.223	0,002
11	<b>Use of Sold Products (150.000km)</b>	<b>250.481.613</b>	<b>77,0</b>
12	<b>End-of-Life Treatment of Sold Products</b>	<b>1.355.869</b>	<b>0,4</b>
13	Leased Assets (Downstream)	565.000	0,2
14	Franchises	1.550.000	0,5
15	Investments	not reported	0,0
	<b>Sum of reported Scope 3 emissions</b>	<b>325.495.862</b>	<b>100,0</b>



96% of the groups total CO<sub>2</sub> emissions can be quantified based on figures from existing LCAs.



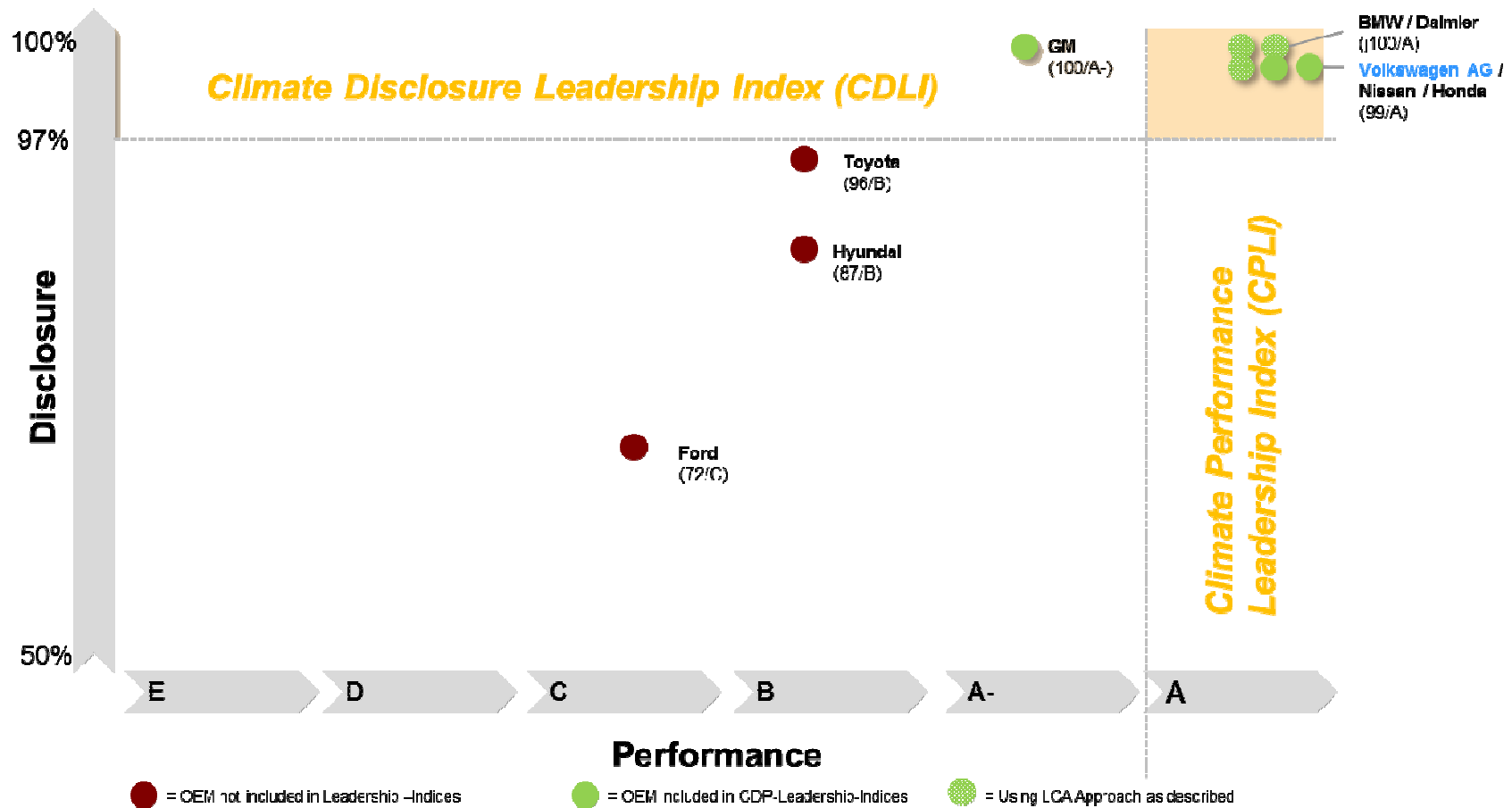


# Approved Conformity to the Greenhouse Gas Protocol



Certified LCAs must be transferable one to one to other initiatives and standards for environmental assessment and reporting.

# A Successful Approach – Volkswagen Included in the CDP 2013 Leadership Index



## Final Conclusion

- LCA is still the right tool to analyse and assess the environmental impacts of products and technologies.
- LCA is capable of quantifying not all, but most of the relevant environmental drivers, even on a corporate level.
- Environmental assessment and reporting of organisations should be based on the combination of different specific tools.
- Existing LCAs validated and certified in accordance with ISO 14040 must be compatible to other frameworks (e.g. CDP, OEF, ISO 14072) without additional use of financial and personnel resources.



## Closing Remark

### „Don`t stretch LCA too far“

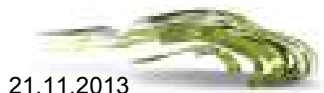
→ rather combined use of focused LCA and other focused tools,  
than the development of a supertool

Prof. Helias A. Udo de Haes

Congress „Life in Tomorrow`s World – Life Cycle Engineering and Industrial Ecology“

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