

4. ASPECTS FOR THE DEVELOPMENT OF AN EVALUATION CONCEPT (HOLISTIC APPROACH)

4.1. CRITERIA

To evaluate the different regulations, concepts and tools the following criteria are used:

- Air emissions: CO₂, regulated pollutants;
- Other emissions: water (yes/no);
- Other emissions: land (yes/no);
- Use of:
 - o materials/resources (recycled, renewable, non-renewable);
 - o water;
 - o land;
- Recyclability;
- Toxics (health effects);
 - o Noise;
 - o EMC;
 - o Effects on biodiversity.
- Data:
 - o Availability and quality of data;
 - o Data is available to whom? Can data be ensured reliable of good quality at world/regional level?
 - o Frequency of data updating;
- System boundaries:
 - o Tailpipe;
 - o Usage of vehicle;
 - o Production (vehicle, spare parts, fuel, other materials);
 - o Recycling;
 - o Holistic (lifecycle & integrated approach);
- Application:
 - o For specific vehicles;
 - o A generic vehicle application;
 - o Vehicle model;
- Effort for application:
 - o Time/cost;
 - o Self declaration, independent 3rd party review;
 - o User expertise;
 - o Communication;
- Comparability (world-wide, approach, credible):
 - o Data;
 - o Results;
 - o Environmental priorities in different world areas:
 - The assessment of the described regulations/standards (section 3.1) and existing concepts (section 3.2.) will be based upon these criteria. Therefore an excel matrix will be prepared (Daimler) and completed by the companies as mentioned in sections 3.1 and 3.2 above

4.2. SWOT ANALYSIS FOR REGULATIONS AND STANDARDS

Based on the definition given in chapter 2.8 and 4.1 regulations and standards are analyzed:

	regulations and standards							other concepts			
	CO2 regulations	regulated pollutants	noise	recyclability ISO 22628	China Green Vehicle	LCA / ISO 14040/44	indoor emissions	EEV - 99/96 EG	WTW	vehicle rankings e.g. VCD, Ökotrend	green manufacturing
Environmental aspects covered: no - partly - yes											
Air emissions: CO2				+	+	+				+	+
Primary Energy demand				+	+	+				+	+
Air emissions: regulated pollutants				+	+	+				+	+
Other emissions: air				+	+	+				+	+
Other emissions: water				+	+	+				+	+
Other emissions: land				+	+	+				+	+
Use of materials/resources				+	+	+				+	+
Use of recycled materials				+	+	+				+	+
Use of renewable materials				+	+	+				+	+
Use of water				+	+	+				+	+
Use of land				+	+	+				+	+
Recyclability/Recoverability				+	+	+				+	+
Toxics (health effects)				+	+	+				+	+
Noise				+	+	+				+	+
EMC				+	+	+				+	+
Effects on biodiversity				+	+	+				+	+
others (environmental management system, ...)				+	+	+				+	+
Data: low/regional - partly - high/worldwide											
Availability of data				+	+	+				+	+
Quality of data				+	+	+				+	+
Frequency of data updating				+	+	+				+	+
System boundaries: no - yes											
Tailpipe				+	+	+				+	+
Usage of vehicle;				+	+	+				+	+
Production (vehicle, spare parts, fuel, .)				+	+	+				+	+
Recycling				+	+	+				+	+
Holistic (beyond the pure product perspective)				+	+	+				+	+
Application: not applied - applied											
For all vehicles				+	+	+				+	+
A generic vehicle application				+	+	+				+	+
Single Specific Vehicles				+	+	+				+	+
Effort for application: very high (--) high (-) neutral (o) low (+) very low (++)											
Time/cost				o	o	o				o	o
Declaration (3rd party - self)				o	o	o				o	o
User expertise for person who performs the analysis				o	o	o				o	o
Communication (understandable message)				o	o	o				o	o
Comparability: regional - crossregional - worldwide											
Procedure				+	+	+				+	+
Data				+	+	+				+	+

Results											
Environ. priorities in different world areas											

* method currently not suitable.

4.3. SWOT ANALYSIS FOR EXISTING EVALUATION CONCEPTS

OICA [34] submitted a paper how to analyse the different approaches concerning the assessment of EFV. The conceptual idea of OICA rests upon the so-called SWOT analysis. The idea of this conception depends on the four issues: **Strength, Weakness, Opportunity and Threat** which should be taken into consideration when various approaches with regard to the assessment of the environmental friendliness of vehicles are analysed.

Different evaluation methods (life-cycle assessment, well-to-wheel analysis, CO₂- regulation reference, environmental rankings, green vehicle certification) were investigated and analysed by means of the SWOT methodology.

Based on the results presented in chapter 4.2 existing evaluation concepts are analyzed:

1) Well to wheel approach:

Strength

In Europe accepted approach

Weakness

No EFV definition in itself / delivers only data that can be used for EFV definitions.

High effort for execution / update.

Environmental discussion is reduced to one single parameter (Energy/GHG).

Well-to-wheel analysis deal with different fuel options instead of EFVs.

Data only available on a regional level and for generic vehicle applications.

Data based on scenarios relevant to Europe in 2010 and beyond.

Opportunity

Other environmental aspects such as emissions can be integrated.

Streamlined Life-cycle Approach (only fuel chain is additionally considered).

Third party certification possible.

Threat

High additional expenditure for the inclusion of other environmental aspects.

2) ECO Ranking by Consumer associations (e.g. Öko-Trend, VCD)

Strength

Easy to establish and third party verification

Top Ten results / Labeling

Methods with more than CO₂ and emission standards

Weakness

Multi Criteria / impact category approach with questionable “scientific” approved weighting.

Criteria with less benefit for environment are included, but no WTW / lifecycle-data.

Opportunity

WTW and other items can be included

Threat

Due to non-sTab. and non-scientific method changing criteria and weightings over time → confuse customer, moving development targets

3) Consequences

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5. ASSESSMENT OF FEASIBILITY TO INTRODUCE AN EVALUATION CONCEPT UNDER THE FRAMEWORK OF WP.29

For discussion following difficulties:

- Regional and temporal dependence on energy mix (i.e. sources of energy may change depending on market and other conditions);
- Regional dependence on environmental priorities;
- No regionally-common testing and measurement methods for vehicle emissions, air quality, etc;

An EFV assessment tool will only provide a result that requires 'interpretation'. It does not decide if a certain vehicle is green or red. Regional environmental need will dictate what is needed and what could be a green or red vehicle.