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Method of Stating Energy Consumption

Status Update

Presented by : China

EVE-14 meeting

April 20, 2015



Outline

- 1.Current state of our research
- 2.Planned work until EVE-15



Working Plan and Timeline

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➤ To carry out the related research on 5.2, it is advisable to take the following steps:

Step1:

Literatures review: Study on the electric vehicle energy consumption evaluation method executed by main countries.

Step2:

Data collection: Build database and conduct comparative analysis on the energy structure for main countries in the world.

Step3:

Method Development: Discusses the necessity and possibility to standardize the energy consumption method.

Task	start date	end date	status	EVE -13		--	EVE -14		EVE -15	--			EVE -16	
				Jan- 15	Feb- 15	Mar- 15	Apr- 15	May- 15	Jun- 15	Jul- 15	Aug- 15	Sep- 15	Oct- 15	Nov- 15
Method of stating energy consumption	Feb-15	Nov-15	Preparation											
1 Literature review	Feb-15	Apr-15												
2 Data collection	Apr-15	Sep-15												
3 Method development	Sep-15	Nov-15												



Scope of Work according to our plan

Ongoing work:

Task 1: Literature Review--Study on the electric vehicle energy consumption evaluation method executed by main countries.

- Existing LCA methods
- Differences in these methods
- GREET Model and application example

Upcoming work:

Task 2: Data collection--Build database and conduct comparative analysis on the energy structure for main countries in the world

- Building Database
- Definitions of data
- Data collection

Task 3: Method Development--Discusses the necessity and possibility to standardize the energy consumption method.

- Method development based on our research
- Report detailing the conclusions



The preliminary literatures review



China Automobile Energy Research Center is a research institute to conduct systematic, in-depth and comprehensive, multidisciplinary research in order to fully understand Chinese automotive energy issues and to put forward sustainable resolutions to these issues.

–Existing LCA methods

1. GREET model: Regulated Emission and Energy consumption of Transportation
2. TLCAM: Tsinghua China automotive energy LCA Model
3. LEM: Life-cycle emission model
4. Other model

–Differences in these methods

on going, unfinished...

–GREET Model and application example

Application in China for <China automotive energy outlook 2012>



Planned work until EVE-15

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DATA collection

- **Data on electricity chains**
 - **A&B:** Life cycle energy consumption and GHG emissions situation for fuel production and distribution stages of power generation
 - MJ/MJ fuel obtained
 - g CO_{2,e} /MJ fuel obtained
 - Electricity generation efficiency (% , by type)
 - **C:**Composition of regional electrical grids (%) (Coal, gas, hydro, nuclear, others)
 - **D:**Electricity transmission loss (%)
- **Data on EV charging and running**
 - **E:**Charge efficiency (%) and Energy consumption for EV running (%)



Planned work until EVE-15

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DATA collection



DATSHEET

Fundamental data needed for database and comparative analysis;

It is appreciated for you to offer us the calculation method of your data.

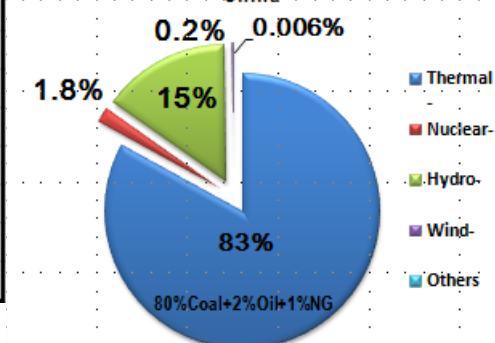
A Data for fossil fuel to power				
A.1 •Life cycle energy consumption and GHG emissions situation for fossil fuel production and distribution stages				
	•Fuel type		•MJ/MJ fuel obtained	•g CO _{2,e} /MJ fuel obtained
	Coal		1.172	104.5
	Oil		1.22	102.9
	Gas		1.196	72.73
A.2 •Electricity generation efficiency				
	•Fuel type		•%	
	Coal		35	
	Oil		40	
	Gas		45	
B Data for non-fossil fuel to power				
B.1 •Life cycle energy consumption and GHG emissions situation for power generation and supplying				
	•technology		•MJ/MJ power supplying	•g CO _{2,e} /MJ power supplying
	Hydro (Big)		0.05	3
	Nuclear		0.05	3
	PV		0.05	3
	Wind		0.05	3
	Others		0.05	3



C Composition of regional electrical grids

*technology	*%
Coal	77
Oil	1
Gas	1
Hydro (Big)	16
Nuclear	2
PV	1
Wind	1
Others	1

Composition of Power Generation in 2010 in China



Sources : Chinese Federation of electric power enterprises 2011

D Electricity transmission loss

*%
6

E Data on EV charging and running

E.1 Charging efficiency

*%
90

E.1 Energy consumption for EV running

*kWh /100 km
16



Planned work until EVE-15

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Thank you for your attention!