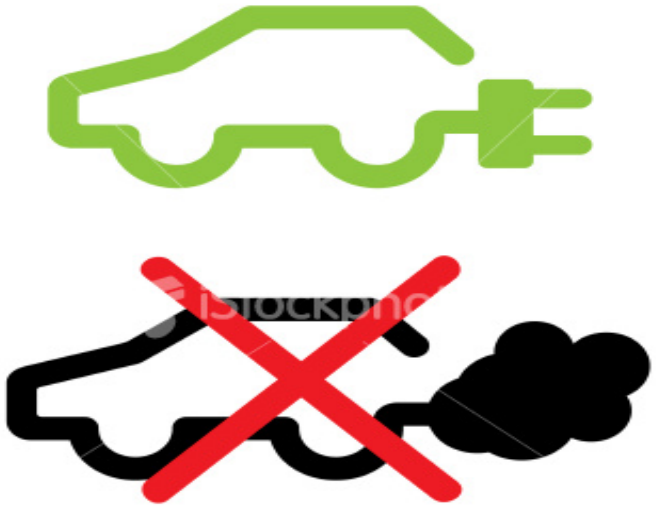
Zero emission, zero noise cars



4E

EnergyEconomicsEnvironmentalE-car

Ljupco Gasteovski

Skopje, Macedonia, 27 June 2013

Background

greedy scramble for profit

- **Destruction of resources**
- **Devastation of the planet**
- **Energy sector as a major pollutant**

become target of

- **Oil is the main driver of crises***

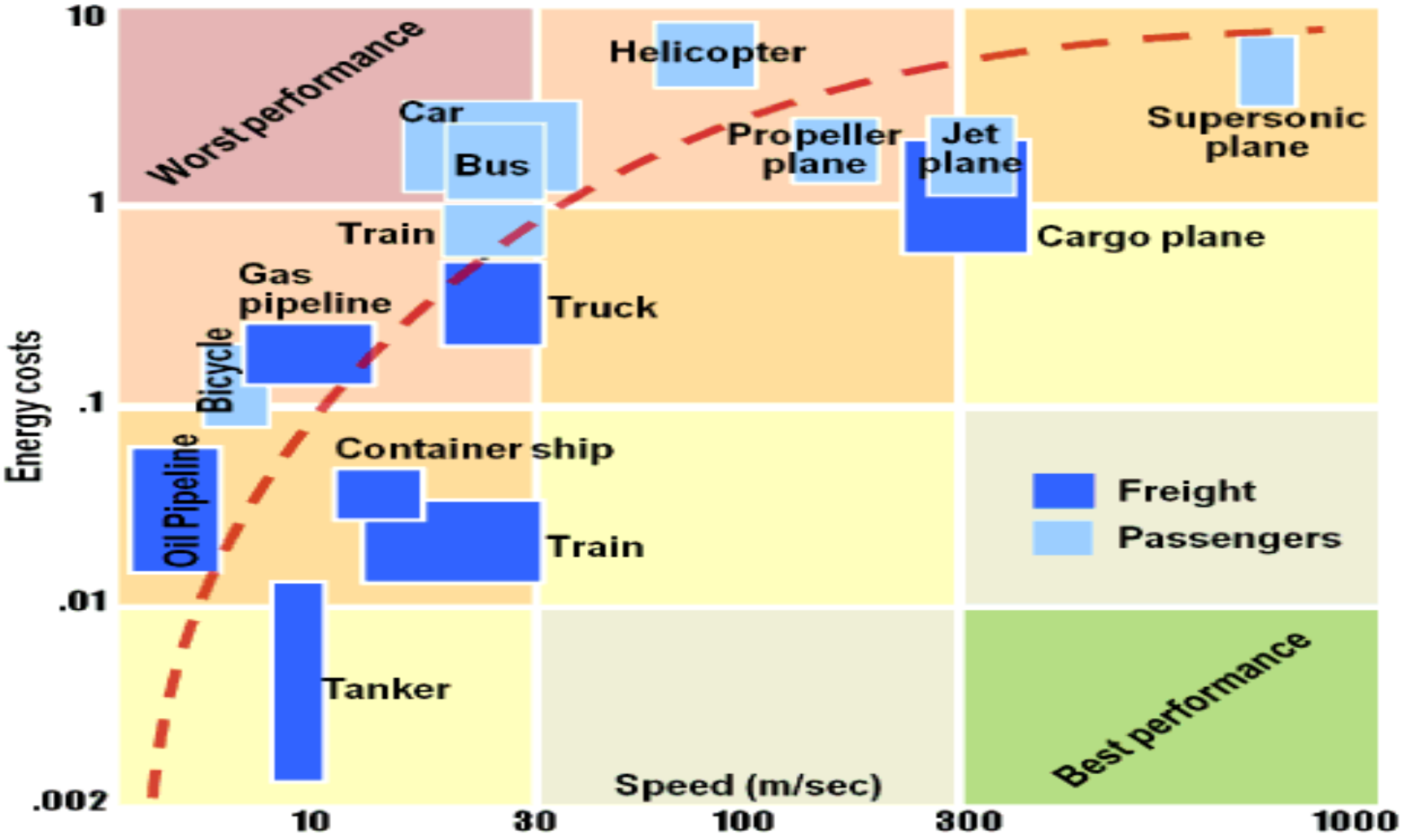
World energy use per sector 2008

- **Industry 27.8%**
- **Transport 27.3% ****
- **Residential and service 36.0%**
- **Non-energy 8.9%**
- **Total 100.00%**

Greenhouse gas emission by sector EU-27 in 2008

- 1.Energy production 31 %
- **2.Transport 20 % *****
- 3.Households 15 %
- 4.Agriculture 10
- 5.Industrial 8
- 6.Others 16

Geography of transportion ****



Vehicles as an energy consumer

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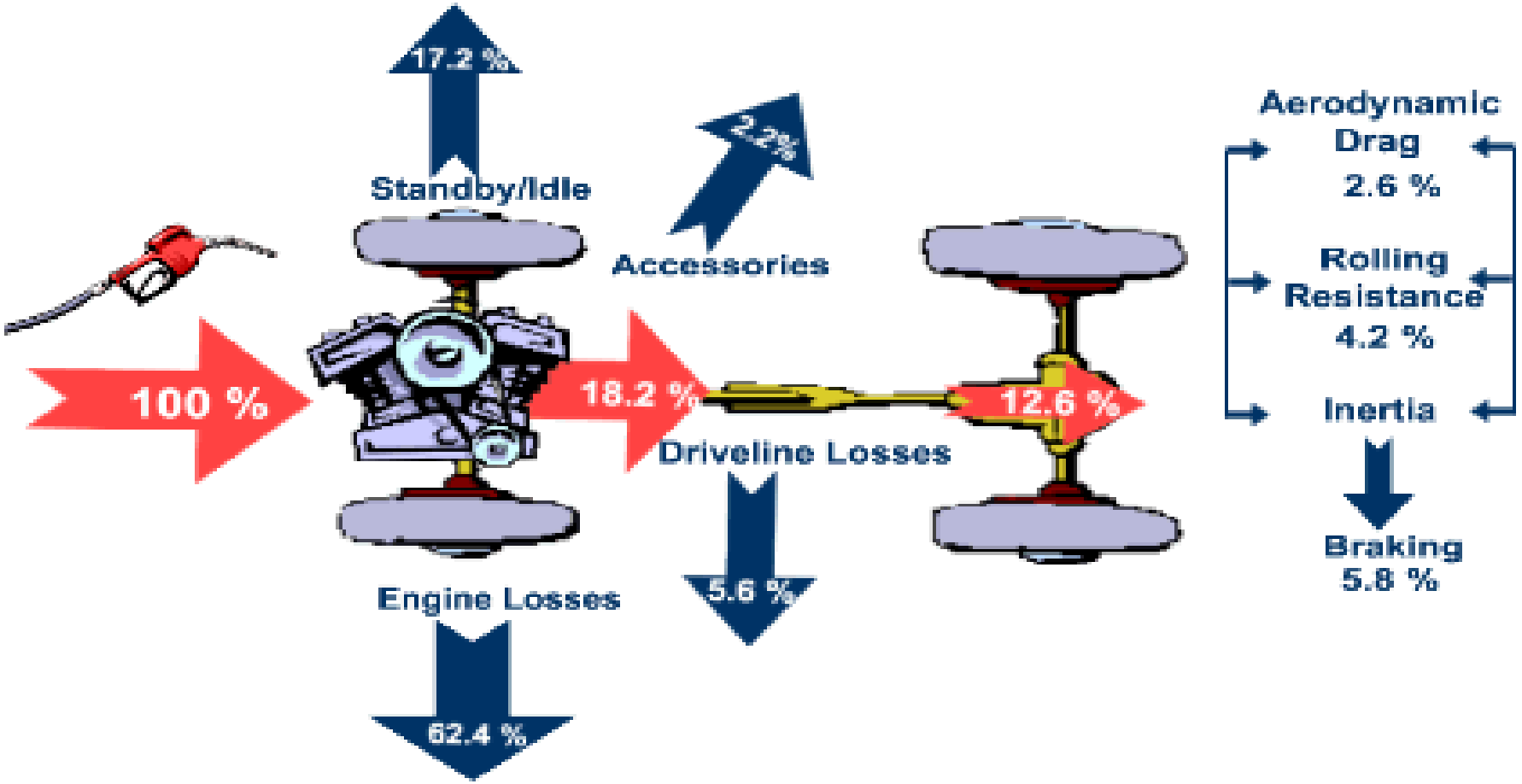
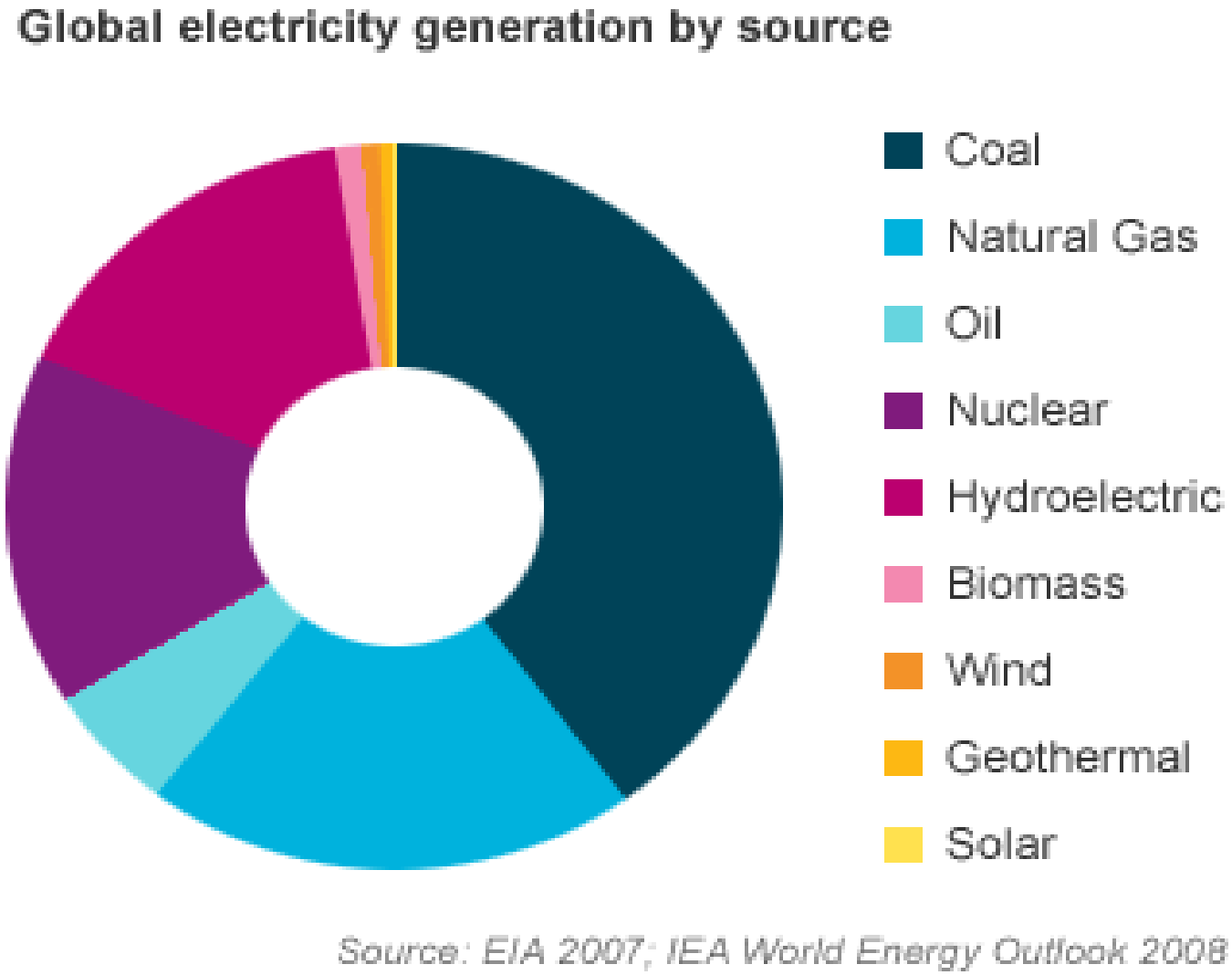




2,5 kWh primary energy produces 1kWhe

CO_2 emission by electricity production (g/kWhe)

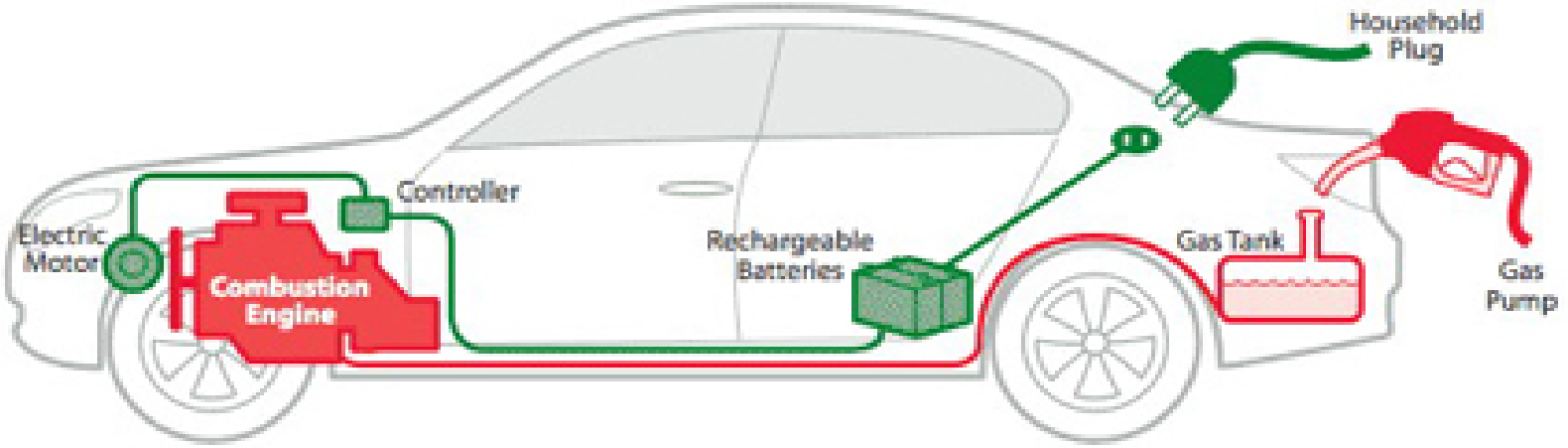
- **1.World 565**
- **2.Europe 230**
- **3.Australia 840**
- **4.Japan 416**
- **5.France 79**
- **6.Germany 460**
- **7.Norway 16**
- **8.Bulgaria 579**
- **9.Macedonia 686**
- **10.India 912**

Fuel combustion CO2 emission (kg/l)

- 1.Petrol gasoline 2,3
- 2.Diesel 2,6
- 3.LPG 3,0
- 4.Methane 2,75
- 5.Biodiesel 2,84

Electric vs. Gasoline

Electric	Gasoline
No Tailpipe Emissions	Greenhouse Gases/Pollution
Utility Company	OPEC
100+/- Mile Range	300+ Mile Range
Hours to Recharge	Minutes to Refuel
2 cents per mile	12 cents+ per mile



Energy efficiency;

Fuel car:100kWh-chem **x 0,19 x 0,68 = 13**kWh-mech

Ecar;gl:100kWh-ch**x0,4=(40**kWhe**+3%x0,56)x0,8x0,68=22,7**kWh-mech

22,7 : 13 = 1,75

E car globally is 75% more energy efficiency(46%coal)

***E-car locally: (100**kWh-e**+5x0,56)x0,8x0,68 = 55,9**kWh-mech**;**

55,9:13 = 4,3

E-car locally is 4,3* times more tech-economy efficiency??

Pollution efficiency;

Fuel car: 100% = 100%

E-car; globally: 75% less pollution (17% coal)

E-car; locally: ZERO Pollution and noise

E-car; in France, Norway,... Near Zero pollution

E-car;nuclear and renewable energy=zero pollution

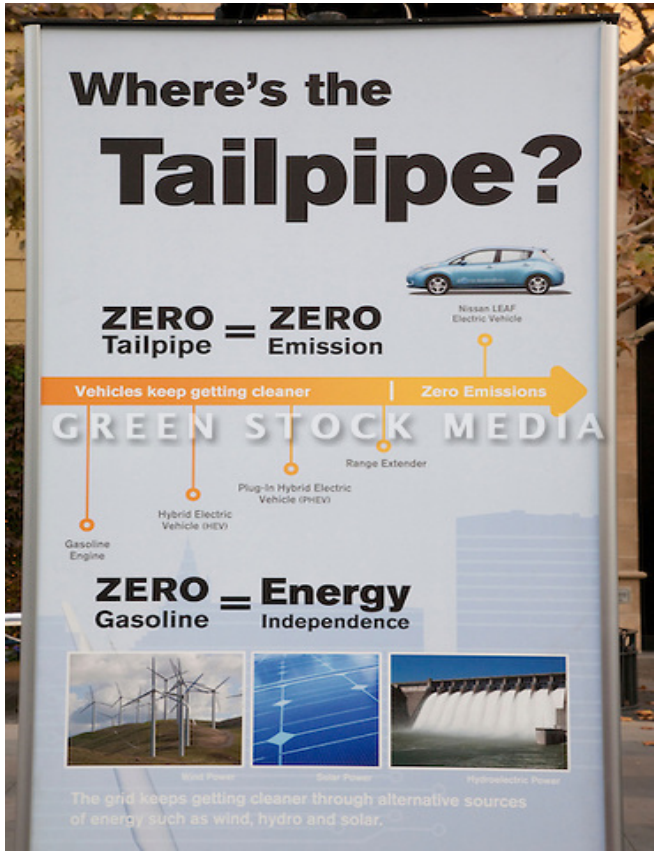
Economy efficiency

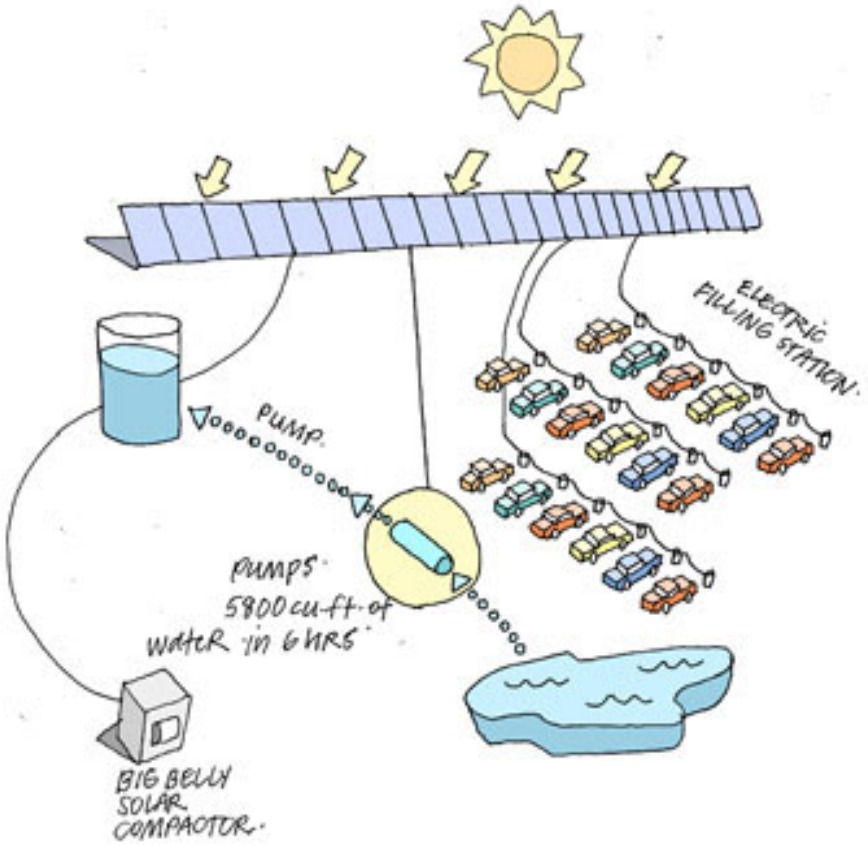
- **Fuel car: 100 kWh_{gl}~10,3 lx79=814 den**
- **10,3:6,5=158km; 814:158=5,15 den/km**
- **100kWh_e; 158x4,3=679 km** **(0,15 kWh/km)**
- **100kWh_ex3,35a.t.x1,33x1,18=527 den**

- 527:679=0,78 den/km a.t.
- 329:679=0,48 l.t.

- 5,15:0,78= 6,6 times cheaper a.t.
- 5,15:0,48=10,7 l.t.

This is zero emission





Linda&Alan's E-car, Denver-Colorado

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Our responsibility is what will leave the planet

These will condemn us

A secure and those not yet born

Thank you for your attention