



## Which Technologies to Diversify Transportation Fuels ?

### => Which Diversification for Which Mobility Performances ?

#### 🌐 Global performances requested :

- 🌐 well to tank, tank to wheel, **AND** vehicle prod., battery prod., ...
- 🌐 Multicriteria : GHG, pollution, independency, but also work condition in sugar cane exploitation, nuclear waste, biodiversity reduction with massive biomass production ...
- 🌐 Need definitions : *scope of the system, methodology, coproducts*

#### 🌐 Depend on :

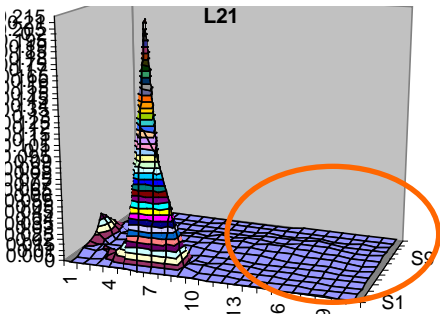
- 🌐 local capability production (biomass stock, NG or other)
- 🌐 co products utilization capability (Neste Oil + Stora Enso)
- 🌐 waste products utilization (used oil, biogas ...)
- 🌐 season or time (no EV in winter during electricity import ?)
- 🌐 also business model : vehicle or mobility (energy manage by pro.)



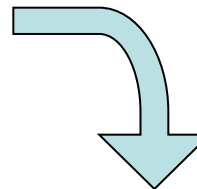
- 🌐 High complexity, multicriteria performances aggregation requested with large stakeholders involvement including “society”, NGO ...
- 🌐 Need to :
  - 🌐 global analysis of all “game players”,
  - 🌐 develop tools and methods to actualize results , and specialize by regions
- 🌐 European Directive “Clean and Efficient Vehicle” :
  - 🌐 good basis : techno neutral, based on pollution, GHG, € - life time,
  - 🌐 need to be completed : fuel production,
  - 🌐 ADEME is developing tools for Directive Application (pollutants real time and conditions estimation),



**LINE 21**

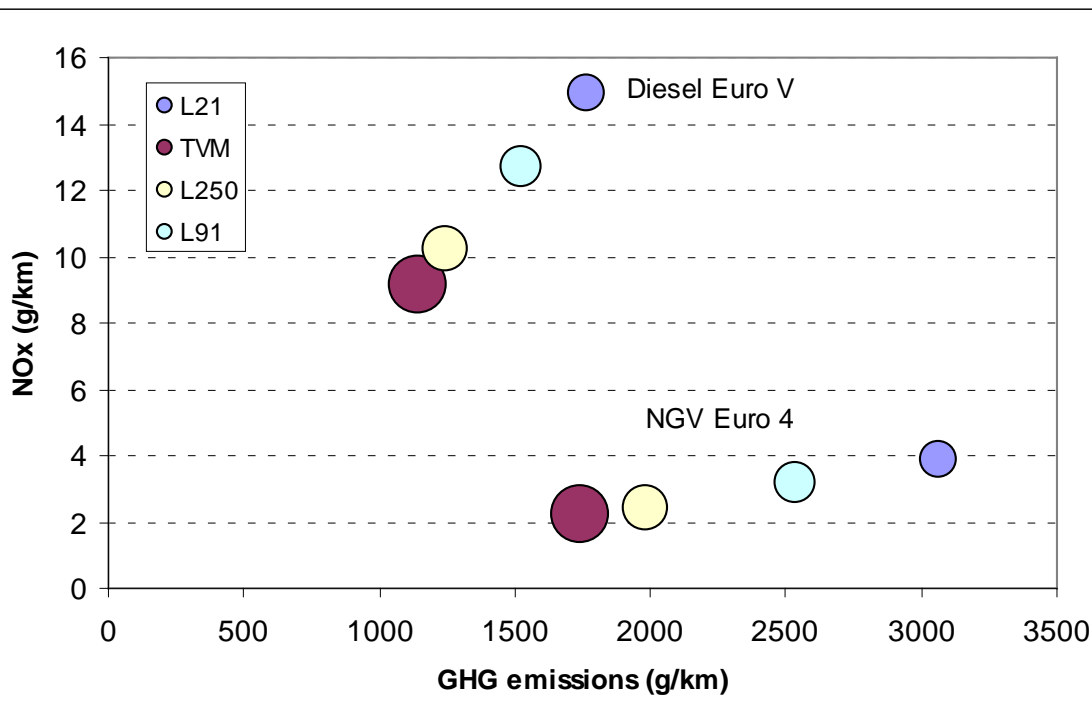
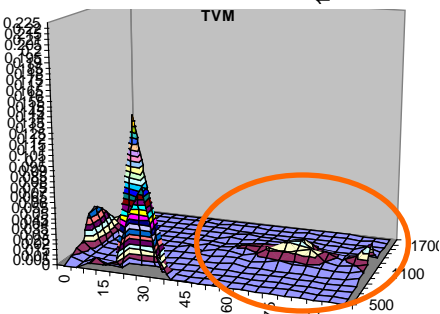


Engine matrix  
speed & load

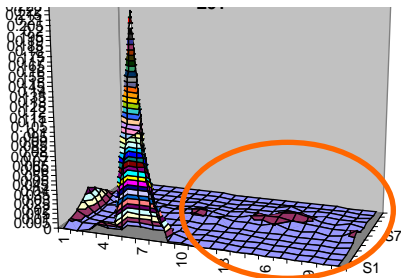


**NOx & GHG (WtW) emissions calculations**  
NGV Euro IV, Diesel Euro V on 4 lines

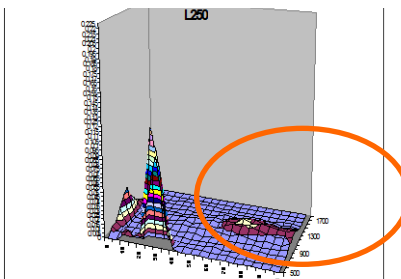
**LINE TVM**



**LINE 91**

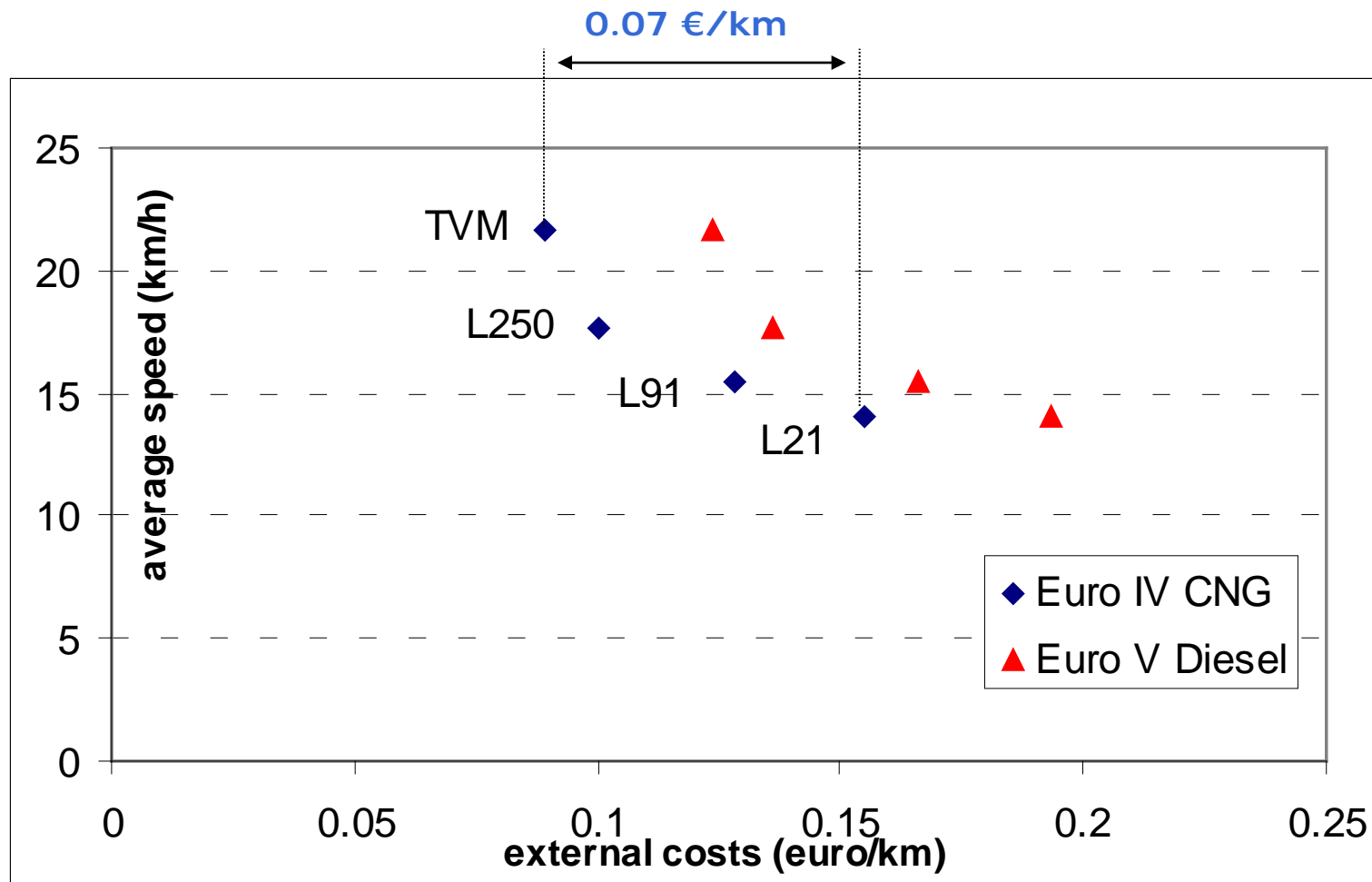


**LINE 250**





## Example of external Costs calculations NGV Euro IV & Diesel Euro V on 4 lines :





# Thank you for Your Attention

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

[www.starbus-tool.eu](http://www.starbus-tool.eu)

(Starbus European Project, EACI support)

[www.transportsdufutur.fr](http://www.transportsdufutur.fr)

(Futur Transportation web platform exchange)