



TRT TRASPORTI E TERRITORIO SRL

# Aggiornamento del modello a scala europea TREMOVE e progetto iTREN

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# TREMOVE update: principali obiettivi

- Aggiornamento del database di input per TREMOVE sulla base dei risultati dei progetti FLEETS, EX-TREMIS e di altri studi recenti;
- Elaborazione del nuovo scenario *baseline* al 2030 e interazioni con i progetti iTREN-2030 e EC4MACS
- Elaborazione di 4 analisi di sensitività



# TREMOVE: road mode (da FLEETS)

## Consistenza della flotta

- 17 sottocategorie (come in COPERT4)
- Elaborazione dell'anzianità del parco e delle percorrenze annuali (iterazioni su funzione Weibull)
- Nessun cambiamento nei fattori di emissione
- Aggiornamento del modulo prezzi e tasse

Gasoline Passenger cars	G<1,4
	G1,4-2
	G>2
Diesel Passenger Cars	D<2
	D>2
LPG Passenger Cars	PCLPG
Gasoline Light Duty Vehides	LDG
Diesel Light Duty Vehides	LDD
Rigid Heavy Duty Vehides	HDVR
Articulated Heavy Duty Vehides	HDVA
Buses	Buses
Coaches	Coaches
Mopeds	Mopeds
2 stroke Motorcydes	Mot2T
4 stroke Motorcydes	Mot<250
	Mot<250-750
	Mot>750



# iTREN-2030: principali obiettivi

## Basic objective:

- To extend the forecasting and assessment capabilities of TRANS-TOOLS to new policy issues, in particular those linking transport with the technology, environment and energy fields.

## Specific objectives:

- To enable environmental assessment with TRANS-TOOLS by linking with TREMOVE.
- To extend forecasting horizon of TRANS-TOOLS and TREMOVE until 2030.
- To generate a coherent reference scenario for the iTREN-2030 model suite.
- To measure indirect economic impacts of transport policies.
- To consider user needs and compare with forecasts of previous studies.
- <http://isi.fraunhofer.de/isi/projects/itren-2030/>



# Scenario di riferimento

- Non è costruito per fornire previsioni che si avvicinano al futuro probabile.
- Viene costruito assumendo un “congelamento delle politiche” al 2008 (solo le politiche già decise dal consiglio Eua metà 2008 sono considerate).
- È uno scenario basato essenzialmente sui trend armonizzati della suite iTREN-2030.
- Non viene considerata la crisi economica mondiale.
- => si tratta di uno step metodologico di iTREN per verificare assunzioni modellistiche armonizzate e consistenti.



# Scenario Integrato

- È costruito sullo scenario di riferimento
- Include tutte le misure e politiche che verranno intraprese tra il 2008/2009 e il 2025, distinte tra
  - Rilevanti e
  - Probabili
- Tali politiche riflettono in gran parte i vincoli e le opportunità legate a tre principali temi dei prossimi due decenni:
  - Politiche per il Clima
  - Scarsità di carburanti fossili
  - Nuove tecnologie
- La crisi economica del 2008/2009 è inclusa.

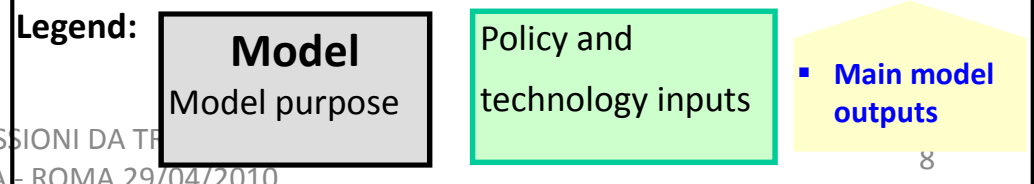
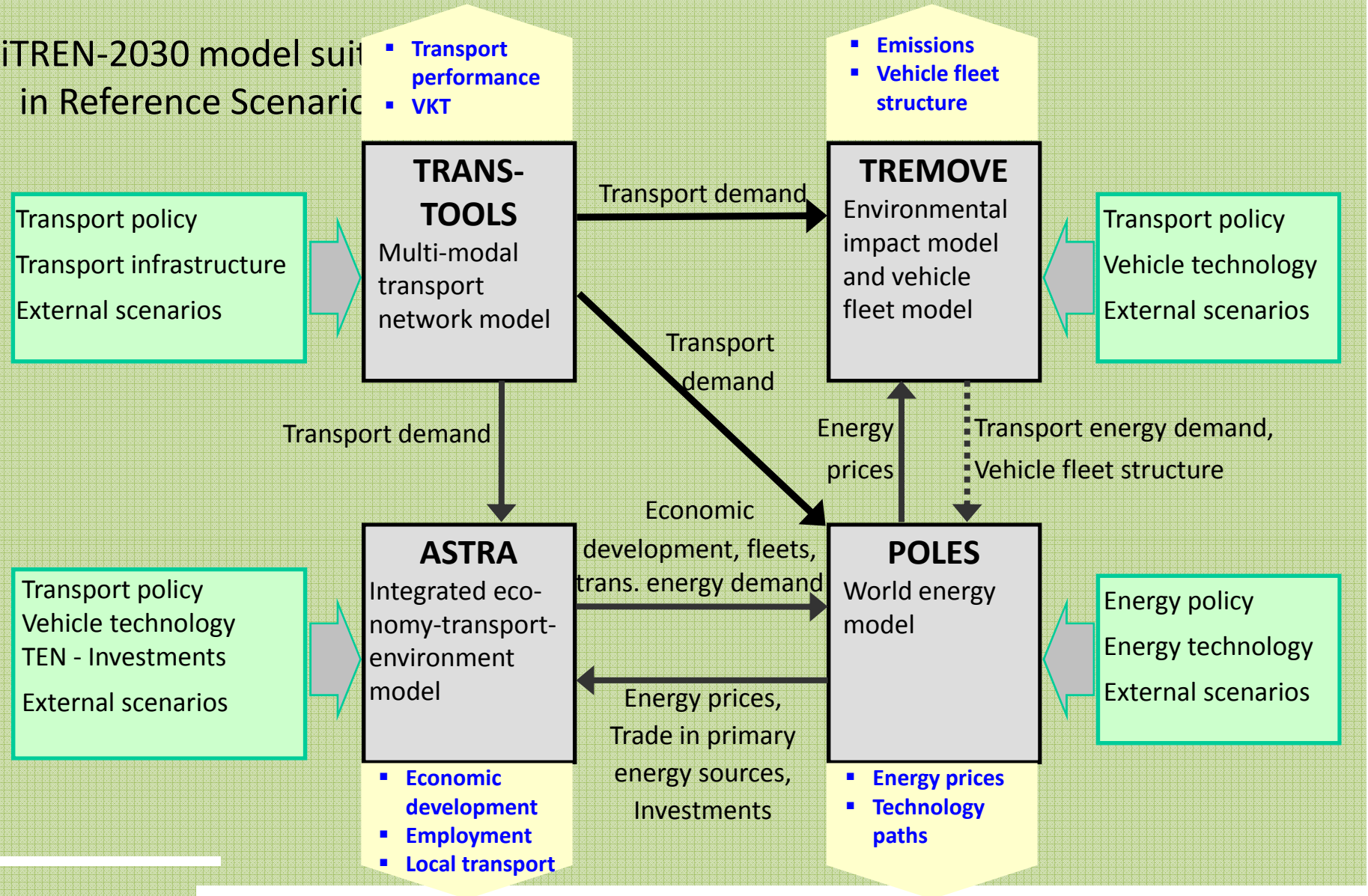


# iTREN-2030 model suite

Model	Purpose	Approach	Type	Space	Time
TRANS-TOOLS	Detailed network based analysis of transport. Corridor analysis.	Stochastic equilibrium	Transport bottom-up	EU31	Static, 2005, 2010, 2020, 2030
TREMOV E	Transport trend as input and vehicle fleets, energy and emissions as output.	Optimisation	Strategic, Fleet bottom-up	EU31	Dynamic, 1995 to 2030
POLES	Supply and demand of world energy system. Global energy emissions.	Simulation	Strategic, Energy bottom-up	Global, EU27	Dynamic, 2000 to 2030
ASTRA	Integrated assessment of economy, trade, transport, fleets, energy and emissions.	Simulation	Strategic	EU27+2	Dynamic, 1990 to 2030

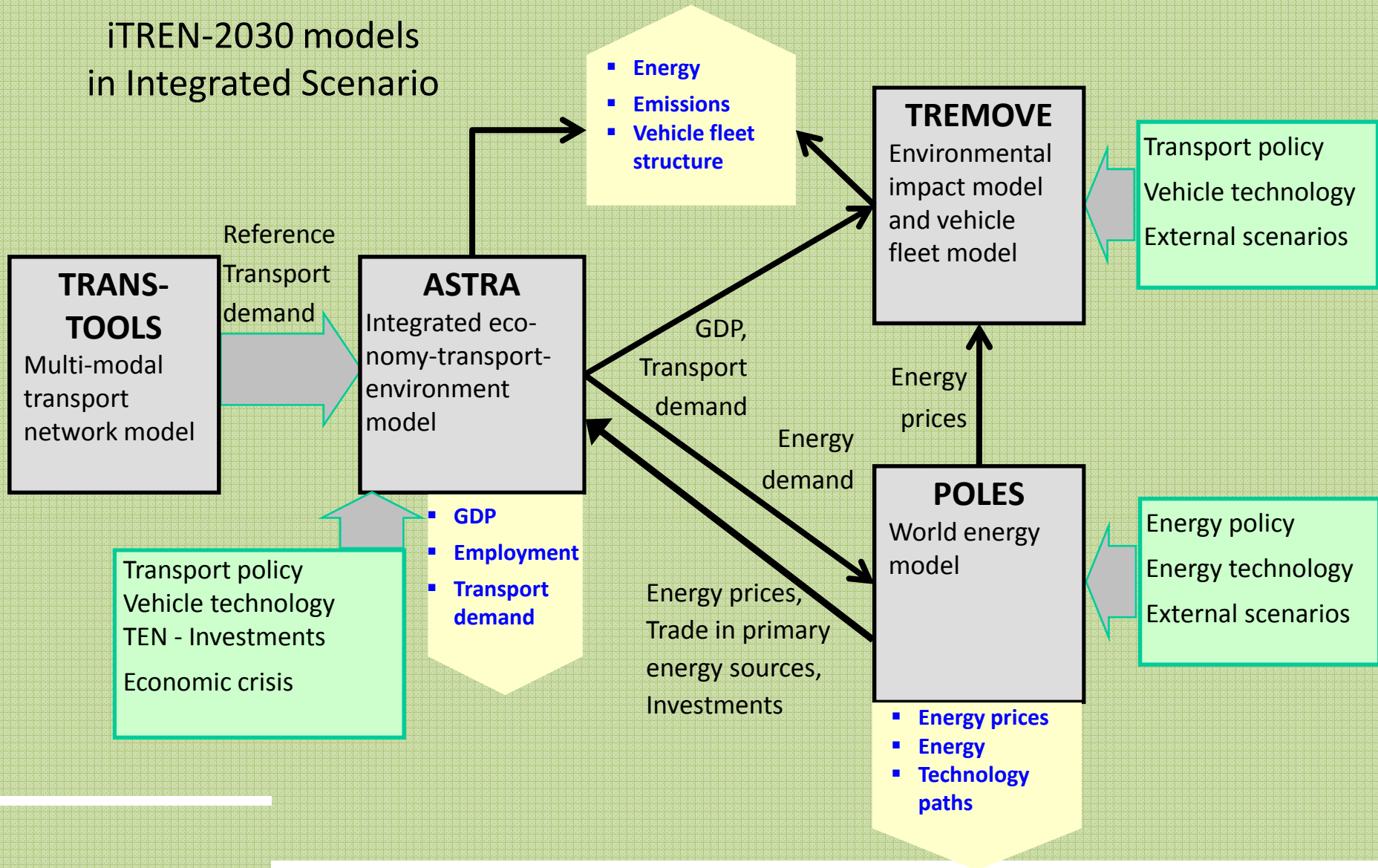


iTREN-2030 model suite  
in Reference Scenario





# iTREN-2030 models in Integrated Scenario



**Legend:**

- Model** (Grey box): Model purpose
- Policy and technology inputs** (Green box)
- Main model outputs** (Yellow box)

# Politiche che influenzano le emissioni e le flotte già applicate nello scenario di riferimento (REF)

Sector	Content	Type	Period	Level
Emission	Fuel quality directives	P	1994, 1996, 2000, 2005, 2009	Base: CEN
Emission	Eco driving by the use of GSI	TA	2008-2030	% of new sold road vehicles with GSI, % fuel consumption reduction, % of vehicle purchase cost increase
Emission	CO2 emission target for cars (voluntary agreement EC-car manufacturers)	P	2009	140 gr/km Base: ACEA, JAMA-KAMA
Fleet	LPG, CNG cars	TA	2006-2030	
Fleet	Euro V for HDV	P	2008	NOx, PM target
Fleet	Euro V, VI for cars	P	2009, 2014	
Fleet	Euro V, VI for LDV	P	2010, 2015	



# Politiche che influenzano la domanda nello Scenario Integrato (INT)

Content	Type	Period	Level
User charging on HDT implemented as road charges on all interurban networks (not only motorway)	P	2020-2030	Country based values, depending on Greening transport package proposal
User charging on CAR implemented as road charges on all interurban networks (not only motorway)	P	2025-2030	Country based values based on truck charges and ratio between car and truck marginal costs
Including ETS in air and maritime transport	P	whole	POLES level
City tolls	P	2025-2030	0.357€/vkm for PEAK period (PK)
Liberalisation: 3 <sup>rd</sup> railway package (gradual opening up of int. rail services to competition)	P	2010-2030	-2% of rail passenger costs (source: quantification in the ASSESS)

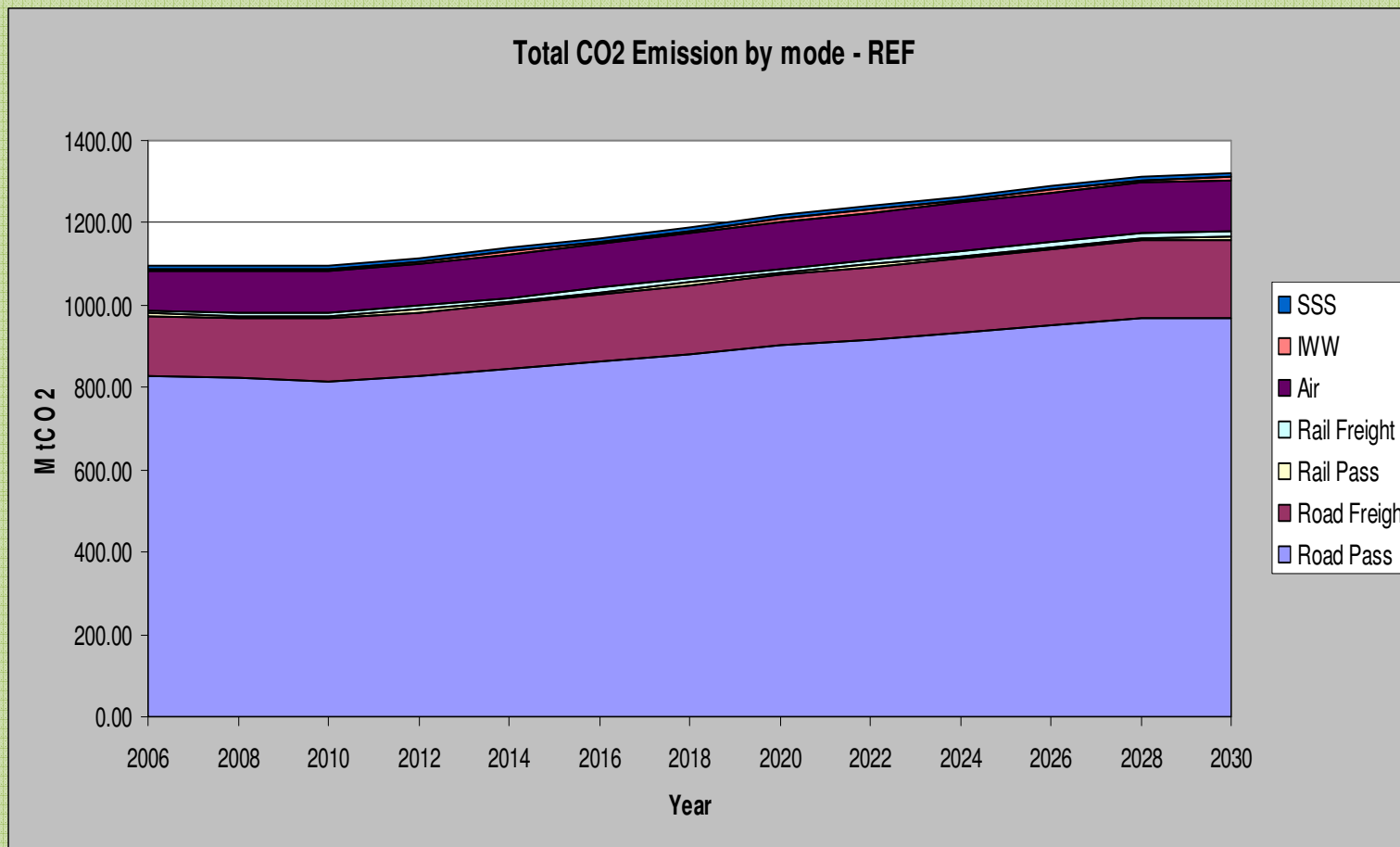


# Politiche che influenzano la flotta nello Scenario Integrato (INT)

Content	Type	Period	Level
Binding CO2 emission targets for cars	P	2009-2030	2012:135 2015:130 2020 to 2030:105 *supplementary measures (LRRT, LVL, TPMS, MAC.) are applied so that the targets decrease furthermore by 10 gr/km to reach: 2012:125 2015:120 2020 to 2030:95
Binding CO2 emission targets for LDV	P	2009-2030	LDV: 2012:182 2015:170 2020 to 2030:150
Euro VI for HDT	P	2012	NOx, PM targets



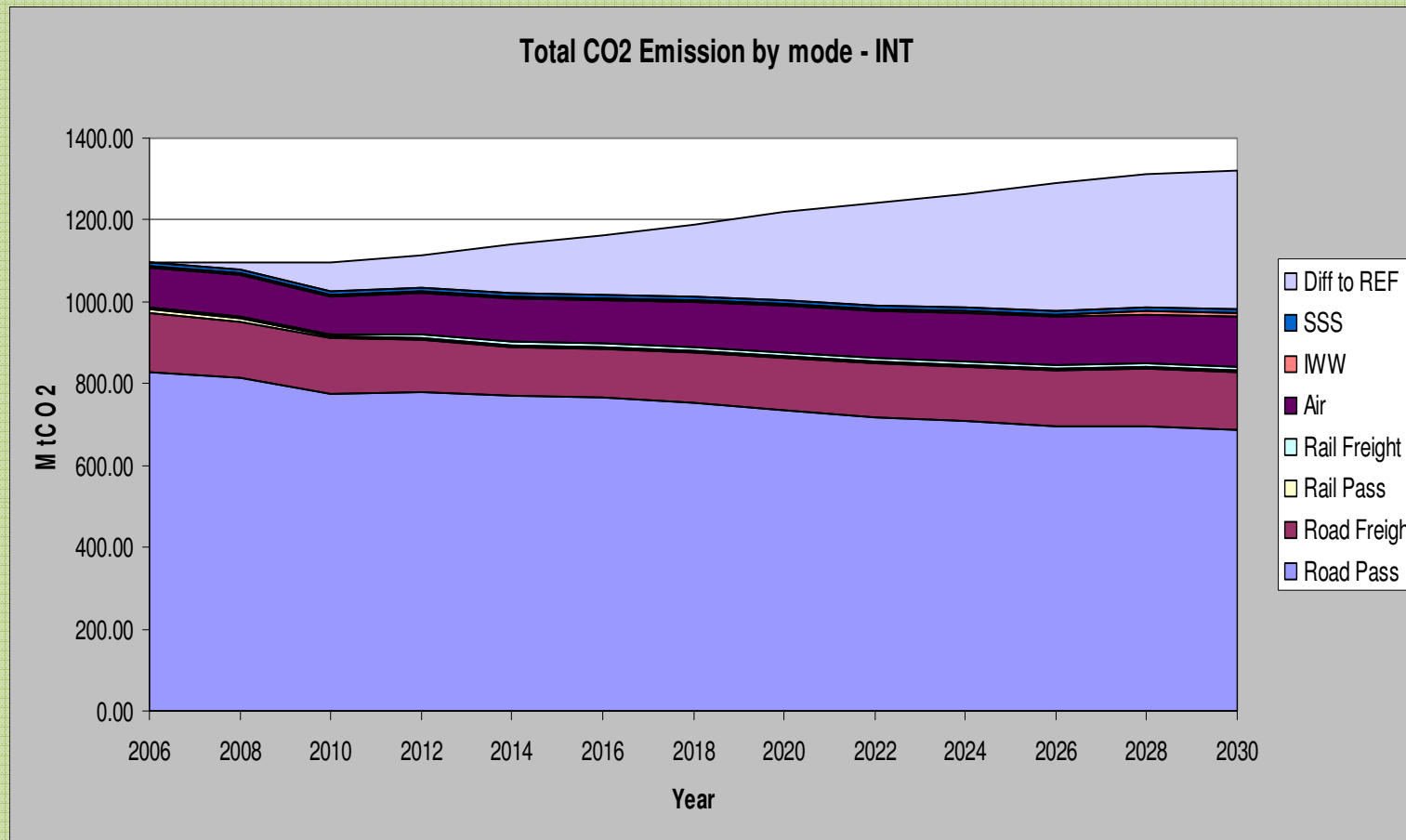
# Total CO<sub>2</sub> Emissions



Source: iTREN-2030, TREMOVE Model



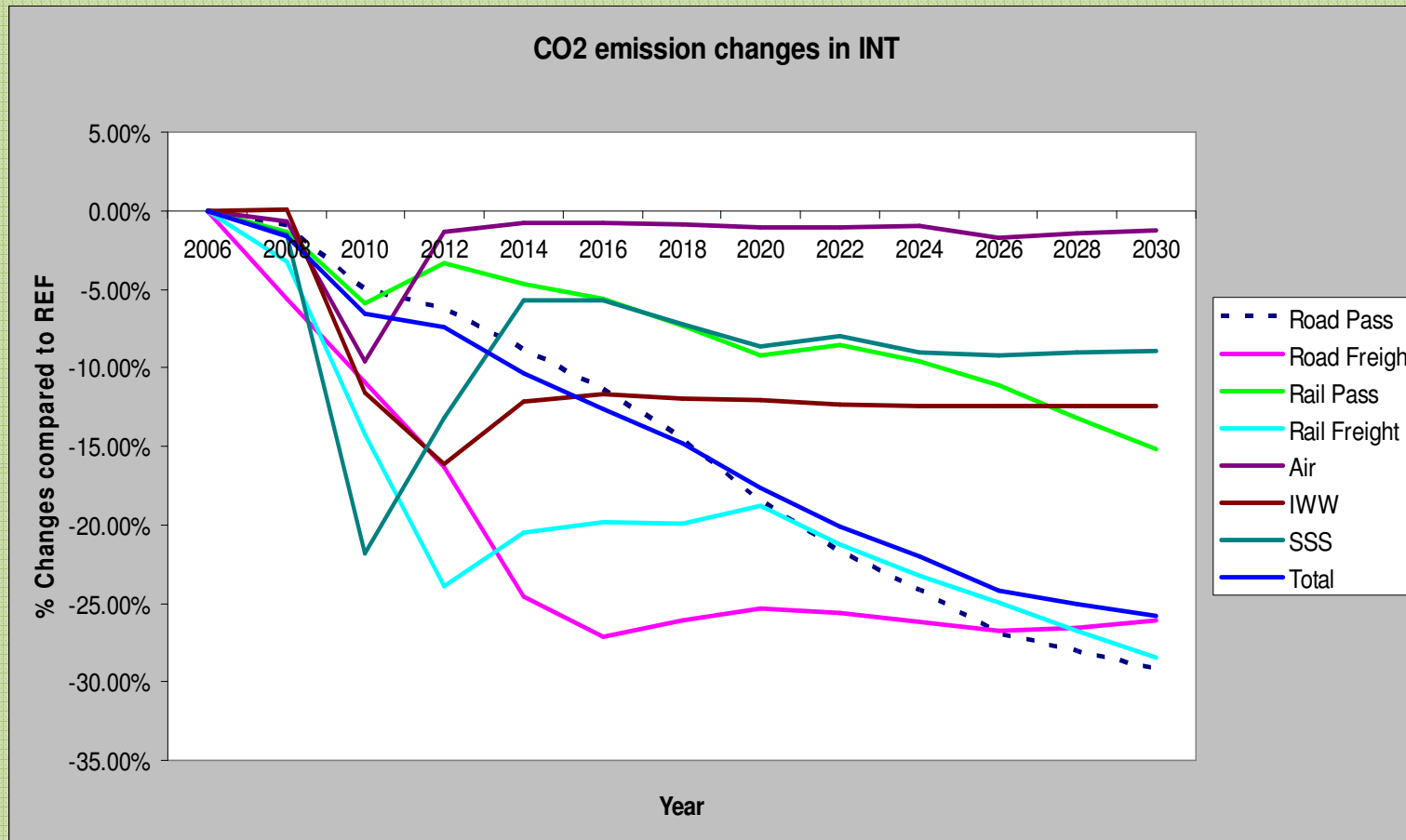
# Total CO<sub>2</sub> Emissions



Source: iTREN-2030, TREMOVE Model



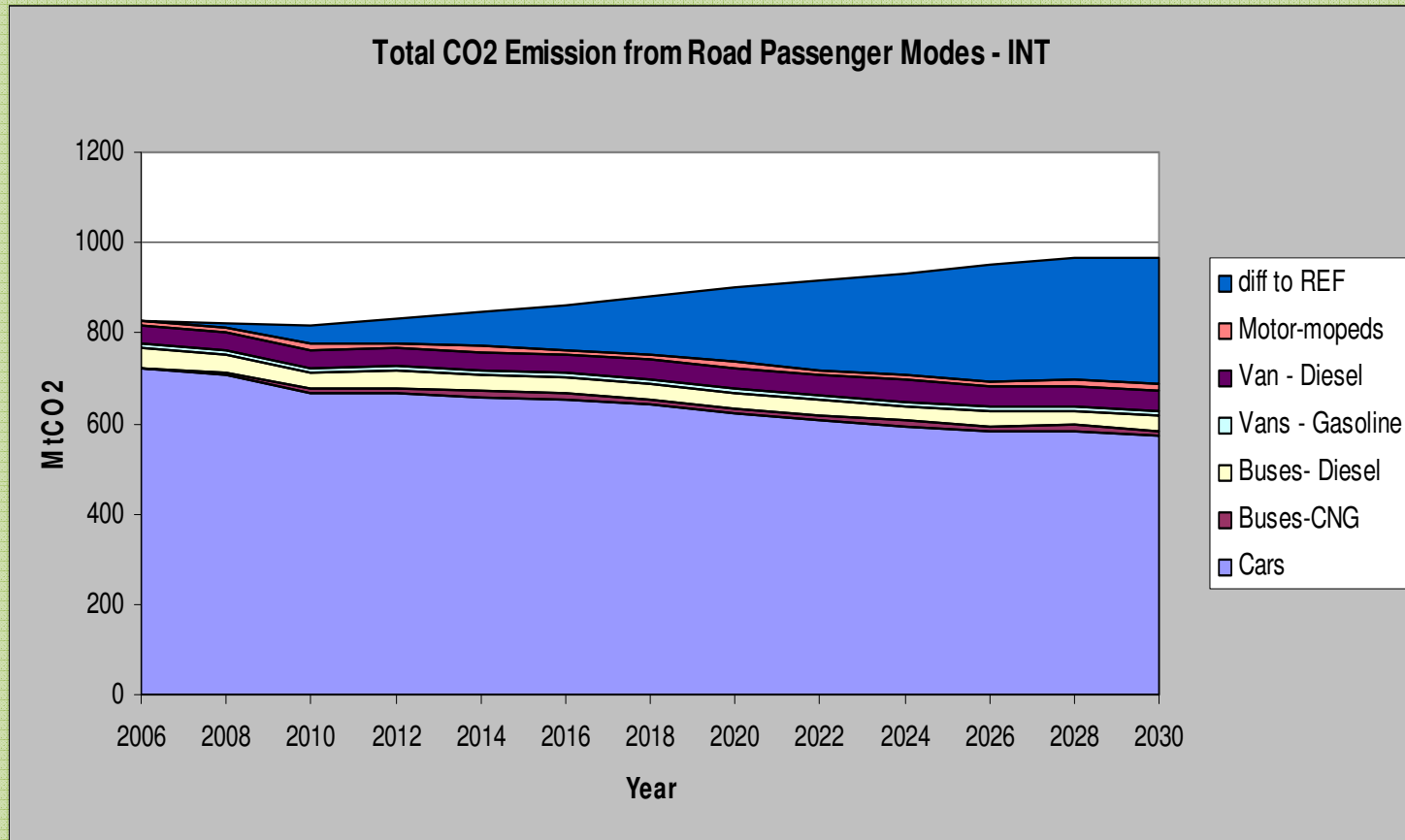
# Total CO<sub>2</sub> Emissions: % changes



Source: iTREN-2030, TREMOVE Model



# Total CO<sub>2</sub> Emissions Road Pass

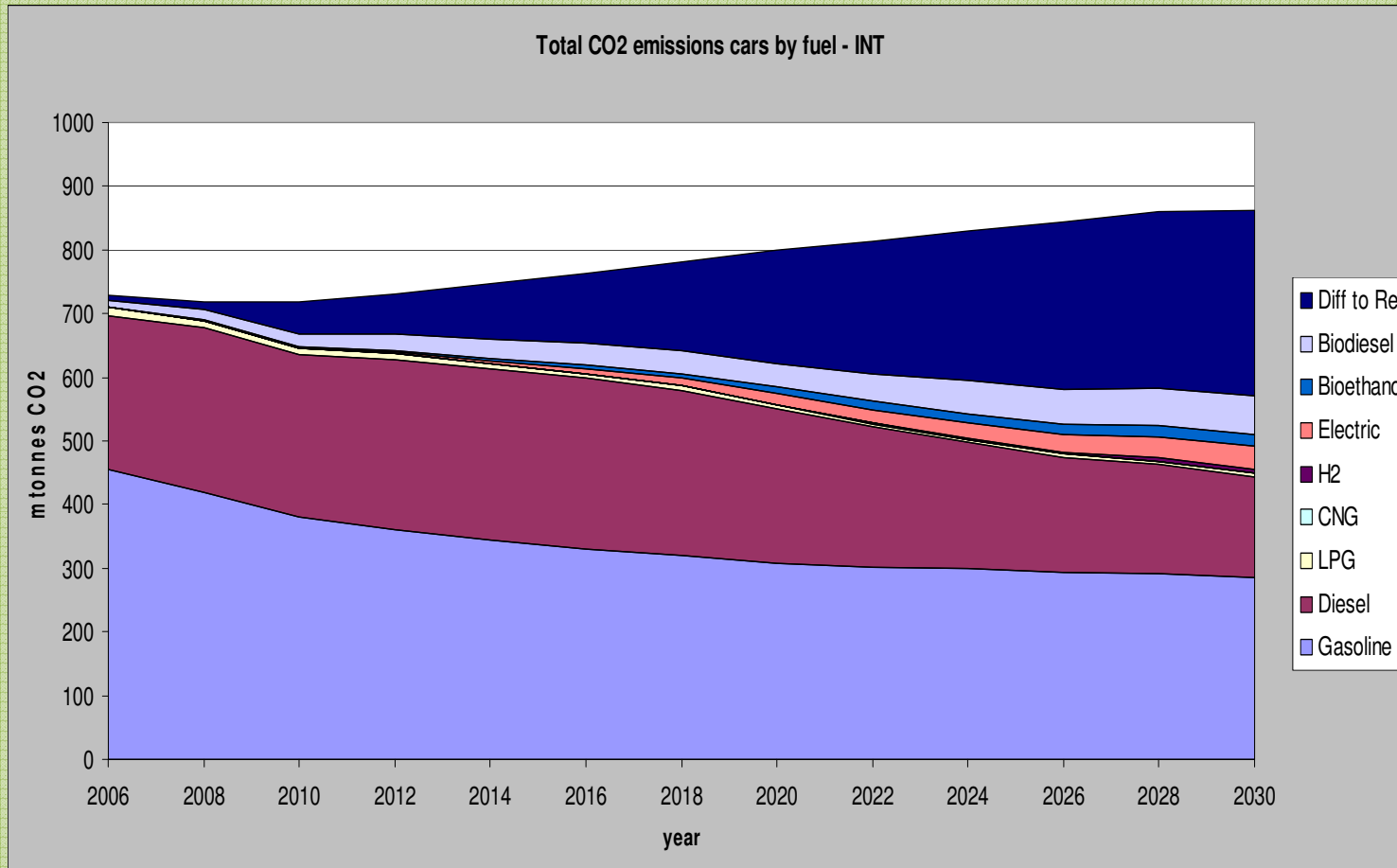


Source: iTREN-2030, TREMOVE Model





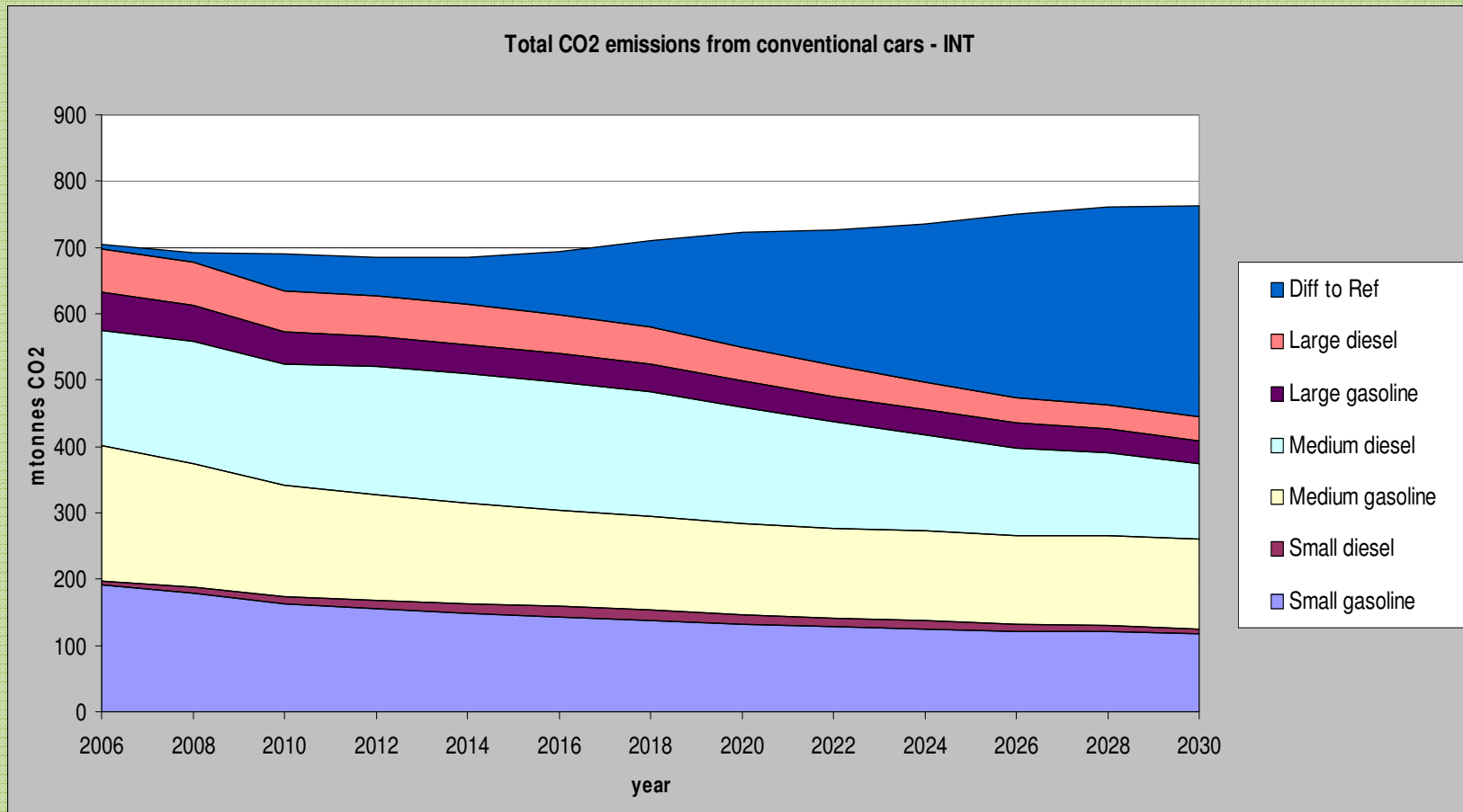
# Total CO<sub>2</sub> Emissions: Cars



Source: iTREN-2030, TREMOVE Model



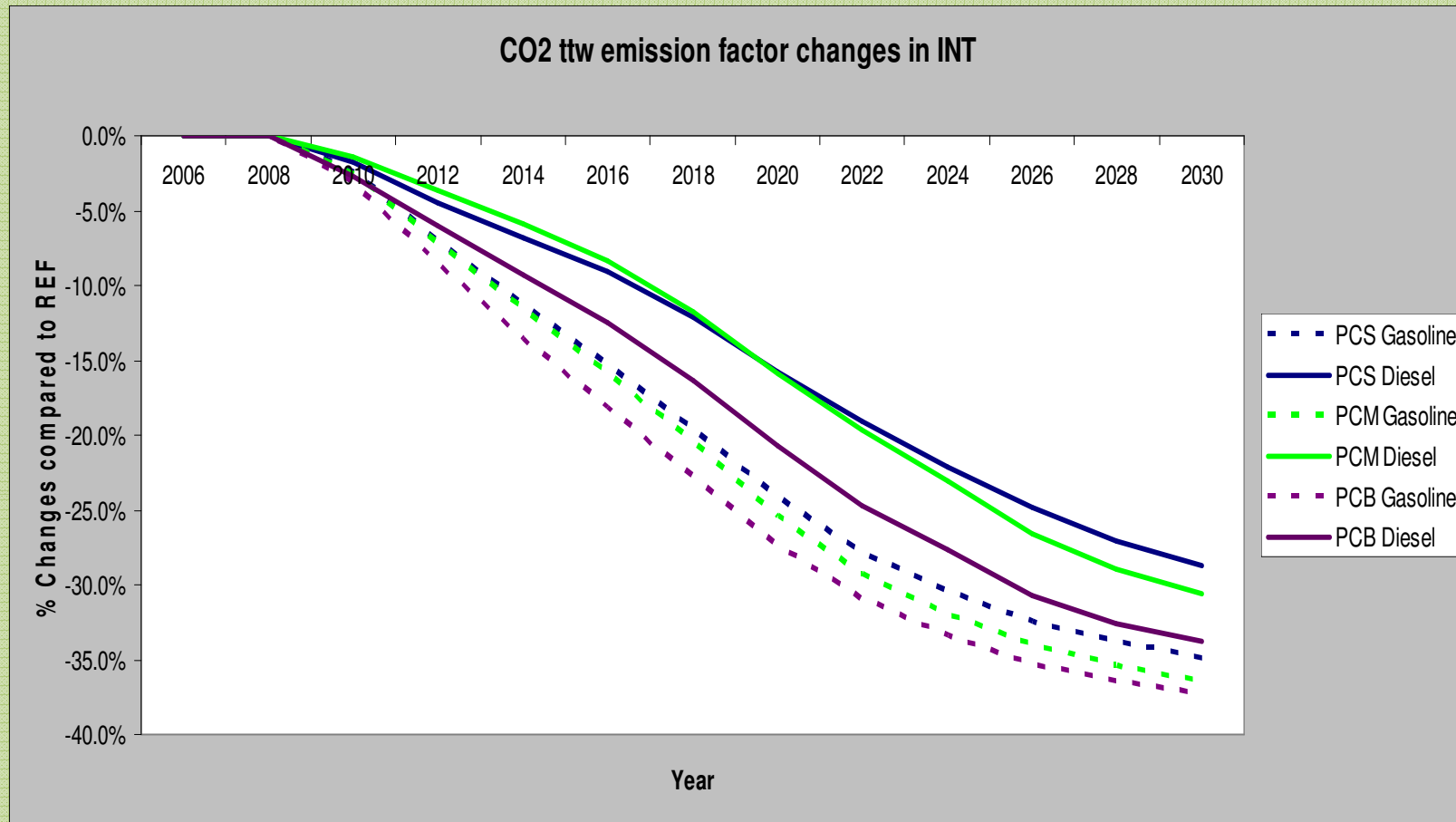
# Total CO<sub>2</sub> Emission: Conventional Cars



Source: iTREN-2030, TREMOVE Model



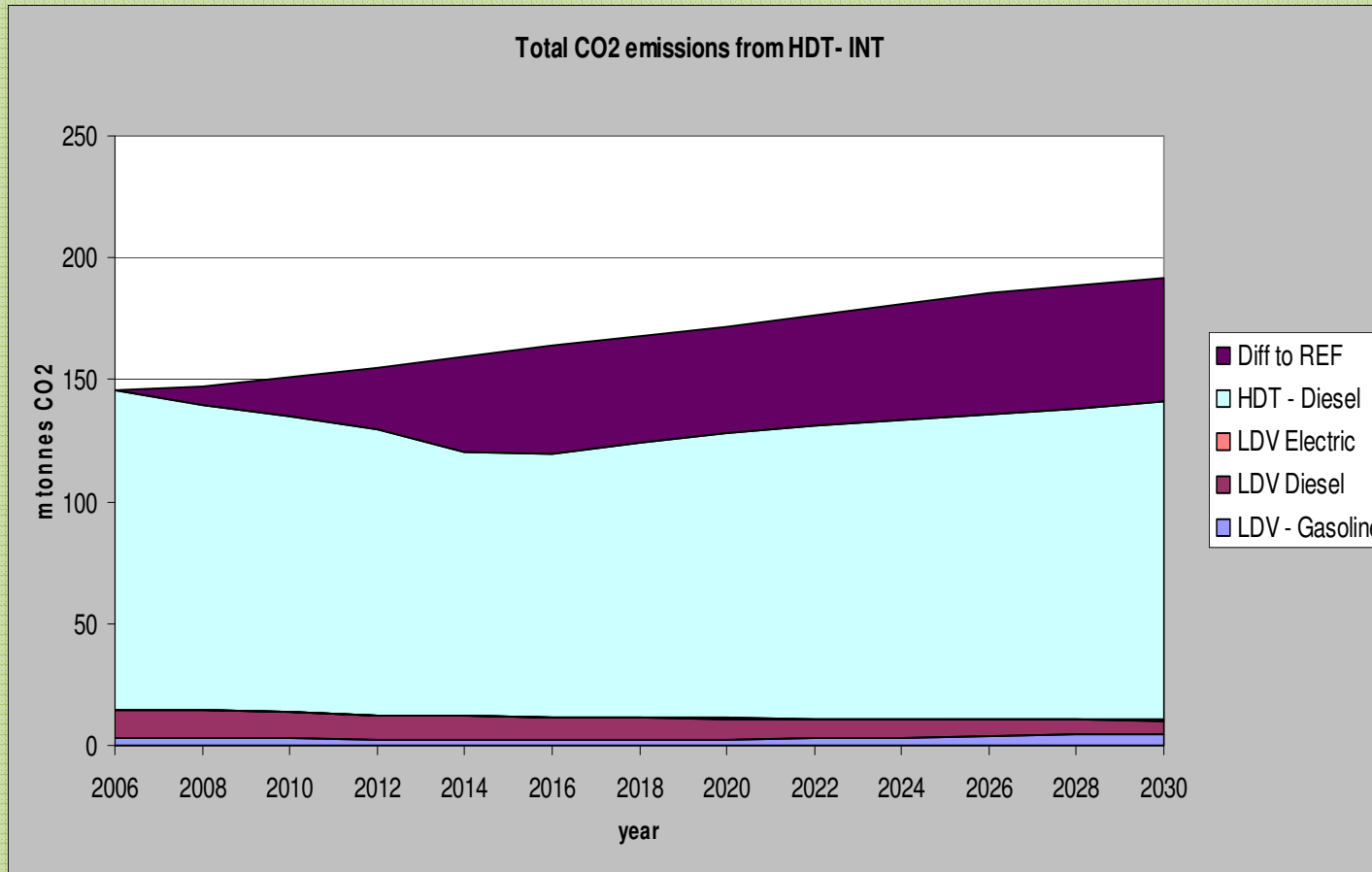
# Average CO<sub>2</sub> Emission factors : Conventional Cars



Source: iTREN-2030, TREMOVE Model



# Total CO<sub>2</sub> Emissions Road Freight



Source: iTREN-2030, TREMOVE Model



# Total PM<sub>10</sub> Emissions

