

Since 1991

The Belgian TIMES model

29-11-2006

Tasks

1. Integrate international dimension and a refinery module
2. Migrate to TIMES and perform tests:
 - to reproduce the MARKAL results
 - evaluate the TIMES specific facilities
3. Policy scenario's



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International aspects and refinery module

- Impact of liberalizing the electricity market = small; no further development
- Refinery module can verify simplified modules + specific policy runs



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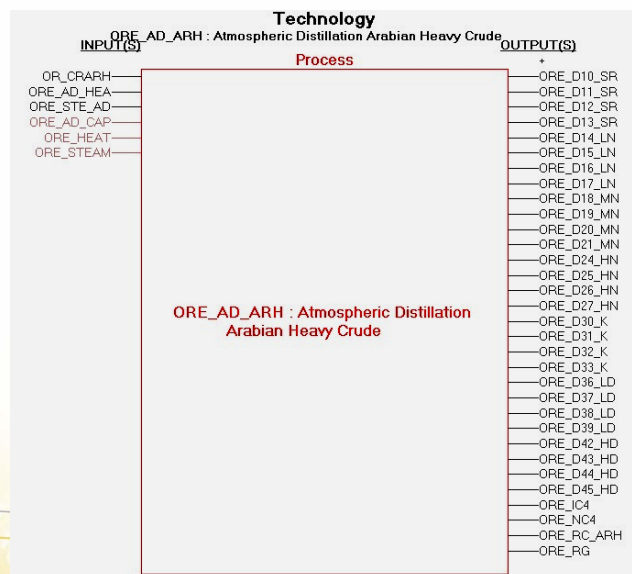
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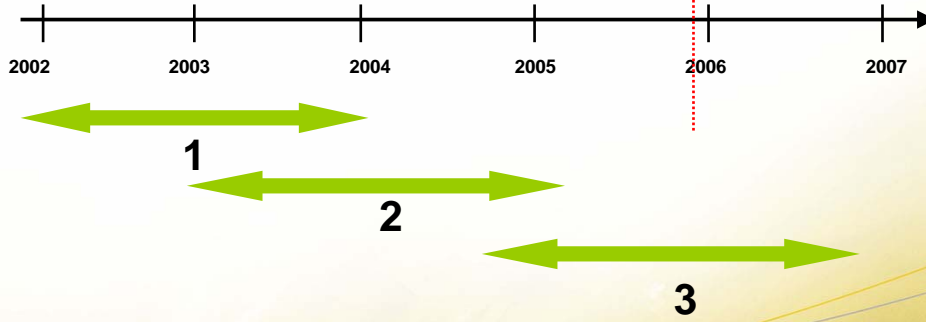
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Time table



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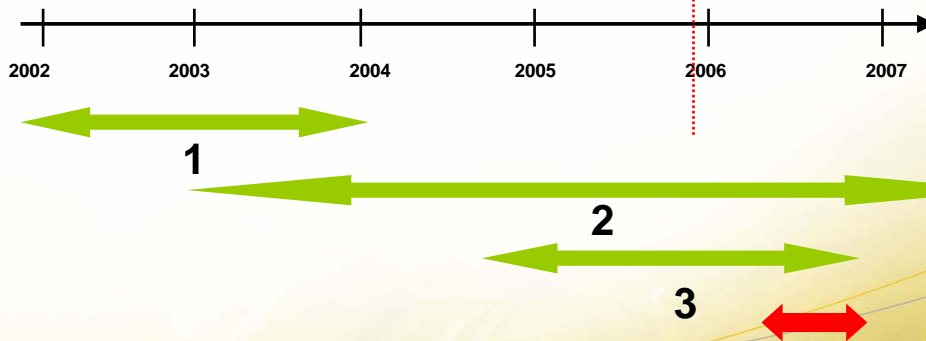
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“Migrate to TIMES”

- Veda versus model generator
- LP = LP
- No edit in Veda ? Esp. restriction for learning model generator
- Check dummies ! (Back stop technologies)
- Milestone years:
 - more detail in beginning
 - helpful for policy makers
- Reproduce same results ?
 - New starting year & structure (scenario's, representation...)
 - New insights (sometimes = forget wrong insights)



The model

- ~ NEEDS structure
- 1 region
- 2000 – 2050
- Elastic demand
- CHP fixed ratio
- 12 time slices for each period



VEDA-TIMES: Reference Energy System (RES) - Single-region

BE

Process Sets: Commodity Sets:

Process Information [TRADST01]

Description: Fuel Tech New - Diesel (TRA)

ProcessSet: .PRE.

Scenario: BASE

Region: BE

Activity Unit: PJ Capacity Unit: PJa

Process Type: PRE Process SubType:

PrimaryCG: TRADST SPG: TRADST01_NRG1

TSLVL: ANNUAL TimeSlice:

Vintaging On For The Process

Normalization:

Close

O I L L N D E S U T

TRADST01
Fuel Tech New
- Diesel
(TRA)

T R A D S T

Central
Item
Information

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VITO Flemish Institute for Technological Research

Flexible inputs/outputs

T T

R R

A A

D B

S D

T L

TCARDST101
Car .DST .EURO4

T T

C C

L S

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Region		Tech		CommGrp		Yr		0	2000	2001	2005	2010	2015	2020
TECH-BE72006	ACTFLO	TRA	DEMO	-	-	-	-			1.7000000				
	AF	TRA	-	UP	ANNUAL						22092.0789017			
	AFAC	TRA	TCS	UP							0.6261067			
	CAPUNIT	TRA	-	-	-									
	CEFF	TRA	TCL	-	ANNUAL						442.1387203	455.5641553	467.0677211	478.861764
			TCS	-	ANNUAL						327.0982479	337.0305068	345.5409495	354.26629
	EMISSIONS	TRA	TRACH4N	-	ANNUAL						0.0075000			
			TRACD2N	-	ANNUAL						0.5000000			
			TRAN2ON	-	ANNUAL						0.0100000			
			TRAND2N	-	ANNUAL						0.2500000			
			TRAPMAN	-	ANNUAL						0.0250000			
			TRAVO2N	-	ANNUAL						0.0425000			
	FIXDOM	TRA	-	-	-	CUR					0.7000000	0.7034913		
	INVCDST	TRA	-	-	-	CUR					15.0000000	15.0748134		
	LIFE	TRA	-	-	-					10.0000000				
	SHARE	TRA	TCL	LO	ANNUAL						0.2000000			
			TCS	LO	ANNUAL						0.2000000			
			TRABDL	UP	ANNUAL						0.0000000	0.0500000		
	START	TRA	-	-	-									
XBase	DELIV	TFMSCEN	TRADST	-	ANNUAL	CUR			3.3051598					
XBaseBE	DELIV	TFMSCEN	TRABDL	-	ANNUAL	CUR			3.3051598					
ZysSettings	FLO_SHAR	TFMSCEN	TRADST	-	ANNUAL	CUR			3.3051598					
			TCL	LO	ANNUAL	-			3.0000000					

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The policy scenario's

- CO2-be-step1: -15% in 2030 and -22.5% in 2050
- CO2-be-step2: -30% in 2030 and -52.5% in 2050
- CO2-be-step2withnuc: 2 with nuclear
- CO2-be-step2semstorage: 2 without carbon storage



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Results

	%DIF	%GDP2000	%GDP2000 annualised
CO2-be-step1-2050	2.2%	13.9%	0.62%
CO2-be-step2-2050	3.8%	24.2%	1.08%
CO2-be-step2semstorag-2050	7.2%	46.9%	2.10%
CO2-be-step2withnuc-2050	2.7%	18.2%	0.81%

Future work

- Better presentation of local pollutants (NO_x, SO₂,...)
- Marginal abatement cost curves
- Further policy scenario's:
 - > use features as the are meant to be used
 - in Veda
 - in TIMES (more time slices...)