



EU Refining Sector Fitness Check

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Content

- *Fitness Check: objective, approach, concepts*
- *Example 1: Renewable Energy Directive*
- *Example 2: int'l competitiveness of EU refining*

Fitness Check - Petroleum Refining Sector

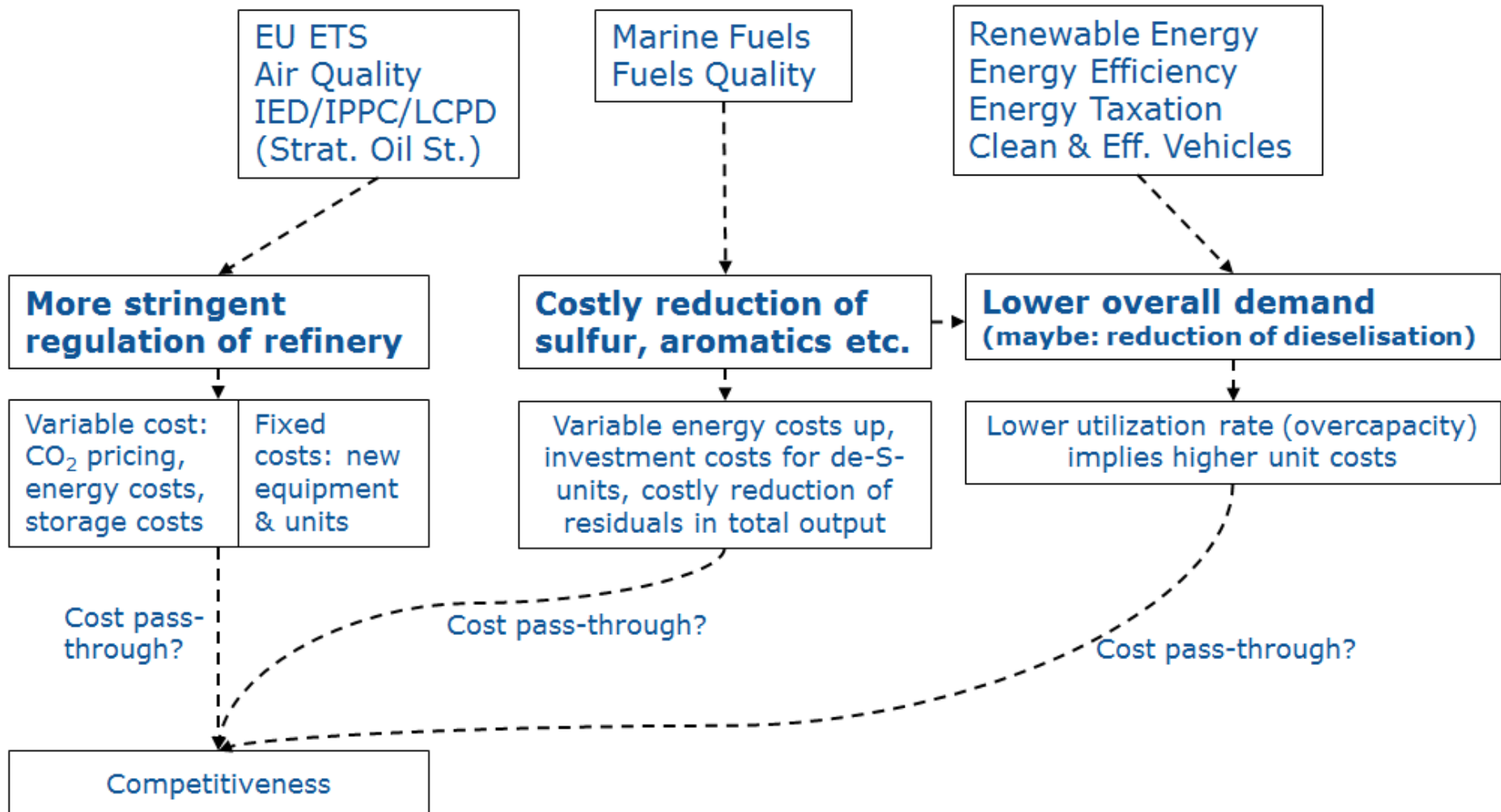
Review of EU environmental and energy legislation affecting the European refining sector during the time period 2000-2012:

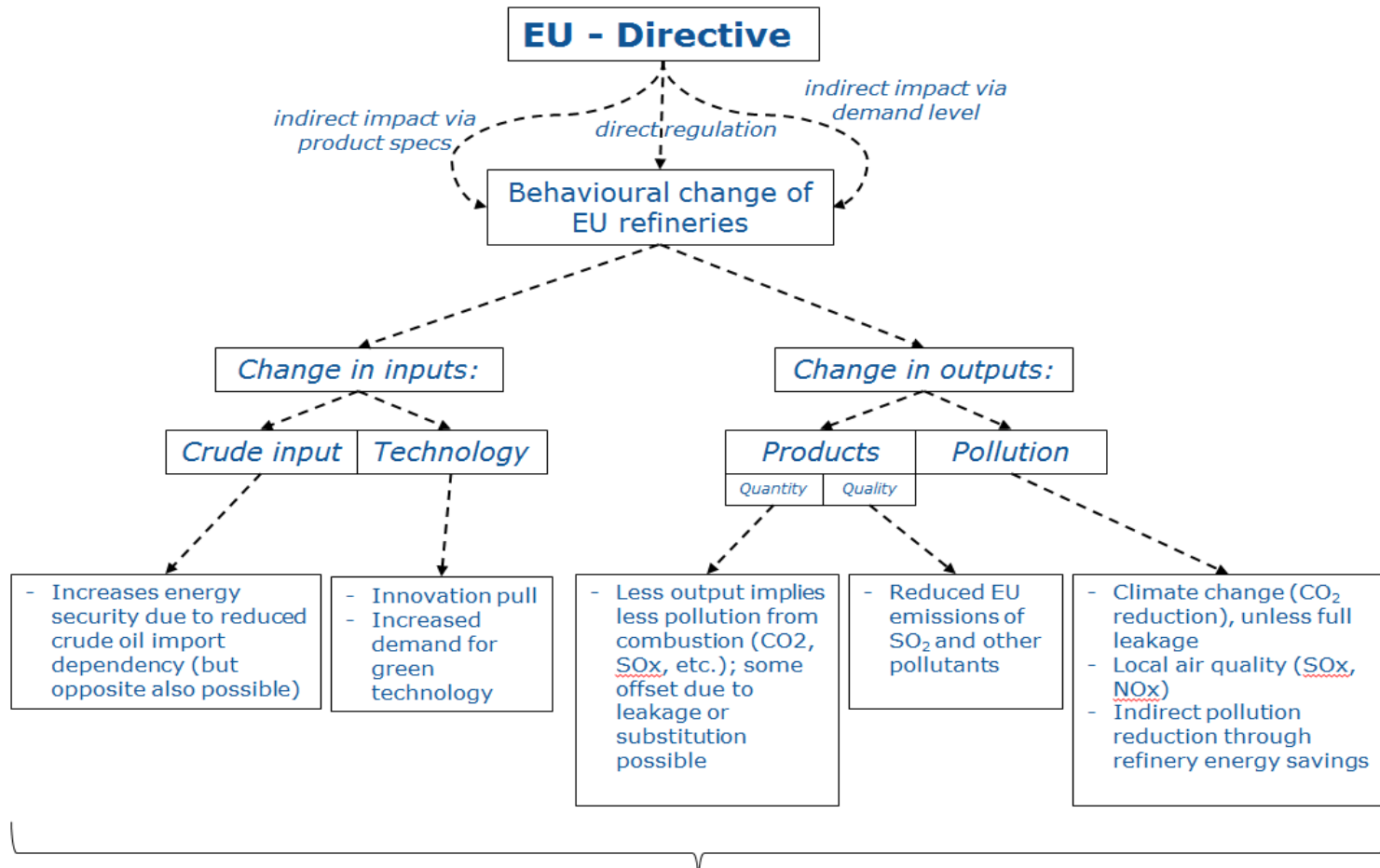
1. Assess economic impacts of legislation

- cost impact on EU refineries
- oil products market impact
- international competitiveness impacts

2. Identify policy inconsistency, redundancy, excessive burden

Conceptual Framework for 10 Directives





Benefits from legislation

Methodology: 3 Pillars

DATA on EU refineries' investments and configuration (JRC/EUROPIA CONCAWE/SOLOMON)

DATA from specialized company on global prices, product trade and refining margins

OURSE MODEL:
Economic model of global refining market, 9 regions, of which 2 EU

Methodology: 3 Pillars

Legislative cost impact

- e.g. investments in
- desulphurisation units
 - refinery SO₂ abatement
 - energy efficiency

Competitiveness impact

- e.g. in terms of EU refining's
- net cash margins
 - utilization rates
 - return on investment

DATA on EU refineries' investments and configuration (JRC/EUROPIA CONCAWE/SOLOMON)

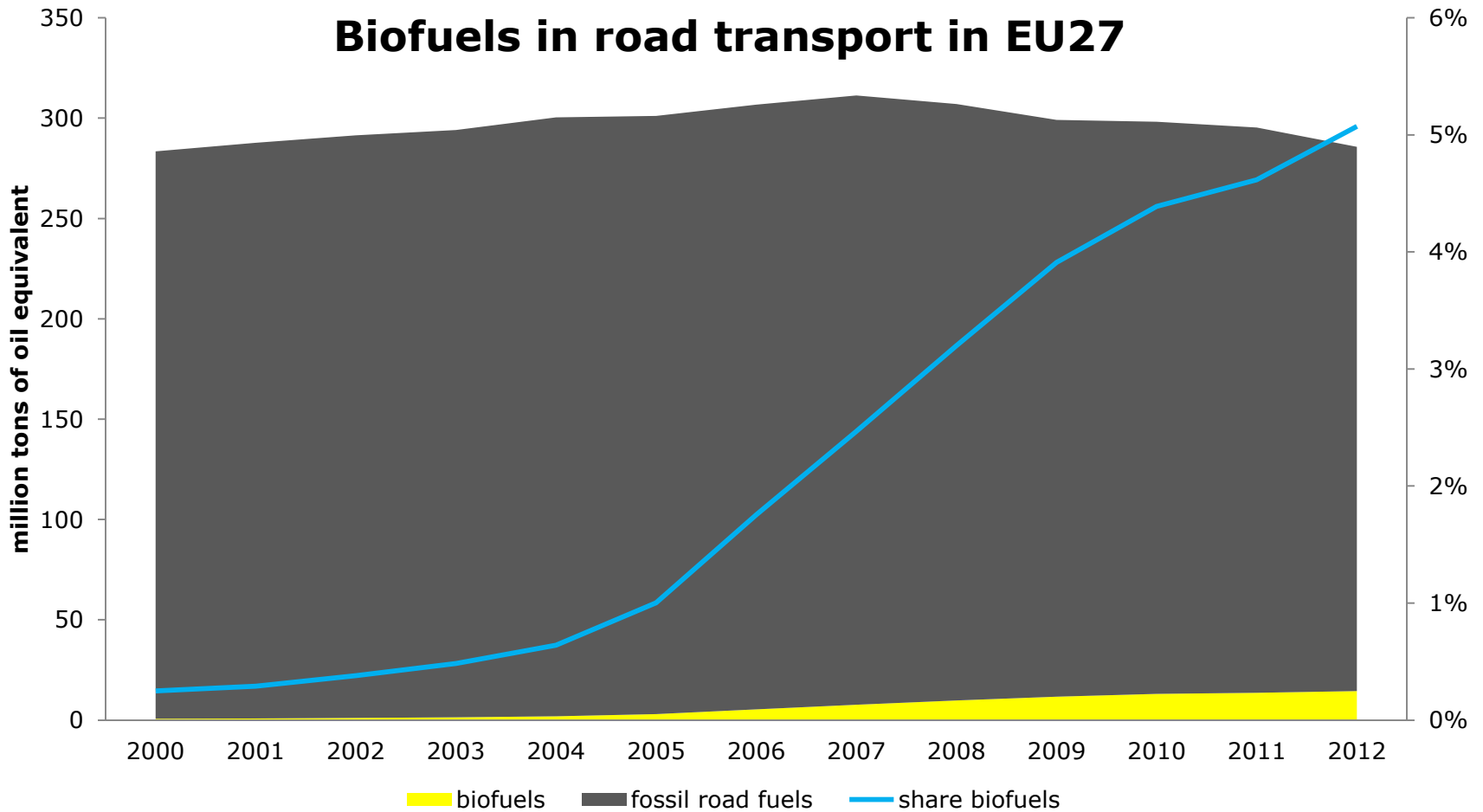
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- *Example 2: int'l competitiveness of EU refining*

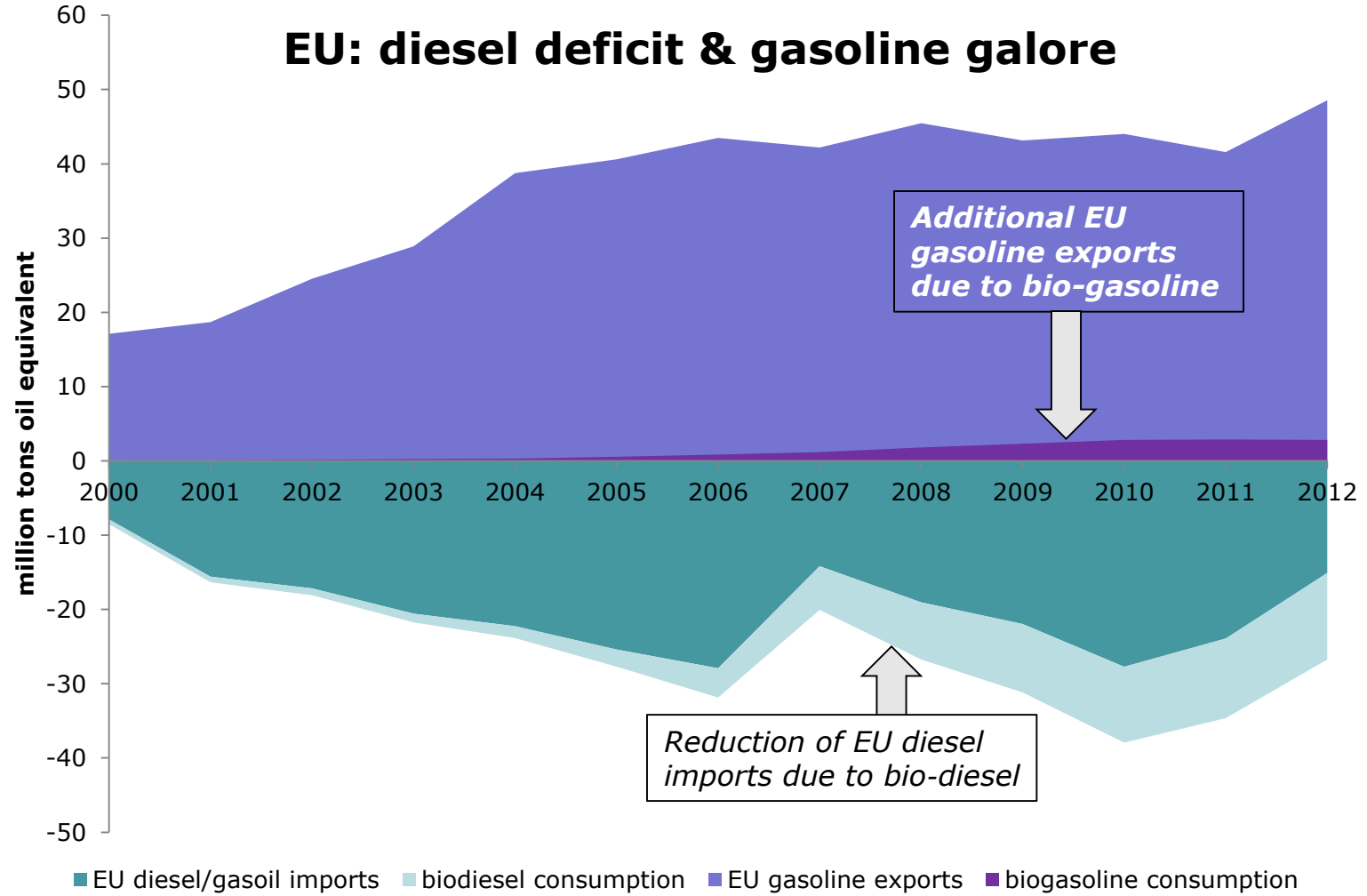
Renewable Energy Directive



Renewable Energy Directive



EU: diesel deficit & gasoline galore





Effect of EU biofuel policy on petroleum sector ambiguous:

- *Positive for Bio-Diesel*
 - **reducing EU diesel deficit and dependence on imports**
 - **in 2012, diesel imports would have had to be 79% higher without biodiesel**
- *Negative for Bio-Gasoline*
 - **problem of EU gasoline excess capacity is reinforced**
 - **in 2012, without bio-gasoline either**
 - (i) **EU gasoline exports could have been lowered by 6%, or**
 - (ii) **EU utilization rates could have been up to 3 percentage points higher**
- *Next: OURSE model for further quantification (and validation)*
- *However: impact of 3 Mtoe increase in bio-gasoline remains small compared to 52 Mtoe drop in fossil gasoline demand over 2000-12*

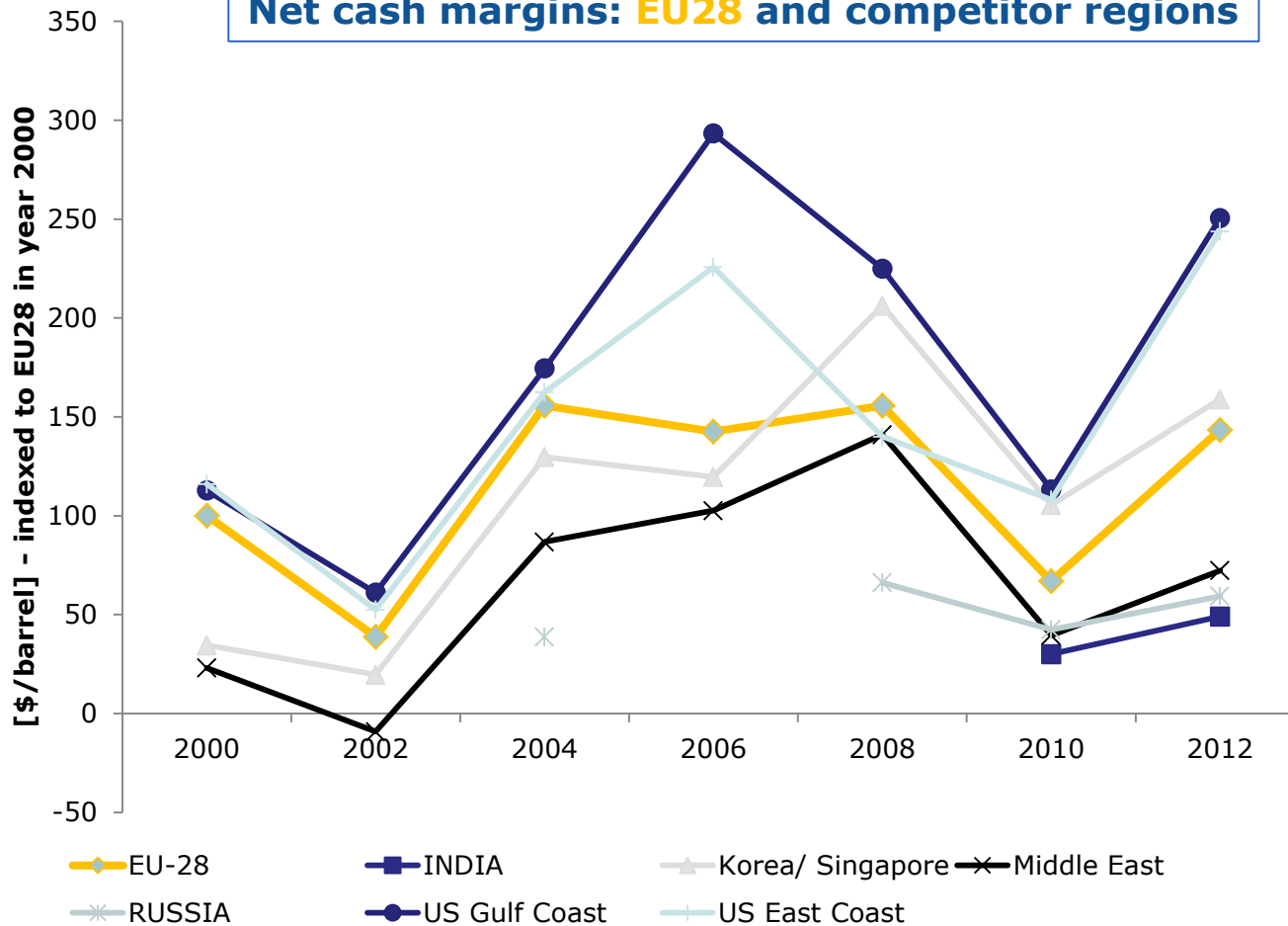
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Int'l competitiveness of EU refining



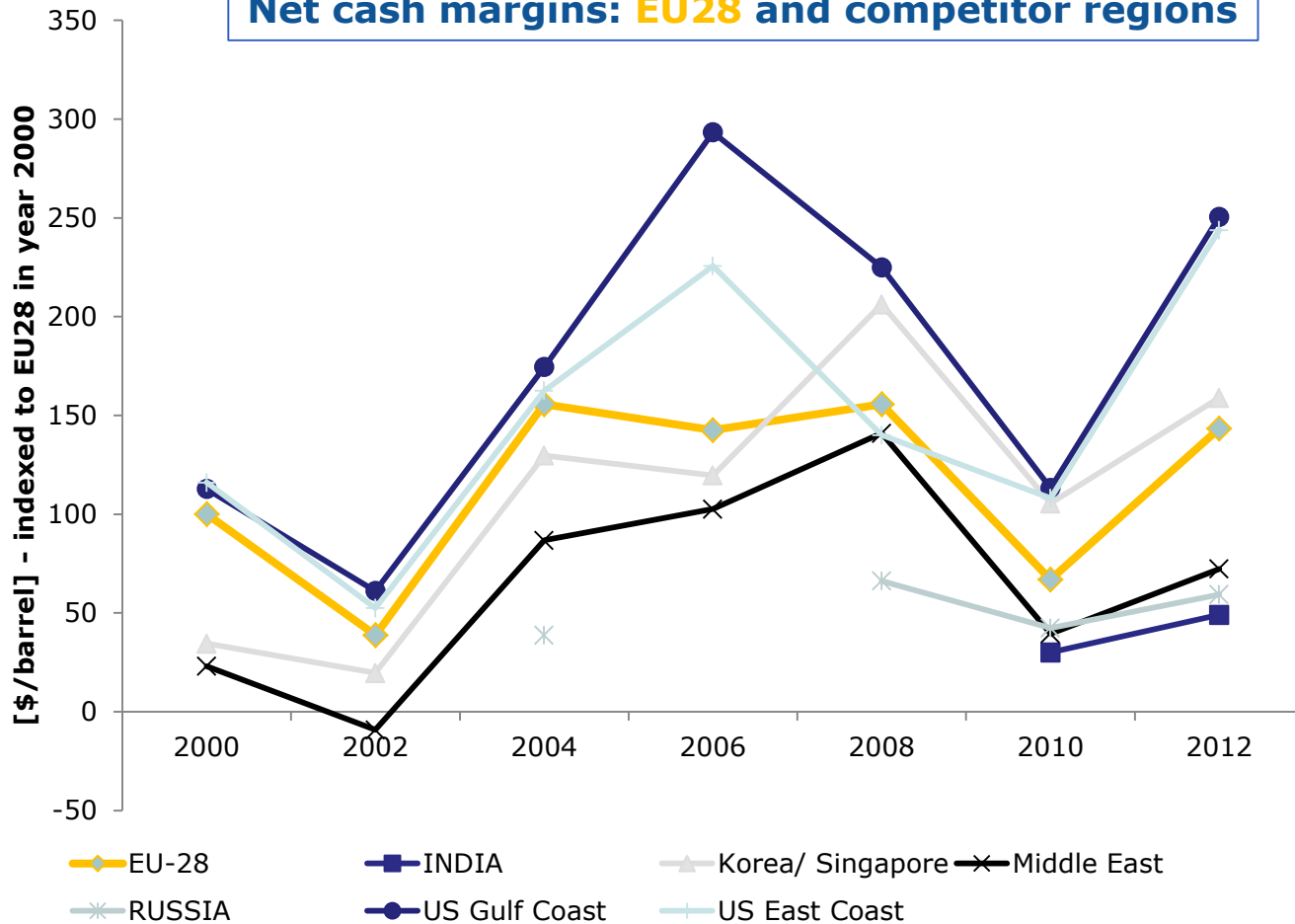
Net cash margins: EU28 and competitor regions



Int'l competitiveness of EU refining



Net cash margins: EU28 and competitor regions



	2000	2012
Korea/ Singapore	34	159
Middle East	23	72
US Gulf Coast	113	251
US East Coast	116	244
Ø	72	181
EU28	100	143
EU28 vs. Ø	+28	-38

Int'l competitiveness of EU refining



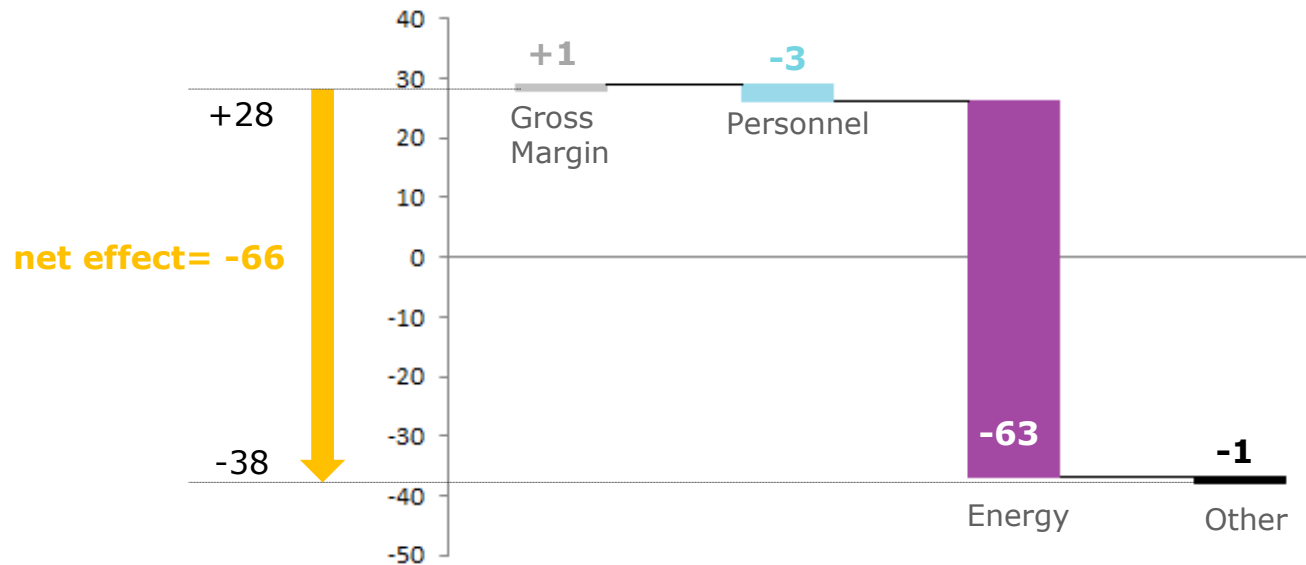
Net Cash Margin = Gross Margin – Personnel Cost – Energy Cost – Other Cost

Hence, the EU's backslide with respect to its competitors is the net effect resulting from backslides (or gains) in these four underlying components.

Int'l competitiveness of EU refining



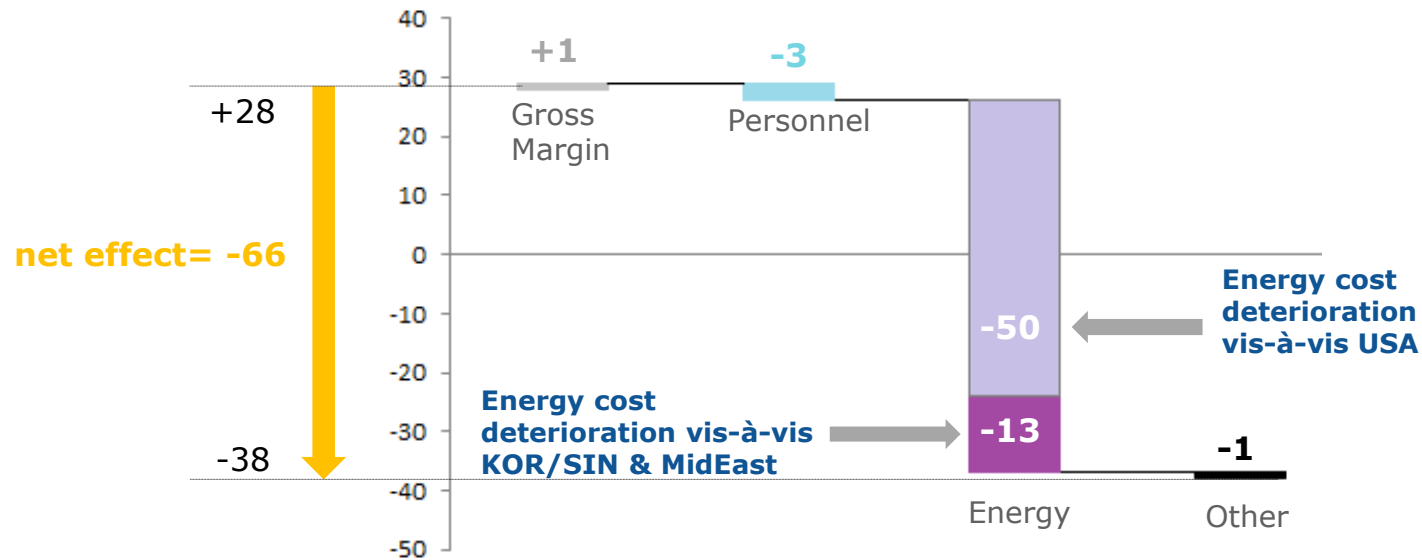
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Int'l competitiveness of EU refining



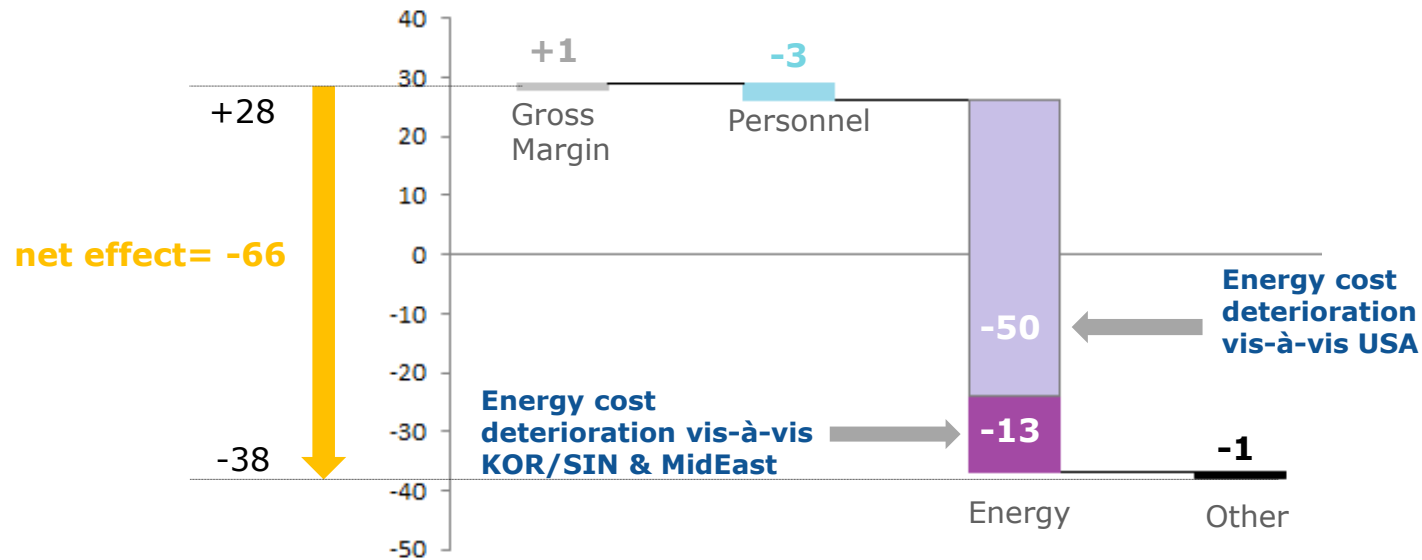
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Int'l competitiveness of EU refining



Net Cash Margin = Gross Margin – Personnel Cost – Energy Cost – Other Cost



The observed sharp drop of EU refining margins versus those of its competitors is to 74% (=50/68) attributable to the deterioration of EU energy costs vis-à-vis US energy costs.*

* Preliminary finding with caveats, e.g. strong data limitations

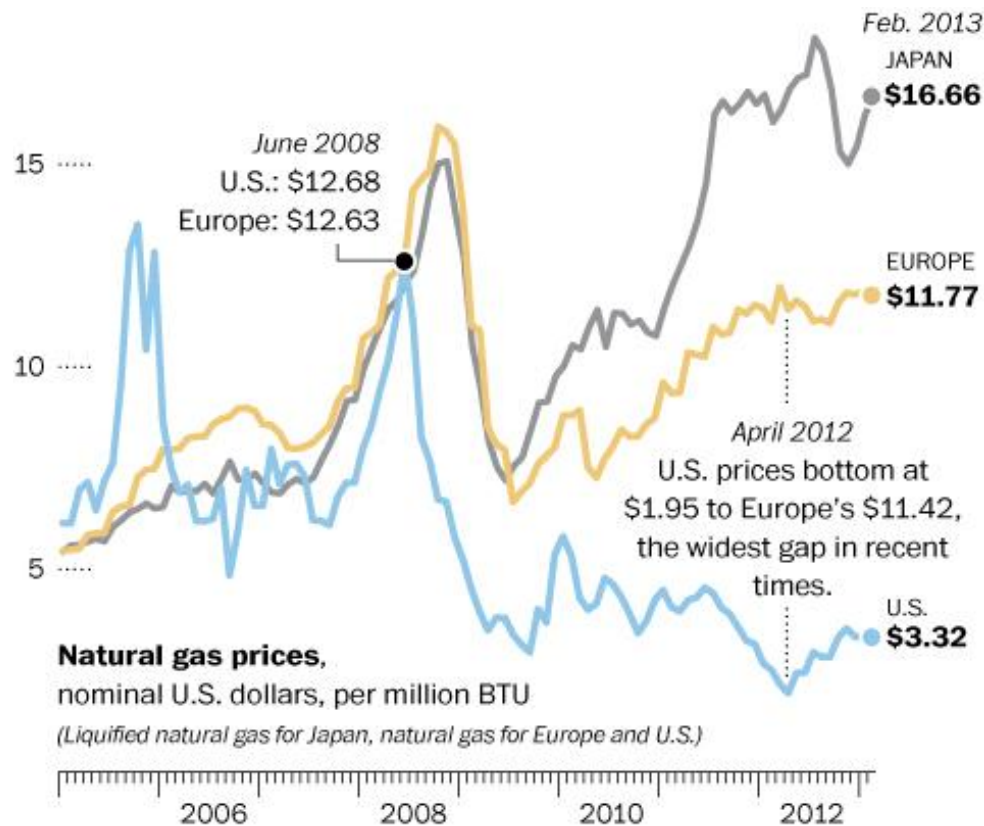
Int'l competitiveness of EU refining



The observed sharp drop of EU refining margins versus those of its competitors is to 74% (=50/68) attributable to the deterioration of EU energy costs vis-à-vis US energy costs **over the years 2008-2012**.*

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Int'l competitiveness of EU refining



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Final remarks on EU competitiveness

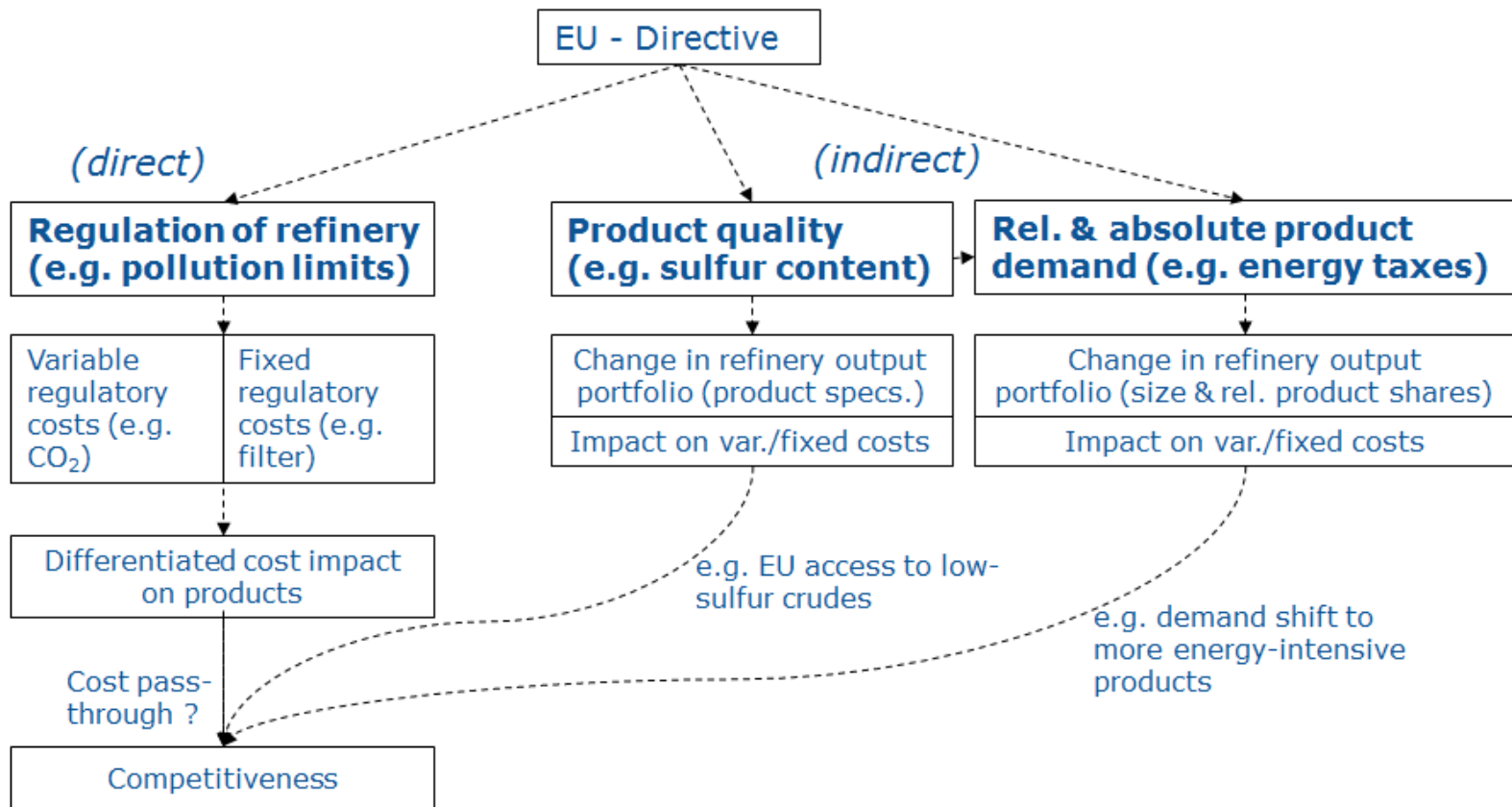
- 1. Loss of EU competitiveness seems evident, but due to current data limitations no definite conclusions should be drawn*
- 2. Energy costs play a very significant role, but how exactly do they propagate into markets and EU refining economics?*
- 3. Net Cash Margin only one possible indicator of competitiveness (but perhaps the most important)*
- 4. Need for further analysis, e.g.:*
 - if US energy cost effect is 74%, what are the other 26% ?**
 - cost = price x quantity ⇒ analyse relative role of energy prices vs. energy intensity**

THANK YOU

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BACK-UP SLIDES

Conceptual Framework for 10 Directives



3 methodological pillars:

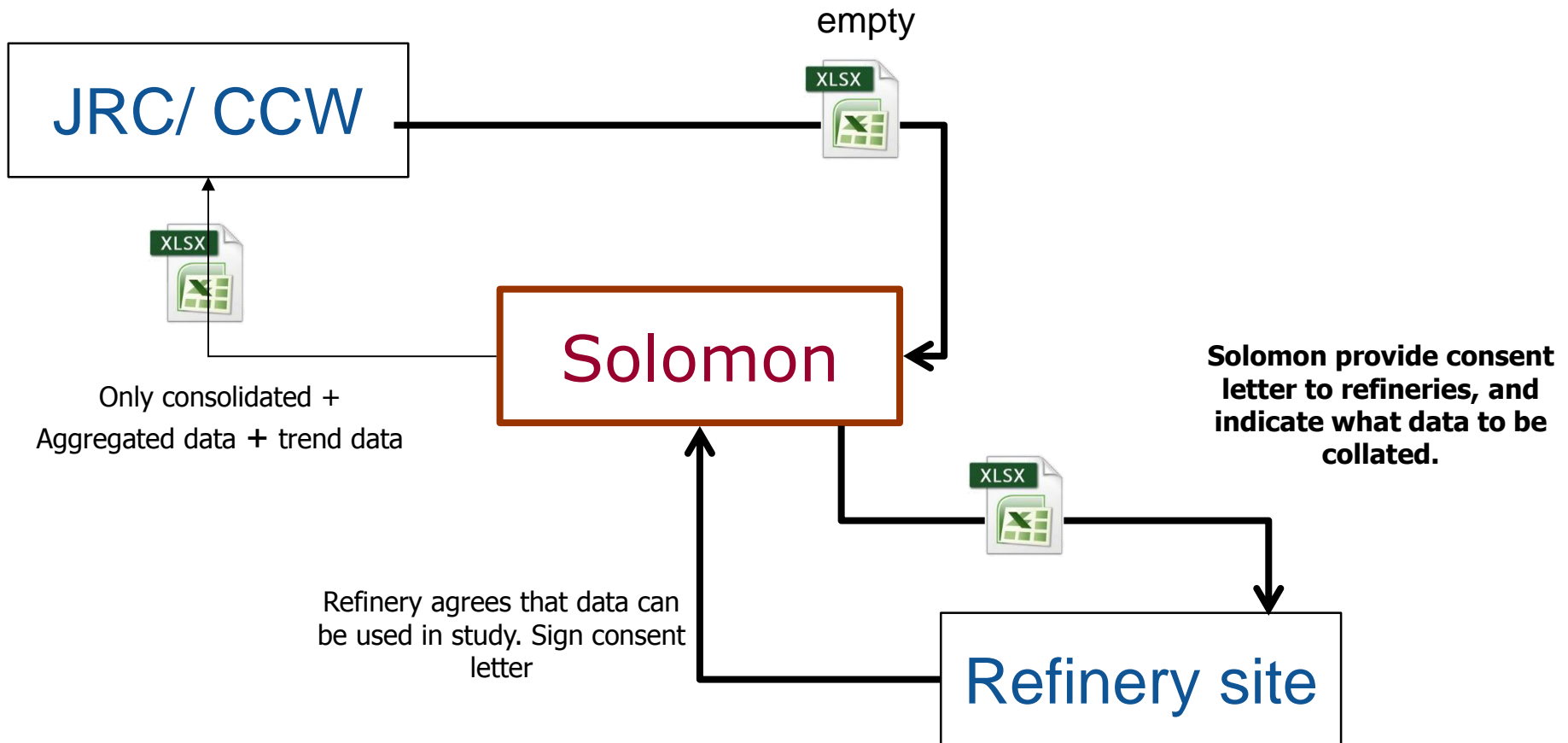
- 1) Estimating cost impacts by using primary data on compliance costs from EU refineries (joint JRC / CONCAWE / Solomon **refinery questionnaire**).
- 2) Statistical descriptive analysis of refinery sector and competitiveness impacts based on **global time series data**. The acquisition of such data from a third party is currently undertaken.
- 3) Modelling the legislative and market driven impacts on the refining sector, using the global **OURSE model**.

		APPROACH			
		SURVEY TO REFINERIES (detailed view)	STATISTICAL ANALYSIS (intermediate)	OURSE MODELLING (aggregate view)	Review of literature
Costs impact of legislation	Direct (a)	X			
	Indirect (b)	X		X	
Competitiveness impacts of legislation (c)			X	X	
Benefits of legislation		(x)		(x)	X

Questionnaire: Process

- *Questionnaire developed by JRC in consultation with CONCAWE*
 - Is data actually recorded by refinery?
 - Is it relevant?
 - Is it 'inaccessible' because commercially sensitive?
- *2-step approach chosen for reasons of efficiency*
 - Step 1: industry consultant SOLOMON extracts relevant data from its existing database ($\sim 3/4$ of all needed data)
 - Step 2: facilitated by CONCAWE, all remaining data is requested directly from refinery via questionnaire

Questionnaire: Process



Questionnaire: Data Coverage

- *Time horizon 1998 – 2012 (only even years)*
- *SOLOMON part:*
 - Organization and staff
 - Capacity and production (inputs & outputs)
 - Complexity and investments (desulphurisation units..)
 - Cost structure (variable, fixed, energy costs...)
 - Detailed energy in- & outputs, and energy efficiency
 - Biofuel inputs
- *Refinery part:*
 - Pollution (SO_x, NO_x ..) and related investments
 - Effects from strategic oil stocking obligations

Questionnaire: Data Coverage

- *Data will be reported to JRC in aggregated format:*
 - 9 geographical groups of 'peers'
 - 5 types of refinery complexity
 - Stand-alone refinery vs. refinery as part of petrochemical complex
- *Data is anonymized*
- *Some data will only be reported in terms of its relative change with respect to the 1998 base year (i.e. as index)*