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Progress on Refining Fitness Check

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Fitness Check

Overview

Understand the impact and interaction of those policies that are most important for the competitiveness of the sector:

- Quantitative assessment of impact of relevant legislation and policies:
- Qualitative assessment of effectiveness, efficiency, coherence and relevance of measures
- Conclusions and recommendations: what are the gaps, inconsistencies overlaps?

The fitness check is relevant for policy decisions on the future of the regulatory framework

Main questions:

Effectiveness: objectives and achievements of legislation

Efficiency: Costs and benefits

Coherence: Degree of integration of policy measures covered by the Fitness Check

Relevance: to what extent these polies address economic, social and environmental challenges

Fitness Check

Overview

Scope for fitness check:

- Renewables Energy Directive
- Energy Taxation Directive
- EU Emissions trading system
- Fuels Quality Directive
- Directive on Clean and Energy Efficient Vehicles
- Industrial Emissions Directive
- Strategic oil stocks Directive
- Marine fuels Directive
- Energy efficiency Directive
- Air Quality Directive

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Macroeconomic contribution

Total, direct and indirect contribution of the EU refining sector to the EU economy

- EU employment supported by the EU refining
- EU income supported by the EU refining
- Gross value added
- Taxes and social security contribution

Security of energy supply

Risk indicators:

- Net import dependence (refining cover)
- Political stability of suppliers
- Volatility of domestic production
- Number of refineries

Resilience indicators:

- Diversity of crude suppliers
- Average storage of crude and oil products
- Flexibility of refining infrastructure (Nelson index)

Refining market development

- Products demand and supply (demand and supply mismatch)
- International trade flows

Crude market development

- Major crude suppliers of the EU
- Global crude trade flows

Trends in refining markets

- Shale revolution in the US
- Large-scale investments in modern capacities in China and Russia
- Others: export favorable tax regimes, etc.

Quantitative Assessment

Analytical Framework

Profitability:

- Prices of crude oil and petroleum products w/o taxes
- Gross / net refining margins by refinery configuration type
- Return on average capital employed

Market structure and competitiveness:

- Size and complexity of the refinery (processing units, product slate, yields)
- Investments in capacities, plant capacity utilisation rate
- Location
- Labor productivity, unit labor costs
- Domestic and export market shares

Cost structure:

- Operational costs (OPEX), variable and fixed running costs
- Investment costs (CAPEX), capital
- Transportation costs, crude oil and products freight costs
- Carbon costs (EU ETS)

Input, exogenous parameters:

- oil products demand (in terms of both quantities and quality specifications),
- crude oil availability,
- refining capacities,
- crude oil prices, and
- CO2 emissions restrictions and taxes

Output endogenous variables:

- refineries throughput (or activity level),
- products blending,
- interregional flows (trade) of oil products,
- investments in refining units (technology of the refining processes),
- marginal costs of oil products (oil products supply prices), and
- pollutant emissions.

Baseline scenario

Scenario consistent with the observed data (ex-post analysis), including the measures of all the implemented policies.

Comparative scenario analysis

Reduced number of scenarios to simulate the cumulative impact of EU policy measures

Sensitivity analysis

Model simulations of how changes in key exogenous parameters over the past 10 to 15 years affect the refining industries in Europe and the other world regions.

Example: Directive on fuel quality (1)

Policy measures:

- Environmental specifications for petrol and diesel, amongst others for sulphur content:
  - Diesel: 350-50-10 mg/kg in 2009
  - Petrol: 150-50-10 mg/kg in 2009

- GHG emissions – 10% reduction of the life cycle emissions per unit of energy by 2020
  - 6 % by 2020 (2% by 2014 and 4% by 2017)
  - Calculation method – (no agreement reached as yet)

Example: Directive on fuel quality (2)

Impact channels:

- Change in the product specification
- Change in the demand structure (demand fall for higher sulfur fuels)
- Flexibility within the crude slate
- New investments

Data requirements:

- Costs (unit) estimates: capital costs and operational costs
- Additional refinery capacities needed in response to the legislation

Analysis:

Costs and benefits

Global LP model (OURSE)

Example: Industrial Emissions Directive/IPPC Directive (1)

Policy measures:

- *Basic obligations* of the operator:
  - use all appropriate pollution-prevention measures, i.e. the best available techniques;
  - prevent all large-scale pollution (to air, water and land);
  - prevent, recycle or dispose of waste in the least polluting way possible;
  - use energy efficiently; etc.

- All installations must have a *permit* to operate
  - 30 October 1999 for new installations and existing installations subject to 'substantial changes'
  - 30 October 2007 for existing installations

Example: Industrial Emissions Directive/IPPC Directive (2)

Impact channels:

- New permit requirements raise costs
- This may affect competitiveness, depending on the degree of cost pass-through rate

Data requirements:

- Which emission abatement projects/measures have been adopted (takes into account all site-specific factors)
- Total compliance costs:
  - *Capital costs* of pollution abatement projects (or of installation reconfiguring to meet permit requirements)
  - *Annual operating costs* of operation of pollution control techniques and of monitoring equipment
  - *Administrative costs* of environmental permits

Example: Industrial Emissions Directive/IPPC Directive (3)

Analysis:

- Actual experience of plants in implementing the IPPC Directive
  - List of pollution abatement measures (BATs) used
  - The corresponding actual incurred costs
  - Further analysis of the data (cost pass through, profits, competitiveness, etc.)
  - Emission reductions achieved
- Possible application of the OURSE model:
  - may shed further light on the reaction of EU refining to pollution prevention and control

Potential external factors to be considered in the modelling exercise:

- Changes in consumer preferences for diesel and gasoline vehicles
- Reduced US demand for the EU gasoline
- Development of non-conventional crude oil supply in North America
- Different development of energy costs across world regions
- Other factors to be determined

1. by May 2014: Quantitative study
2. May – July 2014: Qualitative evaluation
3. Aug – Sept 2014: Conclusions and final report