

Briefing for Director-General Dominique Ristori

Dialogue with Energy Intensive Industries

Informal high-level brainstorming with energy-intensive industries

8 June 2018, 8h30-10h00, BERL, 13th floor, Salon 2

Scene-setter

The informal high-level brainstorming breakfast will address the role of the energy intensive industry in the energy transition. The event is organised in the context of our efforts towards a cost-efficient decarbonisation of Europe's energy system and the on-going work on a Long-term Decarbonisation Strategy until 2050. Telmo Baltazar will represent President Juncker's cabinet. You will start the meeting by a short welcome before inviting the Commissioner to introduce the brainstorming session.

The 13 participants include representatives of energy intensive industries as well as representative of industrial associations:

- [REDACTED], CEFIC
- [REDACTED], FuelsEurope
- [REDACTED], Orgalime
- [REDACTED], Eurofer
- [REDACTED], ArcelorMittal
- [REDACTED], Salzgitter
- [REDACTED], thyssenkrupp Steel European Commission
- [REDACTED], Mitsubishi
- [REDACTED], Covestro [entreprise chimique, produit des "polyurethanes, polycarbonates, coatings, adhesives etc]
- [REDACTED], Port of Rotterdam
- [REDACTED], Aurubis
- [REDACTED], IFIEC Europe
- [REDACTED], voestalpine

The **objective** of the meeting is to brainstorm on the synergies between the Energy Union, the clean energy transition and industrial activities in the EU. The energy transition creates new opportunities for the industry and increases its global competitiveness in a changing world. At the same time, industrial sectors can contribute to the energy transition with innovative solutions.

Energy intensive industries have already started incorporating European energy and climate policies in their long-term strategy. Every major industrial sector has a decarbonisation roadmap (which, in several cases, is in the process of being updated).

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Moreover, representatives of the energy intensive industries are involved with DG GROW in the High Level Expert Group dealing with issues related to competitiveness and decarbonisation. The three guests mentioned above are also members of the High Level Expert Group on Energy Intensive Industries.

The position paper of the High Level Expert Group and the minutes of the last meeting held in DG GROW on May 3 2018 are attached to this briefing. The expert group also submitted a summary of each sector strategy; however it is more difficult to reach a common position (due to, e.g., issues of material substitution).

Speaking points for opening statement

- Dear CEOs, dear Chairmen, dear Presidents, dear Member of Management Boards, dear Director Generals, dear participants, dear colleagues,
- Before the introductory remarks of Commissioner Miguel Arias Cañete, let me welcome you to this high-level brainstorming event having this informal exchange with you is part of our efforts towards a cost-efficient decarbonisation of our economy.
- However, let me clearly state that the benefits of the energy transition go beyond the decarbonisation challenge. It is a great opportunity for greater energy security, competitiveness, investments, growth and jobs as well as improved living conditions and comfort.
- And we know that this is possible! From 1990-2016, CO2 emissions decreased by 23% while GDP grew by 53% showing the successful decoupling between economic growth and CO2 emissions.
- Investments in renewables and energy efficiency as well as in the modernisation and integration of European energy markets, are essential for the decarbonisation of EU economy. But most importantly for the creation of growth and jobs all over Europe, and for the Union's global competitiveness, as the technological advantage these investments sustain will be essential for Europe's industry.
- A stable and performant regulatory framework is key to channeling such investments, and the EU is the most advanced in this respect, thanks to the *Clean Energy for All Europeans* proposals for which the inter-institutional negotiations are quickly progressing. What is needed next, is a strategy to reinforce the industrial basis underpinning the clean energy transition.
- The energy transition and a strong EU industrial base are mutually reinforcing: the energy transition creates new opportunities for the industry, in particular in the construction and engineering sectors. At the same time, many industrial sectors can contribute to the energy transition through more efficient use of energy, production of equipment and innovative solutions to curb emissions, improving thus also EU industry's global competitiveness.
- Energy Intensive Industries are and will always be playing a crucial role in this context:

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- The sector represents an important part of the European economy and the steel and aluminium sector alone employ more than half a million people in the EU.
- Today, Energy Intensive Industries consume approximately 16% of the EU total final energy consumption.
- They also face higher share of energy costs in their production costs (10% as compared to 3% on average).
- In a rapidly evolving energy and industrial landscape, the EU will defend existing industrial capacity in Europe to deliver durable high-quality products, corresponding to the highest safety standards relevant for the wider economy (in sectors such as steel, aluminium, copper, chemical / petrochemical products, automobile industry, refineries, etc.).
- Europe should be capable to make the best products which contribute to reducing emissions while creating growth and jobs and being competitive at global level thanks to improved energy efficiency and synergies stemming from a broader deployment of innovative low carbon technologies.
- The Commissioner Miguel Arias Cañete will now give introductory remarks. In the meantime, please enjoy your breakfast.

- Decarbonisation of the European economy will not happen in isolation, but rather in the context of meta-trends that will reshape the world economy. Examples of these trends are: the ageing population, digitalisation, shifting of the global centres of gravity.
- As an example of these meta-trends, China increased steel production by more than 85% between 2007 and 2015. Imports of aluminium from China to the EU increased by approximately 52% between 2008 and 2014. In the meanwhile, following the recession of 2009 production of both steel and aluminium decreased in the EU with only a weak recovery in the following years.
- However, in the context of global economic growth, we expect the value added of the industrial sector in the EU to keep increasing until 2050. As the industrial sector continues to expand, energy intensity will further decrease. In 2050, it will take half the energy needed in the year 2000 to produce the same value added. On the other and, industry will use almost one quarter more electricity in 2050 compared to 2000.
- The LTS will set out our vision for a decarbonised Europe in a changing world.

Contributions to the LTS

- Every sector of the economy will contribute to the LTS starting with the power sector that will be the first to decarbonise.

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- The vision for Europe's industry will be based on your input. We look forward to a fruitful cooperation with you using the channels already established (for example, the High Level Expert Group on Energy Intensive Industries). Special attention should be given to complementary concepts such as the circular economy and bio-based economy.
- A similar inclusive approach will be used to compile the visions for the other sectors: services, agriculture, transport.

Enabling factors

- Several different elements need to be considered to put the strategy in place:
 1. A clear strategy is needed to support innovation by pooling resources. This is particularly relevant for industry as new technologies will be needed to decarbonise some industrial processes.
 2. Investments will be substantial and the analysis prepared by the Commission will help quantify the needs. It will then be necessary to explore intelligent ways of financing the transition and to avoid overstressing public and private finances.
 3. Public finance can play a strategic role in leveraging and focusing private investments.
 4. Trade and geopolitical issues should be taken into account, e.g., to avoid unfair competition. Decarbonisation will reduce Europe's dependence on fossil fuels, but scarcity of other raw materials may become an issue.

Questions to frame the discussion:

- What are the main meta-trends (ageing population, digitalisation, shifting of the global centres of gravity) that will affect the European industry in the coming decades. How will these meta-trends interact with the Paris-compliant long-term Decarbonisation?
- We anticipate a coupling between power generation and final energy demand sectors. Industry, for example, benefits from the decarbonisation of the power system. What are the main opportunities and hurdles of increased sector coupling?
- The Long-Term Strategy will shed light on the main technological gaps for decarbonisation of industry. What are the main gaps that you see, technological, but also regulatory?

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Defensive points:

How can the European Union guarantee a level playing field for the European Industry in the context of decarbonisation?

A level playing field can be assured by promoting global climate action. The Paris Agreement is also an international treaty establishing commitments on ratifying parties according to their level of development. Finally, proactively leading the energy transformation is the best way to ensure a competitive advantage.

How can industry inform the vision for the LTS?

The Commission is stepping up its effort to gather stakeholders input for developing an inclusive vision for the Long-Term Decarbonisation strategy. Industry can provide inputs in several ways, notably via the upcoming public consultation and through the platform of the High Level Expert Group on Energy Intensive Industries. Officers from Dg ENER working on the LTS will be directly involved in the works of the High Level Expert Group. But having in mind the deadlines, we need input quickly.

How can industry get advice/information from the Commission on issues related to the LTS (such as long-range forecasting,...)?

The Commission is stepping up its efforts to disseminate assumptions and background information relative to the preparation of the LTS. Making sure that each stakeholder receives the relevant information can be a difficult task. I recommend you to reach out to Commission staff through established platforms such as the High Level Expert Group.

Minutes of the meeting of the Commission High Level Expert Group on Energy Intensive Industries (EIIs):

3 May 2018

Brussels, 4 May 2018

Minutes

█ chaired the meeting with industry associations and DGs ENER, CLIMA, RTD, ENV, GROW and the SG (list of participants attached) on the work to develop a consolidated 2050 strategy for the EU's energy-intensive industries, which should contribute to the EU's low emission strategy for 2050.

Discussion

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Then chair took stock of the latest meetings. He asked the EIIs to present their work so far and explained that the purpose of this meeting was to see what questions the EIIs had for the Commission services and vice versa.

On behalf of the EIIs [REDACTED] presented their discussion paper (attached), noting the importance of EIIs at the heart of value-creation in Europe. EIIs have already made major efforts to reduce their carbon intensity and are quickly approaching the technical limits of current technologies. Further significant emission reductions will require transformational changes as well as the development and deployment of innovative technologies and solutions, which all sectors are actively working on. The full investment costs of the transition would require up to four-digit billion of Euros. This is an unprecedented challenge within a relatively short time horizon. Energy, feedstock and infrastructure represent another essential prerequisite to support the industry transition. The strategy should be sufficiently flexible and address also the international dimension, taking into account the emission reduction contributions of extra-EU countries. This is essential to ensure the environmental integrity as well as the competitiveness dimension of the strategy.

EIIs sectorial low-carbon roadmaps, visions and pathways have identified, among others, the following key CO₂ abatement options:

- Energy and Materials Efficiency
- Increased use of low-carbon and carbon-neutral energy sources (electricity, hydrogen, bioenergy)
- Alternative feedstock including carbon (Carbon Capture and Utilisation), waste, secondary raw materials and bio feedstock
- Integrated process management
- Carbon Capture and Storage
- New materials and products

The identified abatement options will require significant availability of:

- Secure and affordable low-carbon and carbon-neutral energy carriers (electricity, hydrogen, bioenergy),
- Feedstock and raw materials (biomass, CO₂, gas, hydrogen, alternative materials and fuels),
- Infrastructures (e.g. electricity networks, hydrogen grid, CCS pipelines and storage)
- Evolution of energy prices will affect abatement choices. In the scenario of highest electricity uptake by 2050, our sectors could require an additional amount of electricity (four-digit TWh), which is more than the whole electricity supply estimated by the IEA (IEA World Energy Outlook 2015, 450 ppm scenario).

The enabling regulatory framework would have to address the following main elements:

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- Ensure industrial competitiveness by addressing direct and indirect costs caused by the lack of an international level playing field, in particular in the field of climate, energy, environmental and trade policies.
- Secure public financing in industry research and innovation at EU, national and local level, to upscale technologies to commercial level, to support their market uptake and to address the first mover disadvantages as well as the impact on the value of existing assets
- Secure supply of competitively priced, carbon-neutral energy. This includes:
 - Develop a comprehensive strategy for the development of a full range of low-carbon
 - and carbon-neutral energy carriers and related infrastructures and storage
 - Ensure an adequate regulatory framework for Power Purchase Agreements (PPAs)
 - and long-term power contracts
 - Value industry's role in balancing the profile of electricity markets
- Promote industrial symbiosis and circular economy, via:
 - Developing a raw and secondary materials strategy
 - Securing a proper accounting of CO₂ emissions across sectors and value-chains
- Stimulate the market uptake of low-carbon, innovative products and solutions.

Individual EIIs expressed the need for inputs from the Commission services on overall landing zones (GDP forecasts, etc.) and in particular availability of key resources (energy, etc.). They also asked for advice on long-range forecasting, regional mapping of industry, infrastructure and CCS potential as well as on depreciation of existing assets.

The Commission services (CLIMA, ENER, GROW) indicated that it would be useful if the EIIs input to the 2050 strategy addressed the following elements:

- Latest sectorial roadmaps
- individual technologies that could be used
- information on sectorial interactions

- Key challenges and opportunities
- Key bottlenecks

- Resource/material efficiency and circularity as vectors for decarbonisation
- potential for value chains that would reduce investment costs
- shift from product production to services with product dimension

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- non-energy raw materials needs

[REDACTED] (RTD) mentioned the Commission's recent MFF proposal, which foresees an allocation for Horizon Europe of 100b EUR, a major increase on H2020. This would include a strong industrial focus. Regarding foresighting, RTD proposed to look into the existing studies by RTD on 2050 and the Bohemia study.

[REDACTED] (ENV) noted that 2050 should envisage a circular economy world, asked EIIs to incorporate other aspects such as product lifetime extension policies and asked EIIs to reflect on what policies Commission should pursue internationally.

The chair addressed the timing, i.e. by November the Commission intended to present a strategy for discussion with stakeholders, but this is part of a process that would lead to the EU presenting its strategy by the 2020 deadline set in the Paris Agreement. This meant that the Commission services would prefer to receive a first consolidated and sectorial input by the summer, which would be discussed with other EII HLG stakeholders after the summer. The Commission services would already like to see the raw data being collected by the EIIs, recognising that it was based on differing underlying assumptions. The collective work would need to continue after this initial phase.

He noted that it could be useful to involve the electricity, hydrogen and waste sectors once the EII work was more advanced. He also indicated that DG GROW planned to extend its interservice group to cover those services responsible for inter alia investment, trade, competition and regional policy.

Next steps

- GROW to send minutes with participation list and latest version of a summary of the EIIs' existing 2030/2050 roadmaps (Annex II).
- EIIs to provide individual roadmaps and further sectoral information as soon as possible.
- DG RTD to provide information on foresighting as soon as possible.
- Extended interservice meeting (Commission services only) including the core group and ECFIN, FISMA, COMP, TRADE, JRC, REGIO, EMPL, MOVE and EPSC (early June).
- Follow-up meeting involving EIIs and core group of Commission services (late June)

Overview of the Steel sector:

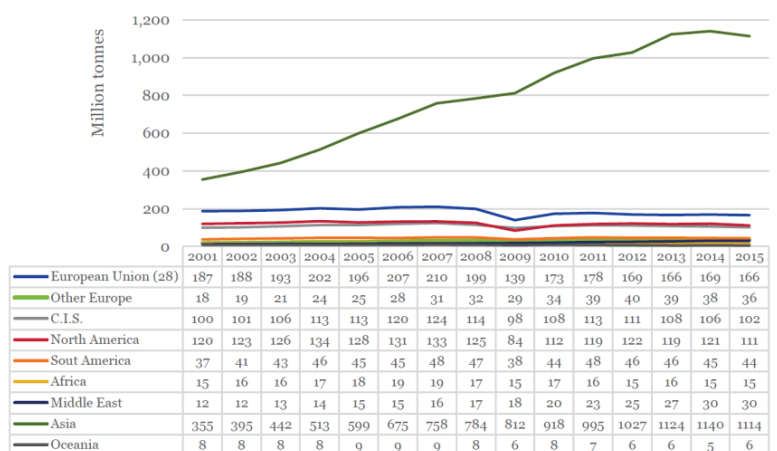
The steel industry is an energy-intensive industry, consuming three main energy carriers, ranked in the following order: coal, natural gas and electricity. Total crude steel production in the EU-28 amounted to 166 million tonnes in 2015. In 2015, six countries – Germany, Italy, France, Spain, the United Kingdom and Poland – accounted for more than two-thirds of total EU crude steel production.

In 2016, the European steel industry directly employs 335,000 people. In general, approximately 218,000 people are employed by large steel producing companies.

The steel sector is characterized by economies of scale and scope, and achieving economies of scale for new producers requires mass production of steel. Therefore, along with new technologies and the privatisation of major European steel industries in the 1990s, a wave of takeovers and mergers occurred. As a result of the consolidation in the European steel industry relatively few companies account for a large share of steel production.

Steel production in the EU decreased by roughly 21% between 2007 and 2015, Asian countries, especially China, increased their production by more than 85% over the same period, satisfying both internal and external demand. Between 2008 and 2009, steel production dropped by roughly 30% in the EU and North America, and underwent a weak recovery in the three following years. After Asia, the global leader with a share in 2015 of 68% global production, the EU ranks second (10%), followed by North America (7%) and CIS (6%). The EU, North America, CIS and Asian countries account for more than 90% of world steel production.

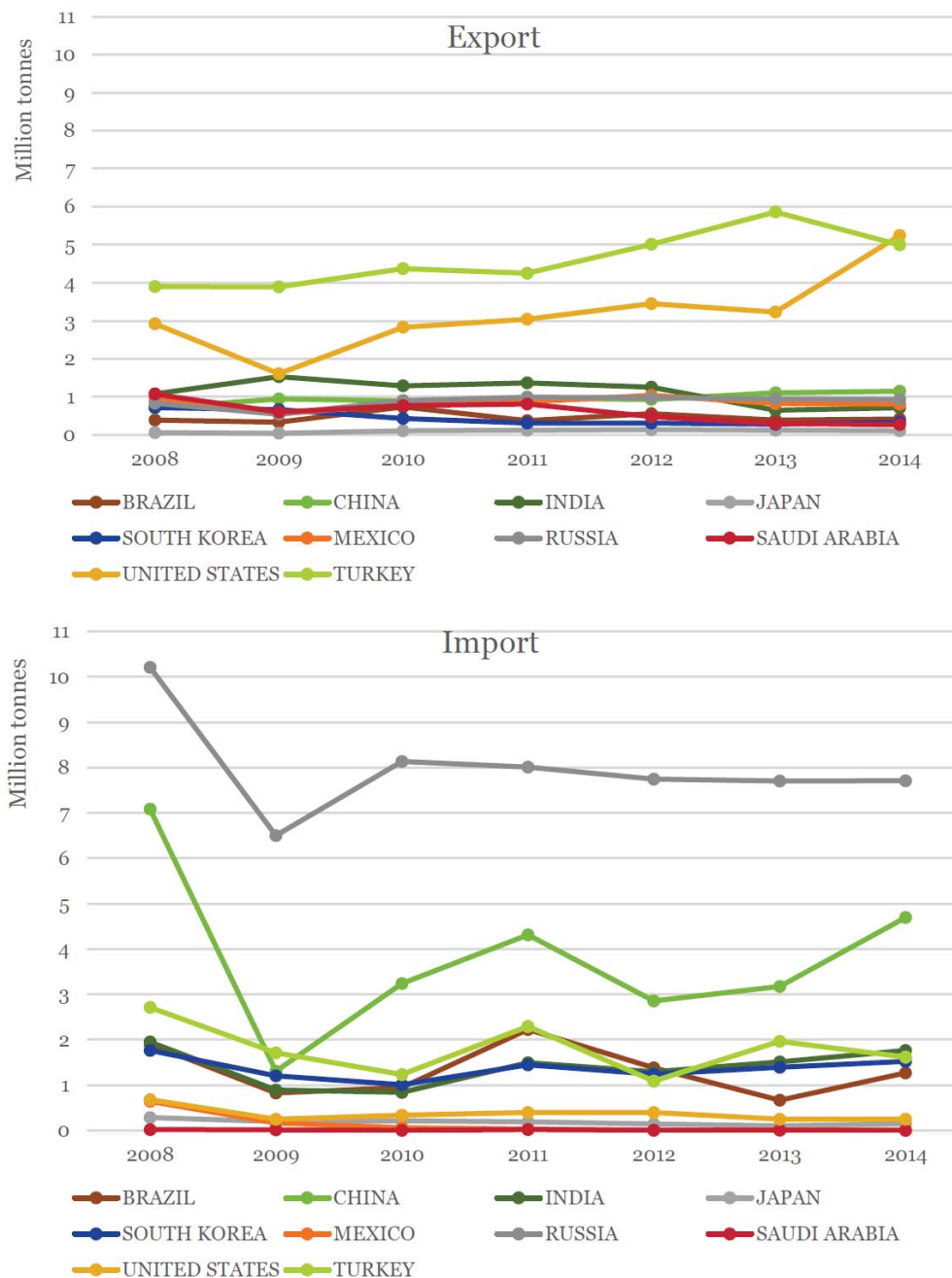
Figure 1 Crude steel production, 2001-15 (million tonnes)



EU trade in iron and steel is still – though to a lesser extent than pre-2012 – represented by intra-EU flows. In 2012, intra-EU trade accounted for 72% of total trade, while only 28% of trade was directed towards extra-EU economies. The same trend is observed with regards to imports: 74% of imports comes from the EU and 26% from outside EU borders.

Figure 2 shows the export and import trade volumes of EU basic iron, steel and ferro-alloys products. In 2014, the EU exported the largest volumes (roughly 5 million tonnes) of iron and steel to Turkey and the United States.

Figure 2: EU export and import volumes of basic iron, steel and ferro-alloys with the 10 most relevant G20 countries (in terms of volume) from 2008 to 2014



The competitiveness of the EU steel industry is highly affected by exchange rates. When the euro appreciates significantly (such as in 2006-07), exchange rates put a lot of pressure on the EU steel industry. Moreover, the European steel industry has been facing since several years an unprecedented wave of distorting trading practices.

Overview of the Aluminium sector:

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In 2012, 2.1 million tonnes of primary aluminium and 4.1 million tonnes of secondary aluminium were produced in the EU-27. In 2015 primary aluminium production was slightly higher at 2.2 million tonnes. The largest energy input (and one of the larger cost components) in the production of primary aluminium is by far electricity, followed by fossil fuels. Aluminium can also be recycled indefinitely to produce secondary aluminium.

As of the beginning of 2016, there were 16 primary aluminium smelters active in the EU, run by 10 different companies. The secondary aluminium plants located in the EU amounted to 209. The aluminium industry is the largest of the non-ferrous metal industries in the EU directly employing a workforce of around 255,000.

The total production value of aluminium dropped in all Member States in 2009, with only Poland and Germany showing significant growth between 2010 and 2014. Production values in Member States such as Greece, Italy and Spain have not yet recovered from the crisis, though all grew slightly between 2013 and 2014.

The EU is a net importer of aluminium and net-imports account for 54% of all aluminium processed in the EU. Over 87% of imports of aluminium wires in 2013 came from just three countries: Iceland (70.000 tonnes), Norway (59.000 tonnes) and Russia (57.000 tonnes).

Table 1 and Table 2 show two snapshots of the trade between the EU and the rest of the world in aluminium products; one for 2008 and one for 2014. It is clear that the EU is a significant net importer, though the gap between exports and imports has narrowed somewhat since 2008. The export values in Table 39 show three main export markets that account for over 35% of total exports: Switzerland, USA (13% of total export by value in 2014) and China. These three countries also figure in the list of main importers to the EU (with 4.3% of total imports coming from the USA).

Table 1: Exports of aluminium and articles thereof between the EU and main trade partners (2008, 2014, in USD), sorted by export value in 2014

2008		2014	
Trade Partner	Exports	Trade Partner	Exports
Switzerland	2,014,955,607	Switzerland	2,239,901,354
USA	1,975,974,227	USA	1,885,849,349
China	967,053,555	China	1,143,096,756
India	373,119,730	India	639,893,056
Turkey	537,721,574	Turkey	624,611,456
Russian Federation	1,110,524,766	Russian Federation	610,683,076
Norway	692,962,763	Norway	608,846,595
Saudi Arabia	234,079,393	Saudi Arabia	562,091,152
Republic of Korea	377,075,723	Republic of Korea	427,595,389
TOTAL	13,759,956,669	TOTAL	14,389,846,718

Table 2: Imports of aluminium and articles thereof between the EU and main trade partners (2008, 2014, in USD), sorted by import value in 2014

2008		2014	
Trade Partner	Imports	Trade Partner	Imports
Norway	5,833,436,163	Norway	3,967,402,538
Russian Federation	2,547,862,978	Russian Federation	3,560,916,747
China	1,863,164,573	China	2,897,705,901
Switzerland	1,784,144,616	Switzerland	1,872,665,801
Iceland	1,890,128,637	Iceland	1,870,243,277
Turkey	1,142,957,021	Turkey	1,461,228,260
United Arab Emirates	631,606,095	United Arab Emirates	1,219,038,839
Mozambique	986,687,052	Mozambique	1,150,534,192
USA	1,111,067,976	USA	1,006,173,478
TOTAL	24,227,743,175	TOTAL	23,362,706,256

Energy costs for Energy Intensive Industries such as steel and aluminium

Energy costs play a modest role in the total production value of the economy in Europe (a bit more than 2% for industry, less than 2% for services).

Energy cost are however important for energy intensive industries (~2% of the GDP; with steel and aluminium representing together 0.21% (0.15% steel and 0.05% aluminium)), specifically in segments of these industries exposed to international competition such as primary steel, primary aluminium, refineries, etc.

The 2016 energy prices and costs reports report shows that energy costs represented on average 5-20% of production costs for energy intensive industries (~ 8% for steel and aluminium)[1] and that some years in some industries can reach up to 40% of the production costs (27% in some cases for steel).

This justifies the need for compensatory measures for these industries to ensure a level playing field (free ETS allowances, State aid for indirect cost of electricity).

[1] Note that the sector statistics include firms producing steel products with different value added and following different production processes (e.g. BF or EAF). The averages of the sector represent the industry as a whole and might not be fully representative of concrete processes in the sector, which may have different sensitiveness to energy cost

Figure 3 Energy costs over production costs of EII's

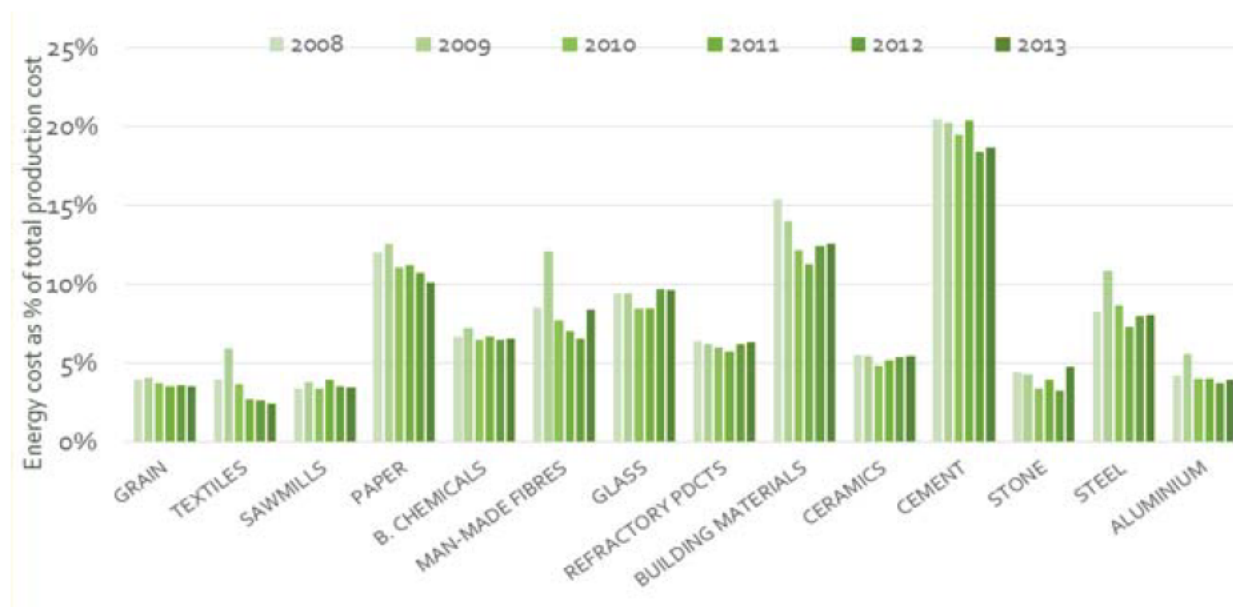


Table 3: Steel and Aluminium sectors – Energy cost intensity, economic importance and international exposure

NACE4 category	Energy cost Intensity	Share of GDP	Trade intensity
C2410 - Manufacture of basic iron and steel and of ferro-alloys ^[2]	7.83%	0.16%	25%
C2442 - Aluminium production ^[3]	7.19%	0.05%	34.64%

Sectors at NACE 4 level are still highly aggregated, in particular as regards steel and aluminium as they present together the data for primary and secondary steel and aluminium which display different energy costs intensities (the production of primary products consumes much more energy than secondary products)

^[2] NACE 2410 includes firms producing steel products with different value added and following different production processes (e.g. BF or EAF). The averages of the sector represent the industry as a whole and might not be fully representative of concrete processes in the sector, which may have different sensitiveness to energy costs.

^[3] NACE 2442 includes both primary and secondary aluminium production. Primary aluminium is 20 times more energy intensive than secondary aluminium. The energy intensity in the production of primary aluminium is around 35% percent. Secondary (Recycled) aluminium's energy intensity is a few percentage points. Therefore, conclusions on averages of NACE 2442 have to be taken with prudence as high energy prices have a high impact on primary aluminium, but far lower on secondary aluminium.

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Figure 4 Absolute and relative changes in main production cost components for iron and steel sectors (2008-2013 and 2011-2013)

