



ArcelorMittal

ArcelorMittal's perspective on LCIA

SUPRIM workshop

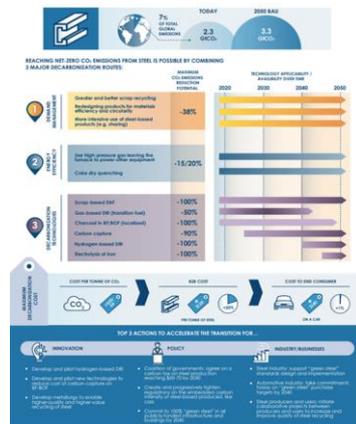
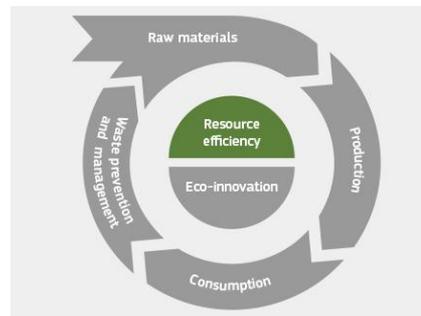
Brussels, 2018-Dec-11

Outline

- ArcelorMittal interest in LCIA
- Indicators: expectation and priorities
- Data availability & License to operate
- Product Environmental Footprint: learnings of the 'Metal sheet' pilot
- Conclusions

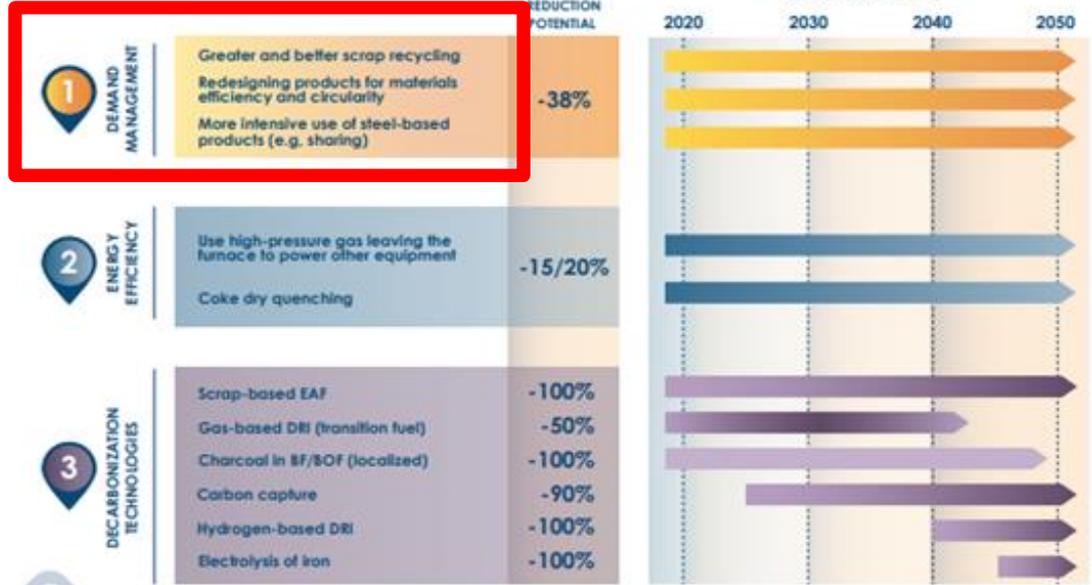
ArcelorMittal interest in LCIA

- LCIA as tool to assess the value brought by **steel made products** over alternative solutions: e.g. recyclability, by-products;
- Drive to a “**green**” and more “**circular**” economy are mega-trends that will bring about opportunities and challenges to the business;
 - Resource efficiency
 - Climate goals





REACHING NET-ZERO CO₂ EMISSIONS FROM STEEL IS POSSIBLE BY COMBINING 3 MAJOR DECARBONIZATION ROUTES:



TOP 3 ACTIONS TO ACCELERATE THE TRANSITION FOR...

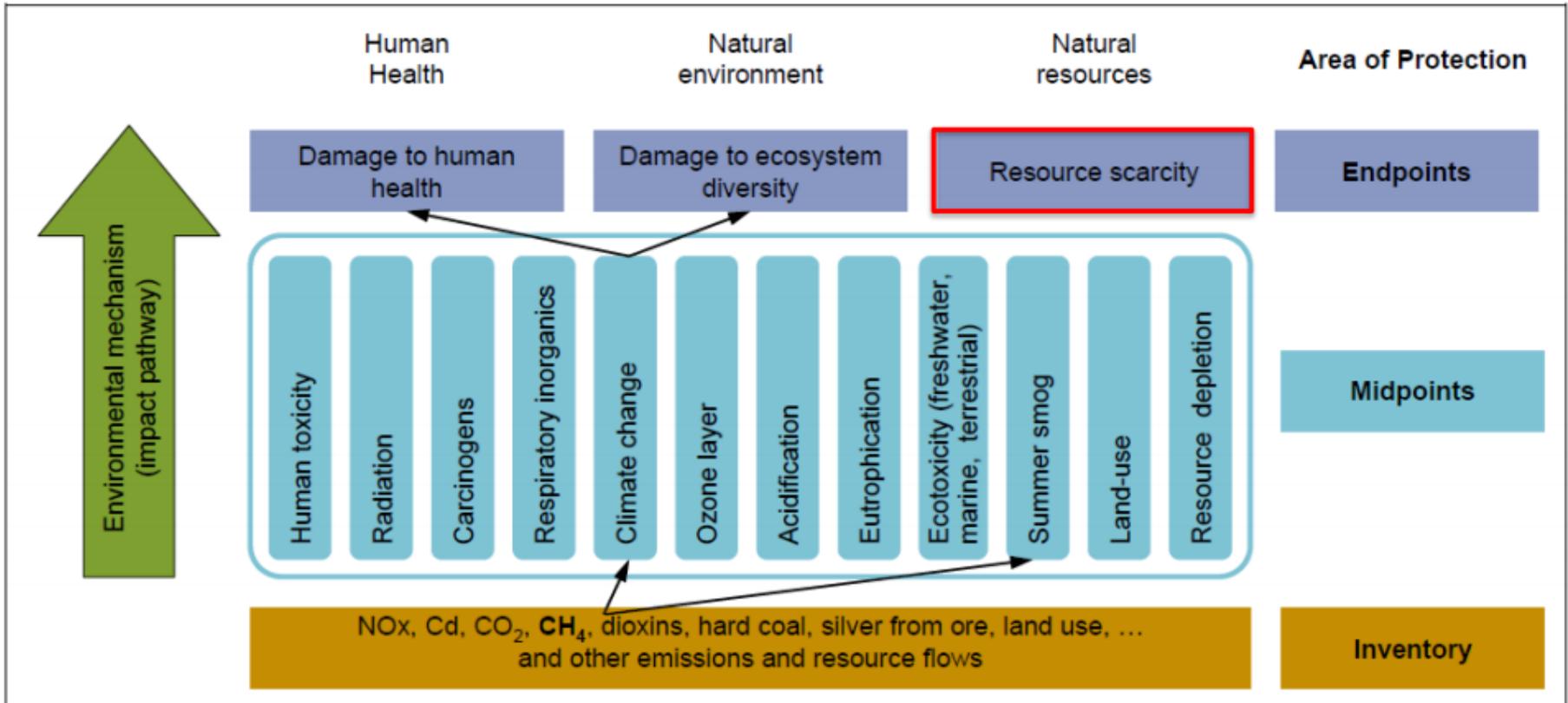
- | INNOVATION | POLICY | INDUSTRY/BUSINESSES |
|--|--|---|
| <ul style="list-style-type: none"> Develop and pilot hydrogen-based DRI Develop and pilot new technologies to reduce cost of carbon capture on BF-BOF Develop metallurgy to enable higher-quality and higher-value recycling of steel | <ul style="list-style-type: none"> Coalition of governments: agree on a carbon tax on steel production reaching \$50-70 by 2030 Create and progressively tighten regulations on the embedded carbon intensity of steel-based products, like cars Commit to 100% "green steel" in all publicly-funded infrastructure and buildings by 2040 | <ul style="list-style-type: none"> Steel industry: support "green steel" standards design and implementation Automotive industry: take commitments today on "green steel" purchase targets by 2040 Steel producers and users: initiate collaborative projects between producers and users to increase and improve quality of steel recycling |

Indicators

Criteria for LCIA:

- **Holistic**, covering the full life cycle of the product i.e. C2C;
- **Core** indicators only, directly linked with main EU environmental policy goals;
- **Trade-off** support, creating level playing field;
- **Comparability** of available data: definition, measurement method and precision;

Areas of Protection (AoP) in LCA



Source: EC - JRC. ILCD Handbook – International Reference Life Cycle Data System, 1st edition, European Commission - Joint Research Centre, 2010.

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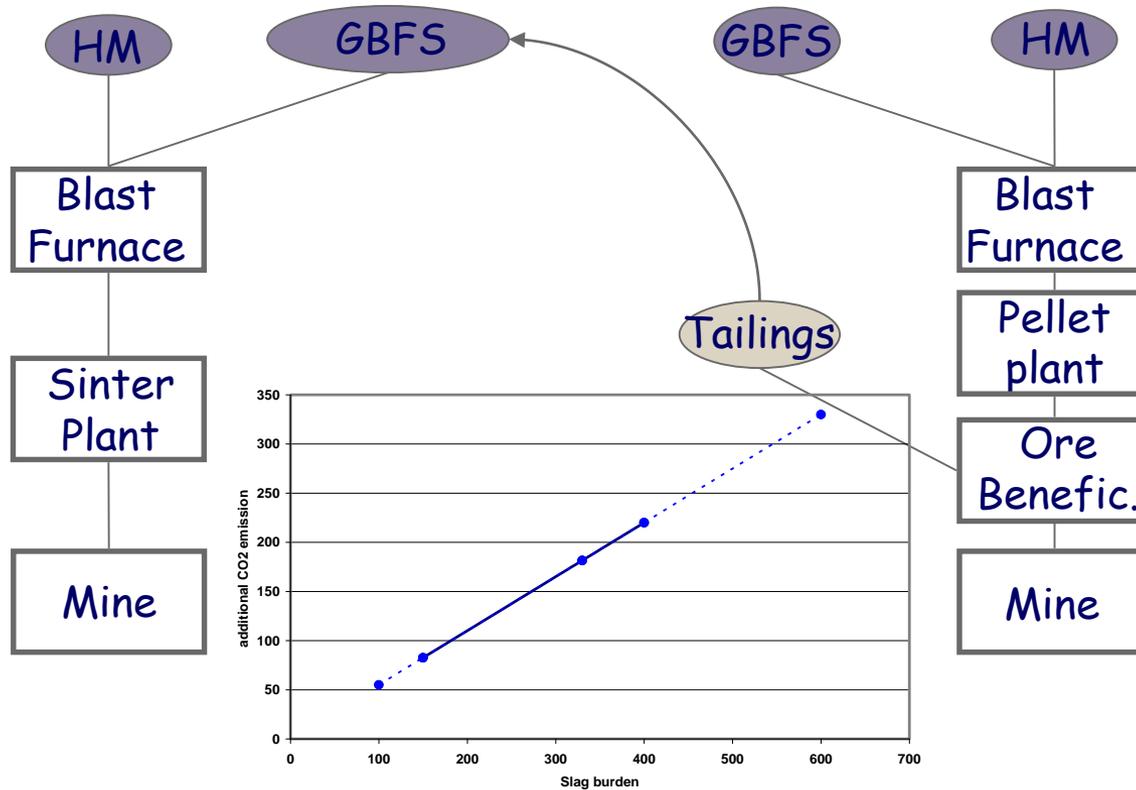
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Trade off: example of slag production



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Metals and steel

- Resource use efficiency
- Climate
- Particulate matter: ducted/diffuse

ICMM Study of 2010

- Particulate matter formation
- **Human toxicity**
- **Terrestrial ecotoxicity**
- fossil fuel consumption
- **land occupation and land transformation**
- **water use**

Data availability

- Reluctance providing compliance data. Confidentiality motivated on issues of competition, lack of comparability, risk on negative image, ...
- “License to operate”:

- EU: compliance data to authorities come automatically in public domain however not comparable nor practically aggregated for consultation;
- Sustainability certificates e.g. “*ResponsibleSteel*”, scoring supply chain on predefined environmental, social, economic criteria



- Social responsibility:



Responding to Ebola

The Ebola outbreak was a significant disruption to our mining business during 2014. We helped to mobilize an effective response to the disease, contributed medical, financial and other resources to the wider community, and worked with other private sector organizations in the country to press for a coordinated international response including international aid agencies.

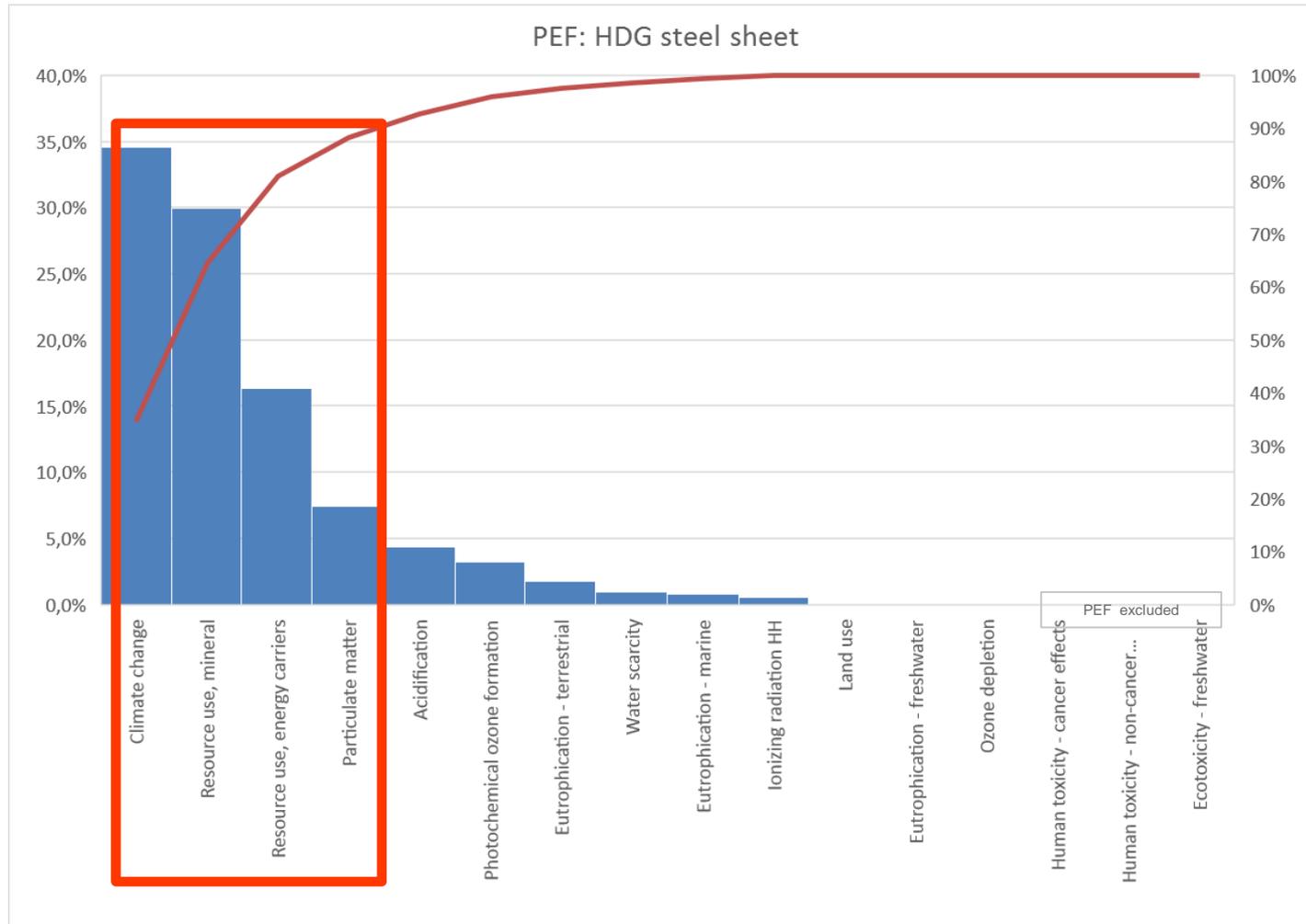


Product Environmental Footprint: Metal Sheet pilot, learnings

- **Toxicity indicators:** calculated but excluded for proven not robust enough to be part of the impact assessment;
- **Resource use, mineral:** interim calculation of abiotic depletion potential, mineral based on crustal content (replacing reserve base). Still, the PEFCR's of all pilots do include a disclaimer for $ADP_{\text{crustal content}}$;
- **Metal sheet pilot:**
 - 4 metals: sheet of aluminium, copper, lead and steel;
 - Strong resemblance between environmental profiles of sheets of the 4 metals. Most significant: see next slide, example steel



Product Environmental Footprint: Most relevant impact categories



Product Environmental Footprint

Most relevant processes

Galvanized steel sheet

Impact category	Life Cycle Stage/Processes	Contribution of most relevant processes (%)
Climate change	Raw material acquisition and pre-processing: EU: 1 kg BF Slab (theoretical 100% primary)	72,7%
	Production of the main product: EU: 1 kg BF Slab (theoretical 100% primary) - Credit for Rolling Scrap	8,6%
Particulate matter	Raw material acquisition and pre-processing: EU: 1 kg BF Slab (theoretical 100% primary)	70,9%
	Production of the main product: EU: 1 kg BF Slab (theoretical 100% primary) - Credit for Rolling Scrap	8,3%
	Production of the main product: GLO: Zinc	7,9%
Resource use, mineral	Production of the main product: GLO: Zinc Disclaimer ... 	97,6%
Resource use, energy carriers	Raw material acquisition and pre-processing: EU: 1 kg BF Slab (theoretical 100% primary)	65,5%
	Production of the main product: EU-27: Natural gas mix	10,1%
	Production of the main product: EU: 1 kg BF Slab (theoretical 100% primary) - Credit for Rolling Scrap	7,7%

Conclusions

LCIA enables assessing the environmental trade-offs in product policy discussions but more work needs to be done:

- Policy makers need also consider socio-economic aspects next to environmental impacts (cfr. LCSA);
- Are/can all relevant impact categories included in assessment i.e. a 'level playing field';
- Is the consistency and uncertainty of the environmental compliance data collected as input, considered; Positive evolution in PEF, specifying more attention to data quality.

Thank you for your interest !

Further questions?

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