

CBAM IMPACT

**ON IRON & STEEL
EXPORTS
OF UKRAINE**



INTRODUCTION

The EU considers CBAM as a special climate instrument which will make importers to pay for each ton of carbon emissions associated with production of imported products.

CO₂ price in CBAM will correspond to CO₂ price in the EU ETS. Required number of CBAM certificates will be adjusted to free allocations in the EU ETS. In fact, CBAM will be extension of the EU ETS for importers.

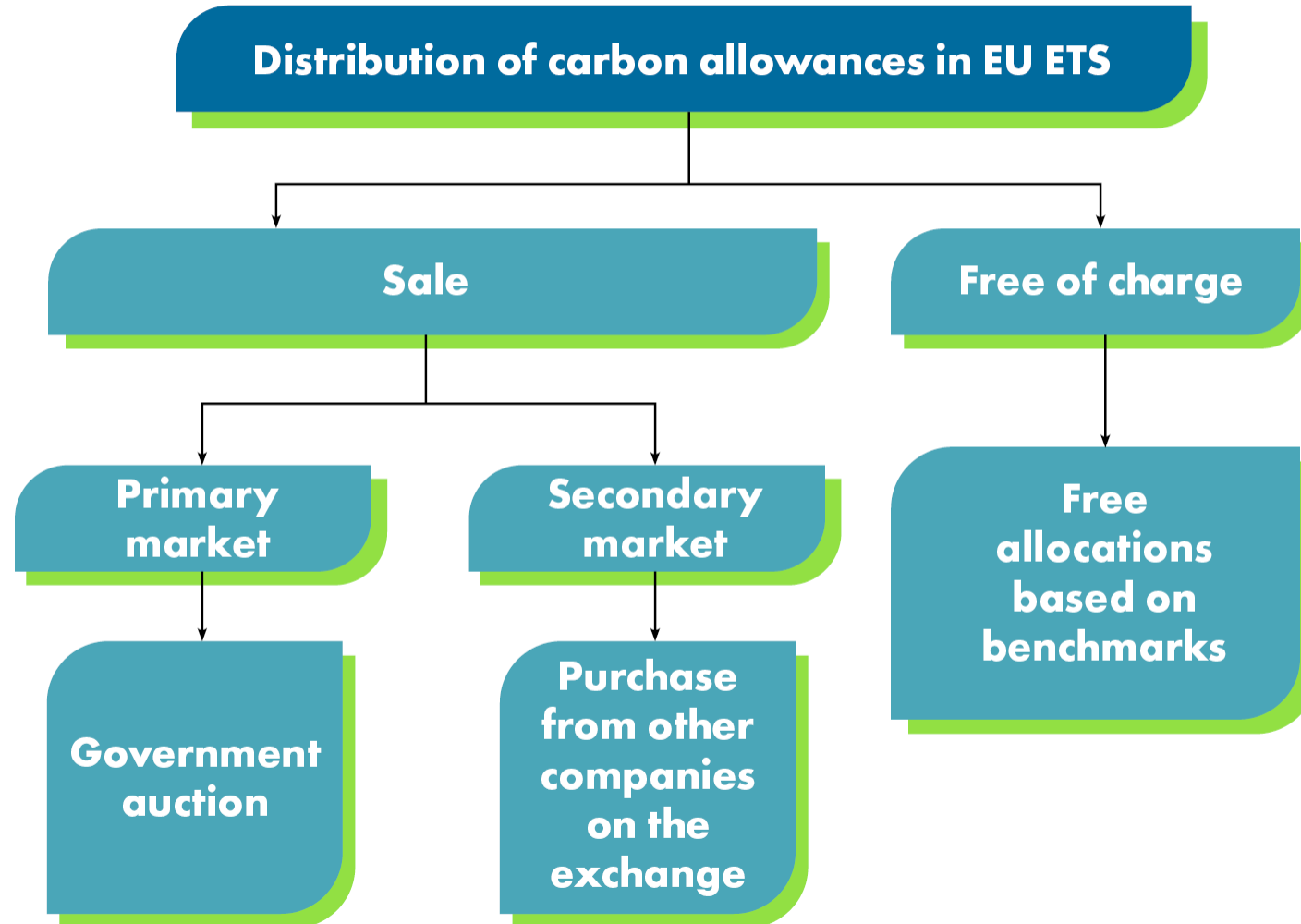
Initially, CBAM will apply to import of cement, electricity, fertilizers, iron & steel, aluminum, hydrogen.
But in future CBAM can be extended on other sectors.

CBAM may significantly change international trade flows. This instrument takes first step towards global regulation of CO₂ emissions.



COMBINATION OF EU ETS AND CBAM WILL LEAD to equal growth of carbon costs for EU producers and importers

Distribution of carbon allowances in EU ETS



In EU ETS each ton of CO₂ emissions should be covered by carbon allowance. 1 ton of CO₂ emissions = 1 carbon allowance.

Total number of carbon allowances is limited by emission cap. Emission cap is decreasing to achieve carbon reduction targets.

Companies can receive carbon allowances free of charge or buy on the market.

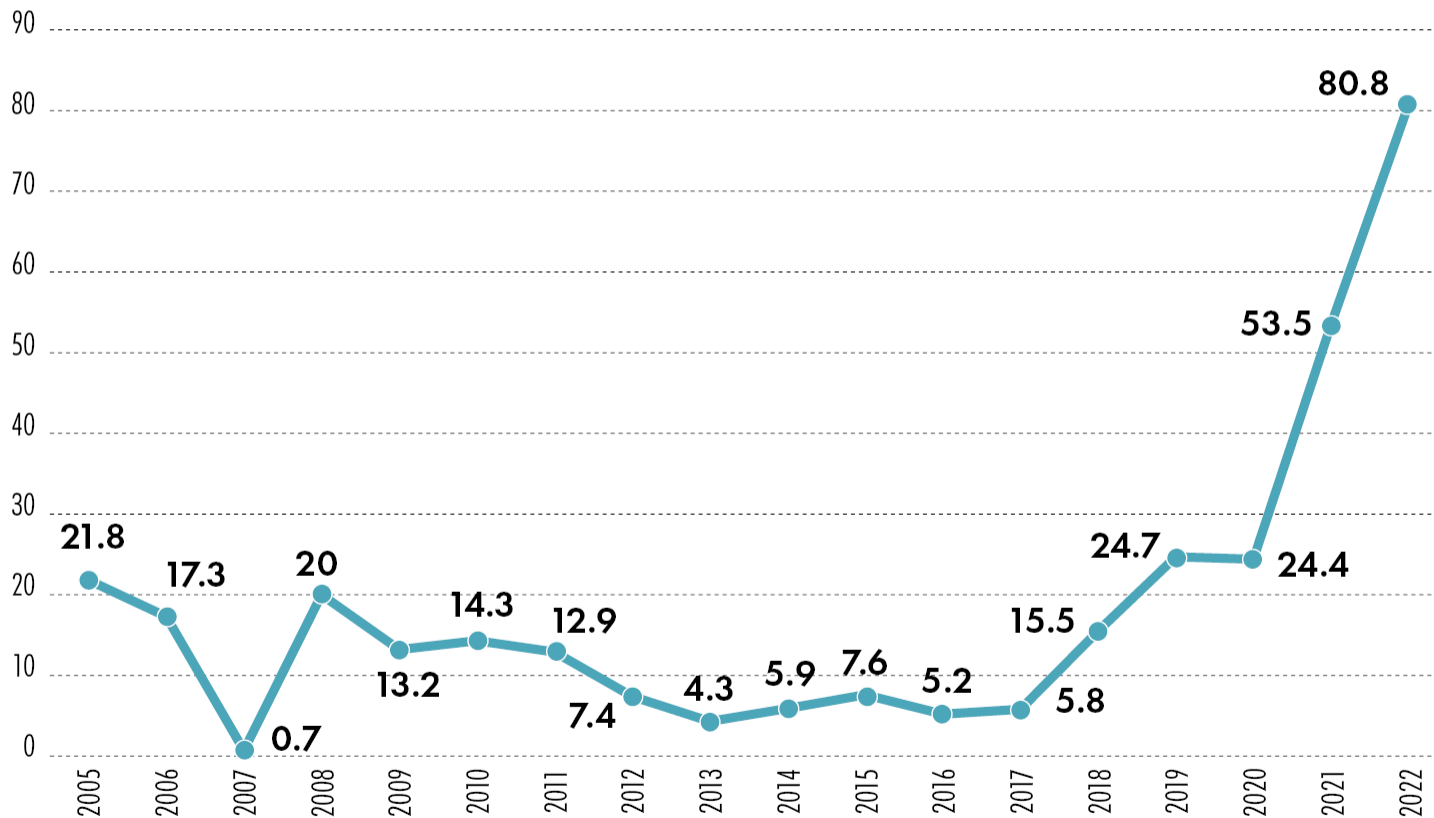
Free allocations of CO₂ allowances are based on benchmarks, which reflect performance of the best installations. Free allocations aim on preventing of carbon leakage.

Introduction of CBAM, as another carbon leakage instrument, leads to accelerated reduction of free allocations, that should be eliminated till 2034.

CBAM will rise demand for purchasing of carbon allowances and carbon prices inside the EU. In this way CBAM will increase carbon costs both for domestic producers and imports.

CO₂ PRICE IN THE EU ETS WILL GROW TO 133 €/t because of reducing free allocations and declining emission cap

Average price of CO₂ allowances in EU ETS, €/t



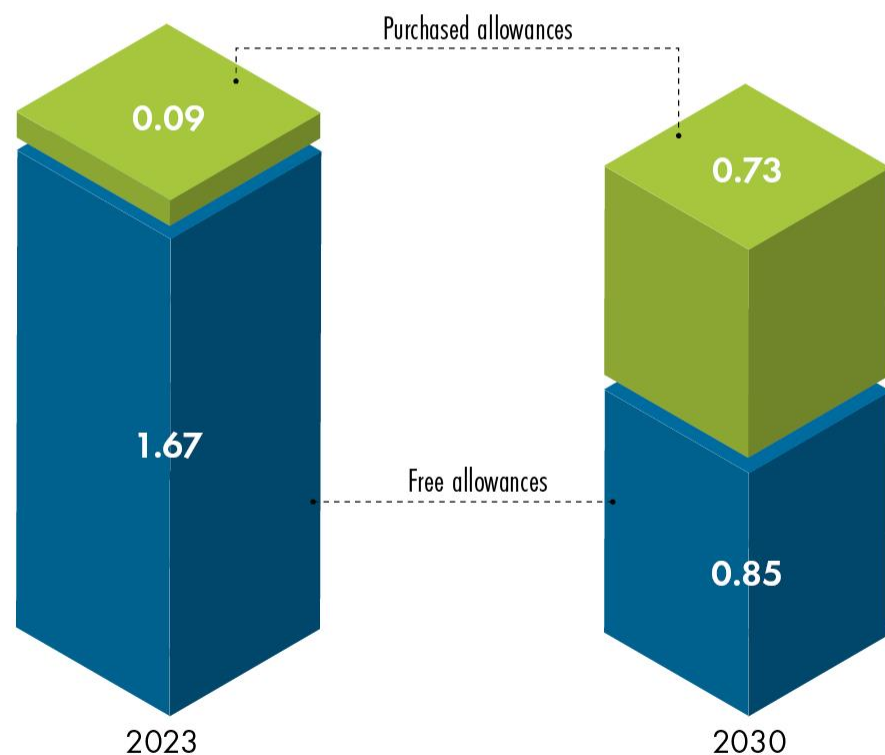
Source: Ember, Internet media, Thomson Reuters, GMK Center calculations

Forecasts of CO₂ prices
in EU ETS in 2030, €/t

Company	Forecast
CRU	167
Reuters	150
ICIS	140
VanEck	133
Potsdam-Institute for Climate Impact Research	130
Bloomberg NEF	130
PwC	100
Consensus	133

EU STEEL PRODUCERS WILL HAVE TO BUY MORE allowances to cover carbon emissions

Distribution of carbon allowances for steel production in EU, t CO₂ per t of steel



Source: Joint Research Center of European Commission, ESTEP, GMK Center calculations



According to Joint Research Center of European Commission, carbon intensity of integrated route (Scope 1) in EU is 1.76 t CO₂ per t of steel.

GMK Center estimate potential reduction of carbon intensity to 1.58 t CO₂ per t of steel by 2030. This estimation is based on ESTEP research, which assessed carbon intensities of different decarbonization options in BF-BOF route.

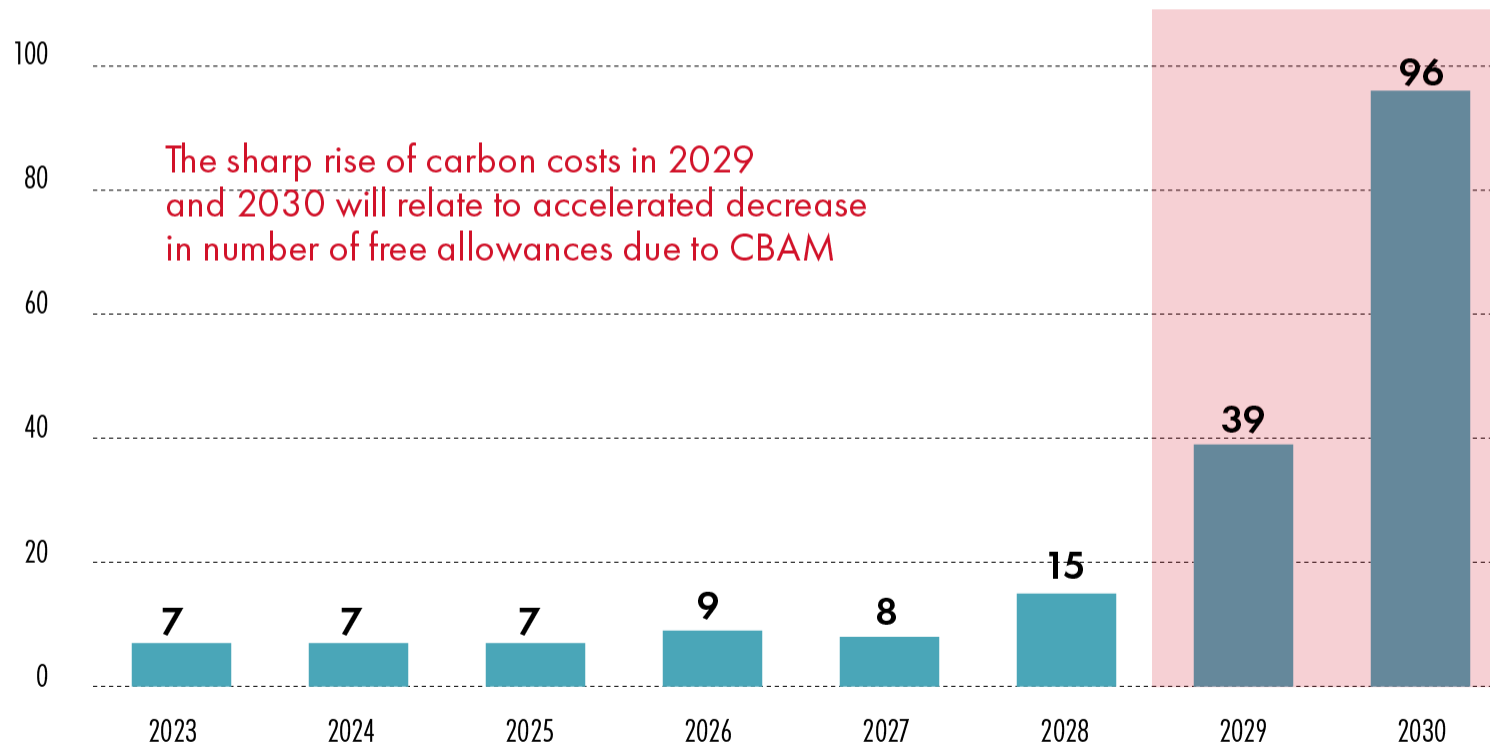
In 2023 average share of free allocations for EU steel producers is about 95%. Only 5% of needed allowances is bought on market.

In 2030 EU steel producers will have to purchase 46% of carbon allowances on market.

CARBON COSTS FOR EU STEELMAKERS

may rise by almost 13 times to 96 €/t by 2030

Carbon costs of EU producers (BF-BOF route), € per ton of steel



Source: GMK Center calculations

The current carbon costs burden for European steelmakers is insignificant – about 7 €/t of steel.

The sharp increase in carbon costs in parallel with introduction of CBAM creates conditions for their shifting to the end price, to the end customer, but with different degree depending on the segment.

Impact of rising carbon costs on market will depend on:

- differences between carbon intensity of EU and imported products;
- structure of steelmaking capacities in the EU and exporting countries, that supply steel products to EU;
- CBAM parameters, which define carbon costs of importers in EU.

CBAM CREATES THE SAME CARBON BURDEN ON IMPORTERS as the EU ETS does on domestic producers

$$\text{CBAM payment} = \text{Specific CO}_2 \text{ emissions} \times \text{CO}_2 \text{ price} - \text{Carbon costs in country of origin}$$



In fact, CBAM replicates EU ETS for importers in specific manner.

CO₂ price in CBAM is calculated weekly as average price in EU ETS.

Number of CBAM certificates is not limited.

Carbon costs paid in country of origin should be deducted if they were really paid without any compensations.

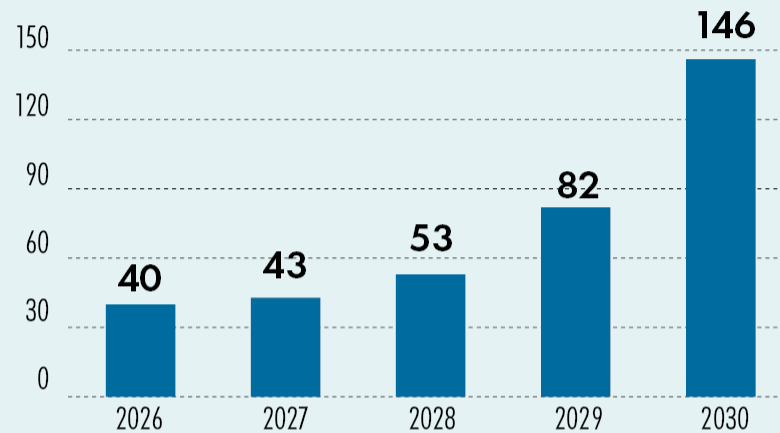
Number of CBAM certificates should be adjusted to existing free allocation of allowances in EU ETS.

From 1 October 2023 until 31 December 2025 obligations of the importer under CBAM will be limited to reporting.

From 1 January 2026 importers will have to pay for carbon intensive imports under CBAM regulation.

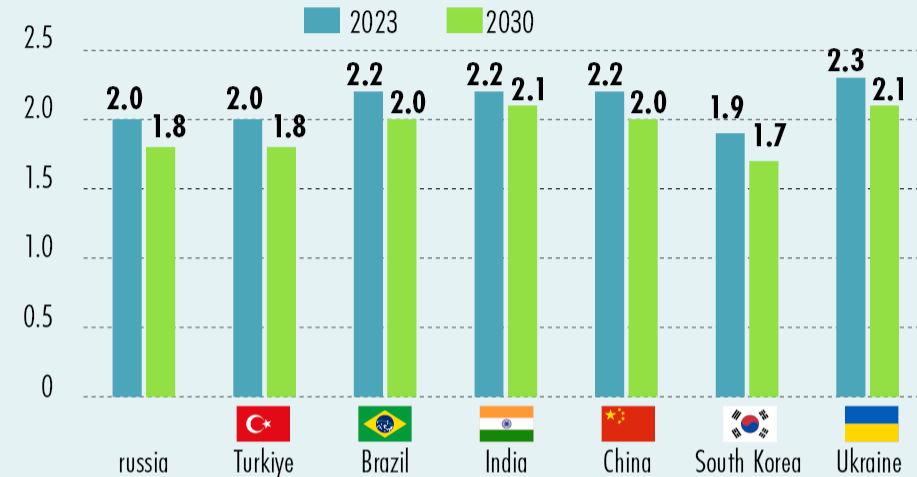
CBAM WILL INCREASE AVERAGE CARBON COSTS FOR BF-BOF IMPORTERS to 146 €/t in 2030

**Average CBAM payments
for imported steel (BF-BOF route),
€ per ton of steel**



Source: Internet media, companies' reports, GMK Center calculations

**Carbon intensity of BF-BOF route
(Scope 1) for steel imported in EU,
t CO₂ per t of steel**



In 2030 CBAM payments will reach 146 €/t based on average carbon intensity of steel imports (1.9 t CO₂ per t of steel in 2030 that means decreasing by 8% from current level), consensus forecast of CO₂ price in EU ETS (133 €/t in 2030) and predicted free allocation benchmarks in EU.

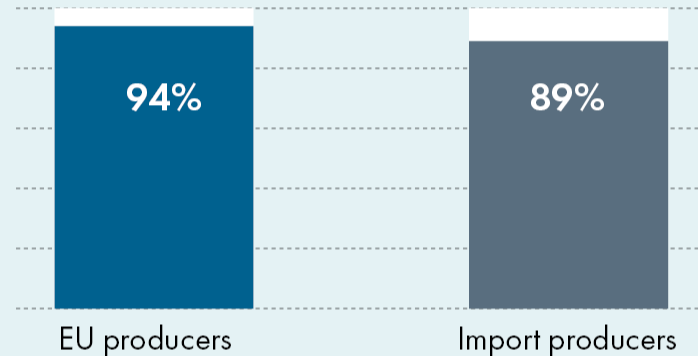
In exporting countries CO₂ price is non-relevant, compared to the EU. Besides, European Commission has not adopted legislation concerning conversion of CO₂ price paid in third countries into reduction of number of CBAM certificates. So, any carbon prices paid in third countries were not included in CBAM payments calculations.

Potential CBAM costs for imported steel in the EU will be in range from 117 to 168 €/t, depending on country of origin. The difference (up to 50 €/t) is the benefit from lower emissions.

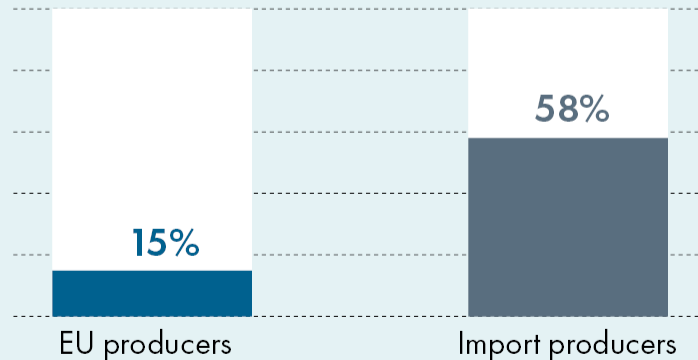
THE IMPACT OF CBAM ON THE MARKET AND IMPORTS

to the EU differs depending on segment

The share of BF-BOF capacities in flats production in 2022



The share of BF-BOF capacities in longs production in 2022



Source: GMK Center calculations



CBAM will provide competitive advantages to EAF steelmakers, whose emissions are up to 4 times lower than BOF steelmakers' emissions. So, impact of CBAM on the market will depend on abilities of EAF producers to increase supply and substitute BF-BOF production.

In flats segment (both EU and import producers) at least 90% of steel produced via BF-BOF route. So EAF steelmakers won't have any abilities to take benefits from rising carbon costs and increase supply. It also considers that DRI-EAF will hold about 30% flats market share in the EU in 2030.

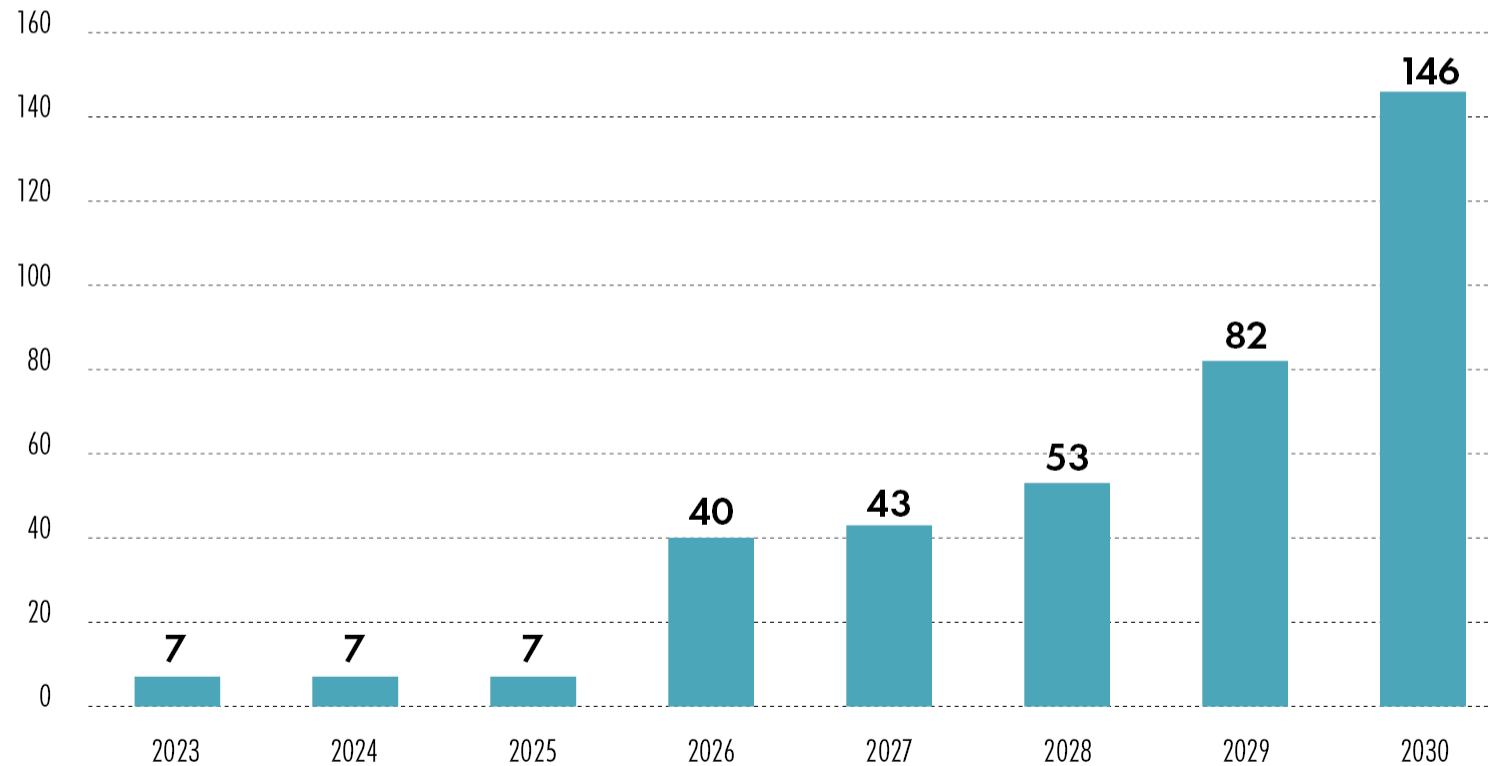
EAF route is dominant in longs segment in the EU, while 58% of import supplies are from BF-BOFs. So, EU's EAF producers will be able to substitute domestic and imported BF-BOF longs.

These findings are also relevant for semi-finished products, used in different segments (slabs for flats and square billet for longs).

SUPPLIERS OF FLAT PRODUCTS are able to transfer CBAM costs onto customers



Carbon costs transferred onto price, € per ton of flat products



Source: GMK Center calculations

Flats prices could rise by 146 €/t covering all CBAM costs of importers.

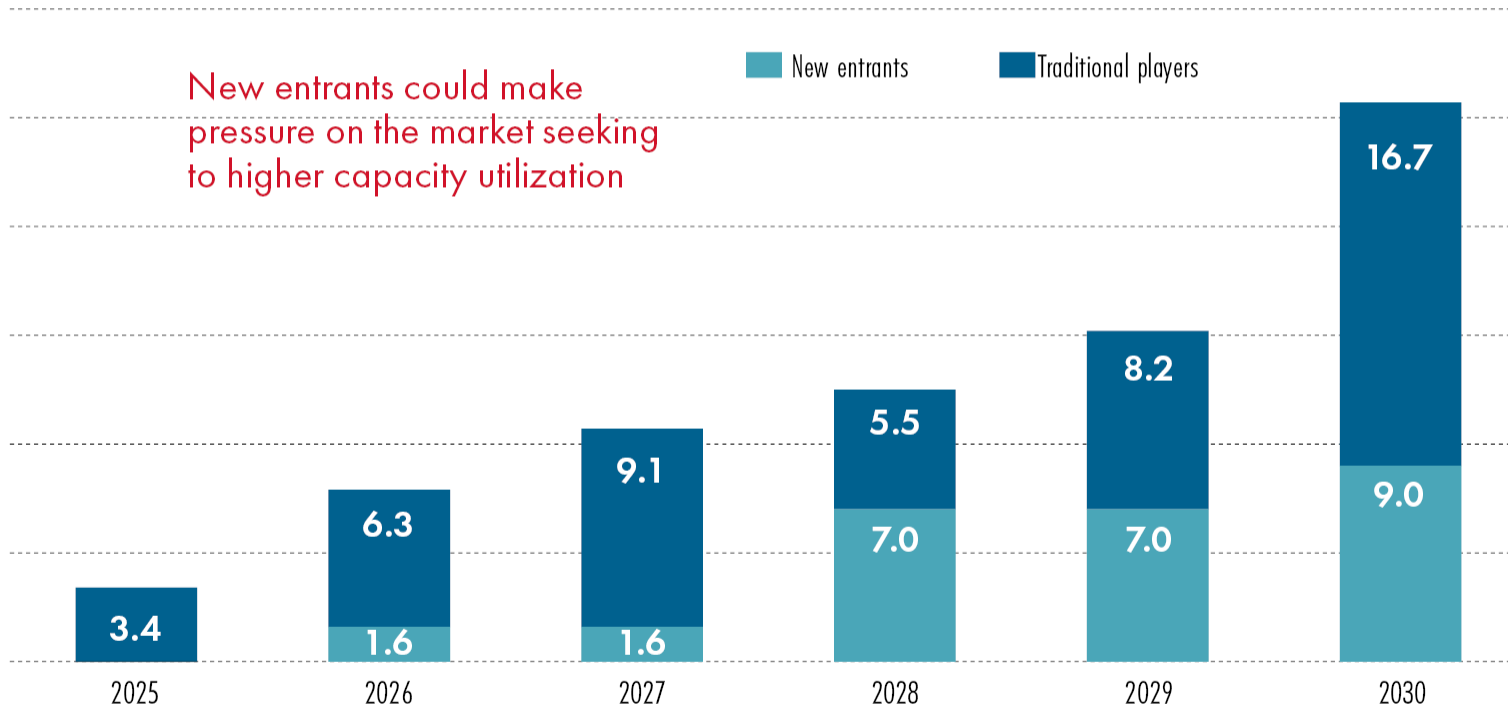
Share of import in flats segment in the EU is about 24% and European EAF producers do not have free capacities to substitute import supplies. It means that according to margin principle increase in carbon costs for imports will be transferred onto steel prices.

Since there will not be alternative to import supplies, import of flats, produced via BF-BOF, will continue. Prices for domestic flat products will increase in line with prices for imported flats. Customers will have to pay increased market price for flat products.

Carbon costs of BF-BOF producers in the EU (96 €/t in 2030) is less than carbon costs of importers (146 €/t in 2030). So, BF-BOF steelmakers in the EU will be able to raise their margins by 50 €/t due to CBAM.

DEVELOPMENT OF LOW-CARBON FACILITIES COULD REDUCE ABILITIES of flats producers to shift carbon costs onto end customer after 2030

Low-carbon flats supply till 2030, mln tons



* According to announces of ArcelorMittal Bremen, ArcelorMittal Gent, ArcelorMittal Gijon, ArcelorMittal Dunkirk, ThyssenKrupp Duisburg, Salzgitter, SHS, H2GreenSteel, HYBRIT, BlaistrGreenSteel, Acciaierie d'Italia, Tata Steel Ijmuiden projects

Source: GMK Center calculations

All announced DRI-EAF projects in the EU consider substitution of BF-BOF production with decommissioning of BF's. So, introduction of new DRI-EAF facilities, should keep status-quo with domestic supply and imports of flats.

New entrants (H2GreenSteel and BlaistrGreenSteel), that aim on flats supply, with total capacity of 8-9 mln tons could be as and exemption and make pressure for the market to ensure their sales.

We don't expect significant market pressure from new entrants till 2030, because of low probability of timely introduction of these projects.

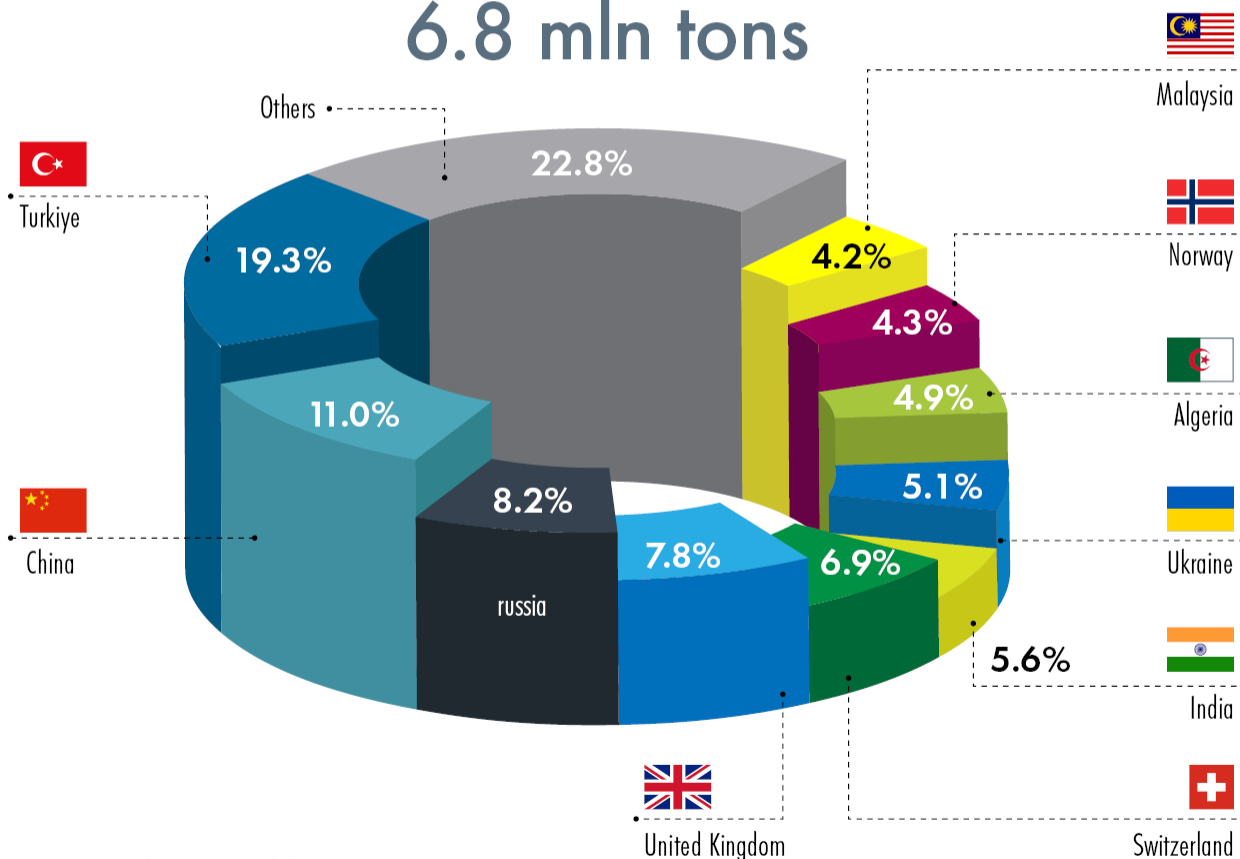
But after 2030 introduction of these capacities could shift cost curve and impact on prices, only if they don't become objects of M&A from large market players.

BF-BOF PRODUCERS OF IMPORTED LONG PRODUCTS will lose margin of 146 €/t supplying to the EU



Imports of long products in EU in 2022 by country

6.8 mln tons



Source: UN Comtrade, GMK Center calculations

In the EU 85% of longs capacities are EAF-based and about 70% utilized.

The EU imported about 4 mln tons of long products produced via BF-BOF route in 2022 (58% of total longs imports).

EAF producers in the EU have abilities to increase long products output by 3-4 mln tons and substitute BF-BOF imports.

Producers of imported long products will not be able to transfer CBAM-related costs onto steel price. CBAM payments for longs will be about 146 €/t as an average.

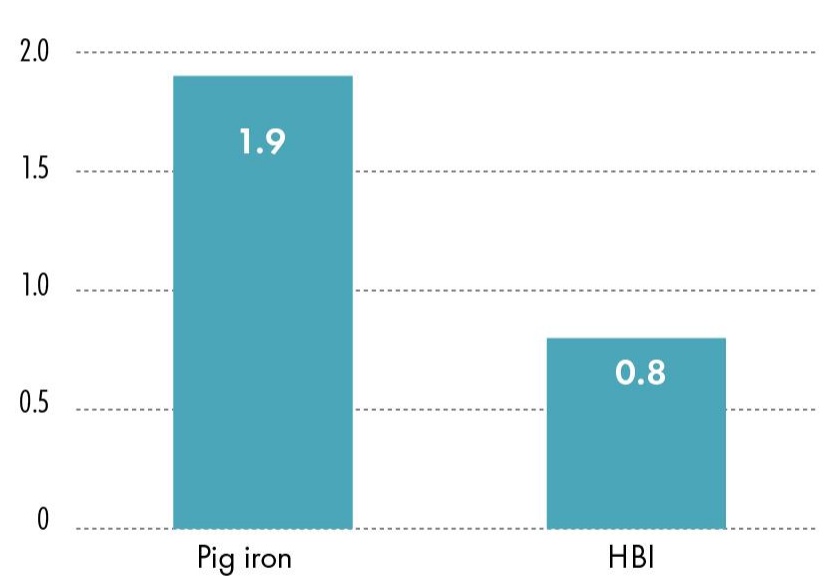
BF-BOF producers of imported long products will be able to continue supplies to EU by lowering their margin by 146 €/t. We don't think that it will be common practice and longs imports to the EU will be represented by EAF produced steel.

5.1% of imported long products to EU is supplied by Ukraine. All Ukrainian producers of long products are BF-BOF plants and under threat of CBAM.



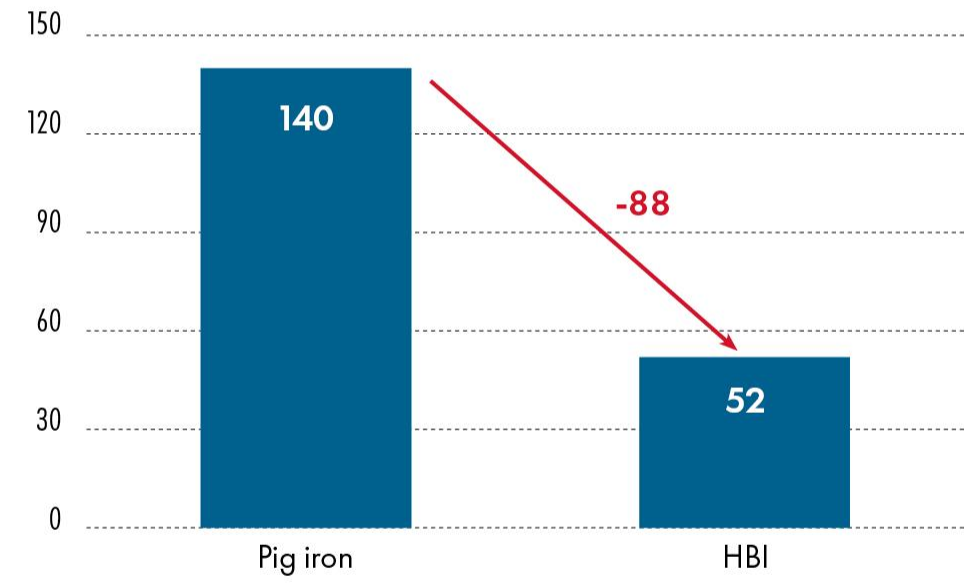
PIG IRON MARKET IN EU will be mainly substituted by HBI till 2030-2035

**Carbon intensity in 2030,
tons CO₂ per ton of product**



Source: Internet media, GMK Center calculations

CBAM costs in 2030, € per ton



In 2030 carbon costs for imported pig iron will be 88 €/t higher than carbon costs for imported DRI. In such conditions imports of pig iron will be unreasonable. We expect that 2.4 million tons pig iron market will be mainly substituted by HBI till 2030-2035.

CBAM WILL SIGNIFICANTLY IMPACT ON UKRAINIAN IRON & STEEL EXPORTS



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76.1%

of steel in Ukraine
produced via BF-BOF,
BF-OHF in 2022

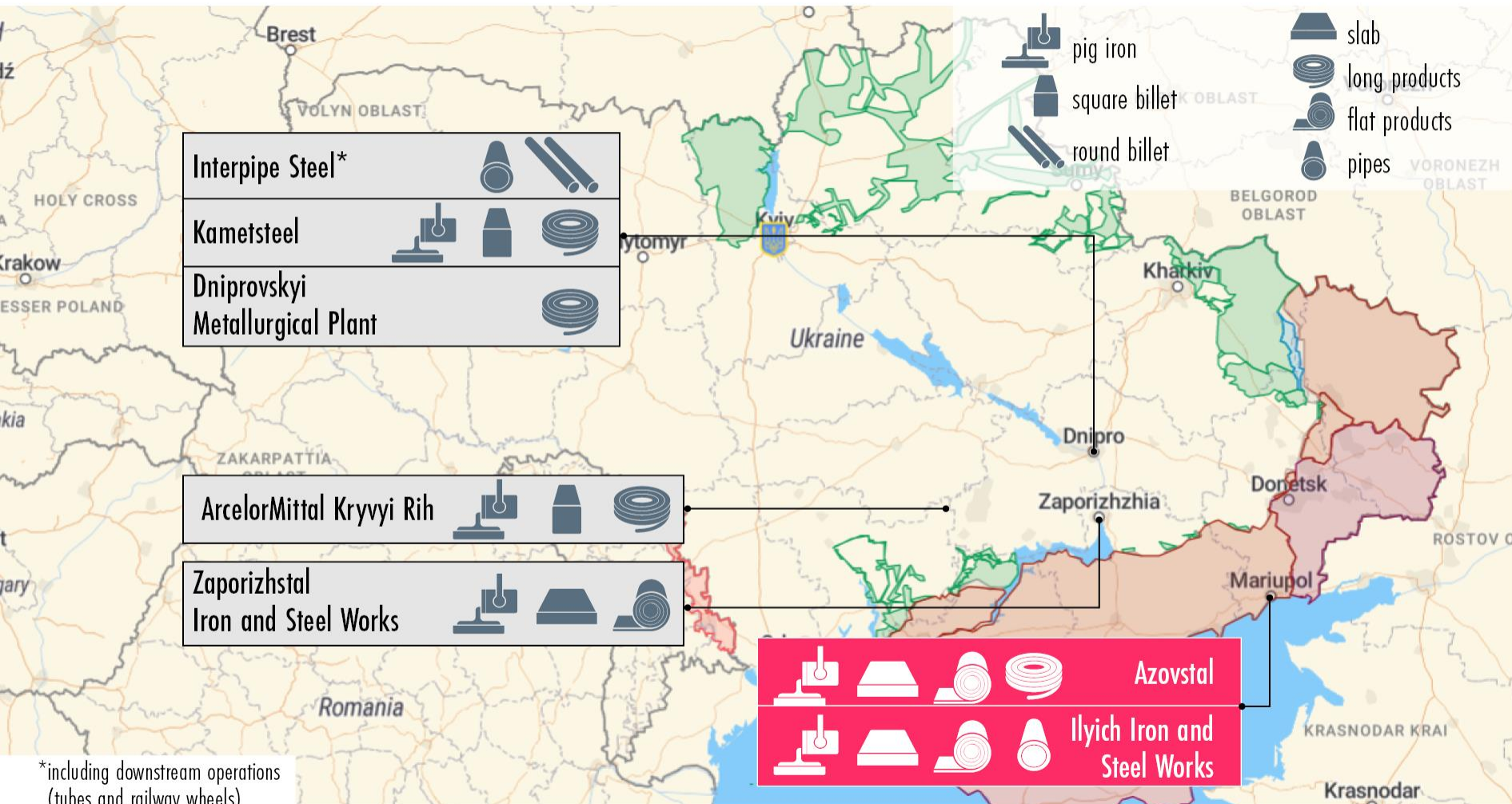
2.3 t CO₂
per ton of steel

average carbon
intensity of BF-BOF
steel in Ukraine

84.5%

share of the EU
in iron & steel exports
from Ukraine in 1H 2023

DURING THE WAR UKRAINE LOST 40% OF STEEL CAPACITIES and almost 100% of slab exports



*including downstream operations
(tubes and railway wheels)

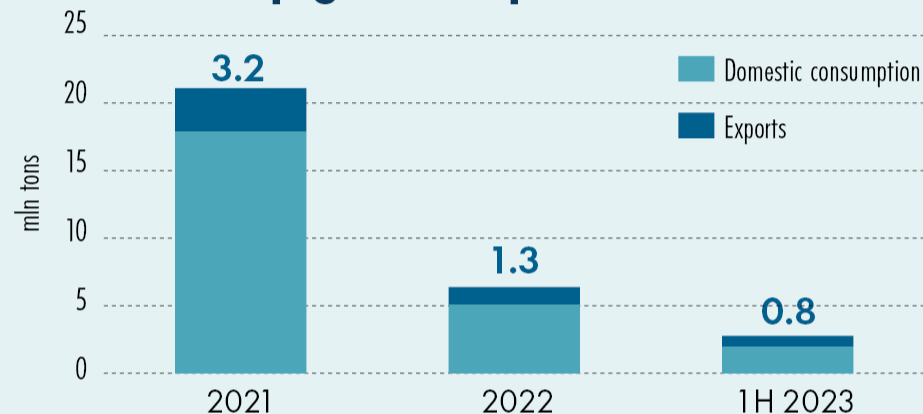
6 out of 11
blast furnaces
were operating
in 3Q 2023
in Ukraine

70%
average utilization
of Ukrainian
steelmaking
capacities

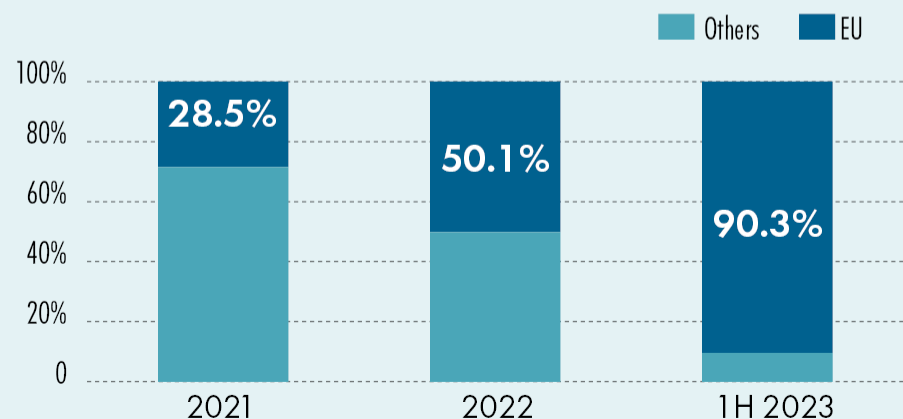
CBAM WILL HALT PIG IRON EXPORTS OF 1.4 mln tons FROM UKRAINE



Structure of pig iron shipments



Destinations of pig iron exports from Ukraine



Producers of merchant pig iron in 2023:

Zaporizhstal;

Kamet Steel;

ArcelorMittal Kryvyi Rih

CBAM consequences for pig iron exports:

Pig iron exports will be halted because high CBAM payments will make pig iron uncompetitive compared to HBI.

CBAM payments, per ton of pig iron:

2026 - €39;

2030 - €149.

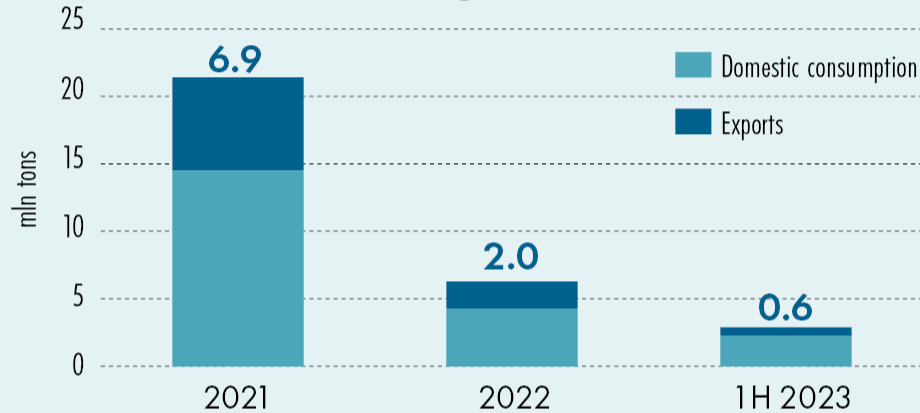
Annual losses of export revenues (in 2023 prices)*:

\$580 mln

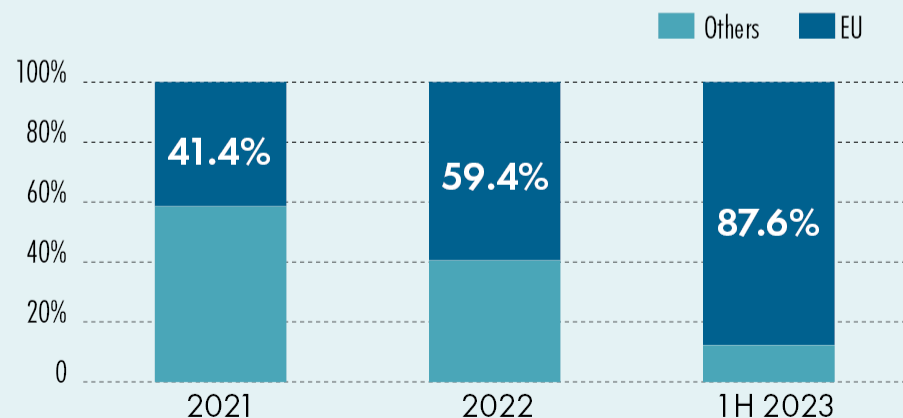
CBAM WILL CAUSE EXPORTS LOSSES OF \$640 mln FOR SEMIS



Structure of semis shipments



Destinations of semis exports from Ukraine



Producer of slabs in 2023:

Zaporizhstal

CBAM consequences for slab exports:

Slabs exports will continue because flat products are produced mainly via BF-BOF route (both in EU and other countries – exporters). CBAM costs will be transferred on price.

CBAM payments, per ton of semis (both slabs and square billets):

2026 - €66;

2030 - €168.

Producers of square billets in 2023:

Kamet Steel;

ArcelorMittal Kryvyi Rih

CBAM consequences for square billets exports:

CBAM will make exports of billets impossible because Ukrainian BF-BOF producers will not be able to compete with European EAF producers. Exporters of billets will not be able to transfer CBAM costs on price.

Annual losses of export revenues

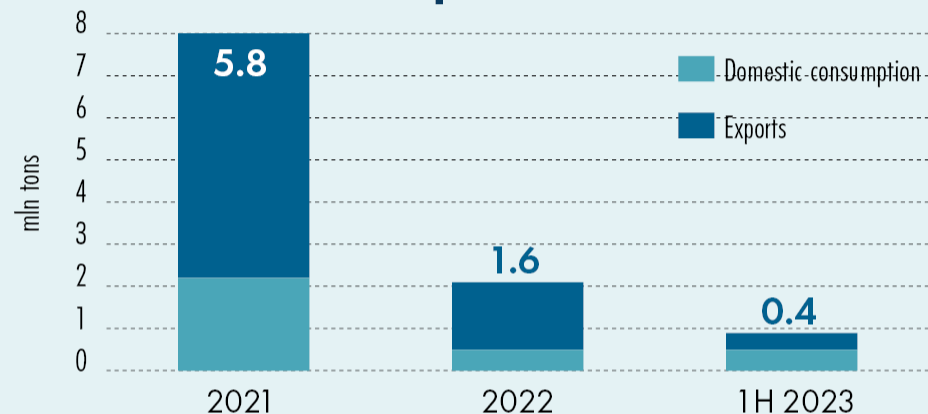
(in 2023 prices)*:

\$640 mln

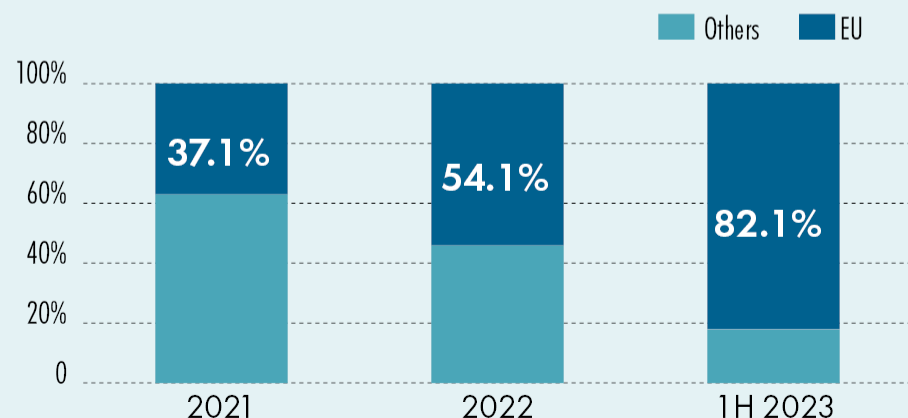
CBAM WILL NOT INFLUENCE COMPETITIVENESS OF FLATS EXPORTS FROM UKRAINE TILL 2030



Structure of flats shipments



Destinations of flats exports from Ukraine



Producer of flat products in 2023:

Zaporizhstal

CBAM consequences for flat exports:

Flats exports will continue because flat products are produced mainly via BF-BOF route (both in EU and other countries – exporters). European producers do not have reserve capacities to substitute imports. So, all CBAM costs will be transferred on price. Situation could change after 2030, when new entrants with low-carbon flat products could make pressure on the market.

CBAM payments, per ton of flat products

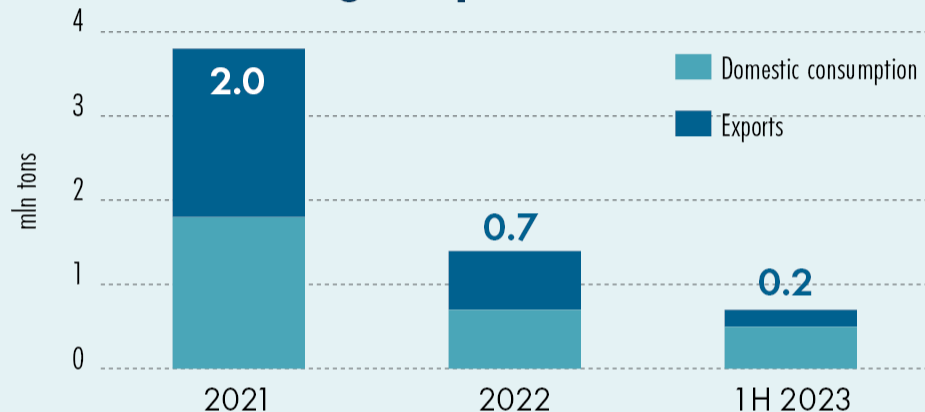
2026 - €66;

2030 - €168.

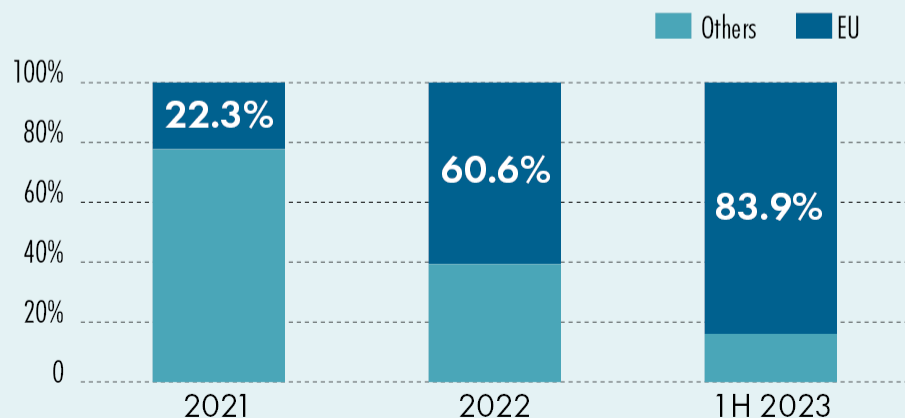
UKRAINE MAY LOSE EXPORTS OF LONG PRODUCTS BECAUSE OF CBAM



Structure of longs shipments



Destinations of longs exports from Ukraine



Producers of long products in 2023:

Kamet Steel;

ArcelorMittal Kryvyi Rih;

Dniprovskyi metallurgical plant.

CBAM consequences for longs exports:

In Ukraine long products are produced in BF-BOF route. BF-BOF producers will not be able transfer all CBAM costs on price. European EAF producers can substitute BF-BOF longs imports, so imports from Ukraine may decrease or even halt.

CBAM payments, per ton of long products:

2026 - €66;

2030 - €168.

Annual losses of export revenues (in 2023 prices) *:

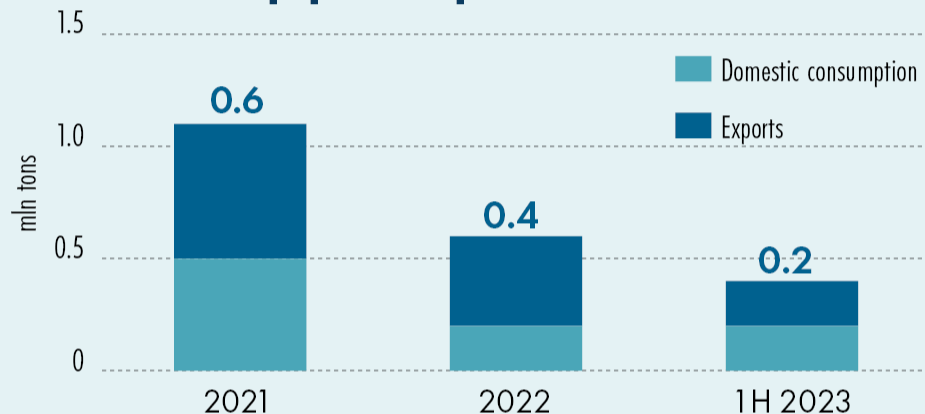
\$175 mln

*Calculated by annualization of 1H 2023 exports

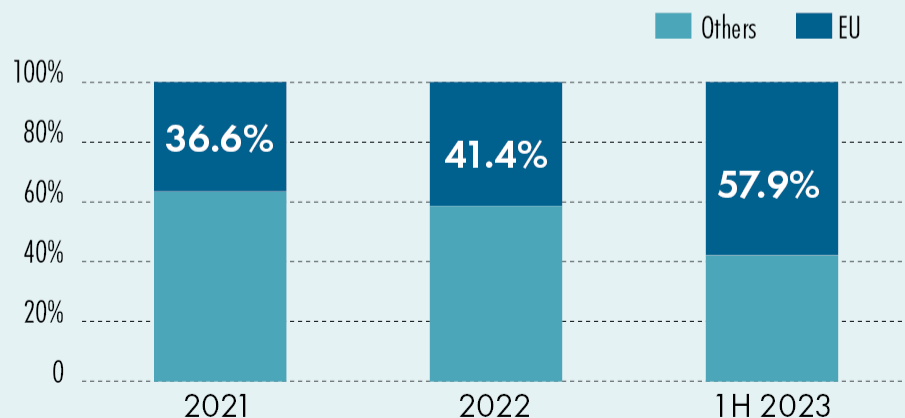
UKRAINIAN PIPES EXPORTS WON'T BE THREATENED BY CBAM



Structure of pipes shipments



Destinations of pipes exports from Ukraine



Source: Ukrmetallurgprom, Customs Statistics of Ukraine, UN Comtrade, GMK Center calculations

Producers of seamless pipes:

Interpipe

Centravis

CBAM consequences for exports of seamless pipes:

Producers of seamless pipes in Ukraine are EAF-based. Their carbon intensity is minimal, so CBAM will not significantly impact on exports of seamless pipes.

CBAM payments, per ton of seamless pipes:

2026 - €4;

2030 - €12.

Producers of welded pipes:

Minor plants

(DMZ Kominterna, AB Metal Group, Trubostal etc.)

CBAM consequences for exports of welded pipes:

Welded pipes are made from stripe produced via BF-BOF route. Consequences for them will be the same as for flat products: all CBAM costs will be transferred on price.

CBAM payments, per ton of welded pipes:

2026 - €66;

2030 - €168.

*Considering all production processes (from making steel to welding pipes)

UKRAINIAN
IRON & STEEL
SECTOR
MAY LOSE
\$1.4 bln
of export revenues
because of CBAM
and 25-35%
of output

Losses from CBAM for Ukrainian iron & steel industry

Production losses

1.4 mln tons
of pig iron

-25%
of output

1.6 mln tons
of rolled products
& steel semis

-35%
of output

Losses of export revenues

\$ 1.4 bln

CBAM will cause decreasing iron & steel production in Ukraine, as well as declining export revenues.

Due to the blocked Ukrainian seaports, the EU remains the main market for Ukraine. That is why CBAM impact for Ukrainian steel producers will be more significant than for competitors from other countries.



Ukrainian based consulting
company focused on
European steel market

Our expertise:

- ▶ Market studies and global trends
- ▶ Impact analysis, analysis of regulatory documents
- ▶ Modelling and business valuation
- ▶ Global trade issues
- ▶ Concept of reforms and policy papers
- ▶ Decarbonization and green energy transition issues
- ▶ Sustainability, ESG activities and reporting



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