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Savremeni izazovi kompanija da svoje poslovanje usklađuju sa CBAM regulativom

Vladimir Mirković[1], Marina Iliev Matić[2], Jelena Lukić Nikolić[3], Branislav Dudić[4]

[1]Economists Association of Belgrade, Belgrade, Serbia, email: vladamirkovic@orion.rs
[2]Economists Association of Belgrade, Belgrade, Serbia, email: marina.matic25@gmail.com
[3]Modern Business School, Belgrade, Serbia, email: jelena.lukic@mbs.edu.rs
[4]Comenius University, Faculty of Management, Slovakia, email: branislav.dudic@fm.uniba.sk

Apstrakt: Klimatske promene utiču na sve aspekte života i društva sa širokim reperkusijama na ljudska bića. Ambiciozni ciljevi održivosti prvenstveno definisani Pariskim sporazumom iz 2015. godine, preko Evropskog zelenog dogovora 2019. godine dobijaju svoju materijalizaciju u različitim inicijativama. Jedan od osnovnih ciljeva postavljenih u oblasti životne sredine u prethodnom periodu ogleda se u značajnom smanjenju emisije gasova staklene bašte. Istovremeno sa namerama EU da Evropa postane prvi klimatski neutralan kontinent do 2050. godine, u maju 2023. usvojen je Mehanizam za prilagođavanje granica ugljenika (CBAM) koji treba da spreči tzv. prekograničnu emisiju ugljenika u skladu sa lakše primenjivim standardima. Ovakvo ponašanje moglo bi ozbiljno da podrži napore EU, kao i napore na globalnom nivou da se ostvare održivi ciljevi. Ovaj rad se bavi glavnim karakteristikama, obimom i posledicama CBAM regulative i kroz analizu studije slučaja domaće kompanije Eliksir Group, kao primer dobre poslovne prakse, dao je preporuke za sve zainteresovane strane u Republici Srbiji.

Ključne reči: CBAM regulativa, implementacija, emisije GHG, klimatske promene, održivost.

Contemporary challenges for companies to align its business with CBAM regulation

Abstract: Climate changes affect all aspects of life and society with wide repercussions on human beings. Ambitious sustainability objectives primarily defined by the Paris Agreement from 2015, via Euopean Green Deal in 2019 get its materialization in various initiatives. One of the main goals set in environmental area in previous period is reflected in significant reduction of greenhouse gas emissions. Simultaneously with the EU intentions that Europe become the first climate-neutral continent till 2050, in May 2023 was adopted Carbon Border Adjustment Mechanism (CBAM) which should prevent so-called „carbon leakage“, the behavior of EU-based companies which could move carbon-intensive production abroad to comply with lighter standards. Such behaviour could seriously undermine EU efforts, as well as efforts at the global level to realize sustainable goals. This paper deals with major feautres, scope and consequences of CBAM regulations, and through case study analysis of domestic company Elixir Group, as an example of good business practice, gave the recommendations for all stakeholders in the Republic of Serbia.

Keywords: CBAM regulation, implementation, GHG emissions, climate change, sustainability.

1. Introduction

Every person on the planet can see the changes in climate we are experiencing, and humanity's biggest challenge lies in our willingness to take the necessary steps to slow down these changes. Every nation, area, city, and resident must act swiftly and decisively in response to climate change. In light of this,

there is a high degree of social awareness worldwide regarding the possibility of material damage, financial repercussions, and workforce loss due to notable climate changes.

Achieving the broadest possible social consensus on climate change topic and fostering cooperation between civil society organizations and the economy are two crucial steps in the process of accomplishing sustainable goals (Mirković & Lukić Nikolić, 2018). In the real world, however, there is no aspect of life or society which is unaffected by the ongoing climate changes, despite the false impression that the fight against climate change just impacts the environment and energy industry. Intergenerational justice and the understanding that future generations have a right to the same or comparable standard of living should be key components of any climate policy. It is not possible to postpone implementing a just transition for many years or election cycles. On the contrary, in order to give future generations the fundamental requirements for a decent living, the shift needs to start right away and involve more work from the present generation (Mirković, Iliev Matić, Lukić Nikolić, Dudić, & Puzić, 2023).

The obligation to reduce the intensity of global warming, through the implementation of ambitious goals defined by the Paris Agreement from 2015, which foresees the limitation of global temperature rise to 2°, i.e. 1.5° Celsius, signed more than 190 countries, including the Republic of Serbia. On the international level, The EU took a leading role in the fight against climate change.

Due to evidently unsatisfactory effects and achieved results reduction of greenhouse gas emissions (GHG), the European Green Deal (European Commission, 2019) has set a clear path, via "Fit for 55", towards achieving the EU's target of a 55% net reduction in greenhouse gas emissions by 2030 compared to 1990 levels with the final objective for Europe to become the first climate-neutral continent by 2050. In July 2021, the European Commission prepared 55 proposals for action, in order to realize the strategic goal, further establishing the EU as a global climate leader.

Following those events in order to strengthen ambitious sustainability goals, in May 2023 was adopted CBAM regulation (*Carbon Border Adjustment Mechanism*, hereinafter: CBAM) (European Commission, 2023). As the EU's climate ambitions grow, less strict environmental and climate policies begin to prevail in some non-EU countries and there is a high risk of so-called „carbon leakage". The phenomenon of CBAM regulation is related to the behavior of EU-based companies which could move carbon-intensive production abroad to comply with lighter standards, or EU products could be replaced with more carbon-intensive imports. Such carbon leakage could lead to the displacement of emissions outside Europe and therefore seriously undermine EU efforts, as well as efforts at the global level.

2. Basic Characteristics and Different Aspects of CBAM Regulation Coverage

CBAM supports the climate ambition of the EU and ensures that climate actions are not undermined by the relocation of production to countries with less controlled climate policy. CBAM represents a regulatory requirement, which is namely a type of tax on CO_2, for certain groups of products from third countries, outside the EU and EFTA. Among others, the goal of the CBAM regulation is to prevent "carbon leakage" i.e. to encourage cleaner industrial production in countries outside the EU. In described manner, the EU protects its competitive industries and avoids obtaining preferential prices for countries that have moved their production to the other countries that have a less controlled climate policy.

CBAM will first apply to imports of six types of products, namely: cement, iron and steel, aluminum, fertilizers, electricity and hydrogen (European Commission, 2023). Coverage of categories of goods subject to CBAM regulation is defined by the list of CN (Combined Nomenclature) codes in the Annex I of regulation. These sectors are selected according to specific criteria, especially according to their own high risk of "carbon leakage" and high emission intensity which will eventually - when fully introduced - represent more than 50% of industrial sector emissions included EU ETS (Privredna komora Srbije, 2023). Abovementioned list of products is presented in Figure 1:

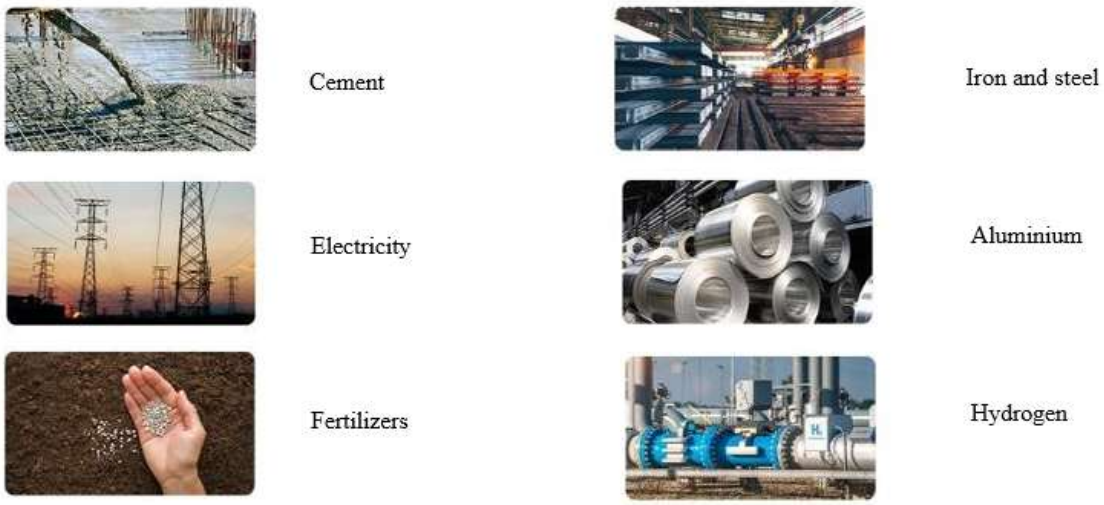

Fig.1. Types of products covered by CBAM
Source: Authors based on 2023 (European Commission, 2023).

Implementation of CBAM regulation started on October 1, 2023, whilst the transitional period will last until the end of 2025. From October 1, 2023, companies are obliged to report on CO_2 emissions contained in their products if they export them to the EU. In the transition period reporting will be quarterly, while January 1, 2026, is set as the beginning of the final post-transition phase, when reporting will be on annual level. The first quarterly reporting for CBAM was scheduled for January 31, 2024, and covered the reporting period between October 1 and December 31, 2023 (European Commission, 2023).

The transition period serves as a pilot and learning periods for all stakeholders (importers, producers, authorities) and as a basis for collecting useful information on embedded emissions to refine the methodology for the final period. For now, reporting refers to the above mentioned six products, while payment of tax on the import of such products will begin on January 1, 2026 (European Commission, 2023; Privredna komora Srbije, 2023). EU trade partner countries, if they establish their own payment system, will be exempt from CBAM in proportion to the price they have already paid in their country. Otherwise, producers will be obliged to purchase a CBAM certificate. Figure 2 showing timeline for CBAM implementation:

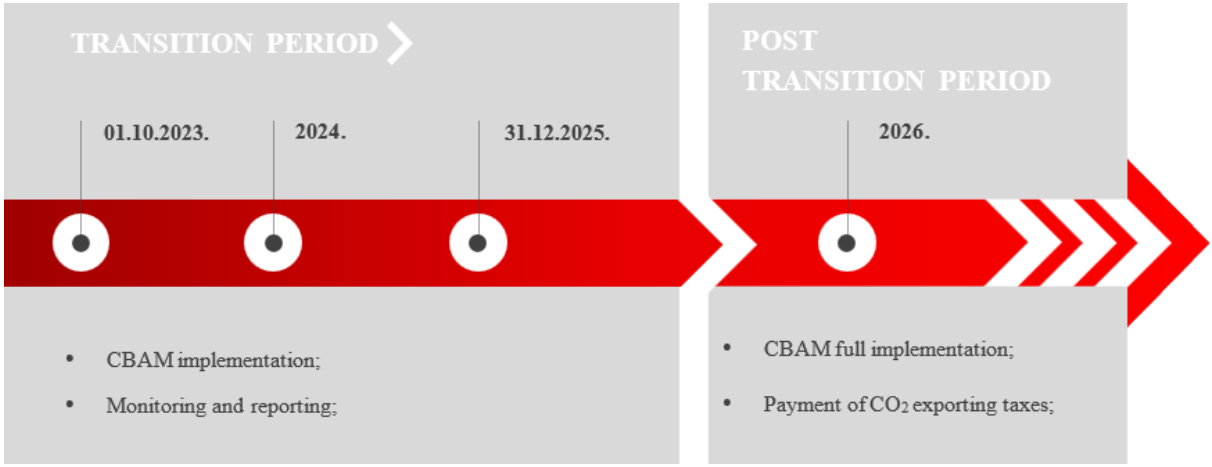

Fig.2. Timeline for CBAM implementation
Source: Authors based on (European Commission 2023)

Gradual introduction of CBAM over time will also enable a careful, predictable and proportionate transition for EU and non-EU companies, as well as for public authorities. During this period, importers of goods under the new rules will only have to report the greenhouse gas (GHG) emissions embedded in their imports (direct and indirect emissions), without any financial payments or adjustments. Indirect emissions will be covered after the transition period for some sectors (cement and fertilizers), based on the defined methodology specified in the Implementing Regulation published on August 17, 2023, and accompanying instructions (European Commission, 2023b). The Regulation for the implementation of reporting requirements and methodology provides some flexibility when into the question of the values used to calculate the built-in emissions on imports during the transition phase. Until the end of 2024, the company will have a choice of reporting in three different ways (Privredna komora Srbije, 2023; European Commission, 2023b):

1) full reporting according to the new methodology (EU method);
2) reporting based on the equivalent method (three options); and
3) reporting based on established reference values (only until July 2024).

From 1 January 2025, only the EU method will be accepted, and estimates (including established values) can only be used for composite goods if these estimates represent less than 20% of total embedded emissions. It should bear on mind that the content of the quarterly CBAM reports will be significantly different between transition and post-transition period. The content of the quarterly CBAM report in the transition period includes data on: the total quantity of exported products per quarter, total installed direct and indirect emissions and the total price of incorporated CO_2 in the country of origin of the product. On the other hand, the content of the quarterly CBAM report in the post-transition period includes data on: the total amount of exported products per year, total installed direct and indirect emissions at the annual level and the verified amount of emissions (European Commission, 2023b). There should be pay special attention on two aspects in CBAM regulation: formation of unique CBAM register and introduction of effective carbon pricing.

2.1. Formation of CBAM registry

At the EU level, the CBAM register was established as a register of all foreign headquarters, customs representatives and the like, which will be publicly accessible. Creating such a registry has its own risks and benefits. The risks are reflected in following: an increase in export costs, lower competitiveness in the market, a ban on doing business in the EU and the fact that EU importers can switch to suppliers whose supply chain is carbon transparent. The advantages of creating a register are: better reputation and credibility of clients who are registered in the register, higher degree of competitiveness of products, greater confidence of investors and owners as well as easier access to green financing (European Commission, 2023b).

The European Commission is responsible for maintaining the CBAM transitional register and it evaluates the implementation of CBAM during the transitional period. Built-in emissions can refer to simple and complex products and are covered both within different scopes (Scope 1, 2 or 3) and within precursors (that is, inputs in the production process that can be delivered via the EU ETS whose emissions are not equal to zero). Direct emission can be determined based on one of two possible approaches: either based on calculations or based on measuring the concentration of GHG gases (European Commission, 2023b).

2.2. Carbon pricing and introduction of CBAM certificates

In the case of indirect emissions, it is necessary to multiply the amount of consumed electricity with the relevant emission factor depending on the source of electricity (e.g. whether they come from the grid.). The obligations of the operator (exporter in the EU) are: to prepare a calculation of direct emissions generated during production, which include built-in emissions per product and built-in emissions of purchased raw materials, then to prepare a calculation of indirect emissions, as well as to regularly report to customers (clients) on the calculated emissions.

To ensure fair treatment of goods produced in different installations, under different jurisdictions, it is necessary for the importer to report the effective carbon price due for the production of CBAM goods. This can be applied at the national or sub-national level. The effective carbon price is the actual price per ton of CO_2 and considers (European Commission, 2023b):

- the actual price of a ton of CO_2 within the carbon price scheme for the given jurisdiction;
- coverage of production process emissions in the carbon price scheme (direct, indirect emission, GHG, etc.);
- all applicable rebates, i.e. the amount of free allocation (in the case of ETS) or any financial support, compensation or other forms of rebate received for that jurisdiction, expressed per ton of CBAM-relevant product; and
- in the case of complex goods, the carbon price due (after rebates received) from all relevant precursors consumed in the production process.

In the transition period, this is a reporting obligation for importers. However, in the post-transition period, the publication of this information will enable the importers to receive the rebate amount; otherwise, the stated amount should be paid by the person responsible for the CBAM obligation.

Until July 31, 2024, for each import of goods for which the applicant does not have all the information, the applicant may use other methods to determine emissions, including determined values that are available and published by the Commission. Using established values for reporting purposes during the transition period is possible for the first three reporting period, without quantitative restrictions. In addition, estimated values (including established values) can be used for the entire reporting period for input materials or sub-processes with a relatively small contribution (e.g. 20%) to the total embedded emission complex goods. In other words, this means that by July 31, 2024, 100% of the total installed emissions will be able to be determined using established values. For the remaining transition period, i.e. from July 1, 2024, to December 31, 2025, estimated values can be used with quantitative restrictions. By the end of the transition period in 2025, the Commission will assess the established values based on collected data. During the post-transition period, established values by country and region will also be available (European Commission, 2023b).

Before introduction of CBAM certificates, it should be noted that the EU ETS sets a limit on the amount of greenhouse gas emissions that can be release from electricity production and large industrial installations. Permits must be purchased on the ETS market for trading, although several free permits are distributed to industry to prevent carbon leakage. To strengthen the incentive for decarbonization, CBAM will be phased in alongside the reduction of free permits. According to the EU ETS, the number of free permits decreases over time, for all sectors. For CBAM sectors, it falls accelerates from 2026, so that the ETS can have maximum impact in meeting the EU's ambitious climate goals. At the same time, the financial adjustment of CBAM is taking place gradually in accordance with the schedule.

CBAM is based on a certificate system that corresponds to the embedded emissions in CBAM products imported into the EU. Unlike ETS, an unlimited number of certificates can be purchased under CBAM. However, the cost of the CBAM certificate will reflect the cost of the ETS permit. Once the full CBAM regime becomes operational in 2026, the system will be adjusted to reflect the revised EU ETS, in particular the reduction of available free allowances in the sectors covered by CBAM (European Commission. 2023b).

This means that CBAM will start to apply only to covered products, and in direct proportion to the reduction of free allowances allocated under the ETS for those sectors. Simply put, until free allowances are fully phased out by 2034, CBAM will only apply to the share of emissions that do not use free allowances under the EU ETS, ensuring that importers treated in an equal way compared to EU producers. CBAM will ensure that imported goods receive „no less“ favorable treatment than EU products, thanks to the following: CBAM takes into account the real values of embedded emissions, which means that the decarbonization efforts of companies exporting to the EU will lead to a lower CBAM charge (European Commission, 2023b).

The price of the CBAM certificate for the import of CBAM goods will be the same as for producers from the EU under the EU ETS. Effective carbon prices paid outside the EU will be deducted from the adjustment, to avoid double pricing. A carbon price paid in a third country could for example be a consequence of established trading system emissions. Before the end of the transition period, the Commission will adopt by-laws for the development of rules and processes, which will consider the effective price of carbon paid abroad.

It is evident that CBAM regulation imposes a numerous challenge ahead of companies which core business is closely related to products covered by this regulation. In the light of mentioned it is necessary to look deeper in concrete actions made by companies which are subject of CBAM regulations. In this paper authors conducted desk research and analysis of domestic company - Elixir Group, which operationally dealt with fertilizers as one of six products covered by CBAM regulation.

2. Case study of Elixir group: the company which is subject to CBAM regulation

As one of the leading companies in Southeast Europe's chemical industry, Šabac-based **Elixir Group** has two plants in Serbia: Elixir Prahovo and Elixir Zorka. They generate one million tons of phosphoric acid and mineral fertilizers combined. Furthermore, Prahovo is home to one of the six phosphoric acid facilities in (Europe Elixir Group, 2023).

Elixir Group has set aside for investments the amount of EUR 300 million which will go toward solar power plants, wind farms, batteries, and the utilization of waste to produce steam. Described investment cycle is named "Prahovo 2027" and involves four greenfield investments. The first is a brand-new, cutting-edge phosphoric acid factory. Next is the manufacturing of liquid fertilizers in the form of crystalline water-soluble fertilizers. At the end, Elixir Group is getting ready to invest in solar parks, wind farms, and batteries (Balkan Energy News, 2024). Energy investments should not only give them energy but also the ability to balance their own electricity generation and get ready for the year 2026, which marks the initiation of the cross-border CO_2 tax payment upon CBAM regulation. Elixir Group has been tracking CO_2 emissions since a long time ago in order to be ready for ongoing changes. A contributing factor is that their partners are sizable EU businesses who require this information for their computations.

As one of the main contributors to the realization of Green Agenda goals in the Republic of Serbia, during 2023 Elixir Group created and presented its „Decarbonization Roadmap" on the example of factories for the production of mineral fertilizers and phosphoric acid (Elixir Group, 2023b). This roadmap serves as a decarbonization guide, which offers options on how businesses may run more sustainably and cut back on their negative environmental effects, like GHG emissions.

It also provides an explanation of the approach taken to assess the environmental impacts of four specific Elixir products all over their entire life cycle, encompassing raw material extraction and procurement, production, product usage, final disposal or reuse, and precise calculation of the products' carbon footprints. Modern monitoring tools and software for quantifying and assessing environmental effect were used to gather the data for this study. For this study, SimaPro, the top life cycle assessment software across the world, which is used in over 80 countries by academic and industrial institutions, was employed (Elixir Group, 2023b). Like most other tools of its kind, it is rather simple to use and enables users to create intricate product life cycle models transparently using the well-known eco-invent databases. It offers seventeen distinct approaches (methods) for evaluating the effects of the environment. Relational databases, such as those for processes, methods, substances, waste fractions, and unit and size conversions, form the foundation of the program. Abovementioned study also contains recommendations for effective and efficient usage od SimaPro software, which could be very helpful for other users which are in beginner stage.

It should be noted that Elixir Group is well recognized per its proactive approach to renewable sources of raw materilas. In „Decarbonization Roadmap" is briefly analyzed the role and importance of phosphorus, which is classified as essential from stock perspective per the European Commission criteria. One of Earth's slowest biogeochemical cycles is the phosphorus cycle. It moves very slowly (500 million years) from rocks over land to the ocean (Elixir Group, 2023b). Conversely, all life on Earth suffers when phosphorous is lacking because it is essential to life. This element is an essential part of every living being since it is the building block of DNA and RNA, plays a significant part in the energy transmission within living cells, and helps create cell membranes as a component of phospholipids.

All living organisms obtain the phosphorus they require from food, which is obtained through biological uptake of phosphorus from the soil. The world's population is predicted to reach 9.3 billion people by 2050, according to some projections, thus there will be a significant increase in food demand in the upcoming years - more than 60% (Elixir Group, 2023b). It will therefore be necessary to expand food and agricultural output, as these are two of the primary drivers of the depletion of natural resources. As of the moment, phosphate deposits are being utilized significantly more quickly than they are being created, effectively transforming phosphorus into a non-renewable resource.

Researchers have been looking for novel materials to use in place of phosphate rock when making fertilizers and other phosphorus - containing products for years. An alternative was the potential use of ash from sewage sludge. The production members of Elixir Group initiated a project to produce phosphoric acid and mineral fertilizers using sewage sludge ash. This shows the company's proactive approach, as it is currently investigating the possibility of substituting raw phosphate with this alternative raw material.

According to laboratory testing, sewage sludge ash can substitute 10–30% of raw phosphate in the formulation of mineral fertilizers and phosphoric acid. The project "Reconstruction, Rehabilitation and Adaptation of the wastewater treatment plant at the Elixir Prahovo" location is being worked on simultaneously with this significant project, which is in the acceleration phase within the framework of the "EU for the Green Agenda" (Elixir Group, 2023). This project envisions, in accordance with the principles of the circular economy, the use of sludge from of the second stage of purification of technological waste water from the phosphoric acid production process for the purpose of reusing phosphorus residues. Additionally, cleansed water will be partially returned and reused in the phosphoric acid production process.

Furthermore, through the lens of proactive approach, Elixir Group is contemplating regarding a concept for developing green hydrogen using its Prahovo factory as an example. This is a product that can be sold in the local and surrounding markets as well as in Europe, a major importer of energy products. Achieving the neutralization of CO_2 by 2050, one of the objectives of sustainable development, depends in large part on green hydrogen (Elixir Group, 2023). The significant decrease in hazardous emissions has a positive impact on environmental protection and makes a significant contribution to its enhancement. The vision of Europe and the world, as well as that of Elixir Group, is reflected in sustainable hydrogen generation.

As a part of corporate social responsible behaviour, in mid-July 2024 Elixir Group has also published its Sustainability report for 2023 year. This report was made by using well known GRI methodology, already recognized in more than 10.000 companies and 100 countries worldwide and verified by audit company (KPMG Elixir Group, 2023). Sustainability report contains six different materially significant segments regarding the company, management, markets, employees, environment and impact on local community.

3. Conclusion

Climate change has a profound impact on humanity as a whole, influencing every facet of life and society. After setting a global sustainability goals through Paris Agreement in 2015, it was obvious that in the environmental domain should be made an additional decrease in greenhouse gas emissions.

In May 2023, the EU adopted CBAM regulation in conjunction with its objective to make Europe the first continent as climate-neutral until 2050. The mechanism is intended to stop companies based in the EU from engaging in "carbon leakage" which is the practice of moving carbon-intensive production overseas in order to comply with less stringent regulations. Such actions have the potential to significantly undermine global and EU efforts to achieve sustainable development goals.

The first six product categories to be covered by CBAM are: cement, iron and steel, aluminum, fertilizers, electricity, and hydrogen. The main task for all exporterts to EU is to be well informed about this special kind of tax and obligation in order to avoid potential penalties. Also, it should be noted that implementation of CBAM regulation is divided into transition and post-transition phase, whilst the phase of full implementation will starting after the 1 January, 2026. It make easier for market participants to be informed and well-equipped in order to fulfill its obligations.

Due to long lasting presence on EU markets certain companies, engaged in business with products that are main subject of CBAM regulation, have a valuable experience in its decarbonization journey. In this paper authors presented the case study of Elixir Group, major domestic company in the area of fertilizers. Elixir Group represents an example of good business practice due to its proactive approach in ESG segment, introduction of decarbonization roadmap and the role of social responsible subject which is confirmed by newest sustainability report made according the GRI principles.

For Elixir Group, CBAM reporting presents both a legal requirement and a tactical chance to hasten its shift to a more ecologically conscious and sustainable company. The organization uses the CBAM regulation to pinpoint the energy balance and operational sectors that require a concentrated effort to reduce CO_2 emissions by switching to alternative and renewable energy sources. Described approach could be benefitial and helpful in forthcoming years for all market participants which will be faced with challenges of CBAM regulation in order to maintain and upgrade its business.

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