

CIECH Soda Romania

A player on the European
soda market and contributor
to the economy of Romania
and Vâlcea County

11 September 2019

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01

Executive summary

Executive summary

- 01 CIECH Soda Romania (CSR) is a manufacturing company located in the Vâlcea region in Romania. For 60 years it has carried out its soda manufacturing operations and now supplies the Romanian market as the only domestic producer. CSR exports its soda products to over 70 countries.
- 02 Rooted deeply in the region, CSR supplies local value chains including glass bottle and window manufacturers, sourcing inputs from Romanian Treasury-owned companies. The factory is also the fifth largest private employer in the region with over 600 full-time employees.
- 03 CIECH Group is the majority shareholder of CSR. CIECH Group is an international chemistry holding with a presence in over 100 countries and 2018 revenue equal to nearly USD 1.0 billion. In 2014 the majority of CIECH's stock was acquired by KI Chemistry, a company belonging to the largest Polish private investment firm, Kulczyk Investments.
- 04 The acquisition of CIECH by KI Holding resulted in substantial reorganization of CSR. An injection of funding of EUR 140 million into the business removed the liabilities and allowed for asset modernization. New strategy and business organization followed to further enhance operations.
- 05 Owing to the transformation, the revenues of CSR increased by 50% over the 2014-18 period to reach a net value of RON 443.7 million.
- 06 Production volume growth over the last 5 years has been substantial. In 2017 the Company produced an all-time-high 540,000 tonnes of soda products - a 30% increase over 2014 figures. With stable domestic sales, CSR has greatly increased its international market with a more than 30% increase in countries served and improving its position in direct sales by over 80%, recapturing volumes sold previously by third party dealers.
- 07 There are four critical cost drivers for the CSR operations: steam, electricity, limestone and brine. Steam, limestone and brine are sourced from exclusive suppliers with no immediate replacements apparent (or possible).
- 08 The steam supplier, CET Govora, suffered a serious damage due to accident in the first half of 2019 thus limiting the supply of steam by a substantial margin. Starting from 18 September 2019, proposed prices of steam will rise sharply by 135% compared with the 2018 level.
- 09 The proposed prices of steam deeply impact CSR operations as steam constitutes over 40% of the Company's total costs, making production non-economical.
- 10 CSR has announced to cease operations at the plant starting from 18th September 2019, while negotiating steam prices with the supplier.
- 11 As CSR is a major company in the Romanian Vâlcea Region, it is anticipated that potential discontinuance of its business operations will have substantial economic and social consequences.
- 12 The impact of the operational activity of the CIECH Group on the economy of Romania and Vâlcea county in 2018, taking into account the links of the CIECH Group to the rest of the Romanian economy, was as follows:
 - ▶ RON 445 m of value added (~GDP) was generated in Romania, of which RON 260 m was generated in Vâlcea county
 - ▶ RON 1.3 bn of global output (~revenues) was generated in Romania of which RON 869 million was generated in Vâlcea county
 - ▶ More than 4,400 jobs were created in Romania of which more than 2,160 jobs were created in Vâlcea county
 - ▶ RON 98 million of government revenues were generated in Romania of which RON 4.5 million were received by local government units in Vâlcea county.

Economic impact summary

COUNTRY LEVEL

RON 445 mn
(EUR 96 mn)

of value added (~GDP) generated in Romania

RON 1 mn

generated directly by the CIECH Group



RON 3.3 mn

in the rest of the economy

RON 1.3 bn
(EUR 279 mn)

of global output (~revenues) generated in Romania

ca. 4,400

jobs created in Romania

1 job

created directly by the CIECH Group



5.9 jobs

in the rest of the economy

RON 98 mn
(EUR 21 mn)

of government revenues generated in Romania

RON 1 mn

generated directly by the CIECH Group



RON 3.1 mn

in the rest of the economy

VÂLCEA COUNTY LEVEL

RON 260 mn
(EUR 56 mn)

of value added generated in the Vâlcea county

RON 869 mn
(EUR 187 mn)

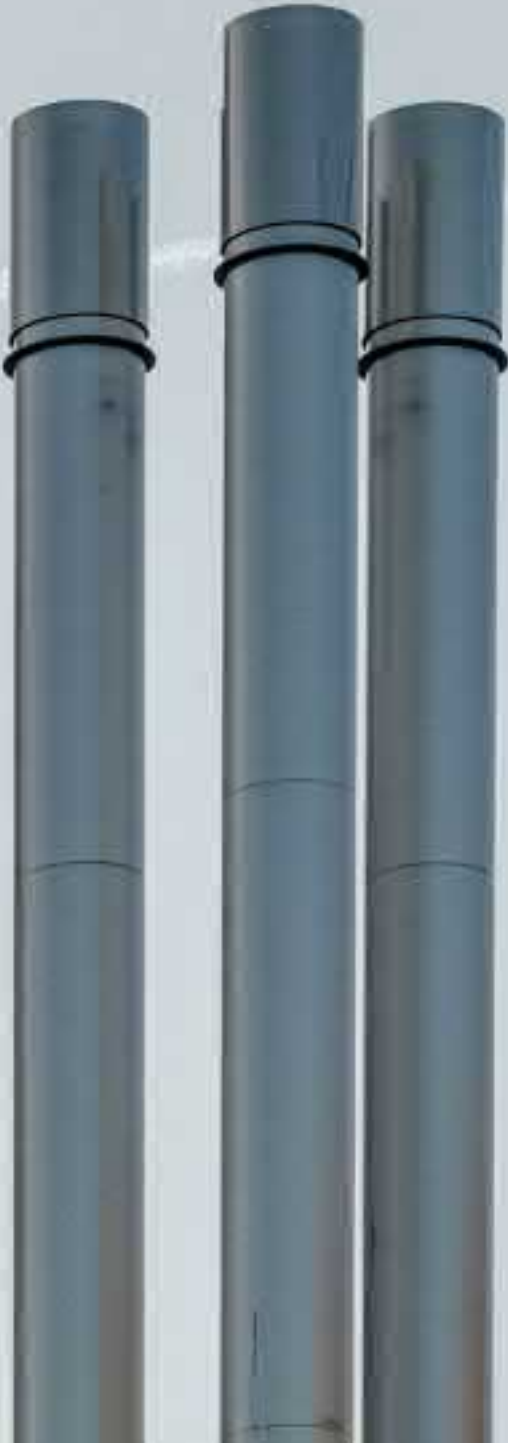
of global output generated in the Vâlcea county

ca. 2,160

jobs created in the Vâlcea county

RON 4.5 mn
(EUR 967 thous.)

of government revenues received by the local government units in the Vâlcea county



02

CSR as a unique soda production facility in Romania

In this chapter we present a general business overview of CIECH Soda Romania and the competitive environment in which it operates.

CIECH Soda Romania is the only Romanian soda producer

60 years
of continuous operations



more than
600 employees
(2018)

part of the
2nd largest soda
company in EU

Top 5
privately owned company in the Vâlcea
region in terms of revenue and
employment (2nd largest by revenue)



CIECH Soda Romania (CSR) is a major company in the Vâlcea region and part of the international CIECH Group

OVERVIEW OF CIECH SODA ROMANIA

CIECH Soda Romania (CSR), formerly known as Uzinele Sodice Govora, is located in the southern part of Romania, in the town of Râmnicu Vâlcea. CSR is the sole soda producer on the economic map of Romania and one of the most important factories in the country. As a strategic supplier to glass and detergent producers, CSR plays an important role in establishment of robust industrial supply chains in Romania.

The Romanian soda factory was the first foreign company acquired by the international CIECH Group (in December 2006).



COMPANY INFORMATION (2018)

Thousand	RON	USD
Total operating revenue	443,700	112,614
USD/RON	3.94	
Annual capacity	540,000 tonnes	
Employment	over 600 FTE	
Ownership	CIECH Group, 98.7%	
Location	Govora, Vâlcea County	

KEY INPUTS

Production of soda is a commodity industry focused on cost base. The key cost drivers are:



Steam, limestone and brine are sourced by CSR via a single and exclusive supplier.

KEY OUTPUTS

The key products of CIECH Soda Romania are:

- ▶ Soda ash
- ▶ Sodium silicates
- ▶ Water glass
- ▶ Soda derivatives
- ▶ Dense soda ash with application in the glass industry, which is the flagship product.

VALUE CHAIN PRESENCE

Local glass and detergents companies are the key local customers for CSR products. Internationally CSR serves a large base of international clients with more than 140 customers in more than 70 countries in Europe, Africa, North and South America as well as Asia. **A detailed analysis of the soda value chain is presented on pages 46-47.**

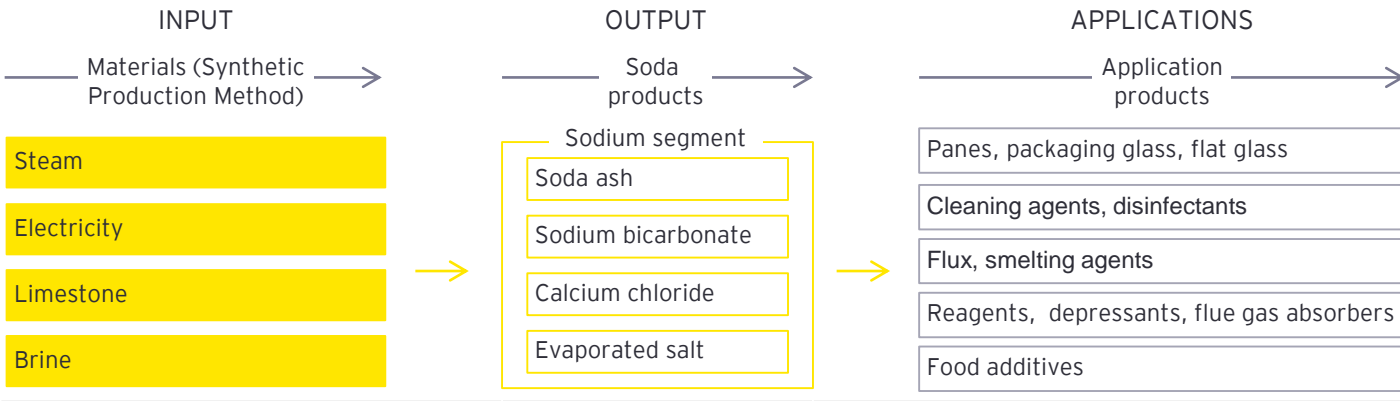
Source: CSR financial statements and data

Being part of the larger CIECH Group, CSR vastly benefits from the ownership

CIECH IS AN INTERNATIONAL COMPANY WITH DIVERSIFIED PRODUCT PORTFOLIO



CIECH GROUP SODA BUSINESS VALUE CHAINS



CIECH GROUP PRESENCE HAS A SUBSTANTIAL IMPACT ON CSR COMPETITIVENESS



INJECTION OF FUNDS

Total investment in the company in the last 5 years amounts to EUR 140 million or an approximate 120% of annual revenue. The fund injection both cleared the liabilities and allowed the company to modernize the production facilities to almost double the capacity from 2009 volumes.



KNOWLEDGE TRANSFER

The modernization of the plant was followed with new management principles resulting in redefinition of go-to-market strategy, creation of a reshaped business model and restructuring of the sales team that already ships the product to 72 countries around the globe.



OPERATIONAL SYNERGY

By being a part of the larger CIECH group CSR has gained more reliable facility output. Its production output has grown by double digit numbers. This can be attributed to the shift in perception of CSR in the market and ability to diversify the sales portfolio.

With a performance history of 60 years, Govora is a well established, continuously growing plant

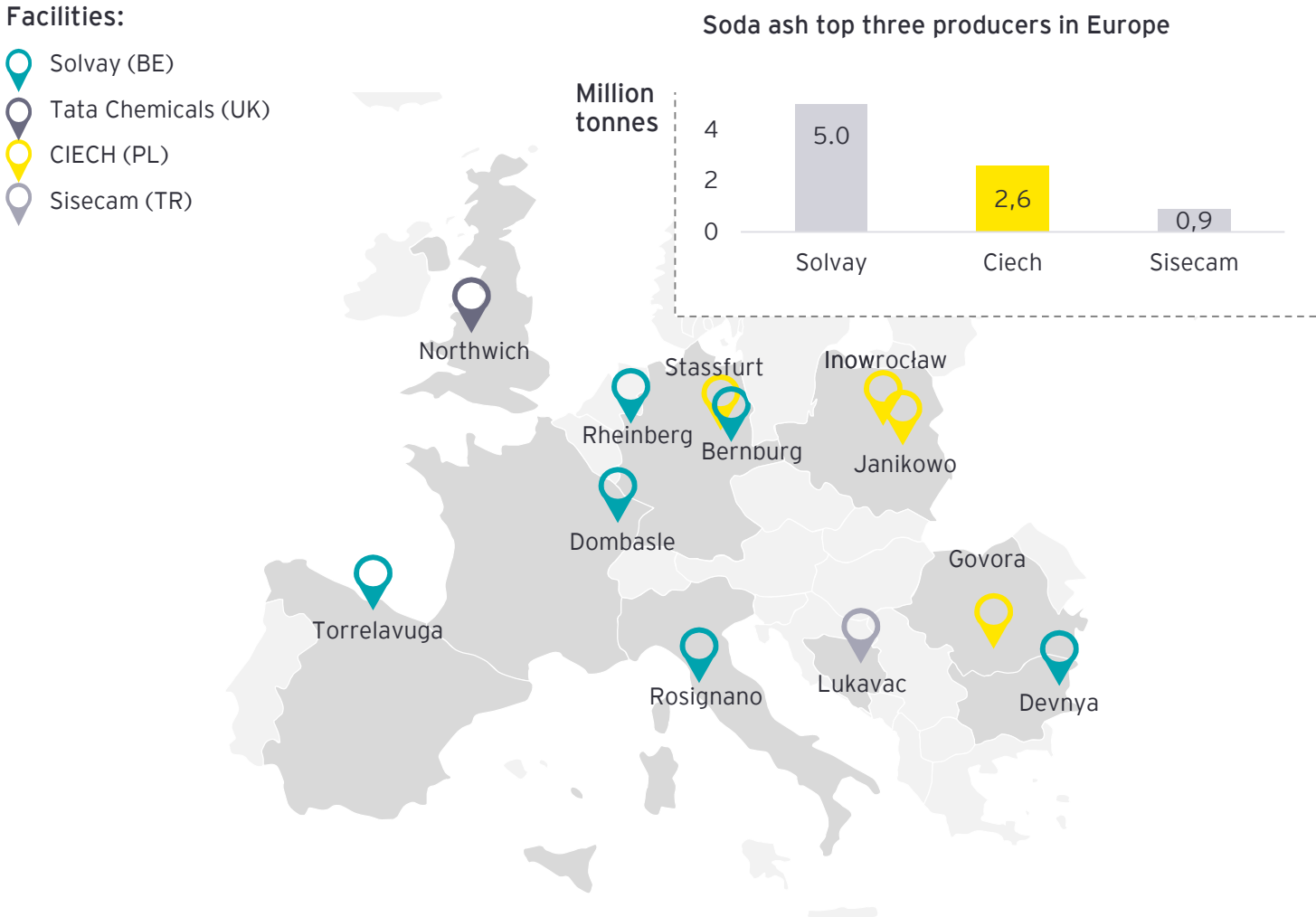
OWNER	EVENT	IMPACT
Romanian State Treasury, then private Romanian investors	1959 The Company is founded as Uzinele Sodice Govora	Launch of modern soda industry in Romania provides strong basis for development of multiple industries including glass and detergents.
	1959-2006 The Company is owned by the Romanian state	From 1959 to 2006 the Company growth is synchronized in accordance with the demand from Romanian customer markets. After 1990 the Company must adapt to the rules of the competitive European soda market.
CIECH S.A. (Polish State Treasury holding)	2006 CIECH Group purchases the Company	Uzinele Sodice Govora enters one of the largest and strongest soda companies in Europe. It gains access to know-how, distribution channels as well as capital.
	2006-2014 Over EUR 140 million invested in the Company	CIECH Group provides multiple loans which are invested in facility modernization and upscale as well as performance improvement initiatives.
CIECH S.A. (Kulczyk Investments as a strategic investor)	2014 KI Chemistry acquires the controlling stake in the CIECH Group	Majority of shares in CIECH Group are purchased by KI Chemistry from Kulczyk Investments, the largest private owned investment house in Poland with strategic positions in the infrastructure, power & utilities, oil & gas or mining sectors.
	2014-2016 Restructuring process under new investor's strategy	KI Group brings new vision and direction to the CIECH Group. The Company records both capacity and productions growth. It remains profitable, despite steam supply issues, including a brief halt in production.
	2015 Production capacity exceeds 540 KTA	As production capacity exceeds 540 KTA, owing to scale the economics of the facility is further optimized.
	2018 Company sells over 80% of production overseas	The dynamic sales team at CSR introduces a number of reforms including expansion into new overseas markets as well as substitution of direct sales to end-users over sales to third party wholesalers.
	2019 Unsustainable steam supply and price puts CSR at risk	CIECH Group communicates situation of steam supplies. The steep hike price for this essential input for manufacturing processes and a key cost component makes production non-viable.

Since 2014 CSR has achieved significant improvements in major KPIs

KEY INDICATORS		2018	CHANGE FROM '14
	Annual capacity	540,000 tonnes	
	Owing to profound modernization of the plant, CSR was able to increase production capacity by 30% from 2014 to 2018, reaching the amount of 540,000 tonnes per annum.		↑ +30%
	Sales revenues	RON 443.7 million	
	Net sales revenues increased substantially between 2014 and 2018, with a CAGR approximate of near 10% and cumulative increase of 50% in total.		↑ +50%
	Long-term liabilities	RON 4.1 million	
	While in 2014 CSR's long-term liabilities exceeded RON 480 million, the long-term debt towards CIECH Group has been paid after equity increase done by CIECH. In result long term liabilities declined to the marginal level of RON 4.0 million as per 2018.		↓ - RON 476m
	Current liabilities	RON 63.1 million	
	Over the last five years CSR has significantly improved its management of current liabilities, reducing them by 75%.		↓ -75%
	CAPEX		
	From 2014 to 2018 CSR invested nearly RON 150 million in plant optimization, modernization and replacements as well as building consolidation and other investments such as IT.		

CSR's plant is one of a few soda ash production facilities in Europe

SODA ASH PRODUCTION PLANTS IN EUROPE (2018)



Source: EY Analysis based on companies' reports

DEMAND SUPPLY SITUATION IN EUROPE

European demand for soda ash including Western, Central and Southeast Europe as well as the CIS (Commonwealth of Independent States) Region is estimated at over 11 million tonnes per year. Market reports put annual growth rates at sustainable levels of 1-2 percent with usually 1 p.p. higher growth dynamics in the CEE than in Western Europe. The structure of soda ash consumption in Europe has not changed much for many years. The demand for this soda

depends mainly on the demand for packaging and flat glass. In Central Europe, the share of the detergent segment is also quite important, while in Eastern Europe the metallurgy industry matters more. The geography situates soda as a unique resource: only 9 countries in Europe are active soda producers. Europe is a mature soda market with nearly balanced demand and supply volumes which have not undergone rapid changes. Nevertheless, availability of key

resources (e.g. brine, limestone) vastly determine the market supply that can be created by European producers. As for 2018, European demand exceeded the supply by over 1.0 million tonnes. The difference was satisfied with imports mainly from North America and the Middle East. In particular, limited European supply may allow the Middle East players, e.g. Turkey, to start disrupting the current market demand supply structure.

CIECH Soda Romania has remained competitive under constant pressure from local peers

SODA ASH PRODUCTION PLANTS IN THE BALKANS REGION (2018)



DOING SODA BUSINESS IN ROMANIA AND THE BALKANS REGION



Source: EY Analysis based on companies' reports

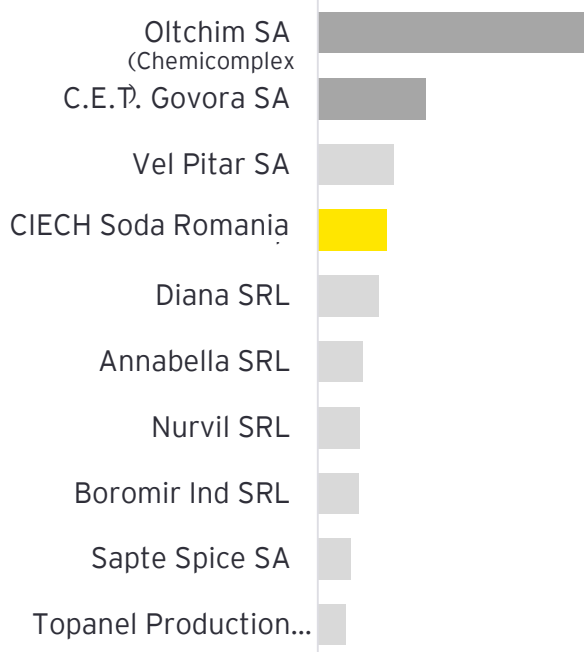
CIECH is one of the most important private entities in the local economy in terms of total operating revenue and employment

IMPORTANCE OF CIECH IN THE VÂLCEA REGION¹

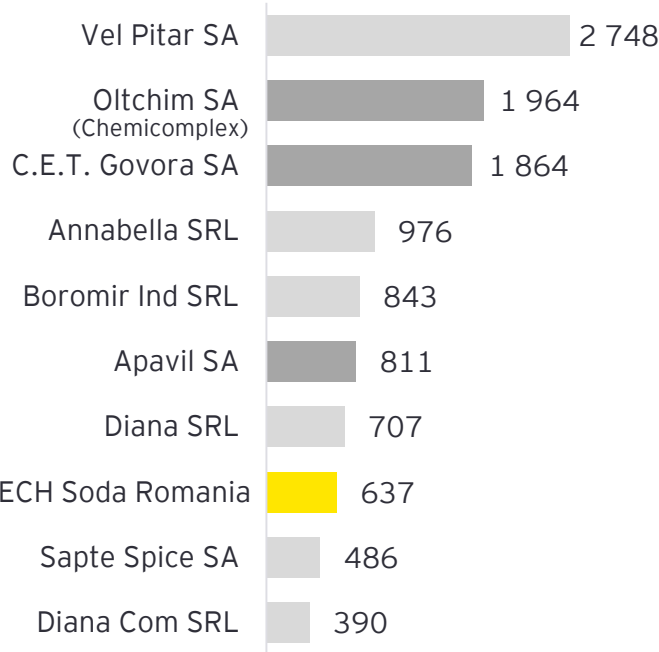
The CIECH Group is ranked fourth in terms of total operating revenue in Vâlcea County. At the same time, It is ranked second among private entities in the city, as Oitchim and CET Govora are state-owned companies.

Moreover, the CIECH Group is the eight largest employer in Vâlcea County and the fifth largest private employer (as Apavil SA is a municipal company).

TOP 10 COMPANIES IN VÂLCEA COUNTY BY TOTAL OPERATING REVENUE (ILLUSTRATIVE, 2018)



TOP 10 COMPANIES IN VÂLCEA COUNTY BY NUMBER OF EMPLOYEES (2018)



State-owned Private

Source: EMIS. The ranking is based on latest available data.

¹ Statistics represent both CIECH Group's companies in Romania: CIECH Soda România and CIECH Spółka Akcyjna Varsovia Sucursala Ramnicu Valcea

ACTIVITIES OF THE CIECH GROUP SUPPORTING THE LOCAL COMMUNITY IN VÂLCEA COUNTY



COOPERATION WITH THE LOCAL INSTITUTE OF CULTURE



SUPPORTING THE LOCAL "CASA PINOCHIO" ORPHANAGE



PARTNERSHIP WITH LYCEUM ENERGETIC: SCHOLARSHIPS AND INTERNSHIPS



03

Perspectives on further business performance at CSR

In this chapter we present the competitive advantages, as well as evaluation of revenue and costs along with the next steps for CIECH Soda Romania.

The key values describing the financial position of CIECH Soda Romania are:

RON 443.7 m

of revenue in 2018, up 50% since 2014

>500,000 tonnes

of production volumes in 2018, almost doubled over last 10 years

44%

share of steam in total operating costs in 1H 2019

135%

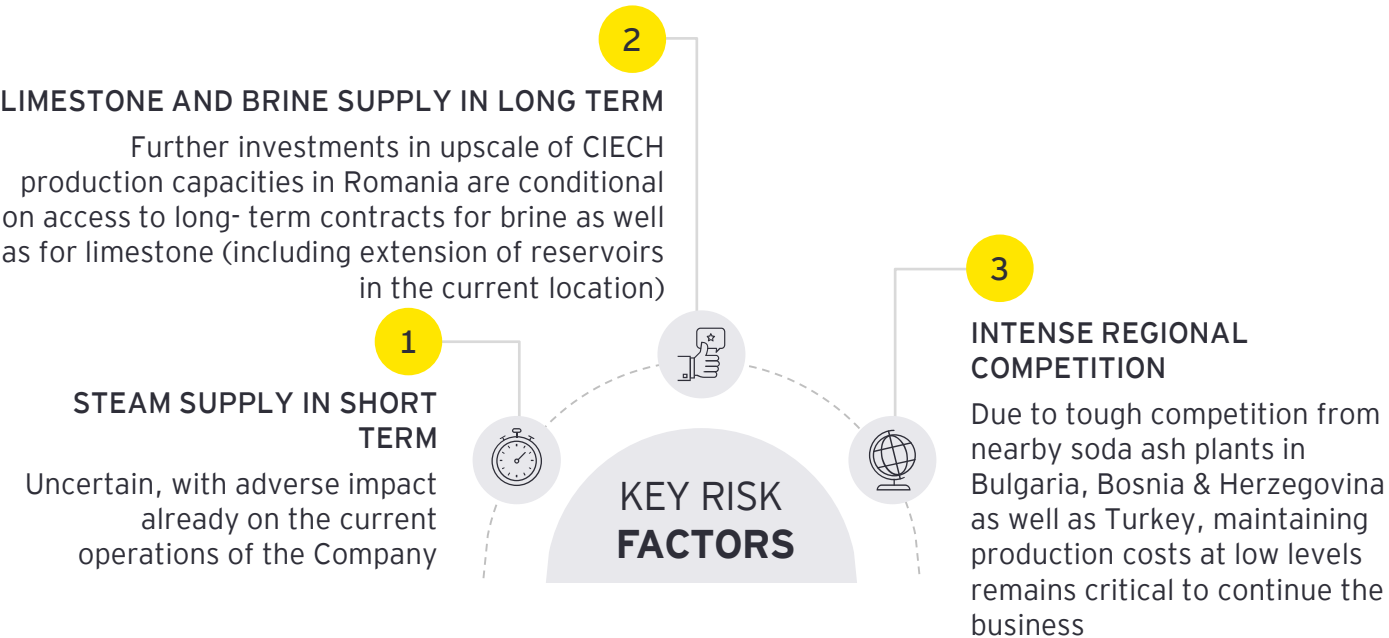
increase in steam prices, hampering operations, starting in September 2019

CSR sales drivers are sound, but a few risks need to be overcome in the future

KEY COMPETITIVE ADVANTAGES






BUSINESS ISSUES TO BE ADRESSED



Substantial growth of sales is a result of successful reorganization of sales operations




SALES DYNAMICS

	'18 RESULT	COMPARED TO '14
 Sales revenue	RON 443.7 million	 +50%
Sales revenues increased substantially between 2014 and 2018, with an approximate CAGR of 10%. Owing to efficient sales operations and international expansion, the number is attributable to the improvements in management and operations.		
 Production volume	> 500,000 tones	 +30%
Production volumes have steadily risen due to the modernization of the equipment and improvements to production technology. Over the last ten years the volumes have increased by almost 100%, with potential room to grow further in the future.		
 Markets served	72 countries	 +#23
This shift led by expansion into the Asian and South American markets with a substantial increase in the overall number of export markets - from 59 to 72 - an increase of 22% over the 5-year period. The number of business partners on those markets also increased by more than 50% effectively, diversifying the revenue sources.		
 Sales structure	>50% direct sales	 +20pp.
The last 5 years of activity have realized a strategy focused on strengthening CSR's own salesforce. The dominant ~70% share of third party traders in sales in 2014 was captured by the dedicated CSR team. The total number of direct sale customers has grown by over 60% over the 2014-2018 period.		



The cost structure at CSR remained stable from 2014 to 2018, while there are risks reported for 2019

COST STRUCTURE DYNAMICS

VARIABLE COST (PER OUTPUT TONNE)

	'14 RESULT	ANNUAL CHANGE FROM '14 TO '18	CHANGE '20 FORECAST
 Steam and electricity	ca. RON 110 m	+5%	+135%
The cost of energy, including steam as a key ingredient of the cost of energy, steadily rose between 2014 and 2018, with an approximate CAGR of 5%. As the price negotiations with CET Govora continue, the cost of energy in 2020 is expected by CSR to skyrocket by 135%.			
 Limestone and brine	ca. RON 60 m	+7%	+5%
Over the 2014-2018 period the cost of raw materials was growing by a high single digit number and is expected to increase significantly also in 2019.			
 Other materials	ca. RON 20 m	+1%	+1%
The cost of other materials including packaging remained stable from 2014 to 2019 without a significant impact on CSR's bottom line measures.			

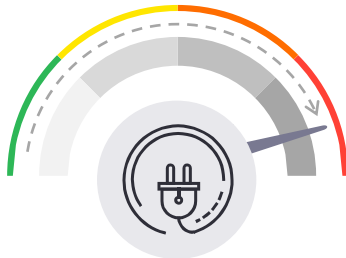
FIXED COST (TOTAL)

 Employee compensation	ca. RON 35 m	+1.5%	+5%
The cost of payroll from 2014 to 2018 remained under control, but growing salaries in the public sector in Romania will put pressure on for a payroll increase from 2019 onwards.			
 Other cost	ca. RON 20 m	+6%	+5%
Other costs, including purchases of external services such as maintenance, have steadily risen with an approximate CAGR of 6%. They are also expected to continue to grow along this trend in 2019.			

Cost of energy incl. steam is the top cost factor that impacts CSR's bottom line

IMPACT OF SELECTED COST FACTORS ON CSR'S PROFITABILITY IN THE CASE OF +20% PRICE INCREASE SCENARIO (SENSITIVITY ANALYSIS)

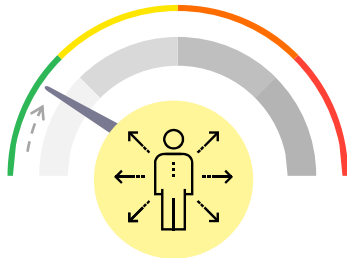
VARIABLE COSTS



Steam and electricity

Below break even point

FIXED COSTS



Employee compensation

Under control



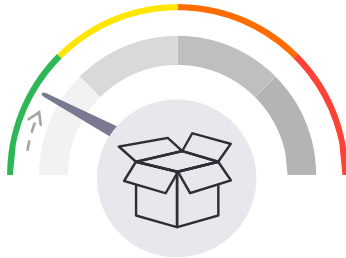
Limestone and brine

Matter to be addressed



Other costs

Under control



Other materials

Under control

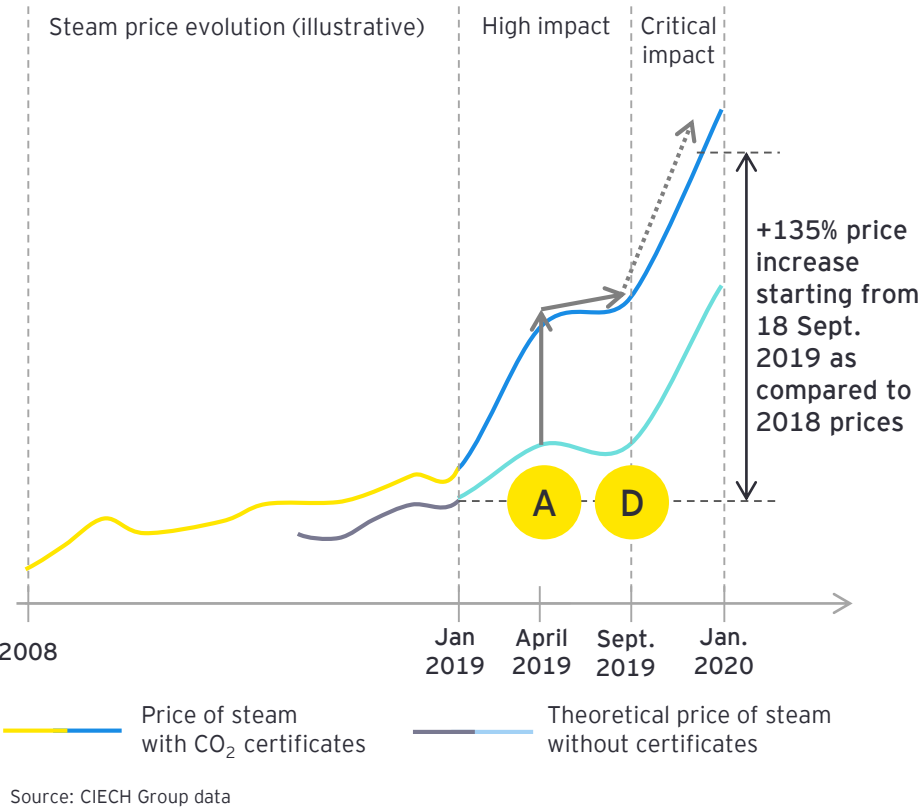
Energy including steam and raw materials are two critical cost factors which together account for around 70% of the Company's total operating expenses. Changes in the price of either of these factors result in a significant impact on CSR profitability measured by EBIT or net income.

According to our analysis, based on CSR's data, it takes merely a 20% increase in the price of energy per unit production to bring the company's EBIT to zero. For comparison, the same 20% increase in the cost of key raw materials such as limestone and brine would lead to a decline in CSR's EBIT by around 65%.

Potential scarcity of steam supply and other resources provided by exclusive suppliers limiting production volumes may also impact CSR's bottom line.

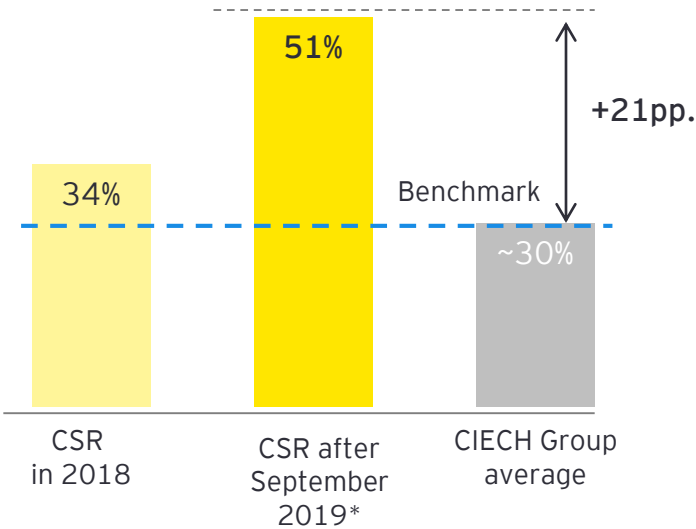
Price of steam proposed by the supplier - CET Govora - adversely affects business profitability at CSR

PRICES OF TECHNOLOGICAL STEAM FOR CSR



- A** 1 April 2019
The price was negotiated to last until the end of 2020. CSR agrees to pay for CO₂ certificates
- B** 23-24 May 2019
Ceased supply of lignite out of which steam boilers for CSR were fed. Reduction of steam supply for CSR by 20%
- C** 18 June 2019
CET terminates the contract from 1 April with 3 months notice. Contract expires on 18 Sept. 2019
- D** 18 Sept. 2019
135% price increase comparing to 2018 will adversely affect CSR's net income

COMPARISON OF SHARE OF STEAM IN TOTAL OPERATING COSTS



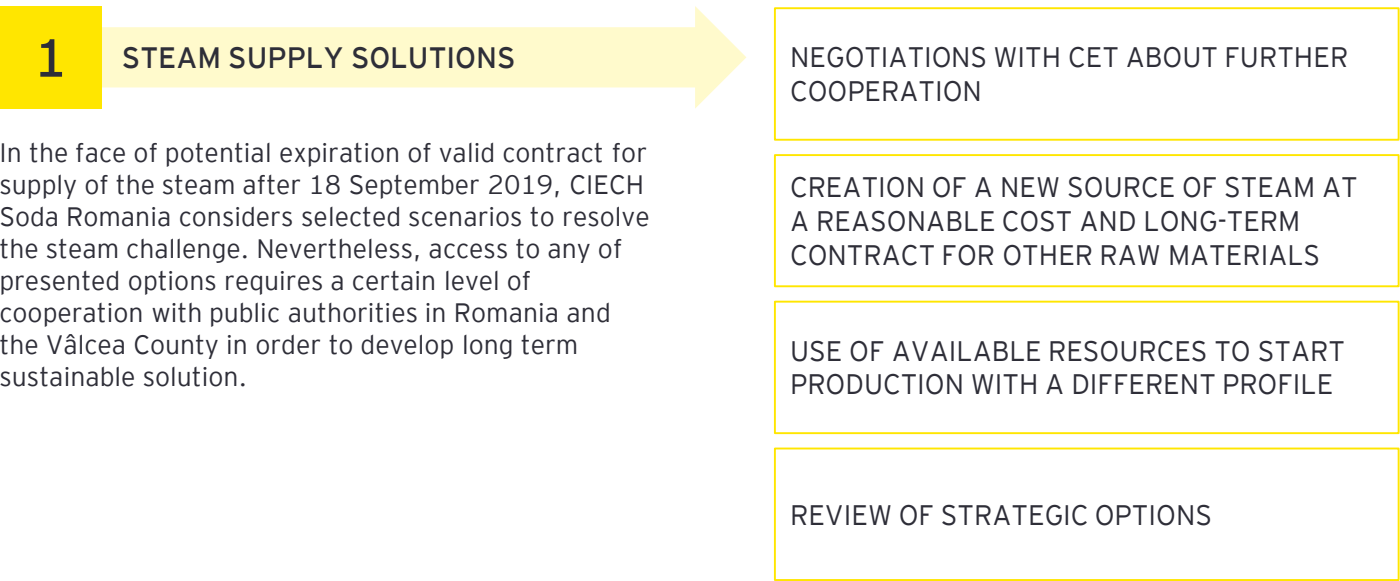
Although since 2008 CET Govora has systematically raised steam prices for CSR, the management of the cost structure remained a challenge. Nevertheless, it remained under control until recently as the price proposed by CET Govora after 18.09.2019 is 135% higher than 2018 price levels.

With prices of steam up by 135%, its cost will exceed 50% of forecasted total cost structure, which is 17 pp. above 2018 levels (34%) and 7 pp. above 1H 2019 levels (44%) as well as and more than 20 pp. above CIECH Group benchmarks (ca.30%).

*) Assuming the production is continued at the price of steam proposed by the supplier
Source: CIECH Group data

Nevertheless, future options for business development in CSR remain open

STRATEGIC OPTIONS FOR STEAM SUPPLY CONSIDERED BY CSR IN THE FACE OF NEGOTIATIONS WITH CET GOVORA



FUTURE DEVELOPMENT SCENARIOS FOR CSR PROVIDED THE STEAM ISSUE IS FIXED



Source: EY Analysis based on CIECH Group data
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04

Impact of the CIECH Group on the Romanian economy

In this chapter we present the economic impact of operating activities of The CIECH Group in Romania in 2018.

The CIECH Group generated the following effects in the Romanian economy in 2018:

- **RON 445 million**
of value added
- **ca. RON 1.3 billion**
of global output
- more than
4,400 jobs
- **RON 98.4 milion**
of government revenues
- **RON 286 million**
of trade surplus resulting from the net exports of the CIECH Group

Impact of the CIECH Group on the Romanian economy in 2018 - executive summary

KEY FINDINGS

The CIECH Group affects the economy of Romania not only by:

- ▶ Directly generated - gross value added (≈GDP), global output (≈revenue), employment and government revenues - but also through
- ▶ Demand in the supply chain (indirect effects) and
- ▶ Increased consumer spending of households (induced effects)

Taking into account the direct, indirect and induced effects, the CIECH Group generated the following effects in the Romanian economy in 2018:

- ▶ **RON 445 million of value added**
- ▶ **ca. RON 1.3 billion of global output**
- ▶ **more than 4,400 jobs**
- ▶ **RON 98.4 million of government revenues**

Sectors benefiting most from the CIECH Group's operational activity in terms of value added (and global output) are:

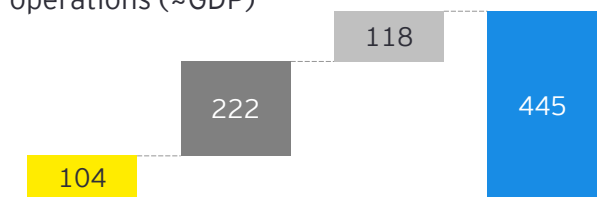
- ▶ Electricity, gas, steam, water, waste and recycling
- ▶ Finance, insurance and real estate services
- ▶ Mining and quarrying
- ▶ Warehousing, transport and telecommunication

The CIECH Group generated the highest numbers of jobs in agriculture, hunting, fishing forestry and trade. Of the total amount of government revenues generated by the CIECH Group in Romania, the social security sector received RON 46.5 million, the central budget RON 42.5 million and local government units RON 9.4 million.

SUMMARY OF EFFECTS IN ROMANIA IN 2018

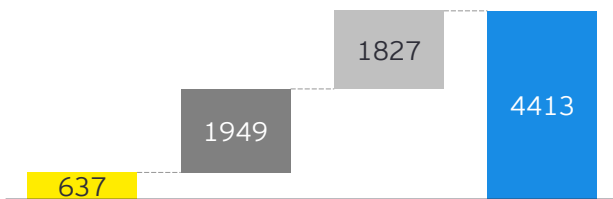
Value added (basic prices, mRON)

surplus of companies' revenues over the expenses incurred on goods and services that are necessary to conduct current operations (≈GDP)



Employment (persons)

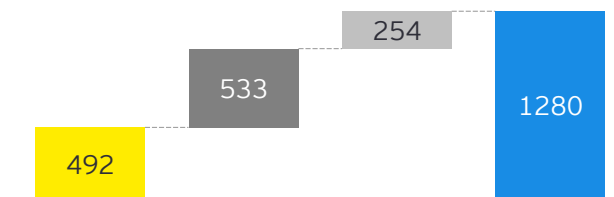
annual number of persons whose employment is dependent upon the company's activity



Direct effects Indirect effects Induced effects Total effects

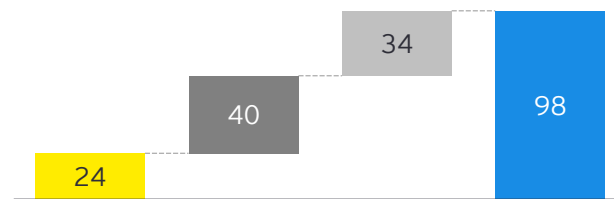
Global output (basic prices, mRON)

value of produced / offered goods and services (≈revenues)



Government revenues (mRON)

arising from corporate income taxes (CIT), personal income taxes (PIT), indirect taxes (VAT and excise), social security contributions and property tax



Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data.
¹ In order to evaluate the impact of the CIECH Group on the Romanian economy, we used the EY Spectrum model. The description of our approach to the analysis can be found in Appendix B.

Economic Impact Assessment

TYPES OF EFFECTS AND MEASURES OF IMPACT

The CIECH Group impacts the Romanian economy through its own output (expressed as revenue excluding indirect taxes), value added (which is an approximation of impact on GDP), employment as well as taxes and social security contributions paid. These are **direct** effects of the CIECH Group's activity.

In order to evaluate the total impact of the CIECH Group on the Romanian economy, we used the EY Spectrum model. It is a combination of input-output model, which is commonly used in Economic Impact Assessment, and spatial econometrics tools.

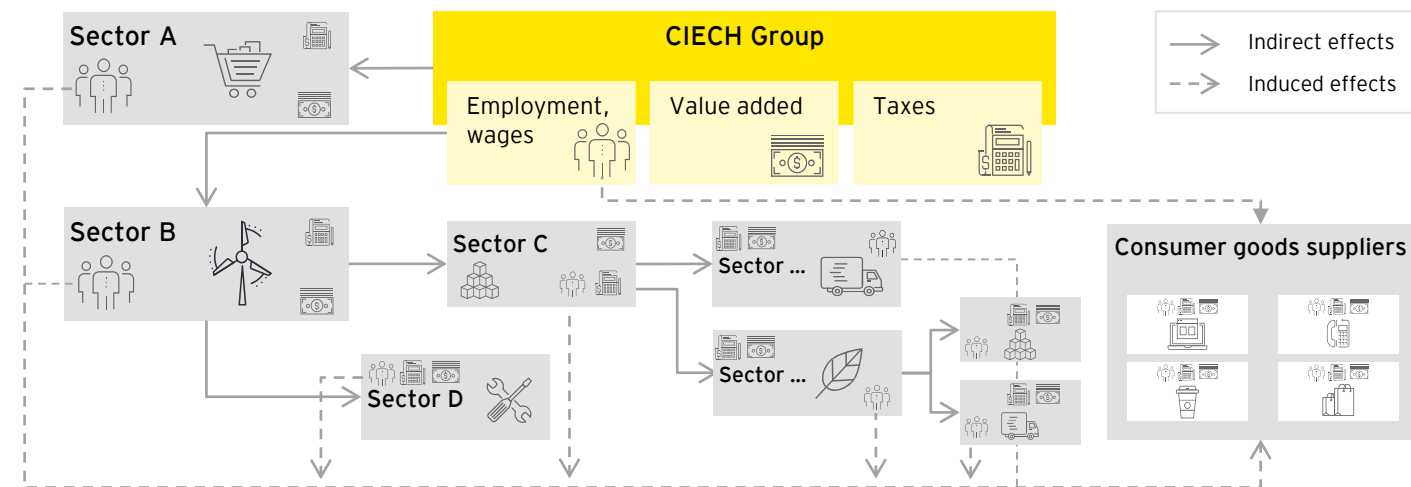
The application of the EY Spectrum model allows us to take into account so-called **demand effects**, which result from CIECH's demand for goods and services generated in the supply chain (indirect effects) and consumer demand reported by the CIECH Group's and its suppliers' employees (induced effects). The mechanism of demand effects generation is illustrated below.

In our analysis, we measure the direct, indirect and induced impact of the CIECH Group on the following variables: value added, global output, employment and government tax revenues. Definitions of these variables are provided in the corresponding sections.

The quantitative analysis in this report accounts for the total impact of operating activities of two enterprises from the CIECH Group located in Romania: CIECH Soda Romania and CIRO (referred to as "The CIECH Group"). The intercompany transactions of these two entities have been excluded in the calculation of the effects. The analysis accounts for the effects on the Romanian economy in 2018.

The EY Spectrum model allows us to distinguish in our analysis also the regional economic effects, which can be attributed to the Vâlcea county. Description of the approach for calculating the regional effects is provided in the Appendix B.

DEMAND EFFECTS OF THE CIECH GROUP



Indirect effects

In order to generate direct effects, the CIECH Group cooperates with other companies by purchasing, i.e., energy, industrial materials, machines etc. These supplying companies produce a part of their production in order to satisfy the demand reported by the CIECH Group. Each of them uses products and services of other companies and so on. In result, the initial demand reported by the CIECH Group "spills over" the entire economy.

Induced effects

Persons employed in the CIECH Group, as well as those working in companies belonging to its supply chain receive wages. A part of them is spent on consumption of goods and services, and thus stimulates the economy - both local and national.

Total effects

Sum of direct, indirect and induced effects.

Impact on value added in Romania in 2018 - sectorial breakdown

AS A RESULT OF THE OPERATIONAL ACTIVITY OF THE CIECH GROUP, CA. RON 445 MILLION OF VALUE ADDED WAS GENERATED IN ROMANIA IN 2018.

Value added can be defined as the surplus of company's revenues over the expenses incurred on goods and services that are necessary to conduct current operations. Value added indicates how a company, through the transformation of goods and services of other companies into a new product or service, generates a new value in the economy. That is why it is an approximation of company's impact on GDP¹.

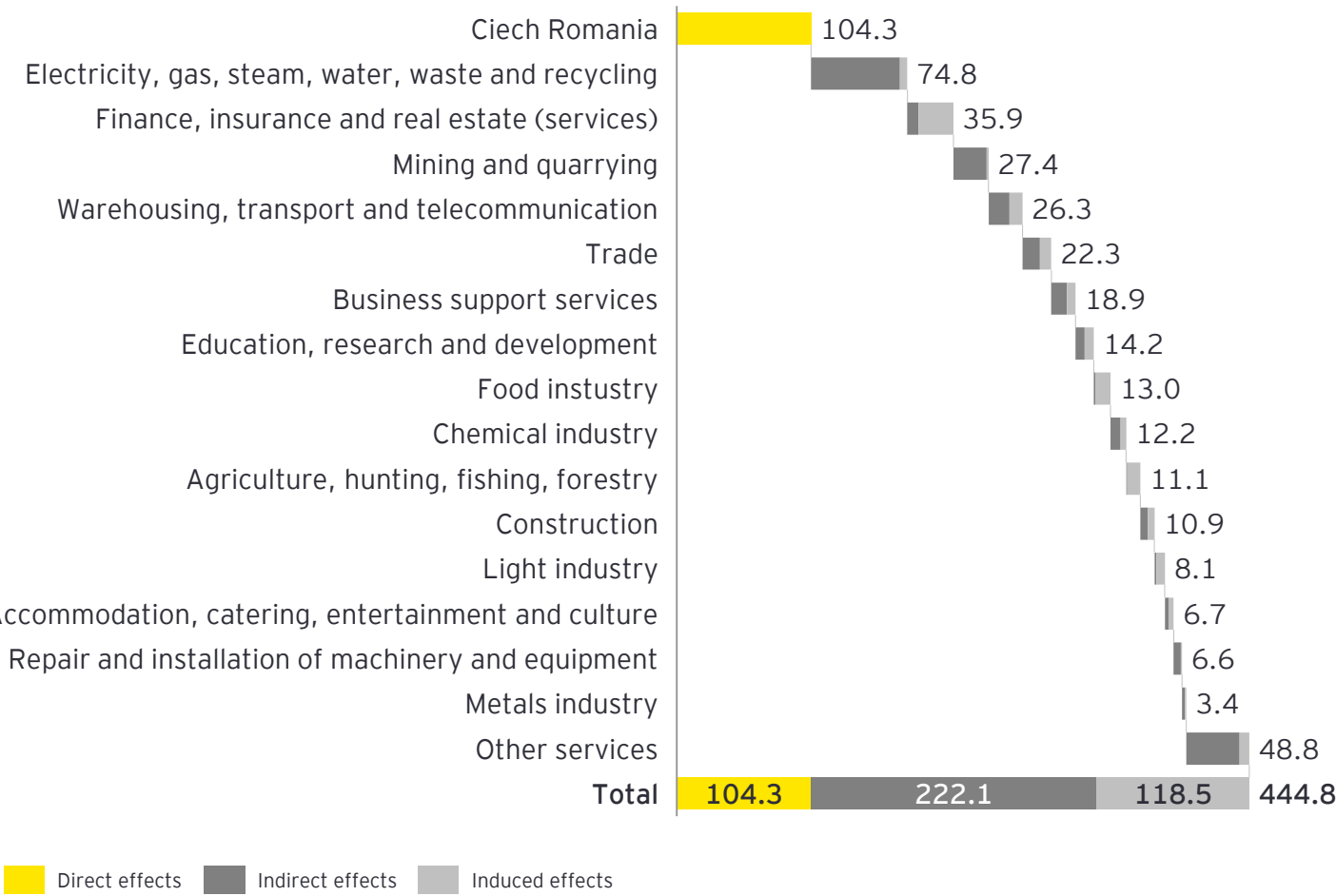
Of the total impact, RON 104 million (23%) are a direct effect of the operational activity of the CIECH Group, RON 222 million (50%) are the indirect effects and RON 119 million (27%) are the induced effects.

Sectors benefiting most from the CIECH Group's operational activity in terms of value added are: (1) electricity, gas, steam, water, waste and recycling, (2) finance, insurance and real estate services, (3) mining and quarrying, (4) warehousing, transport and telecommunication.

Those four sectors accounted for 44% (RON 150 million) of total demand effects for value added generated by the CIECH Group in 2018.

Relatively high indirect effects on value added in the "Electricity, gas, steam, water, waste and recycling" sector result from significant costs incurred by companies from the CIECH Group on process steam and electricity.

EFFECTS FOR VALUE ADDED (BASIC PRICES, mRON)



Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data.
¹ Detailed explanation in Appendix E. Value added presented in this report is gross value added expressed in basic prices (and thus does not include production taxes, mainly VAT and excise duties).

Impact on global output in Romania in 2018 - sectorial breakdown

AS A RESULT OF THE OPERATIONAL ACTIVITIES OF THE CIECH GROUP, CA. RON 1.3 BILLION OF GLOBAL OUTPUT WAS GENERATED IN ROMANIA IN 2018.

Global output is the value of produced / offered goods and services. It can be approximated by company's revenue. When calculating global output, the value of intermediate goods generated at earlier stages of the supply chain is not excluded. Global output is useful as a measure of the size of a market.

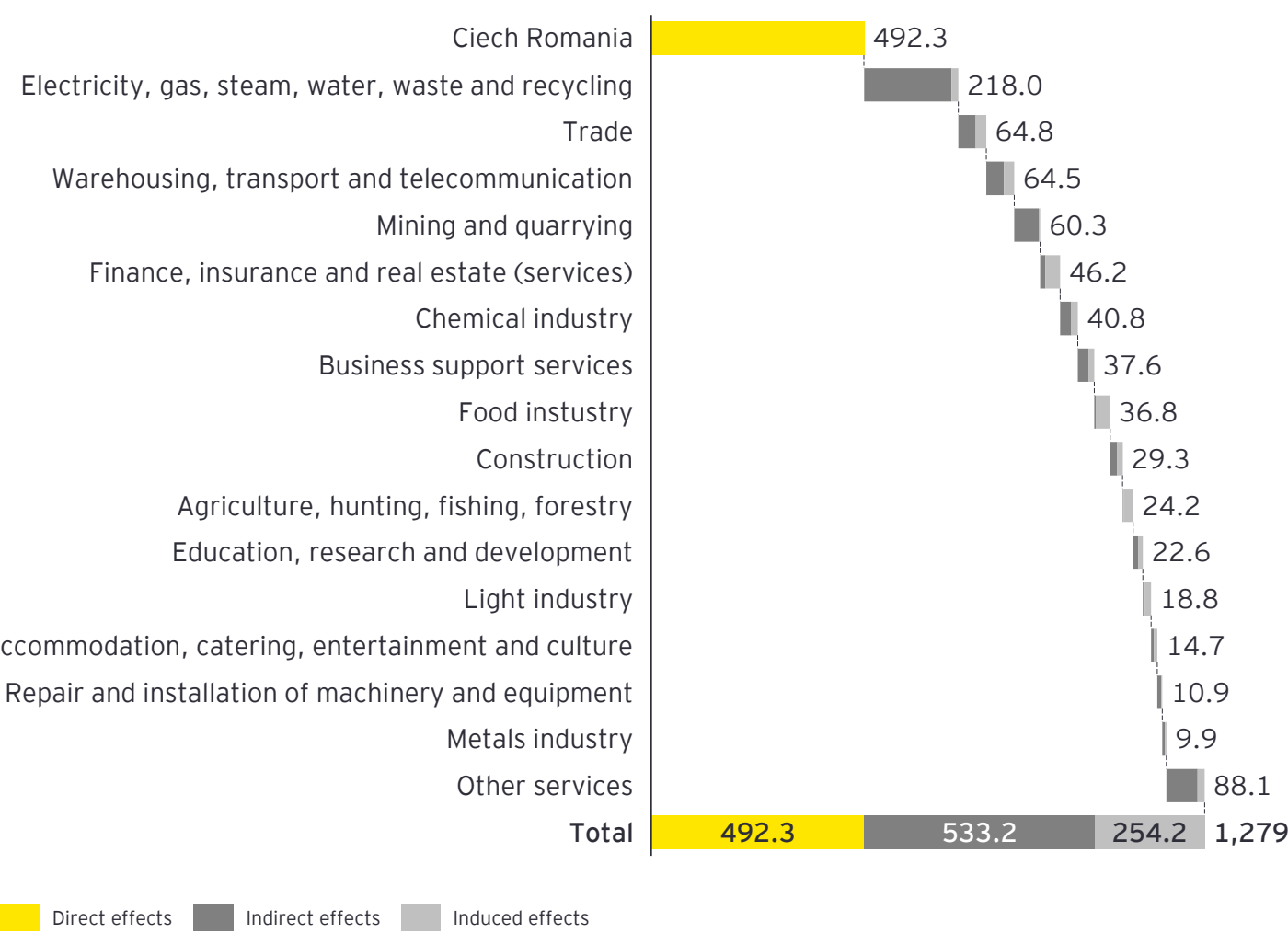
Of the total impact, RON 492 million (38%) are the direct effects of the operational activity of the CIECH Group, RON 533 million (42%) are the indirect effects and RON 254 million (20%) are the induced effects.

Sectors benefiting most from the CIECH Group's operational activity in terms of global output are analogous to those which benefit most in terms of value

added: (1) electricity, gas, steam, water, waste and recycling, (2) trade, (3) warehousing, transport and telecommunication and (4) mining and quarrying.

Those four sectors accounted for 52% (RON 408 million) of total demand effects (indirect and induced) for global output generated by the CIECH Group in Romania in 2018.

EFFECTS FOR GLOBAL OUTPUT (BASIC PRICES, mRON)



Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data
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Impact on employment in Romania in 2018 - sectorial breakdown

AS A RESULT OF THE OPERATIONAL ACTIVITY OF THE CIECH GROUP, MORE THAN 4,400 JOBS WERE CREATED IN ROMANIA IN 2018.

The estimated effects account for the average annual number of persons whose employment is dependent upon the company's activity through direct, indirect and induced effects.

Of the total number of jobs, 637 (14%) were created directly by the two companies from the CIECH Group, 1,949 jobs (44%) were created through the indirect effects and 1,827 (41%) through the induced effects.

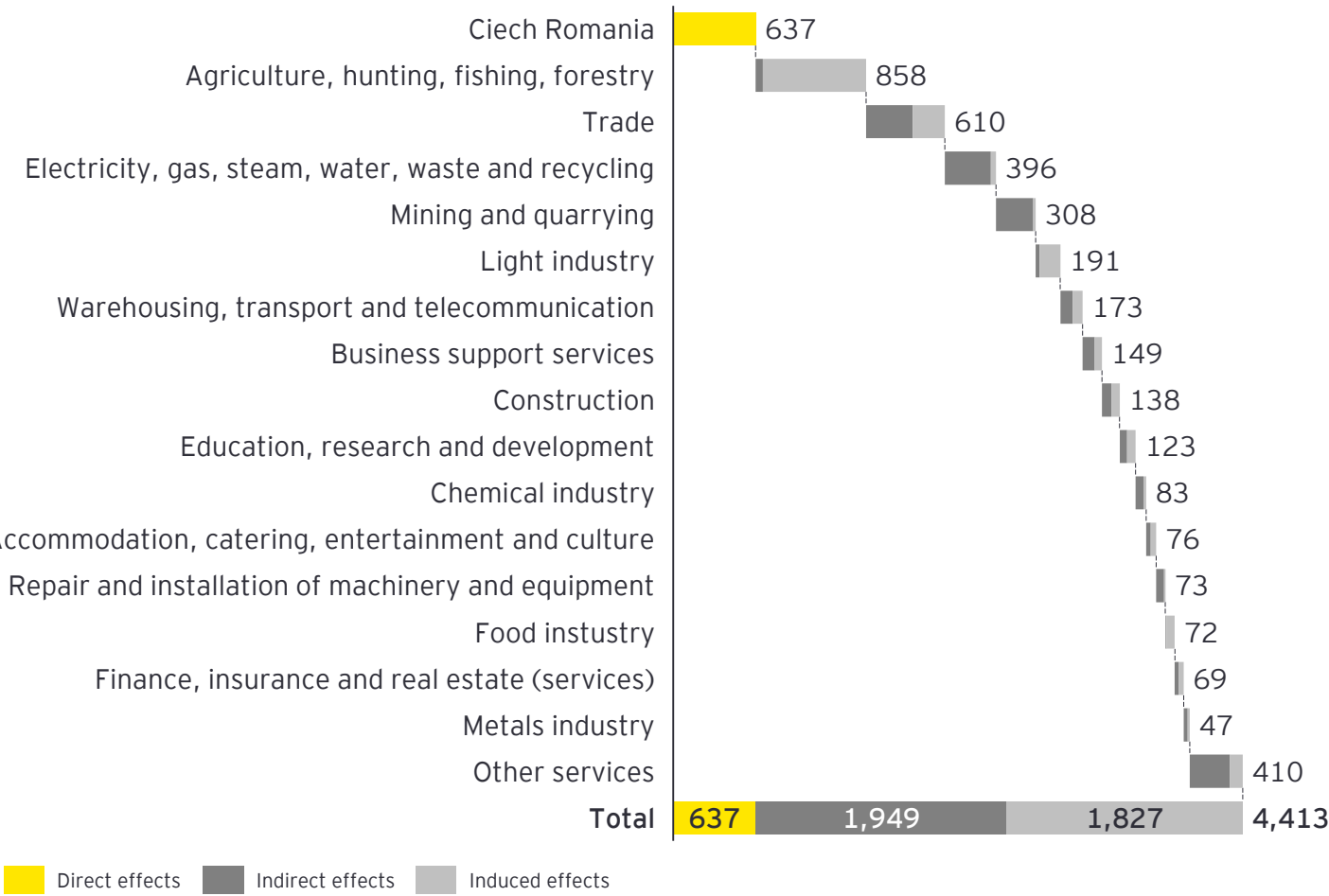
Sectors benefiting most from the CIECH Group's operational activity in terms of employment are: (1) agriculture, hunting, fishing forestry, (2) trade, (3) electricity, gas, steam, water, waste and recycling and (4) mining and quarrying.

Relatively high induced effects for the labor market in the agricultural sector result from: (1) a relatively high share of expenses on food in employees' expenditure and (2) a relatively

low labor productivity in agriculture in Romania compared to other sectors of the economy.

The low labor productivity (high labor intensity) in the agricultural sector means that in order to increase production in agriculture to meet additional demand (reported e.g. by the food industry), it is necessary to increase employment more than in many other industries.

EFFECTS FOR EMPLOYMENT (PERSONS)



Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data

Impact on government revenues in Romania in 2018

THROUGH DIRECT, INDIRECT AND INDUCED EFFECTS, THE CIECH GROUP GENERATED RON 98.4 MILLION OF GOVERNMENT TAX REVENUES IN 2018.

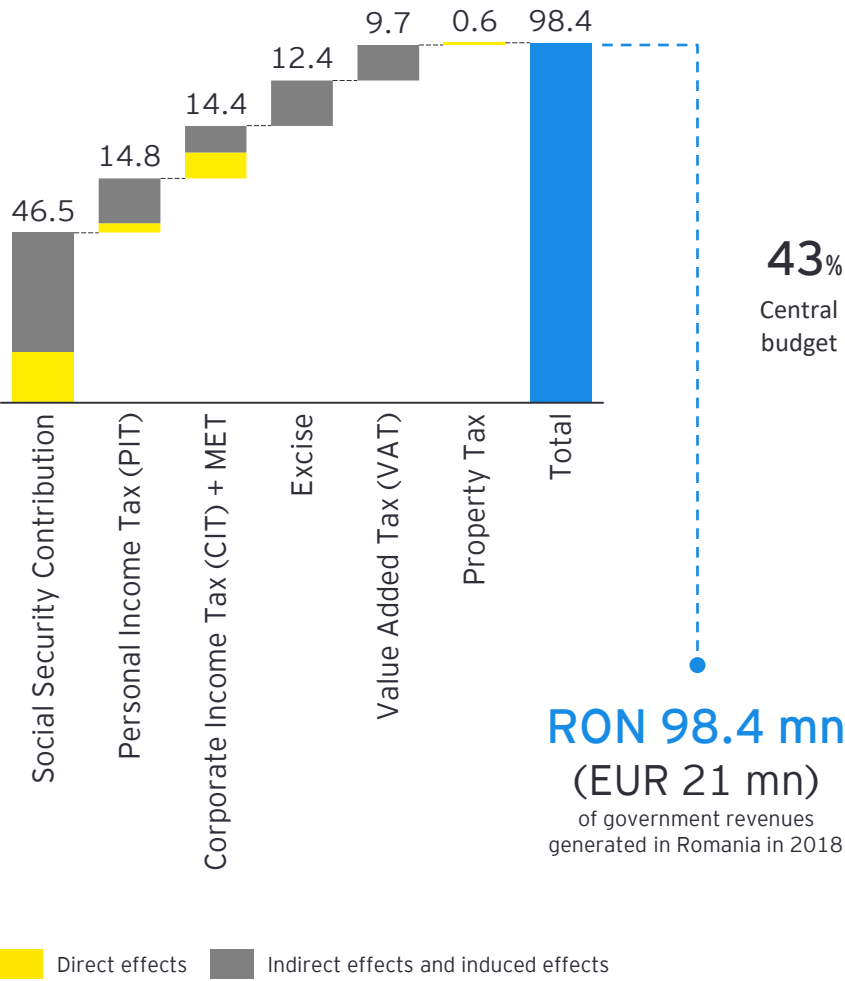
The estimated effects account for the direct, indirect and induced effects for government revenues arising from corporate income taxes (CIT), personal income taxes (PIT), indirect taxes (VAT and excise), and social security contributions. We account also for the direct effect from the property tax paid.

The main source of tax revenues were social security contributions, which reached RON 46.5 million, followed by PIT (RON 14.8 million) and CIT (RON 14.4 million). Excise duty amounted to RON 12.4 million and VAT to RON 9.7 million.

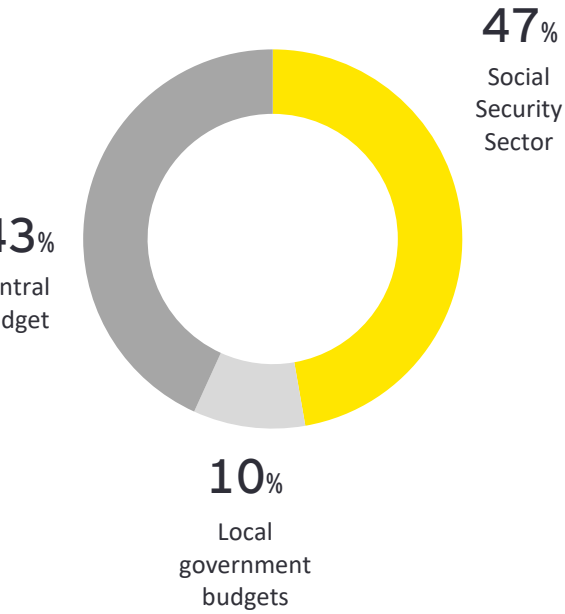
Of the total RON 98.4 million, the social security sector received

RON 46.5 million (47%) and the central budget received RON 42.5 million (43%). Revenues of local government units amounted to RON 9.4 million (10%).¹

GOVERNMENT REVENUES BY SOURCE (mRON)



GOVERNMENT REVENUES BY BENEFICIARY



Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data.
¹ This value includes algorithmic distribution of part of PIT and VAT revenues to local governments of counties and municipalities/communes, as well as direct effect in property tax.

Impact on balance of payments in Romania in 2018

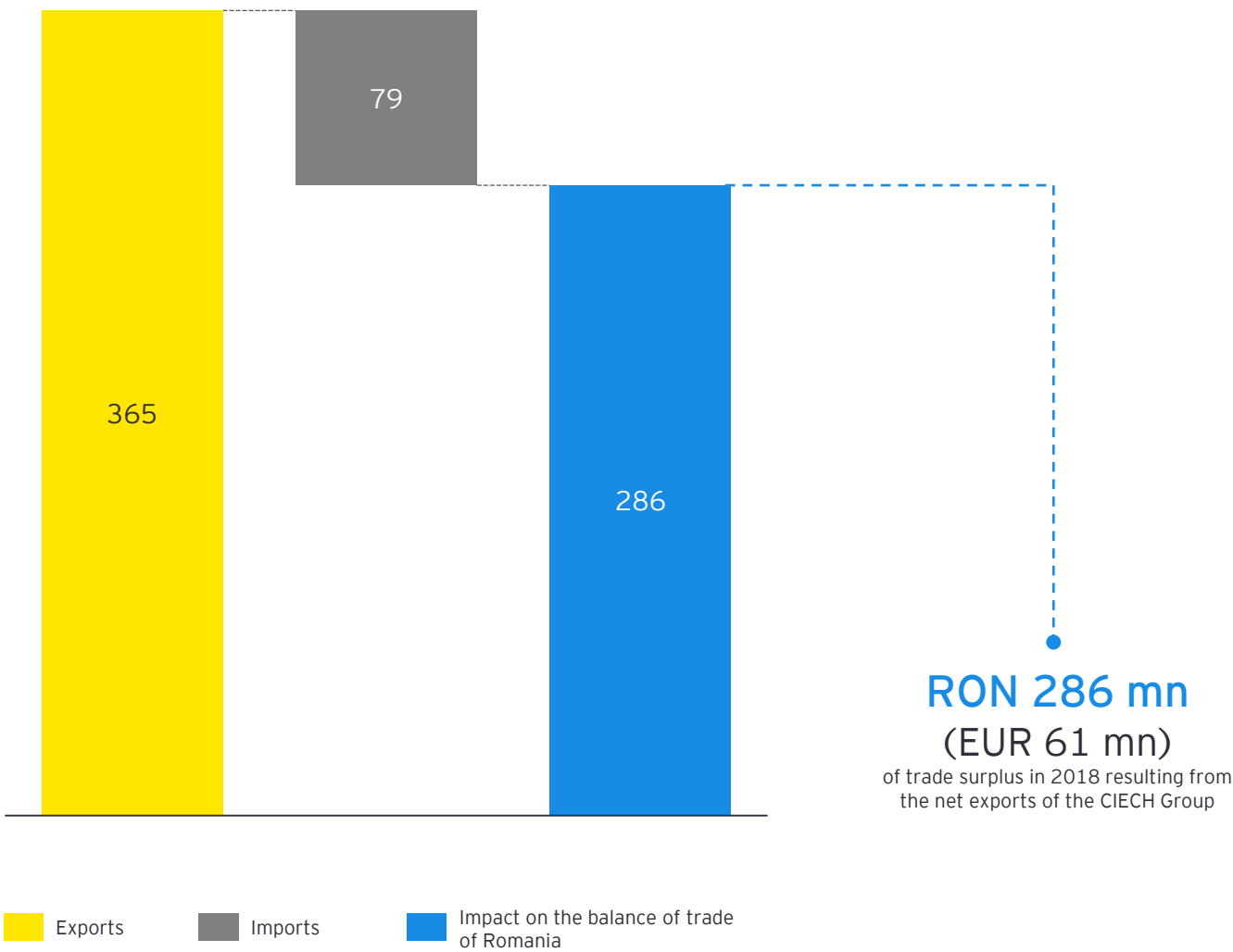
THE IMPACT OF THE CIECH GROUP ON THE TRADE BALANCE OF ROMANIA IN 2018 AMOUNTED TO RON 286 MILLION.

The Balance of Payments (BOP) is a macro-economic indicator used to assess the position of an economy towards the external world. It summarizes all economic transactions between the residents and the non-residents of a country during a given period.

The CIECH Group in Romania generated direct impact on the balance of trade in 2018 resulting from the value of net exports of goods and services (the difference between the value of exports and imports).

The impact of the CIECH Group on the balance of trade in Romania in 2018 amounted to RON 286 million (EUR 61 million).

EFFECTS FOR BALANCE OF PAYMENTS OF ROMANIA IN 2018 (mRON)



Summary of estimated effects on value added, employment and government revenues - multipliers

THE CIECH GROUP (DIRECT EFFECTS)

RON 1 mn
of the value added generated by the CIECH Group

1 job
in the CIECH Group

RON 1 mn
of government revenues generated by the CIECH Group

THE REST OF THE ECONOMY (INDIRECT AND INDUCED EFFECTS)

RON 3.3 mn
of the value added generated in the rest of the economy

5.9 jobs
in the rest of the economy

RON 3.1 mn
of government revenues generated in the rest of the economy

Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data.

05

Impact of the CIECH Group on the economy and community of the Vâlcea county

In this chapter we present the impact of the CIECH Group on the economy of the Vâlcea county.

The CIECH Group generated the following effects in the Vâlcea county in 2018:

- **RON 260 million**
of value added
- **ca. RON 869 million**
of global output
- **above**
2,160 jobs
- **RON 4.5 million**
of local government revenues

Impact of the CIECH Group on the economy of the Vâlcea county in 2018 - executive summary

KEY FINDINGS

A significant share of the effects generated by the CIECH Group in Romania can be attributed to the Vâlcea county¹. The CIECH Group is one of the biggest companies and one of the biggest employers in Râmnicu Vâlcea, the capital of the region.

- Taking into account the direct, indirect and induced effects, the CIECH Group generated the following effects in the Vâlcea county in 2018:
- ▶ **RON 260 million of value added**
 - ▶ **ca. RON 869 million of global output**
 - ▶ **above 2,160 jobs**
 - ▶ **RON 4.5 million of local government revenues**

The following sectors in the Vâlcea county benefited most

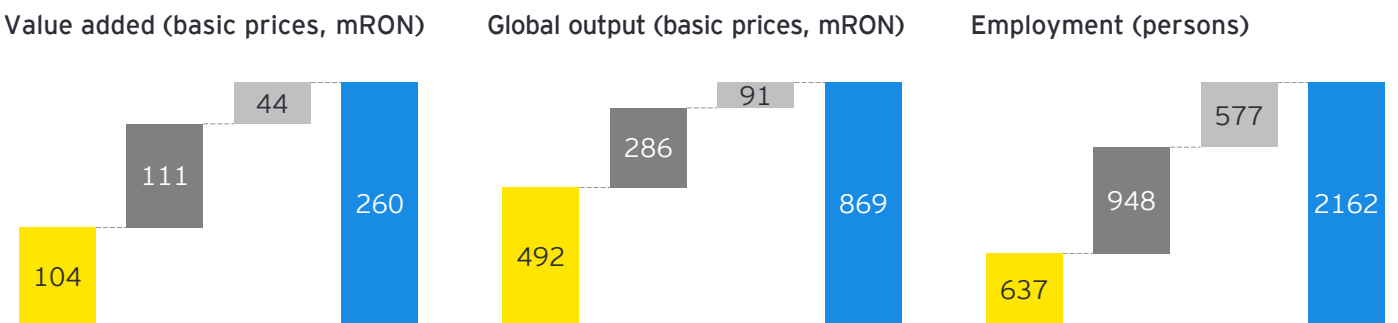
from the CIECH Group's operating activity in terms of value added:

- ▶ Electricity, gas, steam, water, waste and recycling,
- ▶ Mining and quarrying,
- ▶ Warehousing, transport and telecommunication.

The CIECH Group generated RON 4.5 million of local government revenues in the Vâlcea county, which constitutes 44% of the total tax revenues of communes, municipalities and counties generated by the CIECH Group in Romania.

SUMMARY OF EFFECTS THE VÂLCEA COUNTY IN 2018

(Definitions of the presented effects are provided in the previous chapter)



Local Government revenues



Legend: Direct effects (yellow), Indirect effects (dark grey), Induced effects (light grey), Total effects (blue)

Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data.
¹ In order to evaluate the impact of the CIECH Group on the economy of the Vâlcea county, we used the EY Spectrum model. The description of our approach to the analysis can be found in Appendix B.

Impact on value added in Romania in 2018 - regional effects

THE CIECH GROUP GENERATED RON 260 MILLION OF VALUE ADDED IN THE VÂLCEA COUNTY IN 2018.

The effects generated in Vâlcea constitute 58% of the overall value added generated by the CIECH Group in Romania.

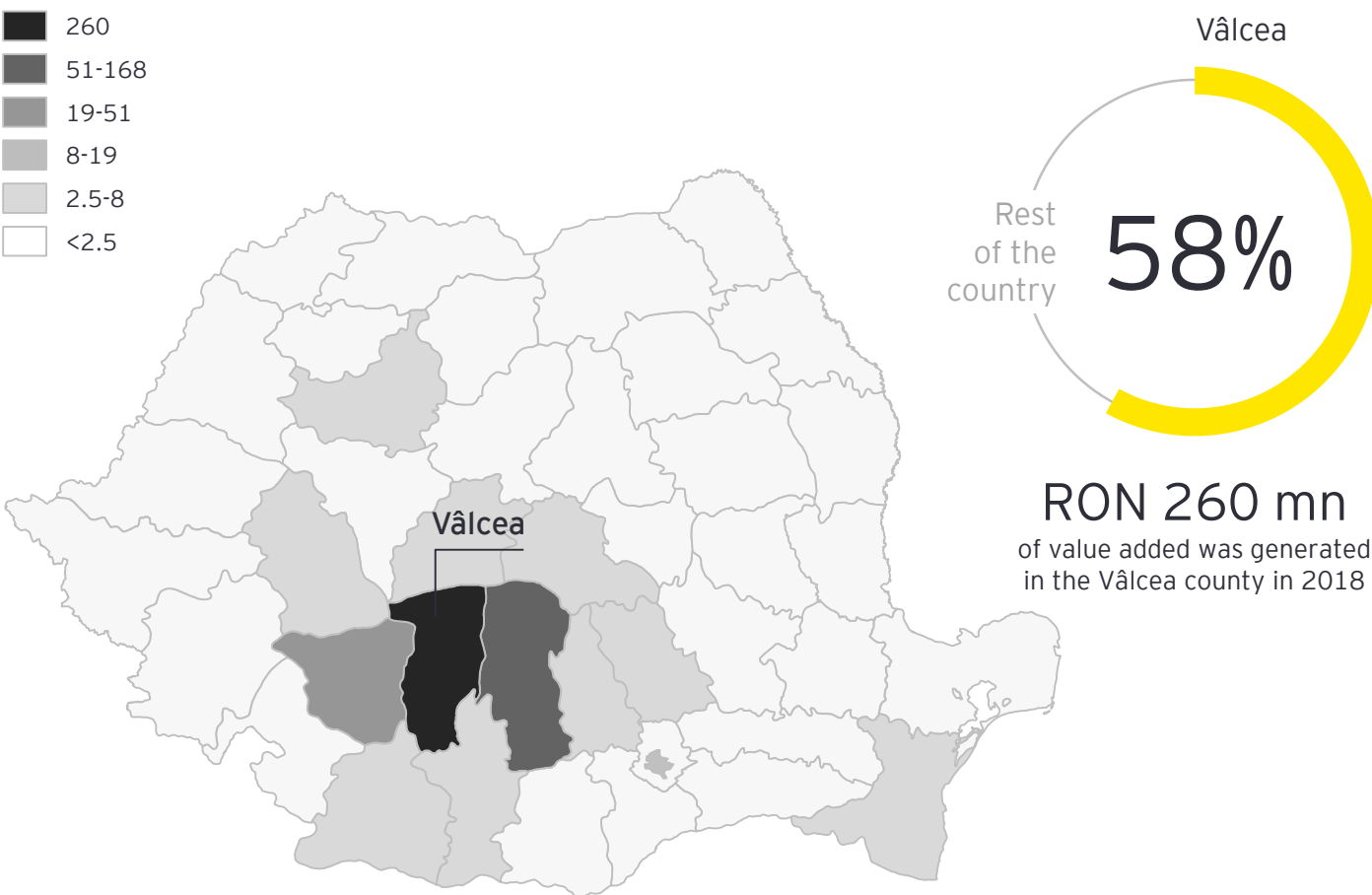
Of the total impact in Vâlcea in 2018, RON 104 million (40%) can be attributed to direct effects, RON 111 million (43%) to indirect effects and RON 44 million (17%) to induced effects.

With regard to sectorial distribution of the demand effects on value added in the Vâlcea county, the largest effects were generated in (1) electricity, gas, steam, water, waste and recycling (RON 57 million); (2) mining and quarrying (RON 16 million)

and (3) finance, insurance and real estate services (RON 15 million).

The effects for value added generated by the CIECH Group in the Vâlcea county accounted for 2.7% of value added created in the region in 2016¹.

REGIONAL STRUCTURE OF TOTAL EFFECTS FOR VALUE ADDED (BASIC PRICES, mRON)



Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data.
¹ We present the relative effects in relation to the year, for which the latest regional data for Romania is available (source: Eurostat).

Impact on global output in Romania in 2018 - regional effects

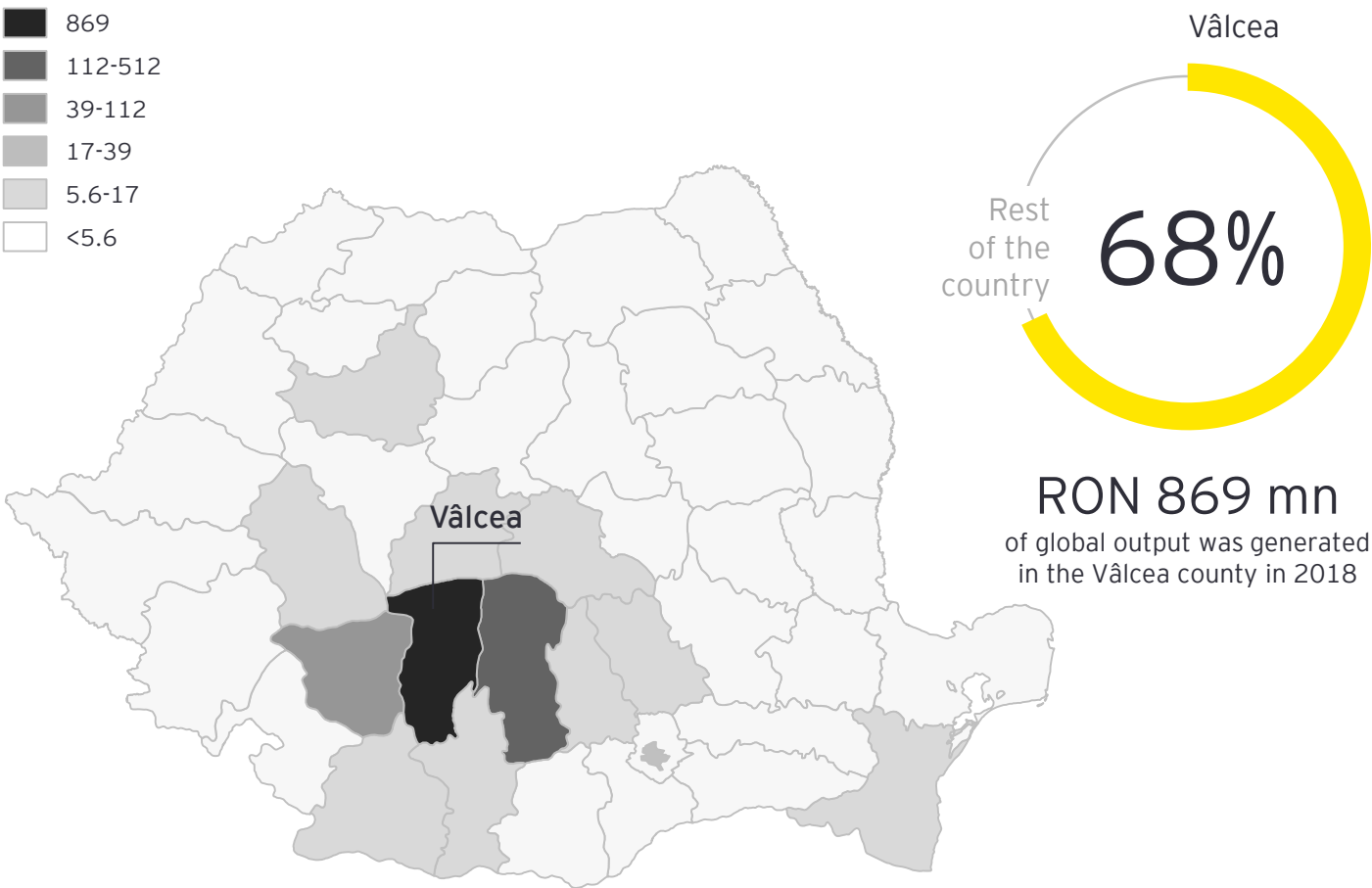
THE CIECH GROUP GENERATED RON 869 MILLION OF GLOBAL OUTPUT IN THE VÂLCEA COUNTY IN 2018.

The effects generated in Vâlcea constitute 68% of the overall global output generated by the CIECH Group in Romania. Of the total annual impact in Vâlcea, RON 492 million (57%) can be attributed to direct effects, RON 286 million (33%) to indirect effects and RON 91 million (10%) to induced effects.

With regard to sectorial distribution of the demand effects on global output in the Vâlcea county, the largest effects were generated in the following sectors: (1) electricity, gas, steam, water, waste and recycling

(RON 167 million); (2) mining and quarrying (RON 35 million) and (3) trade (RON 29 million).

REGIONAL STRUCTURE OF TOTAL EFFECTS FOR GLOBAL OUTPUT (BASIC PRICES, mRON)



Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data.

Impact on employment in Romania in 2018 - regional effects

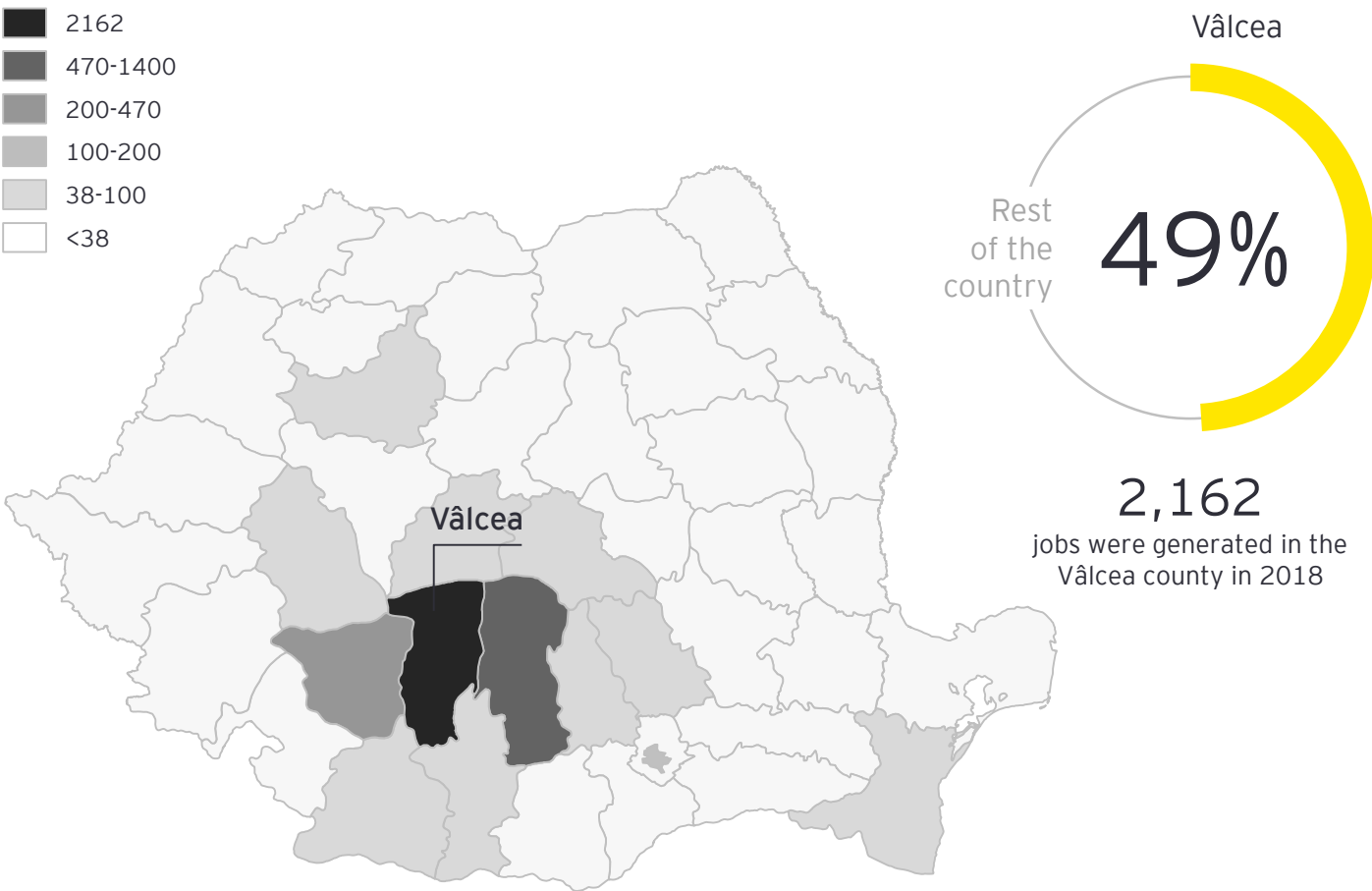
THE CIECH GROUP SUPPORTED 2,162 JOBS IN THE VÂLCEA COUNTY IN 2018.

The effects generated in Vâlcea constitute 49% of the overall employment created by the CIECH Group in Romania. Of the total annual impact in Vâlcea, 637 jobs (29%) can be attributed to direct effects, 948 (44%) to indirect effects and 577 (27%) to induced effects.

With regard to sectorial distribution of the demand effects on employment in the Vâlcea county, the highest number of jobs were created in (1) electricity, gas, steam, water, waste and recycling (306); (2) trade (277); (3) mining and quarrying (179) and (4) agriculture, hunting, fishing, forestry (171).

The effects for employment generated by the CIECH Group in the Vâlcea county accounted for 1.5% of employment in the region in 2016¹.

REGIONAL STRUCTURE OF TOTAL EFFECTS FOR EMPLOYMENT (PERSONS)



Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data. ¹ We present the relative effects in relation to the year, for which the latest regional data for Romania is available (source: Eurostat).

Impact on local government revenues in Romania in 2018

THROUGH DIRECT, INDIRECT AND INDUCED EFFECTS, IN 2018, THE CIECH GROUP GENERATED RON 4.5 MILLION OF TAX REVENUES IN THE VÂLCEA COUNTY.

The effects generated in Vâlcea constitute 44% of the total tax revenues of communes, municipalities and counties generated by the CIECH Group in Romania.

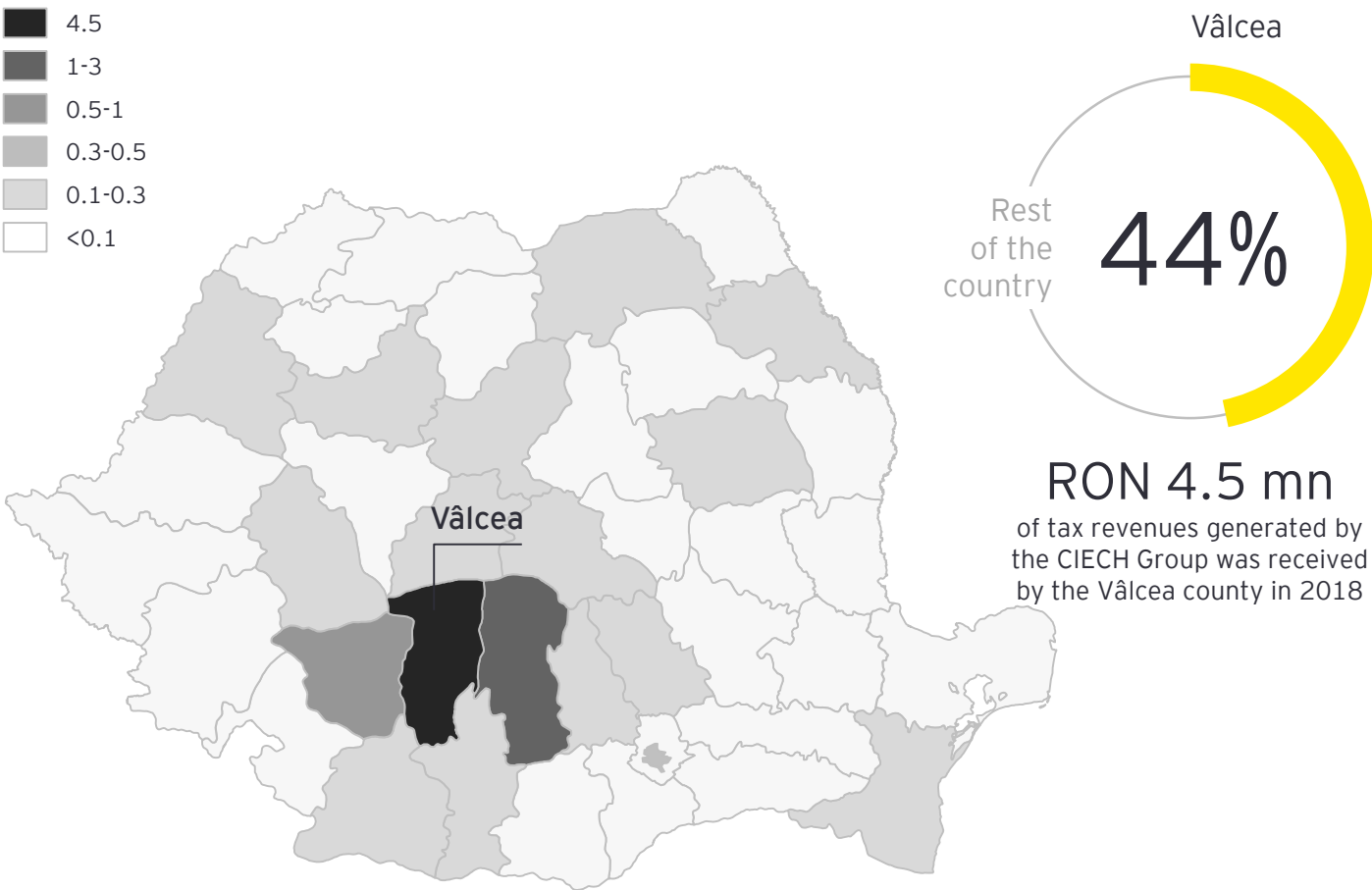
Besides the Vâlcea county, the main beneficiaries of the CIECH

Group activity in terms of tax revenues are Arges (RON 1.4 million), Gorj (RON 595 thous.) and Dâmbovița county (RON 131 thous.).

The effects for tax revenues generated by the CIECH Group in the Vâlcea county account for

0.4% of the total tax revenues received by the region in 2017¹.

TAX REVENUES OF COMMUNES, MUNICIPALITIES AND COUNTIES (mRON)



Source: EY calculation with the use of the EY Spectrum model, based on the CIECH Group data.
¹ We present the relative effects in relation to the year, for which the latest regional data for Romania is available (source: Eurostat).



06

Appendices



Appendix B: Economic Impact Assessment - calculation of the regional effects

EY SPECTRUM MODEL

The demand reported by the CIECH Group is satisfied by companies located all around the country.

The EY Spectrum model used for the analysis enables us to evaluate demand effects not only in the sectorial, but also in the regional breakdown. We have estimated how much of the total effects can be attributed to the Vâlcea county.

We estimated the economic effects based on the data on the scale and structure of the CIECH Group's operational costs, covering expenditure on products

and services of its suppliers. The EY Spectrum model takes into account not only what sectors supply the CIECH Group's entities in Romania, but also where the suppliers are located.

The WIOD input-output tables published in 2014, which divide the economy into 56 sectors¹, were used to track the circulation of the initial spending in the economy.

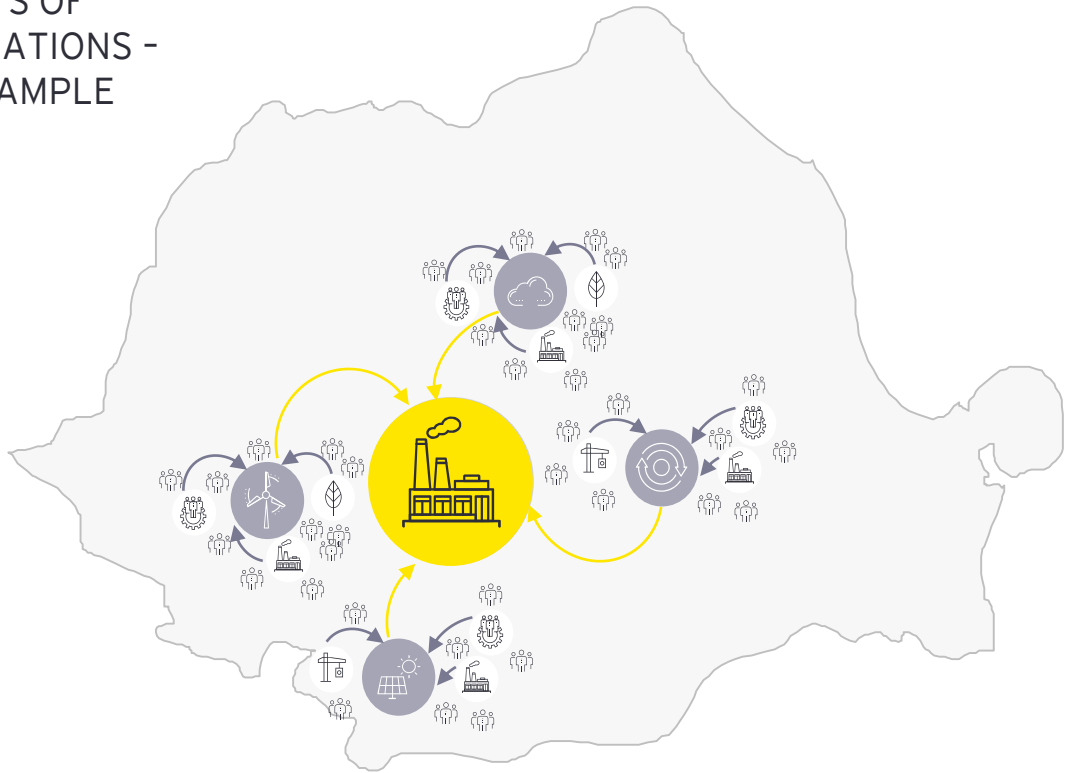
The spatial spread of economic effects was established by the EY Spectrum model with the use of input-output tables. The model allows us to determine the regional structure of trade for each pair of sectors.

Two key factors are taken into account in the model: (i) the distance between regions (in some sectors, e.g. basic services, enterprises are less willing to purchase from remote suppliers) and (ii) limitations on the availability of certain types of goods/services in some geographic areas (e.g. coal mines are only available at predetermined places).

The EY Spectrum model for Romania was constructed for the regions at the NUTS-3 level.

The NUTS-3 regional breakdown divides Romania into 42 regions which are equivalent to the Romanian official administrative divisions of 41 counties and Bucharest.

REGIONAL EFFECTS OF COMPANY'S OPERATIONS - ILLUSTRATIVE EXAMPLE



¹ The WIOD sectors are listed in the Appendix C. In this report, for the presentation purposes, the calculated effects are shown in aggregated form, covering 16 sectors. The aggregation of 56 sectors into 16 sectors is also presented in the Appendix C.

Appendix C: Aggregation of 56 WIOD sectors into 16 sectors presented in the Report (1/2)

NO.	NAME OF THE SECTOR IN WIOD	NAME OF THE AGGREGATED SECTOR
1	Crop and animal production, hunting and related service activities	Agriculture, hunting, fishing, forestry
2	Forestry and logging	Agriculture, hunting, fishing, forestry
3	Fishing and aquaculture	Agriculture, hunting, fishing, forestry
4	Mining and quarrying	Mining and quarrying
5	Manufacture of food products, beverages and tobacco products	Food industry
6	Manufacture of textiles, wearing apparel and leather products	Light industry
7	Manufacture of wood and of products of wood and cork, except furniture	Light industry
8	Manufacture of paper and paper products	Light industry
9	Printing and reproduction of recorded media	Accommodation, catering, entertainment and culture
10	Manufacture of coke and refined petroleum products	Chemical industry
11	Manufacture of chemicals and chemical products	Chemical industry
12	Manufacture of basic pharmaceutical products and pharmaceutical preparations	Chemical industry
13	Manufacture of rubber and plastic products	Chemical industry
14	Manufacture of other non-metallic mineral products	Chemical industry
15	Manufacture of basic metals	Metals industry
16	Manufacture of fabricated metal products, except machinery and equipment	Metals industry
17	Manufacture of computer, electronic and optical products	Other services
18	Manufacture of electrical equipment	Other services
19	Manufacture of machinery and equipment n.e.c.	Other services
20	Manufacture of motor vehicles, trailers and semi-trailers	Other services
21	Manufacture of other transport equipment	Other services
22	Manufacture of furniture	Light industry
23	Repair and installation of machinery and equipment	Repair and installation of machinery and equipment
24	Electricity, gas, steam and air conditioning supply	Electricity, gas, steam, water, waste and recycling
25	Water collection, treatment and supply	Electricity, gas, steam, water, waste and recycling
26	Sewerage, remediation activities and other waste management services	Electricity, gas, steam, water, waste and recycling

Appendix C: Aggregation of 56 WIOD sectors into 16 sectors presented in the Report (2/2)

NO.	NAME OF THE SECTOR IN WIOD	NAME OF THE AGGREGATED SECTOR
27	Construction	Construction
28	Wholesale and retail trade and repair of motor vehicles and motorcycles	Trade
29	Wholesale trade, except of motor vehicles and motorcycles	Trade
30	Retail trade, except of motor vehicles and motorcycles	Trade
31	Land transport and transport via pipelines	Warehousing, transport and telecommunication
32	Water transport	Warehousing, transport and telecommunication
33	Air transport	Warehousing, transport and telecommunication
34	Warehousing and support activities for transportation	Warehousing, transport and telecommunication
35	Postal and courier activities	Warehousing, transport and telecommunication
36	Accommodation and food service activities	Accommodation, catering, entertainment and culture
37	Publishing activities	Accommodation, catering, entertainment and culture
38	Motion picture, video and television programme production, sound recording and music publishing activities	Accommodation, catering, entertainment and culture
39	Telecommunications	Warehousing, transport and telecommunication
40	Computer programming, consultancy and related activities	Business support services
41	Financial service activities, except insurance and pension funding	Finance, insurance and real estate (services)
42	Insurance, reinsurance and pension funding, except compulsory social security	Finance, insurance and real estate (services)
43	Activities auxiliary to financial services and insurance activities	Finance, insurance and real estate (services)
44	Real estate activities	Finance, insurance and real estate (services)
45	Legal and accounting activities	Business support services
46	Architectural and engineering activities	Education, research and development
47	Scientific research and development	Education, research and development
48	Advertising and market research	Business support services
49	Other professional, scientific and technical activities	Education, research and development
50	Administrative and support service activities	Business support services
51	Public administration and defence	Other services
52	Education	Education, research and development
53	Human health and social work activities	Other services
54	Other service activities	Other services
55	Activities of households as employers	Other services
56	Activities of extraterritorial organizations and bodies	Other services

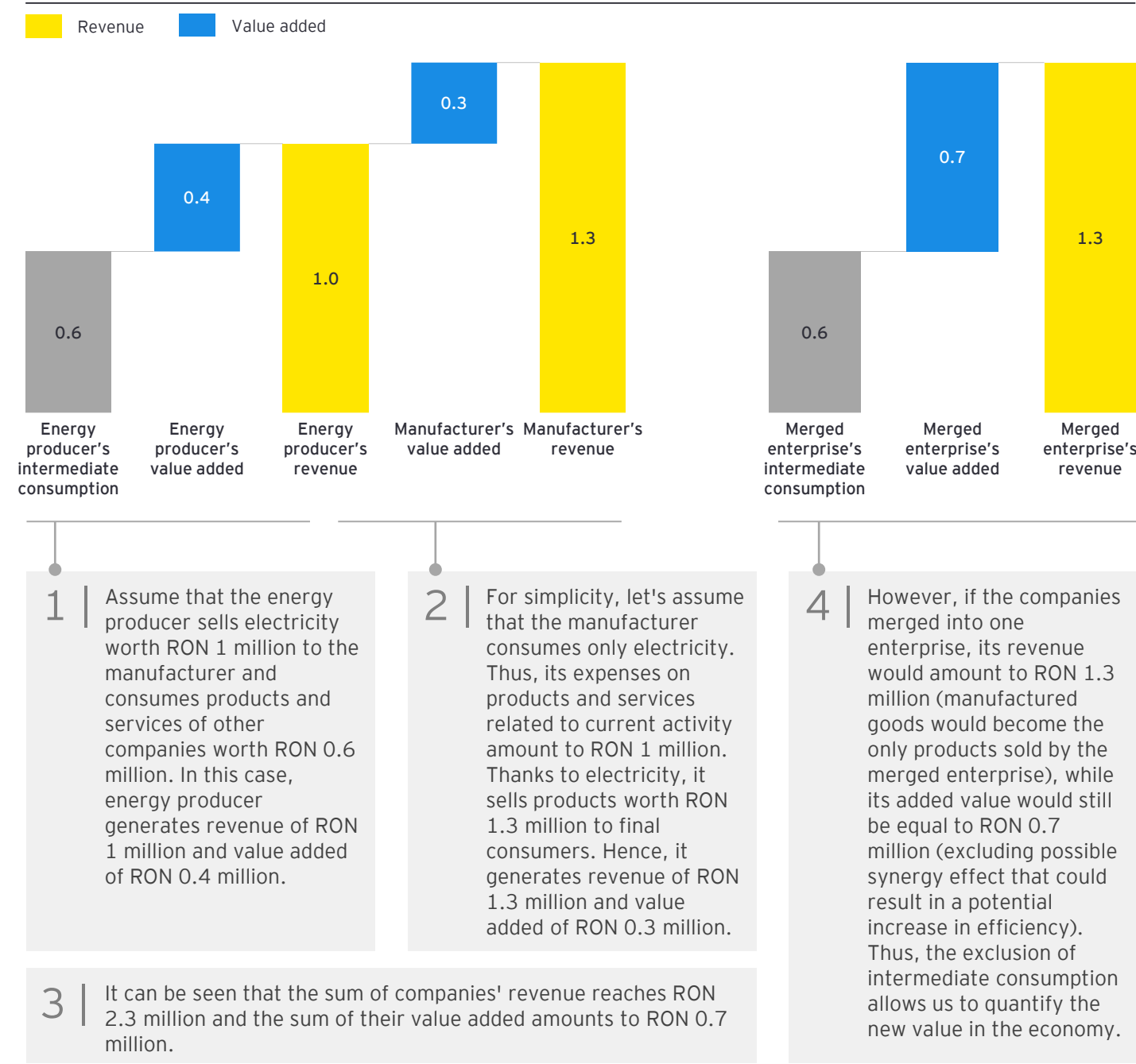
Appendix D: Explanation of the difference between global output (revenues) and value added

GLOBAL OUTPUT (REVENUES) AND VALUE ADDED

The sum of value added of all companies is a useful measure of production volume in an economy. It is worth noting that gross domestic production (GDP) is equal to the sum of value added generated by all resident companies, additionally adjusted for subsidies on products and taxes (primarily VAT).

Contrary to value added, when calculating global output, the value of intermediate goods generated at earlier stages of the supply chain is not excluded.

In order to enhance the understanding of why value added is a more appropriate measure of production volume than revenues, a simplified example of two entities may be considered: (1) an energy producer and (2) a manufacturer.



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