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Municipal Infrastructure Support Programme

●●● Building together for the future

Program podrške razvoju infrastrukture lokalne samouprave

●●● Gradimo zajedno za budućnost



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TARIFF MODEL

Jarit van de Visch, Financial Expert



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Tariff MODEL

- Is a tool with input from the business plan that:
 1. Calculates an average tariff based on the cost price per m3, using the principles from the tariff methodology
 2. Calculates the tariff per m3 for different customer groups based on polluter-pays-principle
 3. Calculates financial results
 4. Enables an analysis of effects of performing better/ worse than indicated in the performance indicators



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FINANCIAL MODEL SET UP

1. **General input sheet** (timing, macroeconomics, performance targets, economic life)
2. Calculation sheets (population & capacity, investment and associated opex, loans, tariff calculations)
3. Output sheets (tariffs, **profit & loss statement & cashflow statement, summary output Full Cost Model**, scenario KfW model)

Main differences with SETEC/KfW:

- *costs & revenues in real terms;*
- *tariff based on full cost recovery;*
- *tariff differentiated with polluter-pays-principle*



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Part of the general input sheet

English ▼ with project scenario ▼ with other activities ▼ Maintenance of new assets + 10-20(40) l/conn ▼

KfW Programme "Water & Sewerage Programme in Medium-Sized Municipalities in Serbia, Programme II Phase 2"

JKP. "VODOVOD" - LESKOVAC - Tariff model - Investment

Applied exchange rate EUR/RSD:	114.0	2012	Original LE tariff model: Invest + Mainten			
Population growth p.a.	Base	Upper	Lower	Case	Chosen	
Town	-0.20%	0.00%	-0.40%	Base	-0.20%	
Villages	-1.00%	0.00%	-2.00%	Base	-1.00%	
Economic growth p.a.	2.00%	3.00%	1.00%	Base	2.00%	
Wastewater disposal	BOD5					
Households & Public	242.0	mg/l BOD5		PUC Leskovac		
Industry	300.0	mg/l BOD5		PUC Leskovac		

Performance targets	Base	Upper	Lower	Case	Chosen	
Supply coverage Sewerage (from total population)						
Sewerage	63%	77%	50% in 2035	Base	63%	
Sewerage urban	95%	100%	92% in 2035	Base	95%	
Sewerage rural	40%	60%	20% in 2035	Base	40%	
Revenue collection efficiency	+2%	+3%	+0 p.a.	Base	+2%	
Revenue collection efficiency	95%	99%	90% max. in 2035	Base	95%	
Non-Revenue Water reduction	+1%	+1%	+1% p.a.	Base	+1%	
Non-Revenue Water reduction	35%	15%	40% min.in 2035	Base	35%	
BOD load	+80%	+100%	+60%	Base	+80%	

P&L (new tariffs) Cashflow (new tariffs) Scenario KfW model Tariffs Current tariff&Tariff structure **Input general & parameters** Population+Capacity



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Part of the tariff calculation sheet

English				with project scenario				with other activities				Maintenance of new assets + 10-20(40) l/conn				2											
KfW Programme "Water & Sewerage Programme in Medium-Sized Municipalities in Serbia, Programme II Phase 2"								27.6%																			
JKP. "VODOVOD" - LESKOVAC - Tariff model - Full cost model								21.5%								43.9%	33.7%	31.9%	23.9%	19.5%	19.5%						
Project year								1		2		3		4		5		6		7		8					
Check (original tariff calculation)																											
Check (adapted tariff calculation)																											
INPUT PARAMETERS				Unit		cost driver				2012		2013		2014		2015		2016		2017		2018		2019		2020	
Revenue collection efficiency				(%)						80%		85%		87%		89%		91%		93%		95%		95%		95%	
Personnel				(No)						405		385		372		342		342		342		342		342			
Cost Driver				1		2		3		4		5		6		7		8		9		10		11		12	
cost driver: Other Revenues				('000 RSD)		Other Revenues				25,025		15,488		15,488		15,488		15,488		15,488		15,488		15,488		15,488	
cost driver: m³ produced				(m³/a)		m³ produced				8,903,625		8,002,252		8,422,828		8,502,329		8,820,373		8,642,125		9,191,739		9,143,990		9,189,990	
cost driver: m³ sewerage				(m³/a)		m³ sewerage				3,998,725		3,674,291		3,899,858		4,035,118		4,092,923		4,137,227		4,180,524		4,222,829		4,264,829	
cost driver: Wastewater disposal				(m³/a)		m³ wastewater disposal										4,035,118		4,092,923		4,137,227		4,180,524		4,222,829		4,264,829	
cost driver: Wastewater disposal + Stormwater				(m³/a)		m³ wastewater disposal + Stormwater										4,947,287		5,116,396		5,224,591		5,365,713		5,495,615		5,625,615	
cost driver: Wastewater treated				(m³/a)		m³ wastewater treatment										996,347,170		1,010,397,273		1,021,118,837		1,031,596,683		1,041,834,556		1,051,836,556	
cost driver: m³ water				(m³/a)		m³ water				5,285,785		4,880,062		5,220,773		5,355,073		5,643,593		5,615,965		5,974,631		5,943,593		5,973,593	
INCOME STATEMENT ('000 RSD) based on current tariffs				Unit		cost driver		Growth		2012		2013		2014		2015		2016		2017		2018		2019		2020	
Income				('000 RSD)																							
Total revenues from current tariffs										312,539		282,300		297,374		305,090		317,883		317,064		332,704		331,723		333,723	
Revenue from water tariff										268,550		242,768		257,187		262,850		275,055		273,850		289,031		287,682		288,682	
Revenue from sewerage tariff										41,813		37,547		38,789		40,074		40,589		40,971		41,345		41,711		42,111	
Revenue from wastewater treatment tariff																											
Revenue from water use fee										1,251		1,135		1,205		1,233		1,292		1,286		1,360		1,353		1,360	
Revenue from pollution fee										925		850		193		933		947		957		967		977		977	
Revenue from fixed fee																											
Revenue from other water activities										18,692		26,828		12,828		413		413		413		413		413		413	
water services										+0		3,391		38,722		3,722											
Tariffs				Current tariff&Tariff structure		Input general & parameters		Population+Capacity		Invest+mainten		Loans		Full cost model tariff		KfW model tariff											



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Gradimo zajedno za budućnost

Part of the income statement sheet

English with project scenario with other activities Maintenance of new assets + 10-20(40) l/conn 2

KfW Programme "Water & Sewerage Programme in Medium-Sized Municipalities in Serbia, Programme II Phase

JKP. "VODOVOD" - LESKOVAC - Tariff model - Full cost model

27.6%

21.5% 43.9% 33.7% 31.9% 23.9% 19.5% 19.5% 19.5% 19.3% 19.3%

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

WATER AND SEWERAGE OPERATIONS ONLY

INCOME STATEMENT ('000 RSD)

Unit

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

WASTEWATER TREATMENT ONLY

INCOME STATEMENT ('000 RSD)

Unit

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

Income ('000 RSD)

Revenue from wastewater treatment tariff 142,461 138,722 136,584 134,452 135,323 136,155 137,012 137,848 138,688

Revenue from other water activities

Total income 142,461 138,722 136,584 134,452 135,323 136,155 137,012 137,848 138,688

Expenditure ('000 RSD)

Personnel 16,992 16,992 16,992 16,992 16,992 16,992 16,992 16,992 16,992

Electricity costs 22,680 23,456 23,952 24,599 25,194 25,788 26,378 26,964 27,545

Other energy costs

Chemicals and other production material 2,956 2,997 3,029 3,060 3,091 3,120 3,149 3,178 3,205

Maintenance - Material & Services 17,518 17,518 17,518 17,518 17,518 17,518 17,518 17,518 17,518

Other material costs

Other (variable) operation cost 8,346 8,464 8,553 8,641 8,727 8,811 8,892 8,972 9,050

Water use and pollution fee

Other fixed and administration costs

Cost of bad debt 15,671 12,485 9,561 6,723 6,766 6,808 6,851 6,892 6,934

Depreciation 34,970 34,970 34,970 34,970 34,970 34,970 34,970 34,970 34,970

Total expenditures 119,132 116,881 114,575 112,502 113,257 114,007 114,750 115,486 116,215

PII (new tariffs) Cashflow (new tariffs) Scenario KfW model Tariffs Current tariff&Tariff structure Input general & parameters Population+Capacity



Program podrške razvoju infrastrukture lokalne samouprave
●●● Gradimo zajedno za budućnost

English		with project scenario		with other activities		Maintenance of new assets + 10-20(40) / /conn																															
						21.5%										43.9%		33.7%		31.9%		23.9%		19.5%		19.5%		19.5%		19.3%		19.3%		19.3%		19.3%	
						2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026			
WATER AND SEWERAGE OPERATIONS ONLY																																					
CASH FLOW STATEMENT ('000 RSD)						2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026			
WASTEWATER TREATMENT ONLY																																					
CASH FLOW STATEMENT ('000 RSD)						2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026			
CASH INFLOW																																					
Revenue from wastewater treatment tariff		('000 RSD)										142,461		138,722		136,584		134,452		135,323		136,155		137,012		137,848		138,688		139,520		140,343		141,175			
Revenues from fixed fee		('000 RSD)																																			
Wastewater treatment billed		('000 RSD)										142,461		138,722		136,584		134,452		135,323		136,155		137,012		137,848		138,688		139,520		140,343		141,175			
Revenue collection ratio		(%)		80%		85%		87%		89%		91%		93%		95%		95%		95%		95%		95%		95%		95%		95%		95%		95%			
Collections from wastewater treatment sales		('000 RSD)										126,791		126,237		127,023		127,729		128,557		129,348		130,162		130,956		131,754		132,544		133,326		134,108			
Revenue from other water activities		('000 RSD)																																			
Cash inflow from operations		('000 RSD)										126,791		126,237		127,023		127,729		128,557		129,348		130,162		130,956		131,754		132,544		133,326		134,108			
Loan disbursement		('000 RSD)																																			
Grant		('000 RSD)		1,038,119				519,059		519,059																											
Financial revenues		('000 RSD)								3,924		3,674		3,702		3,692		3,712		3,726		3,745		3,762		3,780		3,799		3,817		3,835					
Total cash inflow		('000 RSD)						519,059		649,774		129,910		130,726		131,422		132,268		133,073		133,906		134,718		135,534		136,343		137,143		137,942					
CASH OUTFLOW																																					
Operating		('000 RSD)								100,256		99,164		100,012		100,697		101,566		102,387		103,242		104,072		104,910		105,740		106,561		107,382					
Investing		('000 RSD)				519,059		519,059																													
Financing		('000 RSD)						687		643		648		646		650		652		656		659		662		665		668		671		674					
Corporate Income tax (apportion)		('000 RSD)																																			
Total cash outflow		('000 RSD)				519,059		620,003		99,807		100,660		101,343		102,215		103,039		103,897		104,731		105,572		106,405		107,230		108,053		108,876					
CASH FLOW IN PERIOD												29,771		30,103		30,065		30,079		30,053		30,034		30,009		29,987		29,962		29,937		29,913					
Accumulated cash flow												29,771		59,874		89,940		120,018		150,071		180,106		210,115		240,101		270,063		300,001		329,914					
P&L (new tariffs)		Cashflow (new tariffs)		Scenario KfW model		Tariffs		Current tariff&Tariff structure		Input general & parameters		Population+Capacity																									



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Part of the output summary sheet

English with project scenario with other activities Maintenance of new assets + 10-20(40) li/conn



21.5% 43.9% 33.7% 31.9% 23.9%

KfW Programme "Water & Sewerage Programme in Medium-Sized Municipalities in Serbia, Programme II Phase 2"

JKP. "VODOVOD" - LESKOVAC - Tariff model

Tariff Groups	Unit	2012	2013	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
---------------	------	------	------	------	------	------	------	------	------	------	------	------	------

Total annual tariff increase (Company level) (%)

Private, Private - western zone (01-0.01-6.02-4.02-8)

water tariff	(per m³)	42.42	42.42	47.71	41.41	42.82	41.71	38.98	12.5%	-13.2%	3.4%	-2.6%	-6.5%
sewerage tariff	(per m³)	8.51	8.51	6.25	4.12	3.93	3.83	3.72	-26.5%	-34.2%	-4.4%	-2.7%	-2.9%
wastewater treatment tariff	(per m³)				33.77	32.43	31.61	30.80			-4.0%	-2.5%	-2.5%
water use fee	(per m³)	0.21	0.21	0.21	0.21	0.21	0.21	0.21					
pollution fee	(per m³)	0.23	0.23	0.23	0.23	0.23	0.23	0.23					
total m³-based tariff	(per m³)	51.37	51.37	54.40	79.74	79.63	77.59	73.94	5.9%	46.6%	-0.1%	-2.6%	-4.7%

Private with small enterprise (03-1.03-10)

water tariff	(per m³)	53.87	53.87	60.59	52.59	54.38	52.97	49.50	12.5%	-13.2%	3.4%	-2.6%	-6.5%
sewerage tariff	(per m³)	10.72	10.72	7.88	5.18	4.95	4.82	4.68	-26.5%	-34.2%	-4.4%	-2.7%	-2.9%
wastewater treatment tariff	(per m³)				33.77	32.43	31.61	30.80			-4.0%	-2.5%	-2.5%
water use fee	(per m³)	0.21	0.21	0.21	0.21	0.21	0.21	0.21					
pollution fee	(per m³)	0.23	0.23	0.23	0.23	0.23	0.23	0.23					
total m³-based tariff	(per m³)	65.03	65.03	68.90	91.98	92.21	89.84	85.43	6.0%	33.5%	0.2%	-2.6%	-4.9%

Industry Production Sector (05-0)

water tariff	(per m³)	109.02	109.02	122.61	106.43	110.06	107.21	100.19	12.5%	-13.2%	3.4%	-2.6%	-6.5%
sewerage tariff	(per m³)	27.49	27.49	20.20	13.29	12.71	12.36	12.00	-26.5%	-34.2%	-4.4%	-2.7%	-2.9%
wastewater treatment tariff	(per m³)				51.80	49.84	48.57	47.34			-4.0%	-2.5%	-2.5%

Summary output Full cost model P&I (new tariffs) Cashflow (new tariffs) Scenario KfW model Tariffs Current tariff Tariff structure Input general & param



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The calculated cost price (RSD/m³)

Customer group	2015	2016	2017	2018
Average	35.30	33.90	33.00	32.20
Households & public	33.80	32.40	31.60	30.80
Industry	51.90	49.80	48.60	47.30

Polluter-pays-principle taken into account in differentiating per customer group.
Assumption is:

- households discharge m³ x 242 mg/l BOD₅
- industry discharges m³ x 300 mg/l BOD₅



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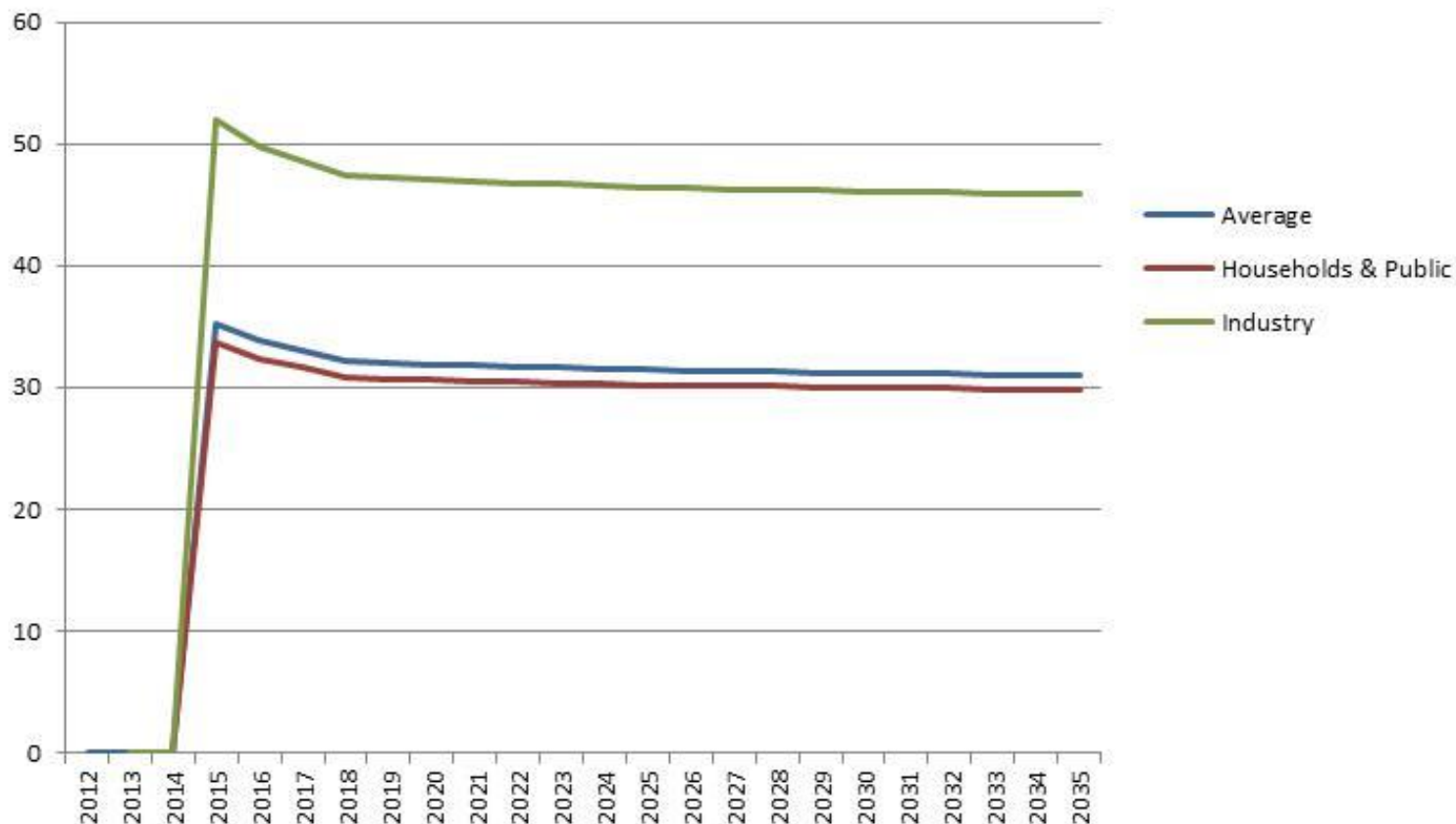
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The calculated cost price (RSD/m³)





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Municipal Infrastructure Support Programme

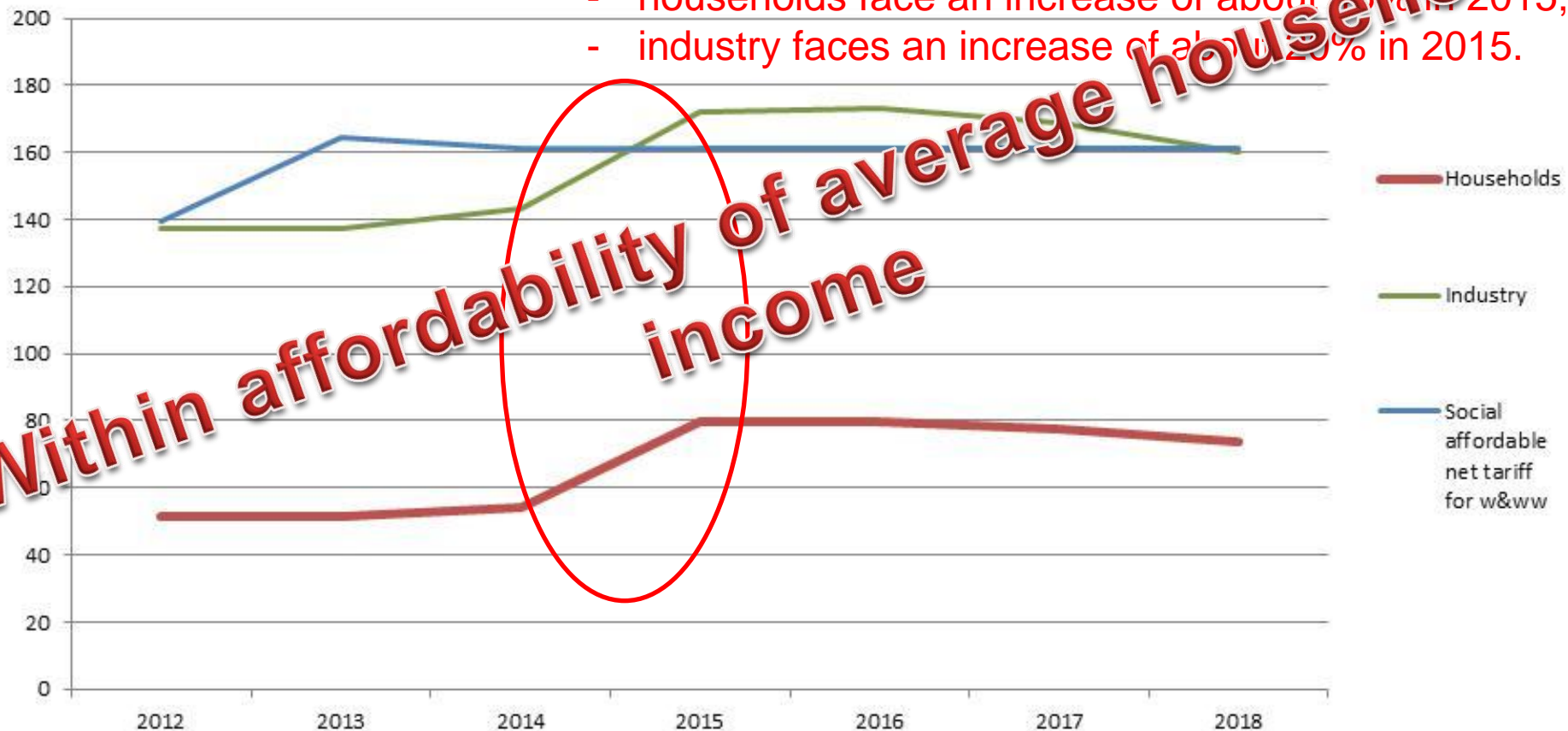
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Impact on total cost price (RSD/m³)

- households face an increase of about 45% in 2015;
- industry faces an increase of about 20% in 2015.





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Impact on profit (000 RSD)

- Wastewater treatment only





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Gradimo zajedno za budućnost

Impact on cash position (000 RSD)

- Wastewater treatment only





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And now the tariff to be charged...

Remember: Step by step increase

Tariff year 1: higher than total costs per m3 excl. depreciation:

Costs per m3 excl. depreciation : RSD 24.00/m3

Tariff year 4: full cost recovery

Full costs per m3 : RSD 32.00/m3



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The resulting tariff (RSD/m3)

Customer group	Cost/m3 excl. depreciation	Tariff 2015	Tariff 2016	Tariff 2017	Tariff 2018 (= FCR)
Average	24.00	?	?	?	32.00
Households & public	22.90	?	?	?	30.80
Industry	35.20	?	?	?	47.30



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■ Avg cost price (ex. depreciation)

■ Avg full cost price (inc. depreciation)



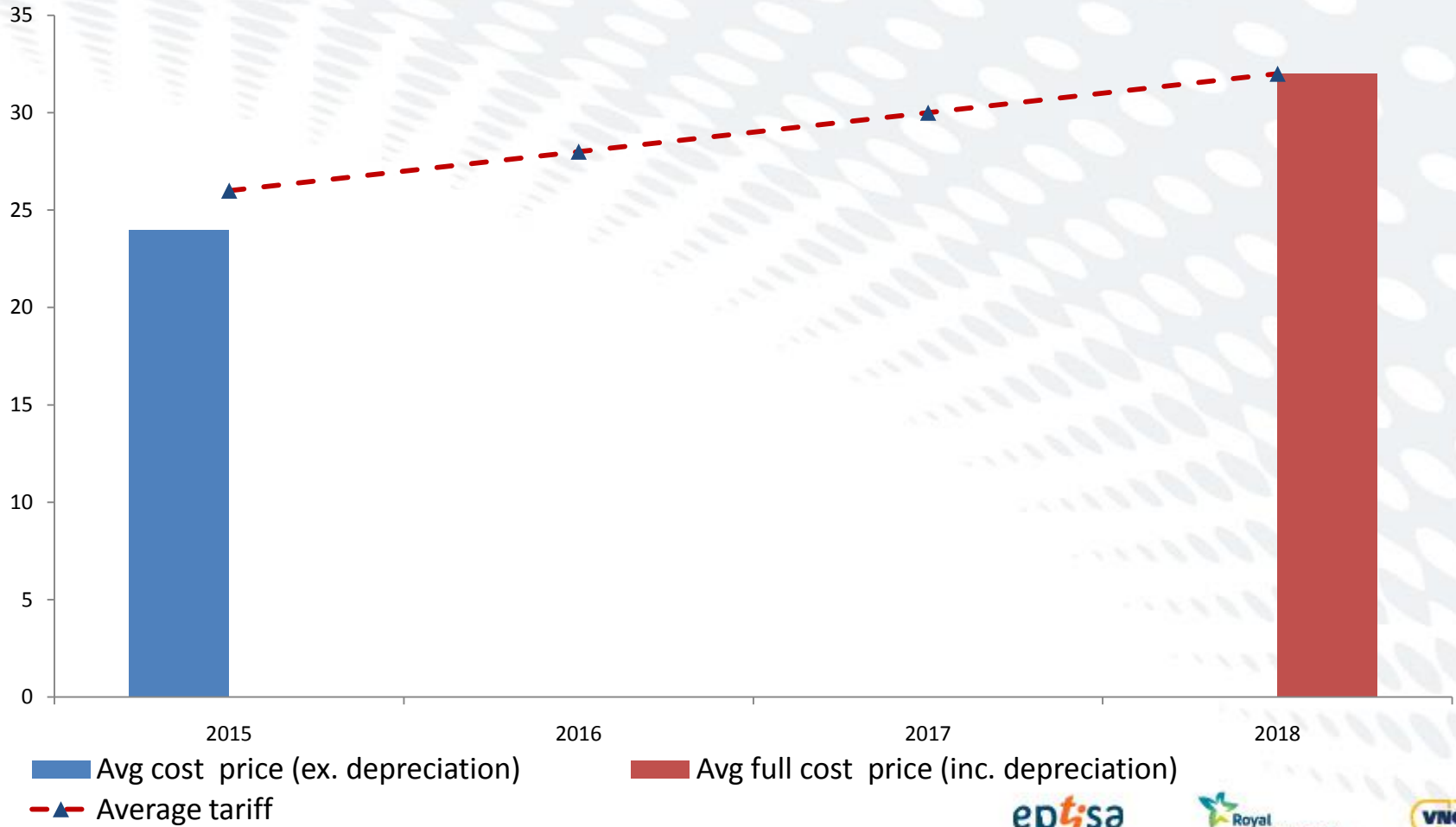
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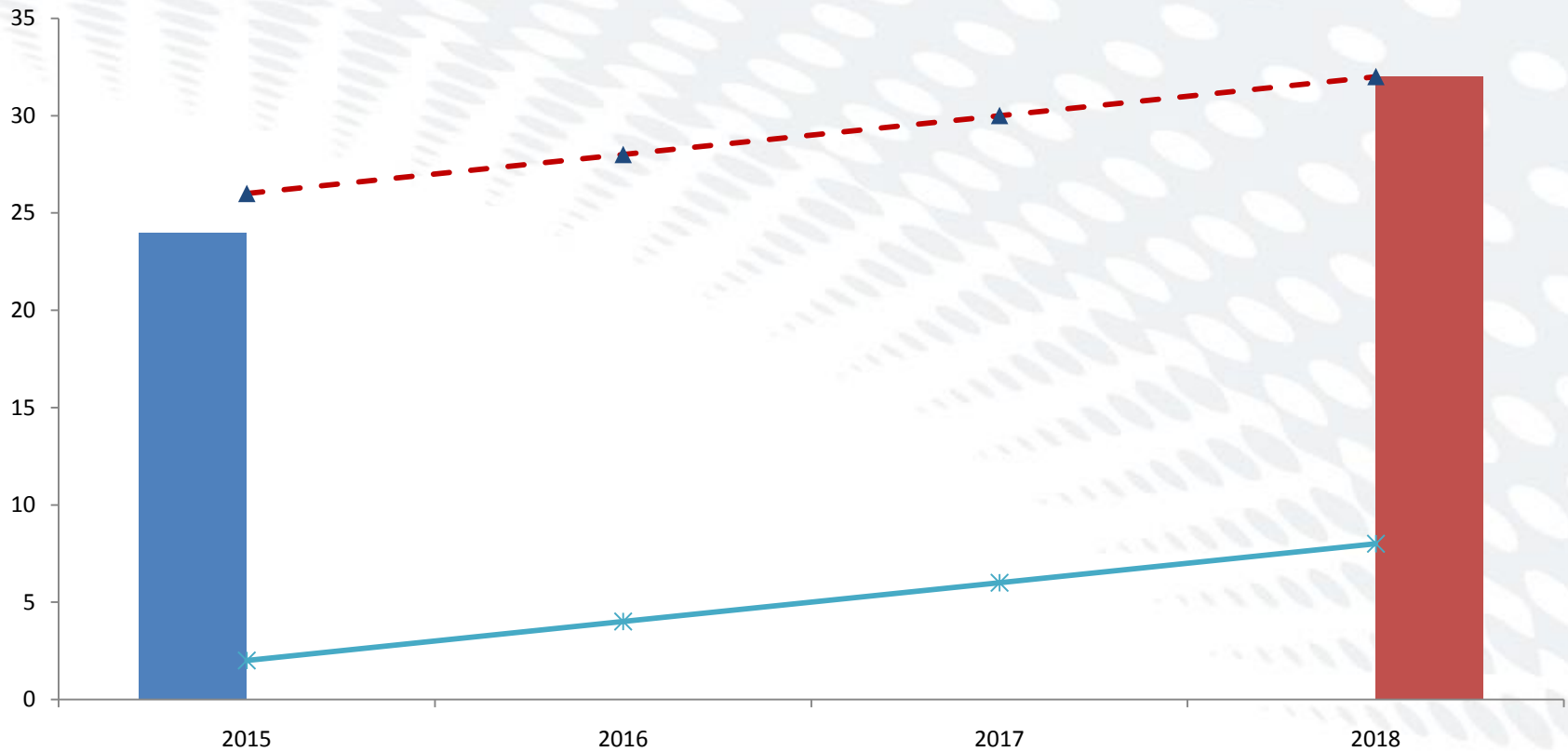
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■ Avg cost price (ex. depreciation)

-▲- Average tariff

■ Avg full cost price (inc. depreciation)

-*- Into Restricted cash account





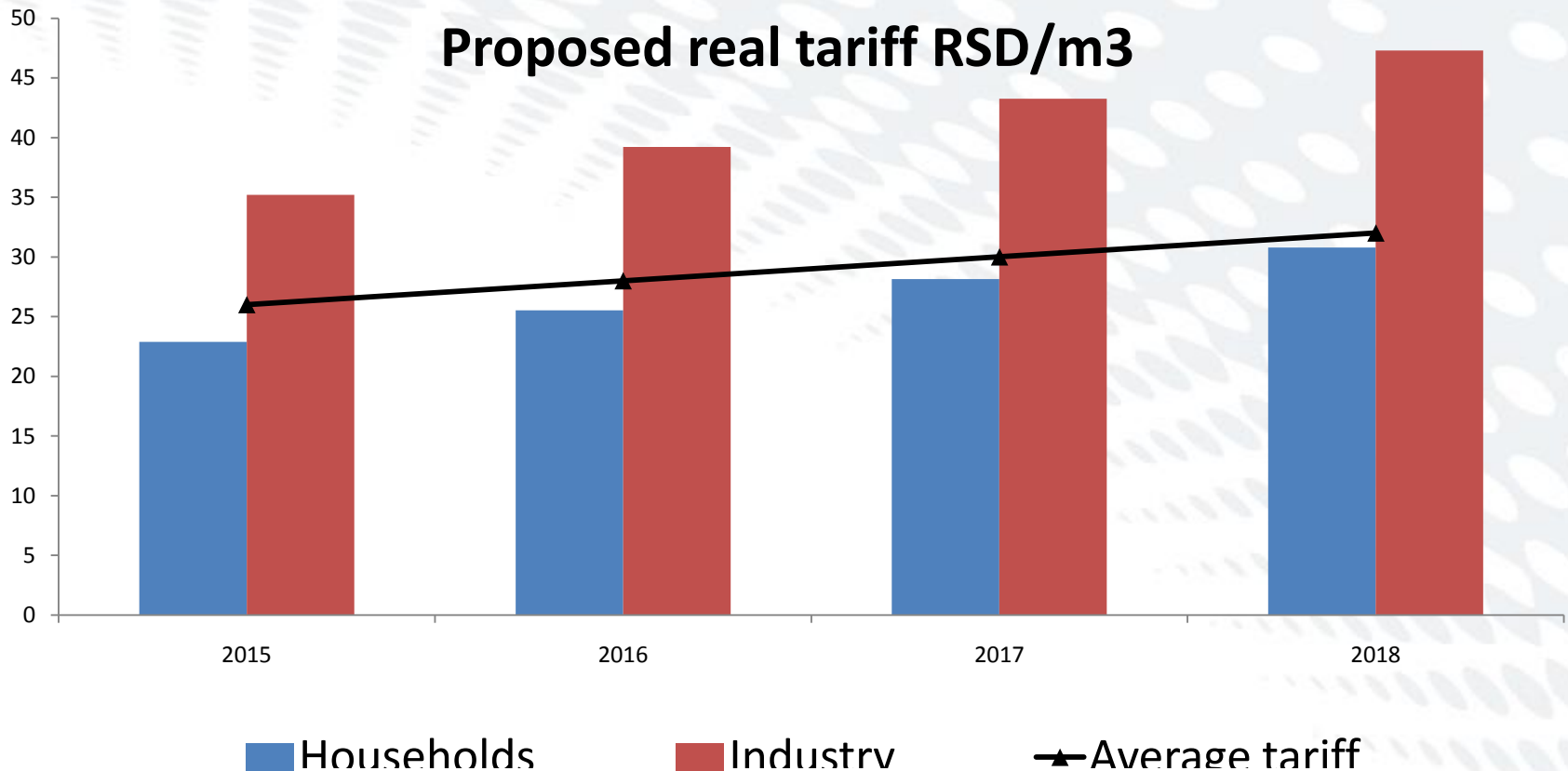
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The resulting tariff (RSD/m3)

Customer group	Cost/m3 excl. depreciation	Tariff 2015	Tariff 2016	Tariff 2017	Tariff 2018 (= FCR)
Average	24.00	26.00	28.00	30.00	32.00
Households & public	22.90	24.80	26.80	28.80	30.80
Industry	35.20	38.10	41.20	44.20	47.30



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QUESTIONS AND ASSISTANCE

Jarit van de Visch

Financial Expert

+31.6. 55 68 42 85

Jarit.van.de.visch@rhdhv.com

www.misp-serbia.rs

Thank you for your attention!