



# Investment Analysis for User Charge Regulation

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# Case study -details of investment

- ▶ Cost of investment: to be determined
- ▶ Useful life: 20 years
- ▶ Expected cubic metres per year: to be determined
- ▶ Cost of capital: to be calculated based on  $K_d$  (cost of debt) and  $K_e$  (cost of equity)
- ▶ Equity/debt % of company: to be established

# Excel spreadsheet – investment data and instructions

The image shows an Excel spreadsheet with the following data:

	A	B	C	D	G	H	I
1							
2	Cost of investment						
3	Useful life	20 years					
4	Operating start date	01/01/2016					
5	Expected cubic metres/year						
6	Capital structure:	100 %					
7	Equity	%					
8	Debt	100 %					
9	Tax rate	0					
10							
11							
12							
13		= cells to be completed					
14							
15		= variable to be completed only once all the other information has been included					
16							

Callout boxes with arrows pointing to specific cells:

- Box 1: "What is the cost of my investment?" points to cell B2.
- Box 2: "How many cubic metres do we expect from investment?" points to cell B5.
- Box 3: "What is the capital structure of my company?" points to cell B7.

# Excel spreadsheet – profit and loss account/ income statement

	A	B	C	D	E	
1	Years	2016	2017	2018	2019	2022
2	Revenue from investment project	0	0	0	0	0
3	<b>Operating costs:</b>	0	0	0	0	0
4	Energy consumption + disposal costs					
5	Personnel costs					
6	Insurances					
7	Raw materials					
8	Depreciation and Amortization	0	0	0	0	0
9	Other operating expenses					
10	Maintenance					
11	<b>Operating income/loss</b>	0	0	0	0	0
12	Interest expense	0	0	0	0	0
13	<b>Income (loss) before tax</b>	0	0	0	0	0
14	Tax provision	0	0	0	0	0
15	<b>Result for the period</b>	0	0	0	0	0
16						
17	<b>Unit price per cubic metre of water, ton of wastewater, gas, etc.</b>					
18						
19	If budget available insert data for years 2016 onwards, if budget unavailable make predictions on potential increase in revenues and costs					
20						
21	Percentage annual increase in revenues					
22	Percentage annual increase in operating costs					
23	Tax rate					

Key variable of entire spreadsheet is the unit price per cubic metre of water, ton of wastewater, etc.

Expected percentage increases in revenue and costs

What is the tax rate in the country where investing?

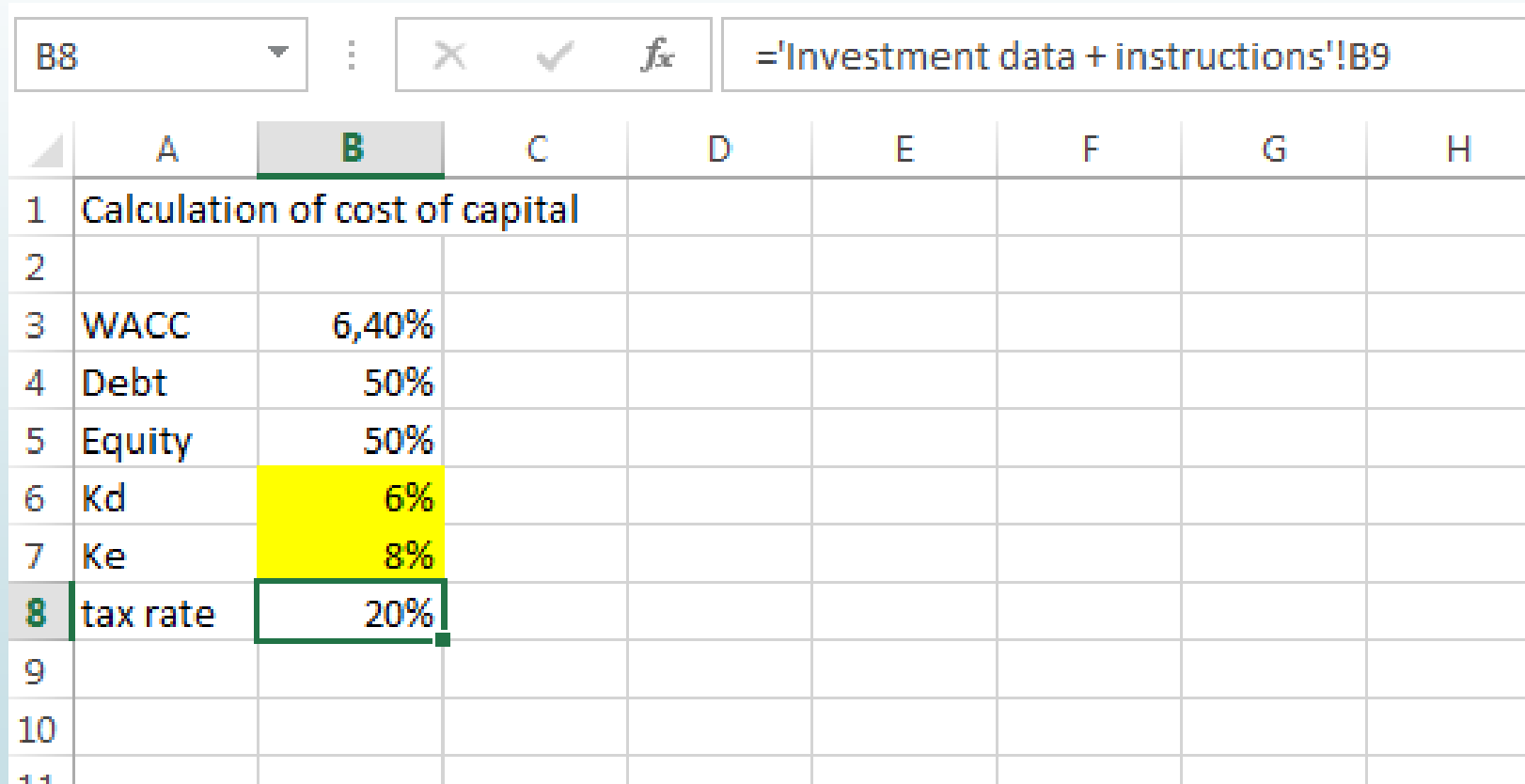
# Excel spreadsheet – cost of capital calculation

	A	B	C	D	E	F	G
1	Calculation of cost of capital						
2							
3	WACC	0%					
4	Debt	100%					
5	Equity	0%					
6	Kd						
7	Ke						
8	tax rate	0%					
9							
10							
11							

What is the cost of debt of the company?

What is the cost of equity of the company?

# Excel spreadsheet – cost of capital calculation completed



	A	B	C	D	E	F	G	H
1	Calculation of cost of capital							
2								
3	WACC	6,40%						
4	Debt	50%						
5	Equity	50%						
6	Kd	6%						
7	Ke	8%						
8	tax rate	20%						
9								
10								
11								



# Excel spreadsheet – loan amortisation plan

	A	B	C	D	E	F	G	H
1							Principal	
2	Years	Date	Scheduled Payment	Principal	Kd (interest rate)	Interest pmt	Balance Beginning	Ending Balance
3	1	31/12/2016	0	0	0.00%	0	0	0
4	2	31/12/2017	0	0	0.00%	0	0	0
5	3	31/12/2018	0	0	0.00%	0	0	0
6	4	31/12/2019	0	0	0.00%	0	0	0
7	5	31/12/2020	0	0	0.00%	0	0	0
8	6	31/12/2021	0	0	0.00%	0	0	0
9	7	31/12/2022	0	0	0.00%	0	0	0
10	8	31/12/2023	0	0	0.00%	0	0	0
11	9	31/12/2024	0	0	0.00%	0	0	0
12	10	31/12/2025	0	0	0.00%	0	0	0
13	11	31/12/2026	0	0	0.00%	0	0	0
14	12	31/12/2027	0	0	0.00%	0	0	0
15	13	31/12/2028	0	0	0.00%	0	0	0
16	14	31/12/2029	0	0	0.00%	0	0	0
17	15	31/12/2030	0	0	0.00%	0	0	0
18	16	31/12/2031	0	0	0.00%	0	0	0
19	17	31/12/2032	0	0	0.00%	0	0	0
20	18	31/12/2033	0	0	0.00%	0	0	0
21	19	31/12/2034	0	0	0.00%	0	0	0
22	20	31/12/2035	0	0	0.00%	0	0	0

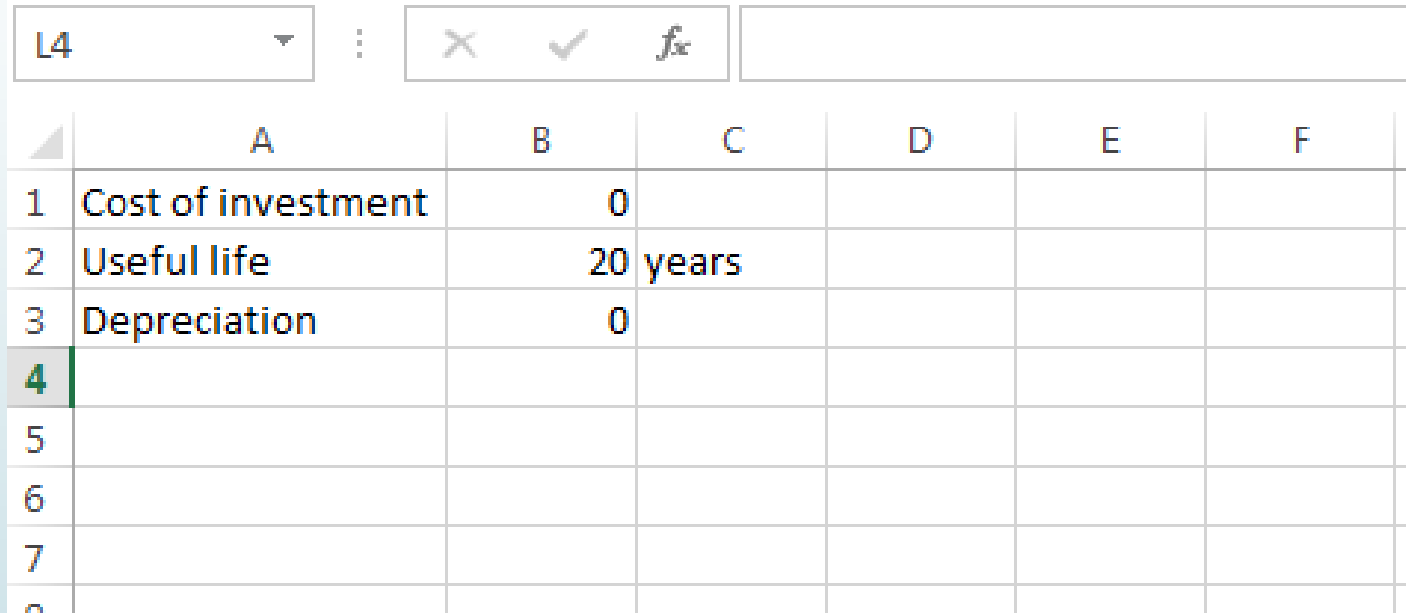
What is the amount of the loan? i.e. how much has the company borrowed to finance this investment?



# Excel spreadsheet loan amortisation plan - completed

	A	B	C	D	E	F	G		H
1							Principal		
2	Years	Date	Scheduled Payment	Principal	Kd (interest rate)	Interest pmt	Balance Beginning	Ending Balance	
3	1	31/12/2016	80,243	30,243	5.00%	50,000	1,000,000	969,757	
4	2	31/12/2017	80,243	31,755	5.00%	48,488	969,757	938,003	
5	3	31/12/2018	80,243	33,342	5.00%	46,900	938,003	904,660	
6	4	31/12/2019	80,243	35,010	5.00%	45,233	904,660	869,651	
7	5	31/12/2020	80,243	36,760	5.00%	43,483	869,651	832,891	
8	6	31/12/2021	80,243	38,598	5.00%	41,645	832,891	794,293	
9	7	31/12/2022	80,243	40,528	5.00%	39,715	794,293	753,765	
10	8	31/12/2023	80,243	42,554	5.00%	37,688	753,765	711,210	
11	9	31/12/2024	80,243	44,682	5.00%	35,561	711,210	666,528	
12	10	31/12/2025	80,243	46,916	5.00%	33,326	666,528	619,612	
13	11	31/12/2026	80,243	49,262	5.00%	30,981	619,612	570,350	
14	12	31/12/2027	80,243	51,725	5.00%	28,518	570,350	518,625	
15	13	31/12/2028	80,243	54,311	5.00%	25,931	518,625	464,314	
16	14	31/12/2029	80,243	57,027	5.00%	23,216	464,314	407,287	
17	15	31/12/2030	80,243	59,878	5.00%	20,364	407,287	347,408	
18	16	31/12/2031	80,243	62,872	5.00%	17,370	347,408	284,536	
19	17	31/12/2032	80,243	66,016	5.00%	14,227	284,536	218,520	
20	18	31/12/2033	80,243	69,317	5.00%	10,926	218,520	149,204	
21	19	31/12/2034	80,243	72,782	5.00%	7,460	149,204	76,422	
22	20	31/12/2035	80,243	76,422	5.00%	3,821	76,422	0	

# Excel spreadsheet – depreciation of investment



	A	B	C	D	E	F
1	Cost of investment	0				
2	Useful life	20 years				
3	Depreciation	0				
4						
5						
6						
7						
8						

# Excel spreadsheet – cash flow calculation

	A	B	C	D	E	F	G	H	I	J
1		0	1	2	3	4	5	6	7	8
2	Years	2016	2017	2018	2019	2020	2021	2022	2023	2024
3	Result for the period	0	0	0	0	0	0	0	0	0
4										
5	<b>Add back</b>									
6	Depreciation	0	0	0	0	0	0	0	0	0
7	Interest	0	0	0	0	0	0	0	0	0
8	Working capital recovered (last year only)									
9	Scrap value of asset									
10										
11	<b>Deduct</b>									
12	Working capital	0	0	0	0	0	0	0	0	0
13	Cost of asset	0	0	0	0	0	0	0	0	0
14										
15	<b>Cash flows</b>	0	0	0	0	0	0	0	0	0
16										
17	<b>Discounted cash flows</b>	0	0	0	0	0	0	0	0	0
18										
19	NPV	0								
20										
21	Working capital % of revenue									

Working capital measures operating liquidity, so we are looking for an approximate % of sales to estimate our working capital.



# Sources

- ▶ Ireninforma – image TRM
- ▶ TRM - Bilancio di esercizio 2014 e 2015 <http://trm.to.it/bilancio-di-esercizio/>