



# **Challenges of Unplanned City Growth:** Electricity Distribution in the city of Budva, Montenegro

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# Outline



- Budva Case
- Possible Solutions
- Regulatory Framework
- Field Analysis: Players
- Investment Summary
- Definition of Service Tariff
- Conclusions

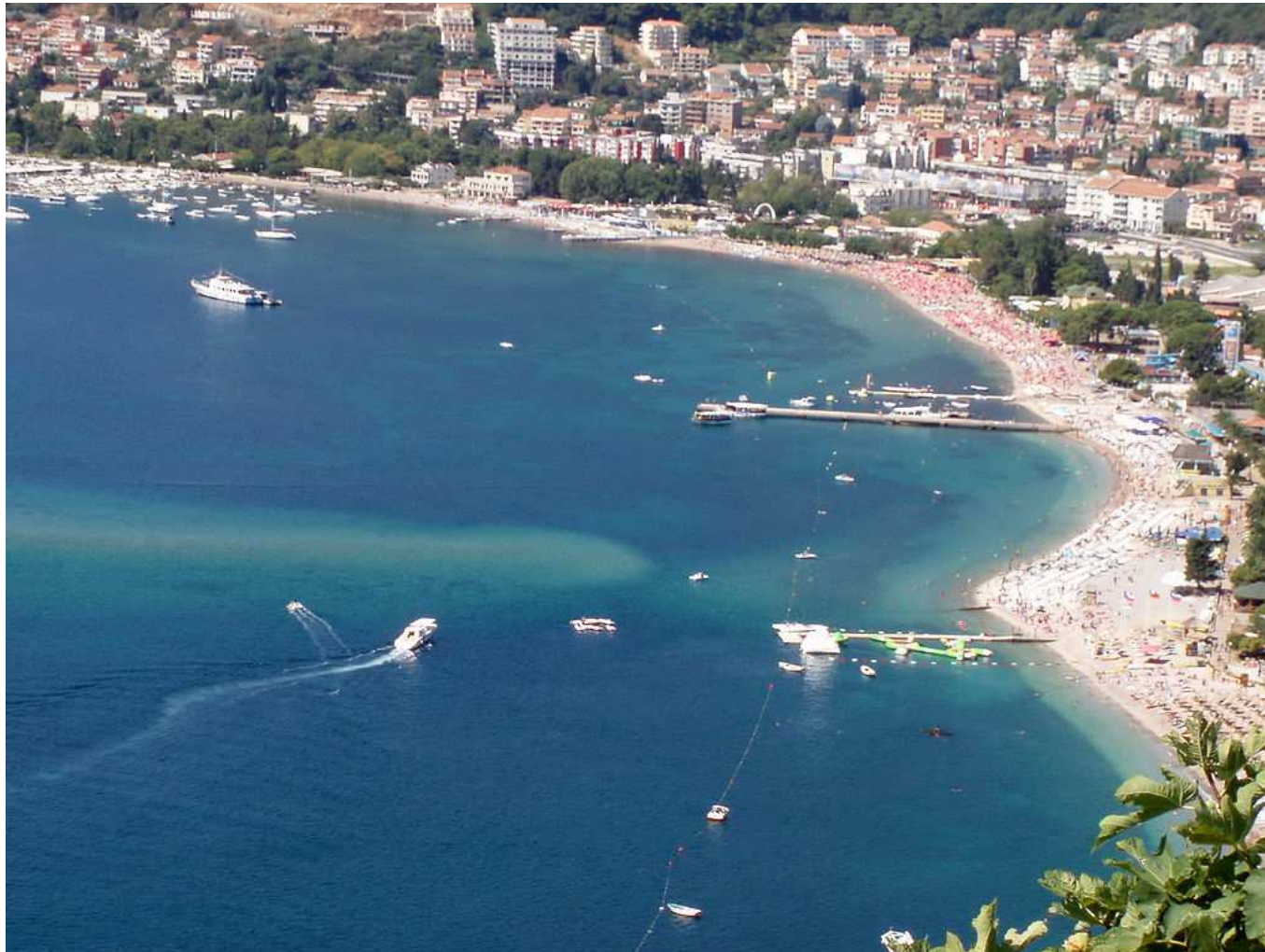


## Montenegro (2013 data, WB)

- GDP: 4,428 billion (current intl \$)
- GDP per capita: 14,318 (current intl \$)
- Population: 621,400
- Corporate Tax Rate: 9% (global average 23.4%)
- Gross power consumption per capita: 5,747 KW/h



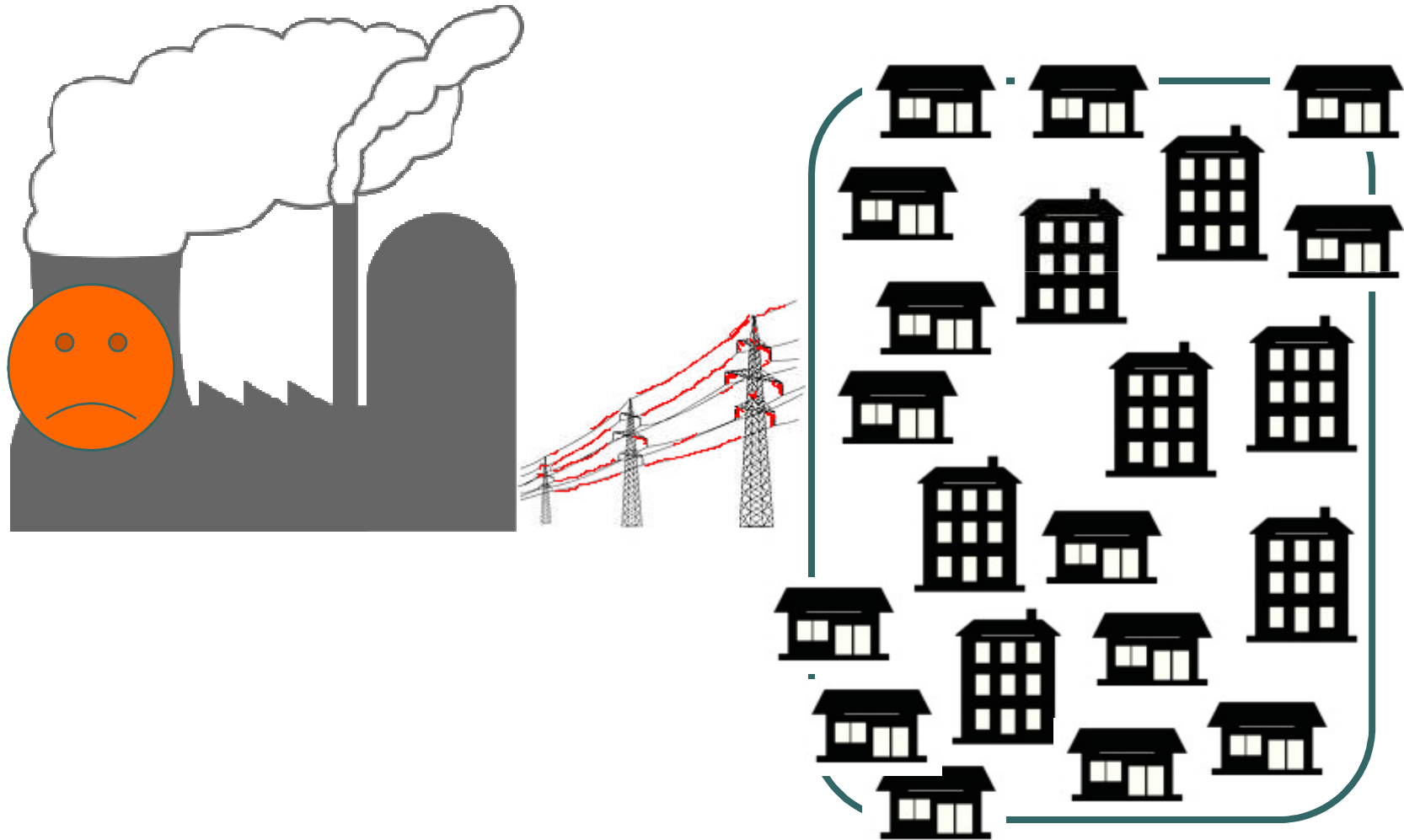
# Budva Case



[Source: Wikipedia](#)

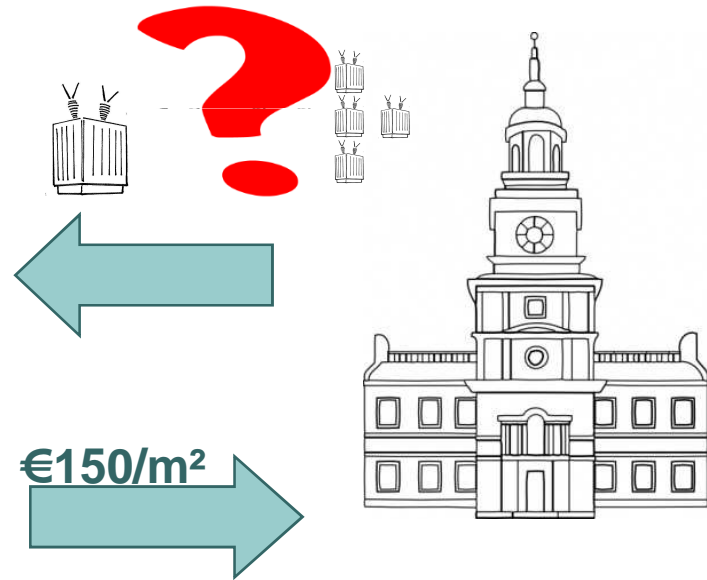


# Budva Case





# Budva Case cont.





# Needed capacity expansion

- 2 substations 35 KV to 10 KV
- 10 substations 10 KV to 0,4 KV
  
- **Total costs: € 2,5 million**
  
- **Who will make the investment?**



# Regulatory framework

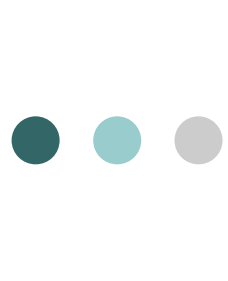
- Regulatory authority: REGAGEN
- Regulatory method: Rate of Return
- EPCG (DSO): 55% state, 45% (A2A & others)
- Tendering procedure





# Field Analysis: Players

- **Investors:** selling apartments
- **Municipality:** earning rents
- **REGAGEN:** solving the problem, RoR 6.8%
- **EPCG:** getting the investment done & recognized
- **Government:** safeguard image of Budva
- **Ratepayers:** bearing cost recovery



# Investment Summary

**Total Capital Cost (CAPEX): € 2.500.000**

- Lifetime: 20 years
- Amortization: 125000/yr + inflation
- Debt: 40% (IP 2%)
- Shares: 150000

**Evaluation : positive**

- O&M: 35,650/yr + inflation first year and growing 5% per year
- NPV after dividend: €21,131.39



# Other issues

- ***Equity issues:*** cost borne by customers of distribution grid and will be reflected in the tariff
- ***Negotiation issues:*** investment cost as a part of following regulatory period
- ***Environmental issues:*** none



# Conclusions



- The case illustrates the challenges posed by rapid city growth and...
- ...the cost of the lack of coordination among local authorities and weak accountability of some local governance actors.
- A proactive regulatory authority helped overcoming the bottleneck and ensuring a stable distribution system.
- **Limitations:** beta, cost-recovery period, and risk-free rate are based on averages.