

At the centre of it , the given problem is a linear programming problem.

As more than 20% of the energy requirements should come from renewable sources, more than 240kWh should come from renewable sources.

Therefore,

$$150 + 0.15*x + 0.05*(1050 - x) \geq 240$$

$$0.15*x + 0.05*(1050 - x) \geq 90$$

$$x \geq 375 \text{ kWh.}$$

Now, the cost of the electricity from power exchange on Jan 1 is __ EUR/kWh

Hence total cost is $57.63*x + m*(1050 - x)$. We want to optimize this w.r.t the condition that $x \geq 375$.

If $m \geq 57.62$, buy all the electricity from the State electricity grid.

If $m < 57.62$, when optimised, the answer is 375 kWh from the State grid and 675 from power exchange

$$m = 34.91266 \text{ EUR/KWh}$$

Hence, the company should buy 375 units from the state and 675 from the power exchange

Model parameters

R2 score : -0.709

Adjusted R2 score: -0.71408