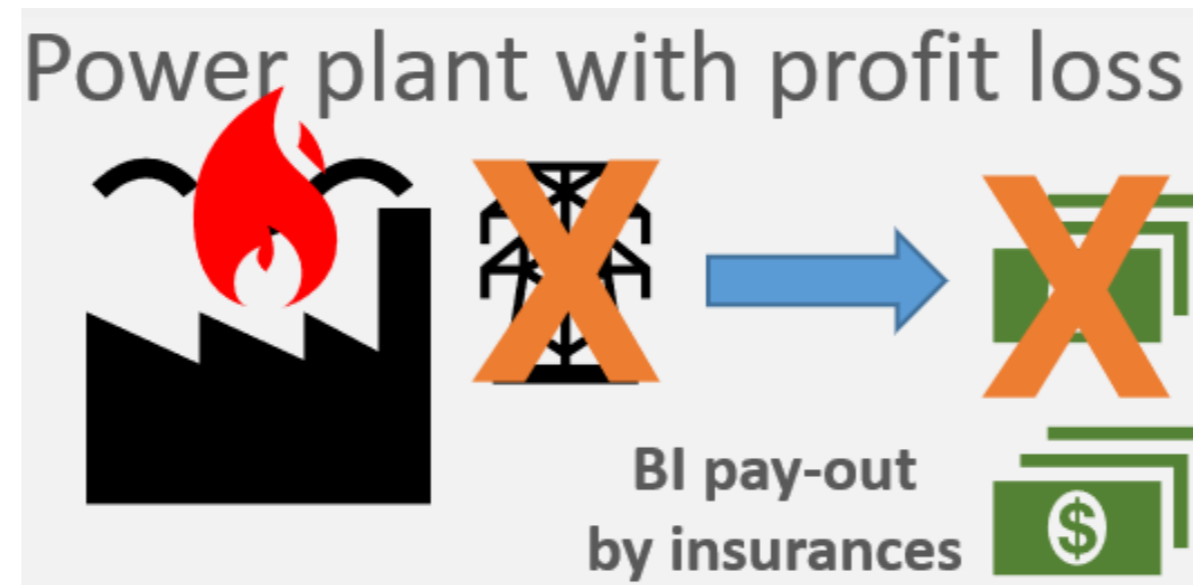


Business Interruption of Power Plants – Insurance Implications

What?

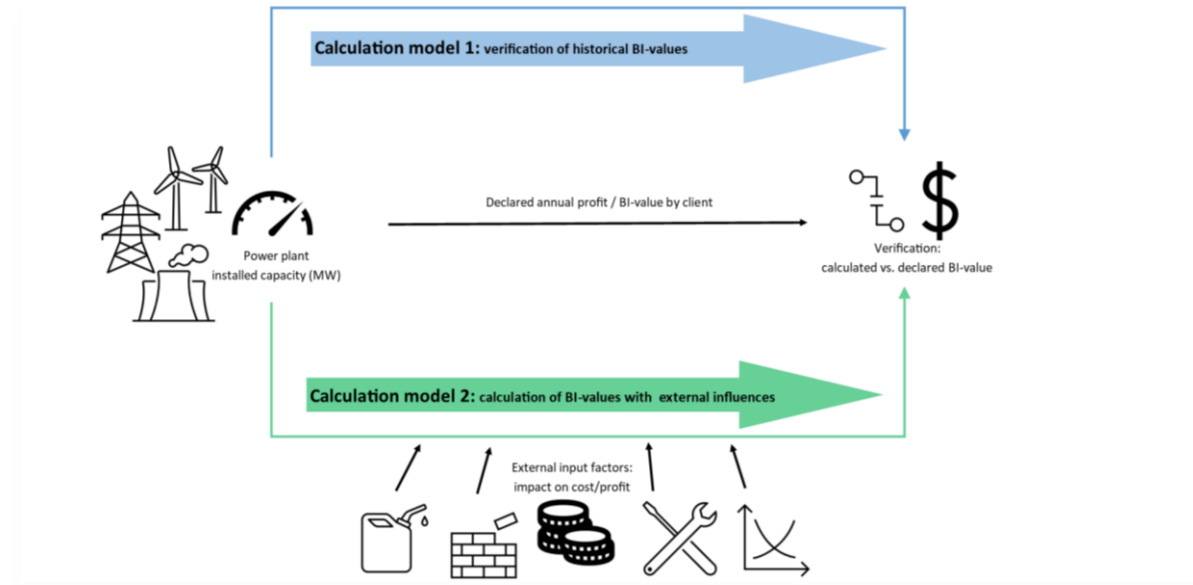


BI insurance covers profit loss [1]

Annual profit calculation based on installed capacity

Possible to calculate profit (BI-value) from capacity?

How?

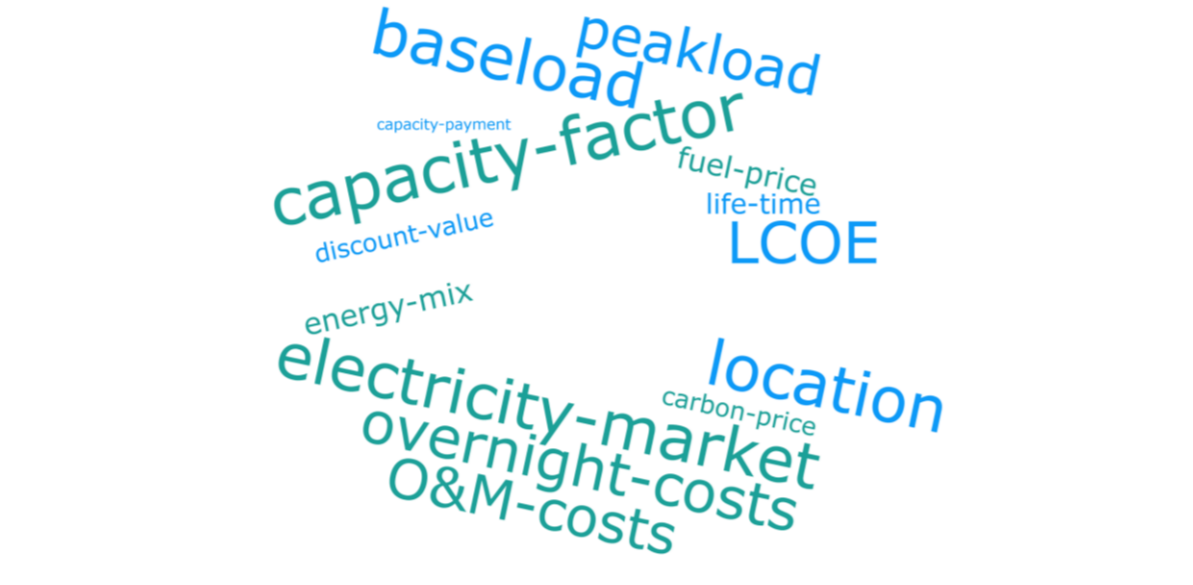


Two calculation models developed [1]

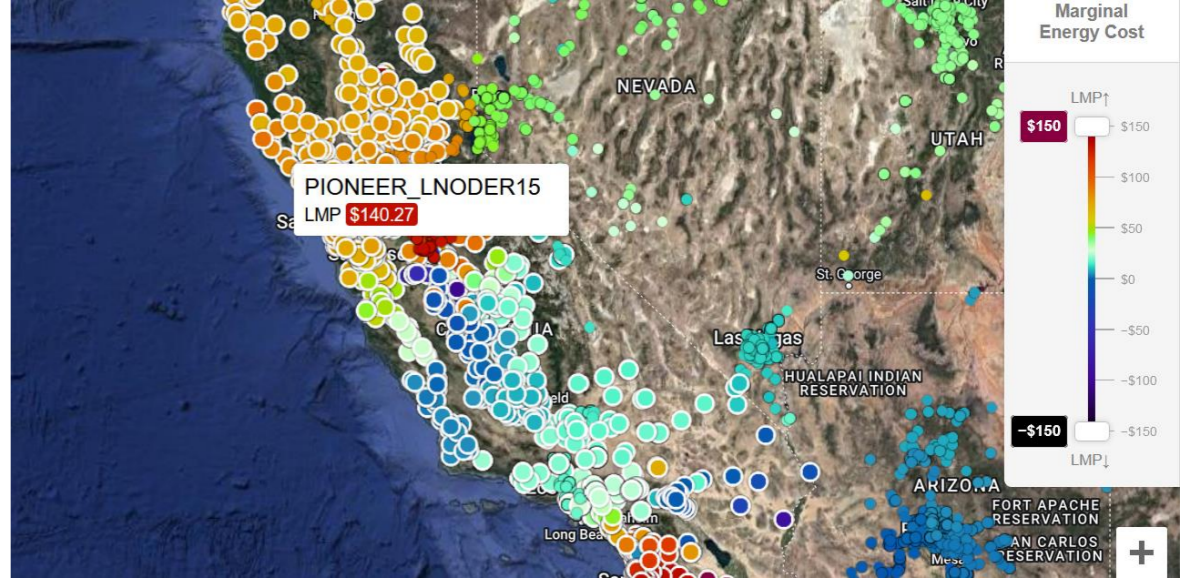


An example hydro power plant Itaipu [1]

Why?

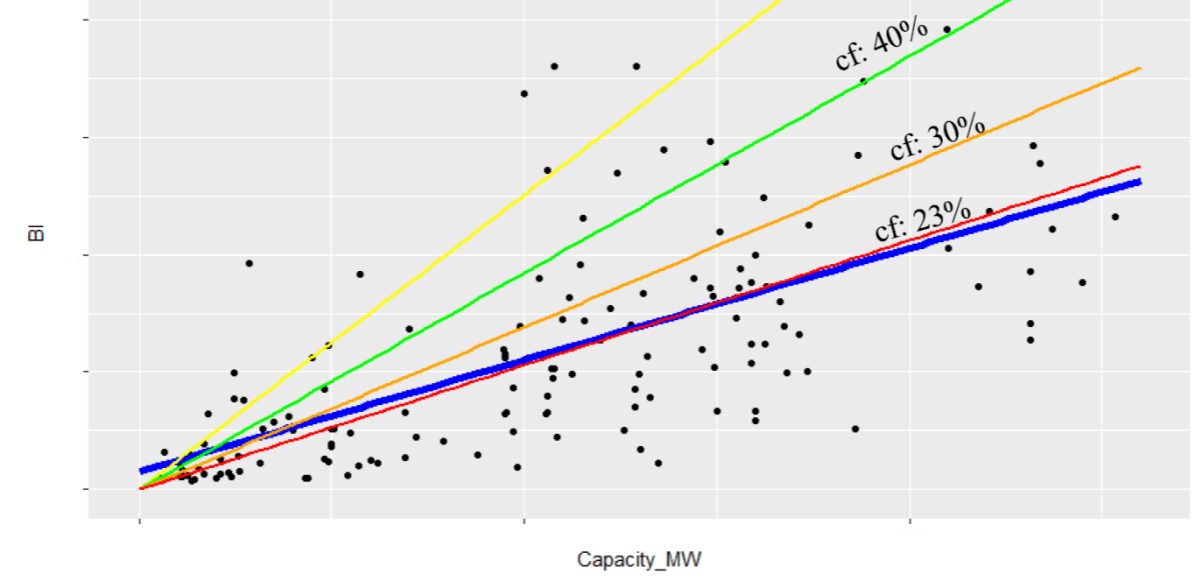


Power plant profit dependencies [1]



Electricity sales prices in California US [2]

Result



BI-value calculation with different capacity-factors [1]

Plant decommissioning costs	0.05 USD/MWh	5'443'200 USD in total lifecycle
Fuel costs	19.01 USD/MWh	2'069'504'640 USD in total lifecycle
Carbon costs	12.05 USD/MWh	1'311'811'200 USD in total lifecycle
Operation & Maintenance costs	5.7 USD/MWh	620'524'800 USD in total lifecycle
LCOE	48.84 USD/MWh	
Revenues	98.54 USD/MWh	
Profit	49.7 USD/MWh	
Annual profit	180'351'360 USD/a	
Annual BI-value	180'351'360 USD/a	

Cut-out of developed BI calculation tool (shown with modified random values) [1]

Research Question

Due to a more and more liberalized electricity market and an increasing number of renewable power plant share, annual profit of power plants is hard to predict. This does not just affect power plant owners but also involved parties like insurances.

In case of a sudden and accidental loss, business interruption (BI) insurances cover the loss of profit. In case of power plants, the possible profit loss is present, when electricity production is impaired. The research thesis shows, whether the possible loss (BI-value) can be verified in today's volatile electricity market. This shall be done based on the installed capacity of a power plant.

Implementation Concept

The present research investigates the relationship between operational capacity and business interruption values. Moreover, it assesses the feasibility of developing a model to calculate business interruption values based on relationship values and future market conditions.

This study develops two calculation models for an additional approach to verify the declared value provided by power plant operators. However, the research will reveal many challenges coming along with a profit calculation based on the installed capacity. Two developed calculation models will show possible solutions. In addition, an attached program will enable Swiss Re to use this calculation model in the future.

The calculation approach makes sure power plants are neither over nor underinsured and that they will receive the right amount of compensation when urgently needed during a business interruption event.

[1] Own illustration.
[2] California ISO CAISO).

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