Modelling rising water levels financial impact on a seaside city

Problem

- Challege 5 by Capgemini
- See levels are rising
- When will the probability of losses greater than the city budget (3 943 mln PLN) exceed 75%?

Modelling

https://mapy.geoportal.gov.pl

Modelling

Estimated commercial value of land in 2011 per hectare, in PLN

Land use	Value (PLN per ha)
Built-up: services	4,294,000
Built-up: housing (dense urban)	2,802,000
Built-up: housing (scattered urban)	1,896,000
Transport areas, non-built-up areas	559,000
Built-up: industrial	444,000
Forests	37,976

https://link.springer.com/article/10.1007/s11069-016-2619-z/tables/1

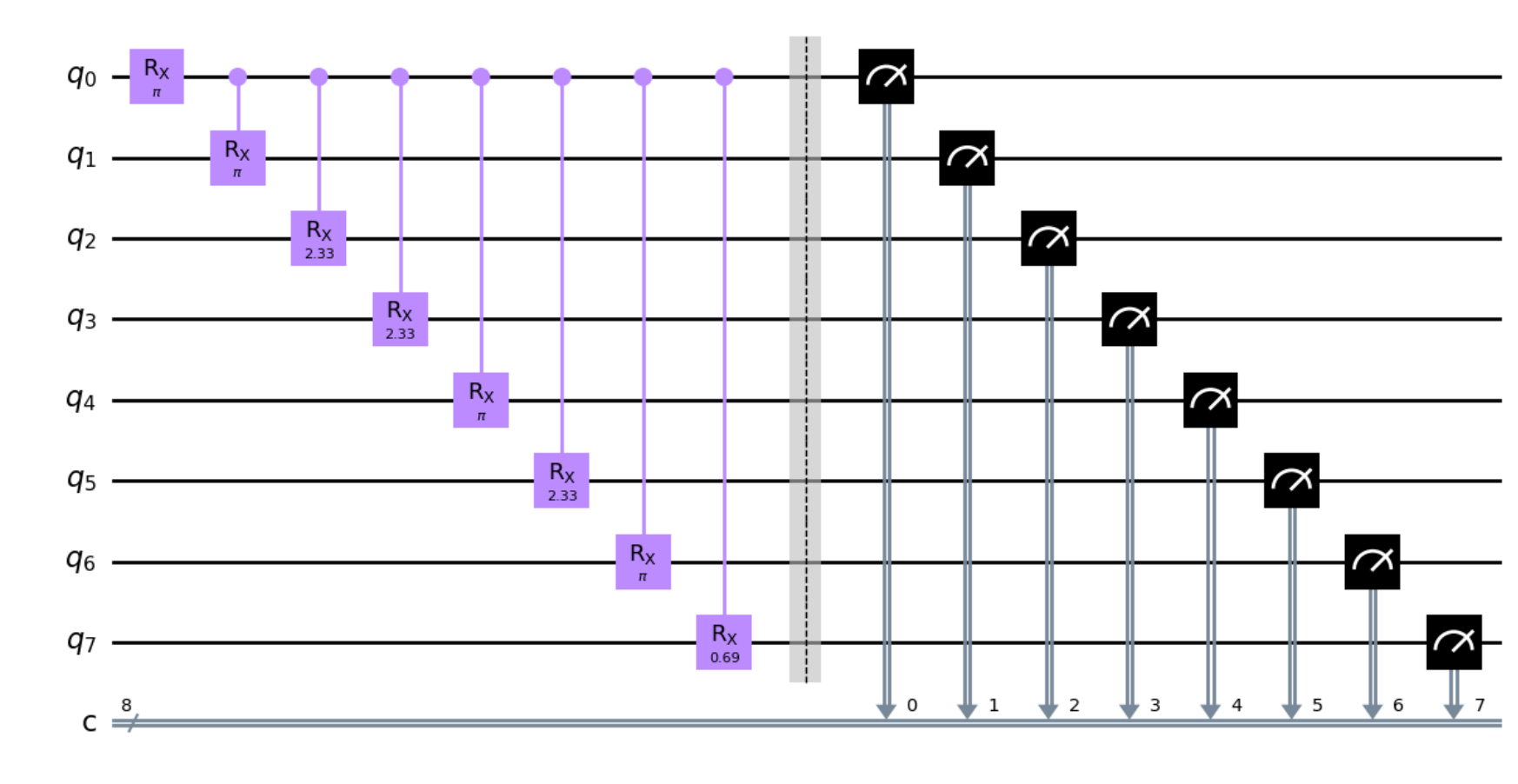
Modelling

Estimated commercial value of land in 2011 per hectare, in PLN, ADJUSTED FOR INFLATION

Land use	Value (PLN per ha)
Built-up: services	6,780,000
Built-up: housing (dense urban)	4,424,000
Built-up: housing (scattered urban)	2,994,000
Transport areas, non-built-up areas	883,000
Built-up: industrial	701,000
Forests	59,964

https://link.springer.com/article/10.1007/s11069-016-2619-z/tables/1

Quantum



So what year will
the probability exceed 75%?

Let's find out!

2023

- Sea level: 0 m
- Expected losses due to flooding: 149 mln PLN
- Probability of exceeding the city budget: 0%

2040

- Sea level: 0.154 m
- Expected losses due to flooding: 328 mln PLN
- Probability of exceeding the city budget: 0%

2060

- Sea level: 0.489 m
- Expected losses due to flooding: 2 643 mln PLN
- Probability of exceeding the city budget: 0%

2080

- Sea level: 0.916 m
- Expected losses due to flooding: 5 286 mln PLN
- Probability of exceeding the city budget: 97%

Team

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