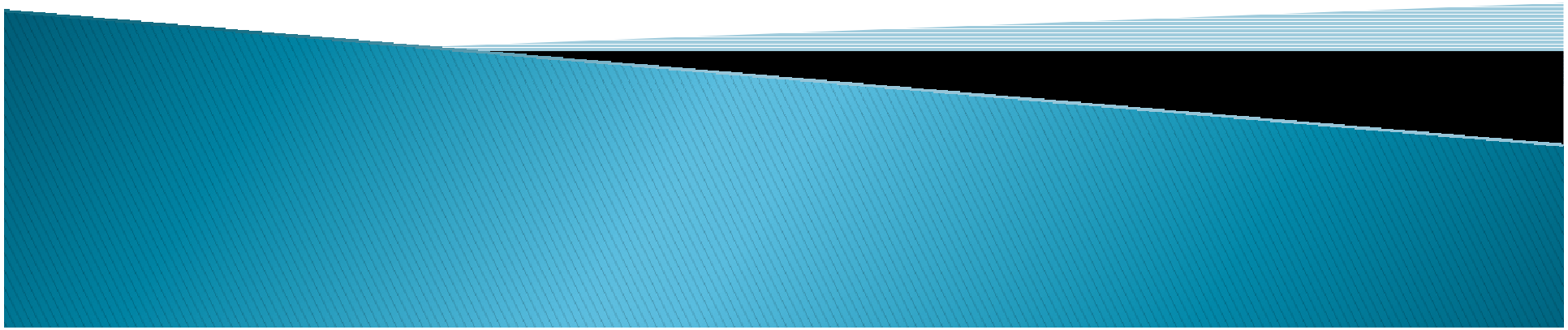
Visegrad Fund

Preliminary results from an indoor radon thoron survey in V4 countries

T. Kovács, A. Csordás, M. Neznal, M. Neznal, K. Holy, M. Mullerova, J. Mazur, K. Kozak



Visegrad Fund

Background

- we have several surveys in Hungary about radon and thoron
- the quality of the data is not the best
  - different survey
  - diferent aim method etc the date analysis is problematic
- several years ago along the radon measurements we have started the radon thoron parallel measurements
- joining to this survey we have chance to compare some devices

Visegrad Fund

Aims of present survey

The last small survey started from 2010 granted by different funds (Hungarian Res. Fund. NIRS president fund, different bilateral funds, and Visegrad fund)

- Elaboration of the common and harmonized measurements protocol - to get comparable data – analysis of the data
- European radon map
- Radon and thoron paralell measurements

Visegrad Fund

Participants

- Czech Republic (RADON v.o.s., Prague)
- Poland (IFJ PAN, Krakow)
- Slovakia (Comenius University, Bratislava, Slovak Medical University, Bratislava)
- Hungary (Pannon University, Veszprem, ELTE, Budapest)

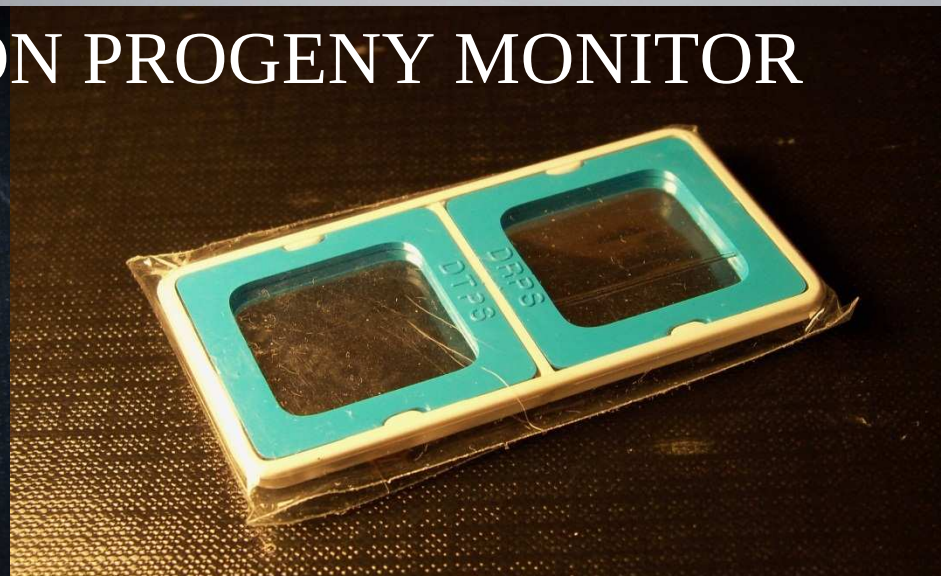
Visegrad Fund

Passive devices

NRPB

RADUET

RADON THORON PROGENY MONITOR



Visegrad Fund

Radon-Thoron devices

Sarad RTM 2100

Pylon WLx

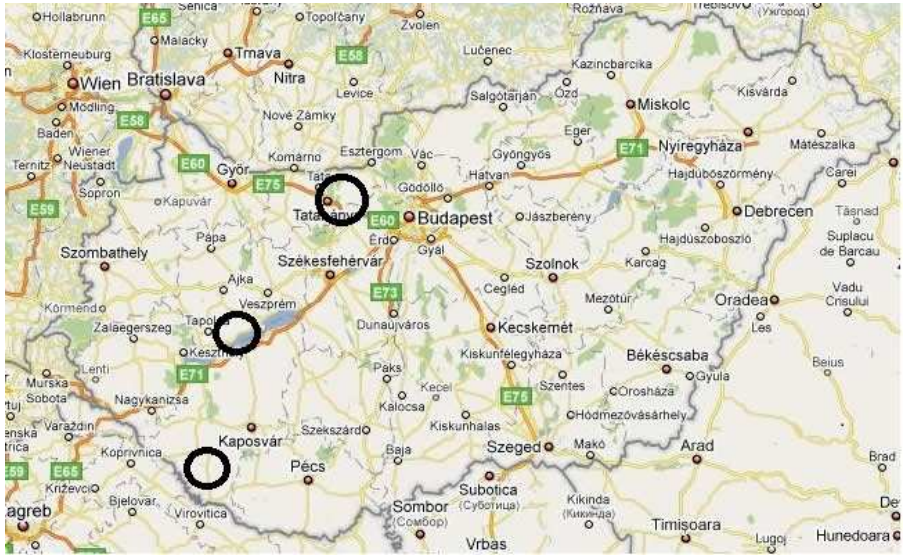
Alphaguard

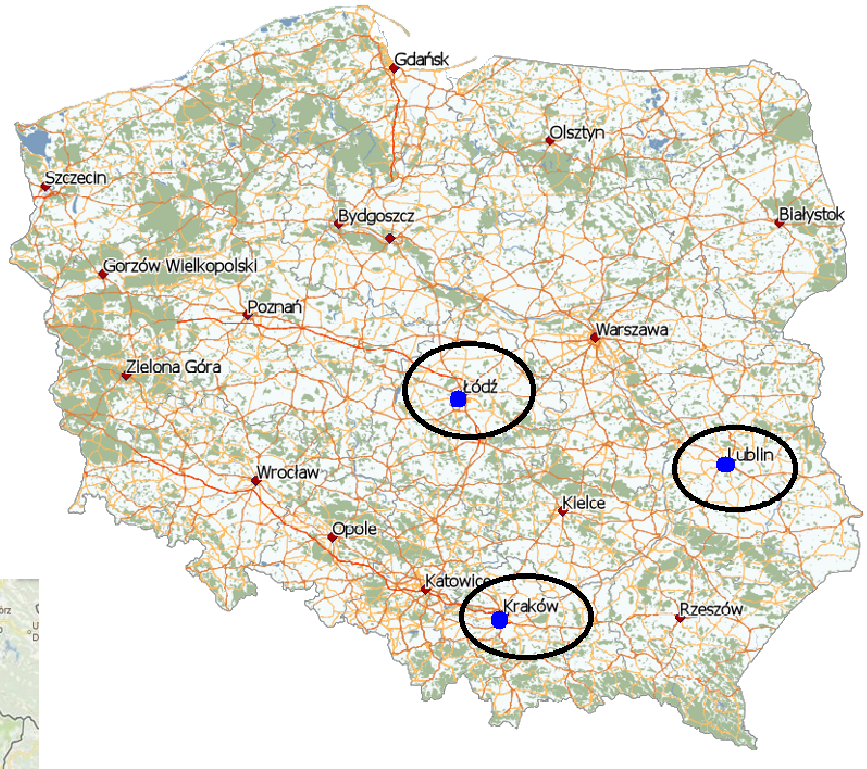
Radim 2P

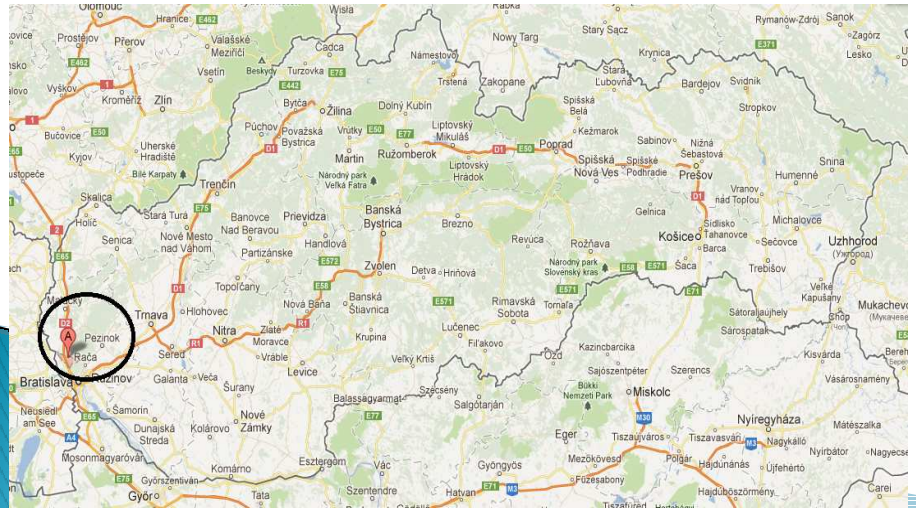
RAD7

Visegrad Fund

Location of the measurements







Visegrad Fund

Placing of the detectors

- 900 detector set in one year
- 1-2 sets in one dwelling
- 15-20 cm from the wall with spacer
- harmonized questionarie
- 1-3 months exposure

Visegrad Fund

Our thoron calibration chamber

- 210.5 L stainless steel
- Source: out of the chamber
- Measured parameters:
  - Humidity
  - Temperature,
  - Air pressure

thoron ceramic source

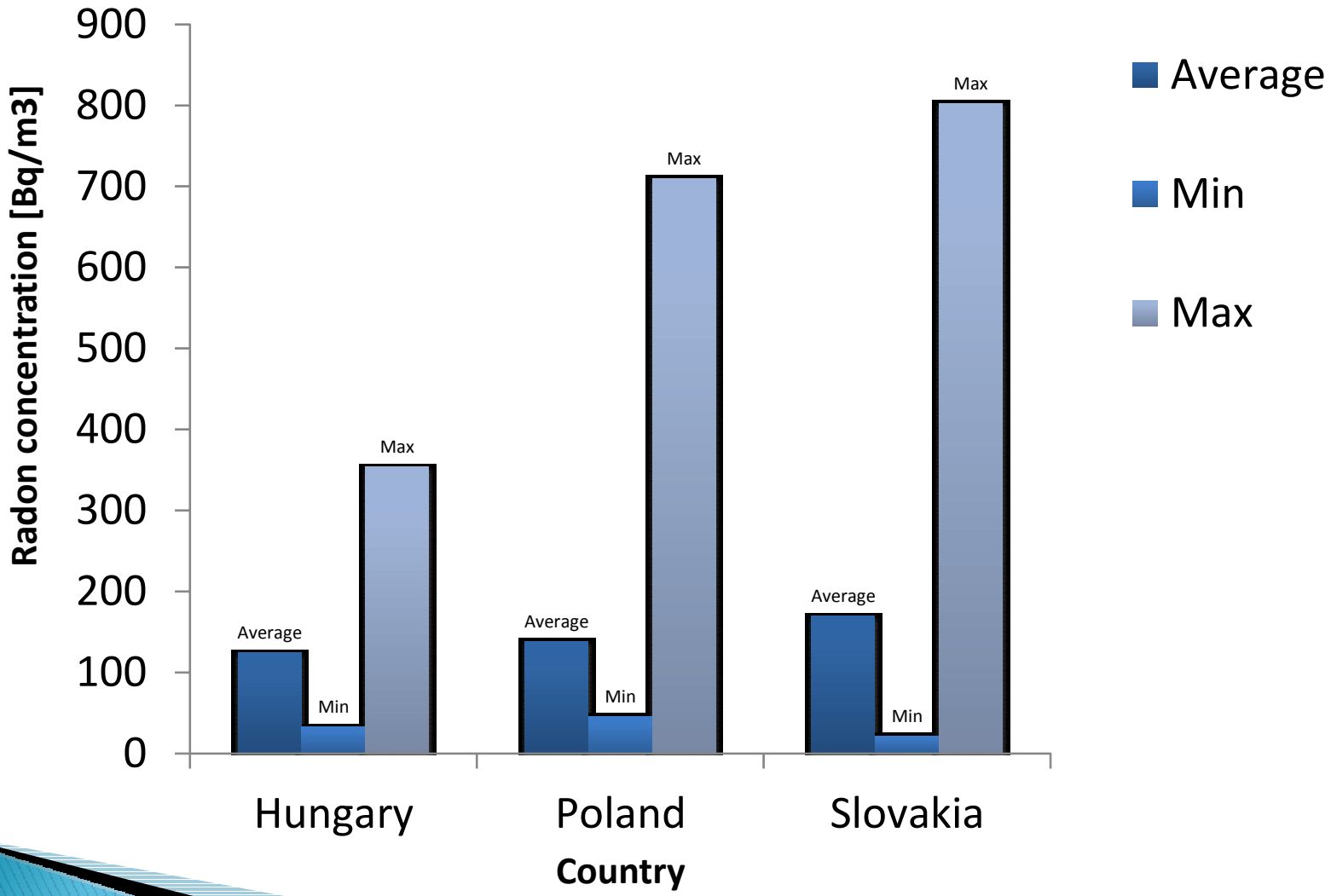
Visegrad Fund

Results

- we are after the first detector „harvesting”
- we have collected more than 300 detector sets
- until now only the raduet detectors are evaluated
- the other type of detector under evaluation - only partial results are presented

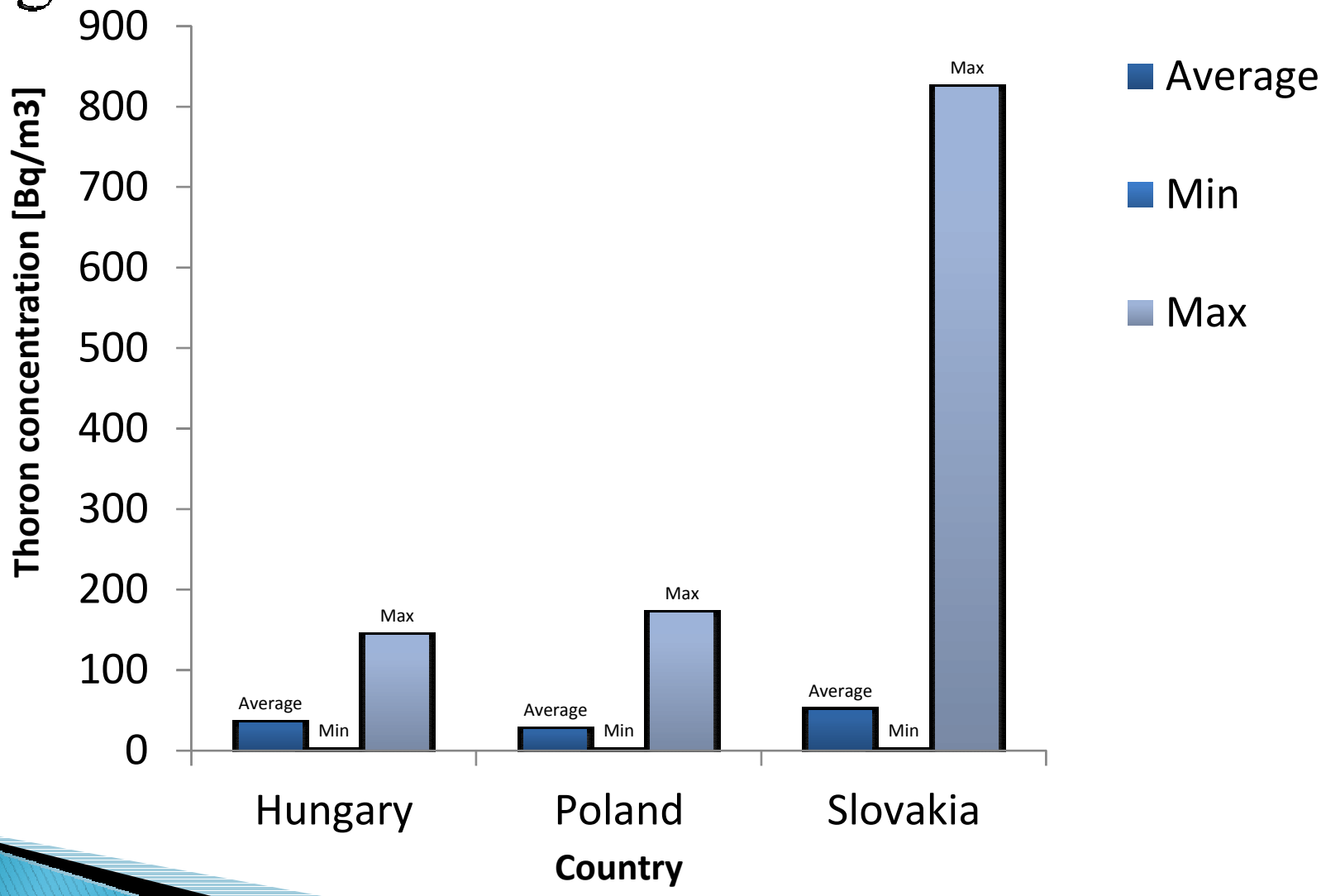
Visegrad Fund

Average radon concentration in the countries



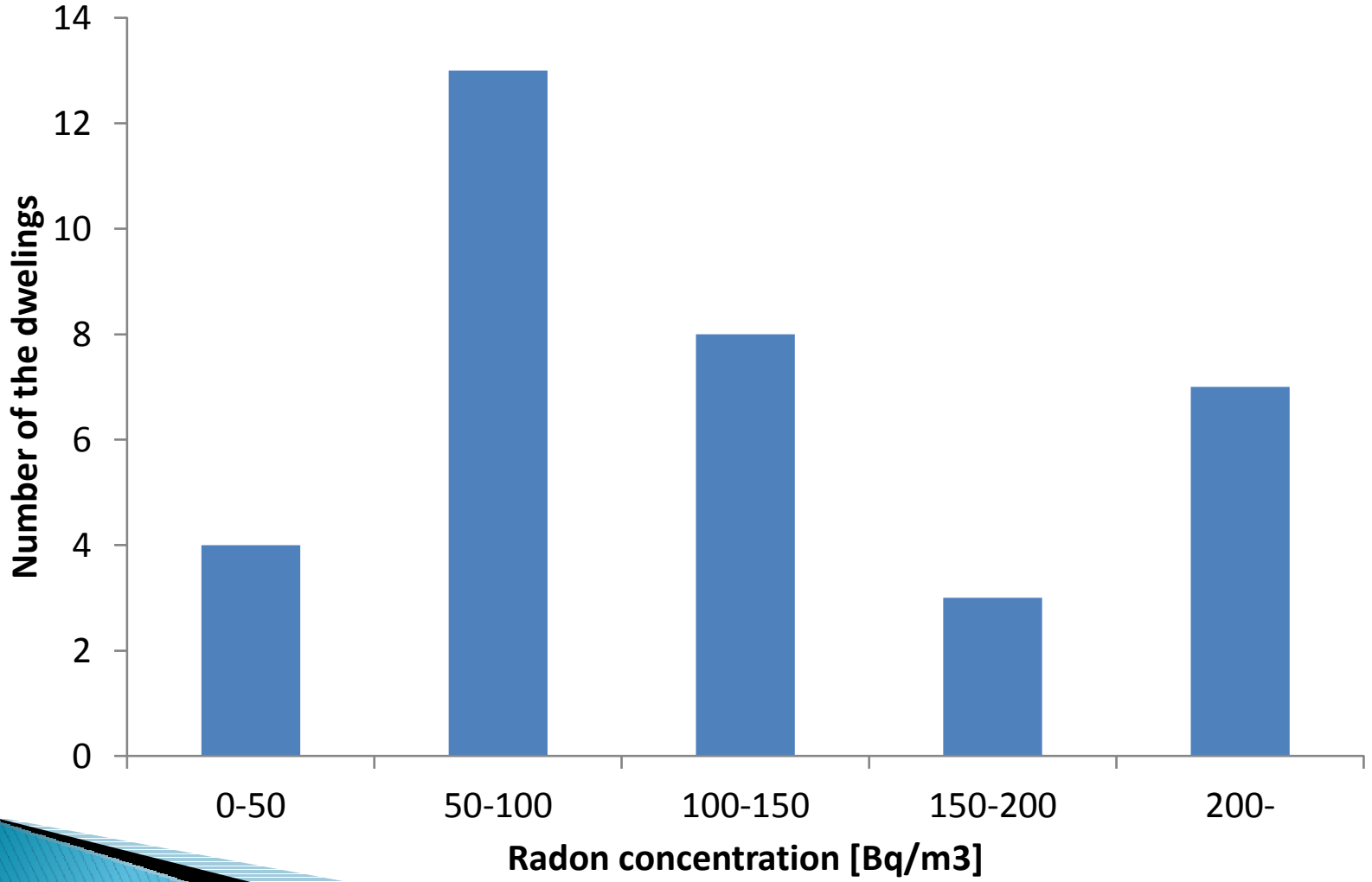
Visegrad Fund

Average thoron concentration in the countries



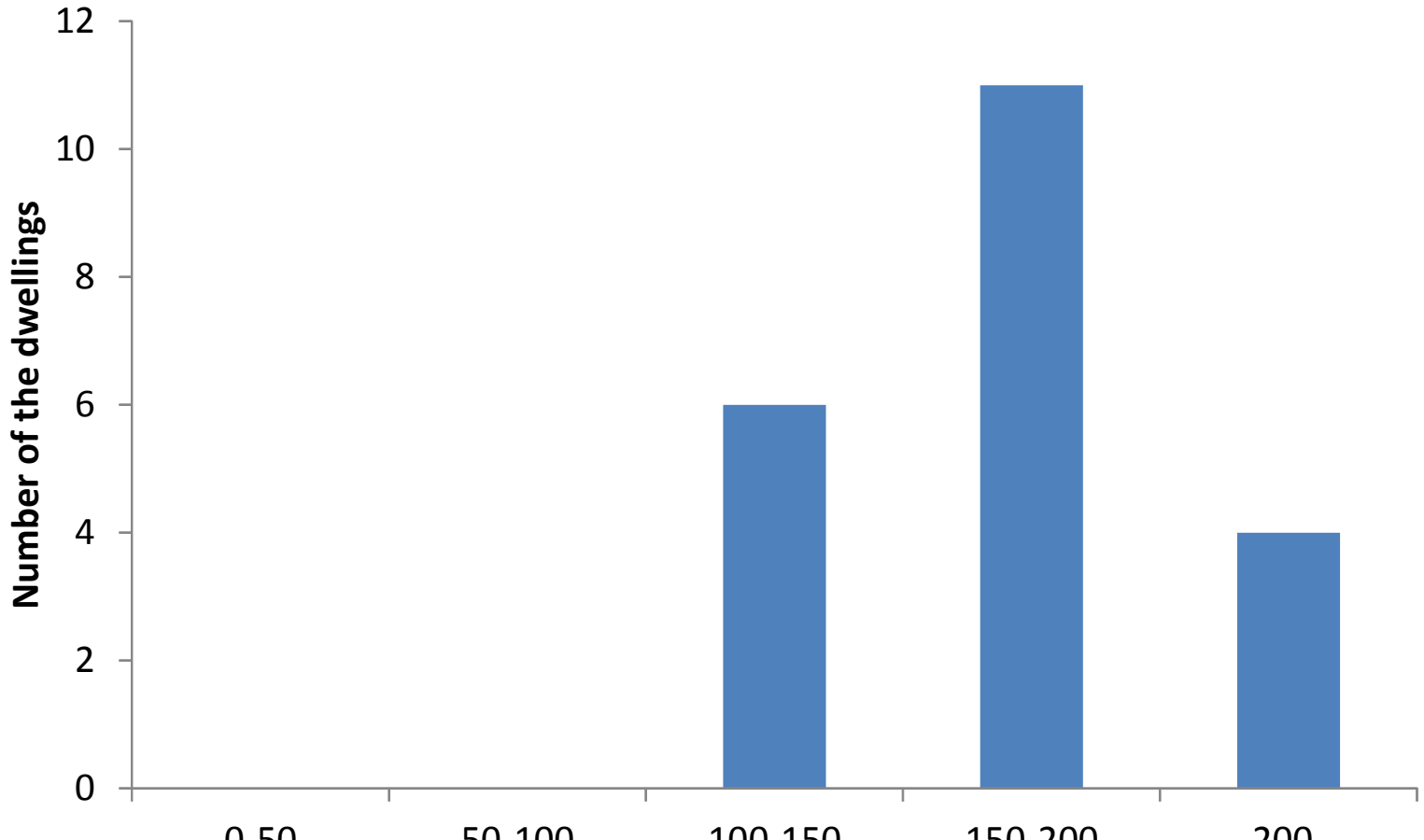
Visegrad Fund

Radon distribution in Poland



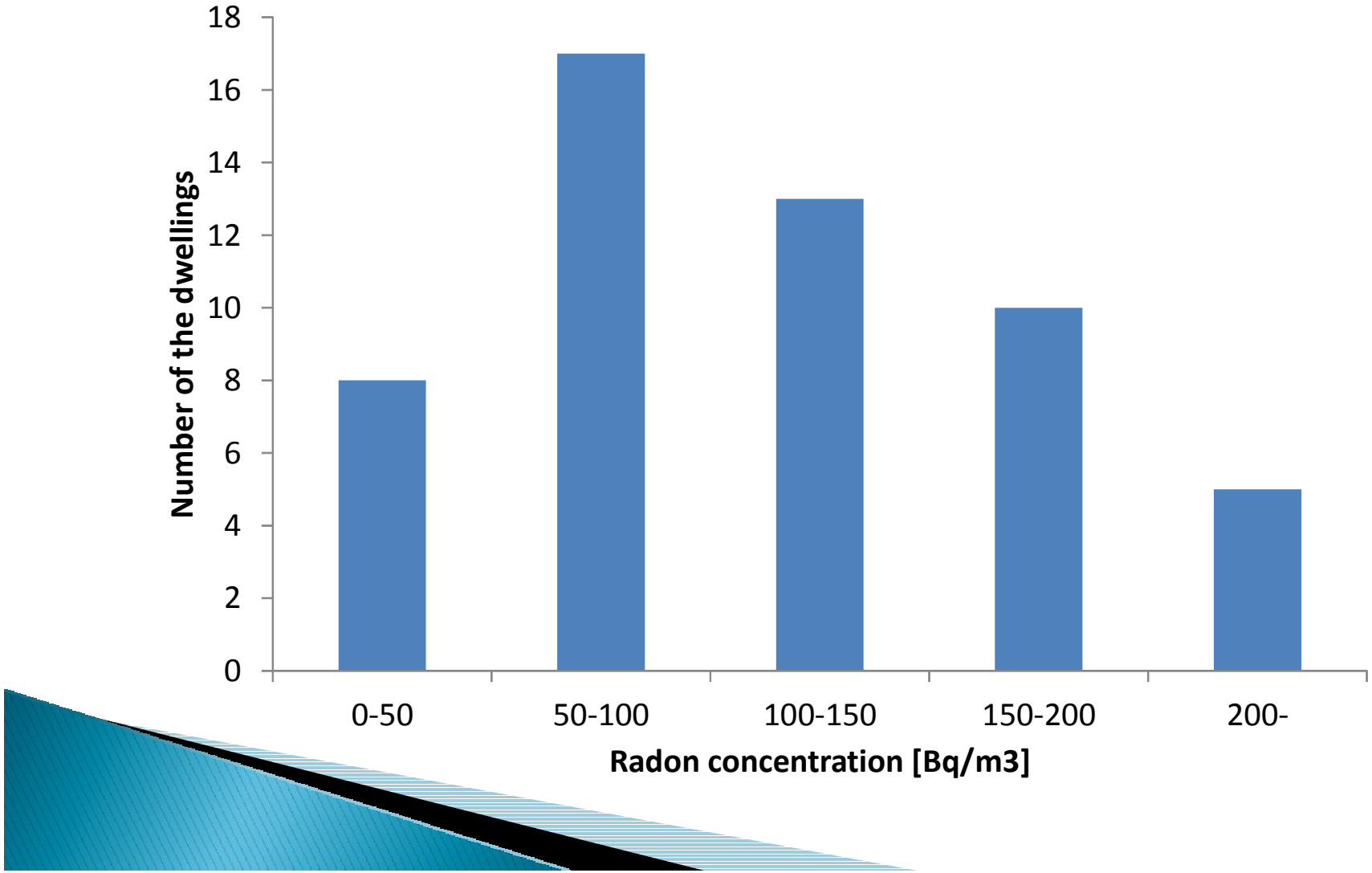
Visegrad Fund

Radon distribution in Slovakia



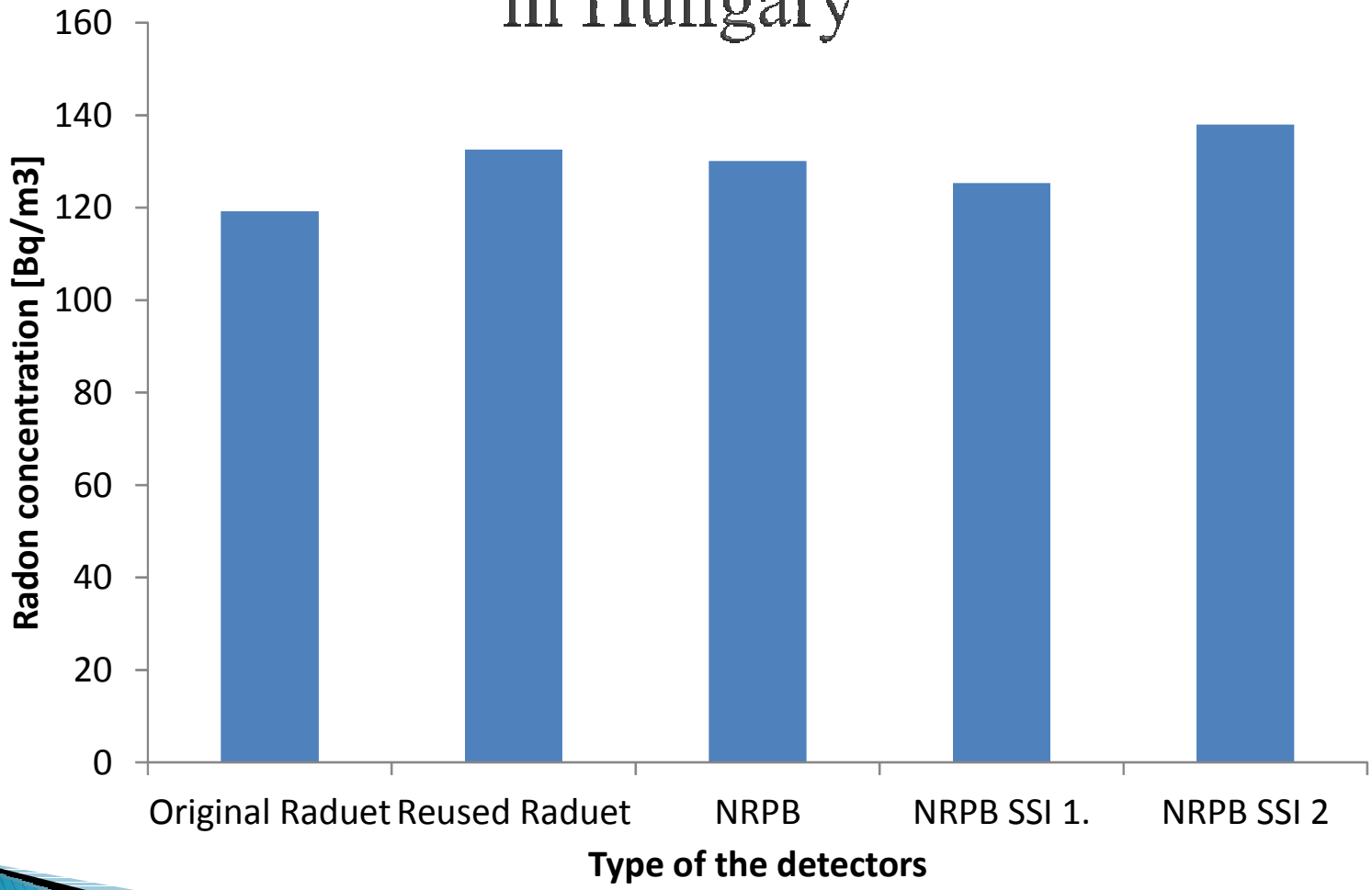
Visegrad Fund

Radon distribution in Hungary



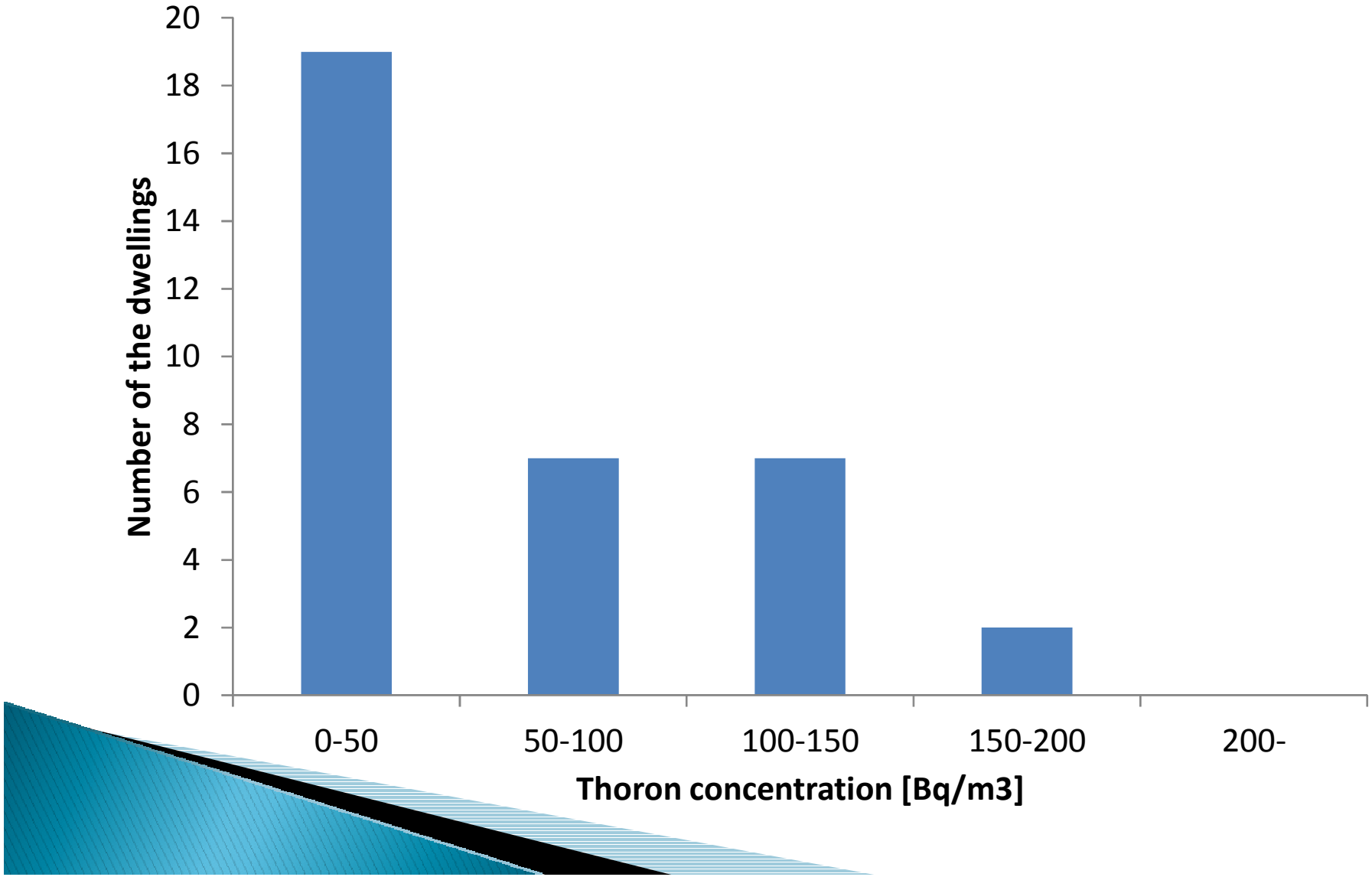
Visegrad Fund

Average radon concentration of the different detectors in Hungary



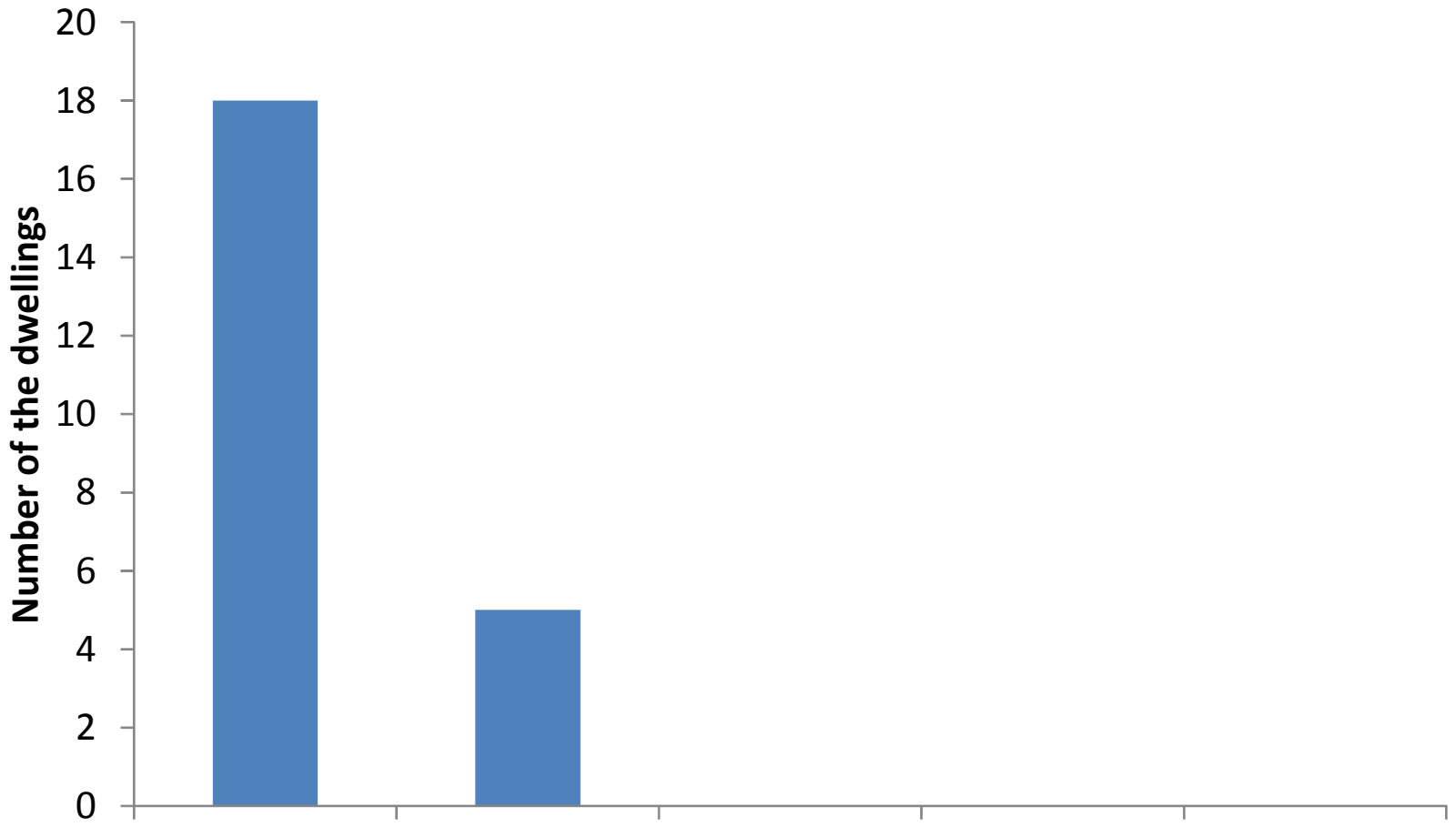
Visegrad Fund

Thoron distribution in Poland



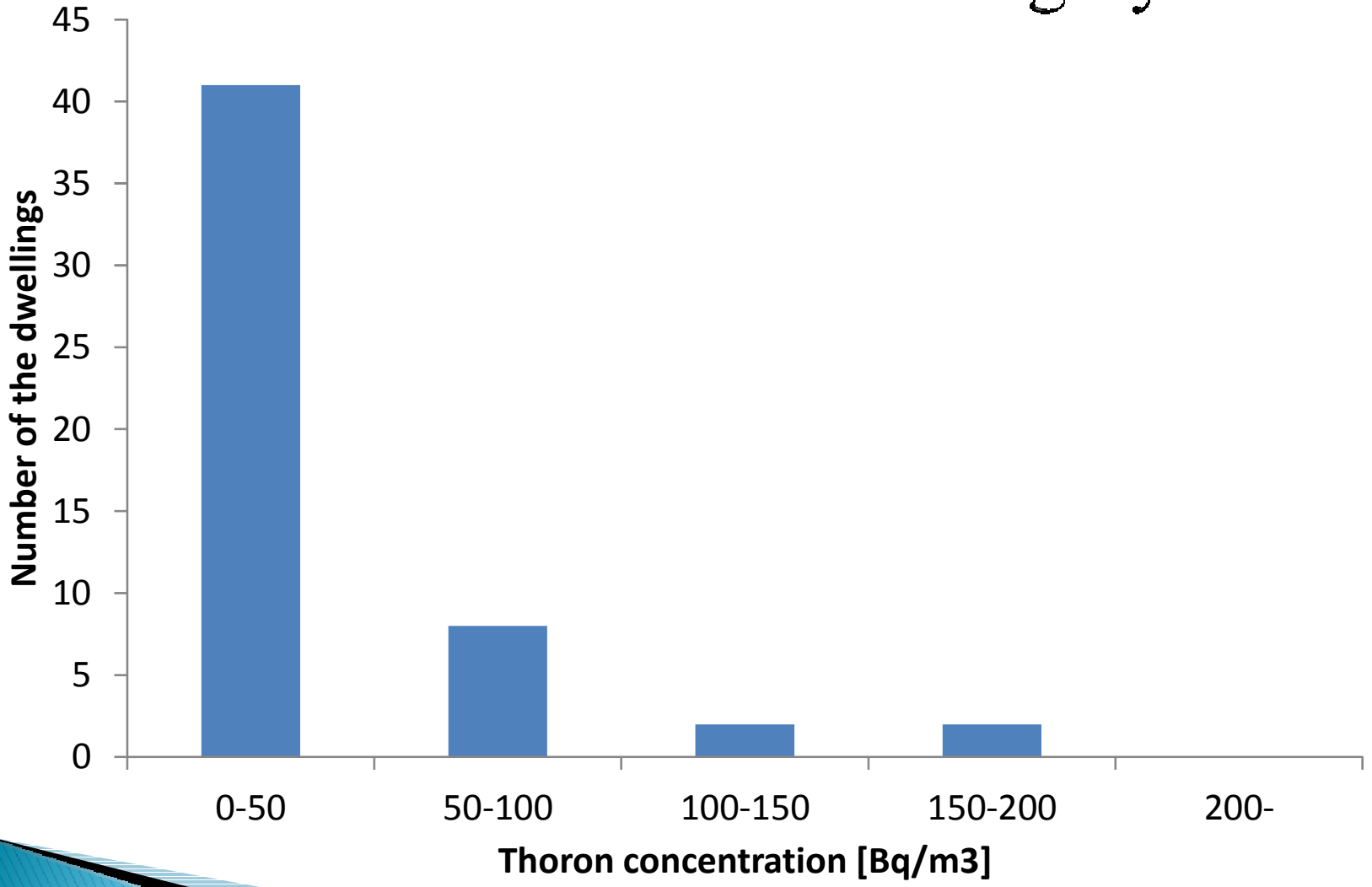
Visegrad Fund

Thoron distribution in Slovakia



Visegrad Fund

Thoron distribution in Hungary



Visegrad Fund

Conclusion

1. The average radon concentration and the radon concentartion distribution are simillar to the previouse surveys
2. The different CR-39 detectors gave a good and comparable data (the standard deviation was 20.9 % between the different type of detectors)
3. Each cuntry shows measurable thoron concentartion in the dwelling but relatively low concentration

Visegrad Fund

Social Organization for Radioecological Cleanliness

Thank you for your attention!