CITIZEN SCIENCE, PARTICIPATORY RESEARCH (Part 2): Air pollution and energy poverty case studies

4 June 2019
Patrik Oskarsson
Swedish University of Agricultural Sciences
patrik.oskarsson@slu.se
Outline

• Analysing air pollution (20 minutes)
• Case studies on air pollution and energy poverty (15 minutes)
• Group work (50 minutes)
• Discussion of case studies (20 minutes each)
• PM2.5 is very varied:
  • Traffic, road dust, waste burning, power plants, household stoves, agricultural burning, forest fires, desertification
  • All these will show up on pollution monitors
Socio-environmental air pollution monitoring

- Monitor where people live
- Target specific source of pollution
Monitor grid in close proximity to one another
• Daily pattern shows that cooking times result in major spikes
• 1000 set as monitor limit
• Non-coal cooking households have almost the same pollution load -> ”Secondary smoking”
Workshop

- Design studies on air pollution with energy poverty focus
  - Use air pollution monitors
  - Complement air pollution monitoring with other sources of data suitable for your case
  - Try to find a specific target audience for the conclusions of your study
Case studies for group discussion

1. Oslo: Wood-fired heating
2. Krakow: Coal heating at home
3. London: Design of low pollution walks to bypass main streets
4. Brussels: Schools located along busy inner ring road
5. Korba, India: Explaining air pollution data
6. Stockholm: Clean air bike lanes
Case 1 Oslo: Wood-fired heating

• Wood fire can be a low cost way to heat your house. Can save money and also reduce use of fossil fuels.

• But how can we understand its pollution consequences in an Oslo suburb?
  • Family houses not connected to central heating rely on either wood or electricity for heating in Oslo.

• Design a study which examines air pollution in an Oslo suburb with independent houses.
Case 2 Krakow: Coal heating

• Similar to the Oslo wood fire case, coal is used to heat homes in the winter.

• Coal generates more pollution, but alternative heating solutions might be lacking.

• Design a study which examines air pollution in Krakow where home coal pollution affects city-wide air quality.
Case 3: London Pollution-free Walkway

• Design a walking route which takes you away from city traffic

• Commuters walk between stations along the main road today. How can we find out what is a better route?

https://urbanpartners.london/wellbeing-walk/
Case 4: Brussels schools along inner ring road

- A number of schools are located along the Brussels inner ring road for easy drop off. This however also means increased pollution exposure for the children
- The popularity of diesel vehicles are reducing but are still among the highest in Europe
- Design a study to examine air pollution in Brussels schools
Case 5: Explaining data in Korba

• Journalists have placed 5 air pollution monitors on roof tops targeting coal industry (power plants, mines and waste ponds).
• The buildings are spread across town on various middle class houses and offices.
• Now they want your help to know what the recorded graphs of pollution mean.
• How do you make sense of the data from an energy poverty perspective? Or do you want to redesign the study before helping out?
Case 6: Air pollution affecting people on bicycles

• Many cities want residents to bike for improved health and reduced emissions

• But how do we know what the air quality is for bicycle commuters? Design a way to investigate air pollution effects of bicycle commuters in Stockholm (left photo below).
Group work

• Work in groups for 50 minutes
• Prepare to discuss these questions:
  • How will you use the monitors for your case?
  • What other details do you need to know to draw conclusions?
  • Who is the target audience for your conclusions?