



IOŚ-PIB

INSTYTUT OCHRONY ŚRODOWISKA
PAŃSTWOWY INSTYTUT BADAWCZY

ZONE Project

Integrated system for support policy and programs
of residential emissions abatement in Poland

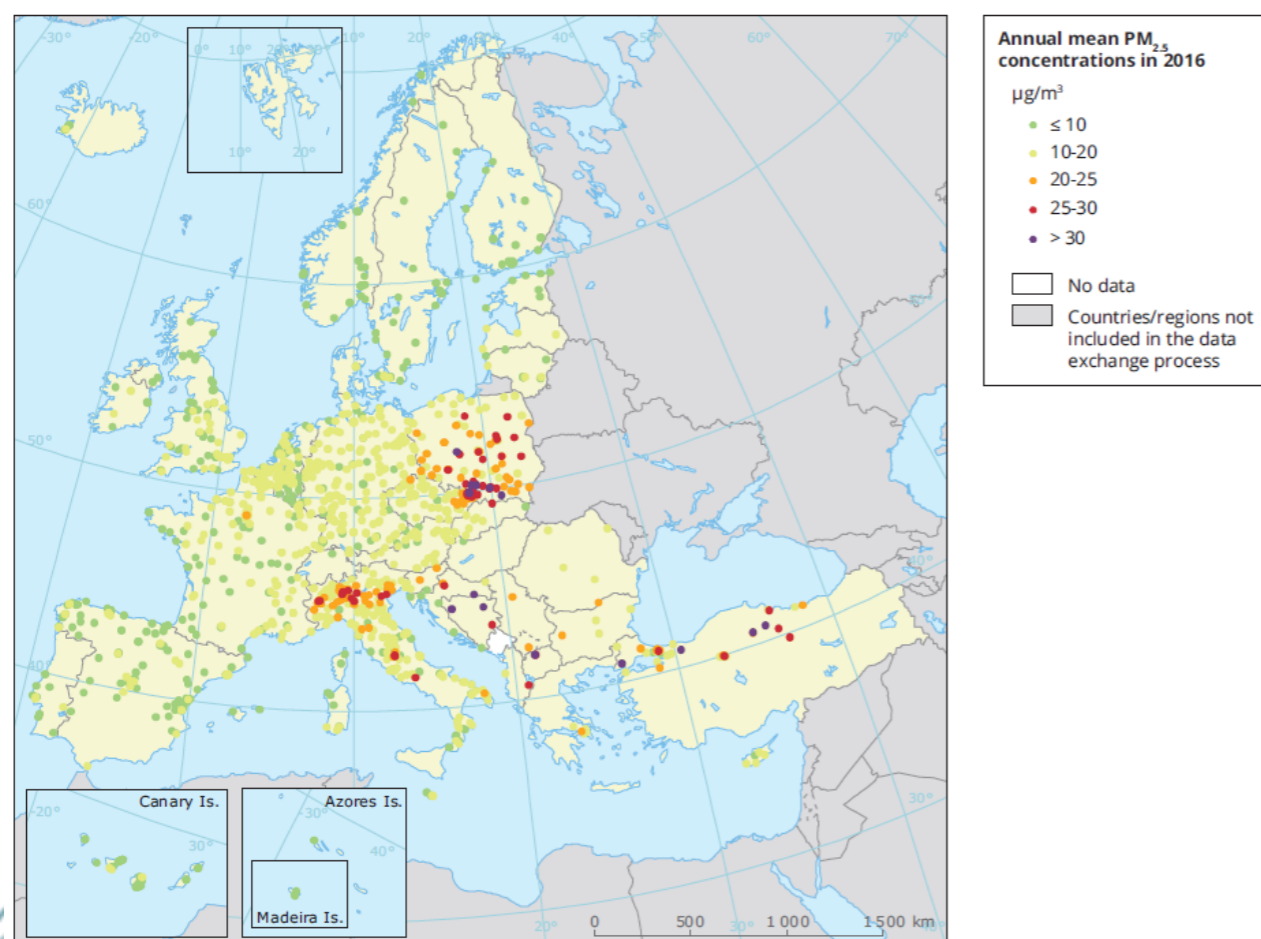
A Pilot Study

Tomasz Pecka & Project Consortium

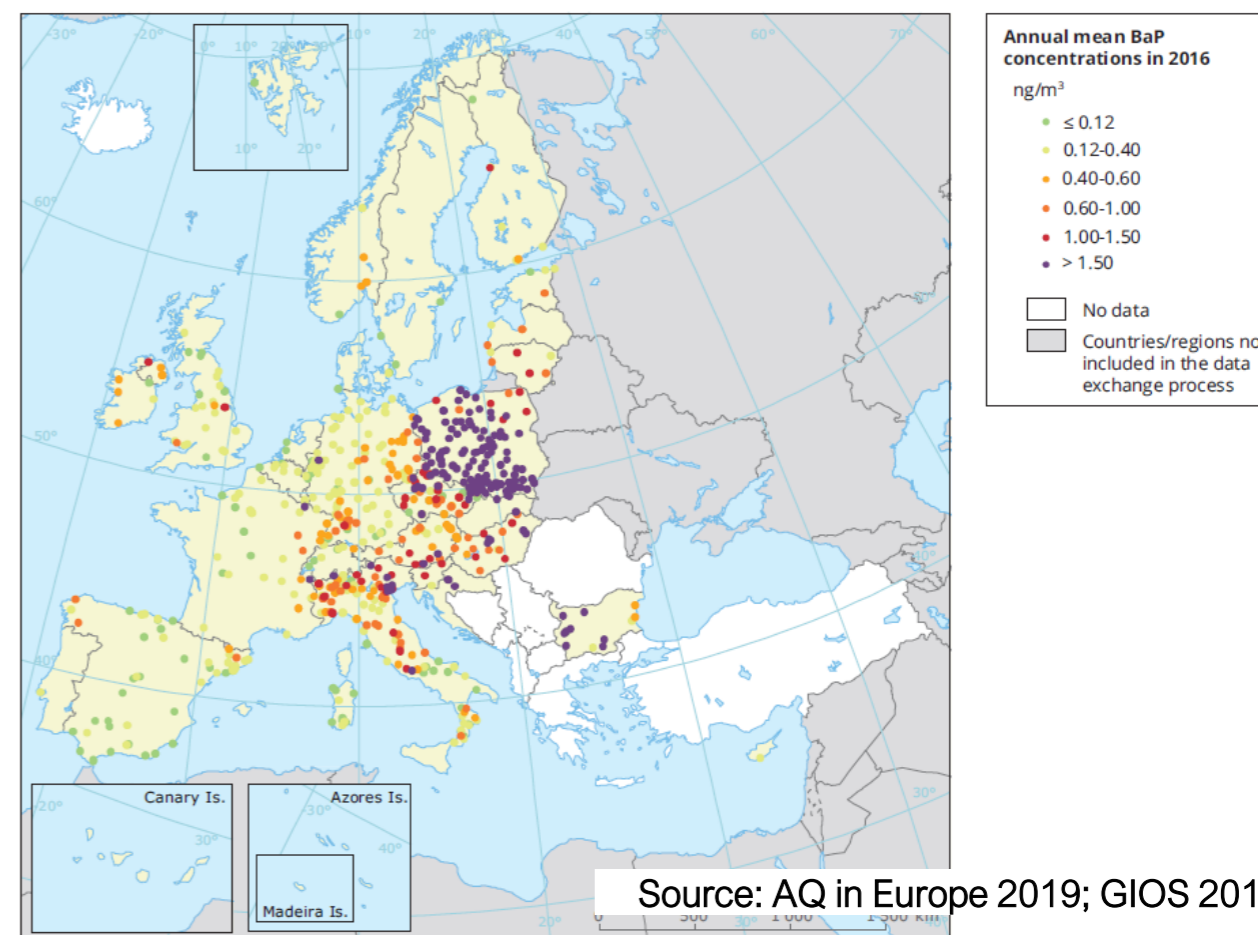
Institute of Environmental Protection – National Research Institute (IOŚ-PIB)

Air Quality in Poland (2016)

Map 3.3 Concentrations of PM_{2.5}, 2016 — annual limit value



Map 7.1 Concentrations of BaP, 2016



Source: AQ in Europe 2019; GIOS 2017

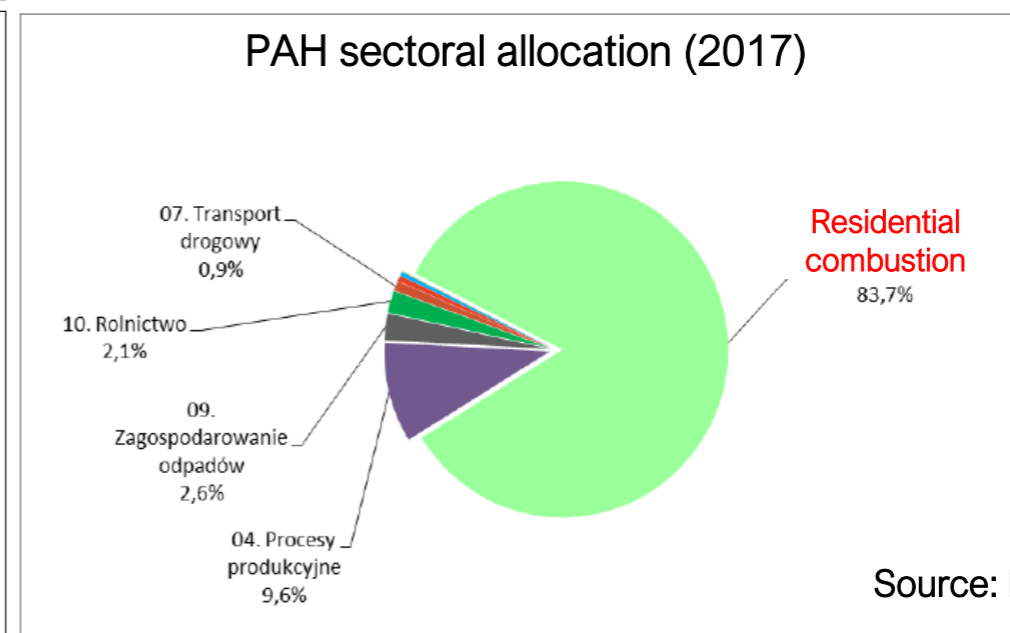
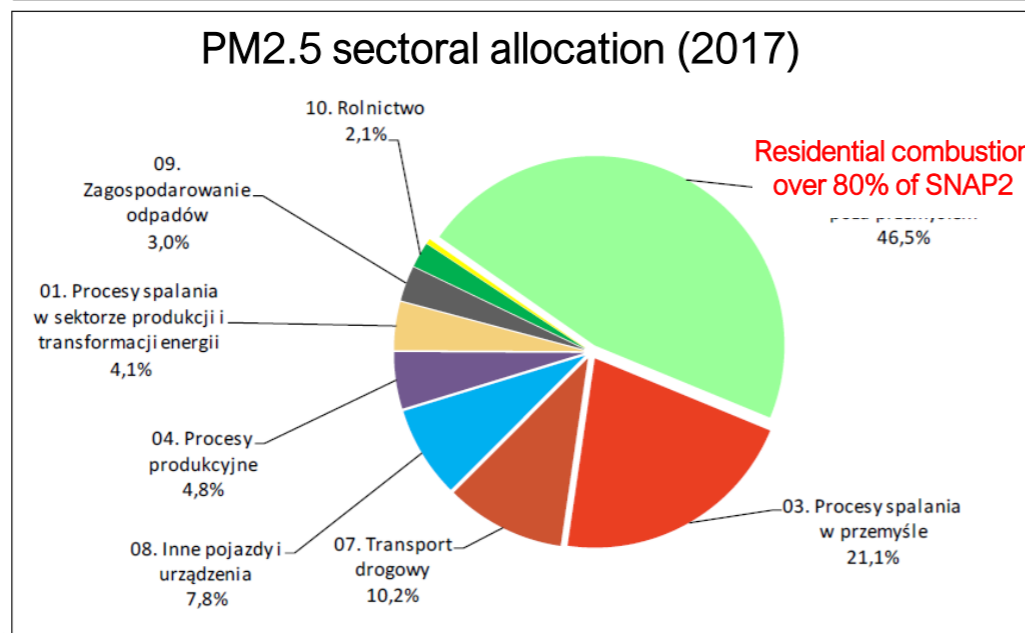
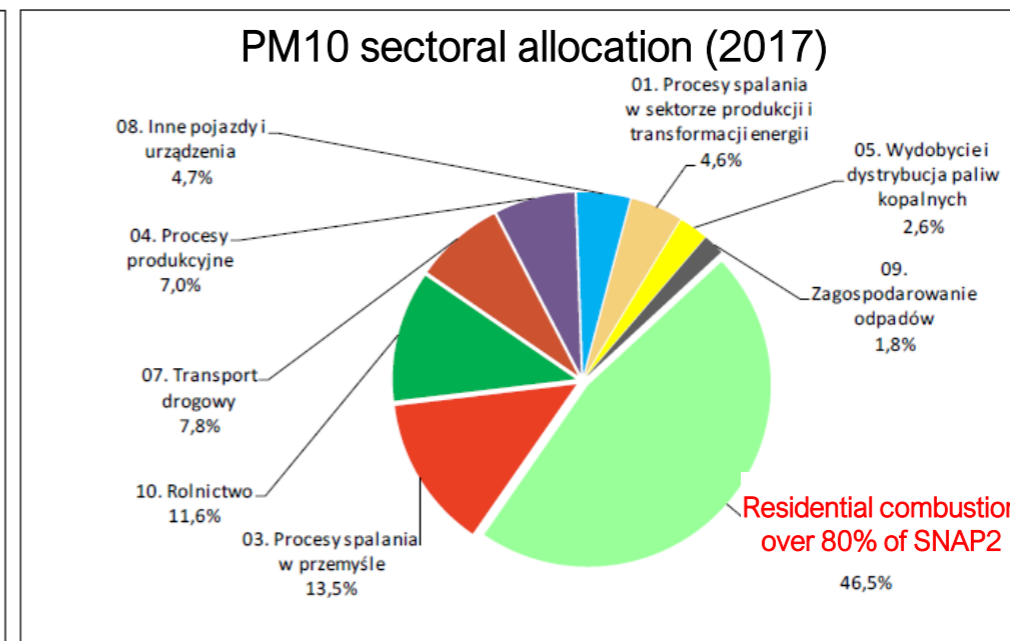
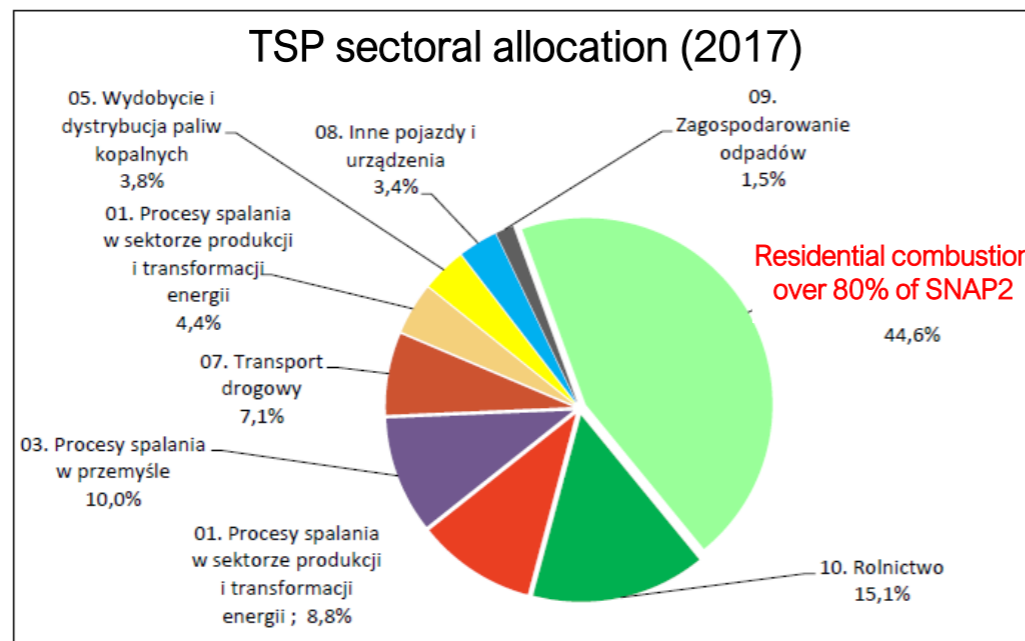
PM_{2.5} exposure (annual mean 22 µg/m³) with 30-31 µg/m³ for Silesia and Krakow Agglomerations in Southern Poland (population ca. 4 mln)

BaP annual mean 4.9 ng/m³ with max 17.8 ng/m³ in Central and Southern Poland

Health impacts of PM_{2.5} :

- Prematured deaths = 44,500
- YLL = 533,300 1403 /100,000 inhabitants (EU-28: 820 /100,000 inhabitants)

Emissions from residential combustion in PL

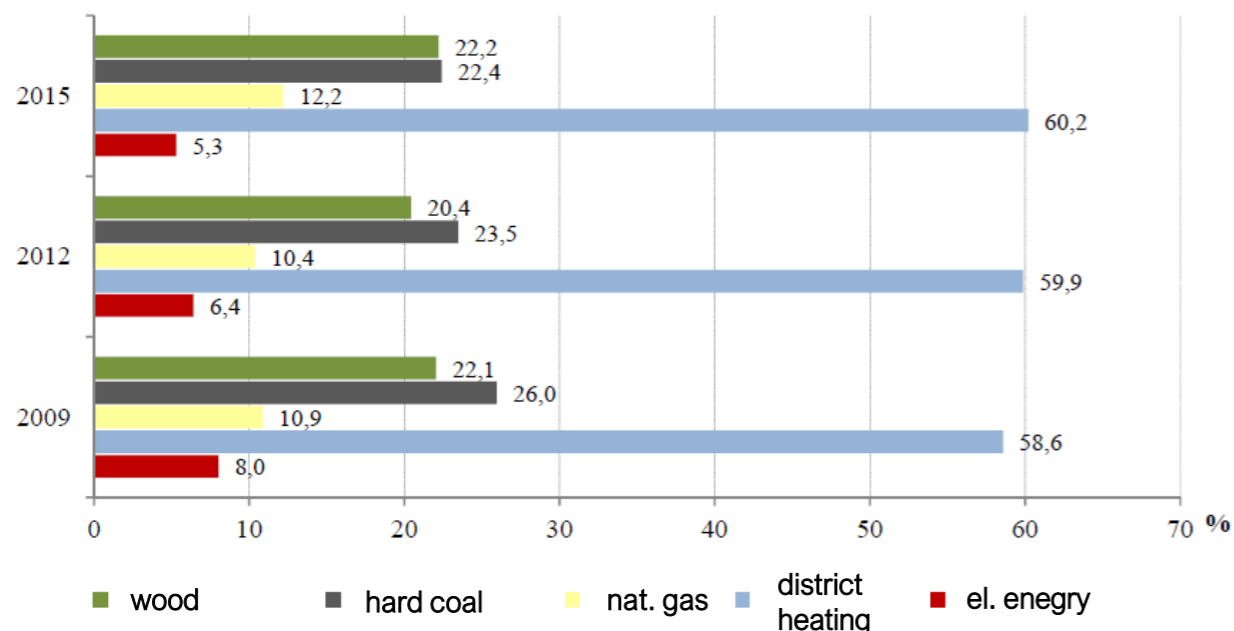


Source: KOBiZE, 2016

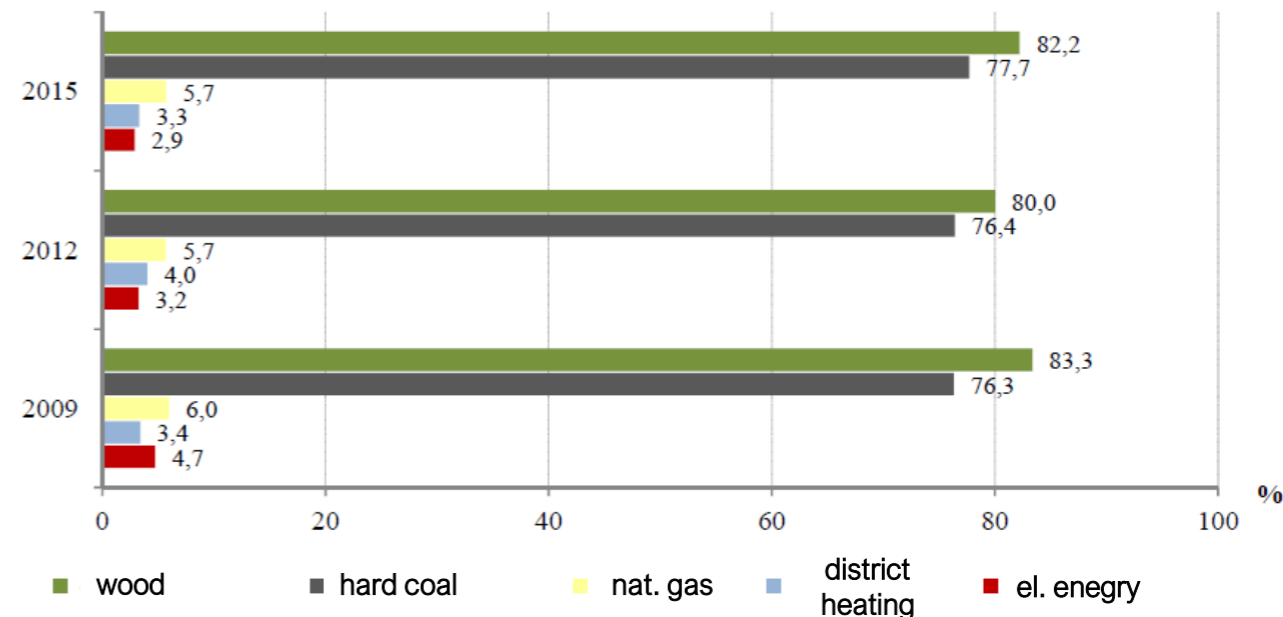
TSP – residential combustion & district heating (44.6%), agriculture (15.1%) industrial combustion (10.0%),
 PM10 – residential combustion & district heating (46.5%), industrial combustion (13.5%), agriculture (11.6%)
 PM2.5 – residential combustion & district heating (46.5%), industrial combustion (13.5%), road transport (10.2%)
 PAH – residential combustion & district heat (83.7%), industry without combustion (9.6%)

Fuels and residential combustion PL

URBAN dwellings



RURAL dwellings



Source: GUS, 2016

Large differences between urban and rural areas in heat supply and fuels in use:

- Urban: 60% district heating and 22% solid fuels (coal and wood),
- Rural: over 80% heat comes from solid fuels (wood and coal),

More than one heating source (e.g. district heating and stoves) and/or multi-fuel furnaces (eg. both coal and wood) are in use.

Cities and Towns in Poland with population 22.6 mln (61% of total population) cover 7.1% of total country area

ZONE Project – general goals


- Development of an **inventory system (pilot study)** of residential combustion sources with additional tools for data analysis,
- Developing a methodology for estimating the external health costs of air pollution,
- Preparation of draft legal regulations to enable the launch of ZONE nationwide as a residential combustion inventory system



ZONE Project

ZONE Project Consortium:

- ✓ Ministry of Entrepreneurship and Technology (**Project Leader**)
- ✓ National Institute of Telecommunications (IŁ-PIB)
- ✓ Institute of Environmental Protection – National Research Institute (IOŚ-PIB)
- ✓ Institute for Chemical Processing of Coal (IChPW)
- ✓ Krakow Smog Alert (KAS)



Pilot study: 9 municipalities (agglomeration, towns, rural)

www.zone.gov.pl

Pilot Study – Municipality level

Pilot study is conducted for **9 municipalities** (agglomeration, urban, rural) with tight cooperation with local government.

Tasks to be conducted for each municipality:

- on-line database and data collecting system for residential buildings and dwellings and associated combustion sources,
- emission measurement for combustion sources,
- air quality measurement and modelling incl. emission scenarios based on ZONE data
- spirometry examination for children.

Local government is involved in to data collecting system. Buildings and sources controls are conducted by:

- chimney sweeps, municipality police officers, engineers,
- land owners are also encourage to filling forms.

Small combustion sources inventory system

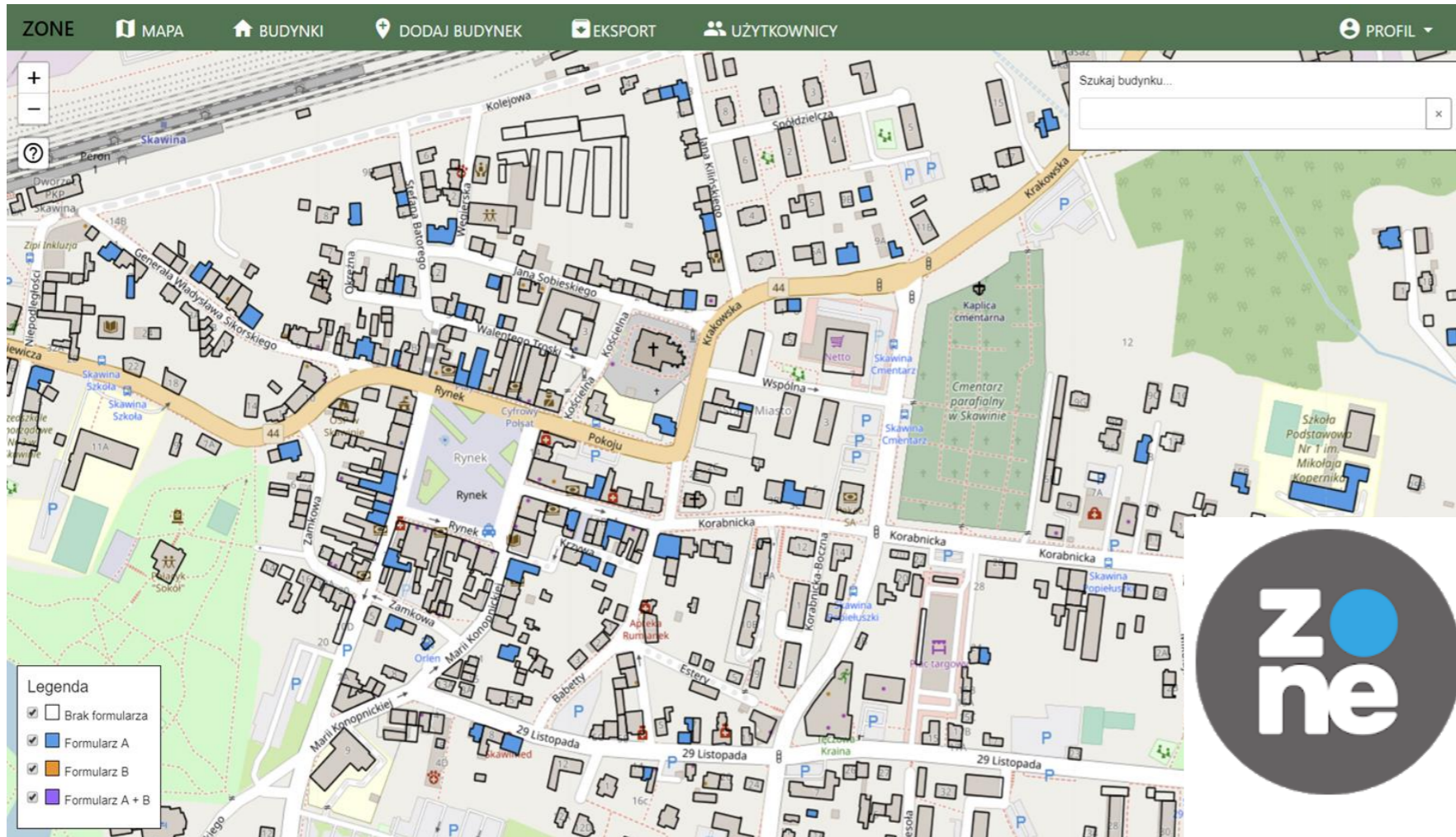
Dataset collected in the ZONE system:

- Building address and coordinates,
- **Building**: age, dimensions, area and volume, general construction materials, wall and ceiling insulation details, stack height and diameter,
- **Heating Source**: heat supply type (individual, external or both), for individual source: age and class, type (stove, boiler, etc.), thermal power, fuel(s) type, fuel used per year, emission TSP and CO (if measurements done).

Additional spatial data:

- Buildings from national inventory system (BDOT),
- District heating supply grids (from local operators).

Small combustion sources inventory system



The inventory and control are in progress...



ZONEapp

Instytut Łączności - Państwowy Instytut Badawczy Narzędzia

PEGI 3

Aplikacja jest zgodna ze wszystkimi Twoimi urządzeniami.

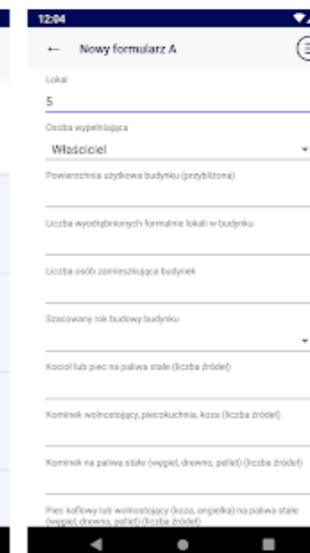
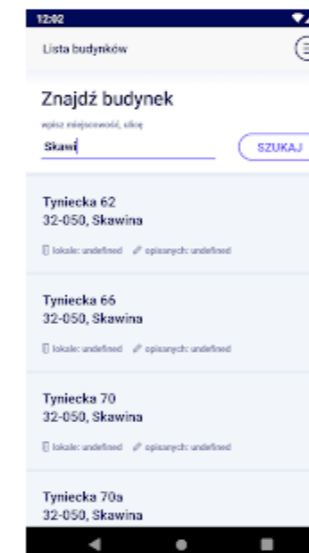
Zainstalowana

Data uploaded online via mobile apps during building and combustion sources control

Anyone may register and add data for his own address.

Current inventory progress:

- Buildings: 12,097
- Heating sources: 11,574



Projekt z dnia 9 września 2019 r.

ROZPORZĄDZENIE

MINISTRA PRZEDSIĘBIORCZOŚCI I TECHNOLOGII¹⁾

z dnia2019 r.

w sprawie katalogu danych gromadzonych w centralnej ewidencji budynków, w których
lub na potrzeby których eksploatowane są źródła spalania paliw o nominalnej mocy
cieplnej mniejszej niż 1 MW²⁾

Register of combustion sources with thermal power less than 1 MW

Draft legal regulation is ready to be proceed.

Expected implementation nationwide (data from National Statistics, 2015):

- **2478 municipalities (2019),**
- **5.5 mln residential buildings (ca. 50% single-family houses),**
- **13.4 mln dwellings,**
- **ca. 35% dwellings are using solid fuels for heating (ca. 4.7 mln (?) combustion sources <1MW)**

PMCOST – new project info

Sources and Chemical Composition of Particulate Matter in Poland and their Control Strategies (PMCOST)

founded by: HORIZON 2020

Duration: 2019-2022

Consortium:

- University of Wrocław (Wrocław, PL) Project Leader,
- UK Research and Innovation (Edinburgh, UK),
- Norwegian Meteorological Institute (Oslo, Norway),
- Imperial College of Science and Technology (London, UK),
- Institute of Environmental Protection – National Research Institute (Warszawa, PL)

Scope:

Improving methods used in Poland for:

- PPMs emission estimation and secondary PMs precursors,
- Air quality modelling at National (EMEP4PL) and local scales,
- impact assessment, source-receptor relationships and scenario analysis.

Kick off meeting in Oct. 2019

NeuroSMOG - new project info

NeuroSMOG

founded by: Foundation for Polish Science (FNP)

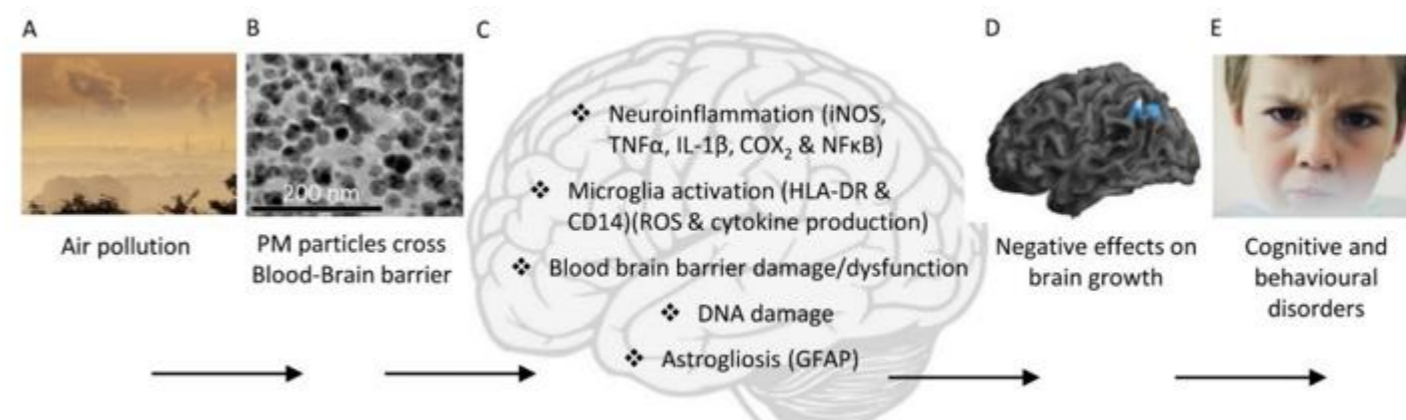
Duration: 4 years

Consortium:

- Jagiellonian University (Krakow, PL) Project Leader,
- Institute of Environmental Protection – National Research Institute (Warszawa, PL)

Scope:

- Research area: Krakow and its suburban area,
- Reconstruction of air quality for past 15 years,
- Human exposure assessment,
- Assessing air quality effects on human brain with neuroscanning methods and behavioural assessment (ca. 800 children study).



Kick off meeting, Dec. 2019

Thank you for your attention

tomasz.pecka@ios.edu.pl



#ŚrodowiskoŻyciem

