



**Scalable financing mechanism to facilitate thermo-modernisation and replacement of inefficient boilers in Silesia and Małopolska**

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## Catching-up Regions Initiative

- An innovative initiative launched by Commissioner Crețu to **overcome key development bottlenecks** and to **maximise performance of Cohesion Policy** in low-income regions - focus on innovation and growth;
- Implemented in a **partnership with the World Bank, the Ministry for Investment and Development and several Polish regions**;
- Financed from **EC Technical Assistance**: EUR 1.3 million (250,000 for EE component);
- Multi-disciplinary approach: focus on spatial planning, R&D transfers, business inspections and **energy efficiency in single family houses (SFB)**;
- **Implementation period**: June 2017 – May 2018

# Energy efficiency in SFB

## What?

Improving EE in heating systems in SFB and lowering low-stack pollution through a scalable financial instrument.

## Why?

Air pollution costs Poland EUR 26 bn per year (medical cost, reduced productivity etc). 50% of harmful air releases come from residential heating.

77% of SFBs in Małopolskie (> 430,000 houses) and 86% in Śląskie (470,000 houses) are heated by solid fuel boilers. 1/2 of them were at least 10 years old (2016). All kind of solid fuels are burned.

## When?

- November 2017: diagnosis part
- December 2017: proposal of financing options for poor and non-poor SFB
- April – May 2018: design of the scheme

## Key findings for Silesia and Małopolska

- **Public funds (including EU funding) are limited** and do not properly involve private sector – estimated investment cost for replacement and thermal retrofit = EUR 6.5 bn for the non-poor and EUR 1.2 bn for the poor households (two regions only);
- Poland just introduced quality **standards** concerning solid fuels;
- **Inadequate insulation**: 1/3 of SFBs in Małopolskie and 1/2 in Śląskie lack insulation of external walls; there are no support schemes for thermal retrofit;
- **Boliers replacement rates** under **air quality plans** are not met: only 1-2% of the objective achieved;
- **No coordination between existing schemes**: multiple and competing financing schemes from different sources, many are poorly targeted and used;
- **Complicated procedures, high risks and significant transaction costs**;

# Objectives of the financial instrument

- **Address poor households**
  - Trigger boiler replacement and thermo modernisation
  - Address energy poverty (the used fuels after the boiler change may be more expensive)
- **Address non-poor households**
  - Incentivise boiler replacement and thermo modernisation
  - Trigger private investments

# Objectives determine solutions and costs

Replacement of old manually-fed coal boiler with eco-design automatic coal boiler & thermal retrofit of SFB			
	Only boiler is replaced	Only thermal retrofit of SFB (old boiler is retained)**	Boiler replacement + thermal retrofit of SFB**
Average Energy Savings (in KWh/sqm/yr)	127 KWh/sqm/yr	262 KWh/sqm/yr	319 KWh/sqm/yr
Fuel savings (coal use)	3.4 tons	5.3 tons	6.9 tons
Annual fuel cost savings (the new boiler requires higher priced coal)	-1,857 PLN	1,479 PLN	1,080 PLN
Total investment***	13,500 PLN	68,503 PLN	82,003 PLN
Annual reduction in particulate emissions	95 kg	42 kg	98 kg
Annual reduction in CO <sup>2</sup> emissions	- 4.1 tons*	4.0 tons	3.4 tons

Currently wood is often used as part of the fuel and will be replaced by other fuels; wood is CO<sub>2</sub> neutral;

## Cost overview

	Poor – Subsidies (through Public Financing Instrument)			Non-Poor (through Commercial Financing Instrument)		
	Number of SFBs	Unit Cost (PLN)	Total Investment	Number of SFBs	Unit Cost (PLN)	Total Investment
<b>Boilers</b>	91,000	13,500	PLN 1.2 b (€0.3 b)	819,000	13,500	PLN 11.1 b (€2.6 b)
<b>Thermal Retrofits</b>	72,800	50,000	PLN 3.6 b (€0.9 b)	327,600	50,000	PLN 16.4 b (€3.9 b)
<b>Total</b>			<b>PLN 4.9 b (€1.2 b)</b>			<b>PLN 27.4 b (€6.5 b)</b>

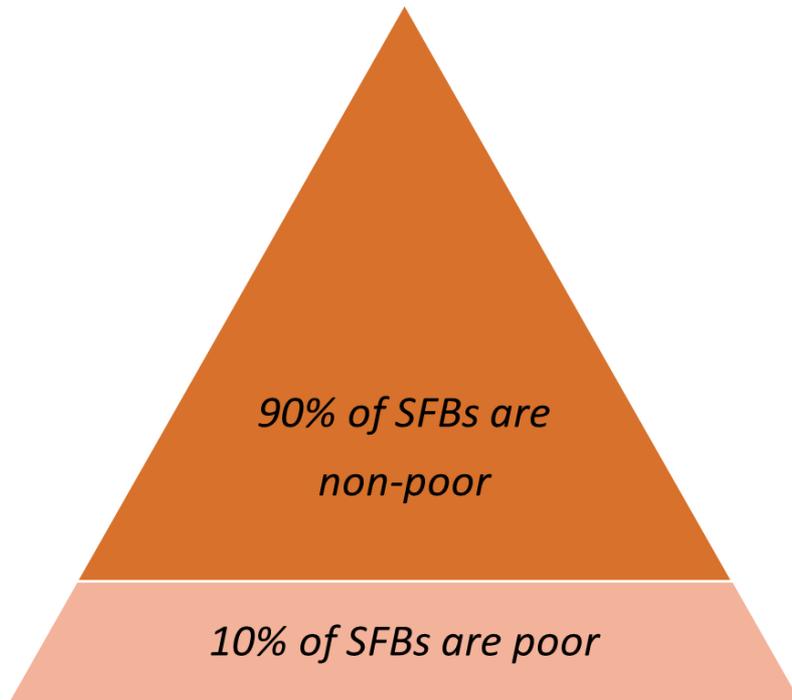
### Assuming that:

1. 90% of SFB are assumed to be non-poor (IBS methodology);
2. 80% of poor SFBs and 40% of non-poor require thermal retrofit

# Key challenges for the financial instrument

- Address effectively **pollution** and **energy efficiency** (size and quality of investments)
- **Lever public funds**
- **Affordability of households**
- **Energy poverty** affects 10% of households in Malopolskie and 7.2% of households in Śląskie (IBS estimates, but no official definition yet);
- High risks and transaction costs for intermediaries
- **High upfront cost and long payback period;**

# Proposed support mechanisms for the poor and non-poor households



## Commercial financing for the non-poor SFBs:

- Credit line through participating financial institutions;
- Risk-sharing

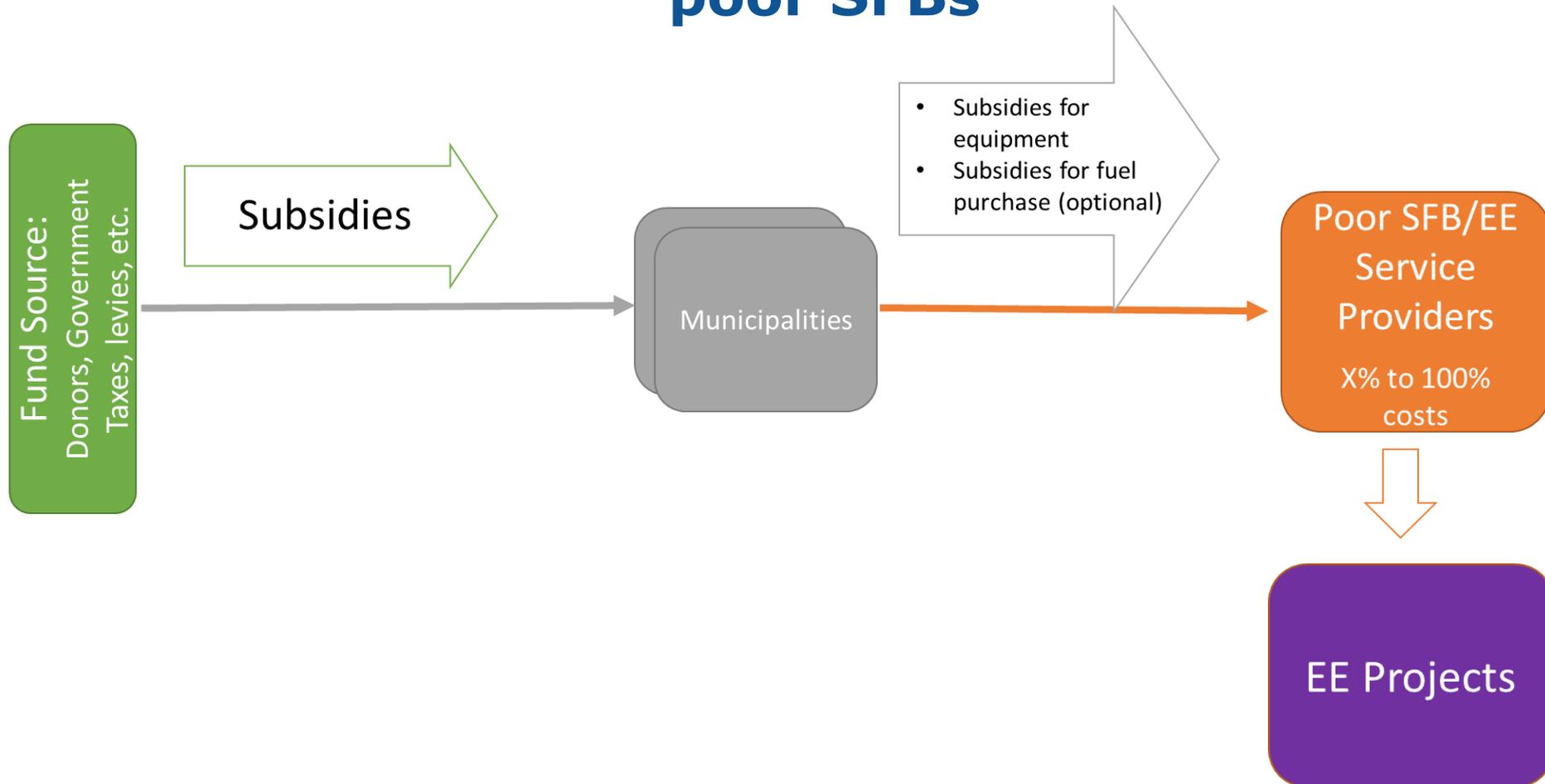
## Fiscal incentives:

- Subsidy of 10-15% as incentive?
- Income tax credit and rebates
- VAT reduction for eligible equipment

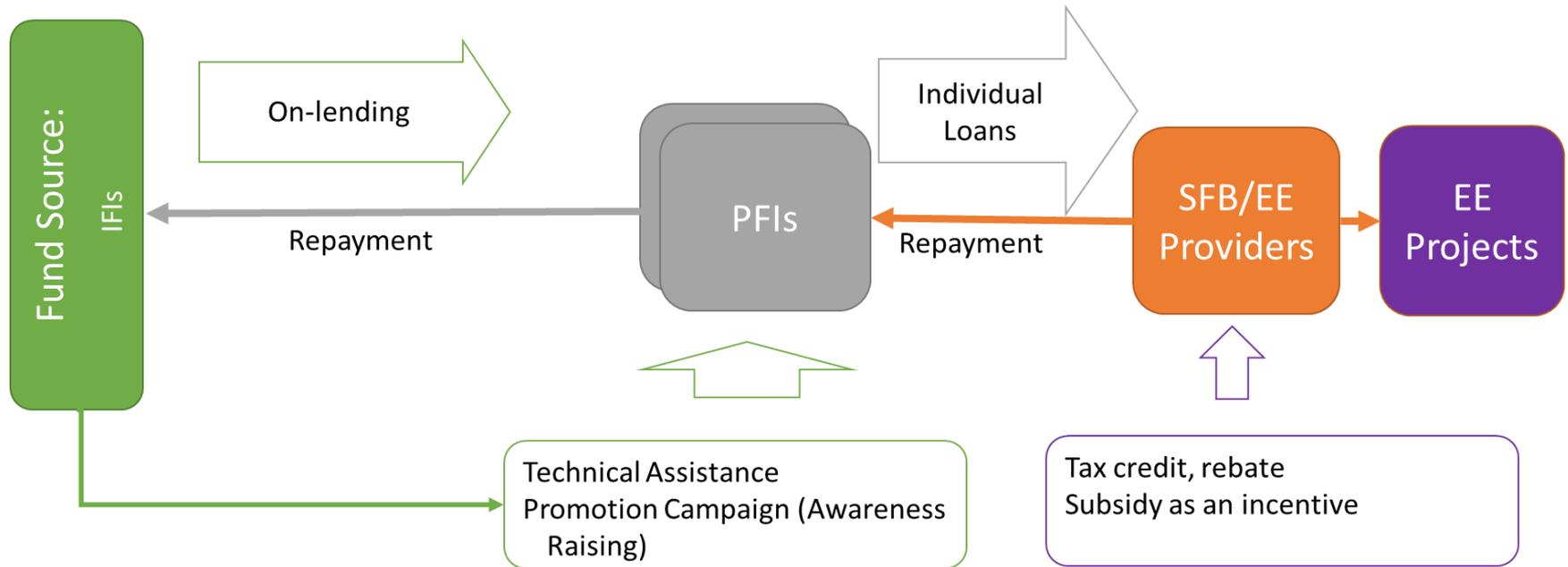
## Support mechanisms for poor SFBs:

- Subsidies (ideally, under 100%);
- VAT reduction

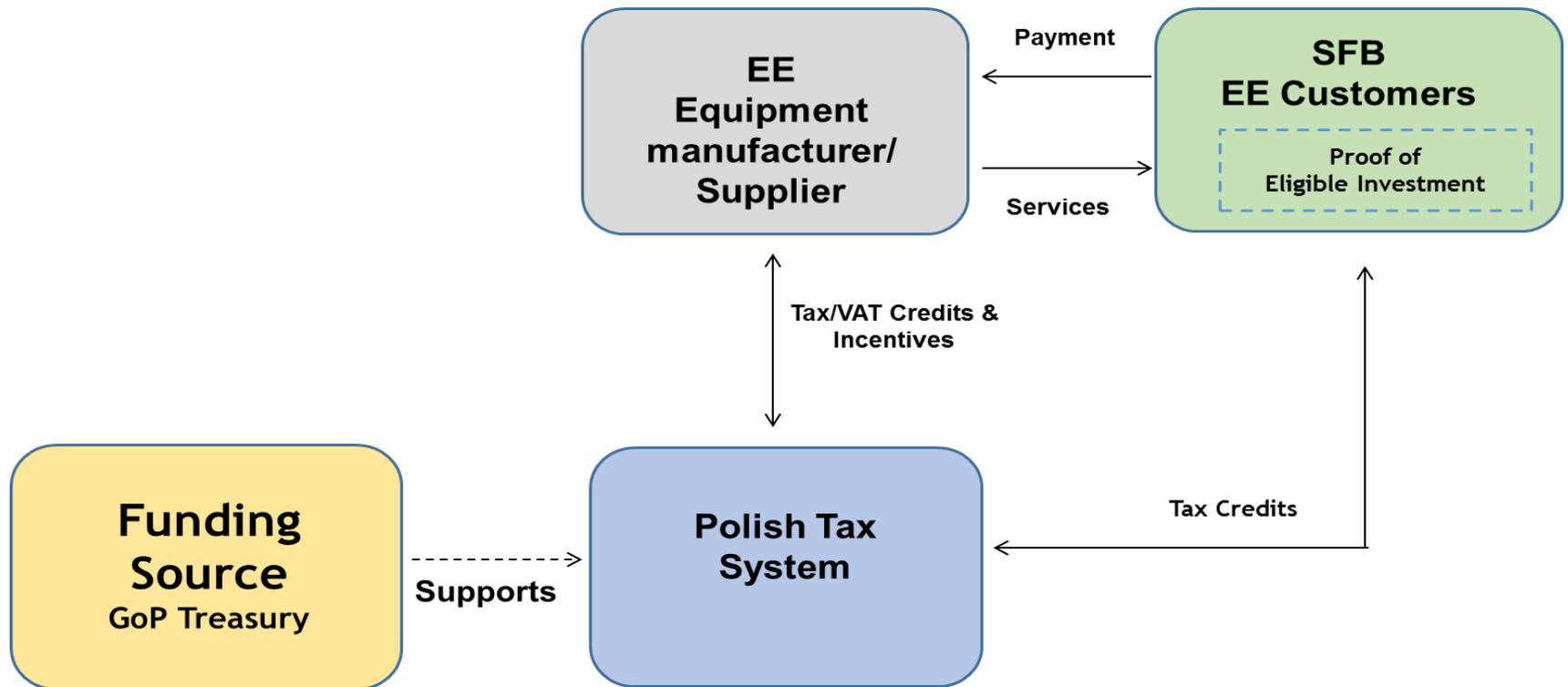
# Public financing support mechanism for poor SFBs



# Commercial financing for non-poor SFBs



# Fiscal incentives to promote boiler replacement and thermal retrofit in SFBs



## Remaining questions

- **Scale:** revolving support for non-poor SFB to be implemented centrally (coordination of IFIs) and the fund for poor SFB to be delivered locally (proximity of social assistance);
- **Financing:** estimated investments vs. technical feasibility, coordination between existing funds needed;
- **Simplicity:** minimal audit and retrofit requirements, easy application process;
- Definition of energy poverty: important to strike the right balance between equity considerations with ease of identification and implementation;
- **Enforcement of anti-smog regulations:** key to create market demand for boiler replacement, but no legal mandate to undertake retrofit of SFBs so far;
- **Incentives for non-poor:** subsidies, tax cuts?
- **Capacity building:** enough technical capacity within municipalities to address potential households effectively
- **Anti-smog objective:** enforced solid fuel quality standards, fuel switching and shift to district heating (where feasible) are important additional considerations.



**Thank you for your attention!**

***For more information:***

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