



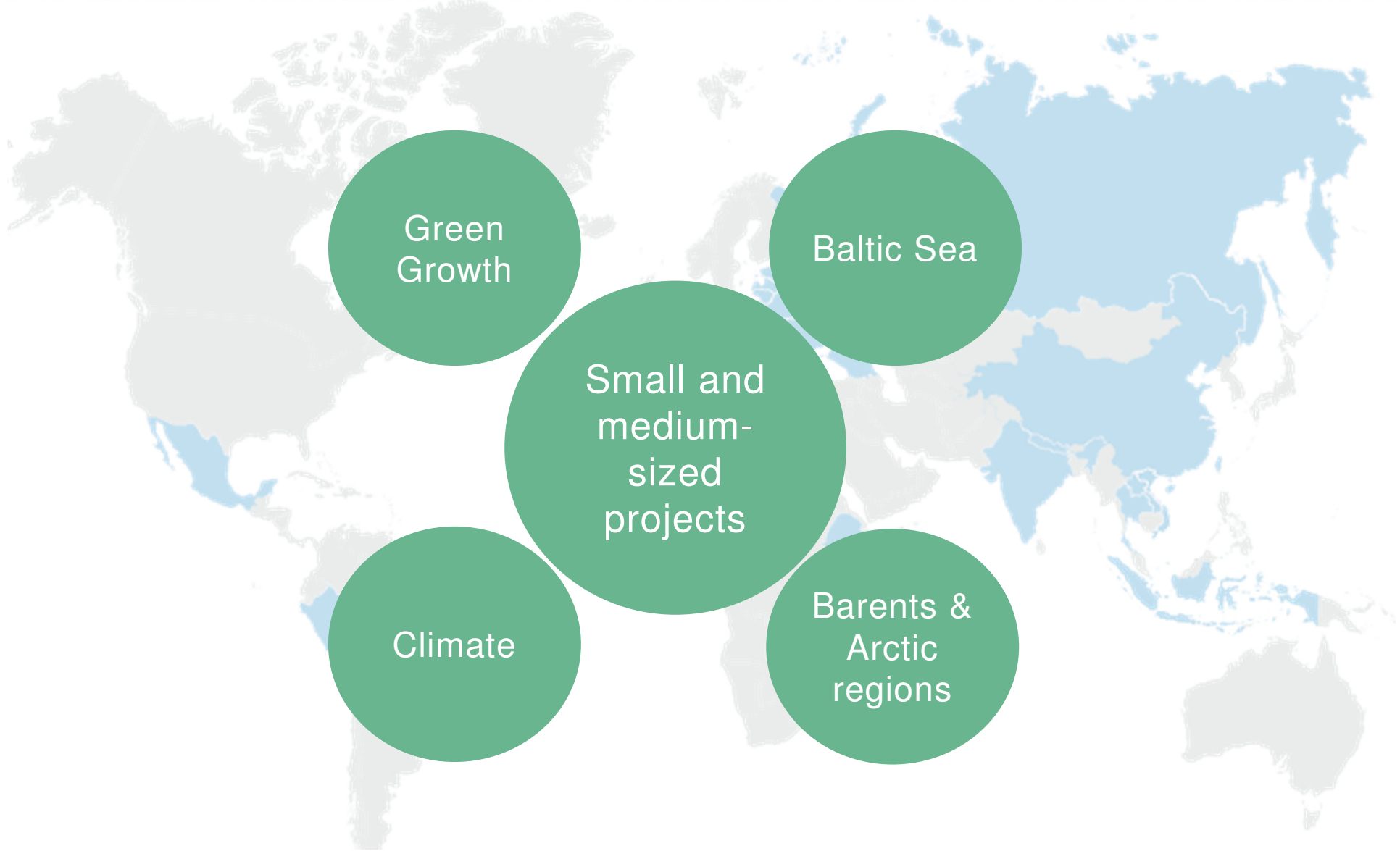
# NEFCO Energy Efficiency and District Heating Projects in Ukraine

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## NEFCO in brief

- ◆ Established by the Nordic countries in 1990
- ◆ Main focus is to generate positive environmental effects of interest to the Nordic region
- ◆ Loans and equity investments for environmental projects
- ◆ Total value of funds administered by NEFCO is currently EUR 500 million
- ◆ Active role within the Arctic Council, Barents Council, E5P and NDEP and several other international organisations
- ◆ Operation in 41 countries – focus on Ukraine, Belarus, Russia, Georgia, Moldova, Armenia
- ◆ Head office in Helsinki with 34 employees, representation offices in Kiev and St. Petersburg





## NEFCO's Energy Efficiency facilities in Ukraine

Total investments for municipal projects is currently 48 million Euro loans and 24 million Euro grants

### Small-scale projects

- **Energy Saving Credits (ESC)** – is currently 12.5 million Euro loans for 41 projects
- **Cleaner Production Facility/DemoUkraineDH** – is currently 7.4 million Euro grants (Sida and E5P) and 8 million Euro loans for 20 projects
- **NIU – Nordic Energy Efficiency and Humanitarian Support Initiative** for projects in the vicinity of the conflict zone in Eastern Ukraine is 7.6 million EUR grant support for 16 projects

### Medium scale projects

- **Investment fund/E5P** – is currently around 27 million Euro loans and 9 million Euro grants for 9 projects





## The Facility for Energy Saving Credits (ESC)

- Demonstration Facility
- Loans in UAH to municipalities in Ukraine
- Investments in energy saving measures in public buildings such as schools, day care centers, hospitals and in street lighting.
- Maximum loan amount: Equivalent of 400,000 Euro, maximum 90% of project costs





## MEDIUM SIZED PROJECT EXAMPLE - ENERGY EFFICIENCY IN PUBLIC BUILDINGS IN CHERNIVTSY

The project in partnership with Sida, E5P and GIZ “Energy Efficiency in the communities” which provided technical support and partially financed energy audits;

- **33 public buildings** including a demonstration project for a swimming pool building
- The project will improve the learning environment and class room conditions for more than **14,000 pupils**

### Measures:

- |                      |                      |
|----------------------|----------------------|
| - Building envelope  | - Kitchen appliances |
| - Heating system     | - Heat pump          |
| - Ventilation system | - Lighting           |



## NEFCO's projects in the municipal sector in Ukraine



**Total number of municipal projects – 84**

**Number of projects by facilities:**  
ESC – 41, DEMO – 17  
NIU – 16, IF – 8  
CPF – 1

**Number of potential projects - 20**





Example of NEFCO activity in Energy Efficiency in Ukraine

## **DemoUkraina – District Heating funding programme**





## DemoUkrainaDH funding programme in brief

- Managed by NEFCO
- Established in cooperation with Ministry for Regional Development, Housing, Construction and Municipal Services of Ukraine, Sida and E5P
- Development of modern, sustainable and energy efficient demonstration projects in Ukraine's district heating sector:
  - Modern technology and design, the best international practice in project preparation, procurement and implementation
  - 30% energy efficiency improvement
  - Reduction of CO<sub>2</sub> emissions



## Funding scheme

- For each project
  - **Loan** (NEFCO): maximum 500 000 EUR, secured against a municipal guarantee – 6 %, repayment adapted to the project's payback period
  - **Grant** (from Sida): maximum 300 000 EUR
  - **Technical Assistance** for project preparation (business plan) and project implementation (design, tender documents, procurement, supervision)
  - The district heating utility is required to provide minimum 15 % of total project cost
- Typical project: 750 000 – 1 000 000 EUR



# Completed projects 2015

## Vinnytsia



## Zhytomyr



## Oleksandria



## Kamyanets-Podilsky



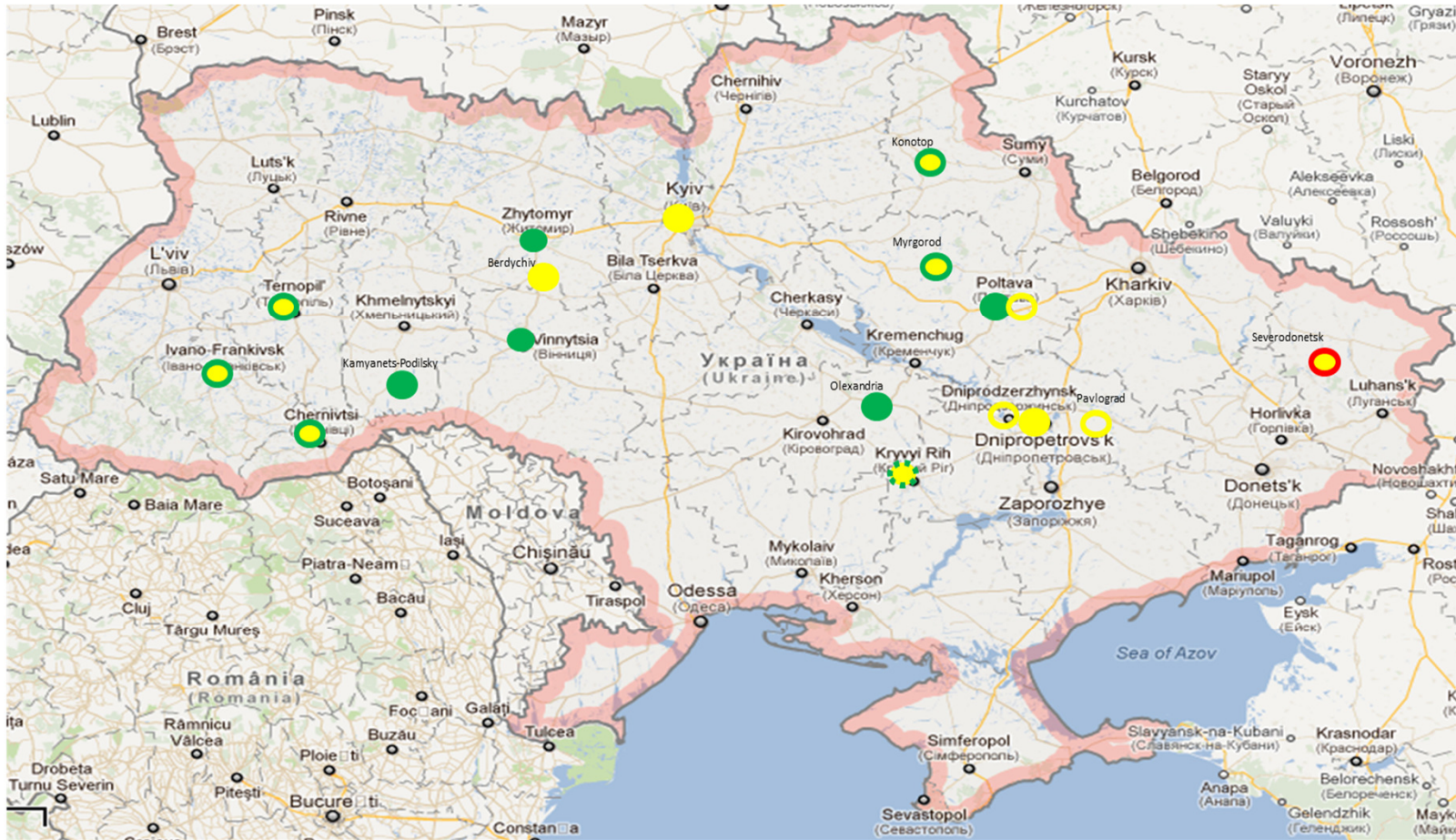
## Poltava







# Project Status January 2016



- Completed
- Preparation
- ⚙️ Implementation about to start
- ⚙️ Implementation
- ⚙️ On Hold
- ⚙️ Preparation about to start





## Some experiences

- Techno-economic improvements
    - Modern cost-effective prefabricated IHS with brazed heat exchangers; downsized control valves and heat meters; minimising oversizing of equipment and unnecessary redundancy components in general
- 15-25 % lower investment
  - Improved hot water quality
  - Improved service



Before...



... and after implementation



## Some experiences

- Techno-economic improvements
  - Modern pre-insulated pipeline design - accepting higher pressure drop, allowing friction-fixed installation (meaning no need for compensators, chambers etc), minimising unnecessary components, flexible pipes etc.

- 20-40 % lower investment
- Lower maintenance cost and heat losses







## Some experiences

- Techno-economic improvements
  - Solutions for domestic hot water production outside of heating season, ex heat pumps, solar collectors etc

- Improved service
- Improved hot water quality





## Some experiences

- Project management and procurement
  - Open and transparent procurement methods have been used successfully
  - Project management routines according to IFI funding requirements have been implemented

## Some challenges

- Lengthy and complex procedures for approval of municipal guarantees for new projects – no projects implemented during 2016
- The current procedure for approval of investment programmes contradicts IFI procurement rules – ex. calls for detailed design documentation and price calculation before a tender is announced etc
- Ukrainian technical norms – procedure to apply for approval of deviation from norms in each specific project



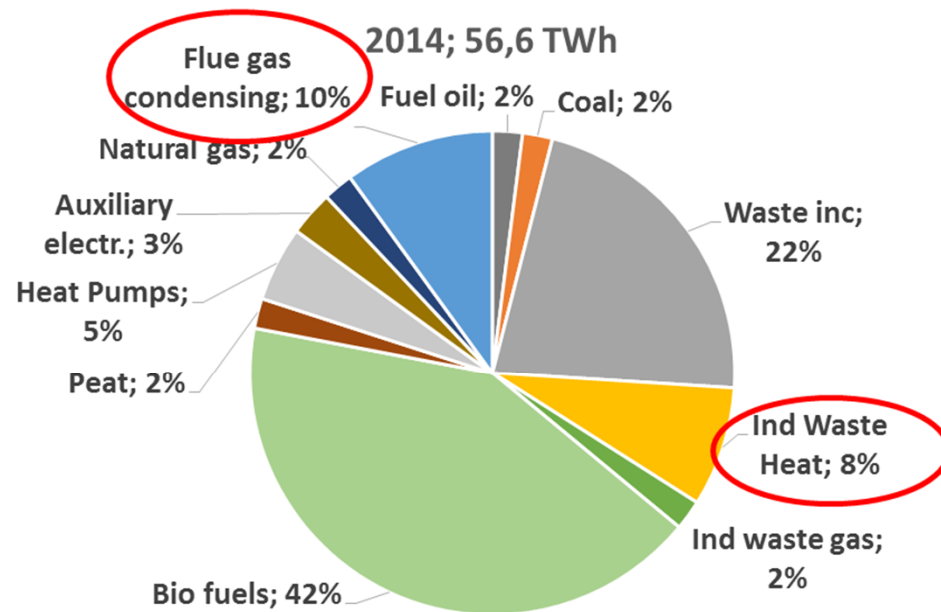
## Still (some) funding to apply for!

- The target is 20 demonstration projects. Procurement have to be completed before the end of 2017.
- Still 2-3 project partners have to be selected – Focus on demonstration value (proven technology, not applied widely in Ukraine before)





# Still unexplored project opportunities



Great opportunities in

- Flue gas condensation
- Industrial waste heat recovery

Energy sources for district heating in Sweden



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**Thank you for your  
attention!**