

TECHNOLOGY FACTSHEET

HEATING PUMPS

- 1) **Sector:** Commercial and residential sector
- 2) **Sub-sector:**
- 3) **Technology name:** Heating pumps
- 4) **Option name:**
- 5) **Scale:** Small-scale
- 6) **Availability:** Available
- 7) **Technology to be included in prioritization?** Yes
- 8) **Background/notes**

According to IEA Heat Pump Centre (February 2006), a 30% market penetration of heat pumps into existing heating markets would reduce global CO₂ emissions by 6%. This is equivalent to 1,500 Mt per annum of CO₂ (IEA Heat Pump Centre, 1997 and 2006).

Heat pumps can improve security of energy supply by reducing energy demand and the small amount of electricity used can also be supplied by renewable energy generation. There are large savings in operating costs compared to conventional heating or cooling systems, although the upfront capital costs are higher. Heat pumps can be applied in the following places:

- Swimming pools and other large-scale low-temperature uses, *e.g.* greenhouses,
- Hotels,
- Schools,
- Government buildings,
- Commercial buildings,
- Apartment buildings,
- For domestic space and water heating

In Azerbaijan, in the year of 1990 there have been produced 21399 thousands of GCal of thermal energy. Statistical data shows that by 1998 this volume decreased by 68%, 12% of which was due to the housing sector.

9. Advantages of the technology:

The system is more energy efficient.

10. Disadvantages of the technology:

Although running costs is lower, investment costs for the equipment is high.

11. Implementation assumptions (How the technology will be implemented and diffused across the subsector)

During the economic transition period (1995-2005) most heating system was completely destroyed or not operated properly. There are development in this sector in recent years and most of new constructed building are provided with modern heating system. But, it requires additional assessments in order to estimate current level of application of the system.

Rough estimates provided for capital city -Baku shows that rehabilitation of heating and hot water supply system would provide the annual saving of 383 thousands of CFT of fuel and reduction of CO₂ emissions by 600 thousands of tons in average.

12. Impact statements (How the options impact countries development priorities)

- a) Countries social development priorities
 - increases live conditions by more comfortable life and by reducing costs of energy
- b) Countries economic development priorities
 - contributes to energy security policy
- c) Countries environmental development priorities
 - contributes to country strategy of application of environmentally friendly technologies in energy consumption
- d) Reduction in GHG emission over 30 years
 - 8 MT

13. Costs

- a) Capital costs over 10 years

Heat pumps are considerably more expensive than boilers, although running costs are much lower. Costs of the equipment depends on size of the house or building. Due to rough estimates there is a need for 1 billion USD dollars for application of combined heating system throughout the country (considering 4.000 US dollar costs per equipment).

b) Operational & maintenance costs over 10 years

For operation and maintenance costs, it could taken 10% amortization from total cost of the equipment

c) Cost of GHG reduction

0.06 USD per kgCO₂

d) Other costs

-