

# Energy Efficiency in the Built Environment in Russia: Concrete Solutions & Lessons Learned

Round table:  
Practical Solutions to Energy Efficiency in the Built Environment  
28 June 2011

By: Jeroen Ketting, Managing Director of Lighthouse Russia BV



# The potential for Energy Savings in Public Buildings<sup>1</sup>

1. **9%** of total Russian energy consumption.



- 1. **49%** - potential reduction of energy consumption.
- 2. **\$ 3,5 – 5 bn.** of annual economy on energy bills.

<sup>1</sup> Source: “Energy Efficiency in Russia: hidden reserve” The World Bank Group

## The Project:



**Location:** Municipal school in Mokshino, Konakovo District, Tver region

**Year of construction:** 1964

**Surface area:** 5067m<sup>2</sup>

**Goal:** Energy reduction of at least **40-60%**

## Goals:

1. Contribute to the overall objective of 40% energy saving in the Russian Federation by 2020.
2. Implement a showcase of successful energy efficiency measures in a public building.
3. Gain concrete experience in EE in public buildings under Russian circumstances.
4. To transfer expertise about energy efficiency audits and measures in public buildings to Russian professionals.
5. To disseminate project results.

# Objectives

1. Audits in five pilot public buildings.
2. Establishing baseline and final situation in one pilot building.
3. Concrete energy saving measures in one pilot building.
4. Transfer of knowledge and training program.

## **Project funded by:**

The Dutch Ministry of Housing, Spatial Planning and the Environment , the Administration of the Konakovo District (Tver) and Lighthouse.

## **Project supported by:**

The Ministry of Economic Development, The Governor of the Tver Oblast, The Presidential Commission on Modernization of the Economy and Technology.

**Ventilation**



**DHW & Heating**



**Insulation**



**Building envelope**

**Lighting**

**Electrical system**

# Measurements

Meters for heating, warm and cold water were installed. Electricity meters were already present.



Meter for heating



Meter for hot water

Readings before and after the implementation of the energy saving measures will allow to calculate the achieved energy savings.

**Ventilation**



**DHW&Heating**



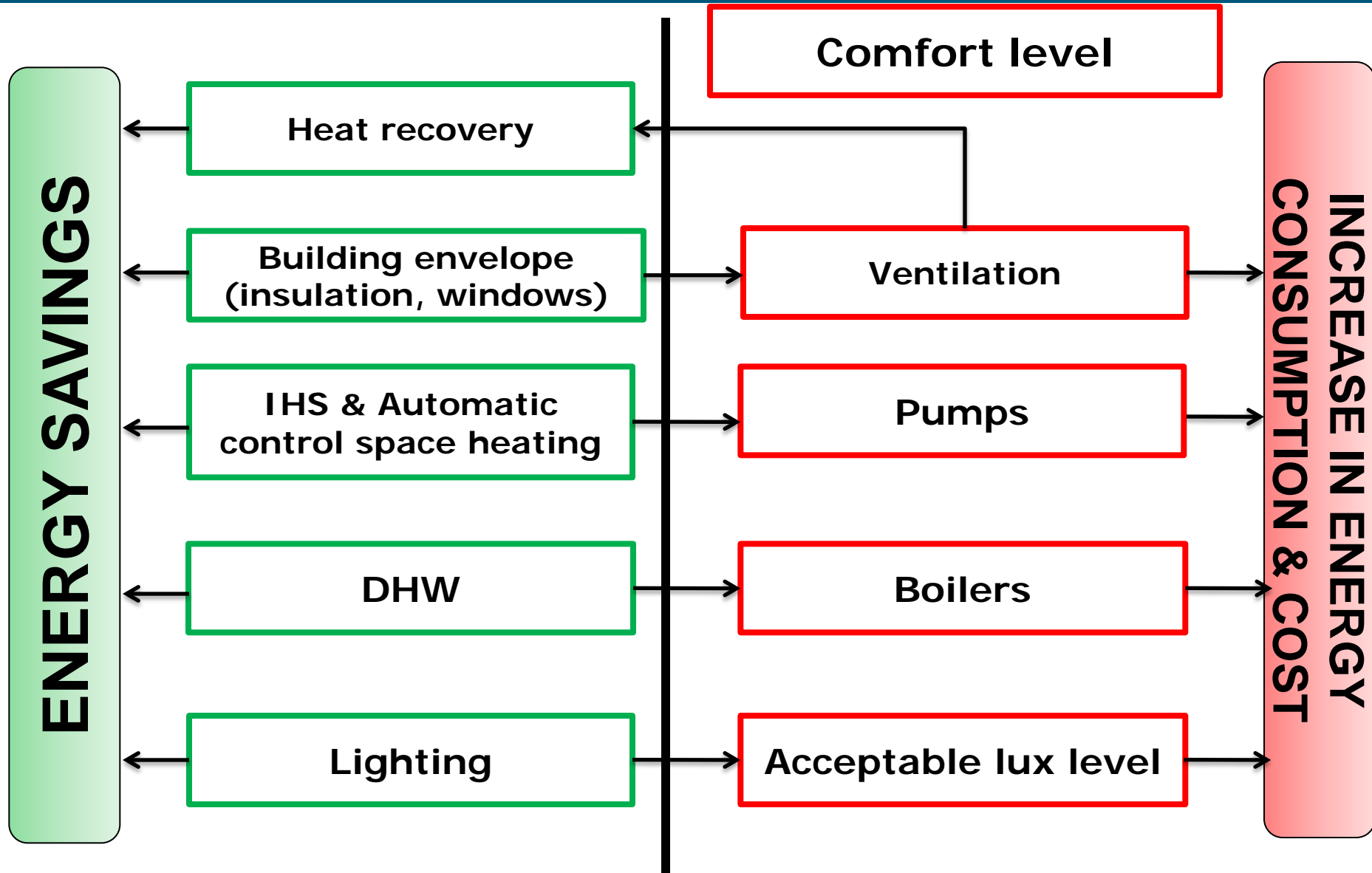
**Insulation**



**Building envelope**

**Lighting**

**Electric system**



# Barriers to EE

There are barriers throughout the entire project cycle:

1. Project initiation.
2. Project design.
3. Project implementation.
4. Project replication.
5. Low stakeholder interest/involvement.

# Project initiation

## 1. Finance:

1. Lack of governmental funding.
2. Few private banks interested in EE projects.

➔ Most EE projects in Russia are funded by IFIs and foreign governments.

2. Long **payback** times.

3. Difficult to find **committed project partners**.

# Project design

## 1. Lack of **reliable information**:

1. Energy consumption (e.g. lack of meters).
2. Tariffs and relation between consumption and Payments (e.g. cross-subsidization).



## 2. Difficult to establish **baseline** energy consumption and costs.



## 3. Difficult to build a convincing **business case** for the project.

# Project implementation

1. It is very hard to find engineers, projectors, builders and suppliers that **really understand EE**.
2. Foreign technical experts are often involved in the project implementation due to a lack of local knowledge on EE → **difficulties** may arise in the cooperation between these experts and the local project counterparts.
2. Local counterparts (e.g. building users) often do not fully understand EE, yet play **a key role** in ensuring a successful project implementation (e.g. daily tracking of meter readings).

# Project replication

1. Many EE projects are implemented through **subsidies / grants**



Such projects are rarely replicated through private/  
public funding.

2. The success of an EE project depends to a large extent on creating a **competent and committed team** of technical experts, stakeholders and contractors.
3. The **local situation** varies from location to location making project replication difficult.

# Stakeholder interest

## 1. Stakeholder interest in public buildings:

- 1) Public officials change regularly.
- 2) Procurement needs to be done in accordance with federal legislation (i.e. the lowest bidder wins).
- 3) Commitment of funds from the state budget is limited to a small number of years.

## 2. Stakeholder interest in residential buildings:

- 1) All the tenants need to agree with the investments made.
- 2) Ownership issues arise once the investor installs the equipment in the building.

# Recommendations

1. Energy efficiency projects require an integrated approach.
2. Consider the entire energy value chain in project selection & design.
3. Consider the primary savings factor and the comfort level in your project selection & design.
4. Commitment and involvement of stakeholders is key.
5. Create a competent project team of experienced engineers, projectors, builders, suppliers, authorities, building users who really understand EE.
6. Establish baseline in order to evaluate the effectiveness of the project.
7. Think through the entire project cycle and install proper project cycle management.
8. Think of EE as a long term investment. Payback may range from 3 to 20 years (average 12 years).
9. Operation of the building is key factor → Include post-project training in your project:
  - a. Correct operation of equipment;
  - b. Proper operation of automatic control systems;
  - c. Proper adjustment of space heating controllers;
10. Avoid "The Emperor's New Clothes".

# Conclusion

1. Many challenges lie still ahead of us and we can only face these challenges if each of us, living and working in Russia, reflects on our personal responsibility for energy saving, as it is becoming the norm all over the world.
2. In the meanwhile, money can already be made in Russia for those with the right understanding of the market, of the peculiarities of the Russian business environment and with a healthy appetite for adventure.

Over the years, Lighthouse has build up a unique and strong track record in Energy Efficiency (EE) projects in Russia. These projects range from developing EE strategies and financing schemes to the actual implementation of EE measures and setting up of ESCO companies. Such projects often require the implementation of Western know-how and technology in the field of EE. However, the specific situation in Russia with regards to the EE needs to be accounted for in order to ensure the successful implementation of this know-how and technology. Lighthouse uses its extensive practical experience in EE projects in Russia to bridge the gap between the Western know-how and technology on the one side and the Russian reality on the other side.

See also: [http://www.thelighthousegroup.ru/gb/lighthouse\\_energy](http://www.thelighthousegroup.ru/gb/lighthouse_energy)

For further information you can contact us by using the coordinates below.

## Contact LIGHTHOUSE

	Director	Jeroen Ketting	<a href="mailto:jeroen@thelighthousegroup.ru">jeroen@thelighthousegroup.ru</a>
	Client Relations and Information	Birgit von Oehsen	<a href="mailto:birgit@thelighthousegroup.ru">birgit@thelighthousegroup.ru</a>
	Finance & administration	Elena Kabko	<a href="mailto:elena@thelighthousegroup.ru">elena@thelighthousegroup.ru</a>
<b>Tel.:</b>	+7 (495) 980 09 77		
<b>Fax:</b>	+7 (495) 502 92 86		
<b>Website:</b>	<a href="http://www.thelighthousegroup.ru">www.thelighthousegroup.ru</a>		
<b>Address:</b>	Mytnaya Ulitsa 3, office 41, Moscow, Russia, 119049		