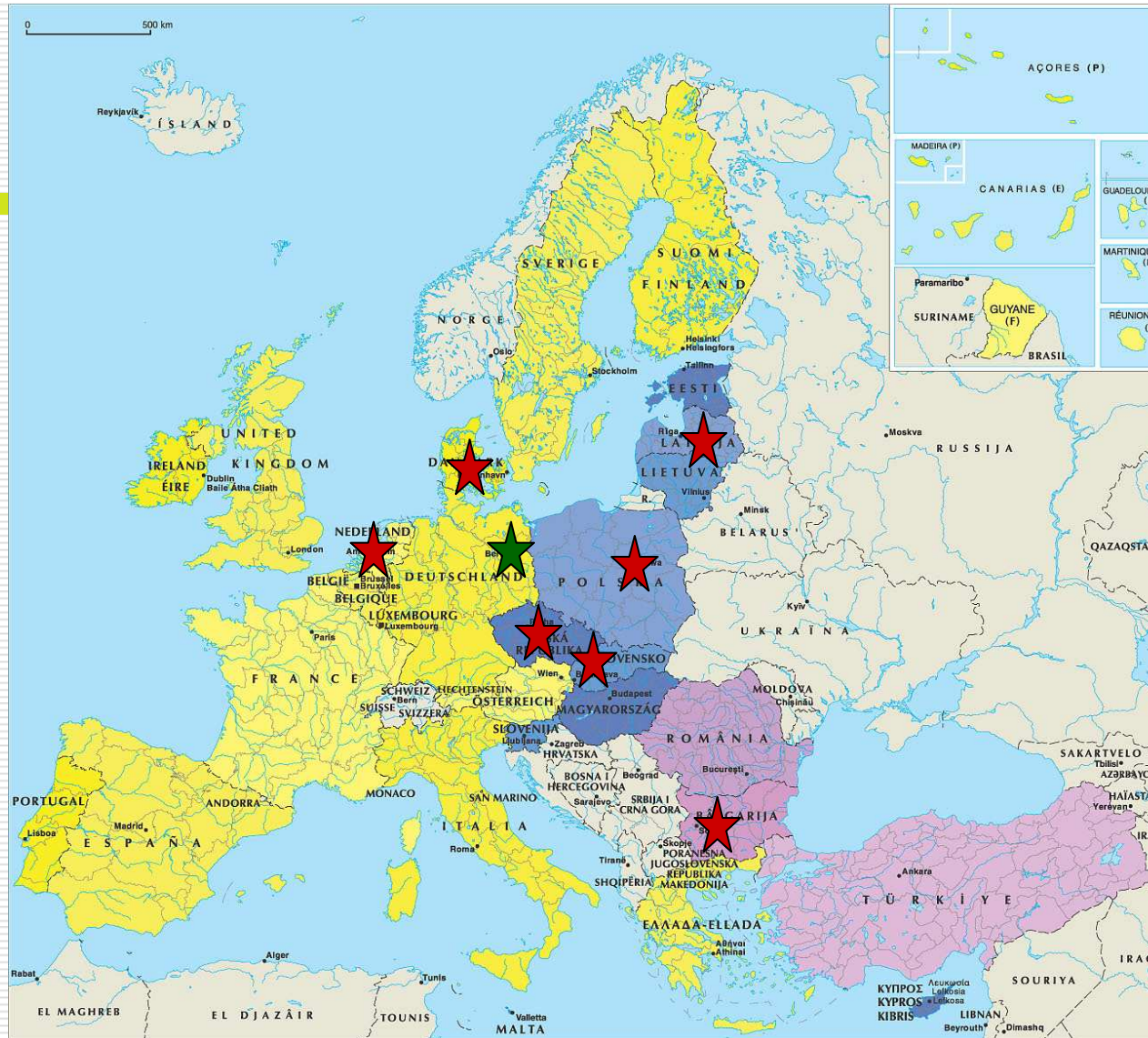


# **Sustainable Energy and Social Housing Ancona 21-22 April**

Contributions from InoFin-Project

**Dr. Georg Wagener-Lohse,  
CEBra - Centre for Energy Technology Brandenburg, Cottbus**





**well spread**

- (1) CEBra - Centre for Energy Technology Brandenburg GmbH, Brandenburg, Germany
- (2) ECNet - Energy consulting network Aps, Denmark
- (3) ENVIROS, s.r.o., Czech Republic
- (4) ECN – Energy research Centre of the Netherlands
- (5) SEC – Sofia Energy Centre, Bulgaria
- (6) Ekodoma, Latvia
- (7) ECB – Energy Centre Bratislava, Slovakia
- (8) NAPE – Nat. Energy conservation agency, Poland

## InoFin Team







**Public  
Responsibility**

**Who should do what?**

**private  
initiative**







**Insufficient insulation (convection – transmission)**  
**Unattractive design of flats, but**  
**Attractive placement in the city**

# Panel building changes to low energy

**dena-model project**

**Adaptation to older people**

**Addition of balconies**

**Introduction of elevators**

**Changes in lay out**

**48 flats with 2,495 m<sup>2</sup> living space**

**1 room 36 m<sup>2</sup> - 2 room 61 m<sup>2</sup>**

**December 2004 – November 2005**

**1.9 Mio. € (767€/m<sup>2</sup>) (+240 K€ for le)**

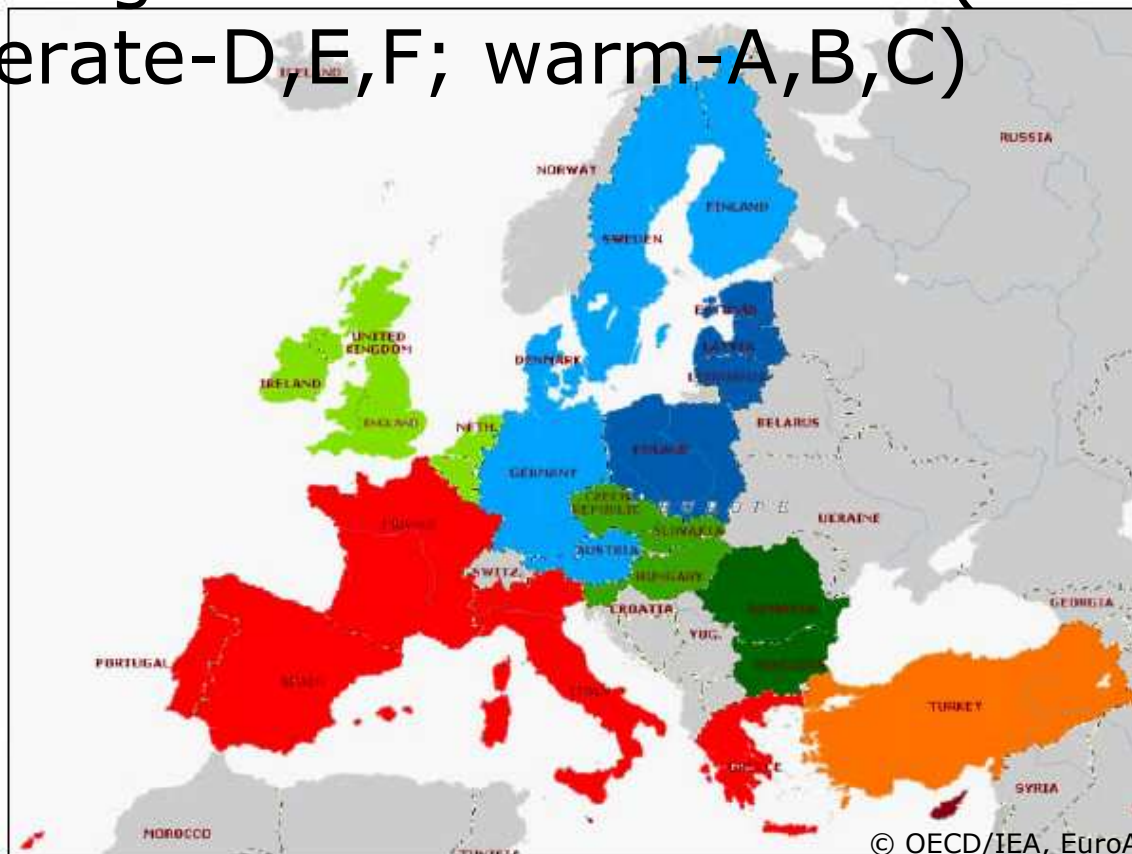
**15% eq, 26,5%KfW1, 7,5%KfW2, 51%  
Brdbrg**

Economic basis differs considerably: Energy costs in €/MWh

	BG	CZ	LV	Sk	Pl
DH	28	44	32	44	35
Nat G.	34	34	21	29	32
Oil	97	44	36	41	68
Coal	12	13	8	17	25
Wood	10	11	9	9	15
Electr	75	38	62	42	

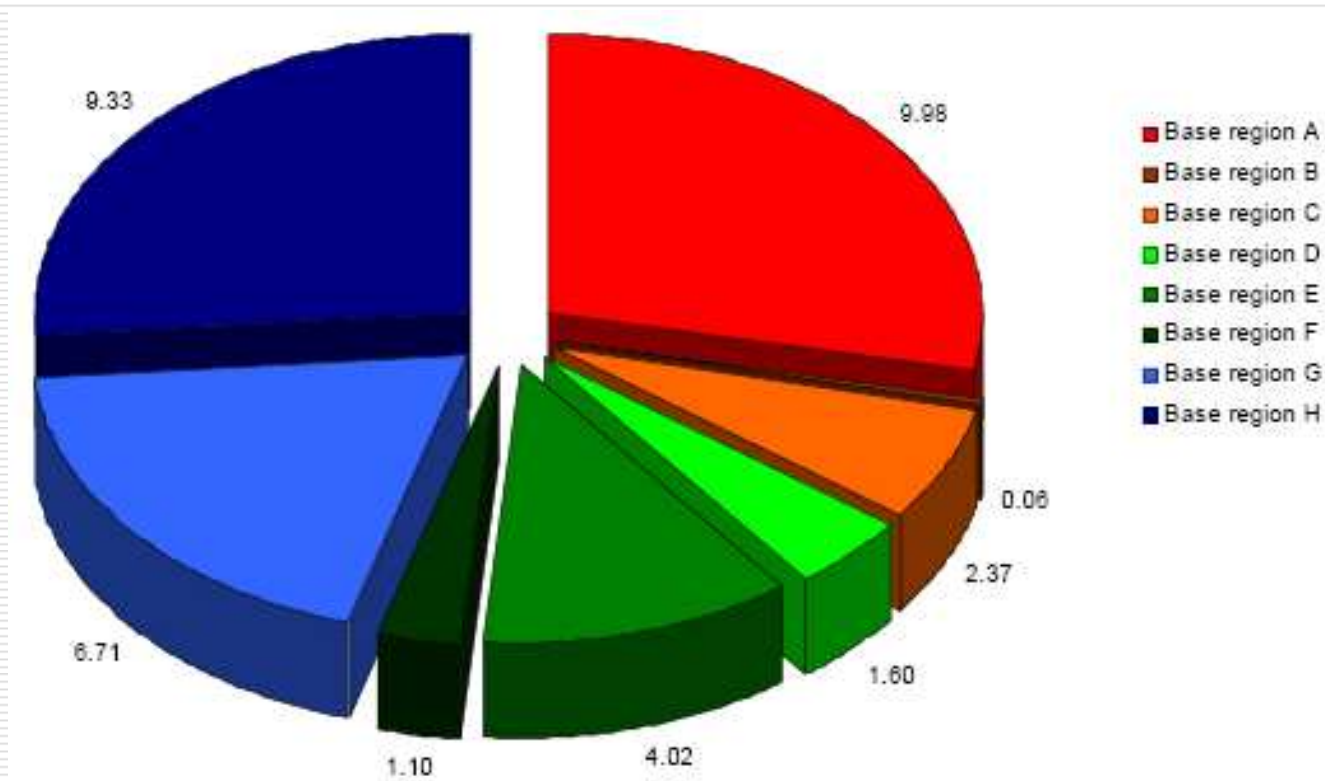


Base regions EU15 and EU10 (cold-G,H;  
moderate-D,E,F; warm-A,B,C)



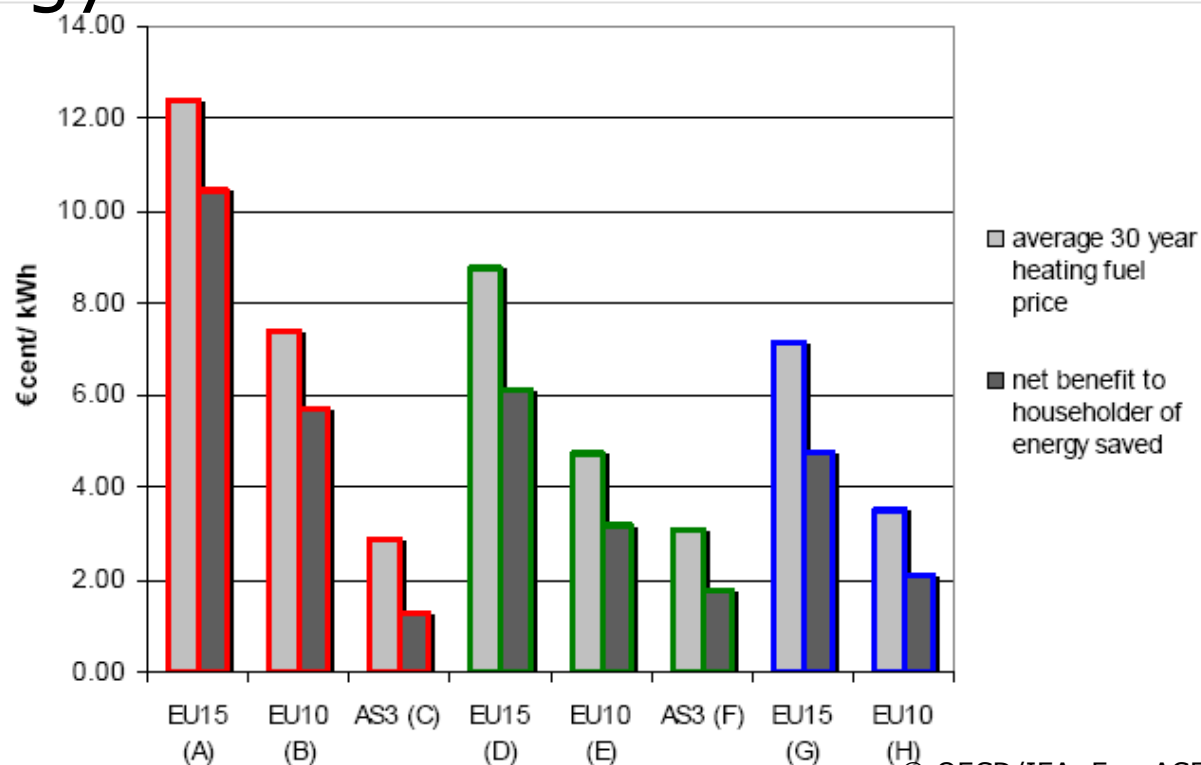
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## CO2 saving potential [Mt] (-120-140kWh/m<sup>2</sup>)



© OECD/IEA, EuroACE November 2006

# Energy Prices and Household benefit of energy saved



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# What are we talking about

Saving*	time
<b>?</b>	<b>&gt;20y</b>
<b>?</b>	<b>&gt;10y</b>
<b>45%</b>	<b>5-10y</b>
<b>30%</b>	<b>5y</b>

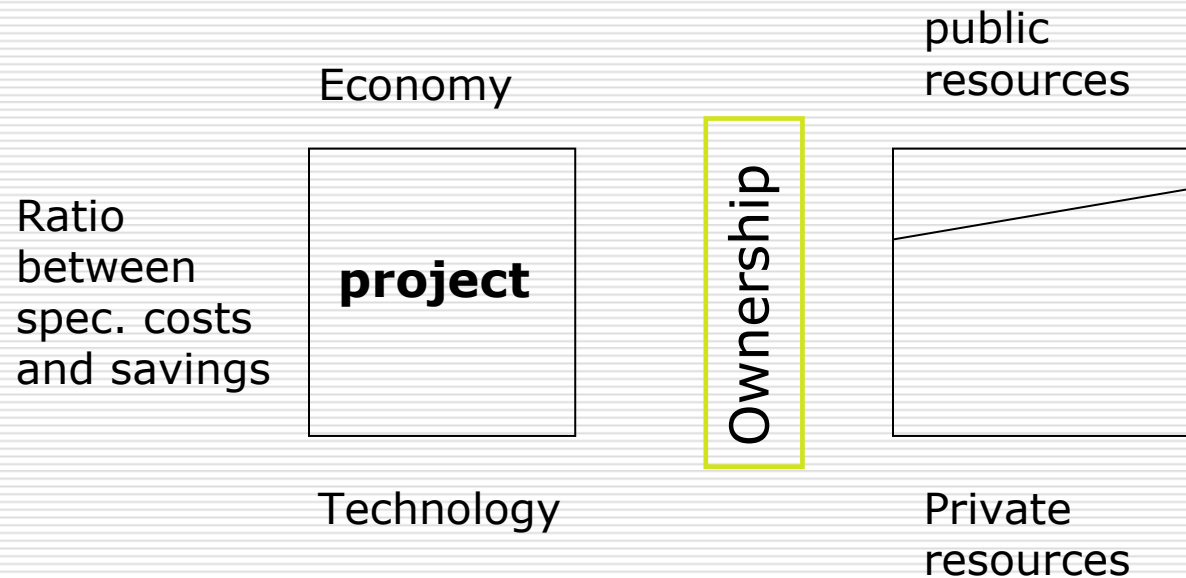
Insulation of all walls	<b>Ic</b>
Insulation of one wall	<b>Ib</b>
Boiler, Tube insulation Ceiling insulation Thermostatic valves	<b>Ia</b>

Standard full refurbishment

Standard full energetic refurbishment

\*estimated effect on consumption in kWh/m<sup>2</sup>

# Ownership decides



## Legal structure of “owner”

- |                         |                                |
|-------------------------|--------------------------------|
| ■ <b>Poland</b>         | <b>condominiums (law)</b>      |
| ■ <b>Czech Republic</b> | <b>different</b>               |
| ■ <b>Slovakia</b>       | <b>different</b>               |
| ■ <b>Brandenburg</b>    | <b>companies, cooperatives</b> |
| ■ <b>Bulgaria</b>       | <b>plenty independent</b>      |
| ■ <b>Latvia</b>         | <b>condominiums</b>            |

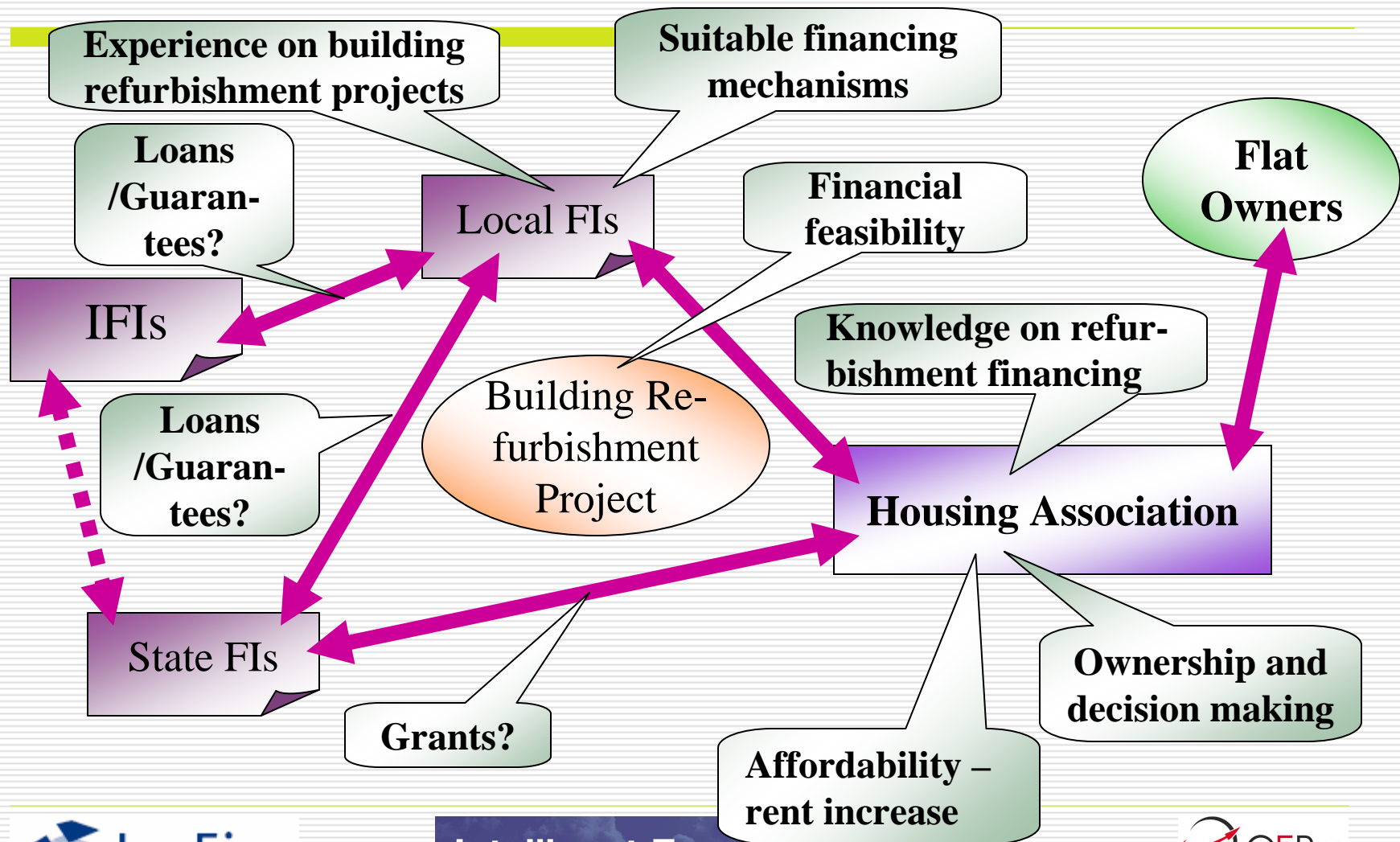


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## Financial burden of “owner”

- **Citizens spend 25% of their income for their flat (EU15 and EU10)**
- **In Romania and Bulgaria app. 19%**
- **While in EU15 money is needed for rent**
- **EU10 need their expenditure for energy and other utilities**

# Building Refurbishment Barriers' Landscape



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## Financial barrier in detail

- **Initial cost barrier**
- **Risk exposure**
- **Appropriate discount factors**
- **Nature of the financier**



## Typical for traditional financing

- **Reproducibility obligations**
- **Quick rates of return** measured as payback time, return on investment, internal rate of return

Simple payback method disadvantages the energy efficiency investments

Financiers fear hidden costs

Financiers believe in higher risks of EEIs

## Typical for traditional financing

- **payback time**

initial investment divided by annual gains (3years)

- **return on investment**

Ratio of money gained (or lost) to the amount of money invested

- **internal rate of return**

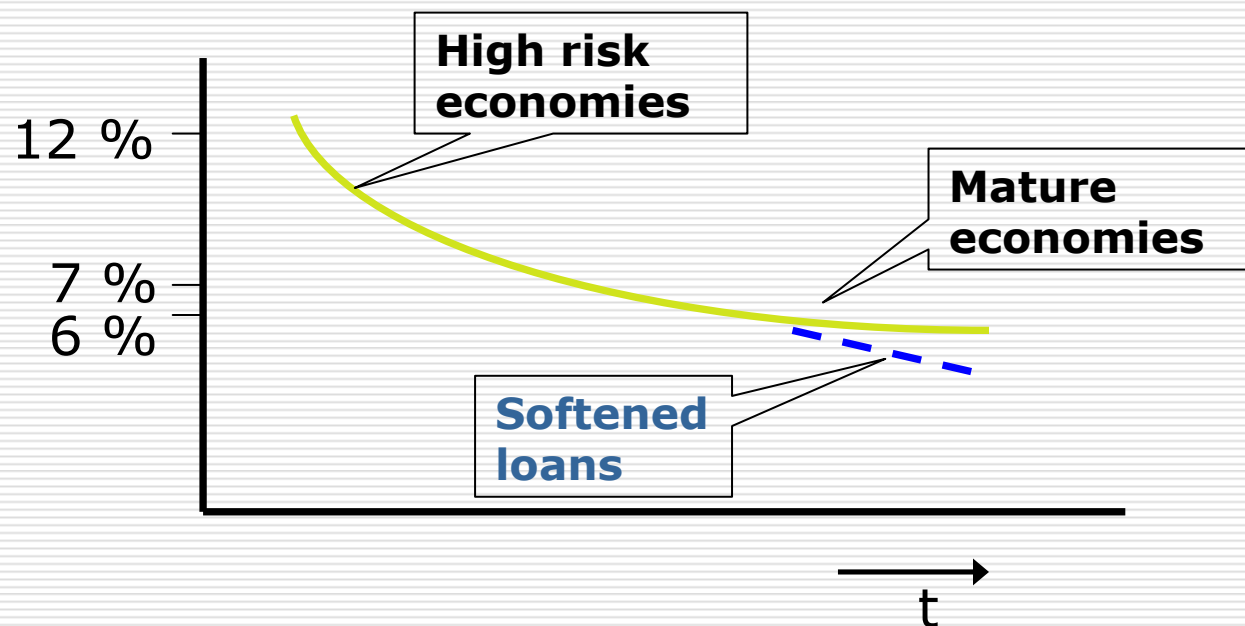
return rate which can be earned on invested capital

## EE investments are difficult to finance

- **Traditional financial indicators do not account for energy efficiency's full benefits;**
- **Their small size compared to typical industrial projects, and difficult standardisation, result in comparatively high transaction costs;**
- **The highly illiquid and irreversible nature of their commitment, which increase their riskiness;**



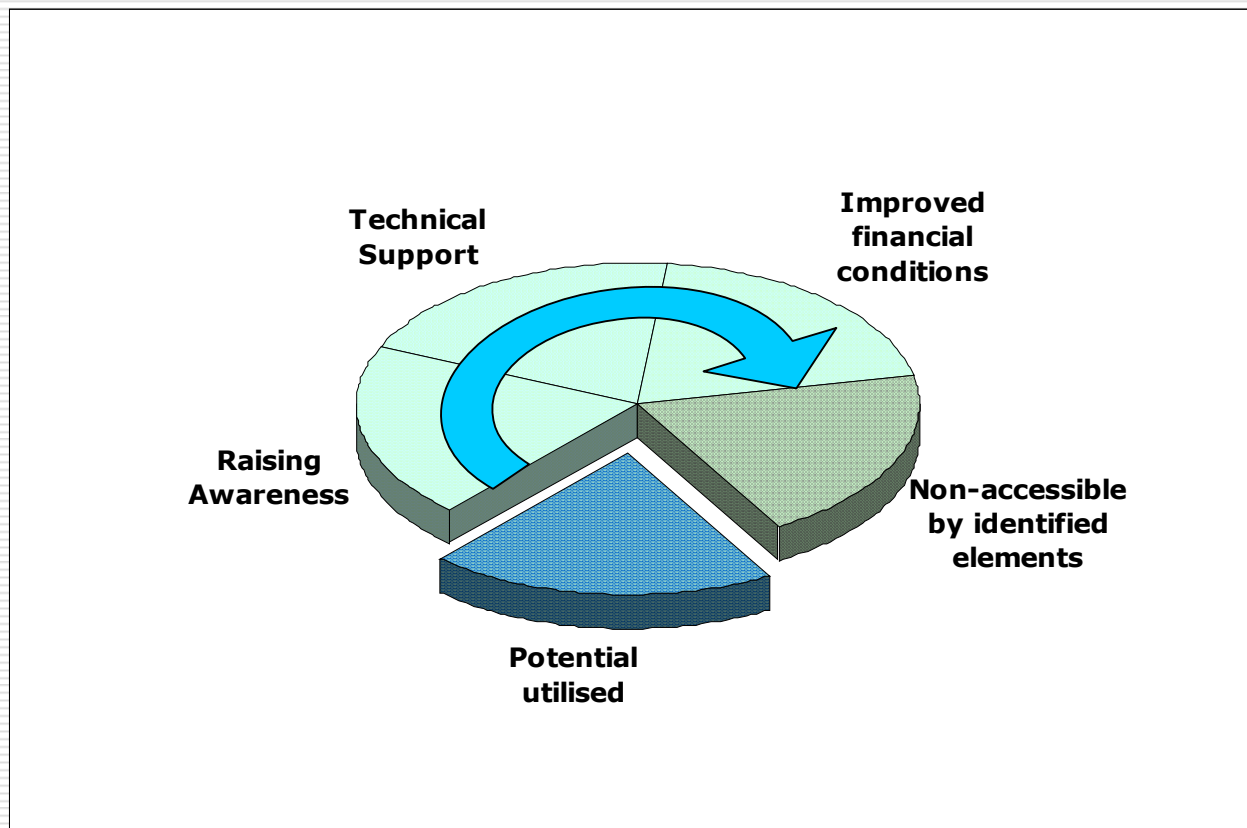
# Development of interest rates



## Suitable means to overcome barriers

- **Heightening awareness towards implementation of energy saving measures**
- **Supporting qualification of loan applications**
- **Providing additional financing resources (or sources must be considered in combination)**
- **Softening the Financing conditions thereby creating more access to schemes.**

# Overall elements to overcome barriers



# Detailed measures to overcome barriers (1)

General measures	Specific measures		Barriers targeted to be eliminated by the measures
<b>Improvement of financing conditions</b>	1	Loans softened by municipal, state or international donor budget	<i>Low affordability amongst part of the target group causing limited access to financing schemes</i>  <i>Relatively high transaction costs for EE projects</i>
	2	Grant schemes with EU money from Structural Funds	
	3	Grant schemes with national money	
	4	Guarantee funds financed by national or international organizations	



## Detailed measures to overcome barriers (2)

<b>Provision of additional financing resources</b>	5	Revolving funds based on different sources (international, national, municipal)	<i>Need for additional financing resources (or sources must be considered in combination)</i>
	6	Green Financing Schemes on the basis of CO2 reductions	
	7	Third Party Financing on the basis of commercial loans	
	8	Construction Savings Banks	

## Detailed measures to overcome barriers (3)

<b>Raising of awareness</b>	9	Support measures to heighten awareness of energy saving measures and financing options	<i>Lack of awareness</i>
<b>Supporting qualification of loan applications</b>	10	Support measures to identification and preparation of projects for financing	<i>Identification, preparation and documentation of projects are not appropriate to secure financing</i>

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## **Soft loan:** A loan with more generous repayment conditions than conventional bank loans

Typical ways of softening soft loan schemes are:

- Direct subsidies on interests
- Risk premium, e.g. an IFI or the state can guarantee a certain amount of loans, typically a 30-80 % share.
- Capital grants to a revolving fund. Loans from this revolving fund are typically paid back at low or no interest.

An example of a soft loan scheme is the Phare ESF in Czech Republic in which the loans are composed of a mix of 33% Phare ESF resources and 67% bank's own resources. The included 33% Phare money requires no guarantee and is to be paid back interest-free. Further the Phare grant is used as a revolving fund

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## **Partial Risk Guarantee:** Provision of collateral from external partners for part of the debt

- Partial credit guarantees could act to extend the loan repayment period and decrease the interest level, thus improving a project's cash flows and the financial viability of the project.
- Precedents exist for this targeted type of financial mechanism in the activities of the IFIs.
- Relatively high transaction costs for project development and due diligence work in smaller projects compared to conventional projects must be reduced by suitable means.



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**Revolving fund** is a fund or account whose income remains available to finance its continuing operation

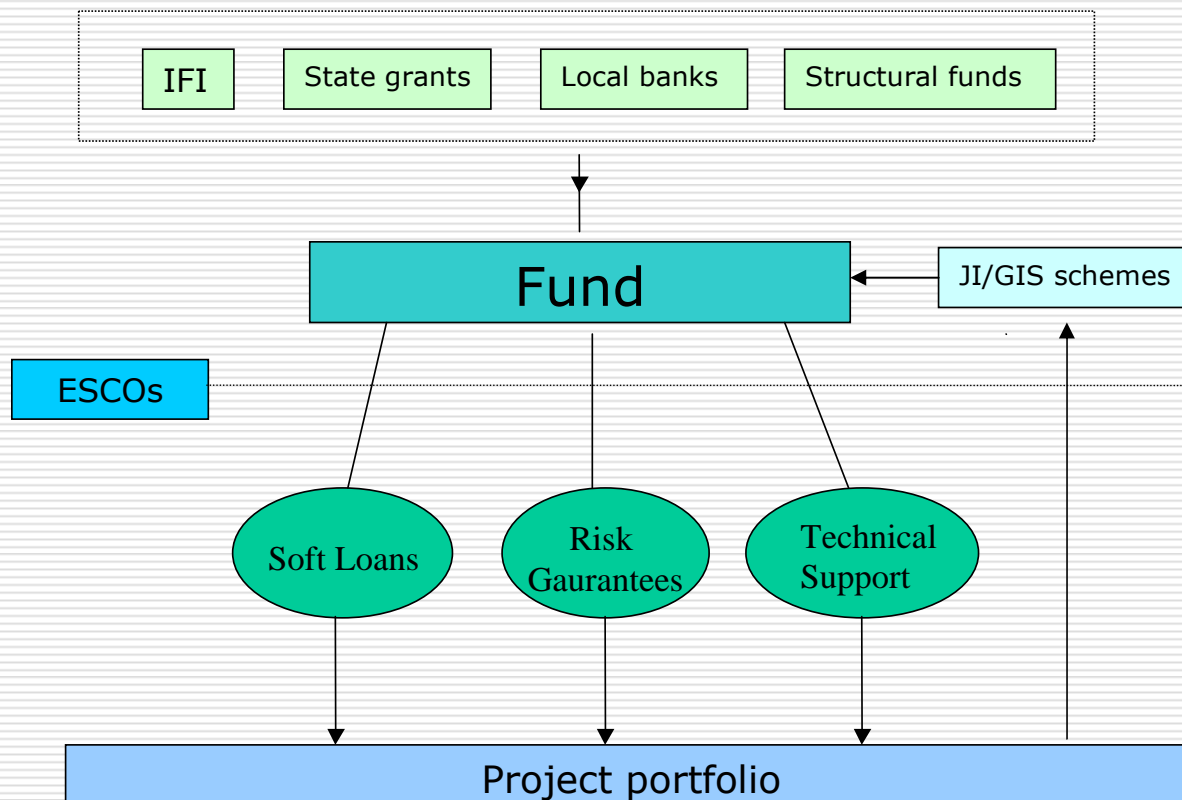
- The European Commission has launched, in cooperation with the EIB and the CEB, an initiative for sustainable urban development: **Joint European Support for Sustainable Investment in City Areas (JESSICA)**.
- Use of structural funds
- Third party financing

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Additional financing sources can also be obtained through  
**Green Investment Schemes** or **Joint Implementation**

- GIS: transaction of Assigned Amount Units, where the revenue of the sale is used to generate CO2 reductions
- JI: CO2 reductions from specific projects need to be verified before Emission Reduction Units can be issued and delivered to a buyer (so far on demand side)
- Especially relevant as both the European Investment Bank and the European Bank for Reconstruction and Development are involved in carbon funds

# Mixing the elements



## Some examples under consideration

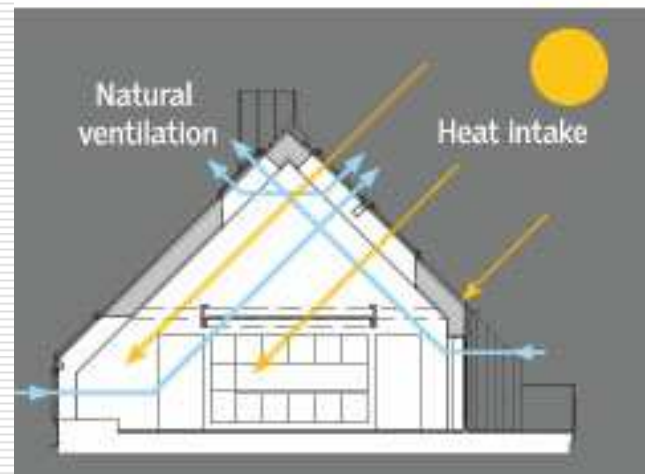
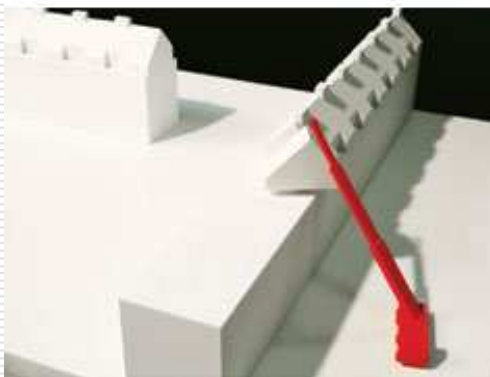
- The PANEL-programme is successfully operated in the Czech Republic since 2001 and offers a small loan with reduced interest rate and a bank guarantee for up to 70% of the loan taken in a credit bank or housing saving bank. The recommendations for the upgrade is that the interest rate soft loan is changed to be three %-points below market-rates and that the guarantee system is cancelled (politically stopped)
- The objective of the proposed programme is to develop pilot projects to show the way how to fight against poverty and social exclusion using Structural Funds for rehabilitation of housing occupied by very low income groups, mainly minorities, i.e. Romany population. (not approved by EC)



## Some examples under consideration

- The Energy Efficiency Revolving Loan Fund in Czech Republic is a loan fund established to provide an incentive for citizens to proceed with energy efficiency and renewable energy projects. It reduces the interest rate on standard bank loans for those qualifying residents and businesses that borrow money to implement an energy efficiency or renewable energy project. (Based on municipal funds it will prevail).

The project team has decided to use the SOLTAG concept (part of the "Demohouse" research project under 6FP). It is basically intended as a roof refurbishment solution.



## Some examples under consideration

- Polish partners will use the experience from the “Thermo-modernisation Fund” to make a thematic fund for EE measures in relation to Structural Funds and the JESSICA instrument in coordination with EIB and relevant authorities.
- This will require the setting up of Urban Development Funds in targeted regions. Jessica mechanism would enable that structural funds are used as equity, loans or guarantees instead of as grants. In addition to resources from Structural Funds, the state, the region and banks may contribute to the fund, which will be of a revolving nature.
- Masovia and Wielkopolska Regions proposed such schemes (UDF - Urban development funds)

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## Some examples under consideration

- In Bulgaria 2 buildings have been approved under the Nat. programme for refurbishment, financing is available, audits are calculated .
- Due to InoFin EBRD credit line that fostered “partial” refurbishment was adapted to give 30% grant for a total building refurbishment instead of 20% for single flats.
- The training course (for municipal experts) is under preparation and will start its test phase in May in Sofia.

## Some examples under consideration

- The prevailing Latvian experience is that the owners/residents are unwilling to use their apartment as a guarantee for loans .
- Three schemes have been assessed as the most appropriate in relation to the prevailing conditions in the sector:
  - Third Party Financing – municipality as ESCO (Daugavpils case);
  - Extension of building (Ikšķile and Jelgava case);
  - Green Investment Scheme .
- Municipality of Daugavpils will lend money to the municipal enterprise “Daugavpils Housing Maintenance company” to implement energy efficiency measures in selected buildings.



## Some examples under consideration

- Currently there are no heat meters in Daugavpils housing stock.
- During implementation of project in selected buildings heat meters will be installed
- During pay back period apartment owners of project buildings will continue to pay for heating to Daugavpils Housing Maintenance company based on average specific heating costs in the city (LVL/m<sup>2</sup>) used in the buildings without heat meters
- Daugavpils Housing Maintenance company will cover heating bills to district heating company based on real consumption measured by heat meters and pay back loan to Daugavpils municipality from the savings reached by buildings calculated as difference between energy consumption measured by heat meters and average specific heating costs in the city (LVL/m<sup>2</sup>) used in the buildings without heat meters

## Four policy lessons

- **Both sides have to intervene**  
public-private partnership offers the best combination of the criteria and offers sustainable impact.
- **Multiple policies are more effective than single measures**  
No single policy instrument can fully resolve the problem
- **A market for energy efficiency is needed**  
weak demand requires few providers
- **Strong political will is required**  
Only private actors offer sufficient creativity and resources, they need political stimulation

**Thank you !**

## **Hope to get in touch for technology transfer and promotion**

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