Retrofitting of Social Housing. Policy and Financing Options

SESSION IV: Social Housing Companies: Policy and Strategy Options

wbg Nürnberg GmbH
Immobilienunternehmen

Nürnberger
Aufbaugesellschaft mbH

Fränkische Wohnungsbau-
gesellschaft mbH

Immobilien
Dienstleistungen GmbH

Ecological Efficient Rebalitation of Residential Buildings

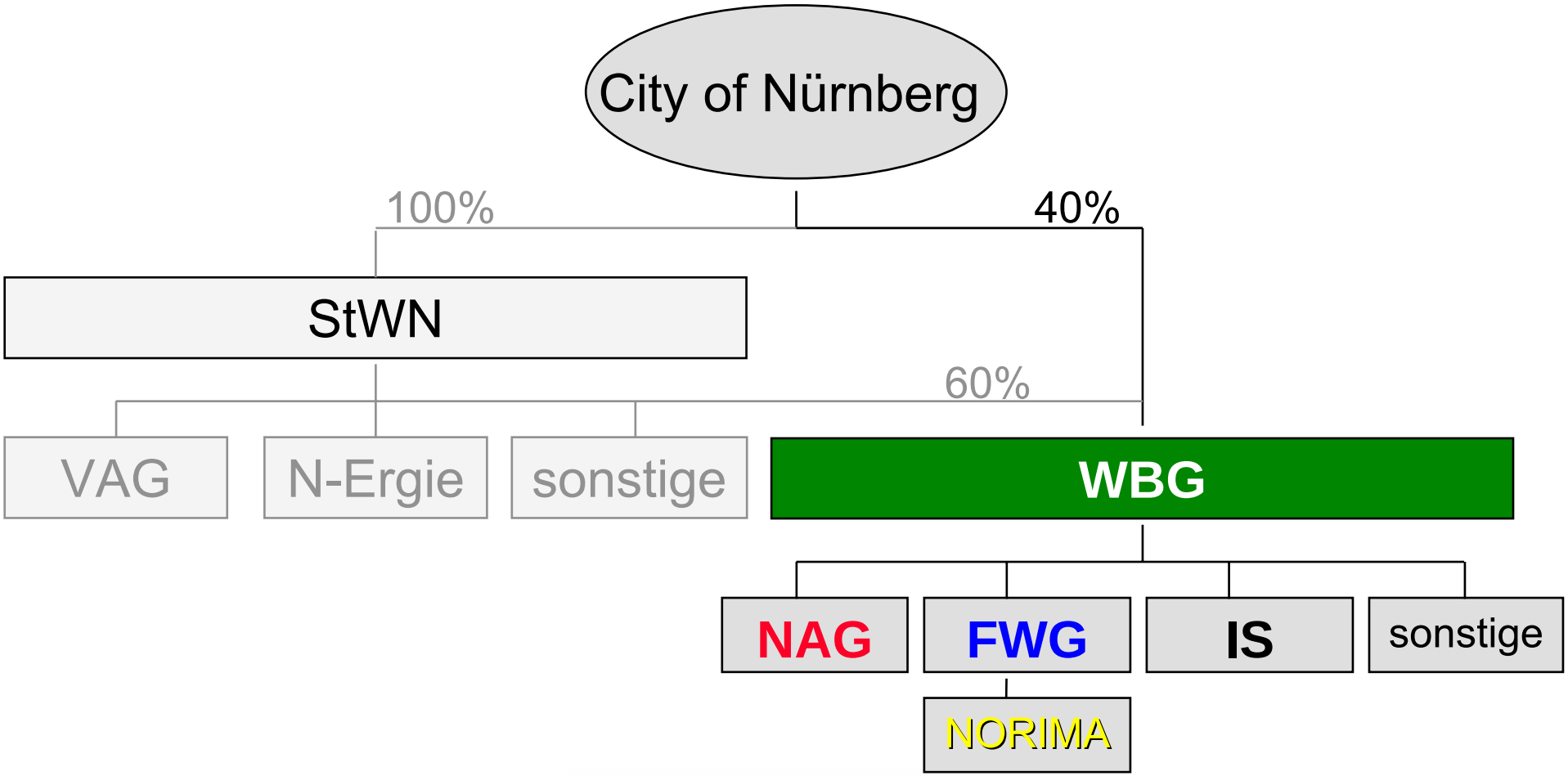
- Activities of WBG Nürnberg GmbH for energetic modernisation in the housing stock

08.11.2006,
Θεσσαλονίκη

Dipl.-Betriebsw. Peter H. Richter
Director of wbg Nürnberg GmbH

Contens

WBG Nürnberg Group
- The Structure of our Company



Wir gestalten LebensRäume

WBG Nürnberg Group
- Figures 2005

Turnover	93,4 Mio. €	Staff	~ 200
Balance	~ 506 Mio. €	Administered Housing Stock	~ 26.400
EBIT	17,2 Mio. €	(Rental dwellings : 18.213 units)	
Own Capital	101,2 Mio. €		

Datenstand Jahresabschluss 2005

Wir gestalten LebensRäume

WBG Nürnberg Group
- Activities and Fields of Business

- Rental Housing Management
- Management of Commercial Units
- Management of other Units
- Urban Renewal
- Planning and Development
- Developer of Projects

- Services connected with Housing and Real Estate
- Management of free hold flats
- Administration of Housing for third parties
- Services of Insurance

Wir gestalten LebensRäume

WBG Nürnberg Group
- Our Philosophy

We are the leading Housing Company Group in the Region. It is our Task to design

the Olylbqj#Vsdfhv of People.

+ Problem Solving for municipal Housing Policy and social Mission

+ Economically acting Company: Capable, modern and independent

+ Demonstrate ecological Responsibility

Wir gestalten LebensRäume

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- WBG Nürnberg – The Housing Company
- Trends, Figures and Facts
- Our Vision
- Presentation of our rehabilitation projects
- Economic check of our rehabilitation projects (example)
- Economic and ecologic efficiency of the measures, Proposal: “Ecological Part”
- Further measures of WBG for Energy-Saving
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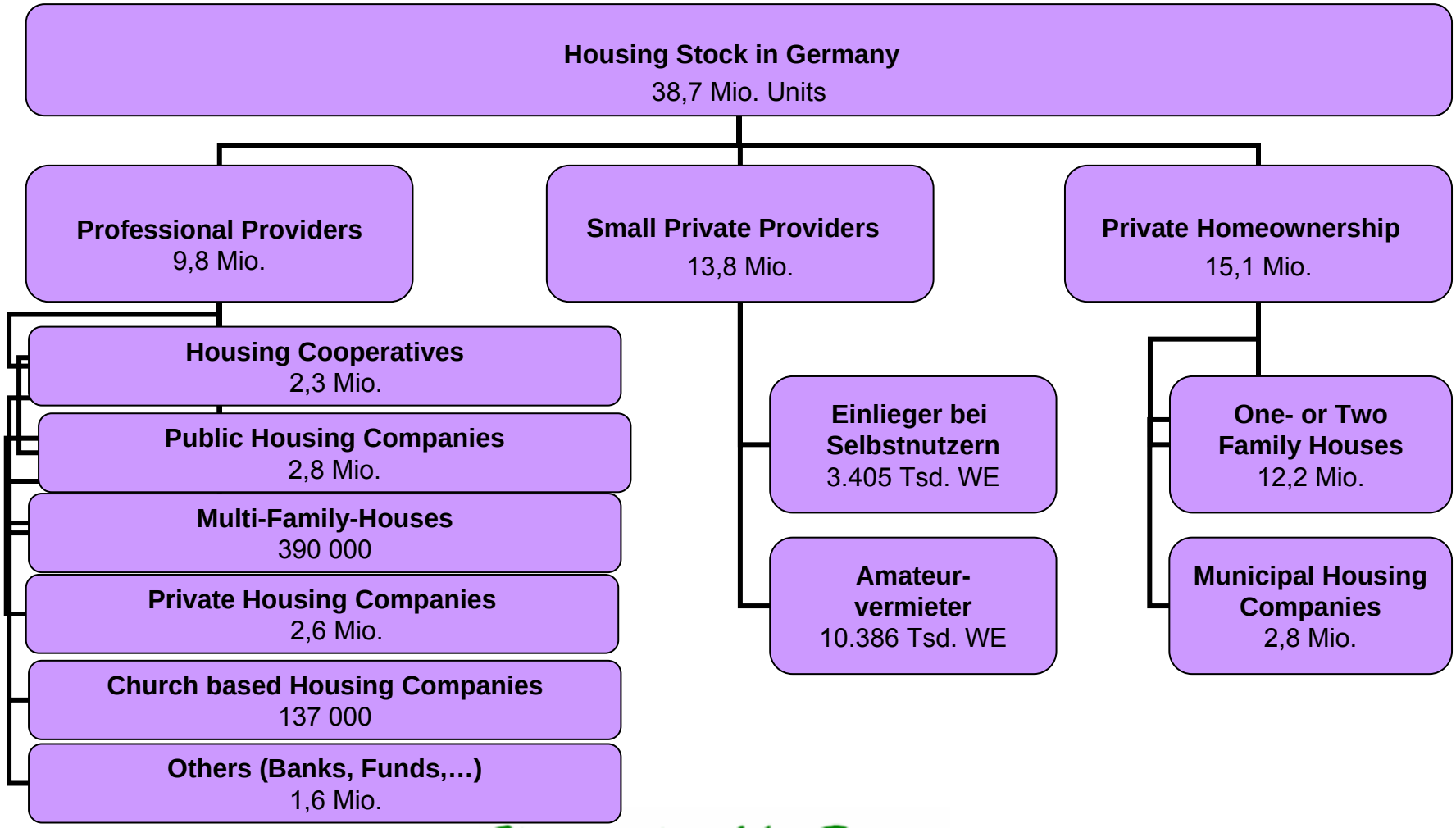
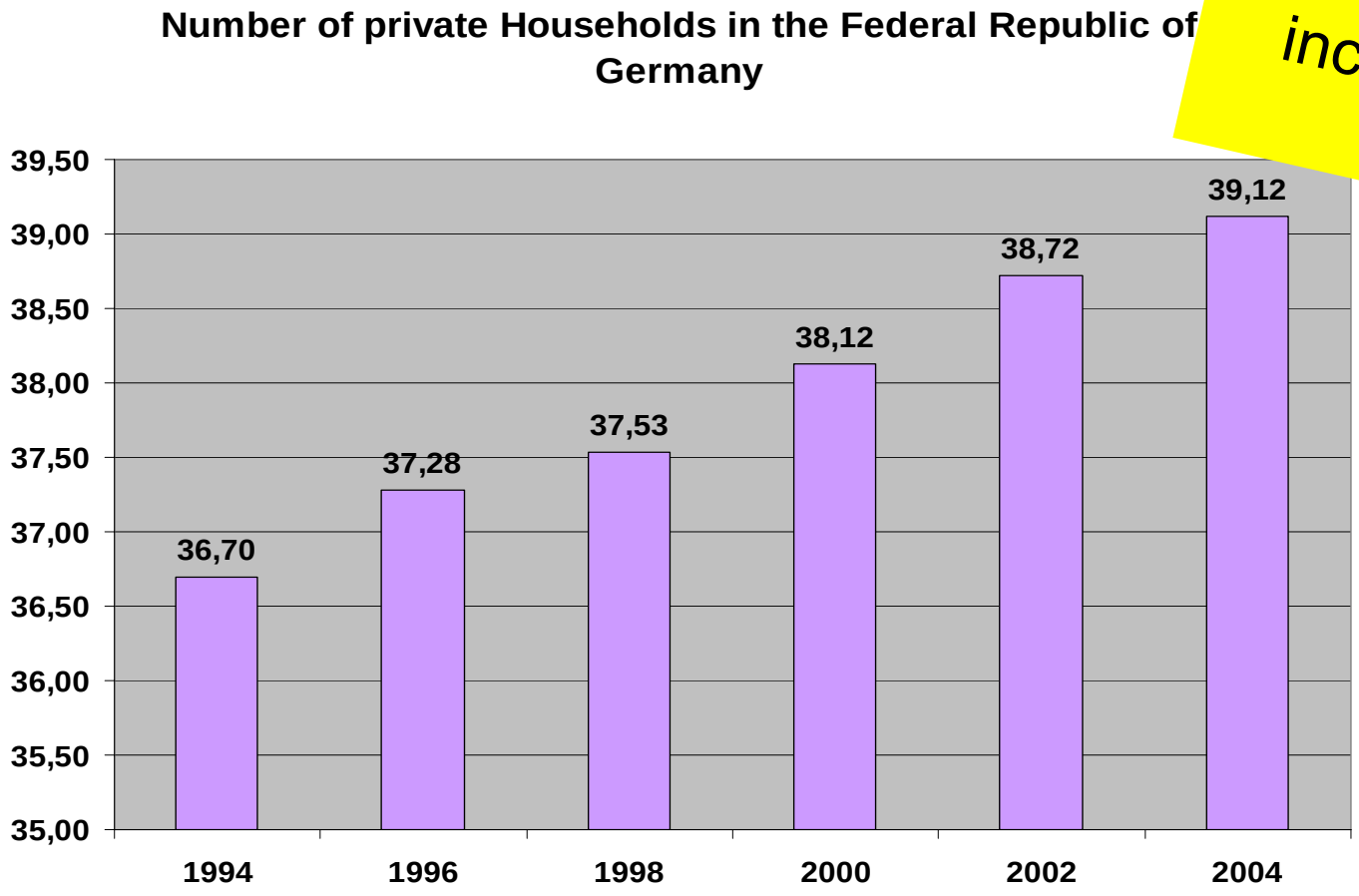
Trends, Figures and Facts



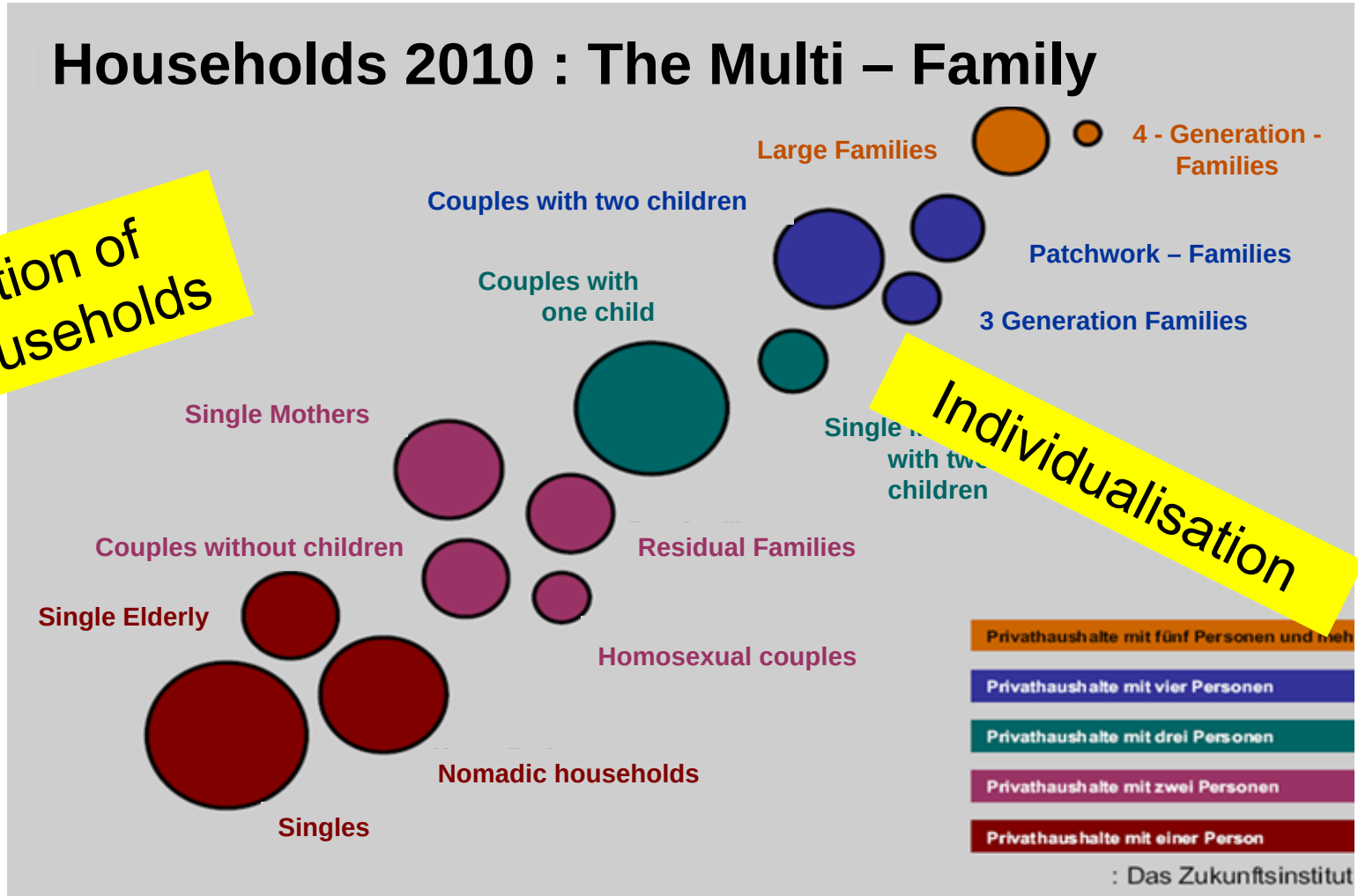
Wir gestalten LebensRäume

Trends, Figures and Facts

The Percentage of private Households in Germany will increase until 2015



Wir gestalten LebensRäume



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If we calculate 81 Mio Inhabitants with

40 Square Meters Living Space in Germany,

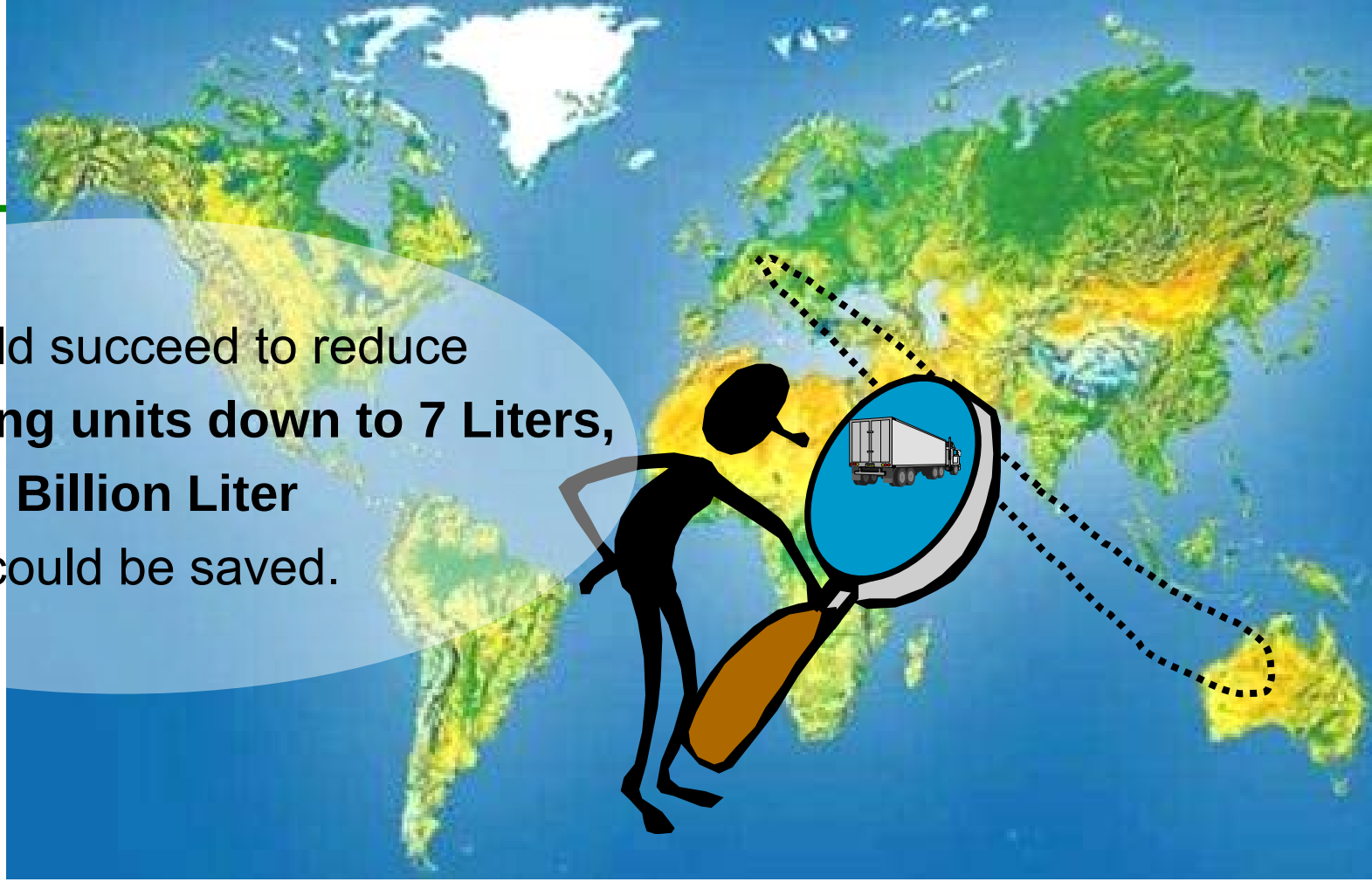
(Basis: 81 Mio. Inhabitants x 40 m² Living Space)

Then we have 3,25 Billion Square Meters Living Space with a Consumption of

51,5 Billion Liters Fuel Oil per Heating Period

(Basis: 15,91 Liters Fuel Oil / Square Meters per Year
Assumption based on Techem-Study 2003/2004 in 133 german cities)

If we would succeed to reduce
all dwelling units down to 7 Liters,
nearly 30 Billion Liter
Fuel Oil could be saved.



This would mean 1,2 Mio Trucks with 25 tons in a line of **24.000 km.**

.....

Wir gestalten LebensRäume

WBG Nürnberg Group
- Our Vision

Until 2012 we want

to achieve a standard

of a **7 – liter - house**

in our stock

Wir gestalten LebensRäume

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WBG Nürnberg Group

Ecological and efficient Model Projects

	Saved Heating Power In kWh per Year
• Modernisation St. Johannis (**7 Liter-Standard**, 1.005 Units, 2000-2004)	8.077.000
• Rehabilitation Ingolstädter Str. 131-137 (**6 Liter-Standard,** 24 Units, 2003)	227.000
• Rehabilitation Eythstr. 31-51, Hansastr. 24-58 (**5 Liter-Standard,** 95 Units, 2001 u. 2003)	1.026.000
• Rehabilitation Ingolstädter Str. 139/141 (**4 Liter-Standard,** 12 Units, 2004)	149.000
• Modernisation Jean-Paul-Platz 4 (**3 Liter-Standard,** 6 Units, 2004)	159.000

Wir gestalten LebensRäume

WBG Nürnberg Group
Ecological and efficient Model Projects

	Saved Heating Power In kWh per Year
• Rehabilitation Nordost-Train Station (379 Units, 1989 - 2006)	3.175.000
• Further Rehabilitation Works (371 Units, 1989 - 2006)	3.287.000
• Further Measures of Rehabilitation Combined with Insulation (1.370 Units, 1989 - 2006)	4.000.000

Wir gestalten LebensRäume

WBG Nürnberg Group
Result of Rehabilitation Projects

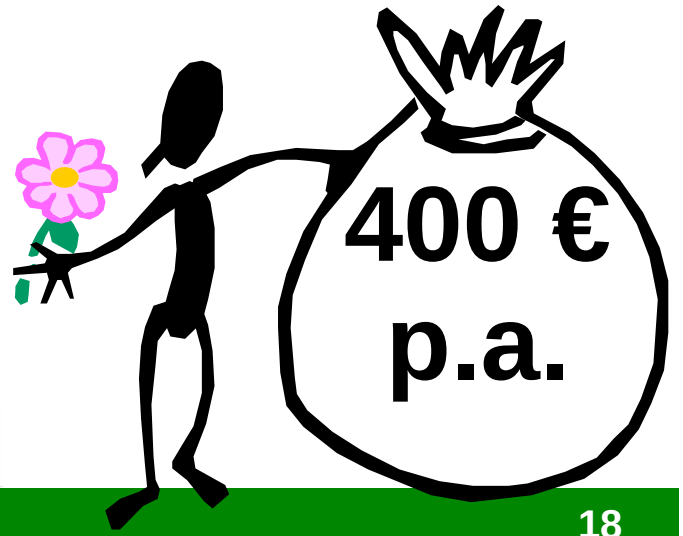
Saved Heating Power

In 3.262 Units	total	**20.100.000**	kWh / Year
Corresponds to			
Saved Fuel Oil	around	2.010.000	Liter / Year
Corresponds to			
Saved Heating Costs	in 2006 around	1.306.500	€ / Year

(Prize: 0,65 Euro/Liter incl. VAT)

Corresponds to

Saved Heating Costs per Unit of around



Wir gestalten LebensRäume

aktuelle Modellprojekte
Modernisation St. Johannis (7 / Liter-Standard)

Short Description:

Modernisation of 1.005 Units

(Occupied and Ensemble Protection respected)

Measures taken:

- Ecological rehabilitation according to classification as a historical building
  (Complete Insulation, New Windows, Roof Rehabilitation)
- Long Distance Heating combined with Power Heating, Interphone and Mailbox
- Balconies, new design of environment
- other measures following tenants' needs

Wir gestalten LebensRäume

aktuelle Modellprojekte
Modernisation St. Johannis

Building Costs:

- nearly 33,75 Mio. €
- (500,--Euro/Square Meter)

Results:

- Low Energy Consumption Standard (7 Liter-Standard EnEV)
- Favourable Financing Conditions (KfW-Loans)
- Up-Grading of the whole Area
- Improvement of the Housing Value
  Better Housing Standard,
  Ensuring Sustainability

Wir gestalten LebensRäume

aktuelle Modellprojekte

Rehabilitation Ingolstädter Str. 131-137 (6-Liter Standard)

Short Description:

Construction Year: 1952

Change of the Building after becoming vacant 24 Units

Wir gestalten LebensRäume

WBG Nürnberg Gruppe

aktuelle Modellprojekte
Rehabilitation Ingolstädter Str. 131-137

Measures taken:

- Check and improvement of all electric connections, windows, walls
- Central Hot Water supply
- Balconies

Construction

Costs per Square Meter Living Space: 931 Euro

Results:

- Low Energy standard (6 Liter – Standard EnEV)
- Improved Living Standard, Ensuring Sustainability

Wir gestalten LebensRäume

aktuelle Modellprojekte

Rehabilitation Eythstr., Schweinau (5 Liter-Standard)

Short Description:

Energetic rehabilitation of 95 Units

(Constr.Year 1939/40)

and new construction of 12 units

Measures taken:

Reduction of energy consumption by 70% through:

- new heating and ventilation system
- use of long distance-heating combined with Energy Power System
- 10 cm external insulation

aktuelle Modellprojekte

Rehabilitation Eythstr., Schweinau (5 Liter Standard)

<u>Construction Costs:</u>

- Nearly 2,53 Mio Euro
- (means: 1.115,--Euro/Square Meter)

<u>Results:</u>

- Low Energy Standard (5 Liter Standard EnEV)
- Favourable Financing Conditions
- Improved Living Quality (Balcony)
- Ensured Sustainability through up-dated equipment

aktuelle Modellprojekte

Rehabilitation Ingolstädter Str. 139-141 (4 Liter – Standard)

Short Description:

- Construction Year 1952
- small units with unfavourable ground plans
- in total 24 housing units (please remember!)
  with 860 square meters living space

Measures taken:

For ensured sustainable leasing:

- new **heating,** ventilation with double use of heating
- 20 cm insulation of **fassades,** new **windows**
- 25 cm insulation of **attic floor**
- insulation of **cellar** ceiling
- added **balconies**

Wir gestalten LebensRäume

aktuelle Modellprojekte

Rehabilitation Ingolstädter Str. 139-141

Construction Costs:

- 1.055 Euro per Square Meter Living Space
- Included additional costs for passive house – component: nearly 120,-- Euro/square meter

Vier-Liter-Haus

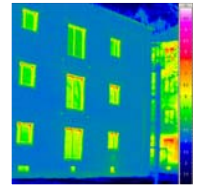
Die Wohnungsbaugesellschaft (wbg) hat für 1,5 Mio. Euro Häuser in der Ingolstädter Straße zu echten Energie-Sparbüchsen umgebaut: Diese Gebäude verbrauchen weniger als vier Liter Heizöl pro qm und Jahr!

Results:

- Low Energy Standard
  (nearly 4 Liter – Standard EnEV)
- Improved Living Quality (Balcony)
- Ensured Sustainability through modern equipment

Wir gestalten LebensRäume

WBG Nürnberg Gruppe



aktuelle Modellprojekte

Rehabilitation Jean-Paul Platz (3 Liter Standard WSVO)

Short Description:

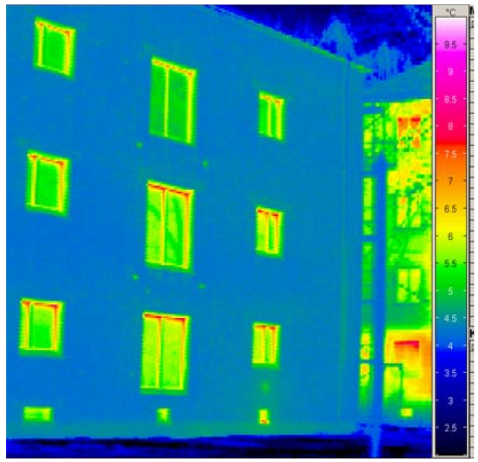
Modernisation of 6 big dwellings (occupied units)

Construction Year: 1930

Measures taken:

„Blower-Door-Tests“

Balconies



Thermographic measures

Ventilation systems with double heating use

Plastic window frames (0,8W/square meter K)

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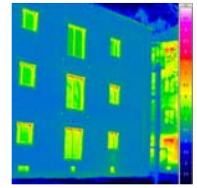


WBG Nürnberg Group
Modernisation Jean-Paul-Platz 4 (3 Liter-Standard WSVO)

Short Description:

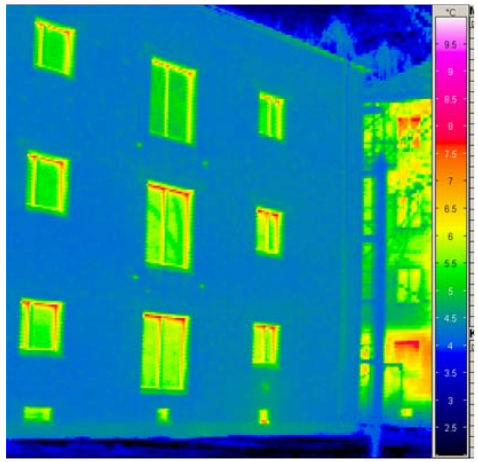
Modernisation of 6 big dwellings (occupied)

(Construction Year : 1930)

Measures taken:

„Blower-Door-Tests“

Balconies



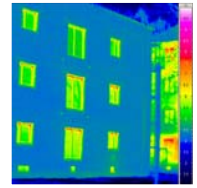
Thermographic Measures

Ventilation systems with double heating use

Plastic Window Frames

Wir gestalten LebensRäume

Modernisation Jean-Paul-Platz 4 (3 Liter-Standard WSVO)
Economic justification: Construction Costs



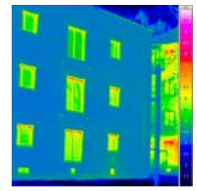
Total Costs		623.000 €
(Included	scientific studies	72.000 €
Not included :	Change of dwelling, developing	25.000 €)

Distribution of Rent:

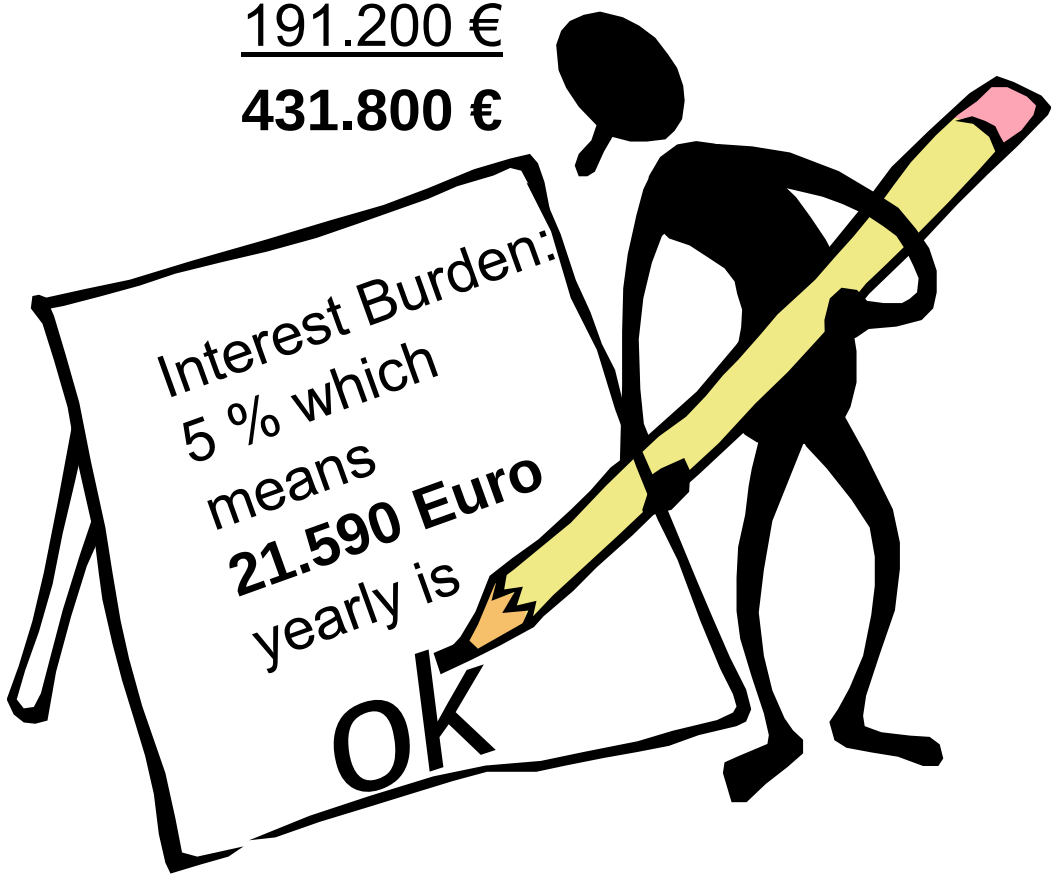
For Rehabilitation:	509.450 €
For Maintenance:	113.550 €
Total:	623.000 €

Constr. Costs per square meter living space:	503 €
Included additional costs for passive house:	ca.100 €

Modernisation Jean-Paul-Platz 4 (3 Liter-Standard WSVO)
Economic justification: Construction Costs

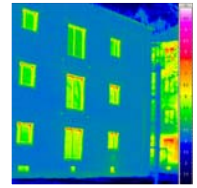


Total Costs	623.000 €
./. Subsidy EU Target 2 – Funds	191.200 €
Remaining amount	**431.800 €**



Wir gestalten LebensRäume

Modernisation Jean-Paul-Platz 4 (3 Liter-Standard WSVO)
Economic justification: Construction Costs



Net Rent (before Modernisation) 2,35 € / per Square Meter / Month

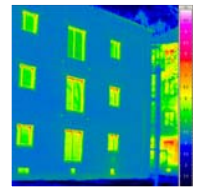
Rent Table (cold) 6,05 € / per Square Meter / Month

(According to the rent table Nürnberg 2004)

The **rent have been fixed** in the following way:

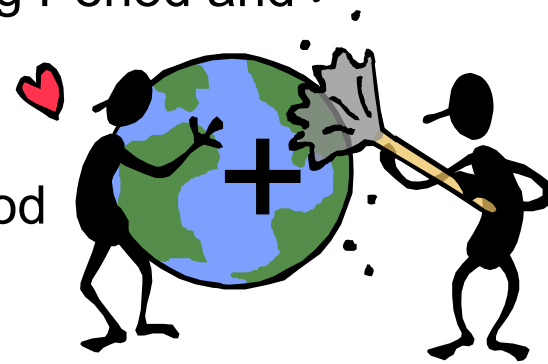
	Rent per Month and Square Meter		
	Cold	Warm	Increase
Tenants before renovation took place	4,26	5,61	1,35
New Tenants in 2003	4,93	6,28	-
New tenants starting 1.3.2005	6,05	7,40	-

Economic Calculation: Heating Costs:

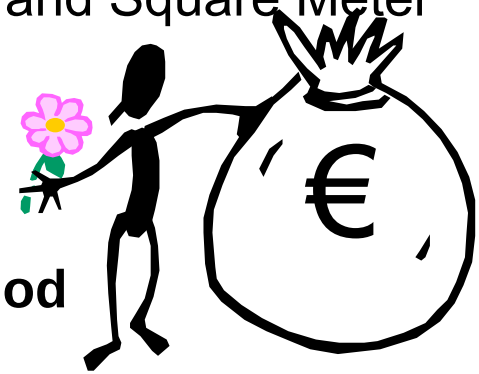


Economic Calculation: Heating Costs:

Living Space:	150 Square Meters
Consumption of Fuel Oil:	**Nearly 20 Liters** per Heating Period and Square Meter
Price for Fuel Oil:	0,65 €
Heating Costs:	1.950,00 € per Heating Period



Living Space:	150 Square Meters
Consumption of Fuel Oil:	**3,0 Liter** per Heating Period and Square Meter
Price for Fuel Oil:	0,65 €
Heating Costs:	292,50 € per Heating Period



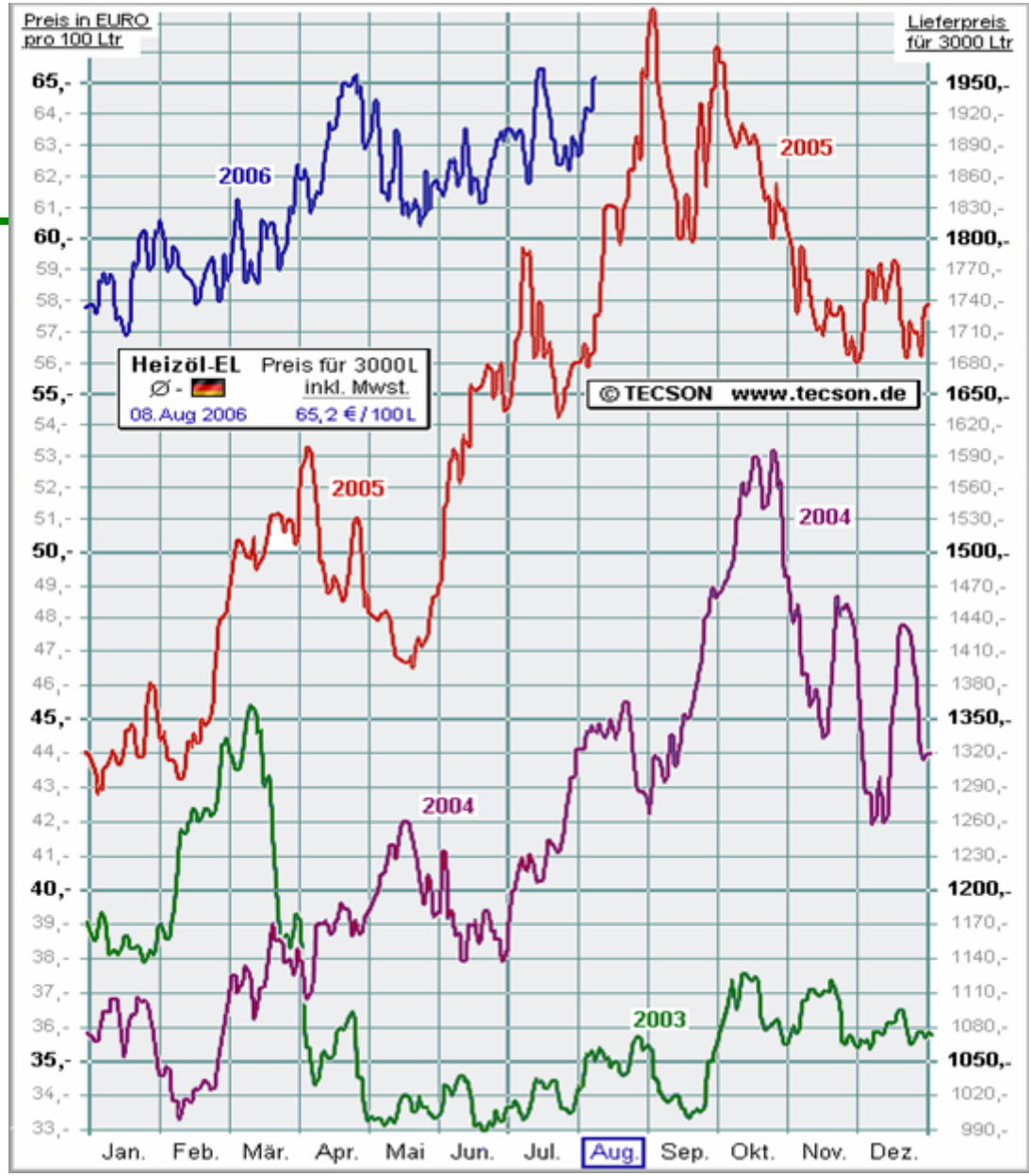
Saved for the Tenant: **1.657,50 € per Heating Period**

Wir gestalten LebensRäume

The Price for
Fuel Oil is increasing…

…and the saving in comparison with a non-rehabilitated dwelling is increasing for the tenant in a rehabilitated dwelling !

But is the investment also worthwhile for the landlord?



Quelle:
aktueller, durchschnittlicher Preis pro Liter inkl. MwSt. bei 3000 Liter Abnahme für Heizöl EL nach DIN 51603-1 mit max. Schwefelgehalt von 0,2%, Stand Aug. 2006, Quelle: www.tecson.de

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Economic Justification of ecologically efficient measures

Example: Rehabilitation Ingolstädter Str. 139-141 (4 Liter-Standard EnEV)

24 Housing Units with 860 Square Meters Living Space

Measures taken:

For securing sustainable leasing:

- **new heating,** Ventilation with double use of heat
- 20 cm instulation of **fassades,** new **windows**
- 25 cm insulation of **attic floor**
- insulation of **cellar** ceiling
- New **balconies**

Construction Costs:

- Constr. Costs per Square Meter Living Space:
  1.055 Euro per Square Meter
- Included additional Costs for Passive House:
  Nearly 120,-- Euro per Square Meter

Economic Justification of ecologically efficient Measures

Rent Calculation:

3,75 €	per m²	Rent at Present
6,32 €	per m²	New theoretical Rent after adaption of rent by according Energy Supply Law EnEV 7,42 Euro per Square Meter (2,57 € per Square Meter)
7,42 €	per m²	New theoretical Rent after adaptation of rent by Modernisation measures with higher effects than EnEV (3,67 € per Square Meter)

Wir gestalten LebensRäume

Economic Justification of ecologically efficient Measures
Win-Win-Win?

How can it be made possible, that in future more economically efficient rehabilitation measures can be realized, which go far beyond the minimum standard (EnEV)?

The optimum would be a WIN – WIN – WIN - Situation

for the environment, for the tenants and for the investor…

Economic Justification of ecologically efficient Measures
Proposal “Ecological Supplement”

The target of the ecological supplement is to **realize a rent level,** which is above the comparable table **rent for dwellings,** where measures have been taken, which **are beyond the minimum standard,** required by legal regulations. **These rent supplement can be used for the financing of additional investment for ecological improvement.**

Example: **120 Euro per square meter** ecological supplement
(Modernisation part beyond legal regulation of energy saving EnEV)

Financed by favourable loans of KfW (Interest Rate: 2,55%) there is an interest burden, which corresponds to the “Rent ecological supplement”:

0,26 € per Square Meter - This supplement is added to the rent as a constant amount.

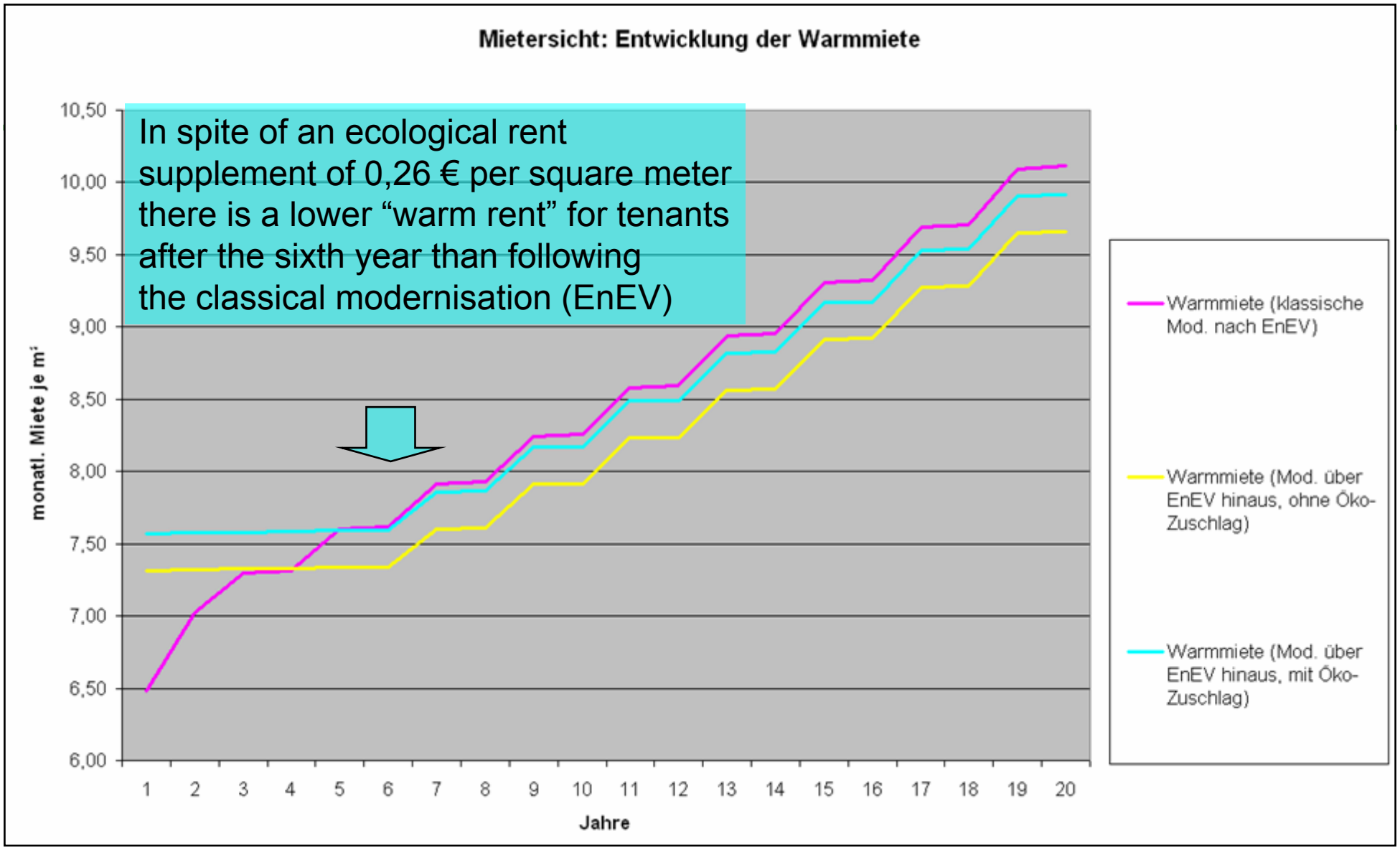
Economic Justification of ecologically efficient Measures
View of Tenants

The ecological supplement is a motivation for the landlord to realize modernisation measures beyond the legal requirements of Energy Saving.

From an ecological and economical point of view the application of an ecological rent supplement is correct and important.

But how is it regarded from the tenants' point of view?

Wir gestalten LebensRäume



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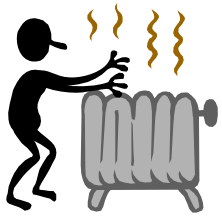


Further Measures

After the realization of modernisation measures
the tenants are informed about
the correct use with the new facilities.

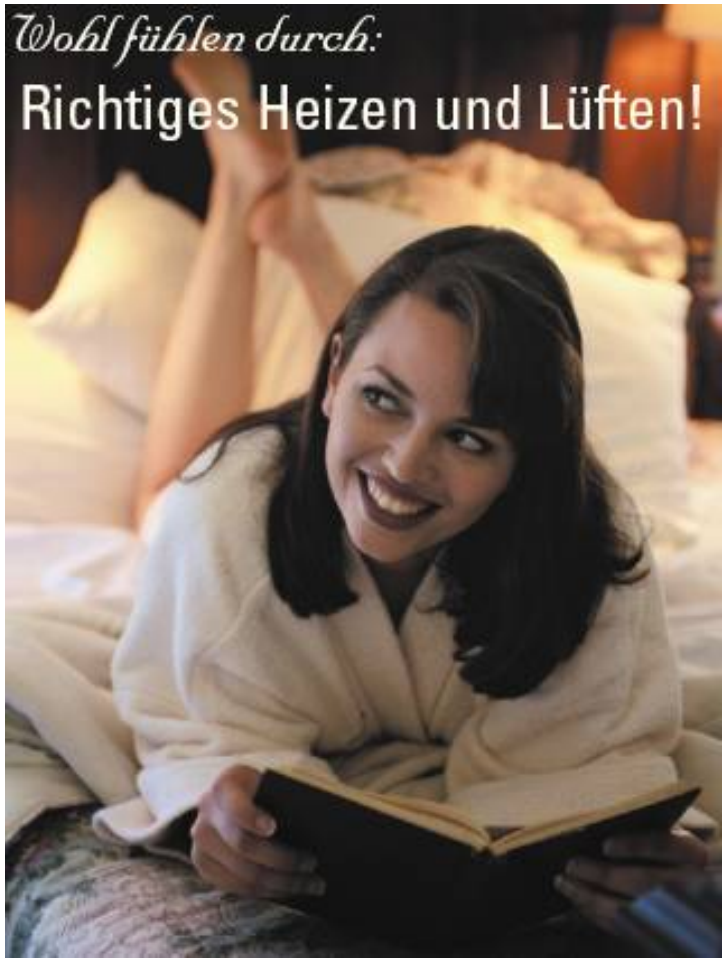
This is done in personal talks and
with information leaflets.

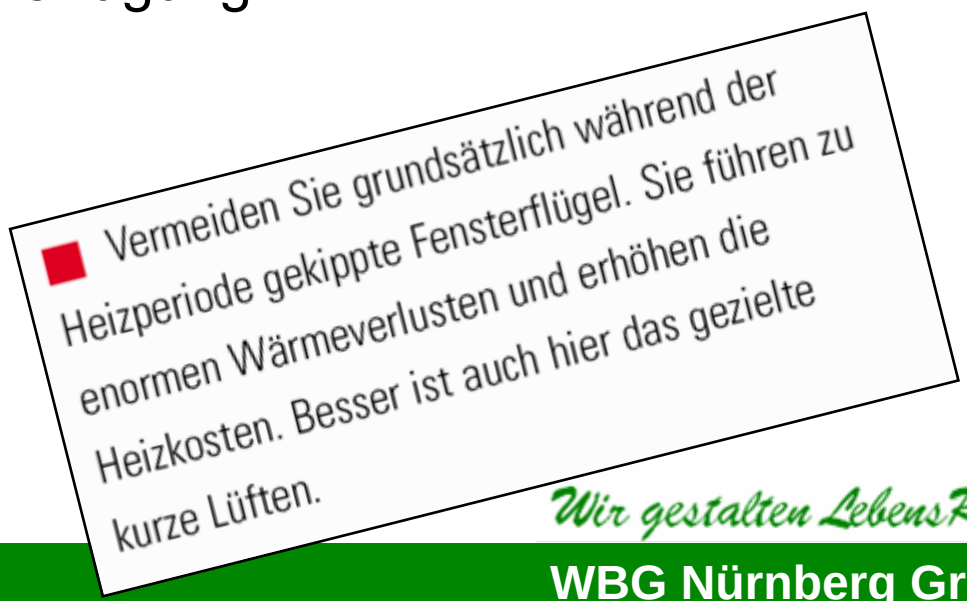
Example:
“About the correct dealing with thermostats”

Further Measures

Through reasonable ventilation and heating high energy saving can be realized.

There is a leaflet for the tenants,
which can be downloaded from the Internet.
www.wbg.nuernberg.de
zur Verfügung.





Wir gestalten LebensRäume

Important advice for energy saving and news from the quarterly tenants' newsletter can be taken:

"WE ARE AT YOUR SERVICE"

or

if needed-visits at home can be made by the technical service team

In **2005** and **2006**

Photovoltaic elements of

Photovoltaic

elements of 5.000 square meters have been

installed for

132 households

for electric supply.

Example:
Zollerstraße

Wir gestalten LebensRäume

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Economic Justification considering the principle of sustainability:

The "Break-Even" between costs and benefits based on ecology and economy can be found!

What is reasonable?

3 Liter-,

4 Liter-,

5 Liter-,

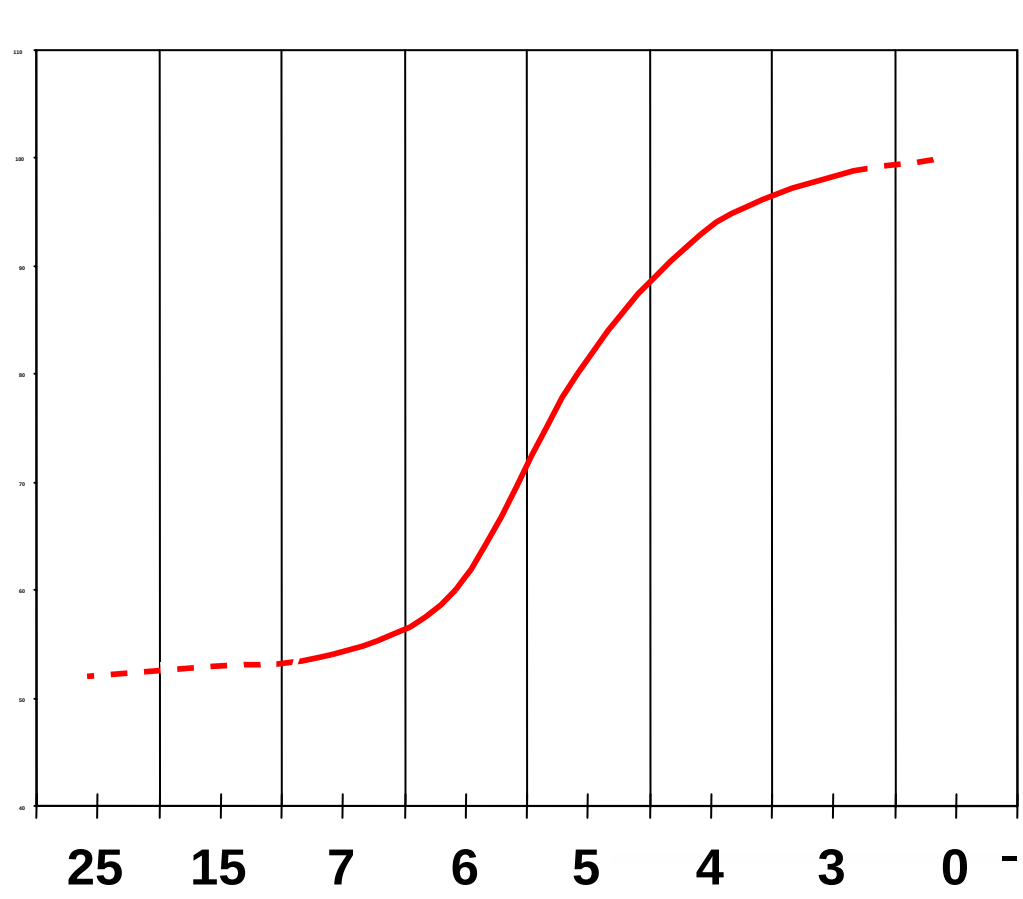
6 Liter-

or 7 Liter – House?

The energy certificate is illustrating the benefit of ecological building to the client!

Wir gestalten LebensRäume

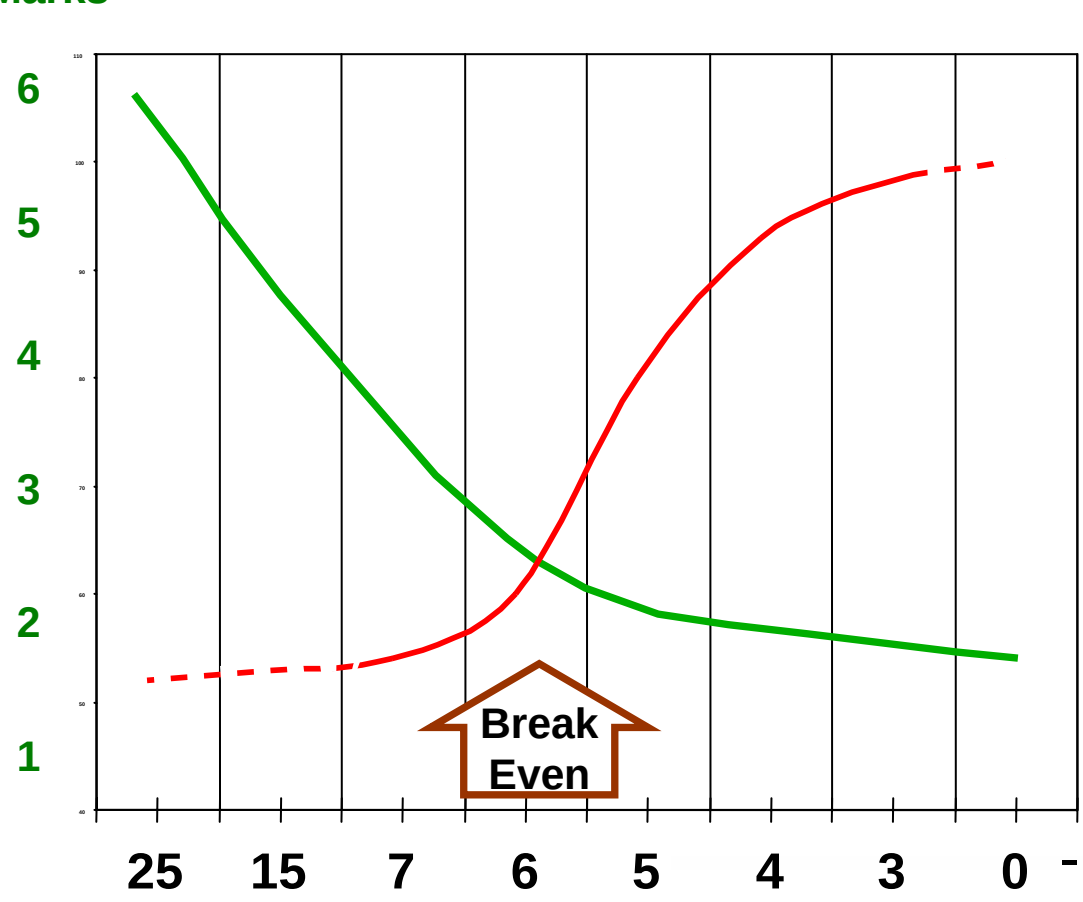
Economic



Additional Costs
for energetic elements in the framework of modernisation or rehabilitation measures in Euro per square meter

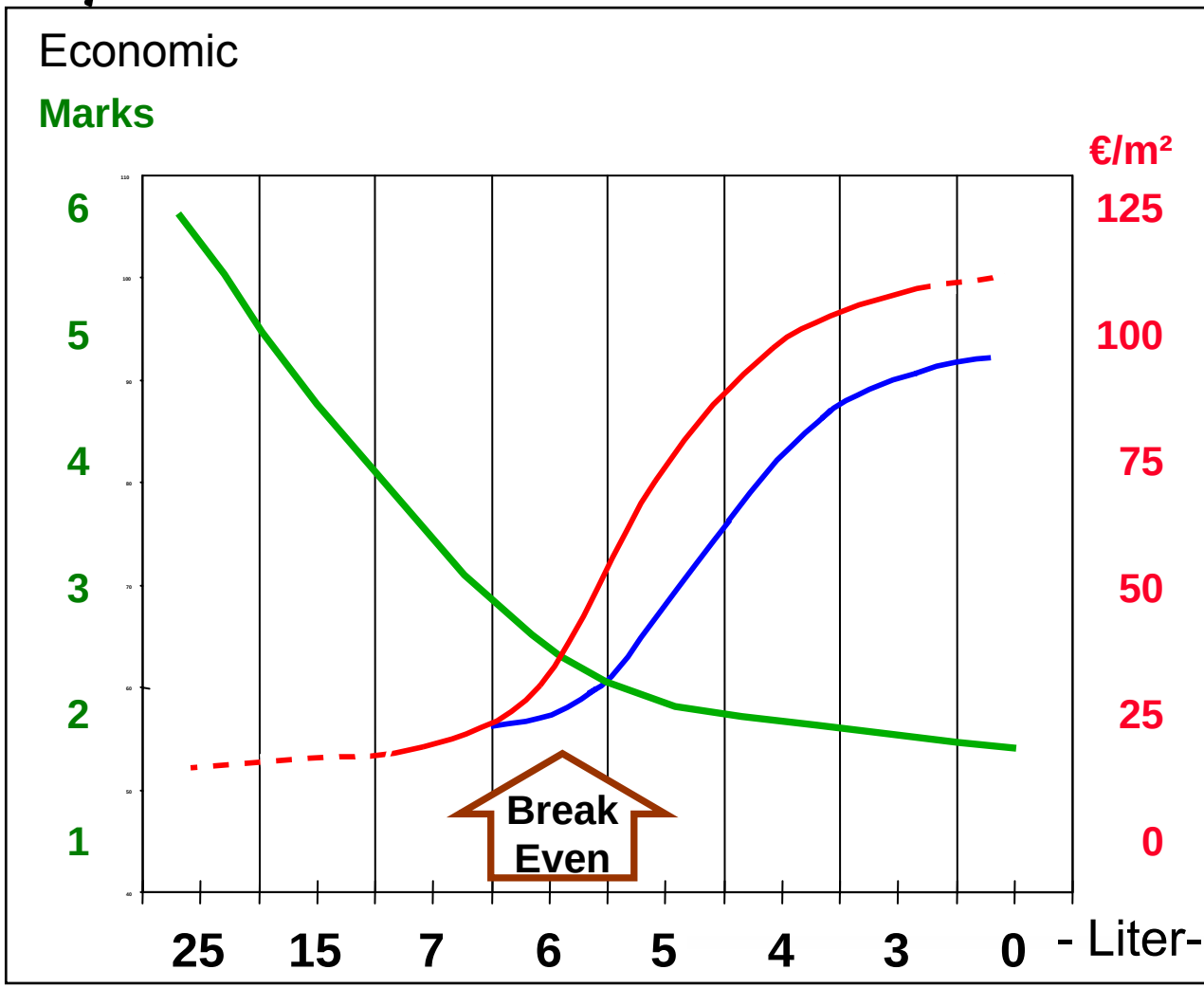
Economic

Marks



Additional Costs
for energetic elements in the framework of modernisation or rehabilitation measures in Euro per square meter

Additional benefit: saved costs for heating supply (70%), **benefit for tenant, Living standard and comfort** (30% according to a survey)



Additional Costs
for energetic elements considering the benefits through the ecological rent supplement in € per square meter

Additional Costs
for energetic elements in the framework of modernisation or rehabilitation measures in Euro per square meter

Additional Benefit:
Saved costs for heating supply (70%), **benefit for tenant, Living standard, Comfort** (30% according to a survey)

High Standard of Housing
And high Quality of Living
In energetically rehabilitated dwellings
-with payable rents for the tenants
and based on economic points of WBG's view

Wir gestalten LebensRäume

The obvious additional

costs of an ecologically healthy
house or a human house
are no real ones,
because they will be reimbursed
through a higher quality of living
and happiness.
Depressions of the soul
and uncritical behaviour
cost much more money!

Friedensreich Hundertwasser

Zitat: „Rede auf der Schmelz“, 1981/1983
Picture: „Schneckenhäuser“,1987

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Energy Efficiency in Portuguese Social Housing

TWO BUILDINGS, TWO REASONS FOR SUCCESS

THE SustainabLE housing in Europe PROJECT

IN PORTUGAL

José Coimbra

Brief Presentation of FENACHE

- The only organization that officially represents Housing Cooperatives in Portugal
- FENACHE has been developing all the efforts to improve quality in social housing
- FENACHE has adopted the Declaration for the Quality in the Cooperative Housing
- FENACHE has formed an External Technical Commission to implement this document

Bouça's Ensemble
Retrofitting An Existing Construction

ÁGUAS FÉRREAS
Cooperativa de Habitação e Construção, CRL

Brief Historical Report

- Bouça's Ensemble was designed by **Siza Vieira** in 1975
- Bouça's construction started in 1977 and was concluded in 1979
- Building had very low habitable conditions, with several problems due to non-existent external insulation

Thermal insulation was inexistent

Bouça's Ensemble
Retrofitting An Existing Construction

ÁGUAS FÉRREAS
Cooperativa de Habitação e Construção, CRL

Work to be done

- Retrofitting of the 56 dwellings, consisting on:
  - Replacement of old and damaged doors and windows by new wooden ones;
  - Applying thermal insulation on roofs and façades to increase inner comfort e diminish energy consumption both in winter for heating and in summer for cooling;
  - Waterproofing of roof-coverings and façades to prevent water infiltration inside the dwellings.

Bouça's Ensemble
Retrofitting An Existing Construction

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Cooperativa de Habitação e Construção, CRL

Improvement on Thermal Insulation

Cement asbastos sheets removal

Thermal insulation with waterproofing sheets covered with fine gravel

Bouça's Ensemble
Retrofitting An Existing Construction

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Improvement on Thermal Insulation

Façades coating and wall thermal insulation

Bouça's Ensemble
Retrofitting An Existing Construction

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Improvement on Thermal Insulation and renewing windows

Façades coating and wall thermal insulation

Bouça's Ensemble
Retrofitting An Existing Construction

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Building's Final Images

A success of retrofitting original author's architecture

Positive outputs of such an Experience

We have taken the example of Bouça's Retrofitting as an important activity that will be "reproduced" in future Buildings

Images of Vila Nova de Gaia

New Standards for Housing Construction

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European Legislation

Directive 2002/91/EC:

Improvement of the Buildings' Energy Performance

considering outdoor climate and local conditions

considering indoor climate and financial profitability

Portuguese Legislation

Published on the 4th of April 2006

Law nr. 78/2006	**Energy Certification**
Law nr. 79/2006	**Air conditioning energy Systems in Buildings**
Law nr. 80/2006	**Building Thermal Characteristics**

The Importance of Demonstration Projects

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- Considering that recent legislation is extremely demanding if we consider the traditional practices of the building sector, and that
- There is a wide distance between what is normally done and what the new rules demand
- FENACHE advanced the fulfilment of new legislation in Portugal joining a pilot project named:
- SHE – SUSTAINABLE HOUSING IN EUROPE
- This Demonstration Project was very important to convince our society that Energy Efficiency is possible to achieve just with a small increase on costs and to show the benefits of Energy Efficiency.

The Example of the SHE Project

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Description

Sustainable housing in Europe

Moving from the Extraordinary to the Ordinary

- A European Demonstration Project with Social Housing Organisations
- Funded by the European Commission under the 5th Framework Programme on "*Energy, Environment and Sustainable Development*" *and supervised by:*
  - Prof. Eduardo Maldonado of the University of Oporto
  - Prof. Matheos Santamouris of the University of Athens

Main Purposes

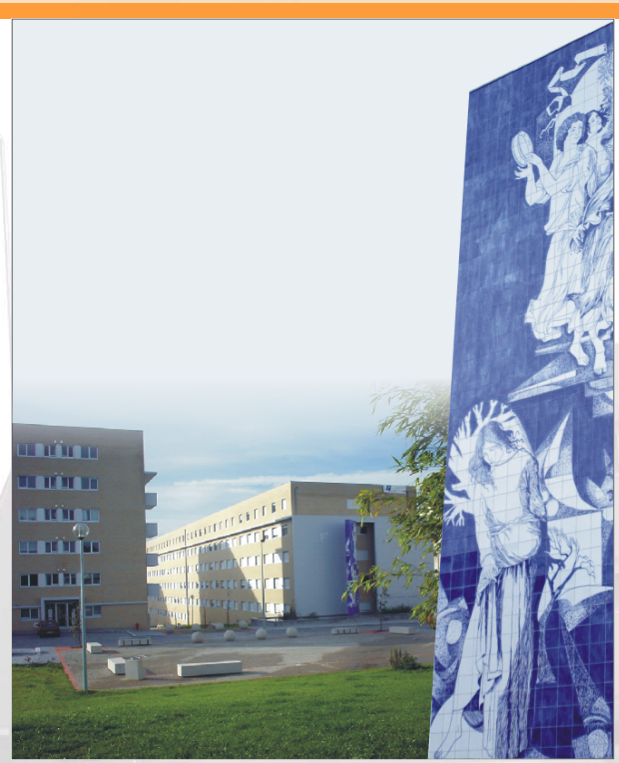
- ✓ To assess and demonstrate the real feasibility of Sustainable Housing using pilot projects (714 dwellings from Denmark, France, Italy and Portugal);
- ✓ To involve and convince the stakeholders of the construction process about sustainable housing

The Portuguese SHE Partner

A Cooperative Union formed in 1998 aiming to promote:

1. Ponte da Pedra 1st Phase (150 non-sustainable dwellings) 1999 – 2003

2. Ponte da Pedra 2nd Phase (101 sustainable dwellings) 2005 – 2006



Ponte da Pedra 2nd Phase
A New Construction

Description

- Cooperative construction under controlled costs approved and financed by the Portuguese Institute Housing of 101 dwellings
- Building's management according to the Norm NP EN ISO 9001:2000
- Technical Control with a ten year insurance policy
- Sustainable construction rules in respect of the SHE Project
- First construction in Portugal designed to obtain a Certificate of Energy Efficiency Grade "A"

Energy Management

We have adopted several measures to reach a
HIGH ENERGY SUSTAINABLE PERFORMANCE:

Adoption of superior quality in THERMAL INSULATION (respecting the very recently approved Regulation on Energy Efficiency).

Introduction of RENEWABLE ENERGIES

ENERGY SAVING on artificial lighting and water heating

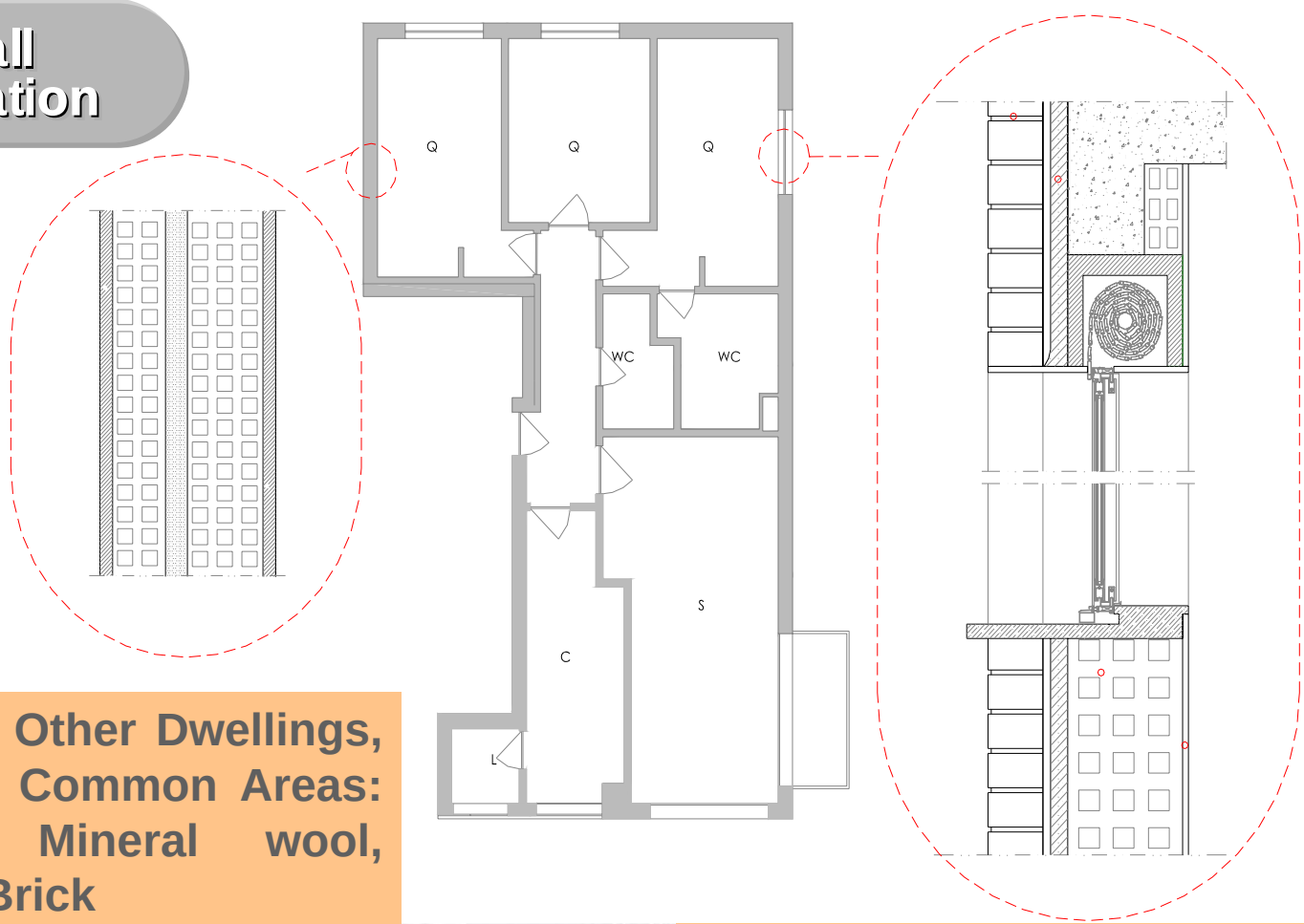
Goal

Improvement of **20%,** considering the old Portuguese regulations

- to improve comfort
- to avoid air-conditioning
- to reduce total energy consumption

Energy Management

Wall Insulation



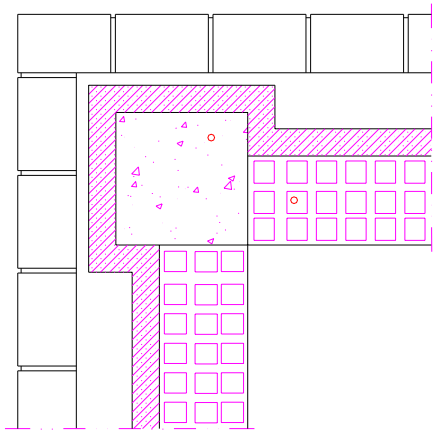
Walls to Other Dwellings, lifts and Common Areas: 4 cm Mineral wool, Double Brick

Insulated Façades, Boxes for Roller Blinds & Double Glazing

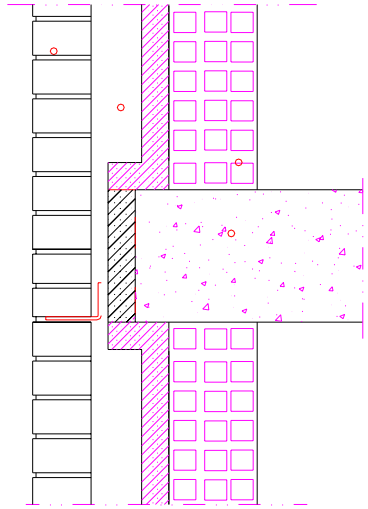
Energy Management

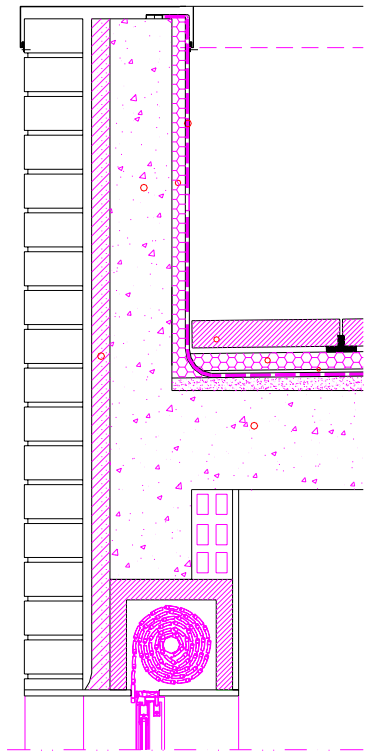
Thermal bridges carefully treated

Aerial view



Frontal view





Energy Management

Projected Polyurethane

Energy Management

Double Wall angle supported with air gap of 4 cm

Energy Management

Roof Insulation

6 cm insulated roofs

Energy Management

Thermal and acoustic blind box

Energy Management

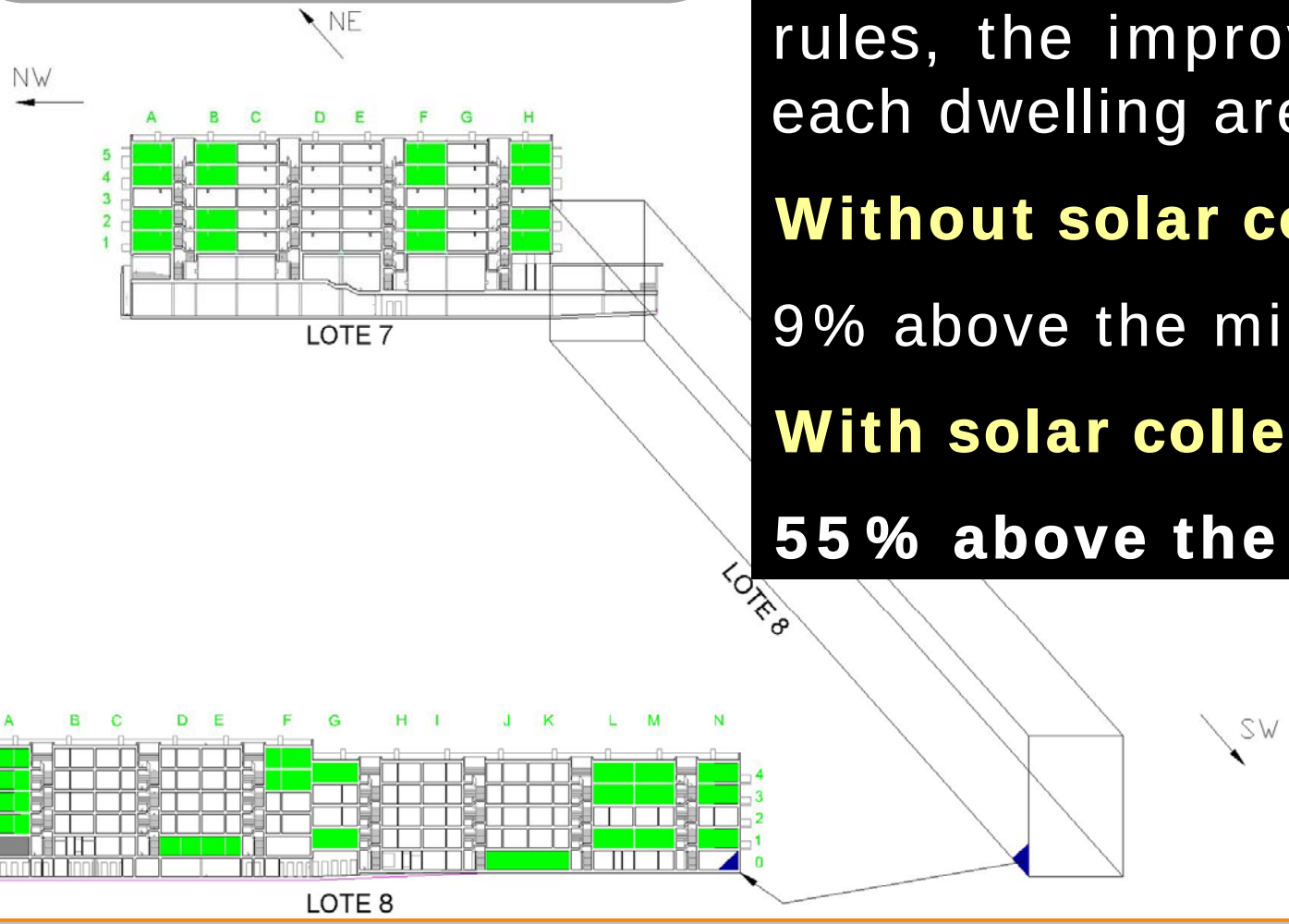
Renewable Energies

Solar Collectors

Gas hot water heaters for apartment top-up

Energy Management

Energy Performance



According to the new 2006 rules, the improvements in each dwelling are:

Without solar collectors:

9% above the minimum

With solar collectors:

55% above the minimum

Energy Management

Solutions of Low Energy Lighting

The model dwelling suggested efficient solutions for lighting:

- Neon bulbs

- T5 bulbs

- Electronic ballasts

Energy Management

Lighting in Common Areas

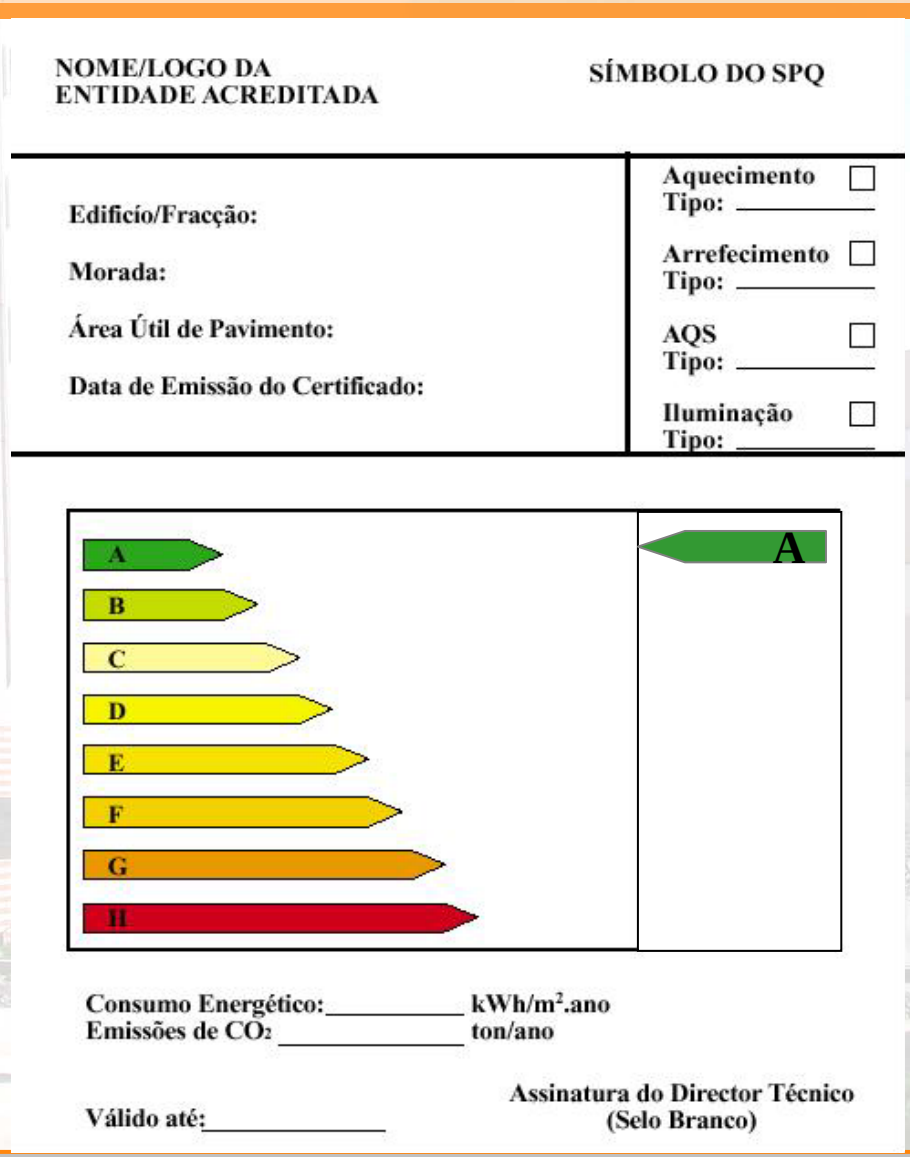
- **Low Energy electronic bulbs turned on through solar cells from the outside**

- **Movement detectors in staircases and corridors**

Energy Management

Energy Certification

According to the new regulation on Energy Certification, Ponte da Pedra – 2nd Phase will reach level "A"



NOME/LOGO DA ENTIDADE ACREDITADA

SÍMBOLO DO SPQ

Edifício/Fracção:

Morada:

Área Útil de Pavimento:

Data de Emissão do Certificado:

Aquecimento ☐ Tipo: _____

Arrefecimento ☐ Tipo: _____

AQS ☐ Tipo: _____

Iluminação ☐ Tipo: _____

A

B

C

D

E

F

G

H

A

Consumo Energético: _____ kWh/m².ano

Emissões de CO_2 _____ ton/ano

Válido até: _____

Assinatura do Director Técnico (Selo Branco)

Energy Monitoring

Monitoring Plan

January 2007 – December 2007

In order to define more accurately the efficiency of the sustainable characteristics of the construction, monitoring will be made on:

- Building Envelope (Surface temperature, Heat flow)
- Energy consumption for sanitary hot water
- Electricity (Consumption for ventilation and lighting)
- Comfort (Indoor temperature, Indoor humidity, Mean radiant temperature)

Images of the Sustainable Building – Project / Construction

Images of the Sustainable Building – Project / Construction

Images of the Sustainable Building – Project / Construction

Positive outputs of such an Experience

We have adopted the rules of energy efficiency and sustainable construction in the future Cooperative Buildings

Leça Palmeira – 29 dwellings

Starting Date – 25/02/2006

Guifões – 40 dwellings / Elderly Building

Starting Date – 25/02/2006

Final Considerations

The Conception of Energy Efficient Buildings was possible:

- Respecting the under controlled costs of Social Housing;
- Gaining the financial and technical support of the Portuguese Housing Institute;
- Improving the Life Quality Level of Inhabitants and Future Owners.

TWO BUILDINGS, TWO REASONS FOR SUCCESS

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Retrofitting of Social Housing

An Energy Efficient New Construction

Energy Strategic Asset Management for Social Housing Operators in Europe (ESAM)

Adrien BULLIER

Project manager, DELPHIS network, France

bullier.delphis@wanadoo.fr

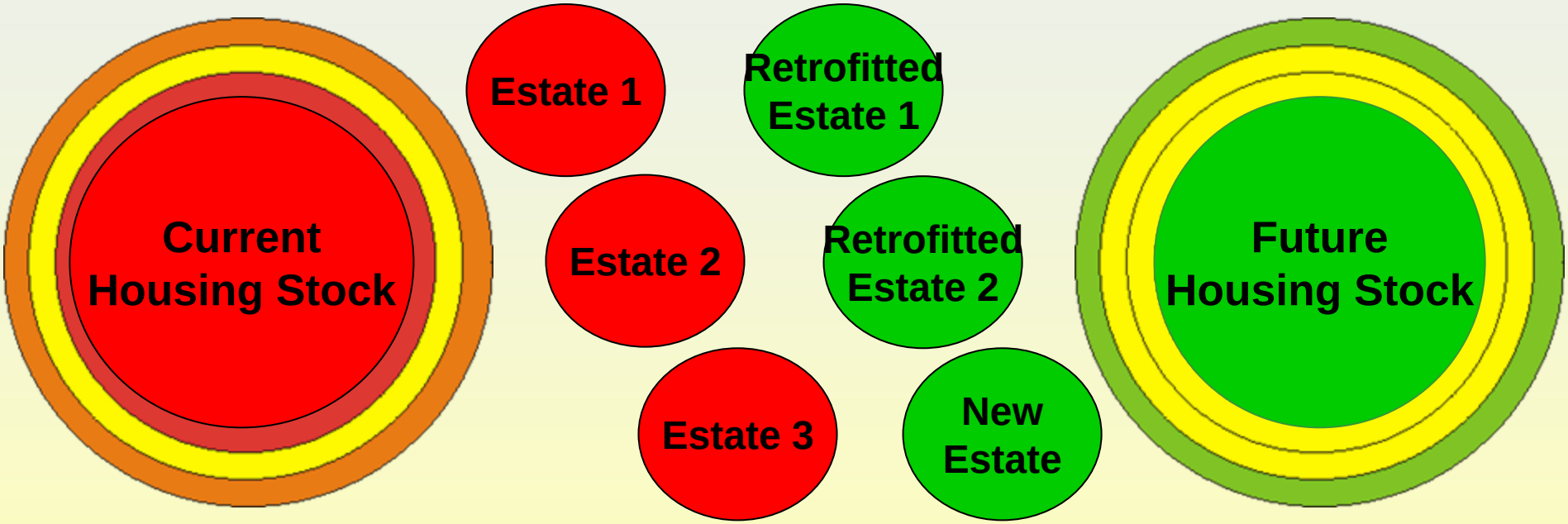
Increasing the global energy performance of the social housing stock

- Make the constraint of Energy Performance Diagnosis an opportunity
- Focus on the existing housing stock
- Integrate energy into strategic decision-making process

➔ From Strategic Asset Management (SAM) to Energy Strategic Asset Management (ESAM)

With the support of Intelligent Energy Europe

Increasing the energy performance of the housing stock



Year 1

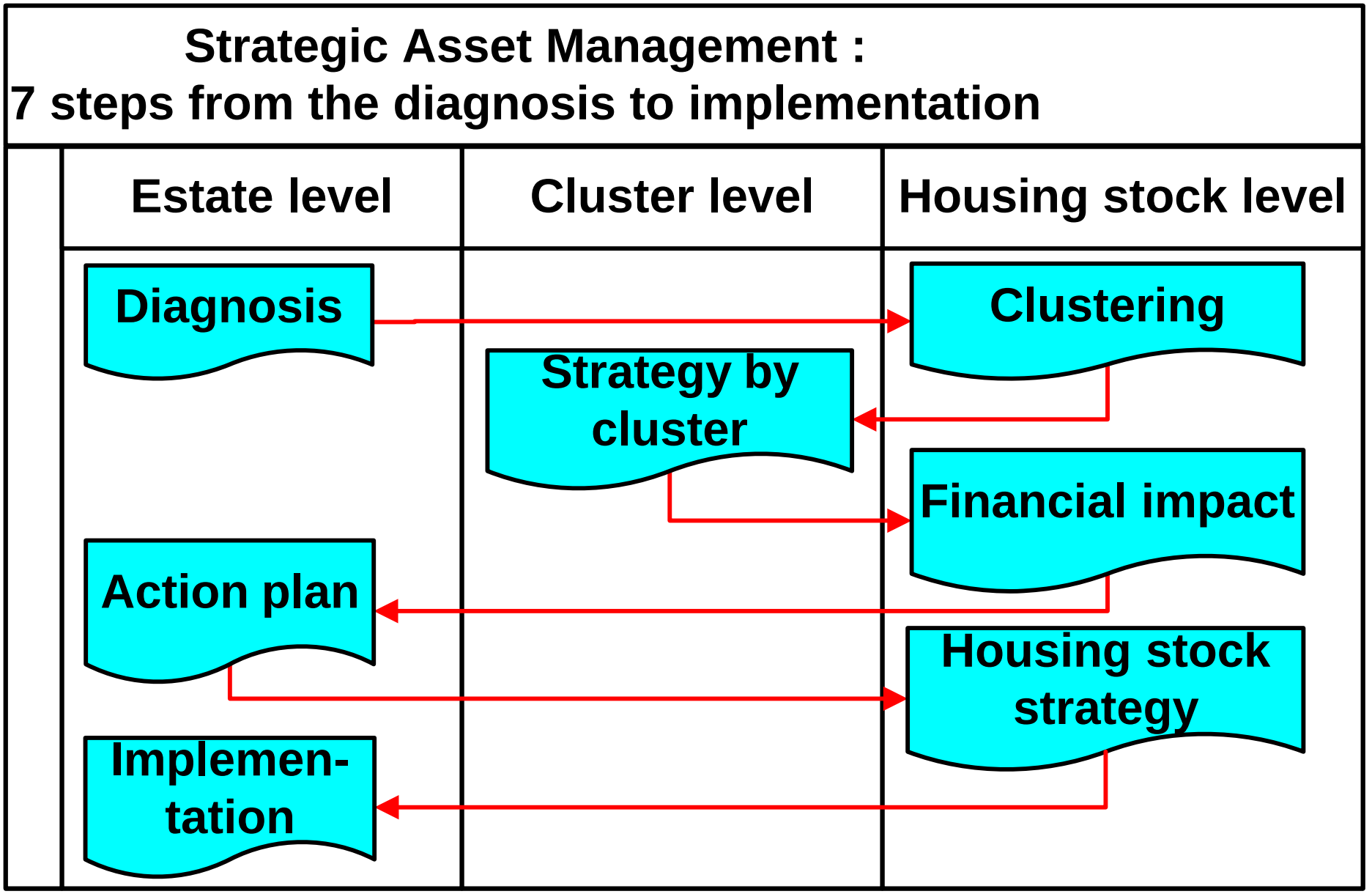
Year 1 + X

Energy-wasting housing stock

Energy efficient housing stock

With the support of Intelligent Energy Europe

Strategic Asset Management :
7 steps from the diagnosis to implementation



Energy Strategic Asset Management

1. Simplified diagnosis of the energy performance of the housing stock

2. Link this diagnosis to the strategic diagnosis of the housing stock

3. Long term strategies integrating the improvement of energy performance

With the support of Intelligent Energy Europe

Using building typologies

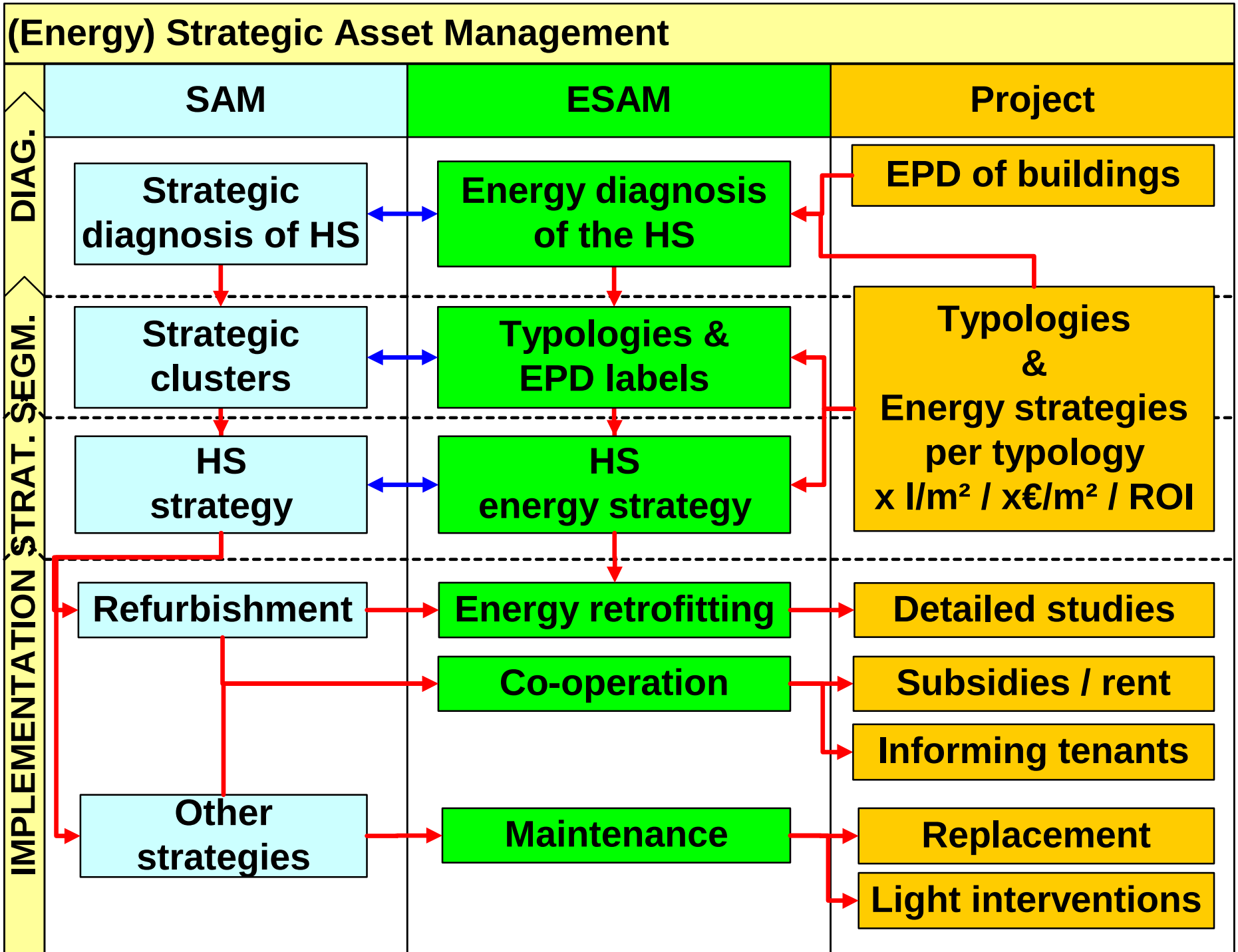
- Simplify the energy diagnosis of the housing stock

- Define standard energy saving strategies for each typologies: x l/m² = x€/m² = x years of payback

→ Identify the cheapest energy saving measures

→ Definition of long-term energy strategies:
  - Impact on the energy performance of the housing
  - Estimation of costs

With the support of Intelligent Energy Europe


(Energy) Strategic Asset Management
SAM
ESAM
Project
DIAG.
SEGM.
STRAT.
IMPLEMENTATION
Strategic diagnosis of HS
Energy diagnosis of the HS
EPD of buildings
Strategic clusters
Typologies & EPD labels
Typologies & Energy strategies per typology x l/m² / x€/m² / ROI
HS strategy
HS energy strategy
Refurbishment
Energy retrofitting
Detailed studies
Co-operation
Subsidies / rent
Informing tenants
Other strategies
Maintenance
Replacement
Light interventions

Expected outcomes

- Accountability on environmental performance of the housing stock

➔ Measurement is the first step to improvement!

- Identify the most energy-efficient investments

➔ Better funding of projects

- Integrating energy in the housing stock strategy

➔ Make energy performance a concrete objective for social housing operators

With the support of Intelligent Energy Europe

DELPHIS

Thank you for your attention

Adrien BULLIER

Project manager, DELPHIS network, France

bullier.delphis@wanadoo.fr