Financing of Sustainable Housing Retrofit

Guidelines for Financial Institutions
Workshop Kopenhagen 26.02.2015

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1. Promotion of Energy Efficient Buildings
2. EU Policy and Promotion
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4. The EuroPhit Project
5. The German Case
6. Denmark
7. Final Remarks

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Part 1

Promotion of Energy Efficient Buildings

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To improve energy efficiency of buildings. we need to achieve a successful mix :

- of regulatory policies
- promotional schemes
- market based instruments

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The system of promotion of energy efficiency

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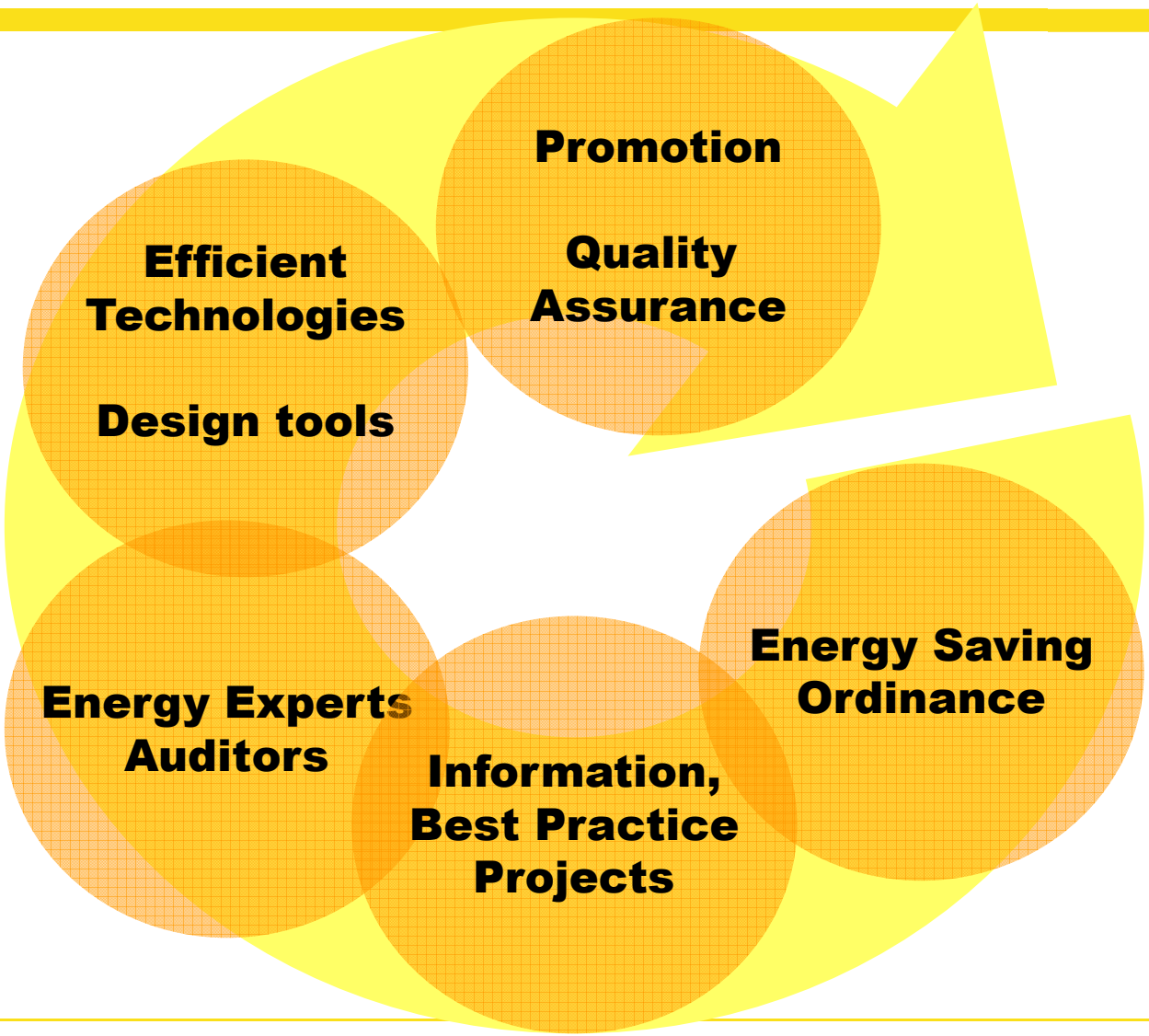

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Principles

- EE- requirements of promotion are more ambitious than legal requirements
- Using energy auditors and appropriate calculation tools Mandatory requirement of qualified engineers and architects (quality assurance)
- Promotional incentives correspond with public benefit

What banks need to know – technical aspects

Whole house approaach

Target value for primary energy

Reliable calculation tools

Certification systems

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Part 2

EU Policy and Promotion

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EU Directive 2002/91/EC

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on Energy Performance of Buildings

- Application of minimum requirements for new buildings and existing buildings for primary energy consumption and energy losses
- Energy certification of buildings
- Member States shall have regulations and administrative provisions to comply
- Member States: Energy Saving Ordinances

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EU Funding for Energy Efficiency in Buildings

http://www.buildup.eu/financing-schemes/

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ELENA - European Local ENergy Assistance

Europäische Investitionsbank

EIB ELENA
Big investment projects
> 50 million €

KFW

KfW ELENA
investment projects
< 50 Mio. €

Severla facilities

CEB
COUNCIL OF EUROPE DEVELOPMENT BANK

CEB ELENA
Social investment projects
< 50 Mio. €

European Bank
for Reconstruction and Development

EBRD ELENA
Focus on municipalities
< 50 Mio. €

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Part 3

Financial Instruments

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Financial Instruments

- Overview
- Cash flow as basis for financing
- Cash flow analysis: Example
- Project- versus recourse finance
- Risks
- More details:
  - Debt financing,
  - ESCO financing,
  - Forfaiting,
  - Leasing
- Public supports
- Due to limited time: Let us know what are your preferences

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Financial Instruments for Energy Efficiency Investments in Buildings

① **Debt financing, Credit lines, Revolving funds,**

② **ESCO financing,**

③ **Forfaiting/ Cession**

④ **Leasing**

Who is the beneficiary?

- Private house owner /tenant: mainly debt financing + public supports
- Private company 1-4
- Community 1-4

Public supports

- Preferential soft loans
- Grants - Redemption grants
- Guarantee schemes

The basis for financing is the financial soundness of a project

The basis for financial soundness is the cash flow.

- Economic benefits (externalities) are not considered, but they can serve as justification for public supports,
- Cash flow from energy efficiency projects consists of:

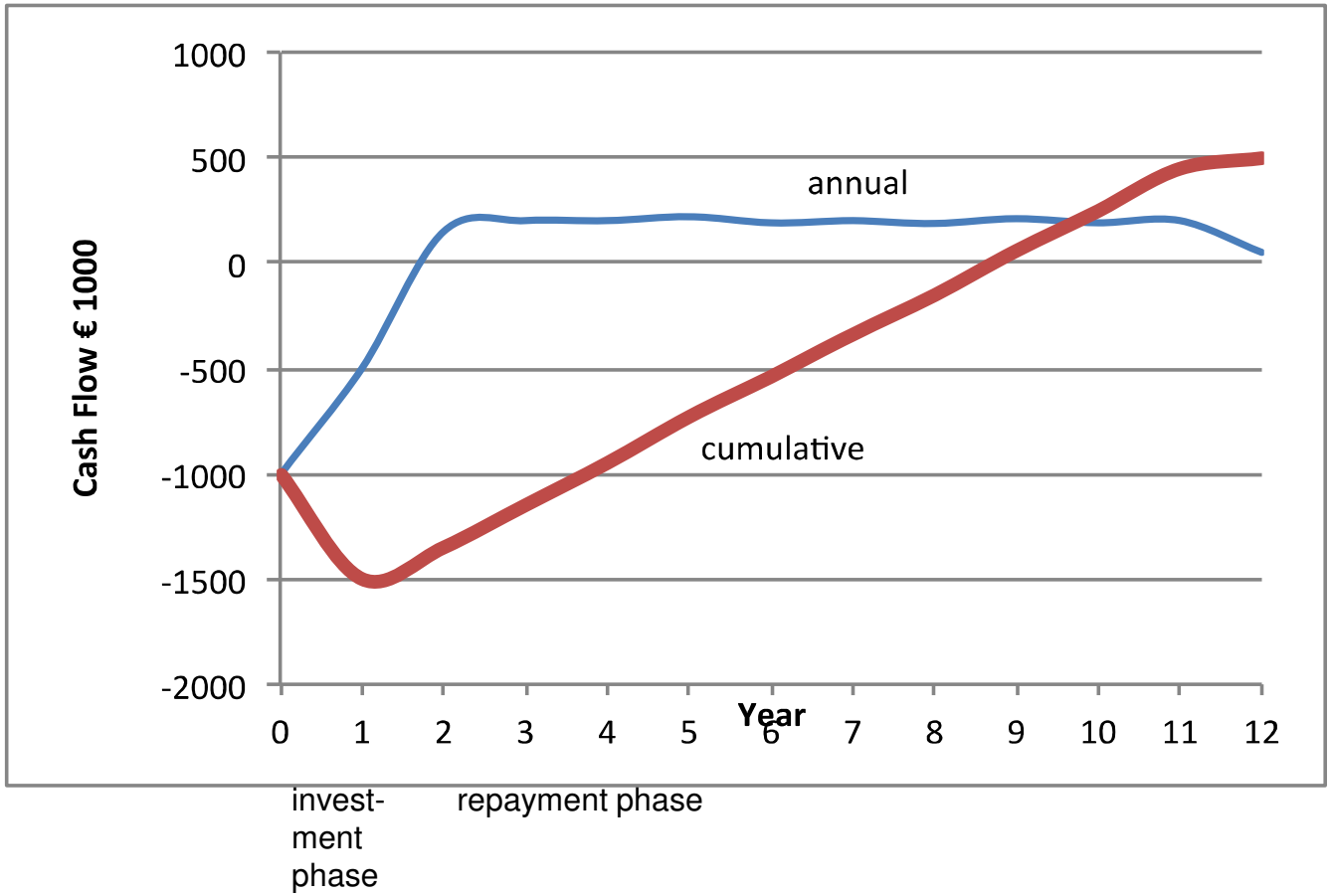
Inflows	Outflows
Savings from efficiency gains	Equity share at investment cost
Higher rents (house-owners)	Operation cost
	Higher rents (tenants)
Loan disbursements	Repayment/interest for loans

- **Savings will arrive as avoided outflows.**
- **Savings usually fluctuate, they also depend on price developments and can only be measured if the base case values are known**
- **They do not always arrive at the same place as the outflows (investment versus operating budget; tenant versus landlord) -→ conflict lines**

Several models :

- **Private tenant**: No investment cost (only inconvenience), but future energy savings (potentially compensated by rent increases: can be the cause for disputes)
- **Private landlord**: investment cost (repayment to banks), energy savings go to tenant if not compensated by rent increases
- **Private house-owner:** investment cost/loan repayments vs. savings
- **Community**: Investment cost must be justified by future savings.
  - **How reliable are estimates on savings?**
  - **Are savings available for debt service?**
  - **Incidental cost and energy saving cost**

Typical cash flow profile of an energy efficiency project



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Cash flow example: Housing refurbishment (Rental homes)

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Discount rate d= 6%

		C	D	E	F	G	H	I	J	K	L	M	N
	Year		0	1	2	3	4	5	6	7	8	9	10
4	1. Revenue		0	193 000	193 000	193 000	193 000	193 000	193 000	193 000	193 000	193 000	193 000
5	Renovation rent increase			85 000	85 000	85 000	85 000	85 000	85 000	85 000	85 000	85 000	85 000
6	Rent increase energy efficiiency			108 000	108 000	108 000	108 000	108 000	108 000	108 000	108 000	108 000	108 000
7	2. Investment (energy efficiency part)		570 000										
8	3.Maintenance cost (2% ann.increase)			0	6 000	6 120	6 242	12 000	6 500	6 630	6 763	6 898	7 036
9	4.Project Cash Flow (energy)	line 6-8	-570 000	108 000	102 000	101 880	101 758	96 000	101 500	101 370	101 237	101 102	100 964
10	4a. Project cash flow after tax	line 9-18		72 800	69 200	68 328	67 455	63 200	65 700	64 822	63 942	63 061	62 179
11	5. Equity		70 000										
12	7. Loan Finance												
13	8. Loan disbursement+debt service	line 14+15	500 000	70 000	70 000	68 000	66 000	64 000	62 000	60 000	58 000	56 000	54 000
14	8.1 Principal	line 16 *c15		50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000
15	8.2 Interest	4%		20 000	20 000	18 000	16 000	14 000	12 000	10 000	8 000	6 000	4 000
16	Loan Balance		500 000	500 000	450 000	400 000	350 000	300 000	250 000	200 000	150 000	100 000	50 000
17	Net Cash flow before tax	line 9-11-13	-70 000	38 000	32 000	33 880	35 758	32 000	39 500	41 370	43 237	45 102	46 964
18	Profit tax 40% **)	40%	-70 000	35 200	32 800	33 552	34 303	32 800	35 800	36 548	37 295	38 041	38 786
19	Net Cashflow after tax	line 17-18	-70 000	2 800	-800	328	1 455	-800	3 700	4 822	5 942	7 061	8 179
20	Plus repayment subsidy 15% (tax free)	15%		7 500	7 500	7 500	7 500	7 500	7 500	7 500	7 500	7 500	7 500
21	Net cash flow after tax+subsidy		-70 000	10 300	6 700	7 828	8 955	6 700	11 200	12 322	13 442	14 561	15 679

22	Pre Tax financial IRR*)	50,32%
23	After tax financial IRR*	-9,10%
24	After tax/subsidy financial IRR*	7,63%
25	*) refers to equity	**) For profit tax principal repayment has to be re-added

26	Debt service cover	1,54	1,46	1,50	1,54	1,50	1,64	1,69	1,75	1,81	1,87
27	Debt service cover after-tax	1,04	0,99	1,00	1,02	0,99	1,06	1,08	1,10	1,13	1,15

Economic IRR

Total investment (energy)		-570 000									
Project cash flow	line 9	-570 000	108 000	102 000	101 880	101 758	96 000	101 500	101 370	101 237	101 102	100 964
Total cash flow + repayment subsidy		-570 000	115 500	109 500	109 380	109 258	103 500	109 000	108 870	108 737	108 602	108 464

Economic IRR*) 12,28%

Economic IRR incl. repayment subs.*) 14,08%

*)No externalities included

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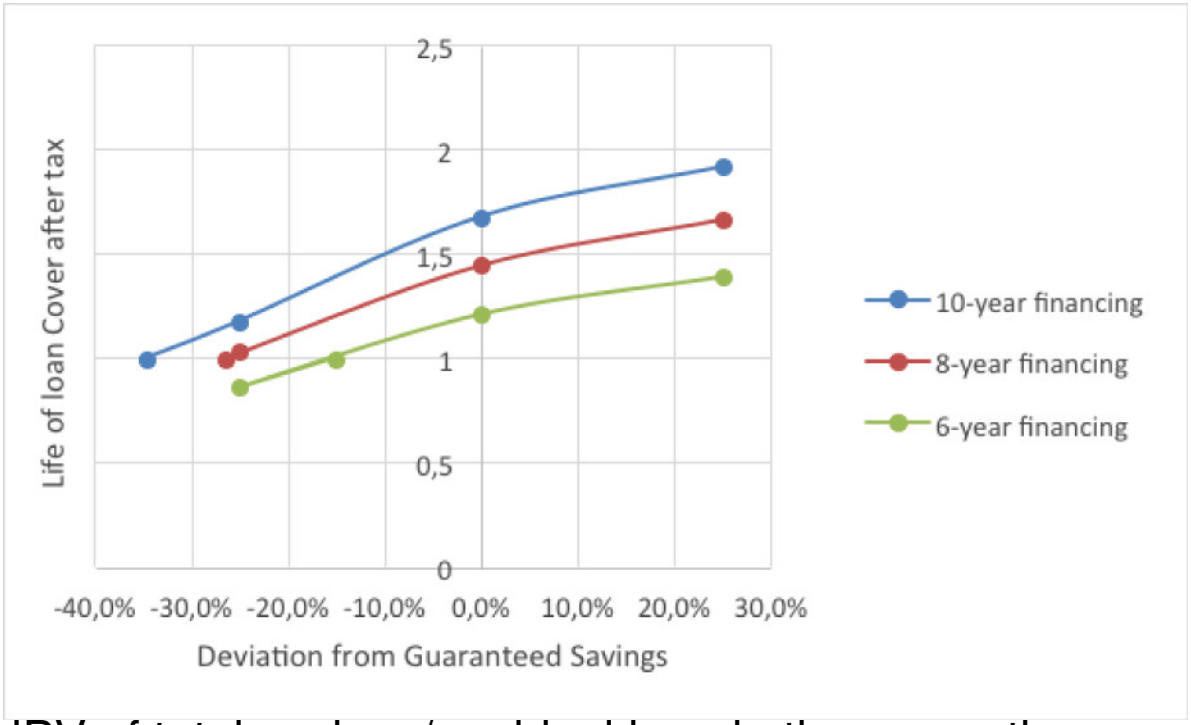
Project versus recourse finance:

- **Recourse (or balance sheet finance):** Finance is granted on the basis of the creditworthiness of the investor (mostly supported by a collateral). Cash flow and NPV are (for the bank) of secondary importance (It is assumed that the investor knows the cost benefits of the project)
- **Project finance:** Finance is granted on the basis of the financial soundness (cash flow) of the project. The investor has to prove that the cash flow is sufficient to cover the repayment (debt service ratio >1; Life loan ratio > 1, at all times)
- **Recourse and project finance:**
  - **Project finance for energy efficiency part**
  - **Recourse finance for the incidental and modernisation part (since there are no visible future financial benefits)**

Example for a banks ratio analysis:

- **Savings sensitivity and life of loan cover (example from a project in Romania):**



= NPV of total savings/ residual loan in the respective year

Risks of energy efficiency projects

- **Technical risks**
  - Quality of design and construction
  - Performance risks, expected savings will not be reached
- **Financial Risks**
  - Price fluctuations
  - Very long repayment time frames (unusual in many countries)
  - No separation of project benefits from other financial cash flows (often needs separate accounting systems)
- **Mitigation of risks (for the lender)**
  - Analysis of different scenarios (sensitivity analysis)
  - Collaterals
  - Participation of public institutions (e.g. first loss share)
  - Step by step refurbishment and finance

Debt financing, Credit lines, Revolving funds,

- **Classical finance for private investors**
- **As recourse financing**:
  - Creditworthiness of borrower, not necessarily project
- **As project finance:**
  - Private house-owner: Standardised procedures, normally under a public programme requiring standardised technical as well as financial ratios
  - Community: Cash-flow must be sufficient for loan-service
  - Separate finance for “incidental part” (equity or recourse financing)

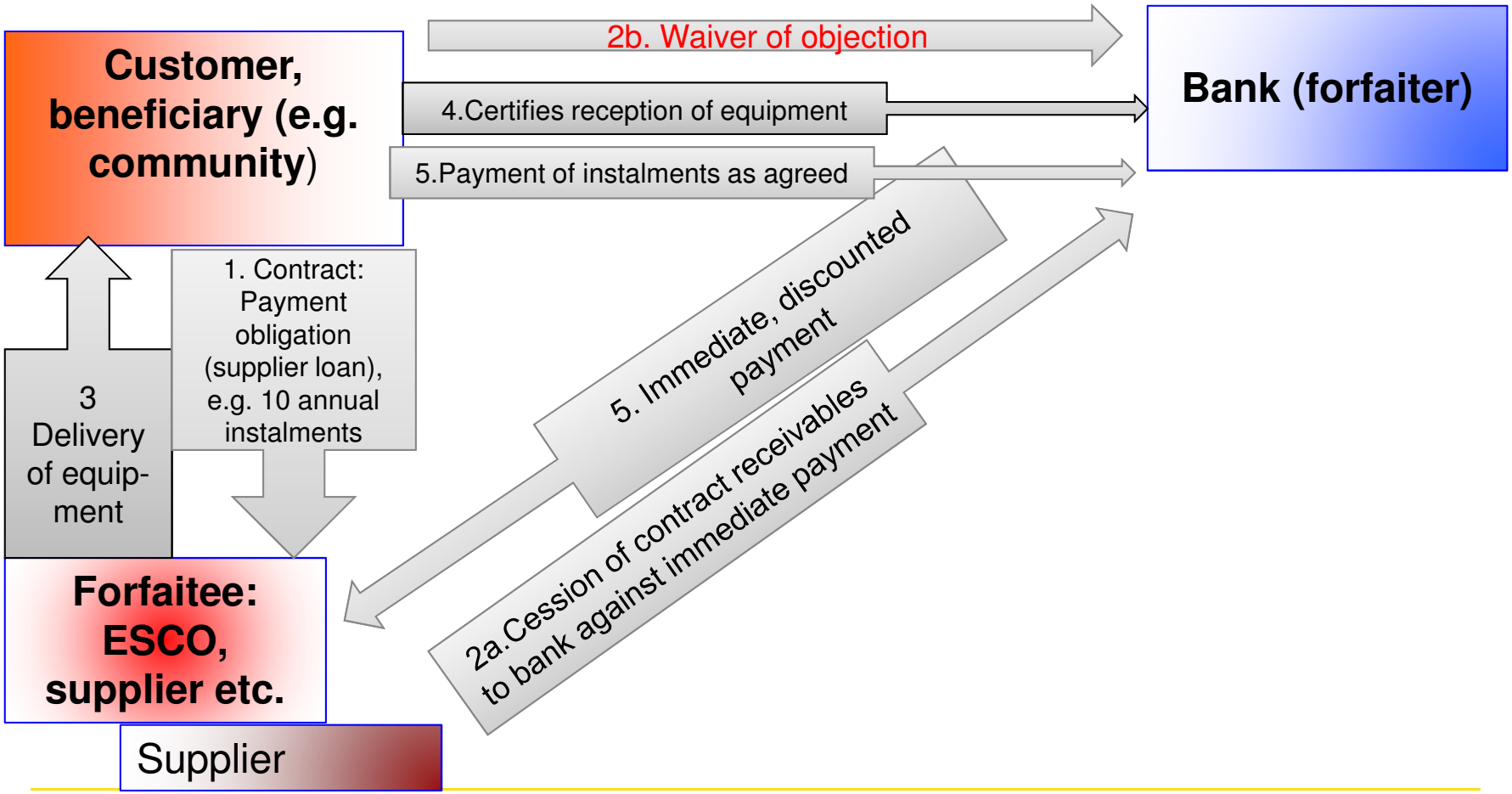
EPC and ESCO FINANCING :

- **EPC (Energy performance contracting)** refers to the contractual arrangement between a provider of energy services and the customer
- **ESCO (Energy service company):** "Natural or legal person who delivers energy services or other energy efficiency improvement measures in a final customer's facility or premises" *(Energy Efficiency Directive (EED, 2012/27/EU)*
- **ESCO by itself is not yet a financing solution**. Depending on the share of hardware/equipment to be installed upfront there is still a financing problem for the ESCO which might also affect the customer
- Small ESCOs as well as ESCOs with a high volume of mandates will have problems to finance a high share of equipment and will therefore either come back to project finance or to forfaiting, which will involve the customer

FORFAITING:

- Financing a forfait means basically
  - Selling a receivable for a discounted lump sum to a bank (forfaiter), normally on the basis of bills of exchange
  - Example: A sum of € 1 Million in 10 annual repayment instalments, discounted at a forfaiting fee of 4% annually yields an immediate payment of € 880.000 (minus around 0,25% provision fee etc.)
  - Passing on all accountability from the financial obligation, meaning: There is no more financial obligation from the side of the seller of the receivable (e.g. ESCO) in case of breach of contract, non fulfilment etc.
  - This “abstractness of the forfaiting document” will be further emphasised by a “waiver of objection”, which means the customer waives his right to object legally against his repayment obligation because of any dispute (like non fulfilment of conditions, late delivery, warranties etc.)

FORFAITING:



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Forfaiting pros and cons:

- Immediate cash for the contractor (ESCO etc.)
- For the contractor: **The debt is not booked on his balance sheet**, so the potential for further debts remains unlimited (in principle)
- Forfaiting needs **immaculate creditworthiness** of the debtor and/or the project (otherwise it becomes expensive or impossible)
- The debtor is always the institution which receives the investment (never the ESCO or the supplier)
- The **waiver of objection** poses the problem that the investor cannot stop the payments any more if contractual obligations are not reached
- This can, however, be avoided if the **operational part is separated from the investment part** (Operation cost normally need no financing anyway)

LEASING:

- Investment goods are only **leased to the investor** and will be taken back after an agreed time (with the option to buy them at an agreed residual value)
- **Operating Leasing**: Leasing period is much shorter then life time
- **Financial Leasing**: Leasing period approaches life time
- Normally leasing makes only sense for **goods that can be given back** without high cost for de-installation: therefore leasing will be the **exception for housing retrofits** (if ever: financial leasing with the option to buy)
- **Tax reductions**: Leasing (in particular cross border leasing) reached some positive (as well as negative) reputation on the basis of tax saving models. Contracts, however, are complicated, sometimes tricky and therefore a good team of international tax experts and lawyers are needed

Public supports

Justification is over energy savings, external effects (CO2/GHG-reduction), demand induced tax revenues, employment effects etc.

•Public supports (especially over banks) will generate trust, especially in countries where energy efficiency investments are still new and –because of long gestation periods- considered risky
•Public supports can have an initial effect (to start energy efficiency investment in an unknown field)
•Public supports mitigate the risk an investor is facing (yet unknown savings, uncertainty of price developments, technological obsolescence)
•Public supports should be applied carefully: no oversubsidy

Financing the retrofit of buildings

EuroPHit

http://ec.europa.eu/energy/efficiency/studies/doc/2014_guidance_energy_renovation_buildings.pdf

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Checked by	Jonathan Lonsdale (ICF International)
Date	14 February 2014

Part 4

The EuroPhit Project

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The EuroPHit Project

The EnerPhit Standard

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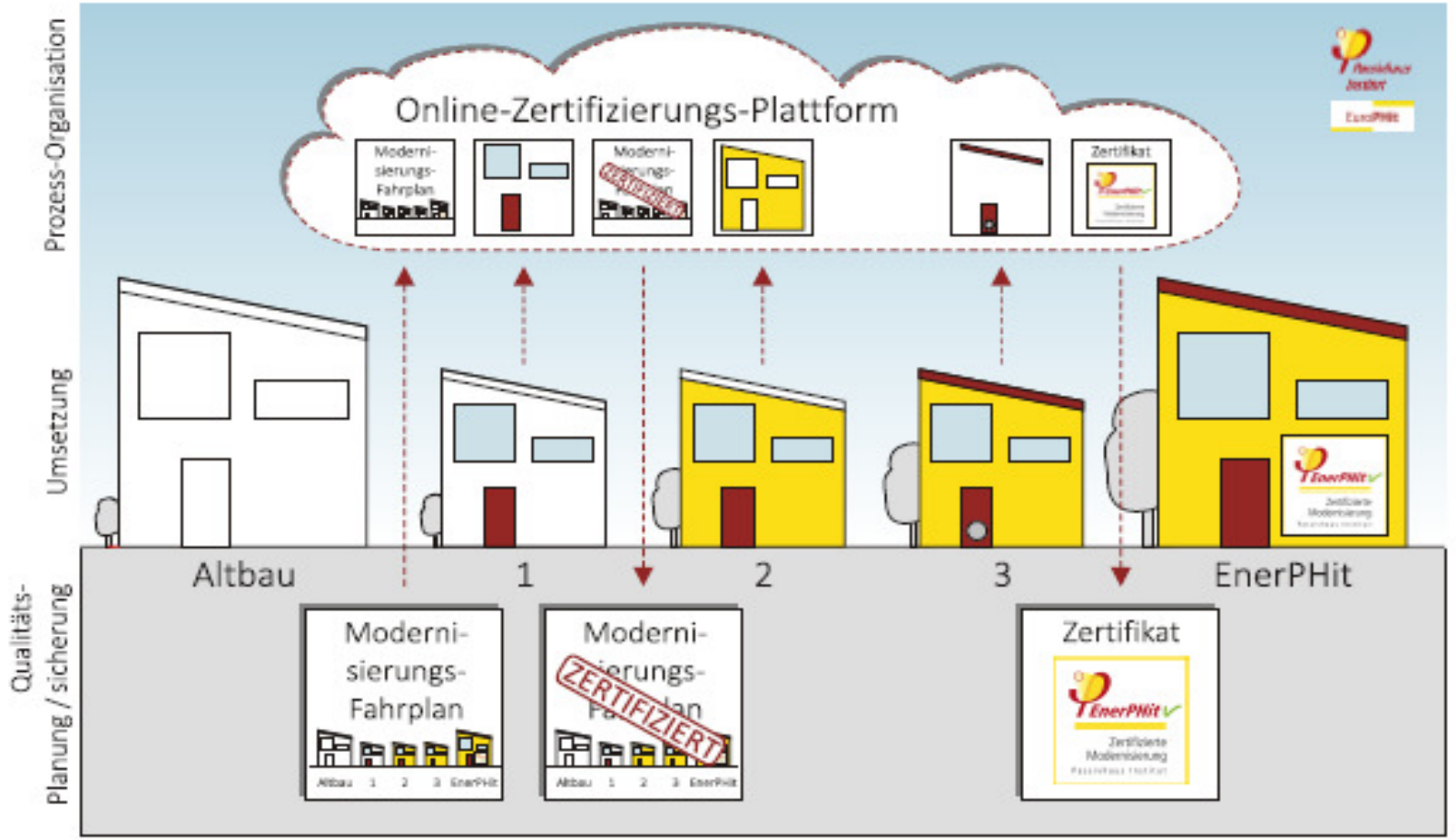

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Part 5

The German Case

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German strategies to lower energy demand

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Law, Regularory Policies

- **Energy Saving Act, Energy Saving Ordinance**, tighten the requirements step by step
- **Renewable Energies Heat Act:** Mandatory use of Renewable Energies of about 15 p.c. for new buildings
- **Heating Costs Ordinance** commits owners of buildings to charge tennants with energy costs depending on individual consumption

Promotional Systems, Financial Benefits
Promotion by KfW via financial intermediaries

Market Based Instruments, Prices, information, transparency in the market, best practice projects,energy certificates,

Research

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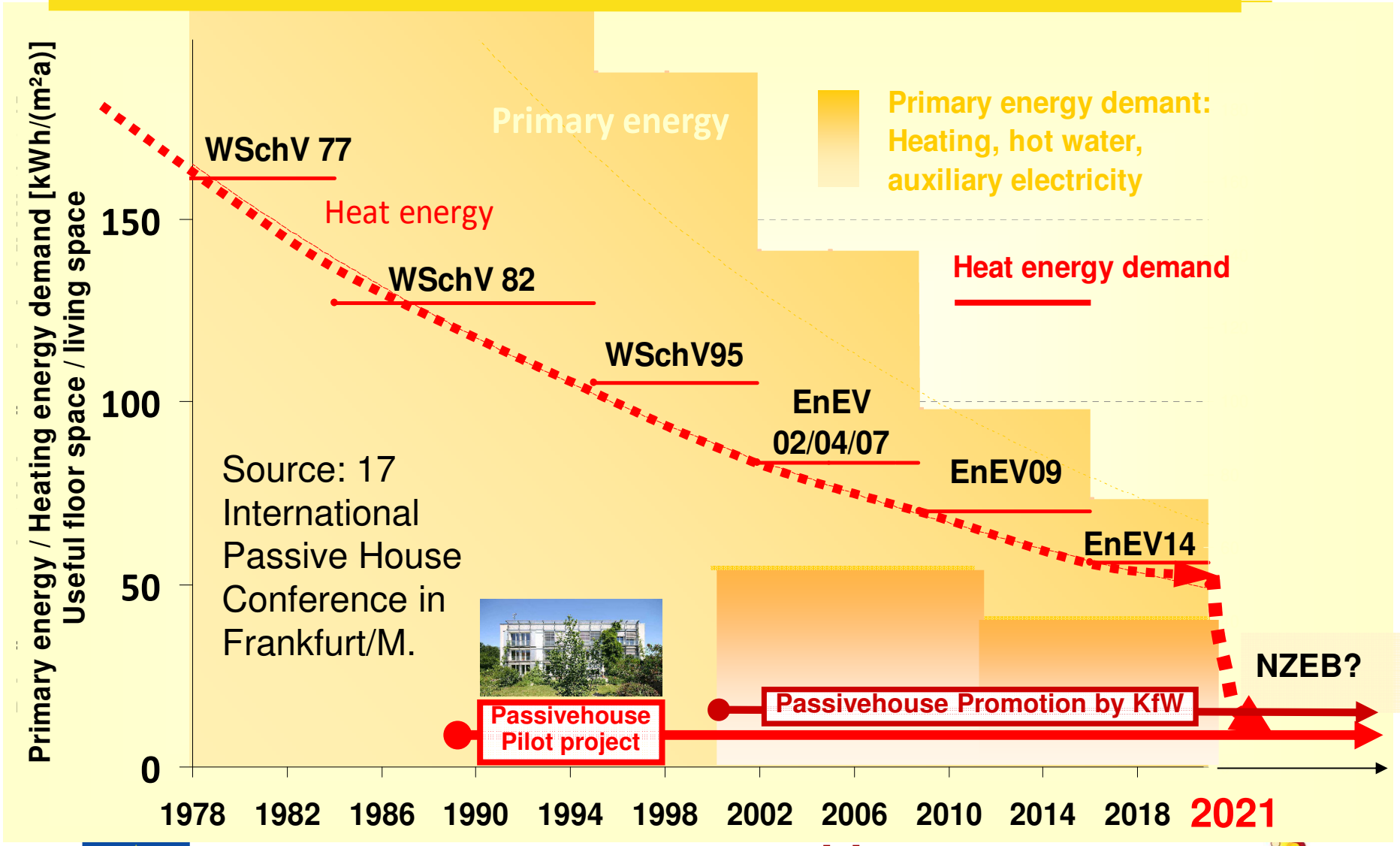
Germany | *Building Energy Performance Standards*

EuroPHit



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How does the promotional scheme work?

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Owner

Energy consultant

Owner´s bank

1

- Get information (www.energiesparen.kfw.de)

2

- Concept/plan for refurbishment activities
- Check if suitable for promotion (online tool)

Extra promotion available for integrated concept/energy efficiency consultancy

3

- Check/decide on creditworthyness
- File application for promotional loan

Near future: full online application process

4

KFW

- Loan commitment and disbursement

5

- Carry out refurbishment project

6

- Ongoing consultancy/supervision
- Confirm energy efficiency level reached

Up to 4.000 extra promotion available for supervision

7

- Confirm that promotional loans has been used in compliance with promotional loan conditions

8

- Partial debt relief is booked according to energy efficiency level reached

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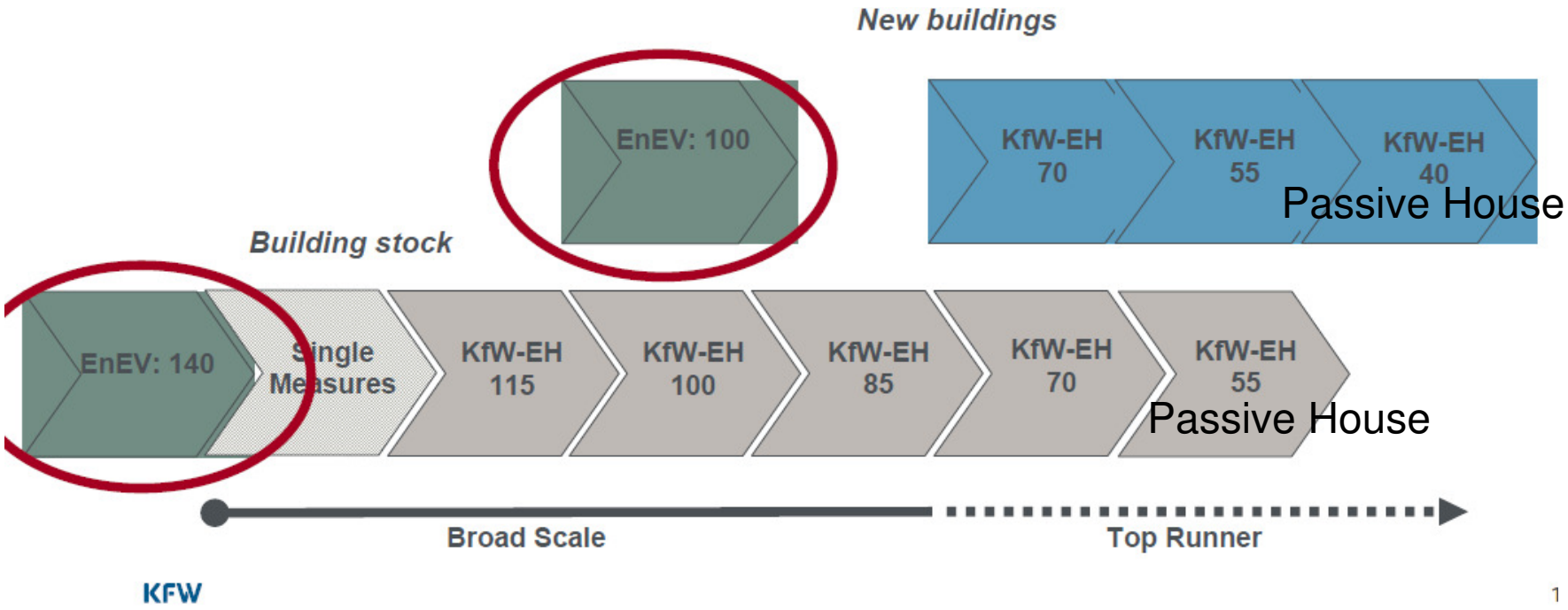
KfW Promotion: The benchmark is the legal requirement

For Passive Houses: International Passive House Standard with PHPP



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budgetary effects – Source Prognos AG

Table 2 presents the key figures over the entire effective period.

Table 2: Sum of NPVs accumulating in respect of subsidy funds, subsidised investments, energy cost savings, gross value added effects, tax revenue in billion EUR and accumulated annual CO_2 reduction

	Effective period		Basic scenario	Scenario 1	Scenario 2
Subsidy funds	2050	Billion EUR	25	91	66
Total subsidised investments[4]	2050	Billion EUR	428	953	838
Demand-induced GVA effects	2080	Billion EUR	68	195	161
Demand-induced tax revenue	2080	Billion EUR	33	112	95
Energy cost savings	2080	Billion EUR	92	453	372
Total GVA effects[5]	2080	Billion EUR	80	252	208
Total tax revenue[5]	2080	Billion EUR	39	139	118
Accumulated CO_2 reduction	2050	Mill. t CO_2/a	15.6	81.4	67.0

Source: Prognos AG

Part 6

Denmark

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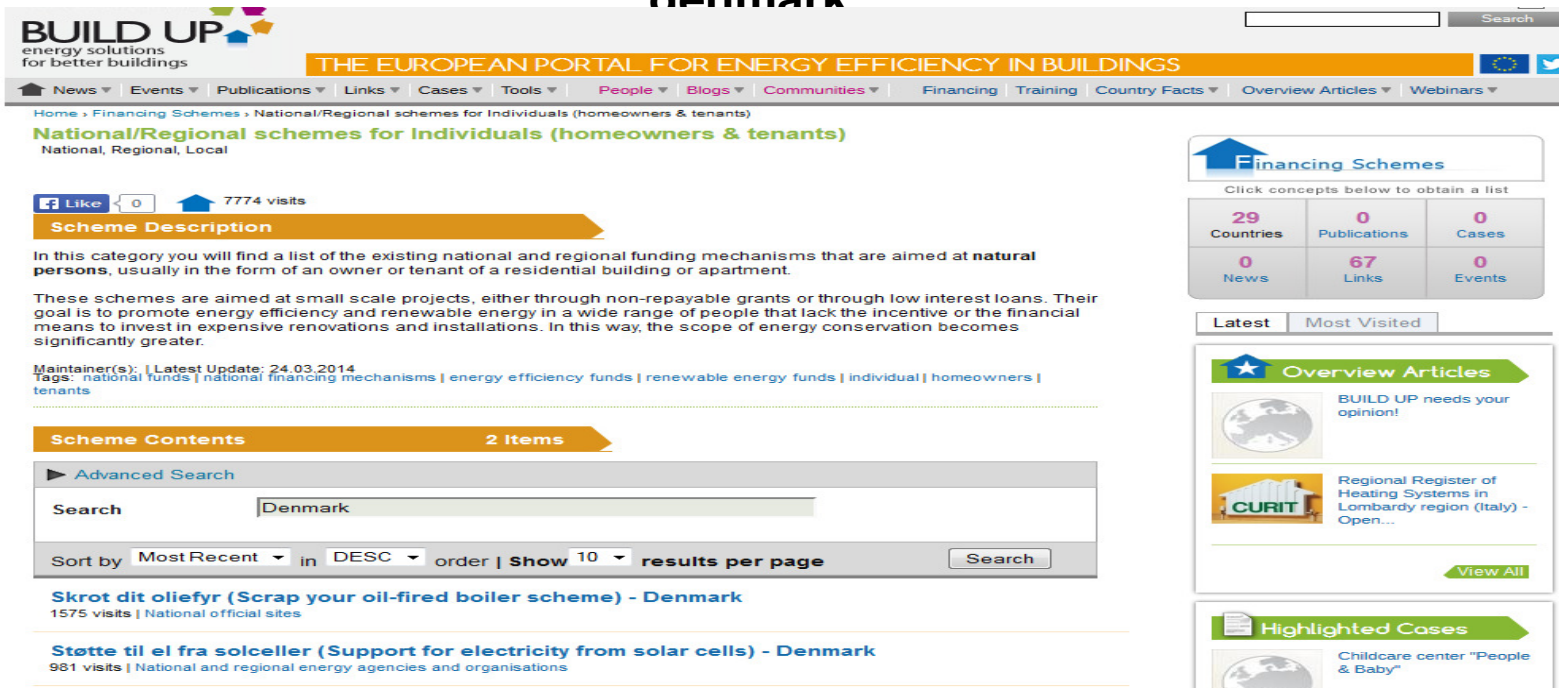
National/Regional schemes for Individuals (homeowners & tenants) denmark



http://www.buildup.eu/financing-schemes/35693?keys=slovakia&field_global_countries_value=All&date_filter[min][year]=&date_filter[min][month]=&date_filter[min][day]=&date_filter[max][year]=&date_filter[max][month]=&date_filter[max][day]=&scheme_content_types=all&s_cr=wnhs&s_ob=DESC&views_page_filter_schemes_content=1

Skrot dit oliefyr (Scrap your oil-fired boiler scheme) – Denmark
National official sites

Støtte til el fra solceller (Support for electricity from solar cells) - Denmark
National and regional energy agencies and organisations

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Part 7

Final Remarks

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Energy Efficiency Investment Drivers – EEFIG page 13

Lenders' approach to energy efficiency investment risk

That lenders of finance for energy efficiency building refurbishments consider the economic benefits (derived substantially through reduced energy bills and increased asset value – if realizable) of such investment and asset improvement, rather than only look at the general creditworthiness of the building owner in its assessment of risk.

Special Aspects

- Co-operation
- Comprehensive Programs
- Viability and Feasibility
  (technical solution - energy audit – loan conditions)
- Know How (energy advisors)
- FaQ

Thank you

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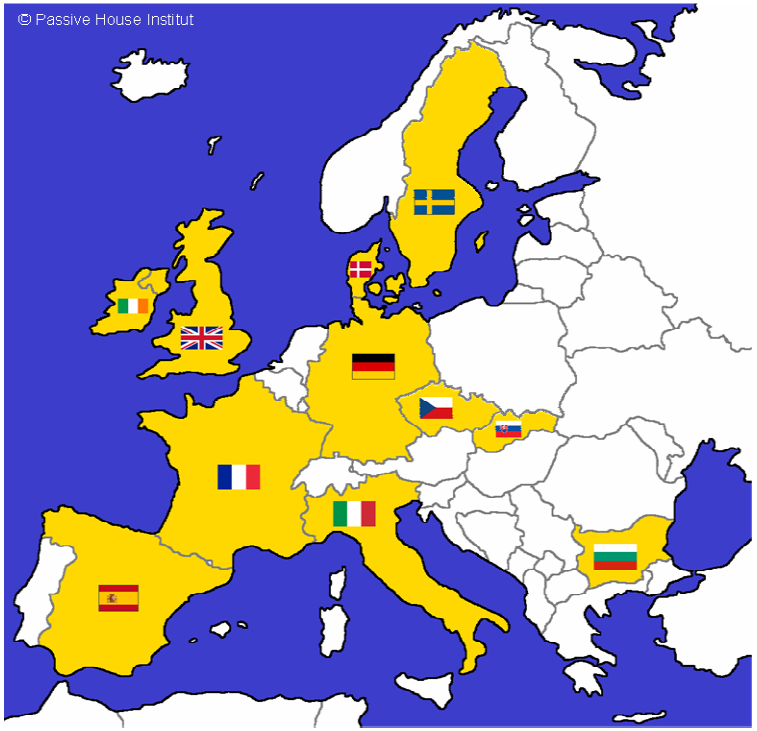

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