KfW experience on promotional programs for energy efficiency in (residential) buildings

GRIHA Summit 2018
70 years of KfW
Financing with a public mission

Promotional bank of the Federal Republic of Germany
Established in 1948
Headquarters: Frankfurt am Main
About 80 offices and representations worldwide

Balance sheet total 2017: EUR 472.3 billion
Financing volume 2017: EUR 76.5 billion
Employees 2017: 6,284
Best long-term rating: AAA/Aaa/AAA
KfW Group

Domestic promotion

- We promote Germany
  - SMEs
  - Private clients
  - Municipalities

International financing

- We support internationalisation
  - Export & project finance

- We promote development
  - Developing & emerging countries

Support for the environment and climate protection

KfW

Financing volume (FV): 51.8 billion (2017, EUR)

KfW IPEX-Bank

FV: 13.8 billion

KfW DEG

FV: 8.2 billion and 1.6 billion
Why to promote energy efficient buildings?

- Building sector (esp. residential sector) contributes to 1/3 of primary energy consumption in Germany

  - Reducing energy consumption in this sector is essential for achieving the targets of the German energy transition

  - Reduced (fossil fuel based) energy consumption leads to reduced CO2 emissions helps achieving climate targets and commitments

- Technical solutions are available

- Additional benefits can be achieved:
  - Better living conditions / higher comfort
  - Employment generation
  - Reduced fuel imports

- Energy use in residential buildings of the same region usual are homogeneous allowing for standardized financing schemes (BUT: Buildings are not standardized)
Promotional Programs for Residential Buildings

Overview

- **New Construction**
  - Energy-efficient Construction
  - KfW Home Ownership Programme

- **Modernisation of Building Stock**
  - Energy-efficient Refurbishment
  - Age-appropriate Conversion

**Promotional loan and grant programs:**
- can be combined
- open for all investor types

**Federal programs**
- financed with federal budget

**KfW programs**
- financed with KfW funds
Energy-efficient Construction
Promotional programs for residential buildings

Energy efficiency

- KfW–EH 55
- KfW-EH 40
- KfW-EH 40+

Annual primary energy demand ($Q_p$)
- KfW–EH 55: 55%
- KfW-EH 40: 40%
- KfW-EH 40+: 40%

Transmission heat loss ($H_T$)
- KfW–EH 55: 70%
- KfW-EH 40: 55%
- KfW-EH 40+: 55%

The higher the level of energy efficiency achieved, the higher the level of promotion.

Repayment bonus
- 5%
- 10%
- 15%
Energy-efficient Construction and Refurbishment

Setting standards

- KfW efficiency requirements set standards for housing construction and refurbishment
- One out of two newly built homes in Germany promoted (is an “Effizienzhaus”)
- The standard is often even applied without KfW finance as it is easier to sell these houses
- 30% of greenhouse gas reduction necessary to reach Germany’s 2020 goal for emission reduction in the household sector

Promotional loans: The higher the energy standard, the higher the interest rate subsidy

- Valid for residential buildings as well as industrial and municipal buildings
- Additional incentives through repayment bonuses
- Grants are available for certain measures
- Resources from Federal Government Budget: EUR 2 billion in the year 2016
KfW Experience in India
» Energy Efficiency in Residential Buildings

KfW cooperation with the National Housing Bank

› Line of credit to National Housing Bank (NHB) signed in 2010 to refinance loans for energy efficient houses

› **Objective**: Establish a pilot programme for promoting energy efficient new residential housing in urban areas

› **Investment Volume**: 50 m EUR

› **Technical assistance**: 1.2 m EUR, develop energy efficiency calculation tool, certify buildings, support in implementation, advise & train NHB and financial intermediaries (“primary lending institutions”), architects and building developers, develop marketing strategy
Financing mechanism for EE housing

What was financed?

- Energy Efficiency Enhancement through **passive measures**
  (building envelope; hollow bricks, roof installations, shading, windows-to-wall ratio etc.)

- Program criteria for only passive measure: Energy need at least 18% lower than benchmark building

- Energy Efficiency Enhancement through **active measures**
  (EE appliances, solar water heater etc)

- Program criteria for passive PLUS active measures: Energy need at least 30% lower than benchmark building
Energy Efficiency Certificate and calculation software

- Adaptation of EU-energy performance assessment tool to India by Fraunhofer Institute for Building Physics and TERI
- Based on the whole-building-approach
- Robust estimate of the energy performance of a new building as compared to a reference building (standard Indian building)
- Easy to use by architects and auditors
- Easy to compare different EE design, material and technology combinations
- The calculation software can be downloaded for free after registering at www.ittoolkitindia.com.
Programm outputs and impacts

- Line of Credit was fully disbursed by 2013
- Certification of 19 buildings with the help of the EE calculation software
- In 12 buildings, 1,912 loans for energy efficient apartments were (re)financed
- Total project cost around 140 mln EUR (10.5 bln INR)

- Mostly passive energy efficient measures were implemented
- Average energy savings in apartments with only passive measures: 21%
- Average savings in apartments with active and passive measures: 34%
- Total average energy saving in the programme of around 22%
- Overall energy savings of 40,000 MWh p.a.
- Emission reduction of around 34,000 tCO$_2$e p.a.
Conclusions and Recommendations
Lessons Learned from the NHB project

- **INCENTIVES** – Put incentives in place to enhance EE building stock
- **STANDARDS** – Enforceable and country wide standards are of help
- **REPORTING and ACCOUNTABILITY** – Make sure that standards are met (monitoring), also in follow-up
- **PARTNERS** - Find the right partners (technical know-how, banking, housing market, network)
- **COORDINATION** – Create effective coordination, linking relevant stakeholders in finance, energy efficiency and housing
- **TECHNICAL SUPPORT** – Provide technical support on certification, awareness, environmental benefits, etc.

2012: Construction of EE homes in Bangalore
Basic Recommendations for promotional programs

- Define the target group and assess their willingness / incentive to invest in energy saving measures
- Look at the viability of EE measures: Are financial incentives needed?
- Make use of existing structures and capacities
- Identify and address training needs
- Start with SMART promotional criteria
- Use a locally adapted software tool for assessing the building energy performance (initial programs can also focus on minimum criteria)
- Take into account different climatic zones in the country and available materials
- If a reference building approach is used, this should be based on regulatory or, if not available, on market standard
Basic Recommendations (continued)

- A custom-made marketing is essential
- Be aware that money saved on the energy bill might be used again for energy consuming products (consumer electronics, more ACs, etc.) and rebound effects are not unusual
- Establish a stringent monitoring system (quality, O&M), including on-site visits by independent experts (however, find right cost-benefit balance)

CONCLUSION:

- Promotional programs are an efficient tool to promote energy efficiency in the building sector
- They can contribute to the implementation of regulations which otherwise might be difficult to enforce (e.g. new ECBC residential standard)
- In India: Many measures can be implemented at low cost
  - Dedicated EE programs for residential sector make a lot of sense in India
Thank you!

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