How Germany's State Development Bank Finances Energy Transition

Briefing Note for BALTA-SIS: Financing Transition Research Cluster - Justin Ritchie - September 2013

Introduction

In recognition of the long-term consequences created by relying on a fossil fuel economy, the German government launched a national plan in 2010 to begin the transition away from non-renewable fuel sources: the *Energiewende* (1). The *Energiewende* calls for greenhouse gas emission reductions of 80-95% by 2050 along with the other targets listed in Table 1. Each of the ambitious goals are proposed in the context of a regulatory and financing framework that these dramatic energy consumption reductions into a possibility. The German state development bank Kreditanstalt für Wiederaufbau (KfW) enables the energy transition through innovations that tie financial goals to energy metrics. KfW has played the role of a reconstruction bank more than once in modern Germany's history: it was the credit institution created by the Marshall Plan in 1948 to rebuild the nation.

Table 1

Energiewende Non-Compulsory Targets

	2020	2030	2040	2050
Greenhouse gas emissions (vs. 1990)	-40%	-55%	-70%	-80 to 95%
Renewable energy share in electricity consumption	+35%	+50%	+65%	+80%
Renewable energy share in final energy use	+18%	+30%	+45%	+60%
Reduction of primary energy consumption (vs. 2008)	-20%	-	-	-50%
Reduction of electricity demand (vs. 2008)	-10%	-	-	-25%
Energy use in transportation sector (vs. 2005)	-10%	-	-	-40%

Adapted from (2)

KfW is a joint partnership of the Federal government and the German states with an 80-20% breakdown respectively. Projects for environmental and climate protection are a key function of the bank, totaling roughly 25-40% of their annual outlays for the last several years. Because of KfW's ambitious support for energy projects, the bank has financed approximately one-third of the investments made in Germany to build facilities for renewable heat and electricity generation, half of the new electricity generation and about 75% of onshore wind farms (3). In addition to financing renewable energy projects, KfW maintains a growing program of financing for energy efficient houses which can be either new construction or retrofits. Qualifying homes that meet stringent energy consumption reduction standards qualify for partial mortgage financing of rates around 1% and extensive repayment bonuses at the end of a loan term at levels up to 17.5%.

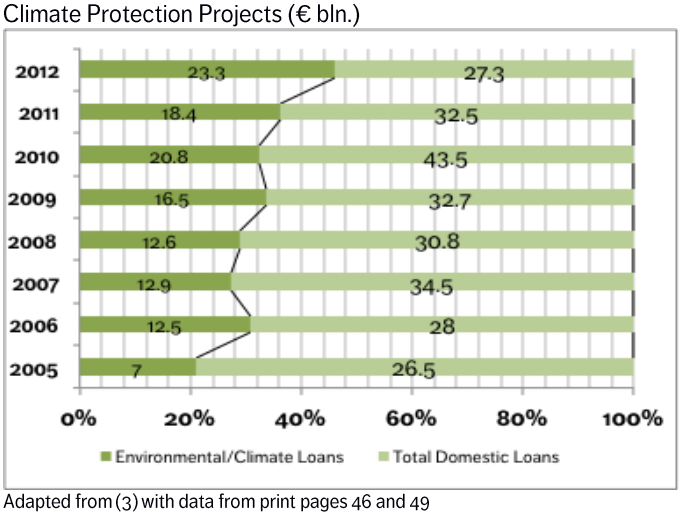
As the OECD's premiere example of energy transition finance, KfW can serve as a model for Canada given our history with the Canadian Investment Bank.

Financing Energy Transition

As one of the largest energy and climate banks in the world, KfW's domestic loan outlays for environment and climate projects has grown from 21% in 2005 to 46% in 2012. If the trend shown in Figure 1 continues, it is highly likely more than half of KfW's annual loans will be for energy and environment projects by the middle of the decade.

Figure 1

KfW's Annual Commitments to Domestic Environment and Climate Protection Projects (€ bln.)



Adapted from (3) with data from print pages 46 and 49

A key innovation of interest to the BALTA-SIS Financing Transition Research Cluster (FTRC) relates to KfW's low-interest financing for dramatic energy consumption targets. The essence of KfW's innovation is in tying energy performance metrics to the interest rates offered to homebuilders and homeowners. By launching a branded set projects to

certify particular levels of home energy performance, KfW uses a system that is easily recognizable[1]. Each promotional incentive requires higher efficiency standards than required by the Federal legal framework while being technologically neutral: energy consumption reduction projects can use any combination of passivhaus, building envelope or heating system technologies to meet energy goals. The KfW-Efficiency House standard is was developed for transparency and simplicity, the smaller the number the higher the energy efficiency. Each home seeking Efficiency House status is approved by a selected energy auditor. Smaller Efficiency House numbers lead to higher promotional incentives: lower interest rates, higher up-front grants and repayment bonuses.

Figure 2

Example of KfW's standards as a brand for ease of recognition

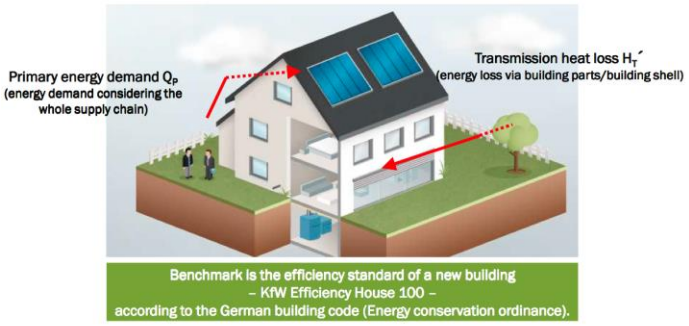
Note: KfW Effizienzhaus 70 from EnEv 2009

New construction financed by KfW is only eligible when meeting KfW-Efficiency House standards of 70, 55 and 40. For retrofits, buildings are eligible when meeting 115, 100, 85, 70 and 55. A monument standard was launched in 2012 to allow buildings with historical value to participate in the program. Incentives for meeting the Efficiency House goals are significant: interest is subsidized on house financing at rates of 1% and at 1.4% for new construction, bonuses are provided upon loan repayment which increase with higher energy performance. Partial debt relief is available for select projects up to 12.5%.

The KfW-Efficiency House rating system is based on a ratio of primary energy demand (Q_P) for each structure to the transmission heat loss (H_T'). A score of 100 represents a building that meets the basic Federal energy performance guidelines.

Figure 3

How the KfW-Efficiency House standard is calculated



KfW reported in 2012 that they have provided more than 2.1 million efficiency home loans since 2001 for a total of €45 billion, reducing CO_2 emissions by 156 billion tons. Houses committed under this program have totaled between 280,000-960,000 units per year since 2009, creating several hundred thousand jobs each year. Each loan can be for up to €50,000 per new home and €75,000 per home in retrofit projects. Subsidized interest rates are available for a maximum of 10 years and loan terms are capped at 20 years.

Federal contributions to this program are are highly leveraged by KfW's high credit rating as indicated in Table 2. With an AAA rating, the bank has access to low rates on international capital markets. In recent years, KfW has financed half of the new flats built in Germany (3).

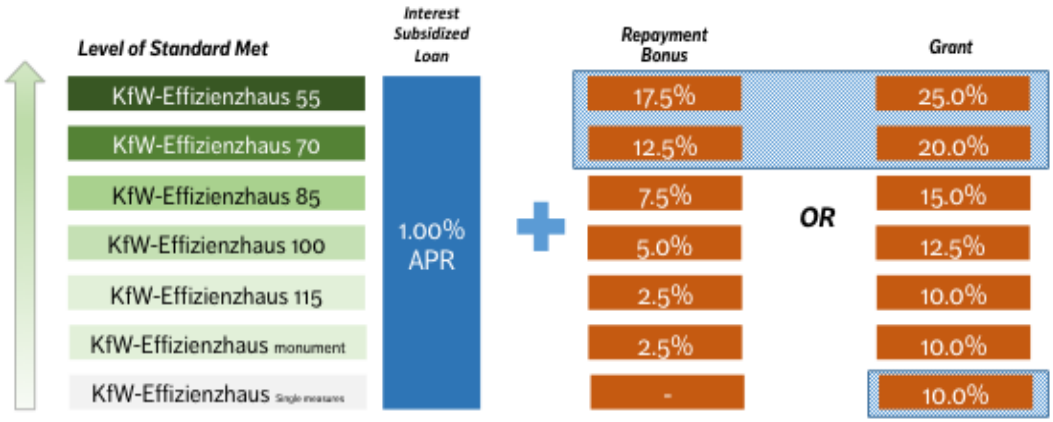
Table 2

Commitments to KfW Housing Program

	2009	2010	2011
Housing units	617,000	953,000	282,000
Reduction of CO2 (1,000 tons per year)	1,452	1,049	567
Jobs w/ Safeguarded Employment for 1 Year minimum	292,000	342,000	247,000
Investments (billions of €)	18.335	21.330	18.427
Federal budget commitments (billions of €)	2.033	1.337	.934
Federal budget leverage	9.0x	16.0x	19.7x

[1] KfW uses the German Federal energy performance standards of EnEV 2009 as a baseline for their metrics

Figure 4 KfW Energy Efficiency Promotional Incentives



Adapted from (4)

The scale and scope of KfW allows it to maintain a high reputation on international capital markets. The bank has offices in over 70 countries as it works to promote German exports: roughly 25% of all jobs in Germany are directly dependent on exports and 50% of Germany's output is dependent on exports. KfW uses the domestic energy industry it supports to grow Germany's export market through offering financing for projects like wind farms in Taiwan and biogas in Africa.

After several years of its Efficiency House loan program, KfW has streamlined the process for connecting homeowners and landords to energy auditors and efficiency experts. A new website was launched in 2012 which allows banks and energy consultants to check project eligibility before submitting a lengthy application.

Given program's success, KfW is now offering low-interest long term loans to municipalities for energy efficient heating, water supplies and sanitation projects. Recently this program has expanded to finance municipal electricity and energy service distribution grids. Terms for these loans are for 20 years at fixed interest rates.

Learning from KfW in the FTRC

While the Efficiency House program has been achieved impressive goals, launching a similar project at the Federal level in Canada would be a complex undertaking. KfW has established itself as a major international bank over the last six decades; its reputation on capital markets enables low-interest financing. Because it is owned by Germany's Federal government and states, national contributions to housing programs are made politically possible. There is no Canadian equivalent that operates at a similar scale and ownership structure.

While Canada is also an export heavy economy, German exports are high value-add products. Scale may also be a barrier: Germany has roughly 40 million households compared to Canada's 12 million. Translating numbers KfW's Efficiency House performance numbers to Canada's scale would yield a project that's roughly three times smaller. Table 3 is a rough approximation of a national home efficiency program in Canada, translating KfW's performance numbers from Table 2.

Table 3
Numbers to expect for an Efficiency House program in Canada?

	2015	2016	2017
Housing units	206,000	317,000	94,000
Jobs w/ Safeguarded Employment for 1 Year minimum	94,000	114,000	82,000
Investments (billions of CAD)	8.375	9.745	8.418
Federal budget commitments (billions of CAD)	2.786	1.832	1.28

Assumed program has 1/3 impact and uptake from numbers in Germany for 2009-2012. Converted investments from € to CAD using current exchange rate of August 2013. A significantly more detailed analysis should include the comparative size of national budgets, homebuilding rates, demographic preferences and more.

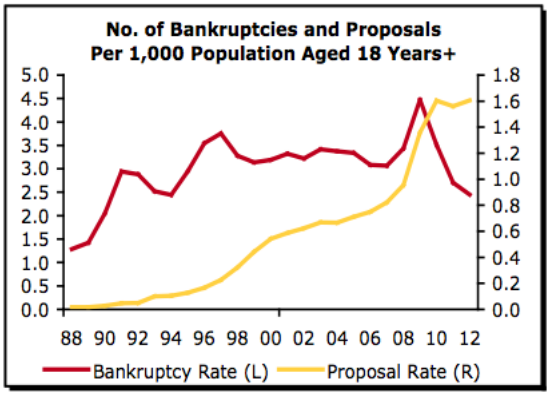
The KfW Efficiency Home program has continued to grow despite the EU debt crisis and the global financial crisis. Even though performance numbers from 2013-2015 should yield a better idea of how the program has performed in an age of acute financial crisis, this speaks to this innovation's resilience and prospects in the Canadian context.

A timely point for introducing this innovation in Canada may be revealed by observing trends in Canadian household debt. A recent note from CIBC economist Benjamin Tal on August 12th, 2013 notes that the composition of Canadian insolvencies are making a significant shift towards proposals rather than outright bankruptcies. A proposal occurs when a loan holder negotiates with a lender to repay only a portion of his or her debt. Proposals now account for more than 40% of all insolvencies across Canada, and more than 50% in Ontario (5). The dramatic rate of this trend change can be noted in Figure 5.

Because KfW's Efficiency House program explicitly includes renegotiating loan terms, an equivalent program in Canada could seek harmony between climate and debt concerns. Political fears over bank balance sheets could find partial relief in a mortgage-refinancing program that used KfW as a template as a rapidly increasing rate of Canadians renegotiate their debt repayment terms.

Figure 5

Trends in Canadian Bankruptcies



Source: Office of the Superintendent of Bankruptcy Canada, Statistics Canada, CIBC

Though Canada lacks a national finance entity that could play the role of KfW's in Germany, our national history could provide answers. The Canadian Industrial Development Bank (IDB) that started in 1944 was one of the world's first development banks (6). The IDB was launched as a subsidiarity of the Bank of Canada with a specific aim of working with the SME sector to create jobs, much the way that KfW's SME programs work in Germany.

The Canada IDB was created with the stated purpose:

"to promote the economic welfare of Canada by increasing the effectiveness of monetary action through ensuring the availability of credit to industrial enterprises which may reasonably be expected to prove successful if a high level of national income and employment is maintained, by supplementing the activities of other lenders and by providing capital assistance to industry with particular consideration to the financing problems of smaller enterprises." (7)

Because the Canadian banking sector in the aftermath of the Great Depression showed little interest in financing the medium and long-term loans required for many domestic businesses to rebuild, the IDB was created to provide reasonable loan terms.

During 31 years of operations, the IDB committed 65,000 loans for a total of $3 billion for 48,000 businesses. The average loan was $47,000 and 48% of the loans were for $25,000 or less. The IDB experienced more than a 90% success rate with the loans, enabling the employment of an estimated 900,000 people (7).

A former employee of the IDB noted that:

"The Bank assisted in just about every kind of business and program imaginable, from setting up a new pipe mill or refinery to helping a young lawyer acquire his own law library. It was active in every part of Canada, and in some remote areas such as the Yukon was a major factor in economic growth. The IDB was probably the most important source of financial support from commercial air services apart from the mainline operations, for motels and other kind of tourist services, and for many kinds of manufacturing such as small and medium sized lumber operations and the production of hosiery."

In 1975 the IDB was closed and a new Federal business development bank was launched with an entirely different mandate: the Business Development Bank of Canada.

It is certainly within the realm of possibility that an arm of the Bank of Canada could be developed to run a program similar to KfW's

Efficiency House Standard. Though for now, the FTRC may want to focus on launching the essence of German energy loan finance in a provincial or municipal context.

References

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