THEWOSAN – funding scheme for buildings

Vienna, Austria

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Vienna´s grant for thermal and energy renovation of residential buildings

THEWOSAN is Vienna´s programme and funding scheme for thermal and energy renovation of existing residential buildings [1]. Through both thermal insulation of buildings and additional measures for their heating systems, a significant reduction of the energy consumption in residential buildings can be achieved. This has the benefits of a reduction of CO_2 as well as air pollutant emissions with linked improvement of the global and local environment. In 2000 a grant was implemented as one measure of Vienna´s Climate Protection Plan KLiP [2] and then updated within Vienna´s Energy Efficiency Program called SEP in 2006 [3]. More than 88,300 flats have been renovated by 2011. The reduction of the heating energy demand is on average about 960 GWh per year. The linked CO_2 emission reductions over the whole period are nearly 150,000 tonnes. With THEWOSAN, Vienna has developed a well-accepted, very efficient and successful funding scheme for the renovation of existing residential buildings. Additionally, it was possible to avoid a displacement of the original, often socially less advantaged tenants of old buildings in need of renovation.

Country/ City Profile
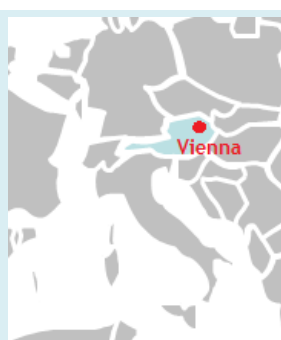
	Country		City	
	Population (2014)	8.6 million [4]	Population (2013)	1.8 million (city)[4]
				3.6 million (region) [6]
	Land area (km²) 83,878	83.9 thousand [4]	Land area (km²)	414.6 (city)[6]
				23,563 (region)[6]
	GDP per capita (2014, current international $, at purchasing power parity)	46,164 [5]	GDP per capita (2014, US$, at purchasing power parity)	55,846[6][1]
	Region	Central Europe	Region	Inland (48°12′N 16°22′E)

City's physical geography	Location	✓ the foothills of the Alps on the river Danube (flooding risk, urban heat islands) ✓ Elevation ranges from 151 to 524 m
	Climate	✓ In transition between oceanic and humid continental climate (average temperature: 11.4 C°) with relatively warm summers (24 - 33 C°) and relatively cold winters ✓ Precipitation generally moderate throughout the year, average 550 mm/year

Initiating context

Vienna has had a comprehensive energy concept since 1978 with regular updates. In addition, enacted in 1999 by the city council, Vienna started with a Climate Protection Programm called KliP I (in German: **Kli**maschutz**P**rogramm) [2]. This programme was updated and called KliP II in 2009. The goal of KliP II is to prevent the annual emission of 1.4 million tonnes of greenhouse gases from 2009 to 2020. The THEWOSAN programme and funding scheme (in German: **TH**ermisch-**E**nergetische **WO**hnhaus**SAN**ierung) [1] is one of 385 defined measures of KliP I & II. THEWOSAN started in 2000 and is especially linked to retrofitting of existing buildings. In 2006, Vienna also introduced a special urban Energy Efficiency Programme called SEP (in German: **S**tädtisches **E**nergieeffizienz**P**rogramm)[3], in which the THEWOSAN programme and grant was adapted and updated. Also additional actions such as the enhancement of Vienna´s building code have been implemented,which then helped in THEWOSAN to justify the defined requirements.

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[1] Own calculations based on values from[6] and [5]

Project description

Within the THEWOSAN programme and funding scheme, the comprehensive thermal refurbishment of existing residential buildings (apartment buildings and single family houses) and energy equipment related measures can be subsidised [7]. Energy equipment related actions are only accepted in combination with thermal refurbishment measures. They include insulation of facades, roofs, cellar ceilings and fire walls, renovation and replacement of windows and external doors, elimination of thermal bridges and other physical construction defects, actions that increase passive solar heat (e.g. winter gardens, glazing of loggias) and construction measures linked with a reduction of heat losses or heat distribution (e.g. insulation of heat distribution network). The energy equipment related measures cover the change or the construction of more efficient and CO_2 reduced heating and hot water energy systems (e.g. from coal or oil to district heating or gas, or the construction of a thermalsolar plant), and energy efficiency improvements to the energy system (e.g. condensing boiler system, heat pump), existing heating and warm water plants and controlled ventilation systems.

Within the THEWOSAN funding scheme a subsidy of up to two thirds of the total investment costs is provided, depending on energy performance after implementation of the measures. Requirements include a post-renovation heating demand which has as a maximum the factor of 1,37 of a low-energy building, and a reduction of the heating demand of at least 20 kWh/(m^2 a). These requirements are not subject to buildings under historical protection.

Implementation process

The THEWOSAN programme and funding scheme has been designed by "Vienna´s Municipal Directorate 20" responsible for energy planning and by the Wohnfonds Wien which is also implementor of the project. Subsidies in form of capital investment are financed on the legal basis of Vienna´s municipal law "Wiener Wohnbauförderungs- und Wohnhaussanierungsgesetz" within the budget of the City of Vienna. THEWOSAN started in 2000 and has been continuously adapted to new requirements.

Applicants to this funding scheme are owners of apartment buildings and single family houses. Applications for funding are submitted to the Wienfonds with additional information, such as the renovation concept. The Wienfonds ranks the applications based on their quality and urgency. Many of the large apartment buildings in Vienna are administrated by social housing companies. The "Wiener Wohnen" Company is the largest one, owned by the City of Vienna and responsible for the administration of about 220,000 apartments (a quarter of all apartments in Vienna). In context of their Corporate Social Responsibility activities and their residential building renovation programme based on THEWOSAN they developed for their tenants a special practice for their involvement [8], which has been integrated in the so-called "Statute of Tenants-Participation" [9]. For each residential complex a tenant representative can be selected, with the right to object the reconstruction plans and to bring in own proposals, discussed and coordinated with the involved tenants.

Results

In the period from 2000 to 2011 more than 88,300 apartments with a usable space totalling 5.9 million square meters have been retrofitted. The reduction of the heating energy demand is about 960 GWh per year (average). The linked CO_2 emission reductions over the whole period is 147,989 tonnes. More detailed information on how the THEWOSAN programme developed over the period is documented in the following table:

Cumulative project benefits of THEWOSAN (2000-2011) [10] Numbers show total amount up to 2011					
Year	Retrofitted apartments	CO2 emission reduced in t	Year	Retrofitted apartments	CO2 emission reduced in t
2000	23.830	39,063	2006	59,549	96,661
2001	27,910	45,359	2007	65,793	108,747
2002	33,994	54,672	2008	70,461	117,269
2003	41,668	66,580	2009	79,803	137,136
2004	45,946	74,164	2010	85,660	144,129
2005	51.772	82,435	2011	88,345	147,989

Other benefits are linked to air pollutant emission reductions such as particulates, SO_2 and NO_x emissions with positive local environmental effects.

Additionally, tenants benefit from the THEWOSAN retrofitting measures several times: The heating consumption has been reduced and the comfort of their dwelling and their living conditions has increased. Due to substantial subsidies in Vienna for retrofitting residential buildings it is possible to avoid the displacement of the original, often socially less advantaged tenants of old buildings in need of renovation.

Lessons learned

With THEWOSAN Vienna has developed an efficient and successful funding scheme for the renovation of existing residential buildings. The high rate of retrofitted apartments shows that THEWOSAN is well accepted. By a continuous update of the funding scheme a steadily rising quality of the retroffited buildings with a higher energy saving rate has been ensured. THEWOSAN is one important implementing measure of Vienna´s Climate Protection Plan to save energy and to reduce CO_2 emissions. Additional benefits of THEWOSAN are the reduction of air pollutant emissions and positive effects for the residents and tenants of the retrofitted buildings. This funding scheme succeded also in preventing the displacement of socially less advantaged tenants.

References

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[4]   http://www.migration.gv.at/en/living-and-working-in-austria/austria-at-a-glance/geography-and-population.html

[5]   World Bank: http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD

[6]   VIENNA REGION Marketing GmbH: http://www.viennaregion.at/en/home/standort/facts

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