RENTCAL
European Rental Housing Framework for the Profitability Calculation of Energetic Ret rofitting Investments

Funded by
The European Union

Country fact sheet: Key tool parameters – Germany

When considering an energy efficiency retrofit within your national housing market, a wide plethora of consideration needs to be made. Below, we list the key parameters that will later be used and combined within the RentalCal tool to facilitate your analysis of this retrofit investment. More details and backgrounds on these parameters can be found in the corresponding deliverables as indicated in the first and last column of this table.

Deliver.	Parameter	Default Value	From Fact sheet / Source
D2.1	Building types	SFH/TH/MFH/AB	D2.1 Country section: Fact sheet on the national (rental) housing stock (Germany)
			TABULA 2012, EPISCOPE update 2016
D2.1	Predominant heating systems	SFH/TH: central heating 88.6% MFH/AB: central heating 62.4% apartment heating 19.4% district heating 12.7%	D2.1 Country section : Fact sheets on national technical framework conditions (Germany)
			Datenbasis Gebäudebestand (Diefenbach et al. 2010)
D2.1	Predominant energy carrier	SFH/TH: gas 47.8 % oil 34.8 % MFH/AB: gas 52.9 % oil 24.2 % district heating 12.7 %	D2.1 Country section : Fact sheets on national technical framework conditions (Germany)
			Datenbasis Gebäudebestand (Diefenbach et al. 2010)
D2.2	Energy consumption before refurbishment	SFH/TH: 153-247 kWh/m²a MFH/AB: 149-242 kWh/m²a	D2.2 Table 5: Cross country comparison on results of the energy balance calculations according to TABULA, page 27
			TABULA 2012, EPISCOPE update 2016
D2.2	Energy consumption after refurbishment	Standard package: SFH/TH: 62-155 kWh/m²a MFH/AB: 90-131 kWh/m/a Advanced package: SFH/TH: 37-86 kWh/m²/a MFH/AB: 43-83 kWh/m²/a	D2.2 Table 5: Cross country comparison on results of the energy balance calculations according to TABULA, page 27
			TABULA 2012, EPISCOPE update 2016
D2.2	Investment costs (ranges; without VAT)	Standard package: SFH/TH: 203-698 €/m² MFH/AB: 166-322 €/m² Advanced package: SFH/TH: 347-897 €/m² MFH/AB: 251-511 €/m²	D 2.2 Table 3: Cross country comparison on calculation results for costs of system and building packages, page 25
			Hinz, E.: Kosten energierelevanter Bau- und Anlagenteile bei der energetischen Modernisierung von Wohngebäuden; IWU / BMUB 2015
D2.3	Energy balance calculation method	DIN 18599:2011 DIN V 4108-6:2003 together with DIN V 4701-10:2003	D2.3 Country section : Fact sheet on nationally used energy performance calculation methods (Germany)
			EPISCOPE Synthesis Report No. 1 (Stein et al. 2016)

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D2.3	Non-renewable primary energy factors	Electricity: 2,4/1,8 kWh/kWh Oil: 1,1 kWh/kWh Gas: 1,1 kWh/kWh Coal: N/A Biomass: 0,02 kWh/kWh District Heating: 1,3 kWh/kWh	D2.3 Country section : Fact sheet on national primary energy and emission factors (Germany) EPISCOPE Synthesis Report No. 1 (Stein et al. 2016)
D2.3	CO2 emission factors	Electricity: 631 g/kWh Oil: 313 g/kWh Gas: 239 g/kWh Coal: N/A Biomass: 18 g/kWh (pellets) District Heating: N/A	D2.3 Country section : Fact sheet on national primary energy and emission factors (Germany) EPISCOPE Synthesis Report No. 1 (Stein et al. 2016)
D3.1	Rent Increase Method 1	According to legal requirements: 11 % of the modernisation cost per annum (without maintenance and repair and net subsidies)	D3.1 Country section : Fact Sheets regarding rent regulations (Germany) § 559 BGB
D3.1	Rent Increase Method 2	According to green premiums: average local contract rent in addition less than 20% (15% in case of officially recognised tight markets) increase over 3 years	D3.1Country section : Fact Sheets regarding rent regulations (Germany) § 558 BGB
D3.1	Rent Increase Method 3	Free negotiations: average local contract rent (similar location and property type) in addition less than 20% (15% in case of officially recognized tight markets) increase over 3 years	D3.1 Country section : Fact Sheets regarding rent regulations (Germany) § 557 BGB
D4.1	Depreciation system	linear (with few exceptions for listed buildings)	D4.1 Country section : Fact sheet – relevant decision making parameters (part 1) (Germany) https://www.gesetze-im-internet.de/estg/__7.html https://www.gesetze-im-internet.de/estg/__7i.html https://www.gesetze-im-internet.de/estdv_1955/__82b.html
D4.1	Depreciation rate	{ 2% – 100% }	D4.1 Country section : Fact sheet – relevant decision making parameters (part 1) (Germany) https://www.gesetze-im-internet.de/estg/__7.html https://www.gesetze-im-internet.de/estg/__7i.html https://www.gesetze-im-internet.de/estdv_1955/__82b.html https://www.gesetze-im-internet.de/estg/__9.html
D4.1	Marginal tax rate	{ 15 – 47,5 }	D4.1 Country section : Fact sheet – relevant decision making parameters (part 1) (Germany) BMF 2015, Die wichtigsten Steuern im internationalen Vergleich 2014 BDI 2015, Die Steuerbelastung der Unternehmen in Deutschland

D4.1	VAT deduction	yes (for average investor)	D4.1 Country section : Fact sheet – relevant decision making parameters (part 1) (Germany)
			http://www.gesetze-im-internet.de/ustg_1980/ https://www.haufe.de/immobilien/verwalterpraxis/umsatzsteuer-mietrechtliche-fragen_idesk_PI9865_HI639392.html
D4.1	Direct subsidies (grants)	up to 30.000€ per dwelling unit (KfW) + additional subsidies for renewable energies (BAFA)	D4.1 Country section : Fact sheet – relevant decision making parameters (part 1) (Germany)
			https://www.kfw.de/inlandsfoerderung/Privatpersonen/Bestandsimmobilien/Finanzierungsangebote/ Energieeffizient-Sanieren-Zuschuss-%28430%29/#2 http://www.bafa.de/bafa/de/energie/erneuerbare_energien/index.html http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=6cc0fb1c584e403c18c16cc8e5913fb2;views;document&doc=7739&typ=KU
D4.1	Interest rates on loans	{ 0,75 – 3,5 }	D4.1 Country section : Fact sheet – relevant decision making parameters (part 2) (Germany)
			https://www.kfw.de/inlandsfoerderung/Privatpersonen/Bestandsimmobilien/Finanzierungsangebote/Energieeffizient-Sanieren-Kredit-%28151-152%29/#2 https://www.umweltbank.de/kreditkonditionen/default.htmlhttps://www.deutsche-bank.de/pfb/content/gk_produktshop_geschaeftskredit-online.html
D4.1	Interest rates on deposits	{ 0,1 – 1 }	D4.1 Country section : Fact sheet – relevant decision making parameters (part 2) (Germany)
			https://www.ing-diba.de/sparen/festzins/
D4.1	LTV ratio	{ 20 – 60 }	D4.1 Country section : Fact sheet – relevant decision making parameters (part 2) (Germany)
			Annual Report of Vonovia SE 2015 Annual Report of KWG Kommunale Wohnen AG 2014
D4.1	Debt repayment structure	annuity loan, instalment loan, bullet loan	D4.1 Country section : Fact sheet – relevant decision making parameters (part 3) (Germany)
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D4.1	Planning (calculation) period	{6 – 50}	D4.1 Country section : Fact sheet – relevant decision making parameters (part 3) (Germany)
			Kirchner, J., 2004, Investitionsrechnungen in der Wohnungswirtschaft BBSR, 2015, Privateigentümer von Mietwohnungen in Mehrfamilienhäusern
D5.2	Energy price level	Electricity: 0,22 €/kWh Oil: 0,059 €/kWh Gas: 0,065 €/kWh Coal: N/A Biomass: 0,046 €/kWh District Heating: 0,093 €/kWh	RentalCal web tool (default values)
			BDEW , 2016 Thermondo, 2016 Solares bauen GmbH, 2016
D5.2	Vacancy rate (national average; % of rental income)	1,9 %	D5.2 Country section : Table regional rental market disparities (Germany)
			IDP, 2015
D5.2	Size of Value premium (national average)	1 % increase in energy consumption: -0.45 % market value.	D5.2 Country section : Table market impact evaluation of green premium issues by region (Germany)
			Cajias, Piazolo (2013), Wameling (2010)
D5.2	Size of Rent premium (national average)	1 % increase in energy consumption: -0.08 % rent	D5.2 Country section : Table market impact evaluation of green premium issues by region (Germany)
			Cajias, Piazolo (2013). City of Darmstadt (2010). City of Tübingen Rental index (2013) ; City of Überlingen