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MINISTRY of ENERGY
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MINISTERUL FONDURILOR EUROPENE



2ND NATIONAL ROUNDTABLE ON FINANCING ENERGY EFFICIENCY IN ROMANIA 6 JUNE 2019, BUCHAREST, ROMANIA

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PadovaFIT Expanded - Establishment of a One-Stop-Shop in the Padova area providing integrated home renovation services Maurizio Minicuci - COMUNE DI PADOVA



IEE PadovaFIT! Experience



- 210.000 inhabitants
- Lots of Class G condominiums
- Average 180 kWh/m²/year
- Housing needs during economic boom of 1960s-1970s

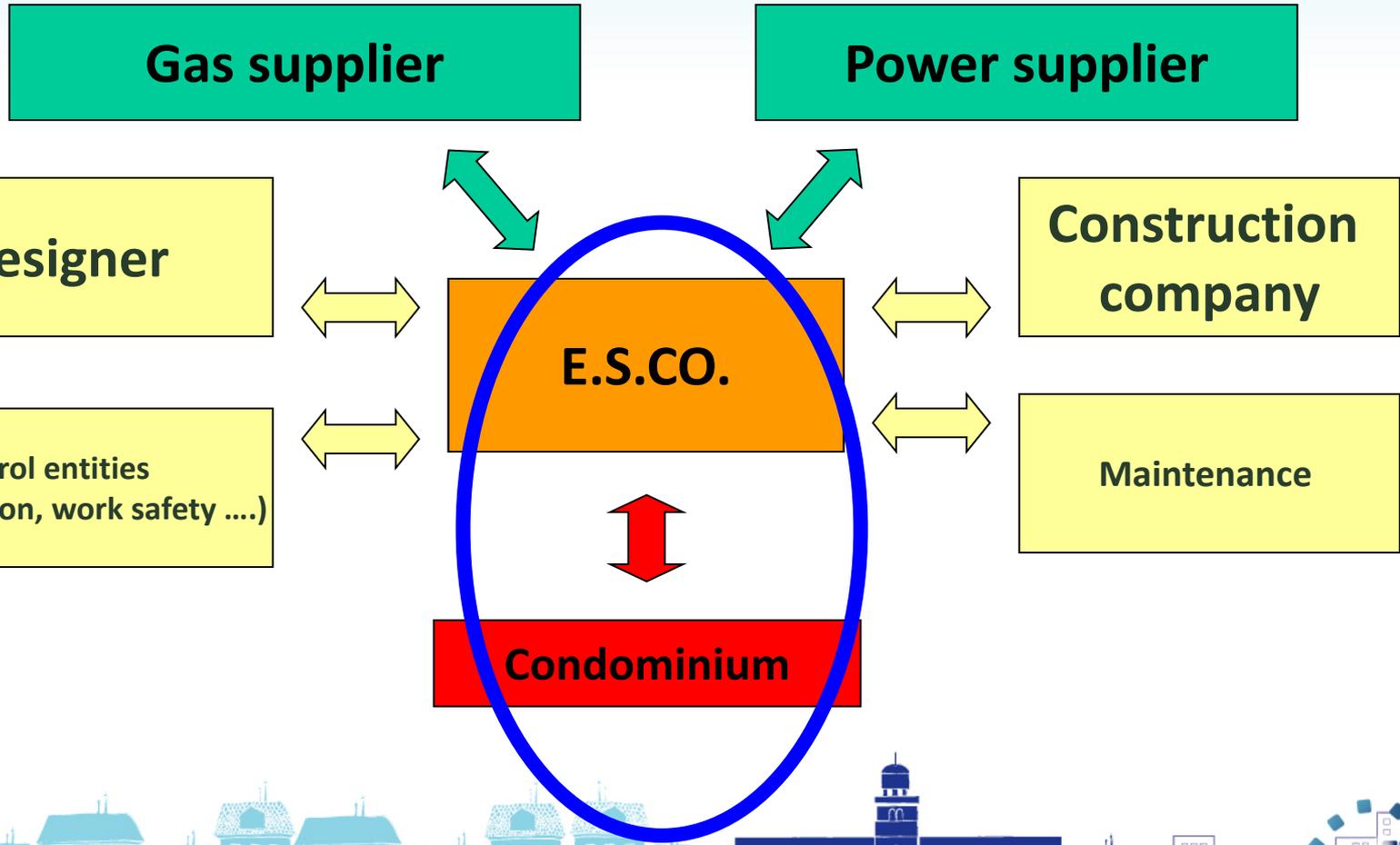


- Energy poverty
- Ageing population
- Lack of competencies in energy and Energy Performance Contracts
- General hostility to debts



The DELIVERY PARTNER (the OFFER side)

Energy Service Company + Engineering Company



CONDOMINIUMs (the DEMAND side)

Stakeholders Involvement & Engagement

- **Different target groups** to address:

- Single Building Managers and citizens
- Building managers associations
- Small owners associations
- House Owners/Tenants Unions
- Constructors' associations



- Target groups **potential resistance** (change in status quo, lack of knowledge, ...)

- Training of **Condominium Facilitators**:

- TECHNICAL and PSYCHOLOGICAL work (Open call – 80 hours of free training)
- **Light energy Audits** and participation in Condominium **Assemblies**



Stakeholders Involvement & Engagement - the Activities





Technical Engineering – Light Energy Audit

CONDOMINIUM n.1 - STARTING POINT



CONDOMINIUM n.1	Padova
Built in	1966
Dwellings	10
Floors heated	3
Square Meters heated	1.750 mq
Window frames	Wood, single glazed
Heating system	<ul style="list-style-type: none"> • type: centralised • Installed: 1994 • fuel: gas • Plant Power: 165 kW

Consumption	Average cons. [kWh, smc]	Average cost [€/year]
Electricity	6.000 kWh	€ 2.000
Gas	22.600 smc	€ 22.000



Technical Engineering – Light Energy Audit



EXAMPLE OF IMPROVEMENT MEASURES

Description	Cost [€]	Energy savings [%]	Money savings [€]	Pay Back <u>(without tax incentives)</u> [years]
Heating system refurbishment:				
- central heating boiler	€ 50.000	23%	€ 5.060	9,88
- individual heat counters				
External Thermal Insulation	€ 58.000	20%	€ 4.400	13,18
Attic insulation	€ 9.000	14%	€ 3.080	2,92
Double glazed windows	€ 47.000	18%	€ 3.960	11,87
Solar thermal plant+ Heat cost allocators (50% need coverage)	€ 18.000	50%	€ 2.750	6,55
Photovoltaic plant (5 kW)	€ 12.000	80%	€ 1.600	7,50



Technical Engineering – What type of contract?

CONDOMINIUM VS ESCo

EPC (**Energy Performance Contracting**) based on certified performance:

ESCo (**Energy Service Company**) investment paid back according to energy savings achieved

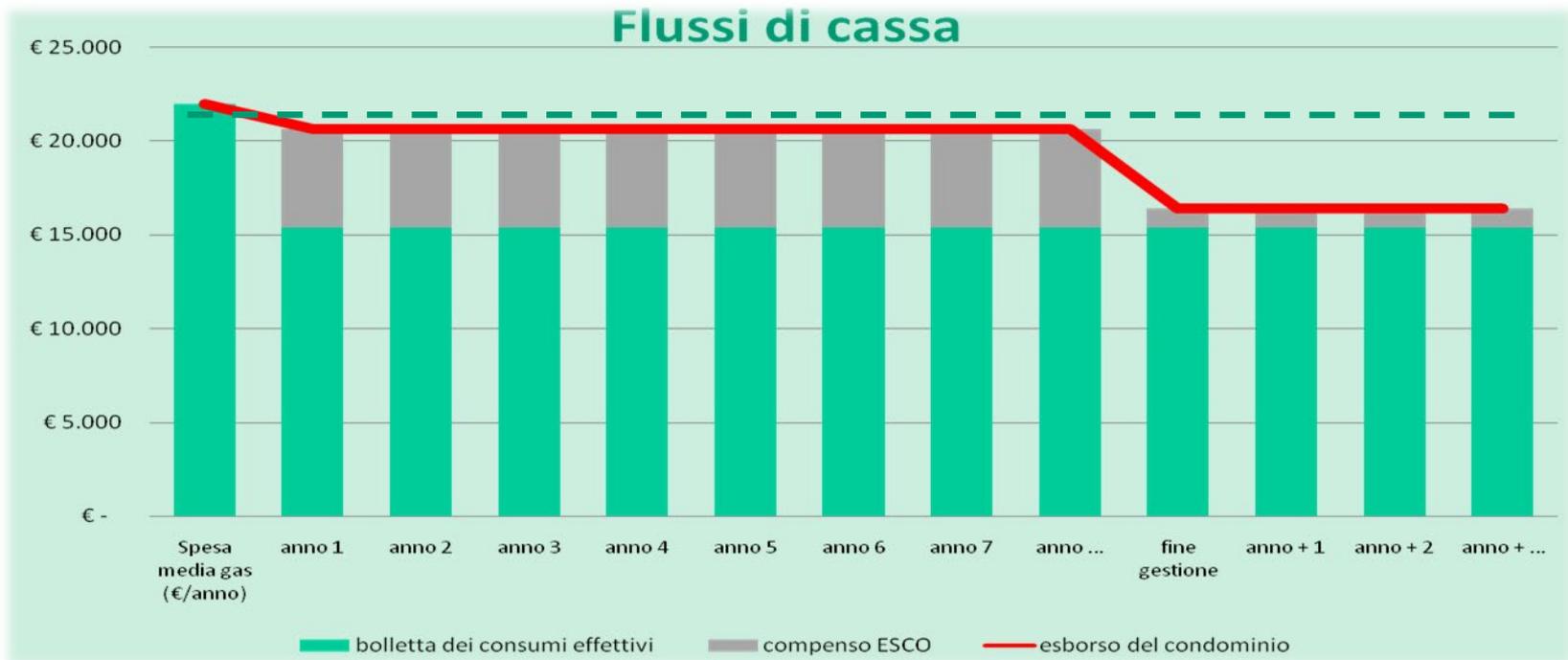
EPC contract highlights:

- Energy Audit and project design of works
- Works planning and timing
- ESCo Investment
- Condominium-ESco Contract Template validated by Municipality
- Duration of the contract
- Energy saving % (guaranteed) to be achieved
- Definition of baseline of energy consumption
- Quality assurance and performance monitoring methodology
- Management and maintenance of system(s) installed
- Energy service provider (heating, cooling, lighting)



Technical Engineering–Why EPC contracts are convenient?

- ESCo entirely funds and implement the works + manages all systems installed
- Condominiums start saving a little bit on energy bill right after works completion and
- When contracts end (normally 9 years) full savings % guaranteed



Procurement and Works – Contracts

• DELIVERY PARTNER selection call (Public Tender)

- Tender framework
- Technical criteria



Descrizione	Quantità	Unità di misura	Prezzo unitario	Prezzo totale
...
...
...



• Municipality - Delivery Partner (Public – Private contract)

- Contract between Padova Municipality and ESCO/Construction Partner

• Delivery Partner – Condominium (Private – Private contract)

- EPC contract template



CONTRATTO DI RENDIMENTO ENERGETICO CON GARANZIA DI RISULTATO E FINANZIAMENTO TRAMITE TERZI



Padova FIT! – Lessons learnt

Which buildings were the most interesting?

- Built in the **20. century** with no recent energy investments
- At least **6 dwellings** (or heated surface $> 500 \text{ m}^2$)
- **Centralised** heating plant (10+ years old) – ESCo has direct control on it
- **Delayed/missing payments** on utilities/condominium bills $< 10\%$.
- **Individual heaters** (one per apartment): no EPC, regular contract + dedicated credit line



Padova FIT! - Lessons Learnt

- **Tender documents** and contract templates to be developed ASAP
- **More than one Delivery Partner**
- Select Delivery Partners very soon – **sign “easy” contracts early**
- **Geographical scale** - large enough to guarantee demand (success rate of ca. 10%)
- **Building Managers** engaged as facilitators
- Training of **Facilitators** just in time (facilitation actions not too early)
- **Financial institutions** to be engaged from the very beginning (keep in mind ESCos financial needs as well as regular credit lines for individual citizens)
- Engagement of **potential Delivery Partners** in the preparation phase



Padova FIT! Legacy

PadovaFIT! LEGACY: CONDOMINIUMS	CHECK LIST
PadovaFIT project performed energy audits in 62 condominiums and identified energy efficiency measures and RES potential, deemed more appropriate in the context examined. The proposed measures were accompanied by a preliminary analysis of investment costs and energy benefits. A checklist was prepared for data collection on the basis of which the feasibility was conducted. Data have been catalogued and aggregated in a database that is organised into the following sections:	Context data - Building data Heat metering system - Heat regulation system Thermal power plant - Fuel used: Diesel/LPG Thermal energy production - Heat distribution system Sanitary hot water production system - Community electric users

SUMMARY OF EE MEASURES, INVESTMENT PLAN, IMPACT

Tipologia intervento	TOTALI complessivi			TOTALI condomini aderenti		
	costo intervento (euro)	Risparmio energia previsto [kWh/anno]	Risparmio CO2 previsto [tCO2/anno]	costo intervento (euro)	Risparmio energia previsto [kWh/anno]	Risparmio CO2 previsto [tCO2/anno]
valvole termostatiche e contabilizzazione del calore	€ 936.054	1.540.931	319,3	€ 228.900	365.223	76,9
refacimento impianto termico e contabilizzazione del calore	€ 5.046.737	4.395.817	905,2	€ 1.054.810	742.523	155,3
impianto ST condominiale	€ 307.450	195.421	41,1	€ 141.130	93.565	20,2
isolamento esterno con cappotto	€ 7.148.889	2.959.300	610,7	€ 1.547.300	608.710	127,5
isolamento sottotetto	€ 760.011	2.067.669	426,7	€ 156.600	408.241	85,6
sostituzione infissi con vetrocamera	€ 6.402.495	3.003.222	618,7	€ 1.720.235	656.404	137,7
refacimento impianto illuminazione condominiale	€ 285.890	455.560	180,0	€ 86.840	91.671	36,0
refacimento impianto pompe con inverter	€ 100.136	193.080	76,5	€ 19.303	36.826	14,5
refacimento produzione ACS da boiler elettrici a PDC	€ 1.014.090	621.048	243,8	€ 232.045	134.039	52,7
impianto FV condominiale	€ 609.420	401.221	160,4	€ 166.320	103.053	43,2
Totali	€ 22.611.171		3.582,3	€ 5.353.483		749,5
Totale Risparmio Energia termica [kWh/anno]		14.162.360			2.874.666	
Totale Risparmio Energia elettrica [kWh/anno]		1.670.909			365.590	
Totale Risparmio Energia primaria [TEP/anno]			1.530,4			315,6
Totale Risparmio Energia primaria [MWh/anno]			17.798,8			3.670,3



Padova FIT! Expanded

Call: H2020-LC-SC3-2018-2019-2020

Building a low-carbon, climate resilient future: secure, clean and efficient energy

Topic: Integrated home renovation services

Type of action: CSA

Budget: 1.500,00



Co-funded by the Intelligent Energy
Europe Programme of the European Union

Padova FIT! Expanded

PadovaFIT EXPANDED builds upon the great deal of knowledge and experience produced in Padova (engagement actions, trained condominium facilitators, market players involvement, template contracts improved, financing products better elaborated) and aims at:

- **creating** and piloting a dedicated one-stop-shop in Padova
- **expanding the business model** to Timișoara, launching and piloting a one-stop-shop as well
- **Supporting** the Bulgarian Energy Agency of Plovdiv to prepare the ground for the metropolitan areas of **Burgas** and **Smolyan** to take on the examples of Timișoara and Padova



Padova FIT! Expanded An Expanded Partnership

COMUNE DI PADOVA, Italy

UNIVERSITA COMMERCIALE LUIGI BOCCONI, Italy

- Business modelling

SINLOC - Sistema Iniziative Locali SpA, Italy

- Financial engineering

SOGESCA s.r.l., Italy

- Technical engineering

FORUM PER LA FINANZA SOSTENIBILE, Italy

- Alternative (ethics driven) financial solutions and Monitoring



Padova FIT! Expanded An Expanded Partnership

CLIMATE ALLIANCE - KLIMA-BUENDNIS - ALIANZA DEL CLIMA e.V., Germany

- Eu wide communication campaigning

MUNICIPIUL TIMISOARA, Romania

- Pilot city

ENERGY AGENCY OF PLOVDIV ASSOCIATION, Bulgaria

- Supporting municipalities of Burgas and Smolyan (City level Action Plans for the establishment of a One-Stop-Shop)



Padova FIT! Expanded

The One-Stop-Shop challenges

- A brand new entity will be established to act as One-Stop-Shop in our area
As of today, only the City of Modena has a similar entity, although entirely publicly owned: L'Agencia per l'Energia e lo Sviluppo Sostenibile (AESS).

The challenging question was how to aggregate Demand/Supply sides

- The positioning of (local) Public Authorities is either facilitators, or full players, or variable blended solution. This fundamental decision entails both what the OSS will be able to offer and how this offer will be made available to homeowners and suppliers.

The challenging question was how far the OSS ought to take the homeowner along the customer journey.



Padova FIT! Expanded

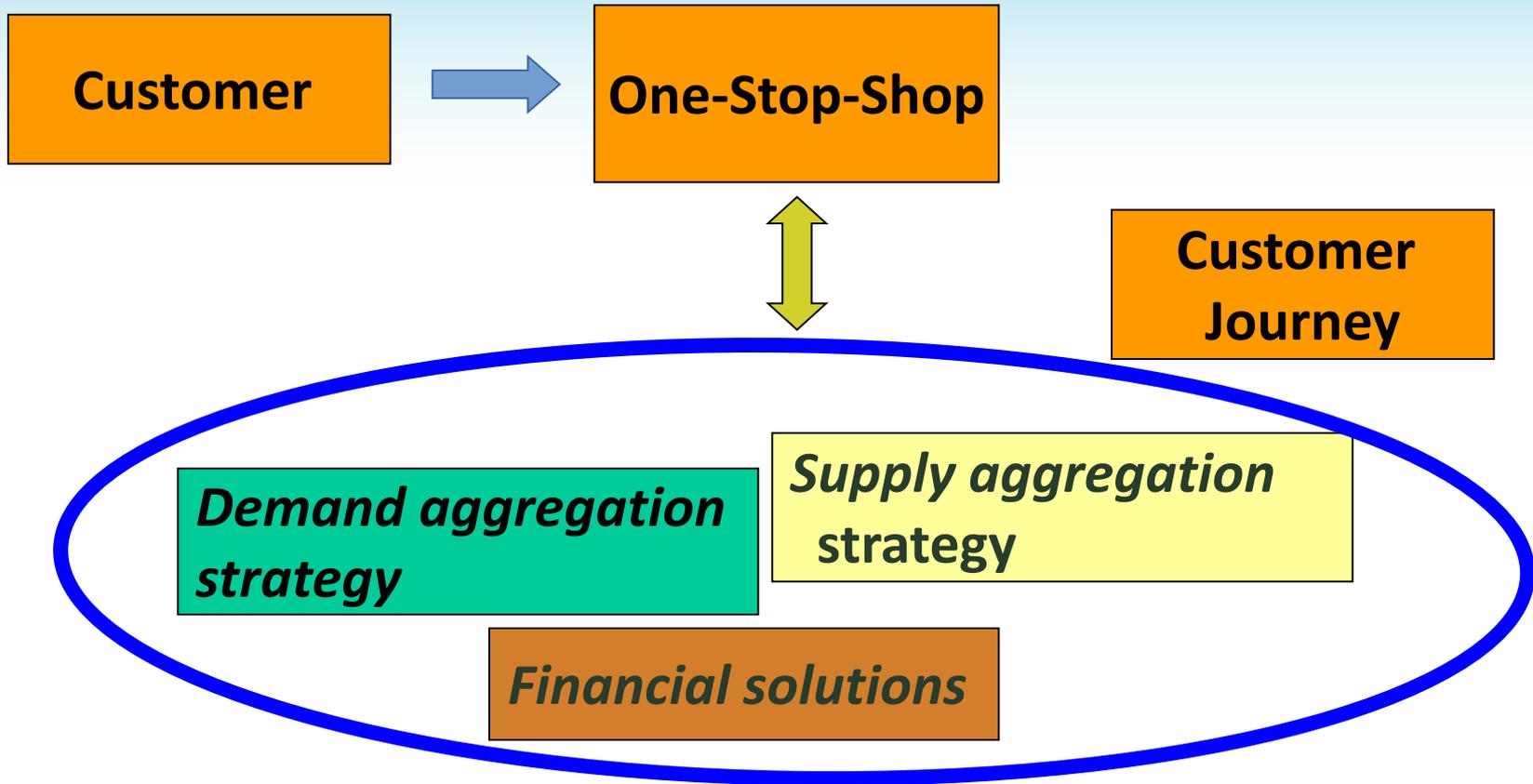
Engagement and confidence building

- As suggested by previous experiences, the strategy should not be at regional or city level, but at **neighborhood level** since it is very much likely they have similar dwelling typologies, construction eras, construction types, historical values, etc. and the living example of neighbours can be a significant trigger for further renovations.
- **PadovaFIT PIONEERS**: selected early enthusiast, at least one building per neighbourhood, according to building typology and peculiarities of each area, to act as demonstration buildings for the entire neighbourhood.
- Training of **community facilitators** with technical and less technical background in soft and hard skill that will allow them to engage residents and provide motivational input, or participate in public or condominium assemblies.



The One-Stop-Shop

A territorial approach for Demand-Supply Aggregation strategies



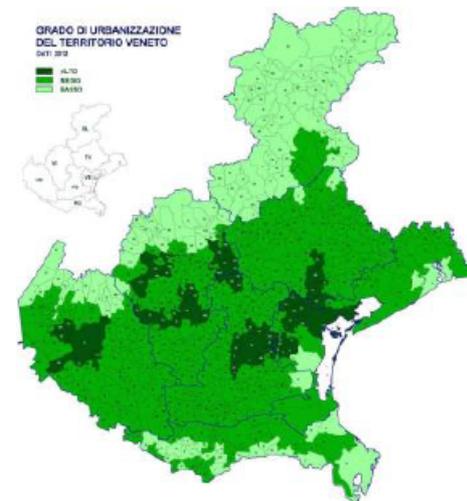
The One-Stop-Shop

Expected Impacts: high potential demand

Buildings in Veneto per use typology (Istat 2011):

TOT VENETO=1.177.551

	Residential	Productive	Commercial	Offices	Touristic	Services	Other
Veneto	1 057 276	33 167	21 606	5 182	4 619	13 738	41 963



Buildings in Padova per use typology:

TOT PROV=214.639 TOT MUNICIPALITY=37.814

	Residential	Productive	Commercial	Offices	Touristic	Services	Other
Province	191.641	7.189	4.475	990	402	2.469	7.473
Municipality	30 886	1 020	1 021	360	62	627	3 838

Residential Buildings in Padova per construction era: TOT PROV=191.641, TOT MUNICIPALITY=30.886

	1918 <	1919-1945	1946-1960	1961-1970	1971-1980	1981-1990	1991-2000	2001-2005	2006 >
Province	11 312	10 072	24 098	41 793	41 805	25 470	17 979	10 738	8 374
Municipality	2 141	1 387	6 137	8 638	6 237	3 187	1 977	813	369



The One-Stop-Shop

Expected Impacts: high potential demand, but not just condominiums

Residential Buildings (#units distribution per building)

	1	2	3-4	5-8	9-15	16+	TOT
Province	102 390	51 791	20 357	10 627	4 722	1 754	191641
Municipality	13 802	6 592	3 968	3 734	1 918	872	30 886

Residential units (where residents live) per building construction era

	1918 <	1919-1945	1946-1960	1961-1970	1971-1980	1981-1990	1991-2000	2001-2005	2006>
Province	16 224	12 966	39 230	72 257	76 176	53 188	42 446	29 497	19 947
Municipality	5 130	2 741	15 641	25 162	20 887	11 097	6 410	3 136	1 116

Residential Buildings: state of conservation

	Excellent	Good	Poor	Very poor	Tot
Province	83 431	84 590	21 359	2 261	191641
Municipality	11 968	15 328	3 289	301	30 886



The One-Stop-Shop

Expected Impacts: high potential, yet highly fragmented supply side

Supply side data for Veneto Region

ATECO	ACTIVITY	#PLAYERS
41100	Real estate projects development	2,692
41200	Construction of residential and non-residential buildings	17,223
68100	Marketing/trade activities (Agencies owned properties)	11,298
71110	Architectural offices activities	2,028
71122	Engineering design activities	695

ATECO	ACTIVITY	#PLAYERS
432200	Installation of electrical, plumbing systems and other construction installation works	15,176
432902	Thermal insulation works	369
43320	Windows installation works	3969



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