

### eeef highlights

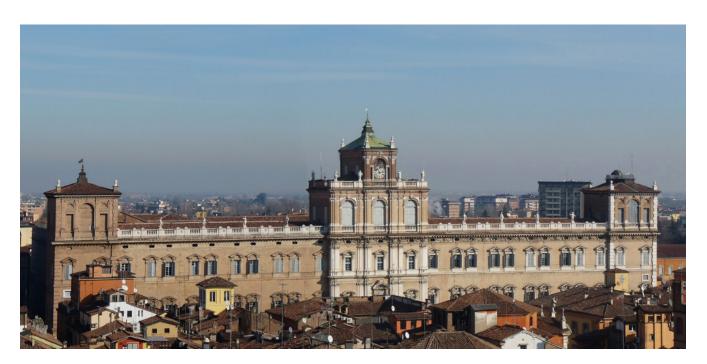
The Italian Ministry of Defense is the third public authority to benefit from eeef's Technical Assistance Facility (TAF). The eeef Technical Assistance Facility assists public authorities to prepare feasibility studies, energy audits, evaluate the economic viability of investments and launch the tender process, and received part of funding from the ELENA Facility under Horizon 2020 Programme of the European Union. The eeef TAF will provide consultancy services for the building retrofit project of the historical Ducal Palace in Modena, Italy, as a government property in use to the Ministry of Defense.

The building currently houses the headquarters of the Military Academy, where military students receive training. Additionally, part of the Eastern Tower of the Palace houses the University of Modena and Reggio Emilia's (UNIMORE) geophysical/meteorological observatory and the first floor hosts a museum where the Municipality of Modena offers guided tours.

The Italian Ministry of Defense's Energy Task Force identified that an Energy Performance Contracting (EPC) model could provide a solution for the energy refurbishment of the Military Academy. The Energy Task Force and UNIMORE completed a concept feasibility study, which indicates a potential project volume of EUR 8.1m, split in circa EUR 5m to upgrade heating systems and circa EUR 3.1m for building envelopes.

The eeef TAF will allow completing fully-fledged feasibility studies of the Palace, accurately assessing the current infrastructure and proposing improvements and measures appropriate to a building of such historical value. All of the recommendations will comply with the architectural constraints required by law to protect the public heritage of the Palace. The proposed measures will enable the prestigious historical building to upgrade to the latest energy standards at the same time as to offer the military students and staff access to a better learning environment.

On 22 – 23 February, took place in Athens, featuring speakers from all over Europe, the Conference on Smart Islands and Small Cities, organized by the Aegean Energy & Environment Agency (AEEA), the Network of Sustainable Greek Islands DAFNI and the energy portal Energypress. AEEA is used to collaborate with the European Commission, in fact the event in Athens built on the ratification on 28 March 2017 of the Smart Islands Declaration by 36 island representatives, networks and organizations at the presence of General Director for Energy Dominique Ristori. According to the AEEA's General Director Mr. Ilias Efthymiopoulos, "the conference highlighted the conditions for intelligent development at local level. It defined the respective roles and duties for government, municipalities, enterprises, citizens' unions, academia, as well as to present the roadmap to enable the technical and financial supporting structures available to small cities and islands by National and European funding mechanisms and programmes". The European Energy Efficiency Fund has been invited to join the event to present its value proposition, to which the audience responded with vibrant interest, especially in how the Fund combines tailored structures for investment financing with Technical Assistance. The event gave the public sector in islands and small communities new instruments to implement their projects for smarter infrastructures and services.



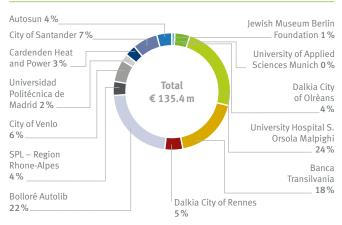
# Advancing Sustainable Energy for Europe Quarterly Fact Sheet as of 31/03/2018



Senior Debt

72%

### Investments by Partner Institution\*



### Investments by Country\*



### Investments by type of Partner Institution\*



\* Based on commitments signed to projects, not including repayments or accrued interests.

### Bused on communents signed

CO, savings (in tCO,e)



### NAV as at 31/12/2017 (in € million)\*\*

**Investments by Financial Instrument** 

Equity 9% \_

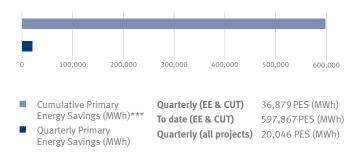
19%

Subordinated Debt



\*\* NAV as of 30 March 2018 will be available after conclusion of IFRS9 processing.

### **Primary Energy Savings (PES)**



\*\*\* Cumulative data includes calculations from financial close to loan maturity, based on estimations for projects under construction and less than one year of operations and actual data for projects which have been in operation for over one year. Savings are for total project investment volume (i. e. eeef and non-eeef investments). Portfolio Primary Energy Savings CUT & EE (absolute and percentage) is for 100 % energy efficiency (EE), clean urban transport (CUT) and additional capacity RE projects only.

EE – energy efficiency. CUT – Clean urban transport.



### eeef closed transactions Existing projects



Country:GerSector:EnerType of Investment:ForfTotal project size (€m):1.4eeef investment size (€m):0.9Financial close:200Maturity:100Status:In control

Germany Energy Efficiency Forfeiting 1.4 0.9 20 March 2012 10 years In construction

#### **General description**

Johnson Controls' Energy Service Company (ESCO) and the Jewish Museum Berlin entered into an amended Energy Performance Contract (EPC) for both buildings of the museum with a total EPC volume of  $\leq$  1.4 m. Agreeing on energy efficiency measures comprising of the optimisation of heating, ventilation & air conditioning and an efficient energy management system, the project is expected to achieve a 26% reduction of CO2 emissions compared to the baseline. It is a lighthouse project because of its innovative financing structure using forfeiting as a funding source.

• Project performance in line with envisaged plan



Country: Sector: Type of Investment: Total project size (€ m): eeef investment size (€ m): Financial close: Maturity: Status:

Germany Energy Efficiency Forfeiting 1.1 1): 0.6 15 November 2012 10 years In operation

General description

Johnson Controls' ESCO and the University of Applied Sciences Munich (UoM) entered into an energy performance contract (EPC) for both buildings of the UoM's campus in Munich-Pasing with a total EPC volume of  $\in$  1.1 m. The ESCO and UoM agreed on energy efficiency measures comprising the acquisition of a 49.5 kW combined heat and power (CHP) plant, the optimisation of heating, lighting, metering, building management and pumping. The implementation of all measures achieves an 6% reduction of CO2 emissions compared to the baseline. The ESCO guarantees the UoM certain energy savings p. a. and performs maintenance and building operation services for the 10 year contract period. This project is a role model for further energy efficiency investments in educational facilities such as schools, universities etc.

Recent developmen

• Project performance in line with envisaged plan



Country: Sector: Type of Investment: Total project size (€ m): eeef investment size (€ m): Financial close: Maturity: Status:

France Renewable Energy Junior Funds 36.0 5.1 12 March 2013 Perpetual In operation

### General descriptior

The CHP plant with an installed capacity of 7.5 MW in electricity and 17 MW in thermal heat supplies the heat to the City of Orléans and sells the electricity via a Power Purchase Agreement (PPA) to Electricité de France (EDF) at a negotiated tariff fixed over 20 years. The plant is fired by wood biomass (90,000 tonnes p. a.) from a supply radius of less than 100 km. This project is the first equity investment of eeef (majority owner of the plant with 84%). The operation of the CHP plant achieves a reduction of CO2 emissions by 18,533 tonnes p. a., approx. 65% compared to the baseline.

cent development

• Project performance in line with envisaged plan



**Existing projects (continued)** 



### **General description**

The project entity, Progetto ISOM S. p.A., a special purpose vehicle (SPV) which is the counterparty of eeef, signed a concession agreement with the University Hospital S. Orsola Malpighi (UHSOM) in Bologna. Planned initiatives are intended to raise the energy efficiency of the entire fluid production and distribution system and reduce energy consumption via adoption of energy efficient equipment such as centrifugal chillers and absorbers, reconstruction of heat distribution networks, renovation of heat exchange substations and inclusion of a tri-generation plant for the combined production of cooling, heat and power (CCHP) sized on the basis of the energy consumption of the hospital facility which is fuelled by methane gas. The project will achieve a reduction of CO<sub>2</sub> emissions by 7,881 tonnes p. a., approx. 26% compared to the baseline. It has been the largest energy efficiency upgrade in Italy under a public-private partnership (PPP) framework so far and is a lighthouse project which demonstrates the positive impact of energy efficiency measures in public healthcare.

**Recent developments** 

• Project performance in line with envisaged plan.

### Project: Banca Transilvania

• N/A



Country:RoSector:FirType of Investment:SuTotal project size (€m):25eeef investment size (€m):25Financial close:26Maturity:10Status:Im

Romania Financial Institution Subordinated Debt 25.0 26 September 2013 10 years Investment phase

#### General description

Banca Transilvania (BT), one of the leading banks in Romania, and eeef signed a letter of intent regarding green lending to support energy efficiency and renewable energy investments in Romania. It is the first cooperation of the eeef with a financial institution and also its first transaction in Eastern Europe. With BT, eeef has a strong local partner with experience in financing several energy efficiency projects.

Recent develo

Project: City of Rennes

 Country:
 I

 Sector:
 I

 Type of Investment:
 J

 Total project size (€ m):
 I

 eeef investment size (€ m):
 I

 Financial close:
 I

 Maturity:
 I

 Status:
 I

France Renewable Energy Junior Funds 47.6 7.3 12 December 2013 Perpetual In operation

#### General descriptior

The fund has completed its second equity transaction, investing in Rennes Biomasse Energie, which operates a combined heat and power facility with an electrical output of 9.8 MWe and thermal output of 22 MWth over 20 years. This junior fund investment has been realised through the purchase of 85% of the shares of Rennes Biomasse Energie by eeef. Dalkia France is co-investor along with eeef and is shareholder of the remaining 15% of Rennes Biomasse Energie. The plant supplies 21,000 households in the city with green heat. The facility is estimated to save 13,258 tonnes of CO, per year.

ecent developments

• Project performance in line with envisaged plan



Existing projects (continued)

Project: Bolloré	Country: Sector: Type of Investment: Total project size (€ m): eeef investment size (€ m): Financial close: Maturity: Status:	France Clean Urban Transport Senior Debt 30.0 30.0 23 December 2013 5 years In operation								
General description										
The French company Bolloré signed a bond subscription agreement for floating rate notes worth € 30 m issued by Bolloré and purchased by the eeef with a maturity of 5 years. eeePs investment is used to finance electric cars and required infrastructure used in Bolloré's European electric car rental concession. This transaction is within the framework of a green transportation initiative for the cities of Paris, Lyon and Bordeaux.										
	Recent developments									
• N/A										
Project: Société Publique Locale Efficacité énergétique (SPL)	Country: Sector: Type of Investment: Total project size (€ m): eeef investment size (€ m): Financial close: Maturity: Status:	France Energy efficiency measures, public buildings upgrades Senior Debt approx. 25 5.0 3 April 2014 5 years Implementation phase								
General description										

The Société Publique Locale d'Efficacité Energétique (SPL) signed a mid-term loan agreement for € 5 m to finance the refurbishment of public buildings during their construction phase and to pave the way for raising further long term financing. The SPL was initiated by the Région Rhône-Alpes as a private special purpose company under the French Commercial Code, but operating with public capital. It is associated with a number of public authorities in the region and is dedicated to implementing energy-efficient refurbishment projects of public buildings (high schools, schools and gymnasiums), including renewable energy production. By setting an example of upgrading public buildings, while going beyond standard thermal regulations, the SPL is thinking ahead and aims to achieve its long-term objectives of energy savings and greenhouse gas reduction.

Recent developments

• N/A



Country: Sector: Type of Investment: Total project size (€ m): eeef investment size (€ m): Financial close: Maturity: Status:

The Netherlands Energy Efficiency Senior Debt 8.6 8.5 3 April 2014 15 years In operation

#### eneral description

The City of Venlo signed a long-term financing contract for € 8.5 m to finance street lighting upgrades with the objective of equipping a minimum of 16,000 lighting points with LED lights (73% of the total lighting points of the city) and achieving more than 56% energy savings. The existing public lighting is the largest consumer of electricity with approximately 36% of total consumption of the municipality. The large-scale street lighting upgrade is a further sign of the city's commitment towards environmental sustainability including, among other things, being one of the first cities in the world to support the principle of 'Cradle to Cradle' (C2C), a framework for using sustainable energy resources only, phasing out conventional energy sources.

**Recent developments** 

• Project performance in line with envisaged plan



**Existing projects (continued)** 



Country: Sector: Type of Investment: Total project size (€ m): eeef investment size (€ m): Financial close: Maturity: Status:

Spain Energy Efficiency Forfeiting 2.5 2.5 18 November 2015 9 years In operation

#### **General description**

eeef provided financing for the replacement of existing oil boilers providing hot water and heating to the Universidad Politécnica of Madrid ("UPM"). The retrofit of new gas boilers, thermal valves and thermal PV solutions will be completed in 32 buildings of the UPM. The project will realise 22% of Primary Energy Savings and 36% CO<sub>2</sub>e savings annually compared to baseline. The transaction resulted from the public tendering process launched by the UPM earlier this year. Ingenieria y Servicios de Eficiencia Energética S. L. ("Enertika") was awarded with the nine year mandate, and the Energy Management Contract ("EMC") was signed on the 4th of September 2015. The EMC will consist of measures to provide and install the technology required to upgrade existing infrastructure and perform operation and maintenance services as required to ensure optimal performance of the new technology.

**Recent developments** 

• Project performance in line with envisaged plan



Country: Sector: Type of Investment: Total project size (€ m): eeef investment size (€ m): Financial close: Maturity: Status:

United Kingdom Energy Efficiency, Renewable Energy Senior Loan 5.5 4.34 31 October 2016 16 years In operation

### **General description**

The project involves the replacement of gas boilers in residential buildings owned by Ore Valley Housing Association (OVHA) and small wind farms in the Fife Region in Scotland developed by CHAP. OVHA is a Scottish Housing Association, a registered social landlord with charitable status operating in central Fife, while CHAP is a subsidiary of OVHA. The boilers will be leased to OVHA and the wind plants will benefit of the national Feed in Tariff. The senior debt facility provided by eeef is complemented by junior funds from the Scotland's Renewable Energy Investment Fund (REIF) and equity from OVHA/CHAP. Overall, the project's target is to achieve cumulative annual savings of 99 % for primary energy and 96 % for CO<sub>2</sub> e compared to baseline.

### Recent developments

• First disbursement in November 2016.

• Implementation of boilers and wind turbine completed in March 2017.

### Project: City of Santander



Country:SpainSector:EnergyType of Investment:ForfaitTotal project size (€m):9.2eeef investment size (€m):9.2Financial close:18 AuMaturity:14 yesStatus:End of

Spain Energy Efficiency Forfaiting Loan 9.2 9.2 18 August 2017 14 years End of construction

### General description

The project consists of the upgrade of the existing street lighting luminaires from predominantly high pressure sodium vapour lamps to the last generation PHILIPS LEDs. In the 12 months construction period, ending in November 2017, the number of lighting points replaced will come to a total of around 22,300 units. A system of UVEX wireless sensors will connect the whole infrastructure point-by-point with the City's digital communication network and the remote CEMILUX control system. Savings in CO, and primary energy are envisaged to reach 80% compared to the baseline. The project emerges from the European Commission Technical Assistance, successfully completed in 2015, with the Municipality of Santander receiving €450k of funding to conduct energy audits, set up the street lighting investment programme and the tender documents. The project is one of the largest street lighting upgrades in Spain under a Public Private Partnership (PPP) framework.

### Recent developments

• €9.2m fully disbursed in December 2017 as planned, when more than 98% of installations were completed. The project is expected to achieve final commissioning in April 2018.



Existing projects (continued)



The project consists of a portfolio of small-scale PV plants, allowing self-consumption up to 5.6 MW in total to end-users in the public sector across Portugal. Beneficiaries will be public entities such as municipalities, state-owned companies and other public authorities. The portfolio developer is Wattosun, an agile player with a highly skilled management team, which comes to a total of over 50 years of experience in developing, financing and operating rooftop and ground mounted PV plants globally.

The portfolio, comprising seven sub-projects, foresees installation of circa 21,100 solar panels. When compared to the baseline and the Portuguese electricity grid, the project is expected to allow seven public authorities to save globally  $CO_2$  emissions of 2,650 tonnes per year and primary energy savings of 20,736 MWh per year. The self-consumed electricity would enable the public authorities to minimise or even exclude any exposure to changes in energy prices and benefit from effective electricity cost reduction.

**Recent developments** 

• Signed MoU, portfolio under construction

eeef created a number of videos to show the projects evolution, please watch them on the eeef website https://www.eeef.eu/home.html



### eeef Technical Assistance development

The Technical Assistance (TA) Facility of the Fund, which has also received funding from the ELENA Facility under Horizon 2020 Programme of the European Union, was launched end of 2016. The objective of the new facility is to support public authorities to prepare investment programmes for a sustainable transformation in the areas of energy efficiency (mainly public building renovation and street lighting upgrades) as well as small scale renewable energy. eeef has selected a pool of consultants to work closely with the public authorities during the preparation of feasibility studies, energy audits, public tender processes etc. Up to now, three projects have been selected under this facility: City of Gijón, Ferrara Province and Italian Ministry of Defence – Ducal Palace.



Country:SpainSector:Energy EfficiencyTotal investment volume ( $\in$ ):21.7TA amount approved ( $\in$ ):400,000Financial close:24 April 2017

City of Gijon is planning the implementation of an ambitious sustainable investment programme to complete energy audits for 98 public buildings and 40,000 street lighting points, identifying the appropriate set of energy efficiency and/or renewable energy related interventions, preparing and publishing the tendering documentation as well as preferably selecting an ESCO company to realise the measures within a two-year timeframe. As a Covenant of Mayor and RECI member (Spanish Association for Smart Cities), the city is fully committed to share its experience and best practices with other public authorities, thereby boosting the replication potential for such year of projects in Spain but also Europe-wide.

#### ecent developments

• Data collection for street lighting inventory completed

• Master lighting plan established, technical and economic analysis of proposed interventions in progress

• Energy inventory of facilities ongoing



Country:ItalySector:EnerTotal investment volume ( $\in$  m):15.3TA amount approved ( $\in$ ):389,Financial close:31 M

Italy Energy Efficiency n): 15.3 389,500 31 May 2017

#### General description

Joining forces with SIPRO (Agenzia Provinciale per lo Sviluppo) – a development agency with a 40-year track record – the investment programme of the Province of Ferrara addresses the implementation of energy efficiency measures in several municipalities to prevent high energy consumption and heat loss going forward. Municipalities directly involved in this TA project are Ferrara, Cento, Argenta, Bondeno, Mesola, Copparo and Voghiera. The investment programme includes deep energy retrofitting measures (in 13 buildings such as schools, offices, town halls and sport facilities) and the replacement of 27,000 public lighting points to LED technology in the cities of Ferrara and Voghiera. The tender for a LED replacement is planned to be launched by the end of 2017.

#### Recent developments

• Energy audits carried out for 15 buildings, reports in progress

- Screening and validation of public lighting database for Voghiera finalised; reports in progress
- Planning of public lighting interventions for Ferrara completed; tender specifications finalised; tender publishing expected in Q1 2018



## eeef Technical Assistance development

(continued)



Country: Total investment volume (€m): 8.1 TA amount approved (€): Financial close:

Italy

340,000 5 March 2018

The Ducal Palace in Modena (Italy) is owned by the Italian government and is currently used by the Italian Ministry of Defense (MoD). With a total project volume of €8.1m, the upgrade of thermal systems (€5.0m) is expected to include new pipes for the network distribution plus improvement of the existing ones, advanced climate control system, replacement of old radiators and boilers and retrofitting the hot water system. For the building envelope (€3.1m) the MoD plans reducing thermal losses by introducing insulation in internal opaque walls and air infiltration with improved sealing of window frames. The the Ducal Palace of Modena is located in the City of Modena, in the Italian region of Emilia Romagna. The palace was the residence of the Este Dukes of Modena for more than two centuries and today is owned by the Italian government. The main part of the building is currently used by the MoD and houses the headquarters of the Military Academy. In this building, military students attend academic lessons of several university courses held by professors from the public University of Modena and Reggio Emilia (UNIMORE). Part of the Eastern Tower of the palace houses the geophysical-meteorological observatory of UNIMORE, while the first floor is a public museum of the Military Academy with guided tours offered by the Municipality of Modena.

• Preliminary data screening for energy audits started



### **EC Technical Assistance development**

eeef provided grant money under the European Commission TA Facility (until 31 March 2014) facilitating nine investments with a total investment volume of around € 130 m. The projects are at various stages. While Région Rhône-Alpes, OVHA and Venlo successfully achieved the financing stage with eeef, further three projects (Santander, Terrassa and CIMAC) are currenty discussing financing with eeef. A number of projects are under completion using other sources of funding, thereby generating  $\in$  95 m worth of investment programmes.

Pub	lic authority	Country	Description of the investment programme	Total size of the investment programme (EURm)	TA volume approved (EUR)	Estimation of CO <sub>2</sub> reduction (tonnes per annum)	Estimation of Primary Energy Savings (mWh/y)	EEEF share (EURm)	
	City of Santander	Spain	EE – Public lighting/ building retrofit	14.3	452,560	4,396	39,848	9.2	
	City of Cordoba 1	Spain	EE – Public lighting/ building retrofit	1.7	527,968	N/A	N/A	other sources of funding	
<b></b>	Cabildo of La Palma	Spain	Public lighting/ building retrofit/ clean urban transport	TA termination, funds returned					
	City of Terrassa	Spain	Public lighting/ building retrofit/clean urban transport/PV	16.2	623,467	3,952	12,695	5.0	
3 Ber	City of Marbella	Spain	Public lighting/ building retrofit/PV	8.8	417,596	3,725	8,466	5.0	
	Région Rhône- Alpes <sup>2</sup>	France	EE – Building retrofit	25.0	1,125,000	992	4,156	financing closed (€5m)	
2	Municipality of Ringkøbing-Skjern	Denmark	RE – Biomass	Based on TA outcome, project not feasible					
	Ore Valley Housing Association <sup>3</sup>	UK	EE – District heating	5.5	1,382,520	1,612	8,968	financing closed (€4.3m)	
١	City of Elche	Spain	Public lighting/ building retrofit/ clean urban transport/ PV/biomass	TA termination, funds returned as agreed (Eligible TA funds provided: € 29.291,55)					
	City of Venlo	Nether- lands	EE – Public lighting	8.6	425,000	948	4,632	financing closed (€8.5 m)	
Université de Liège	University of Liège	Belgium	EE – Building retrofit	32.6	1,340,073	2,718	19,277	other sources of funding	
etb Endersteinen er etter Bestehenden Keinen er etteren	Limerick and Clare Education and Training Board	Ireland	Building retrofit/ PV/micro wind	Based on TA outcome, project not feasible					
	Groupement de Redéploiement Economique de la province de Liège	Belgium	EE – Building retrofit	59.9	2,000,000	1,449	29,900	other sources of funding	
<b>Ø</b> cimac	CIMAC (Comunidade Intermunicipal do Alentejo Central)	Portugal	Public lighting/ building retrofit/ clean urban transport/ PV/biomass	21.3	513,441	6,909	19,000	14	
SER	Municipality of Zaanstad	Nether- lands	EE – Open and smart energy network	Based on TA outcome, project not feasible					
	Roscommon County Council	Ireland	EE – Biomass district heating	TA termination, funds returned					
Total:				193.9	8,807,626	26,701	146,942	51	

TA amount will be reduced due to non-achievement of leverage factor (LF)

To be determined after project implementation phase

Based on a conversion factor of 1.1912 for GBP as of 10th May 2017. Since the initial project structure (which received TA funds) was not pursued, LF and saving data not applicable. For the new project scope savings of 8,968 mWh and 1,732 t CO<sub>2</sub> p. a. are expected



### Investors











### Disclaimer

All statistics presented in this report, unless otherwise specified, are based on non-audited figures of the financial model and reporting tool of the European Energy Efficiency Fund. Care has been taken in preparing the financial model and the statistics presented in this report but no representation, warranty or undertaking (express or implied) is given or will be made and no responsibility or liability is or will be accepted by Deutsche Bank AG ("Deutsche Bank") or by

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