Public Internal Performance Contracting – Managing and financing energy-efficiency measures in public administrations

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Abstract

Public Internal Performance Contracting (PICO) is a type of in-house "third-party" financing or energy performance contracting scheme. In theory, once triggered, PICO provides a "perpetual motion" finance mechanism for public authorities by which energy efficiency savings fund new investments in an upward virtuous cycle.

One unit of the public authority, e.g. the technical department, delivers the financial and technical energy efficiency service to another unit of the same public administration. Remuneration takes place through cross payments between these units, according savings made in energy costs. The initial investments require "seed funds" to kick start the process, after which the cross payments provide sufficient means to fund further measures.

How can the PICO mechanism be initiated in times of tight public budgets? What difficulties are faced during the implementation process and how can these be overcome? What kind of energy-efficiency measures is PICO best suited to? And what role can national and European policy play to facilitate implementation?

These are the key questions that the EU-funded PICO-Light project aimed to tackle. This was done through testing and disseminating the PICO schemes, first used in Germany, in six European countries, developing these further and making the necessary adaptations. PICO schemes were piloted in seven public administrations with the technical focus on energy-efficient lighting retrofits. The experiences gathered in these pilot projects should help to introduce PICO schemes on a larger scale in public administrations in Europe. The paper presents the preliminary results from these pilot projects.

The PICO idea and the PICOLight project

Public Internal Performance Contracting (PICO) is an innovative concept for management and funding of energy efficiency in public buildings.

In many public authorities and comparable institutions, significant opportunities to save energy costs exist. However, often these profitable potentials are not realised for various reasons. Among the barriers, typical characteristics of public investment financing play a prominent role (Borg & Co. et al. 2003):

- There are, for example, split incentives for managers to invest in energy efficiency due to the more or less standard procedure of managing public sector finances by dividing investment and management budgets across different departments. The standard practice is a disincentive to the user departments, which cannot keep the return from investments in energy efficiency in their buildings, and a non-incentive to those in charge of managing the investments.
- Furthermore, investments aimed at yielding direct future economic returns are not a natural part of the investment culture in public administrations. This is reflected at decisional level, where priority is directed to improved service levels, and within administration, which often lack the skills to undertake simple cost benefit analyses.

- Third, public (procurement and building) management routines are complex and increasingly decentralised. Procurement and building management officials work in an environment of conflicting policy objectives, extensive regulations and a variety of pressures. The complexity tends to favour relying on past practices, avoiding risks, which consequentially stifles innovation.
- Moreover, with more and more public administrations facing severe budget problems, there often is a lack of financial means and personnel even for profitable investments.
- Finally, decisions on energy-efficient investments are sometimes difficult to take and need detailed preparation, because information about energy consumption and costs of public buildings are insufficient.

Energy efficiency services often provide a solution to this situation, and during the last decade the related market for third party financing schemes such as energy performance contracting or contract energy management has grown. Very similar to performance contracting, public internal performance contracting (PICO) represents a way to enable energy efficiency investments through a kind of in-house "third-party" financing or energy performance contracting scheme.

Implementation is as follows: A unit in the public authority, e.g. the technical department of a municipality, delivers the financial and technical energy efficiency service to another unit, and the remuneration takes place through cross payments of budgets between the two separate organisational units of the same public administration. The financial and technical service offered by the internal contractor might include a first audit, an investment graded audit, the economic and technical planning and financing of measures, the issue of tenders for the implementation of measures, the commissioning of external actors and the supervision and control of implementation and/or the operation and maintenance of equipment. Beside the implementation, external actors might be also involved in the investment graded audit and in the operation and maintenance, particularly if special technical expertise is needed not available in the administration. Furthermore, part of the financing might come from external actors (e.g., bank loans, cheap credits, subsidies).

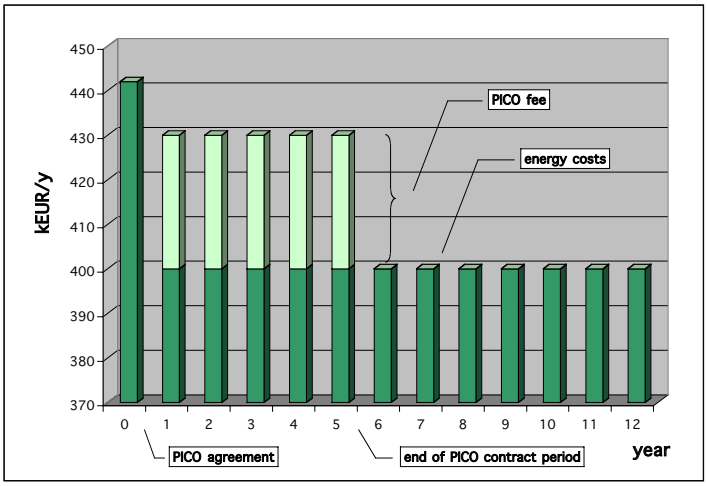

Figure 1. Schematic illustration of cash flows under a shared-savings PICO arrangement.

Comparable to other third party financing schemes, the efficiency measures reduce the annual energy bill of the customer department, which gives room to pay the PICO fee, e.g., under a shared-savings agreement (Figure 1) or with a service guarantee by the internal contractor based on a defined baseline and with rather simple measurement and verification procedures.

PICO offers a means to tap and facilitate access to significant economic rewards offered by undertaking investments in energy efficiency improvements in the public sector. And indeed the returns are potentially huge. The European study on Public Procurement of Energy Saving Technologies (PROST) indicated potential economic savings of 12 billion Euro per year in the former EU-15 by undertaking additional annual investments in energy efficiency of only 80 million Euro. (Borg & Co, et al. 2003).

In the course of the PICOLight project, PICO schemes, first used in Germany, were tested, further developed and disseminated in seven public administrations in six European countries. The experiences gathered in these pilot projects should help to introduce PICO schemes on a larger scale in public administrations in Europe.

In the following, the paper will present the main preliminary project results. Since the project was still on-going in March 2005, and since the implementation of energy efficiency measures and PICO schemes in some of the pilot projects was delayed, the paper cannot present final results. The paper analyses,

- in how far the continuity of managing and financing energy efficiency measures has been or will be secured in the participating public administrations by adapting the PICO concept to their specific needs or by using other mechanisms,
- what kind of energy efficiency measures have been or will be implemented in the seven public administrations by the help of an adapted PICO concept or by using other mechanisms,
- the applicability of the PICO concept to public administrations in genera based on these preliminary results,
- what role national and European policy could play in supporting the implementation of PICO schemes.

Implementation and adaptation of the PICO concept

CENTRAL QUESTION: HOW TO CONTINUOUSLY MANAGE AND FINANCE ENERGY EFFICIENCY MEASURES?

The central question is, how public administrations can find a way to continuously finance energy efficiency measures, so that the measures implemented become more than a flash in the pan.

In theory, in times of tight public budgets, PICO offers the opportunity to continuous implementation of energy efficiency measures through the temporary provision of seed money. For example, through a re-organisation of budgets, loans, etc during the initialising phase of PICO, it is possible

to stimulate a continuous flow of investments so that the resulting payback cash flows in turn provide new funds for follow-up projects. This can be organised in the form of a clearly separated revolving funds, but as the examples of the pilot projects will show, also other forms to organise the continuous flow might be possible.

However, as the results from the pilot projects show, it is not so easy to implement this principle idea into practice in the different public administrations in the different European countries, and often it is a long way from the first idea to the implementation. Moreover, due to the specific conditions and circumstances the respective public administration faces, adaptations and changes to the concept have to be made. In particular,

- Legal framework conditions might not allow the formal implementation of revolving funds on the local level as it has been the case in the Polish PICOLight example.
- Lack of political will might only allow installing a "light" PICO scheme, with more general energy efficiency targets and different options how to follow them as it might come out as the result of the German PICOLight pilot project.
- Lack of seed money might only lead to a small PICO fund, even if the PICO schme is implemented more or less in its pure form as it is the case in Niguarda/Italy.
- Demarcation disputes and lack of communication between different departments of a public administrations (e. g., the environmental department, the buildings department and the department of finance) might not only delay implementation, but might lead only to a small PICO fund, since opportunities and responsibilities for feeding the fund with seed money are not clear enough. This will probably be the case in the Province of Bologna/Italy.
- If the property management is not constrained by a split between operating and investment budgets and can thus in theory optimise energy investments according to lowest life-cycle costs, the PICO methodology in its pure form might be considered too complicated as it has been the case in the Swedish pilot project. Therefore, the PICOLight project will not lead to a new structure for building investment procedures, but to an optimisation of the existing one, e. g. by introducing a system of budgeted energy used in order to give incentives to the users, and by introducing a rule, which allows to allocate a certain small percentage of the total energy bill to energy efficiency projects within the property management.

The main aim remains to secure the continuity of energy efficiency measures. In how far this can and will be done in the different public administrations and which problems the implementation of the principle PICO idea faces, is described in the following in more detail.

CITY OF SALZBURG, AUSTRIA

The City of Salzburg is the capital of the Austrian State Salzburg. There are about 400 municipal buildings, with a total energy bill of about 4.3 million Euro/annum. The group of buildings includes office building (offices), primary and secondary schools as well as kindergartens and old people's homes. There already exists a high standard of energy efficiency. The specific energy consumption for electricity is approximately 70 kWh/(m^2 a) and approximately 150 kWh/(m^2 a) for heat. Efficient luminaries with occupancy/movement sensors are common standards for retrofitting public buildings in the city of Salzburg. Usually the power load for lighting is less than 10 W/m^2 following renovations.

In the City of Salzburg, there is the political will to secure some extra money for investments in energy-efficiency. However, until March 2005, it was not clear yet to what extent a continuous implementation of energy-efficiency measures above the already high standard in the City of Salzburg can be secured.

There are some experiences with the PICO concept in Austria. In Linz, the capital city of Upper Austria a revolving fund was created in 1999. Extra energy efficiency measurements can be financed through this "pot" and the investment will be paid back by the saved energy costs. This system follows the original PICO model used by the German City of Stuttgart. Investments, which have been financed since 2001, include the refurbishment of a heating system and the insulation of a roof of a school, but also investments in the water system and in renewable energy systems.

UNIVERSITY OF BORDEAUX, FRANCE

The University Bordeaux 1 is a scientific university employing some 12 300 people on campus, among them are 10 000 students, 800 working in the administration and 1 500 in research laboratories. The campus comprises of 34 buildings corresponding to 200 000 m^2. From 1986 until 2002, annual electricity consumption has doubled from 6.5 to 13.5 GWh per year, equivalent to the electricity consumption of a town of 12 000 inhabitants.

Though the PICO structure could be theoretically placed within the technical service of the University of Bordeaux, several elements indicate that the University will not create such a structure. This is mainly due to the following:

- Difficulty to find real profitable measures to implement (a lot has already been done).
- Relatively low price of energy.
- Absence of an energy consumption follow up procedure.
- Lack of appropriate personnel.
- Lack of political will.

However PICO could nevertheless be used in the French context as no legal barrier has been found. It is a matter of finding an administration that is willing to test the concept, this means via technical staff to politicians, which could create a positive PICO reference to serve as a good practice example for other public administrations.

BLB NRW, GERMANY

The Bau- und Liegenschaftsbetrieb NRW (BLB NRW) was founded in 2001 from an initiative of the government of North Rhine-Westphalian. It is one of the largest real estate companies in the most populous state in the Federal Republic of Germany. The BLB NRW is supervised by the Minis-

try for Finance in consultation with the responsible Ministry for construction.

The BLB NRW serves the function of acquiring, managing, developing and exploiting real estate which has been transferred to it for the purposes of the State of North Rhine-Westphalia according to the principles of sound stewardship. The BLB NRW functions as a proprietor on behalf of the State of North Rhine-Westphalia. The real estate portfolio of the BLB NRW comprises of about 2 500 properties with 4 600 buildings with a floor space of about 7.7 million m^2. Many users of public buildings in North Rhine-Westphalia such as ministries, police authorities, forestry and tax offices, courts and prisons, institutes of higher education, are now clients (tenants) of the BLB NRW. For most of the buildings, the BLB NRW has taken over the energy and facility management, operating surveillance, and the conclusion of electricity and heat contracts with energy companies.

In principle, there are good preconditions for the implementation of a PICO scheme at the BLB NRW. For example, seed funding is not a problem for the BLB NRW. However, implementation has not yet occurred due to several reasons, among others, delays in the energy audits and structural and personnel changes within the organisation.

It has already been decided, that there will not be any special revolving funds for every efficiency measures. Instead, there will be an agreement between the ministries of the state of North Rhine-Westphalia and the state-owned BLB NRW on specific targets with regard to energy efficiency measures in new and in existing buildings of the BLB NRW. This agreement will include the development of model contracts and incentive schemes, which could be implemented in buildings like the one selected in the course of the PICOLight project. It is aimed at concluding at least one contract in 2005, testing the contract, and afterwards transferring the model chosen also to other buildings in case the test was successful.

The model favoured in March 2005 was an addition to the contract, the BLB NRW has with its tenants. It is considered to negotiate with the tenant a temporary increase in its rent to finance a specific energy efficiency investment beyond the current energy efficiency standard of "normal" refurbishments (baseline) as a kind of shared-savings agreement based on relatively simple measurement and verification procedures (if possible, ex ante). However, the details of such a procedure have not been settled by March 2005.

OSPEDALE NIGUARDA CÀ GRANDA, ITALY

Niguarda Hospital consumes roughly 21 million kWh/year of electricity and about 6.5 million m^3/year of methane (used both for heating and as a gas). Hospital real estate covers about 270 000 m^2 (corresponding to about 101 000 m^3). Energy costs amount to 5.9 million Euro/year (of which roughly 2.6 million Euro for electricity).

The annual economic savings provided by the improved lighting system implemented in the course of the PICOLight project will be set aside by the Accounts Department of the hospital for a new PICO fund. However, as a first step, with the lighting measures implemented in the course of the PICOLight project, this will be only 1 500 Euro per year. The PICO fund will be controlled by the head of the Facilities Department and will be used exclusively for investing in energy efficiency improvements to the hospital. The NEC engineering consultancy company (100% owned by the hospital) will be charged with identifying future energy efficient investment opportunities within the hospital. Seed funding for the first measures implemented in the course of the PICOLight project will be provided by the Lombard Region.

PROVINCE OF BOLOGNA, ITALY

For the purpose of territorial administration, planning and provision of public services, Italy is divided into 21 Regions, 103 Provinces and 8 100 Village/Town and City Councils. The Provincia di Bologna is one of 9 Provinces forming part of the Region of Emilia Romagna.

The Provincial Administrations directly provide a number of public services, for example, managing:

- 70 higher secondary schools
- 1 400 km of provincial roads
- 1 museum.

The Provincial Administration has agreed to implement a PICO system. The fund will be managed by the Buildings Department. The Real Estate Superintendency will make annual payments to the PICO fund based on the energy savings realised through investments in energy efficiency. The Buildings Department will then seek to use these funds to undertaken further investments in energy efficiency.

The Buildings Department believes that to be truly useful the PICO fund needs to be endowed with sufficient seed funding. Supposing that future investment opportunities were to provide similar returns as the proposed retrofit of the Istituo E. Mattei, an initial fund of 15 000 Euro would in the first years provide a return of roughly 3 000 to 4 000 Euro per year.

Current efforts are directed at identifying which Department will provide the seed funding and to which extent it will be possible to increase the amount of seed funding. A continuous in-house management and financing of energy efficiency measures can only be secured, if a solution to this seed funding problem will be found.

CITY OF JORDANÓW, POLAND

In Jordanów, the PICO scheme is seen as one of several elements of a more complex system for energy efficiency improvements in the City. The main existing barrier concerning the introduction of PICO scheme in Poland is a legal one. First of all, in public entities the unspent money cannot be transferred to the next budget year. Therefore, establishment of a revolving fund requires legislative changes at governmental level. One of the possible solutions of this problem would be to use the existing municipal environmental protection funds, which remain under the public administration to host the energy efficiency revolving fund as a separate sub-account for energy efficiency investments.

The second option is a municipal budget act, declaring that money saved due to energy efficiency measures will be spent on further energy efficiency investments. These solutions were widely discussed among the City of Jordanów, scientific expert AGH and external economic experts and

Regional Chamber of Account in Krakow. In both cases establishment of a PICO requires approval by the City Council, which may not be easy to obtain. After detailed analyses of financial and, especially, legal aspects the second option was chosen (cf. Figure 2) as one of the elements of a more complex system for energy efficiency improvements in the City.

The municipal budget act says that all financial savings resulting from investment in energy efficiency measures will be allocated to investments aiming at further energy savings. The investment itself is possible because of soft loans available for ecological investments (seed funding). The first energy-efficient lighting measures implemented in the course of the PICOLight project in the town hall and in the kindergarten will lead to cost savings of about 3 900 Euro per year, which can be invested in further measures. The City Mayor is responsible for the execution of this Act. In the scheme adapted by the City, Jordanów invests initial money in lighting modernisation. Energy cost savings resulting from the energy efficiency measures will be recorded and invested in energy efficiency measures the following years. One of the key issues is assessment of energy savings; the baseline for cost savings will be energy bills and energy monitoring. Implementation of measures (tendering, selection, installation, approval), operation and maintenance of the new systems is co-ordinated by the department of economy. Decision on future investment will be undertaken by the department of economy and will need approval by the City Mayor or the City Council (depends on scale of investment).

Concerning this act on energy savings, the key issue is political will of the Council and the Mayor. If there is no awareness about environmental and health impact of energy use and lack of political will to address those aspect it won't be possible to implement PICO. It requires clear, detailed information with all potential obstacles and, of course, advantages of PICO to be provided to the local authority to convince it to put the scheme into practice.

During roundtable discussions held between November 2003 and May 2004 in Krakow, the PICO scheme was presented to the representatives of local self-governments and government, scientists, economists and local decision makers. Main problems regarding the adoption of PICO to Polish conditions, such as the establishment of a revolving fund and the creation of a financial flow of saved money and management scheme were discussed. The great interest in PICO was shown by A. Czerwinski, representative of Polish Parliament, member of Sejm Energy Commission. He declared his intentions to present the PICO scheme for further discussion at government level and initiate a legislation process facilitating the introduction of municipal revolving funds.

CITY OF MALMÖ, SWEDEN

The city of Malmö's Property Management Unit acts as the owner and manager of most buildings occupied by the city authorities. Energy efficiency is a top priority, but most systematic efforts have so far been concentrated on the heating and ventilation systems.

Virtually all schools, and most offices, in Malmö pay a rent where the energy price is included. The incentive to save

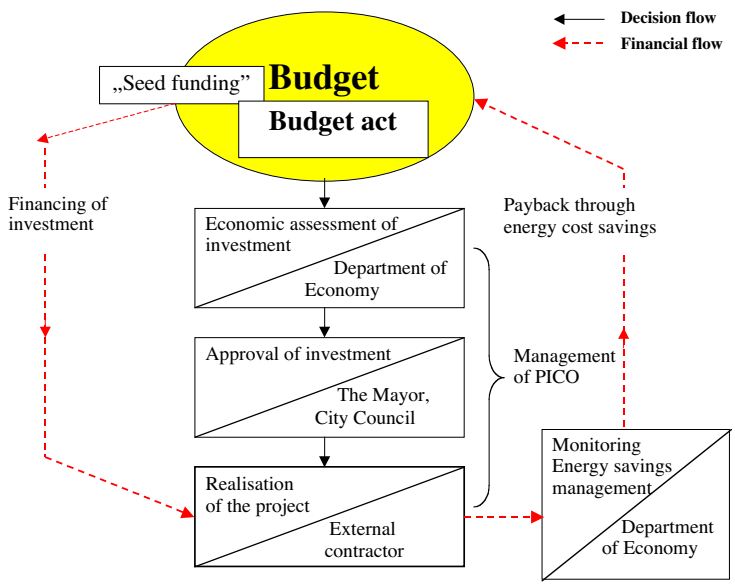

Figure 2. The adaptation of the PICO scheme to the current legal situation in Jordanów (Poland)

electricity is thus small for the users. At the other hand, the property management unit has a stronger incentive to save energy. The unit is not considering to start a PICO fund, instead, it is currently considering to set a aside a fixed percentage of their annual energy bill that will go to energy efficiency investments. The city has a rather sophisticated buildings database, and investments and savings will be tracked and analysed. A decision methodology will be developed that helps the city to simply direct its investments to the most profitable opportunities.

Energy efficiency measures implemented

RETROFITTINGS SAVE A TOTAL OF APPROXIMATELY 200 MWH_{EL}/YEAR

In general, the share of energy use by indoor artificial lighting systems varies significantly from public administration to public administration, not to speak about the differences between countries. More efficient lighting and better lighting design during building renovation or in new buildings may drop the total building electricity consumption by 5 – 15% (Borg & Co, et al. 2003).

However, in spite of the potential cost effective energy savings, it seems that commercial performance contracting has historically shown less regard to indoor artificial lighting compared to actions aimed at improving, for example, public street lighting, traffic lights, and above all indoor heating systems, ventilation and air conditioning systems and other technologies (e. g., compressed air) (cf. also Blumberga/Rochas 2005, Geißler/Kallmann 2005). Although generally cost effective, energy efficiency improvements to indoor lighting systems often involve relatively high transaction costs and generally lower returns (or longer pay-back times) compared to several alternative energy efficiency investments (for example heating system) and thus far have been avoided by

ESCOs. The examples from the PICOLight pilot projects have shown pay-back times of packages of energy efficient lighting measures up to 16 years. Indoor artificial lighting therefore represent an ideal test ground in which to establish the effectiveness of the PICO concept. Therefore, the EU-funded PICOLight project, of which the results are presented here, had a technical focus on energy-efficient lighting retrofits.

The results of the PICOLight project show, that even in public administrations, which have already implemented several energy efficiency measures in the past and which have already achieved a high lighting energy efficiency standard, considerable cost-effective saving potentials for energy-efficient lighting measures exist in at least parts of their buildings.

In the course of the PICOLight project, lighting measures and further energy-efficiency measures have been analysed and partly already implemented in schools, a kindergarten, a university, a town hall, a police headquarter, an old-people's home, and a hospital. Retrofittings undertaken in the 7 public administrations will save a total of approximately 200 MWh_{el}/year. Furthermore, follow-up measures may lead to additional savings, for example, in the case of the French university, further potential reductions of 50% of current energy consumption for lighting purposes is expected, i.e. 1,1 GWh (cf. http://www.iclei.org/europe/ecoprocura/PICOLight for further information on the lighting measures implemented).

BENEFITS AND COSTS OF THE MEASURES IMPLEMENTED

In most cases, the energy-efficient lighting measures planned and already partly implemented in the course of the PICOLight project are cost-effective, when adjustments for comfort gains are made, and if only the additional costs of higher energy-efficiency and not total refurbishment costs are taken into account. As it has been said before, pay-back times were up to 16 years, depending on the types of rooms, in which the measures have been implemented, the baseline chosen, the time of use assumed and further framework conditions. However, in some cases even pay-back times of 3 to 4 years could be identified.

Experiences from the various case studies show that difficulties of carrying out cost-benefit calculations of the energy efficient lighting measures implemented lie in, among others,

- defining the baseline towards which the energy-efficiency case is calculated, particularly when the existing lighting system is very old and lighting levels need to be increased due to new regulations (EN 12464-1) and the respective need for higher lighting comfort,
- defining the time of use in some types of buildings (e.g., schools, universities, police headquarters) as this is a decisive factor regarding the cost-effectiveness of energy-efficient lighting measures,
- defining the general assumptions for the cost-benefit calculations of the various lighting technologies, e.g. regarding the future development of energy prices and labour costs, while these price developments in the liberalised EU markets can hardly be estimated for the whole lifetime of the lighting technologies,
- bundling an attractive energy efficiency package considering lighting measures only, hence, additional energy efficiency measures were often included to achieve a lower payback time and a higher rate of return, respectively.

However, the PICO model allows to define the baseline and to calculate, monitor and verify the achieved savings in a practice-oriented, simple and sometimes rough way, because the PICO scheme is only an internal scheme within a public administration with only internal money transfers based on these calculations. In this way, the PICO scheme reduces transaction costs compared to external performance contracting schemes, and can particularly help smaller energy efficiency investments, which would not be profitable when implemented by an external contractor, to break even.

Regarding the increase in the lighting comfort often needed due to new regulation (EN 12464-1), cost-benefit calculations and measurement and verification procedures, in many cases, have to take into account

- the starting point (old situation of the lighting system) with
- a fictitious "normal" refurbishment of the lighting system achieving the high lighting comfort needed and
- an energy efficient refurbishment of the lighting system achieving the same high lighting comfort.

For the calculation of cost-benefit ratios of the energy efficiency investment, the investment costs (including planning and transaction costs) and the resulting running costs (maintenance and energy costs) of the fictitious "normal" refurbishment have to be compared with the respective costs of the energy-efficient refurbishment.

General applicability of the PICO concept to public administrations

As the results from the pilot projects show, it is not so easy to implement this principle idea into practice in the different public administrations in the different European countries. As it has been already described in the beginning of this paper, there is no single PICO solution applicable to every public administration. Due to the specific conditions and circumstances the respective public administration faces, adaptations and changes to the concept have to be made, the principal idea of the PICO scheme must be adapted to the conditions and circumstances the respective public administration faces. Since public procurement and buildings investment routines differ very much between the different public administrations in Europe, it is not possible to implement the same PICO method in every administration.

Furthermore, it has to be considered, that the way from the first ideas to the implementation of a scheme often is a long one. A change in investment culture, induced by the transition of public administrations from a system of cameralistics with divided investments and management budgets into modern administrations with budgeting might ease the implementation of PICO, but can also lead to very different PICO solutions. Due to tight budgets, these solutions often

do not include a clearly separated revolving funds and particularly have to find a solution for the seed funding needed. Nevertheless, as the Polish example shows, it is still possible to design a system in which the continuous management and financing of energy efficiency measures is secured for the benefit of the municipality, and which can trigger the realisation of significant energy savings and net economic benefits.

In order to secure a continuous implementation of energy-efficient lighting and other energy efficiency measures in a public administration via a PICO scheme or a similar structure, the following basic conditions have to be fulfilled:

- Legal possibility to install a PICO scheme with or without a separate revolving funds. In general, legal impediments seem to ply a minor role only (cf. Borg & Co. et al. 2003, 79). However, the Polish example shows, that still some barriers might exist, which have to be overcome or bypassed. In particular, the formal and legal aspects of PICO with regard to public dept management, budgetary codes and the acceptance of budgets by the supervising financial authorities are not always clear.
- Cost accounting of saved energy based on individual metering by department or even building is helpful for "internal ESCO" type projects as well as for external ones. For some kind of measures, it is a pre-condition for setting the baseline, even if there are only simplified measurement and verification procedures agreed to within a PICO scheme. However, a revolving fund at the level of the whole administration's budget, managed e.g. by the buildings department, will be possible without the existence of individual accounting. This is the model developed by the Niguarda hospital.
- Some kind of energy management / technical expertise for management of energy efficiency projects. If a small administration lacks the respective management capacity and knowledge, it might make sense to implement an effective and efficient energy management jointly together with other small administrations or a larger administration. After a PICO scheme has been implemented, it in turn activates and strengthens the personnel capacities of the public administration.
- Political will to provide seed money for PICO funds and to start energy efficiency improvements. In times of tight budgets and with only very much restricted possibilities for credit financing of municipalities, this is probably the most crucial point in many public administrations for initiating a PICO scheme.

Therefore, while energy efficiency is not on the top of the agenda, and in the absence of external funding for the start of a PICO scheme in most of the European municipalities, it often needs creativity and committed persons who really want to implement such a scheme to get started. Without a broad and sufficient implementation of the basic conditions mentioned, it will hardly be possible to introduce PICO on a larger scale in European administrations.

With regard to the kind of energy-efficiency measures PICO is best suited to, PICO might particularly be appropriate for small to medium-sized projects that can be handled inside the administration and are too small to attract external ESCOs. In this way, PICO can be seen as a complementary rather than as a substituting instrument to performance contracting (cf. Table 1). Both concepts draw on a similar concept and incorporate comparable procedures and project management tasks, so that competence from one field can be used for undertaking projects in the other, i.e. the different strengths and focal points of both approaches can be joined in the sense of a tool box. Both might even act as a door opener for each other. For example, net cost savings from energy performance contracts could be used as a seed funding for a PICO scheme. On the other hand, administrations, which have established a sufficient infrastructure and know-how to carry out PICO projects, are much better equipped to be a capable customer on the market for external, more demanding performance contracting projects.

The role of national and European policy

If PICO schemes are successfully implemented and tested on a high level of administration, many administrations might copy it. Therefore, it is recommended that the European Commission starts a PICO scheme for managing and financing energy efficiency measures in its own premises.

On the national level, it is most important, that the energy management capacities and technical expertise of medium

Table 1. PICO and performance contracting through ESCOs in comparison.

Instrument	PICO	Performance Contracting through ESCOs
Offers Advantages in Cases when ...	the size of the energy saving measure is too small to cover the transaction costs of performance contracts the acquisition of external know-how is not required an internal knowledge base can and should be used own capacities allow the project to be handled internally so that risk and profit margins can be saved, improving the project profitability there is the risk of "cream-skimming" which does not meet the complete needs of the public authority	looking for new financial sources and/or overcoming liquidity bottlenecks specialised external know-how is needed risks shall be shared or even transferred to the external ESCO, especially when a fixed saving is guaranteed own staff shall get access to external know-how and qualification only limited personnel resources are available scarce resources – not just personnel capacities – shall be concentrated on core activities

to large municipal administrations or of joint ventures of small municipal administrations are secured and further developed. This has to be done for the implementation of PICO schemes as well as for developing tenders for performance contracting. Therefore, one programme by a possible Energy Efficiency Fund in Germany proposed by Thomas and Irrek (cf. the respective ECEEE 2005 article in this volume) aims at supporting energy management and PICO in public administrations. The proposed programme could be understood as a way of providing seed funding for PICO schemes. It provides municipalities with 5 Euro per inhabitant once they have implemented a system securing the continuous managing and financing of energy efficiency measures, which has to be verified during the first years of implementation. Further requirements include the installation of a proper energy management function and the qualification of caretakers and property managers.

Second, the Polish case shows that it is still necessary to improve the compatibility of PICO with existing regulations.

Third, national support for disseminating the PICO idea and marketing its benefits is necessary to make the PICO idea and good practice examples and procedures well-known to public decision makers. This in turn might ease the provision of seed money for PICO funds.

Finally, measures improving the general framework for energy efficiency measures in public administrations also support the introduction of PICO, like energy efficiency targets set, the implementation of life-cycle cost assessments in public building management routines, the development and operation of simple, but effective measurement and verification procedures (cf. Borg & Co et al. 2003, 79ff.).

Conclusions

The PICO scheme is a way to continuously manage and finance energy efficiency measures in public administrations. However, there is no single PICO solution applicable to every public administration. The principal idea of the PICO scheme must be adapted to the conditions and circumstances the respective public administration faces.

If implemented, the PICO scheme reduces transaction costs compared to external performance contracting schemes, and can particularly help smaller energy efficiency investments, which would not be profitable when implemented by an external contractor, to break even.

A properly functioning energy management and the political will and possibility to provide sufficient seed funding are crucial for the implementation of PICO in public administrations. While energy efficiency is not on the top of the agenda, and in the absence of external funding for the start of a PICO scheme in most of the European municipalities, it often needs creativity and committed persons who really want to implement such a scheme to get started. Without additional support from the national level, it will hardly be possible to introduce PICO on a larger scale in European administrations.

The EU institutions should create one or more PICO schemes for improving the energy efficiency of their building stock as a model for other public administrations in Europe. National governments should support energy management in public administrations as the initiating and managing units of PICO activities, should provide the initial seed funding and should promote the use of the PICO concept.

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