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Swiss Federal Office of Energy SFOE

ProKilowatt



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COMPETITIVE TENDERS FOR ELECTRICITY EFFICIENCY. THE SWISS «PROKILOWATT»-PROGRAMME



OVERVIEW

- Introduction: three main features of ProKilowatt
- Design and implementation
- Results 2010-2016
- Lessons learnt in Switzerland



MAIN THREE FEATURES (1/3): WIDE RANGE OF TECHNOLOGIES

Subsidies possible for (almost) any particularly efficient technology.



Technical process optimisation



Replacing electric motors with variable-speed steered and/or highly efficient motors

Variable-speed air compressor for producing compressed air



Replacing circulator pumps with efficient circulator pumps



Heat recovery in milk production



Replacing indoor lighting with steered LED-lighting

Aim:
addressing a significant part of electricity efficiency potential.



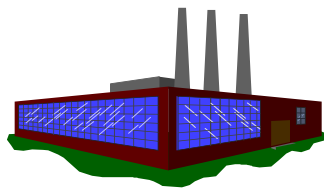


MAIN THREE FEATURES (2/3): PROJECTS AND PROGRAMMES

May apply for subsidies: both (1) enterprises owning installations and (2) intermediaries.

Projects: owners of installation applies directly for own measures

Programmes: intermediaries apply for measures of different owners



applies for funds



gets subsidies for efficiency measures



Aim:

addressing electricity efficiency potentials in industry as well as in small enterprises and households.



MAIN THREE FEATURES (3/3): TENDERING

Not all eligible measure get subsidies.

Financial support for measures..

1. which would otherwise not be implemented; and that succeed in an invitation for tenders
2. with the most attractive cost/benefit ratio.

Award criteria: **cts/kWh** (subsidies CHF/ electricity savings kWh)



Aim:
getting as much electricity savings
through public funds as possible.



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DESIGN: LEGAL BASE

- Swiss Federal Law on Energy Art. 32, Art. 36 (EnG; SR 730.0)
- Swiss Federal Ordinance on Energy Art. 19-22 (EnV; SR 730.01)
- Funding: Levy on the electricity transmission grid of up to 0.1 cts/kWh
- Scope: electricity efficiency for end-users, since 2018 also to some extent in distribution and production

as of 01.01.2018



DESIGN: POLICY INSTRUMENTS



Ecodesign and Labelling

Mass-produced appliances



Buildings obligations

Electrical heating



Large consumer obligation and target agreements

Economically viable measures in industry



ProKilowatt

Best available technology not yet economically viable



Information, training, further education, ideas

as of 01.01.2018



DESIGN: ADDITIONALITY

Requirement of additionality of funds: by law, only measures can get a subsidy that would not be realised without funds.

In practice:

- payback of measures > 4 years
- Measures are not required by law and not part of a target convention.
- Measures are not yet realised.
- Technology meets ambitious efficiency target.
- No other obvious violation of the principle of additionality.



DESIGN: SAVINGS AND COSTS

Allowable annual electricity savings

$$\Delta E_a \left[\frac{kWh}{a} \right] = (E_{old\ eq.} - E_{new\ eq.}) \left[\frac{kWh}{a} \right]$$

Allowable electricity savings over lifetime N_s

$$\Delta E_N [kWh] = 0,75 * N_S [a] * \Delta E_a \left[\frac{kWh}{a} \right] = 0,75 * N_S [a] * (E_{old\ eq.} - E_{new\ eq.}) \left[\frac{kWh}{a} \right]$$

Allowable costs

$$Investment\ I [CHF] = Investment_{new\ eq.} [CHF]$$

Payback time (a)

$$= \frac{Investment\ I [CHF]}{Allowable\ annual\ electricity\ savings\ \Delta E_a \left[\frac{kWh}{a} \right] * (standard\ -)electr.\ price \left[\frac{CHF}{kWh} \right]}$$

as of call of 2018



DESIGN: FINANCIAL SUPPORT AND COST-EFFECTIVENESS

Allowable maximal financial support through ProKilowatt

$$\begin{aligned} & \text{Financial support through ProKilowatt}_{max} \text{ [CHF]} \\ & = 30[\%] * \text{Investment } I \text{ [CHF]} \end{aligned}$$

Cost effectiveness

$$\begin{aligned} & \text{cost effectiveness} \left[\frac{\text{CHF}}{\text{kWh}} \right] \\ & = \frac{\text{Financial support through ProKilowatt as applied for [CHF]}}{\sum_{i=1}^{\text{measures}} \text{allowable electricity savings over lifetime } \Delta E_{N,i} \text{ [kWh]}} \end{aligned}$$

as of call of 2018



DESIGN: IMPLEMENTATION

calls with time limits

managed by
subcontractor



Agenda

09.02.2018

Dernier délai pour soumettre vos projets

09.05.2018

Dernier délai pour soumettre vos programmes

04.06.2018

Début du prochain appel d'offre (projet)

ProKilowatt

Programme national de l'Office fédéral de l'énergie

Contact

ProKilowatt, c/o Cimark

Route du Rawyl 47 - 1950 Sion (Switzerland)

+41 27 322 17 79

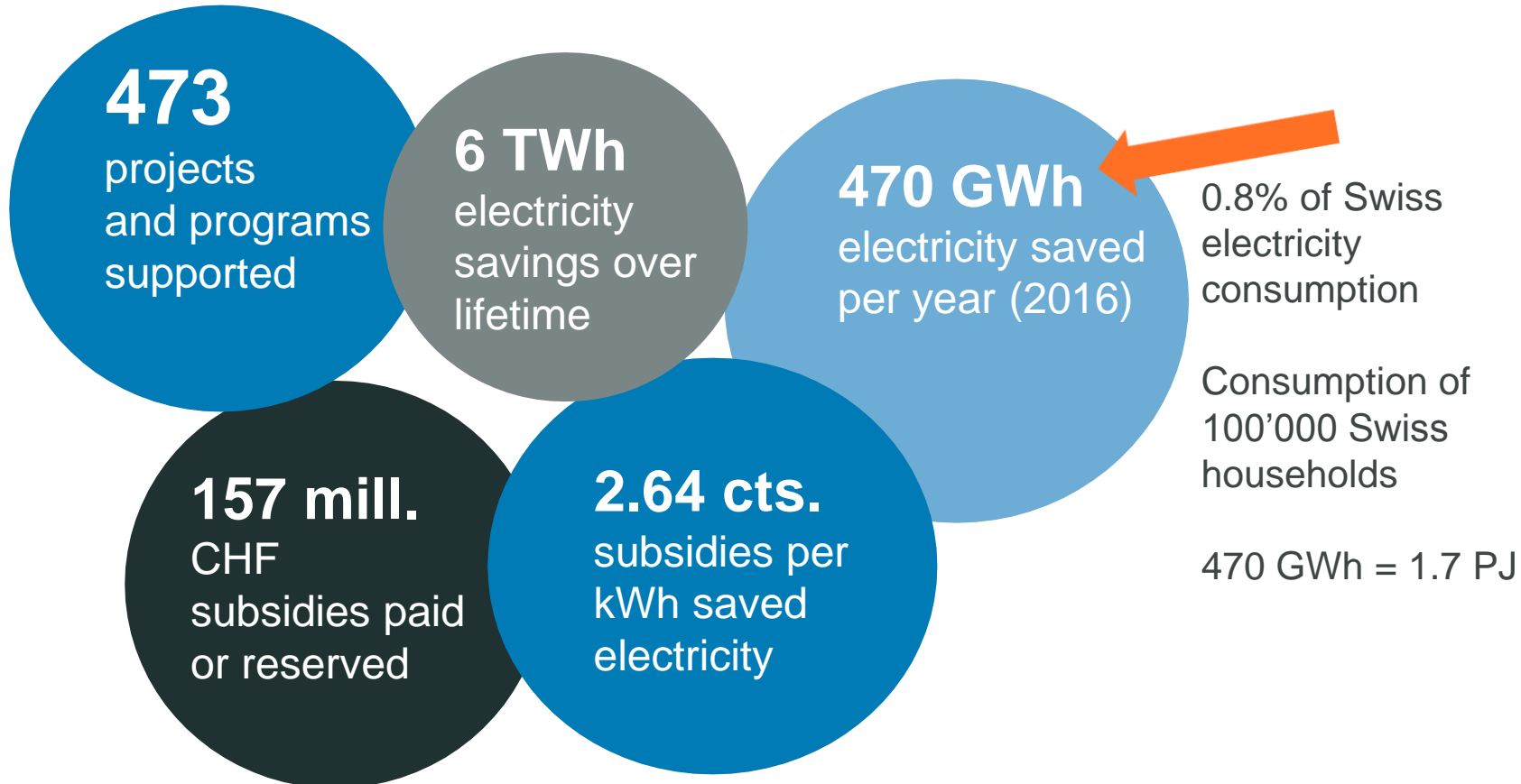
prokilowatt@cimark.ch



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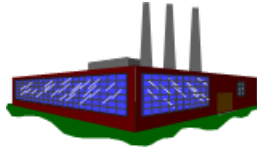
RESULTS: PROKILOWATT KPIS 2010-2016





RESULTS: SUBSIDIES AND SAVINGS BY SECTOR

industry



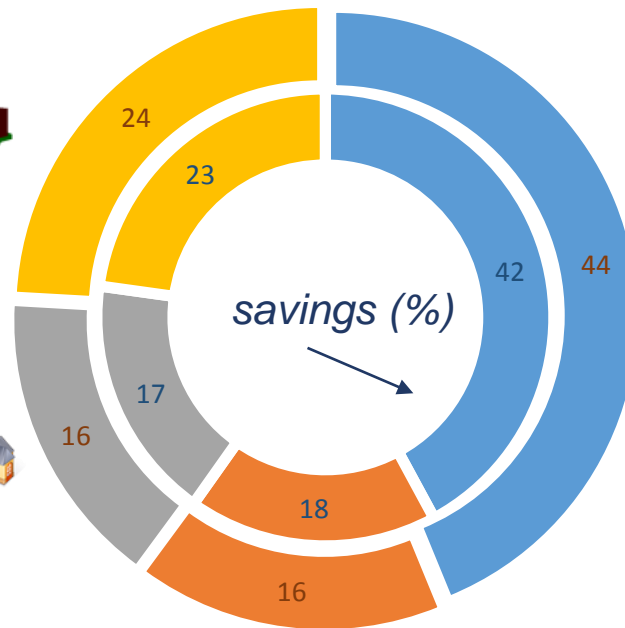
services and trade



households



public sector



subsidies (%)

2010-2016



RESULTS: SUPPORTED TECHNOLOGIES

Over 20 different kind of technologies supported

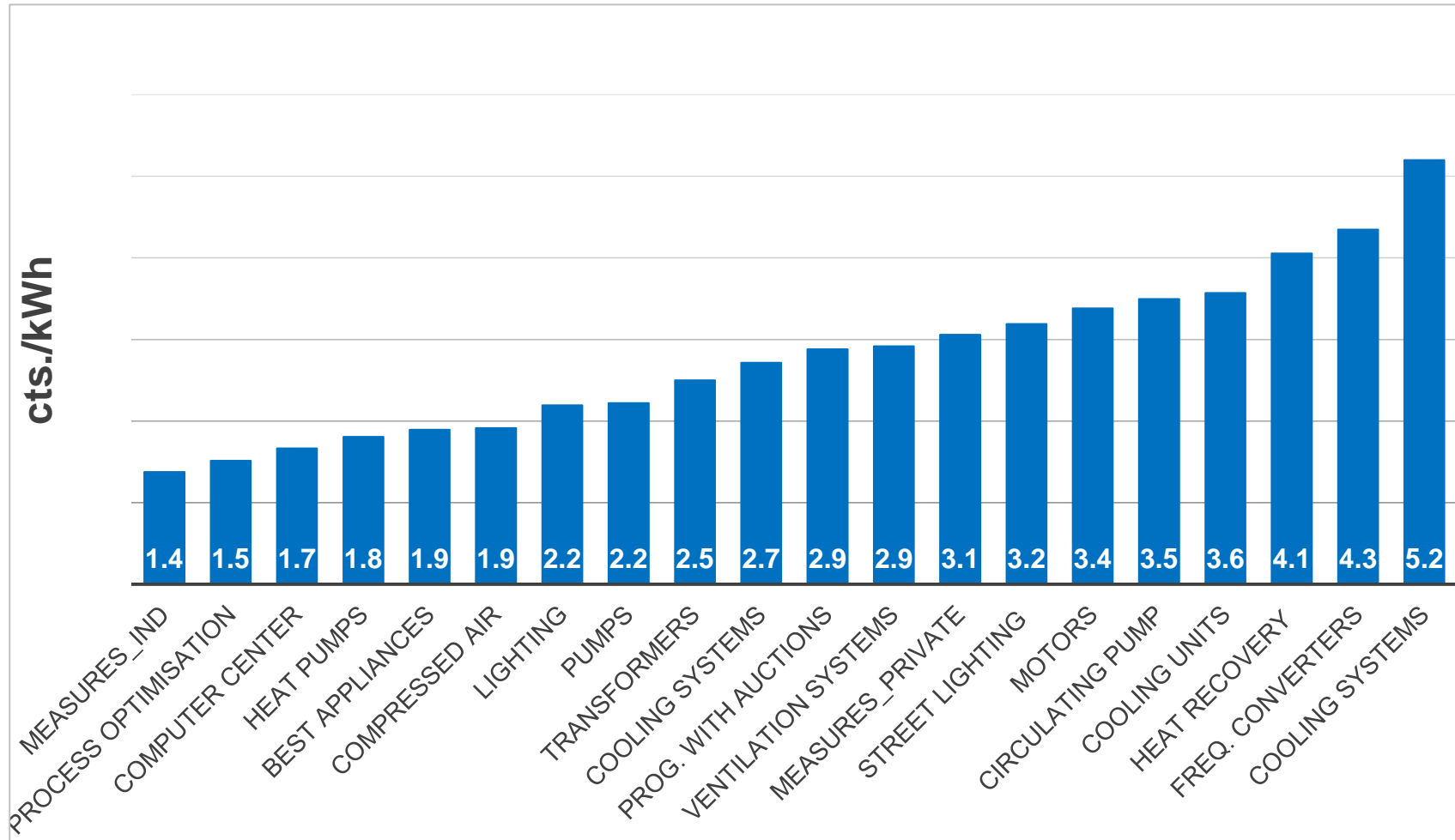
More than 75% of electricity savings through the following technologies:

- lighting
- motors and variable-frequency drive
- cooling systems
- hot water heat pumps
- circulating pumps
- pumps
- ventilation systems

2010-2016



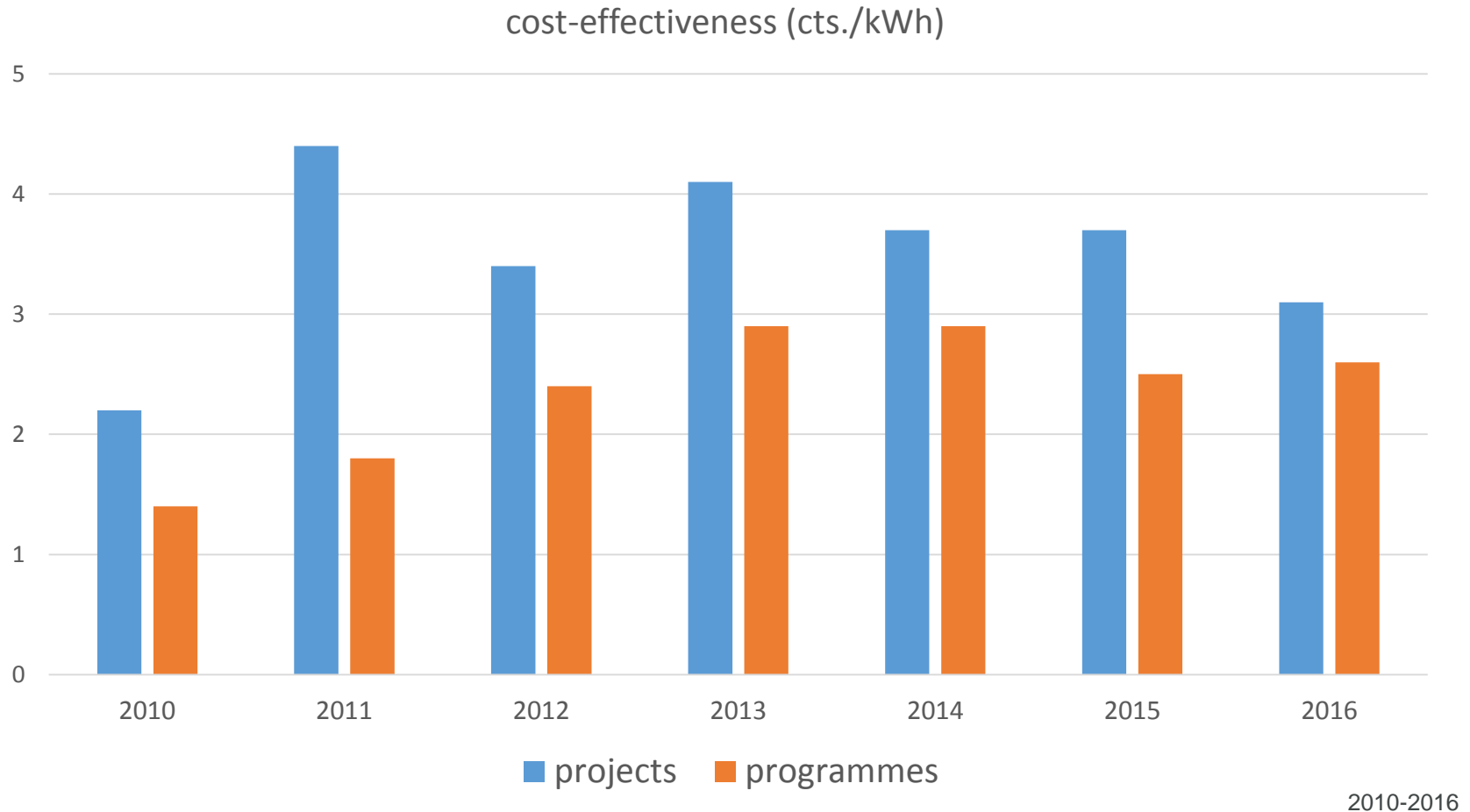
RESULTS: COST CURVE OF PROGRAMMES



2010-2015



RESULTS: COST-EFFECTIVENESS OVER TIME





RESULTS: EFFECT OF TENDERING ON COSTS



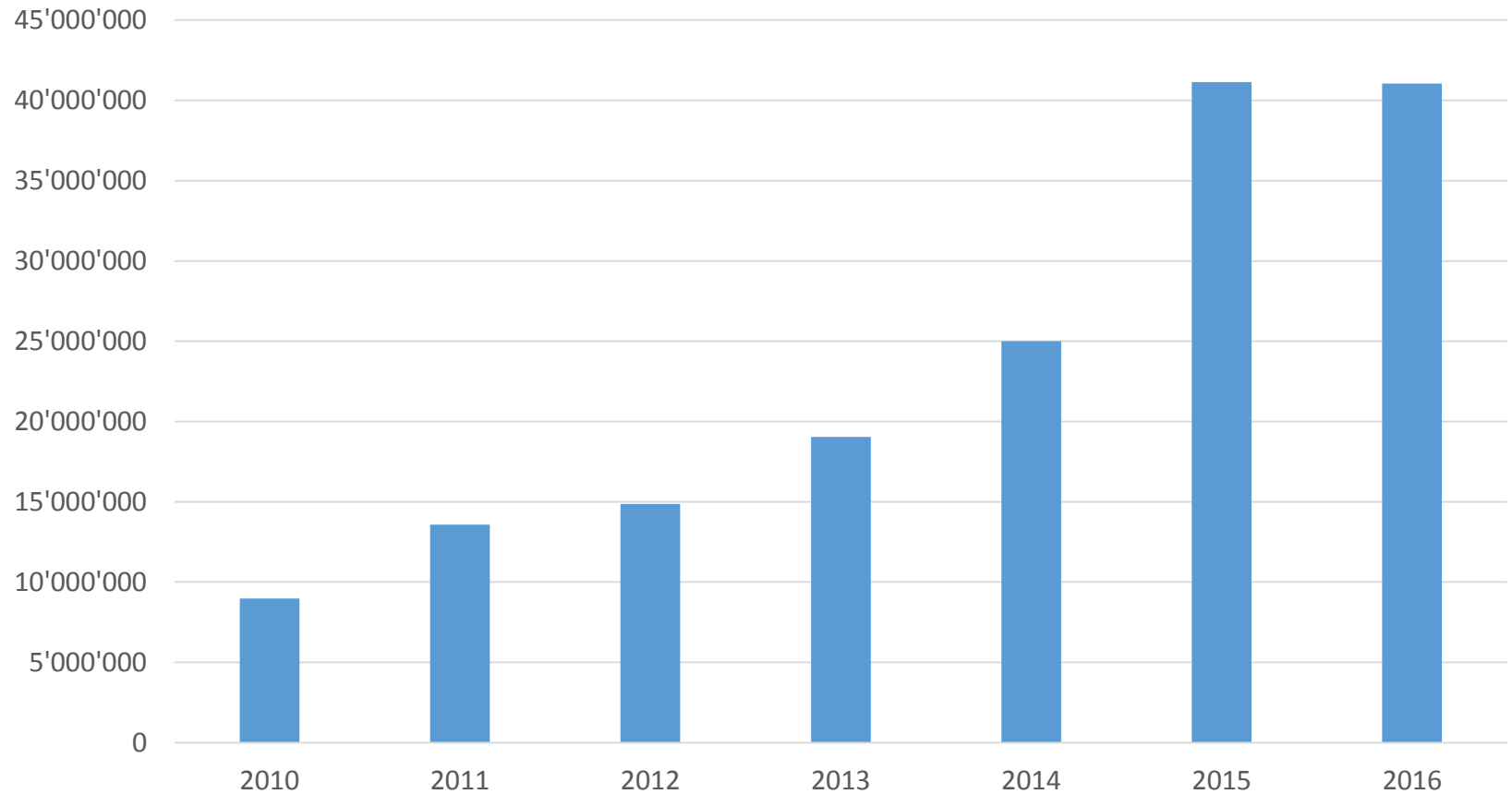
In 2016, the projects which passed tendering applied on average for 74% of what they would have been allowed to.

Thus, tendering help saving 26% of public funds as compared to more traditional subsidise programmes.

2010-2016



RESULTS: BUDGET 2010-2016



Budget approved for projects and programmes, 2010-2016



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LESSONS LEARNT (1/3)

- ProKilowatt delivers energy savings at low costs.
- A funding scheme that is open to most technologies is possible, even though it is better to define the savings calculation for standard measures upfront.
- Information sessions and communication activities have to be conducted in order to gain managing entities to participate in the scheme.
- Audits are needed to ensure that energy savings are calculated correctly and that funds are spent in line with the conditions.

Source: Radgen, Peter and Kurt Bisang (2016): Competitive Tenders for Energy Efficiency – Lessons Learnt in Switzerland. Eceee Industrial Summer Study Proceedings. Online Version. <http://proceedings.eceee.org/docs/2016/contents.pdf>



LESSONS LEARNT (2/3)

	Strengths	Weaknesses
Projects	<p>Offer can be custom-tailored by a company and fits its particular situation</p> <p>Risk that planned project and realisation differ is low</p> <p>Auctioneer can assess planned technical measures in advance and in detail</p>	<p>Entry costs for bidders relatively high (risk of dropping out of the auction)</p> <p>Costs of assessing the offer on behalf of the auctioneer only economically justifiable for large measures</p>
Programs	<p>Allows to realise small-scale technical measures (i.a. in households and small companies)</p> <p>Almost no entry costs for end-consumers as they can participate in a program that already passed the auction</p> <p>Existing customer-basis or members of an intermediaries can be reached</p>	<p>Overhead costs on behalf of intermediaries incur</p> <p>Risk that planned and realised measures (in numbers) differ is significant</p> <p>Auctioneer cannot assess all situations where measures are planned and realised in advance</p>

Source: Radgen, Peter and Kurt Bisang (2016): Competitive Tenders for Energy Efficiency – Lessons Learnt in Switzerland. Eceee Industrial Summer Study Proceedings. Online Version. <http://proceedings.eceee.org/docs/2016/contents.pdf>



LESSONS LEARNT (3/3)

- Main advantage of tendering: bidders do not per se submit the maximal price limit set by the government but are closer to the actual value of needed subsidies.
- No evidence of strategic bidding so far, even though about 80% of projects submitted get funds.
- Tendering to some degree might lead to frustration of companies that get no funds.
- Tendering have to have fixed deadlines and the evaluation takes time. Two or more auction rounds should be run per year, in particular for measures implemented by industry.
- Tendering in comparison to White Certificates are a voluntary measure and might therefore be more likely to find political acceptance.

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THANKS!

Contact

prokilowatt(at)bfe.admin.ch
kurt.bisang(at)bfe.admin.ch

Dr. Kurt Bisang
Head of Appliances and Competitive Tenders
Swiss Federal Office of Energy
3003 Berne, Switzerland

prokilowatt(at)cimark.ch
gregoire.blanc(at)cimark.ch

Grégoire Blanc
Head of Bureau ProKilowatt
CimArk SA
Rte du Rawyl 47
1950 Sion, Switzerland



Wetterhorn, Bernese Oberland