

ENERGY SAVING: TARGETS AND ACHIEVEMENTS IN CYPRUS

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Energy efficiency has a major role to play in reducing CO₂ and other greenhouse emissions. However, industrial competitiveness and the overall functioning of society are depended on safe, secure, sustainable and affordable energy. Experiencing the impacts of the ongoing financial crisis, it is evident that the need for rational use of energy and for reducing the cost of the energy bills is getting more important day by day.

For the Energy Service of the Ministry of Commerce Industry and Tourism, the exploitation of the national energy saving potential in all sectors has been a priority since many years. The implementation of the legislation for the improvement of the energy efficiency of the buildings, the operation of grant schemes since 2004 for promoting and financing energy saving technologies in all sectors, technologies for domestic generation of renewable energy for covering thermal and cooling loads as well as combined heat and power technologies are just some of the actions taken so far for realizing this potential.

Cyprus has set in 2007 through the 1st National Energy Efficiency Action Plan an indicative energy saving target at end-use of 10% for the year 2016 and an indicative intermediate target of 3.3% for year 2010, compared with the average final energy consumption of the period 2001-2005 respectively. This corresponds to an intermediate target of saving 60,000 tones of equivalent oil (toe) by 2010 and 185,000 toe by 2016.

In July 2011 Energy Service submitted to the European Commission the 2nd National Energy Efficiency Action Plan (NEEAP), presenting the final results with regards to the fulfillment of these targets and plans for implementing additional measures, estimating their effects. Based on the evaluation of the measures implemented by the end of 2010, Cyprus meets the intermediate indicative target of 2010, as the savings achieved amounted to 65,729 (toe), while for the year 2016, the savings resulting from the measures and policies that have been taken/adopted so far, are estimated to reach 190,751 (toe). The calculations were executed utilizing EU recommended methodologies and national methodologies developed by the Energy Service.

TOTAL ENERGY SAVINGS FOR ALL SECTORS			
Item No.	SECTOR	Contribution to 2010 Target (toe)	Predictable contribution to 2016 Target (toe)
1.	Residential Sector	51.164	161.877
2.	Tertiary Sector	8.942	23.681
3.	Industrial Sector	1.714	1.284
4.	Transport Sector	3.909	3.909
5.	Horizontal Measures	Not evaluated	Not evaluated
TOTAL ENERGY SAVINGS		65.729	190.751

ACTIONS, PROGRAMS AND MEASURES TAKEN AND EVALUATED BY THE END OF 2010

RESIDENTIAL SECTOR

All new dwellings, except those described in the Annex to the Regulation of the Energy Efficiency of Buildings Law (142(I) 2006 must satisfy the minimum energy efficiency requirements laid down in the relevant Ministerial Order issued by the Minister of Commerce, Industry and Tourism.

Distribution (free of charge) compact fluorescent lamps

All existing dwellings, except those described in the Annex to the Regulation of the Energy Efficiency of Buildings Law (142(I) 2006, which undergo comprehensive renovation (as specified in the relevant law) must satisfy the minimum energy efficiency requirements laid down in the relevant Ministerial Order issued by the Minister of Commerce, Industry and Tourism.

Maintenance and inspection of boilers and heating systems at regular intervals, as determined in the Ministerial Order issued by the Minister of Commerce, Industry and Tourism.

Maintenance and inspection of air-conditioning systems with effective rated output greater than 12 kW at regular intervals, as determined in the relevant Ministerial Order issued by the Minister of Commerce, Industry and Tourism.

Grant Schemes for energy savings in the residential sector (heat insulation in existing dwellings)

Grant Schemes to encourage the use of RES in the residential sector

TERTIARY SECTOR

Measures implemented through the National Plan for Green Public Procurement.

All new tertiary sector buildings, except those described in the Annex to the Regulation of the Energy Efficiency of Buildings Law (142(I) 2006 must satisfy the minimum energy efficiency requirements laid down in the relevant decree issued by the minister of Commerce, Industry and Tourism.

All existing tertiary sector buildings, except those described in the Annex to the Regulation of the Energy Efficiency of Buildings Law (142(I) 2006, which undergo comprehensive renovation (as specified in the relevant law) must satisfy the minimum energy efficiency requirements laid down in the relevant Ministerial Order issued by the Minister of Commerce, Industry and Tourism.

Maintenance and inspection of boilers and heating systems at regular intervals, as determined in the relevant Ministerial Order issued by the Minister of Commerce, Industry and Tourism.
Maintenance and inspection of air-conditioning systems with effective rated output greater than 12 kW at regular intervals, as determined in the relevant Ministerial Order issued by the Minister of Commerce, Industry and Tourism.
Grant Schemes for energy savings in the tertiary sector
Grant Schemes to encourage the use of RES in the tertiary sector (energy saving technologies in existing buildings)
SEAPs materialization (Covenant of Mayors)
INDUSTRIAL SECTOR
Grant Schemes for energy savings in the industrial sector (energy saving technologies in existing undertakings and for the promotion of investments on Cogeneration of heat and power and/or high efficiency cooling)
Grant Schemes to encourage the use of RES in the industrial sector and agriculture
TRANSPORT SECTOR
Grant scheme for energy saving in transport (purchase of hybrid, electric vehicles and low CO2 emission vehicles)
Withdrawal vehicle Plan
Action Plan to strengthen public transport
HORIZONTAL MEASURES
Informative campaigns on energy saving.
Educational programs on the internet for students.
Publication of educational books for students.
Publication of 2 of special leaflets for young children.
Publication and distribution of posters and stickers for saving energy.
Establishment of student competition on RES and Energy Conservation. 3 cash prizes.
Lectures at schools for RES and Energy Conservation
Energy awareness campaigns for reducing energy consumption in buildings of the public and broader public sector.

With the 2nd NEEAP, Cyprus submitted also the National Action Plan for Primary Energy Saving by 2020. For Cyprus, this indicative target amounts to 463,000 toe and it can be achieved by the implementation of additional measures / policies beyond those implemented / adopted until 2010. Major contributor to the target will be the introduction of natural gas to the national energy system as well as the operation of Grant schemes for energy saving and domestic generation for RES for heating and cooling, in all sectors. However, attempts for further improvement of the energy efficiency of the Cypriot energy system must be focused on road transport, which is the sector that consumes by far the greatest part of non-electricity energy.

The target for 2020 has been set upon developing an energy model for Cyprus¹. The model calculates future annual energy consumption in each major economic sector of Cyprus (agriculture, cement industry, other industry, households, services, road transport and air transport) as a function of future macroeconomic variables and future oil prices. Then it calculates fuel shares in each sector, depending on technology costs, the penetration potential of various technologies, and technical constraints for the uptake of new technologies, and allows computing future final energy consumption by sector and fuel.

To simulate the effect of energy efficiency measures on national energy consumption distinct scenarios have been set up. The scenarios contain different assumptions with regard to the implementation of energy efficiency measures in the residential, industrial, tertiary and transport sectors. Such measures include both actions taken as a result of mandatory compliance with EU legislation, such as the Energy Services Directive (2006/32/EC), the Directive on labelling of the energy consumption by energy-related products (2010/30/EC) and the Directive on energy performance of buildings (2010/31/EC) and additional national measures such as subsidies for energy efficiency and renewable energy investments by households and firms.

The national energy efficiency target for 2020 has been set comparing a «reference scenario» with an «energy efficiency» scenario. The «reference scenario», assumes that no additional measures at EU and national level will be implemented after 2010. The «energy efficiency» scenario, assumes that further energy efficiency measures will be adopted after 2010, such as a continuation of national subsidies for investments in energy saving technologies, the implementation of the recast Buildings Directive the effective development of market for energy audits and energy services in Cyprus as well as the gradual implementation of the EU Energy Efficiency Action Plan 2011. This scenario also assumes the introduction of natural gas in the energy system from year 2015 onwards.

Savings, efficiency - (reference without NG)

(ktoe)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Savings in final non-electricity consumption	4	10	16	23	30	37	46	54	64	76	90
Residential	0	1	1	2	3	3	3	4	5	6	8
Total Industry	0	0	0	0	0	0	0	0	1	1	1
Tertiary	0	1	2	3	4	5	6	7	9	11	14
Agriculture	0	0	0	0	0	0	0	0	0	0	0
Road Transport	3	7	11	15	20	25	31	37	43	50	57
Air Transport	1	1	2	2	3	4	5	6	7	8	10
Savings in final electricity consumption	1	5	11	16	21	26	31	37	42	47	50
Savings in primary electricity production because of savings in final electricity	3	15	29	42	55	58	66	77	87	96	102
Savings in primary electricity due to introduction of natural gas*	0	0	0	0	0	190	259	264	267	270	271
Total savings in primary electricity	3	15	29	42	55	249	325	340	354	365	373
Savings in national energy consumption	7	24	45	65	84	286	371	394	418	442	463
	0.2%	0.9%	1.6%	2.3%	2.9%	9.6%	12.2%	12.7%	13.3%	13.9%	14.4%

* including energy savings in primary energy from additional measures in transmission/distribution system

¹ Long-Term Energy Forecasts for Cyprus: Scenarios and Policy Options, Theodoros Zachariadis, Cyprus University of Technology

The contribution of each measure set for the materialization of the energy efficiency targets of 2020 and 2016 is explicitly described in the 2nd National Energy Efficiency Action Plan, which is available on the website www.mcit.gov.cy

It is evident that the fulfillment of the target for 2020 for energy saving in primary energy consumption goes through the fulfillment of the indicative target for energy efficiency at end use for 2016. In addition to that, it can easily be concluded that any reduction of the final energy consumption will definitely contribute to reaching the mandatory target for increasing the penetration of RES in final energy consumption by 13% by 2020.

Challenges and opportunities for the upcoming years are considered as promising for further achievements in energy saving. Opening and regulating of the market for Energy Services Companies in Cyprus (ESCOs)² for offering energy services³ to final consumers which are based on energy performance contracts⁴ will operate as a boost for tapping the existing energy saving potential in buildings, industries and transport. In addition to that, the introduction of natural gas in the national energy system will operate as a facilitator for increasing the penetration of combined heat and power technologies, the most efficient technologies for tapping existing demands in electricity, heating and cooling. It should be noted that high prices of conventional fuel are currently a significant barrier, especially for small CHP systems in tertiary sector. However, the energy efficiency improvement in the transformation sector with the introduction of natural gas combined cycle technology in power generation will significantly reduce the consumption of primary energy.

There is no doubt that the benefits arise from the penetration of energy efficient technologies in all sectors are important. Furthermore, the implementation of the European and national legislation related to energy efficiency is essential in order to face national and global challenges related to energy and environment. Planning, implementing, verifying and monitoring energy savings is a boost to further developments and achievements. The pathway towards an energy efficient way of living in Cyprus has already opened, providing multiple opportunities and challenges for present and future generations.

² A natural or legal person that delivers energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria

³ Services that can help the owner/tenant/manager to improve energy efficiency and can include energy audits, energy efficiency improvement measure and a measurement & verification plan

⁴ Contractual arrangements between the beneficiary and the provider (normally an ESCO), of an energy efficiency improvement measure, where investments in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement