




Project co-financed by the European Regional Development Fund

Experiences and progress of Cyprus Local Authorities in the implementation of Sustainable Energy Action Plans and new challenges for climate change mitigation and adaptation

Cyprus Energy Agency

Savvas Vlachos

Acting Director

Energy Management and monitoring of Sustainable Energy Action Plans

Athens 24.02.2017






The Cyprus Energy Agency

The legal status of the CEA follows the legal requirements for the establishment of a non-profit organization under the Cypriot Societies and Institutions Law 57/1972.

The Cyprus Energy Agency was officially established 9/2/2009.

It is a legal entity: “Public equivalent body”



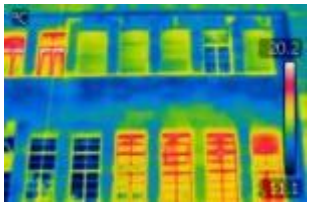



Specific objectives



Promotion of Renewables





Promotion of Energy Efficiency



Promotion of Sustainable transport

PACT OF ISLANDS

Covenant of Mayors for Climate & Energy

european energy award

Sustainable Local Energy Planning

Covenant of Mayors · energycities · manageenergy · FEDARENE · ISLENET · Cyprus Energy Agency

The CEA Team

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Education, Training, Ideation and Networking

Christia Alexandrou

Energy efficiency and preservation of buildings

Maria Achilleos






	Local Authority	Covenant of Mayors	Pact of Islands	European Energy Award	Population
1	Strovolos	√	√	√	67,904
2	Lefkosia	√			55,014
3	Larnaca	√	√	√	51,468
4	Paralimni	√	√		14,963
5	Lakatamia	√	√		38,345
6	Engomi	√	√	√	18,010
7	Aglantzia	√	√	√	20,783
8	Latsia	√	√	√	16,774
9	Aradippou	√	√		19,228
10	Agios Athanasios	√	√	√	14,357
11	Dali		√		10,466
12	Yeri		√		8,235
13	Deryneia	√			5,844
14	Ergates		√		1,792
15	Episkopi	√			3,681
16	Polis Chrysochous	√	√	√	2,018
17	Lythrodontas	√	√		3,043
18	Agros	√			806
19	Platres	√	√		239
20	Psimolofou		√		1,626
21	Lefkara	√	√	√	762
22	Kyperounta	√	√		1,516
23	Geroskipou	√			7,878
24	Limassol	√			98,000
25	Mesa Yitonia	√			18,000
26	Yermasoyia	√			12,300
27	Kolossi	√			4,405
28	Ipsonas	√			11,500

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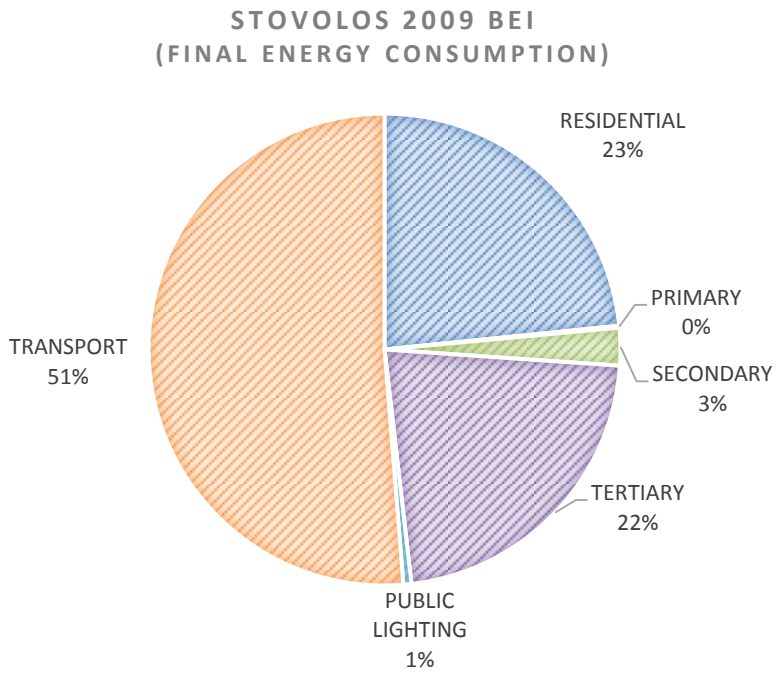
Baseline Emission Inventory



Baseline Emission Inventory (BEI) is a quantification of the amount of CO_2 emitted due to energy consumption in the territory of a Local Authority within a given period of time. It allows identifying the principal sources of CO_2 emissions and their respective reduction potentials. The BEI and subsequent inventories are essential instruments that allow the local authority to have a clear vision of the priorities for action, to evaluate the impact of the measures and determine the progress towards the objective. It allows maintaining the motivation of all parties involved, as they can see the result of their efforts.

BASELINE INVENTORY 2009

Residential	Primary	Secondary	Tertiary	Public lighting	Transports	TOTAL (MWh)	RES electricity	Emission Inventory 2009
MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	tonnes CO_2
289,730	1,633	31,909	273,517	6,809	635,212	1,238,810	171	507,409

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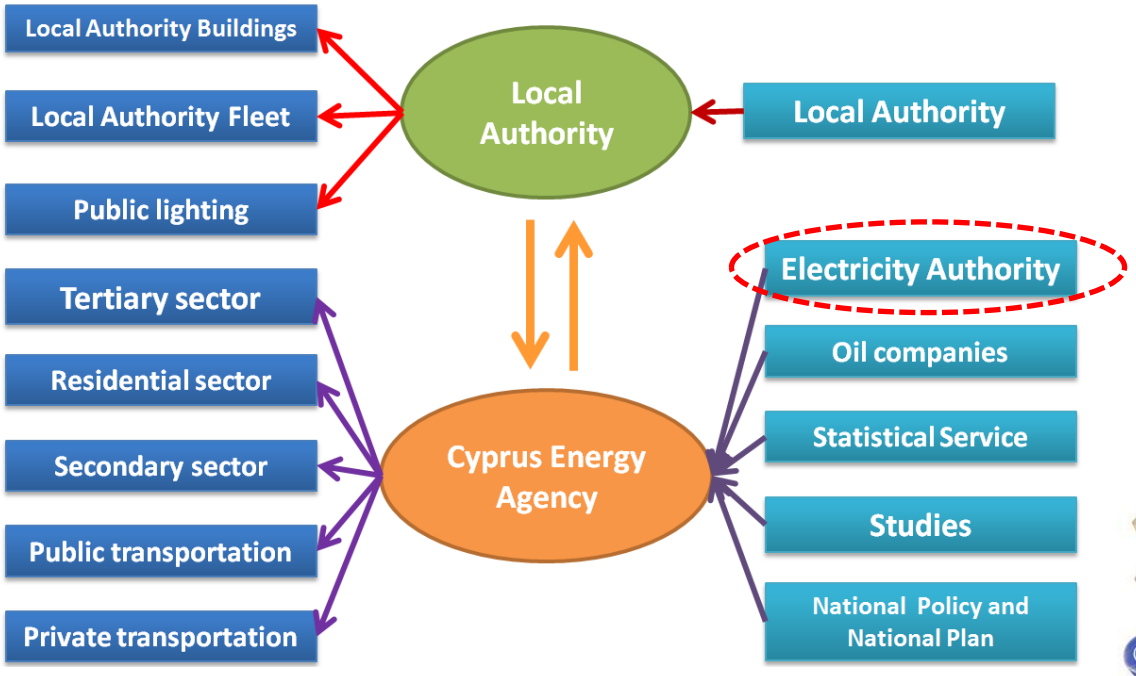
Data collection



Memorandum of Cooperation

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Select Community or Municipality or Region:

Λευκωσία

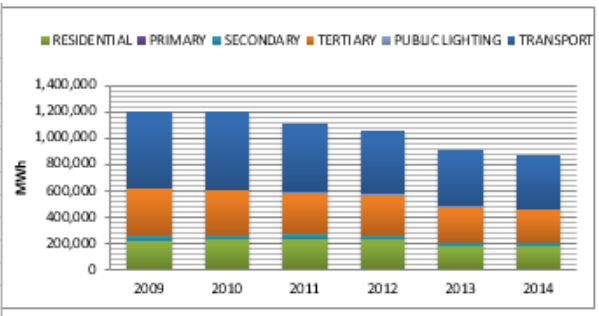
Select Units:

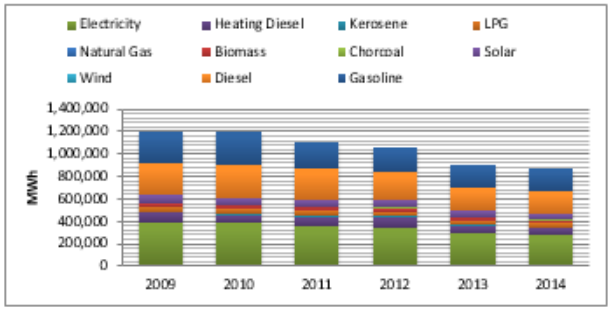
MWh

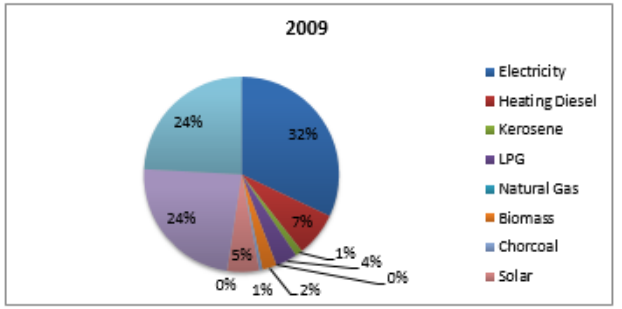
Supported by INTELLIGENT ENERGY EUROPE

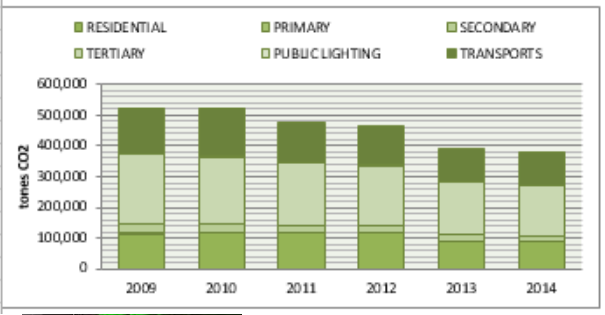
	2009	2010	2011	2012	2013	2014	2015	2016	2017
	398,563	451,334	461,441	468,071	468,071	454,150	449,431	0	0
	912,238,764	4,801,342,355	4,584,649,245	4,396,515,493	3,889,190,636	3,902,557,916	3,991,990,534	0	0
Population	810,239	825,323	840,407	855,491	870,575	885,660	900,744	0	0
Heating Diesel	114,304	94,953	108,708	105,335	85,812	77,308	88,809	0	0
Diesel	348,841	357,835	343,599	305,099	259,759	249,801	264,887	0	0
Gasoline	383,468	390,302	384,756	372,113	349,110	340,766	345,342	0	0
LPG	55,440	52,658	58,618	56,904	51,364	48,410	53,809	0	0
Kerosene	18,544	13,878	16,491	16,970	11,640	9,478	13,546	0	0
Agricultе Diesel	23941	23,483	24,640	23,786	23,175	21,209	23,529	0	0

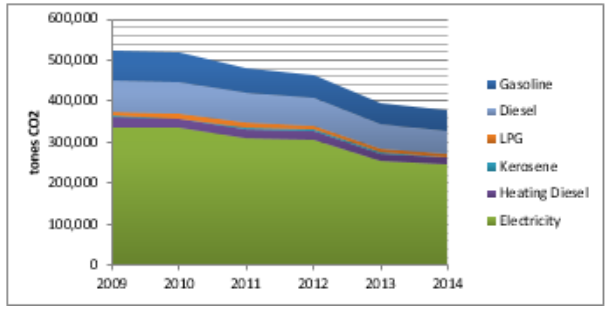
LIVING QUARTERS	CENSUS 2001	2002	2003	2004	2005	2006	2007	2008	2009
Population	47832	48,550	49,268	49,987	50,705	51,423	52,141	52,859	53,578
Living quarters (Occupied)	18062	18,463	18,864	19,265	19,666	20,067	20,467	20,868	21,269
Living quarters (Vacant/ Of temporary residence)	3636	3,895	4,154	4,413	4,672	4,932	5,191	5,450	5,709
Number of households	18111	18,583	19,055	19,528	20,000	20,472	20,944	21,416	21,889
Number of Institutions	17	16	16	15	15	14	13	13	12
Average household size	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.4

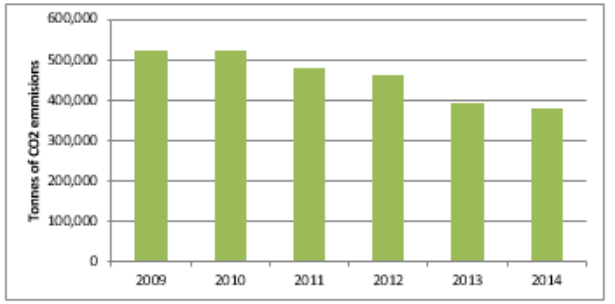












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1. BUSINESS AS USUAL SCENARIO

Select BAU Scenario:

Urban developed

- Urban developed
- Urban grauing
- Peri Urban developed
- Peri Urban grauing
- Village
- Touristic developed
- Touristic grauing

RESIDENTIAL SECTOR	
Residential	
Residential storege heaters	
PRIMARY SECTOR	
Agriculture, Forestry and Fishing [A]	
Mining and Quarrying [B]	0.5%
SECONDARY SECTOR	
Manufecturing [C]	1.5%
Electricity, Gas, Steam and Air Conditioning Supply [D]	0.0%
Water Supply; Sewerage, Waste Management and Remediation Activities [E]	1.0%
Construction [F]	2.0%
TERTIARY SECTOR	
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles [G]	2.0%
Transportation and Storage [H]	2.0%
Accommodation and Food Service Activities [I]	2.0%
Information and Communication [J]	2.0%
Financial and Insurance Activities [K]	2.0%
Real Estate Activities [L]	2.0%
Professional, Scientific and Technical Activities [M]	2.0%
Administrative and Support Service Activities [N]	2.0%
Public Administration and Defence; Compulsory Social Security [O]	2.0%
Education [P]	2.0%
Human Health and Social Work Activities [Q]	2.0%
Arts, Entertainment and Recreation [R]	2.0%
Other Service Activities [S]	2.0%
Activities of Households As Employers [T]	2.0%
Activities of Extraterritorial Organisations and Bodies [U]	2.0%
PUBLIC LIGHTING	
Public Lighting - Urban areas	2.5%
Public Lighting - Rural areas	2.5%
Public Lighting - Treffic Lights	2.5%
Public Lighting - Other Lighting	2.5%
TRANSPORTS	
Urban and suburban passenger road land transport	3.0%
Other passenger road transport services (taxi, tourism, school buses, etc.)	3.0%
Local Electricity Production from Renewable Energy Sources	4.0%

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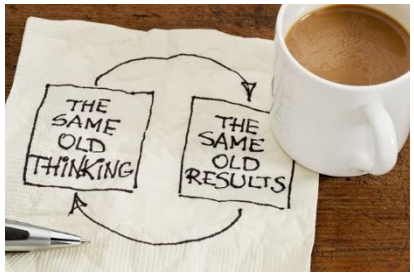
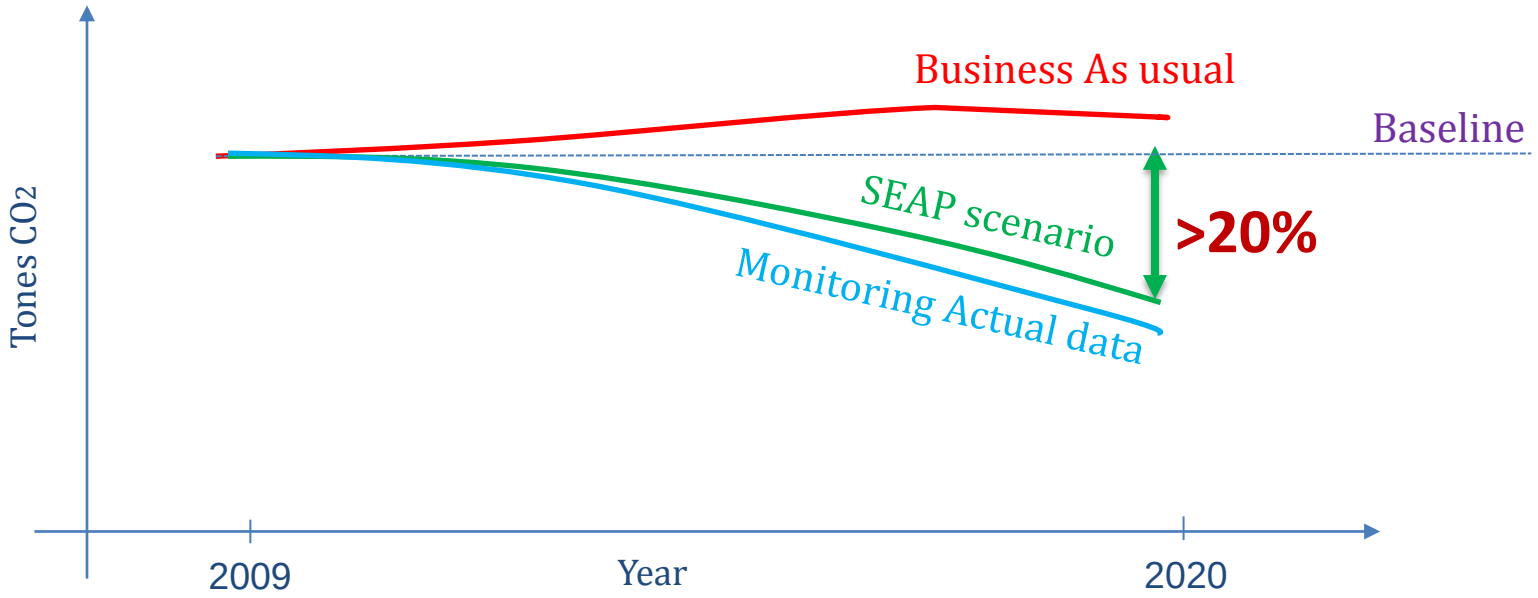
Energy modelling



In order to forecast the CO2 emissions for the period 2010 to 2020, the scenario of expected CO2 emissions evolution was established where it is possible to estimate the future CO2 emissions if no taking any measures for energy savings, energy efficiency, sustainable transport and renewables. The contribution of national energy policies and strategies are also taken into account in the scenario.



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SEAP sectors/actions

PUBLIC LIGHTING





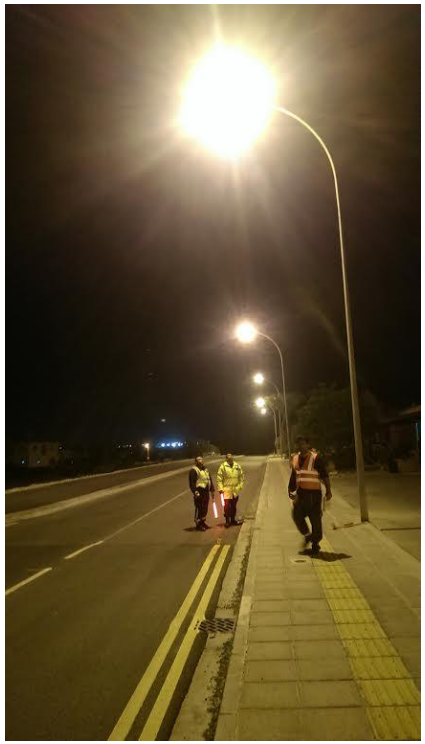
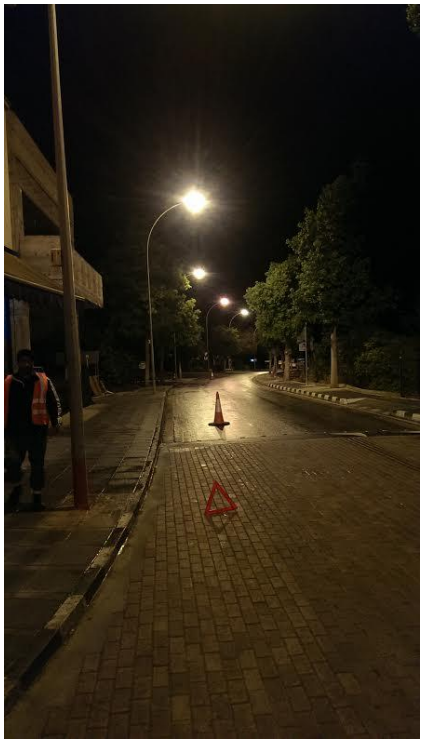




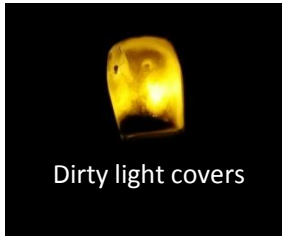

SEAP sectors/actions

Budget of about 20 M€
56,000 lamps
Potential savings >40%
Improvement of streets illumination

Street lighting project:
13 Municipalities and 7 Communities
High Pressure Sodium, Metal Halide, Low pressure sodium, Compact Fluorescent Lights
Capacities 20W, 70W, 150W and 250W
In total 89 street and avenues
More than 350 lighting fixtures
More than 15,000 lighting measurements

Energy Performance Contracting
What went wrong?
Liability of LA?
Cyprus ESCO market?
Drop of electricity prices..


Dirty light covers


Open or broken light covers

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Joint GPP for the replacement of 195 street lights with LED to the mountainous villages of Alona and Polystypos (44% energy savings)

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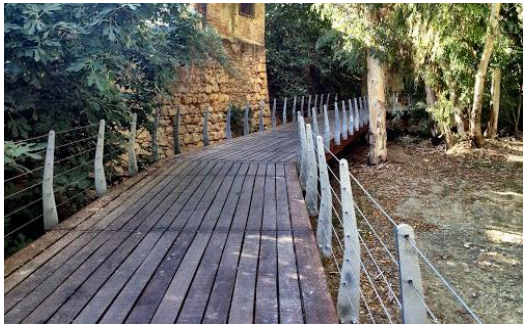
SEAP sectors/actions

TRANSPORT

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SEAP sectors/actions

PROMOTION OF RENEWABLE ENERGY SOURCES – EXPLOITATION OF MUNICIPAL GREEN WASTE

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SEAP sectors/actions

MUNICIPAL BUILDINGS

Nicosia Town Hall

Strovolos cultural center

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SEAP sectors/actions

EDUCATION AND AWARENESS

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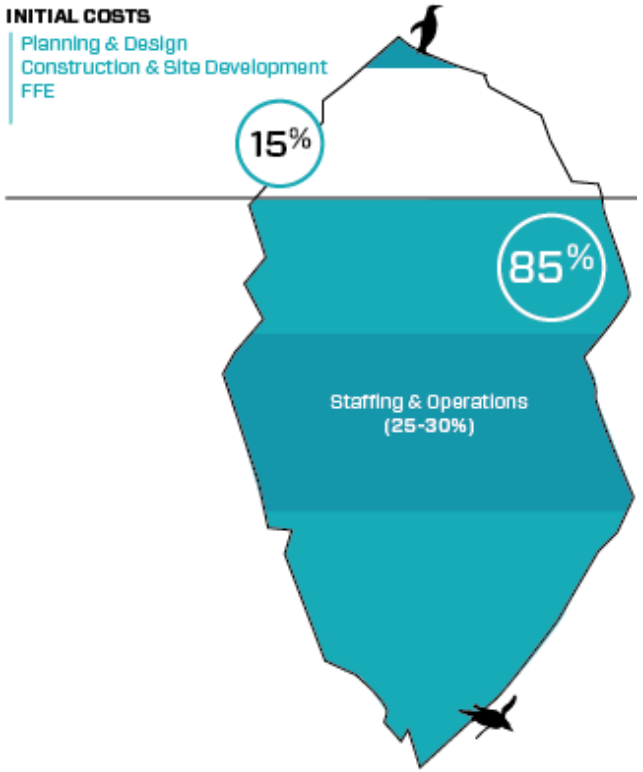
SEAP sectors/actions

GREEN PUBLIC PROCUREMENT



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2020 objectives

- The estimated annual CO_2 emissions reduction for 2020 by the successful implementation of the 22 Sustainable Energy Action Plans amounts to **600,000 tons.**
- The impact of the reduction to the Business As Usual Scenarios will result to a reduced amount of local annual CO_2 emissions of 2,200,200 tons by 2020.
- That is, **35% lower** with respect to those in the reference year 2009. The 600,000 tons of CO_2 emissions reduction will be the result of **2 millions MWh planed energy savings and 90 thousands of MWh energy to be produced by renewable energy**.

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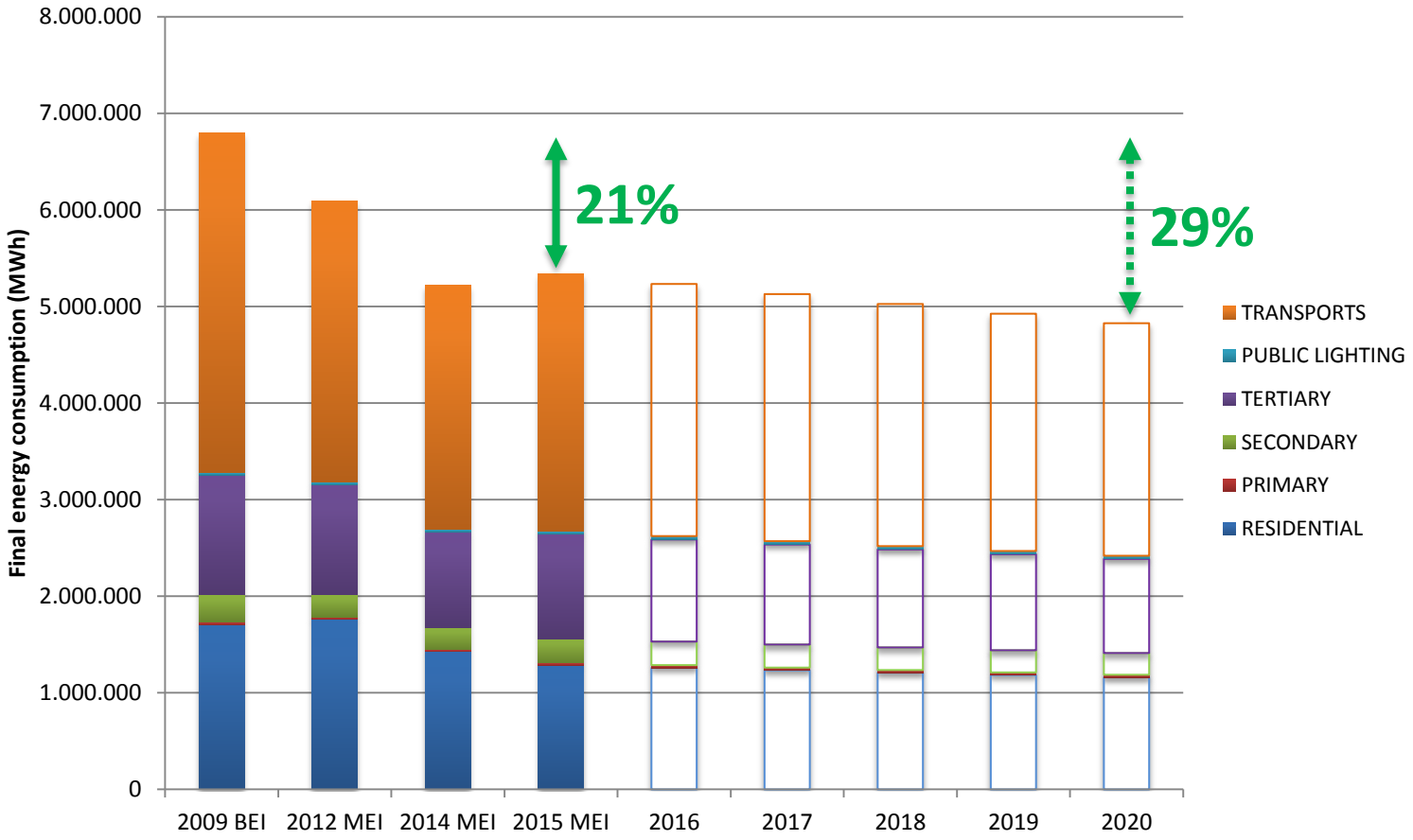
SEAPs monitoring in Cyprus 2009-2015



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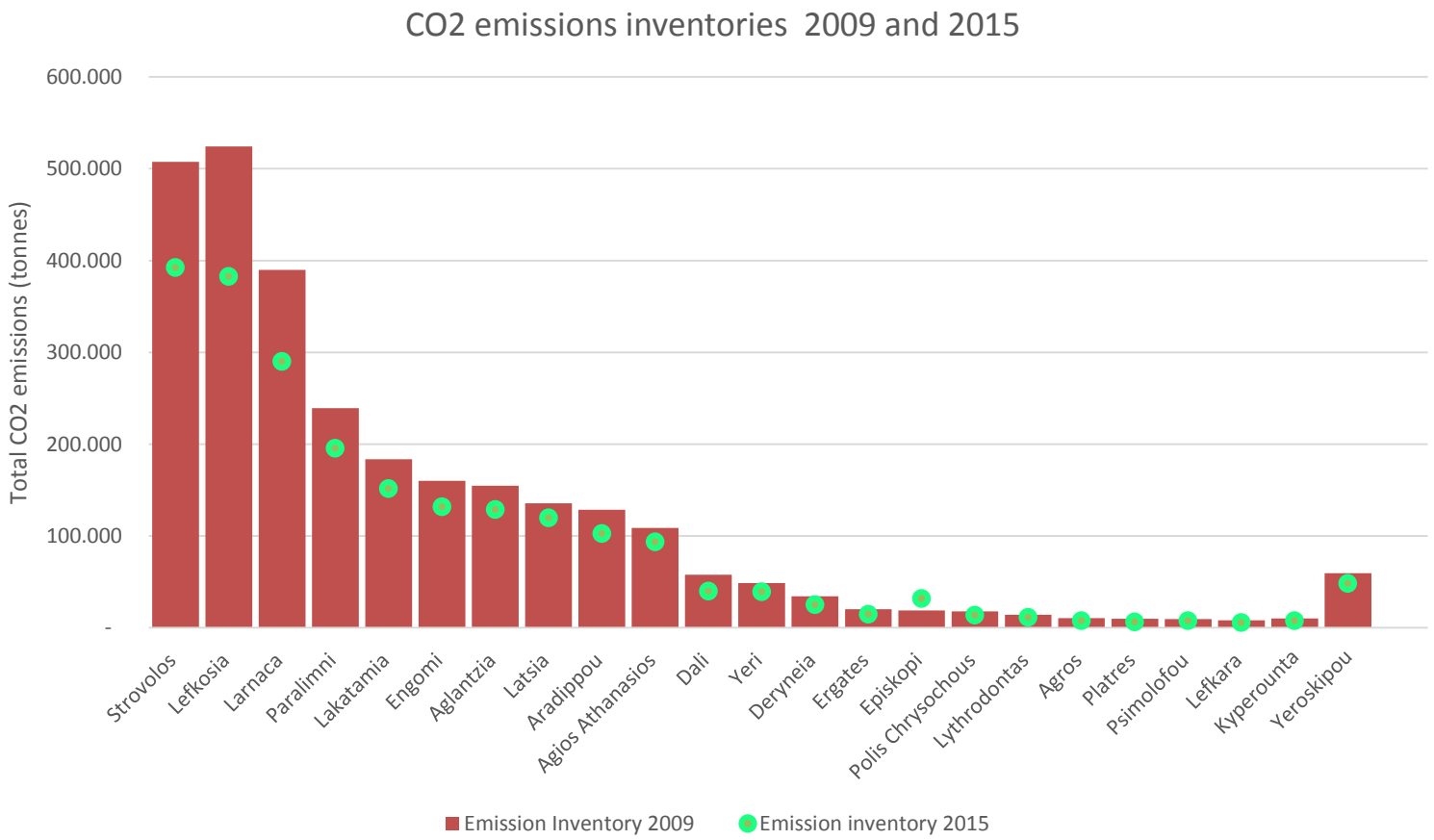
SEAPs monitoring in Cyprus 2009-2015



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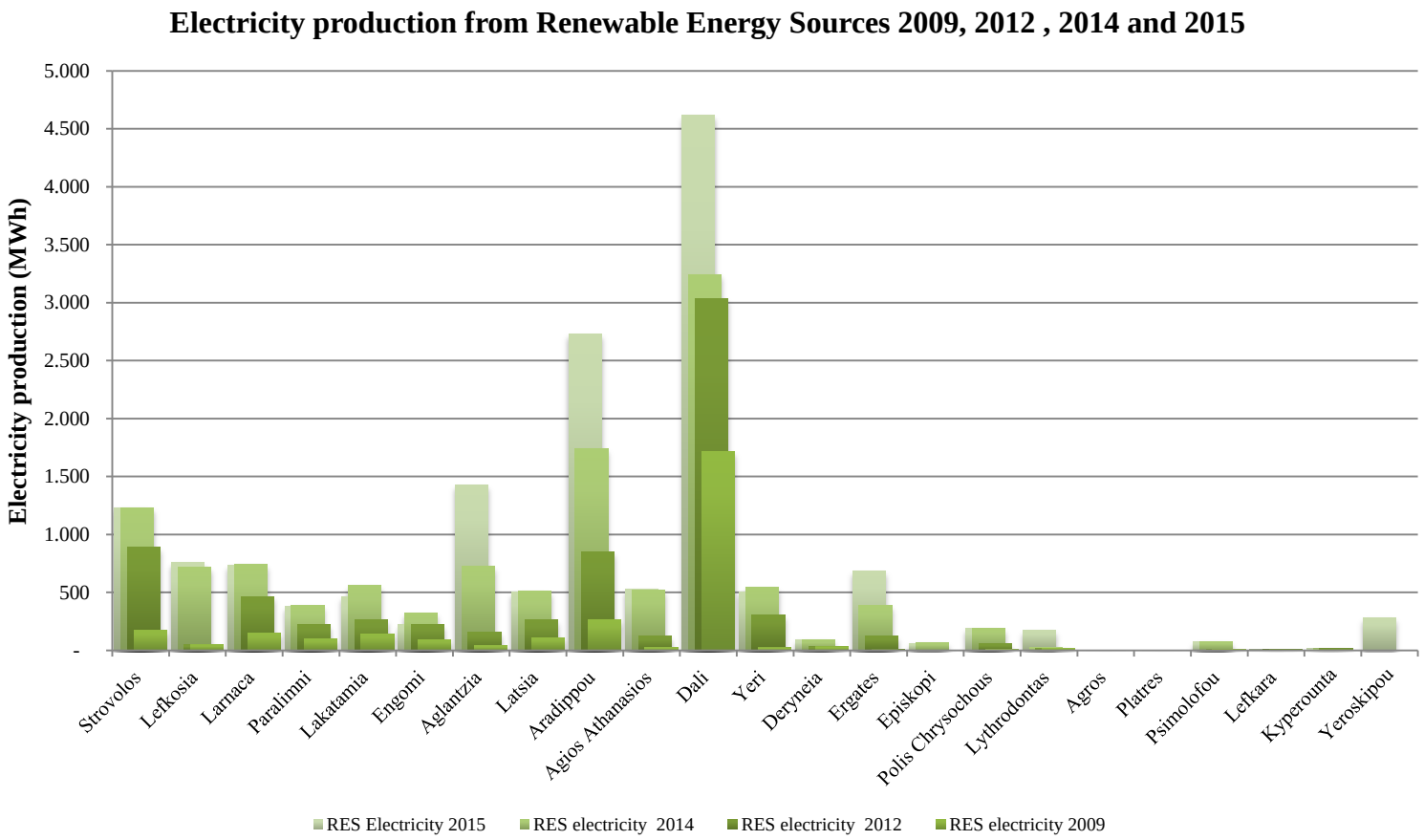
SEAPs monitoring in Cyprus 2009-2015



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Climate adaptation challenges

Mediterranean area

Increased temperatures

Reduction of precipitation

Water scarcity and desertification

Danger for biodiversity

Needs of additional water for agriculture

Reduction of agriculture performance

Danger for fires

Increase of extreme hot days number

Extreme weather conditions and floods

Social impacts to vulnerable people – energy poverty





Climate adaptation challenges

TANKER BRINGS WATER TO CYPRUS FROM GREECE 2008

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Climate adaptation challenges

EMPTY WATER RESERVOIRS

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Climate adaptation challenges

Καύσωνας ρεκόρ με 46 βαθμούς κελσίου!

02.08.2010 07:14 SigmaLive/Ράδιο Πρώτο

Έσπασε τα θερμόμετρα ο καύσωνας. Ρεκόρ όλων των εποχών με τον υδράργυρο να χτυπά τους 46 βαθμούς υπό σκιά, μετατρέποντας κυριολεκτικά την Λευκωσία σε καιόμενο καζάνι.

Σημειώνεται ότι η υψηλότερη θερμοκρασία που καταγράφηκε μέχρι σήμερα ήταν οι 44 βαθμοί κελσίου. **Τα επίπεδα υγρασίας εκτοξεύτηκαν στο 82%,.** Συνδυασμός που «σκοτώνει» και που θέτει το νησί σε κλοιό καύσωνα.

Χιλιάδες κόσμου αναζήτησαν όαση δροσιάς στις παραλίες. Κολύμπι στη θάλασσα σε συνδυασμό με άφθονα δροσιστικά ροφήματα ήταν στις επιλογές των περισσοτέρων προκειμένου να πάρουν ανάσα από τον ανυπόφορο καύσωνα.

Όσο για τον υδράργυρο δεν αναμένεται να σημειώσει αξιόλογη μεταβολή, καθώς σύμφωνα με τη μετεωρολογική υπηρεσία, η θερμή αέρια μάζα, αναμένεται να επηρεάσει την Κύπρο και την Τρίτη. Την Τετάρτη και την Πέμπτη ο υδράργυρος θα σημειώσει σταδιακή πτώση και η θερμοκρασία θα επανέλθει στα κανονικά για την εποχή επίπεδα, στους 37-38 βαθμούς.

Κατά τις καυτές αυτές μέρες, οι ειδικοί συστήνουν στις ευάλωτες ομάδες του πληθυσμού να αποφεύγουν την έκθεση στον ήλιο, ιδιαίτερα τις μεσημβρινές ώρες, και να παραμένουν σε δροσερό μέρος

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Climate adaptation challenges

FIRE TO SOLEA AREA FOREST 2016






Climate adaptation challenges

DUST EXTREME EVENTS

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Climate adaptation challenges

FLOODS

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Covenant for Climate and Energy

1. Political commitment

- New CO2 objective for 2030
- New energy actions for period 2020-2030

2. Monitoring reports every 2 years

- Comprehensive (ever 4)
- Actions (every 2)
- Good practices

3. Adaptation scoreboard

- Preparation of adaptation actions
- Risk and vulnerabilities
- Identifications and evaluation of adaptation actions
- Implementation of adaptation actions
- Monitoring and evaluation

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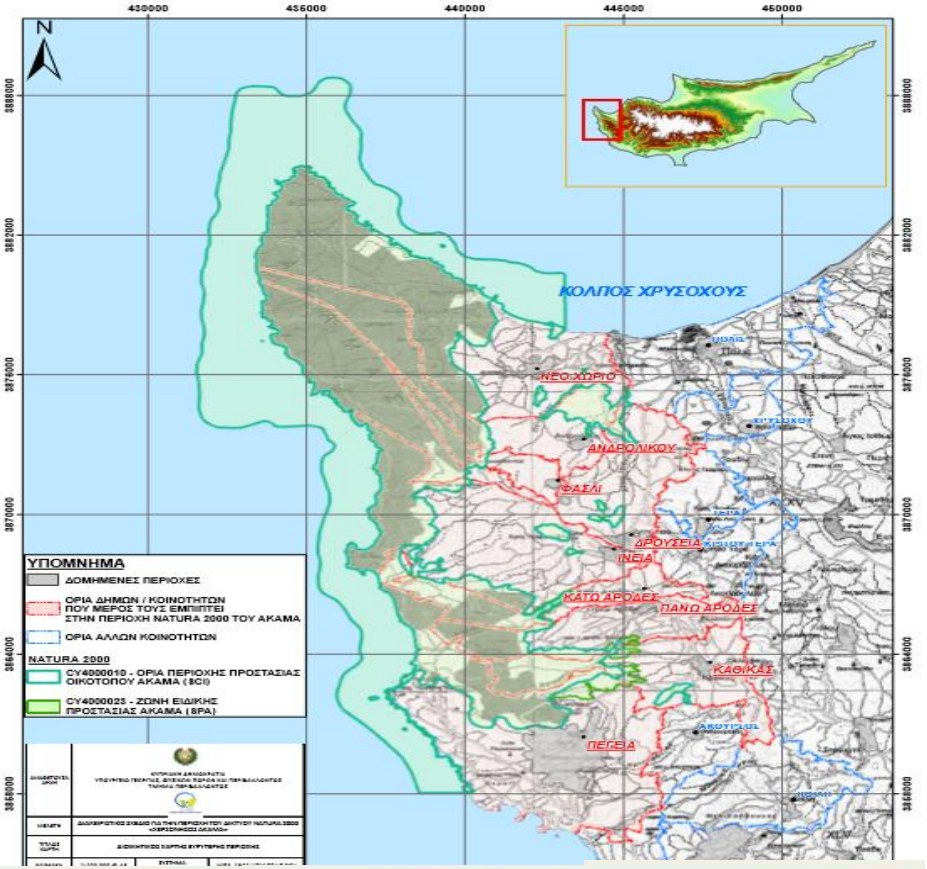
Adaptation actions

Adaptation sectors:

- Water resources management
- Biodiversity protection
- Soil, pavements, urban planning
- Agriculture protection and adaptation
- Energy, peak load managements, renewable energy sources
- Health and quality of urban environments
- Infrastructures
- Civil defence



Joint SECAP at **Akamas Peninsula**, which is in the northwestern part of Cyprus and is defined by the line joining the municipality of Peyia, and villages (communities) Kathikas, Arodes, Inia, Droushia and Neo Chorio.

Area: *17.000 hectares*

Population: *5.880 inhabitants*

The largest area is occupied by the Akamas forest park. This park is extremely important from an environmental point of view because of its rare biodiversity.

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Interreg Mediterranean EUROPEAN UNION PRISMI






Barriers

• Limited competences of Local Authorities					X
• Limited financial resources				X	
• Difficulties to access European funds for financing projects because of the size of the projects				X	
• Absence or weak regulatory framework			X		
• Limited capacity (technical knowledge)			X		
• Absence of political will		X			
• Bureaucracy and public procurement		X			
• Ownership		X			
• Market barriers		X			
• Citizens involvement and acceptance		X			

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Conclusions

The reduction of the equivalent CO_2 emissions during the period 2009-2015 it is a result of the local actions but also the effect of other externalities such as the current financial crisis and the business activities *downturn*. It is estimated that the reduction in energy consumption is the result of the following:

- Awareness campaigns, educational activities and training
- The introduction of the new public transportations systems
- The promotion of sustainable transport
- The promotion of energy efficiency technics and renewable energy sources for households
- The financial crisis and energy prices

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THANK YOU/ΕΥΧΑΡΙΣΤΩ

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