EPISCOPE

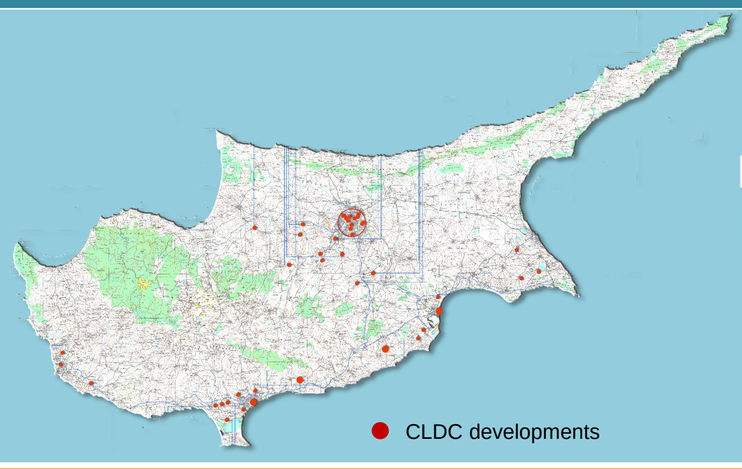
Co-funded by the Intelligent Energy Europe Programme of the European Union

Cyprus

Cyprus Land Development Corporation

SCOPE

SCALE	Local
NUMBER OF DWELLINGS	2484
NUMBER OF BUILDINGS	606
NUMBER OF INHABITANTS	9936
m^2 NATIONAL REFERENCE AREA	261680 (useful floor area)
m^2 EPISCOPE REFERENCE AREA	261680



34 Single Family Houses

1120 Terrace Family Houses

1330 Apartments

OVERVIEW OF ACTIVITIES

I. **The building stock was divided into categories** based on the typology of the dwellings (SFH, TH or MFH) and the chronological period of construction.

II. The current **energy performance** and the **refurbishment rate** of the existing dwellings was found through **onsite observation, questionnaire survey** and **collection of the electricity consumption data** (bills).

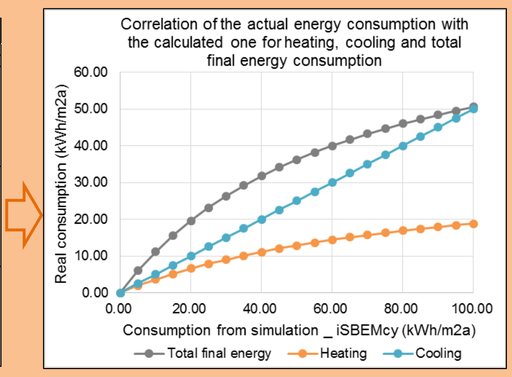
III. **The buildings to be constructed in the future were divided in two categories:** a) Improved, compared with the current, minimum requirements and b) nZEB standard, as specified by the energy Directives to be followed.

IV. The **energy performance** of the dwellings (existing and future) was also calculated through **simulations. Various refurbishment scenarios** were applied for optimised energy performance and cost effectiveness.

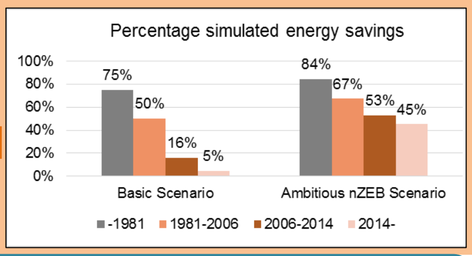
V. **Future upgrading Scenarios (Trend, Moderate and Ambitious-nZEB) were developed** based on the observed trends, the efficiency of the various refurbishment scenarios and the use of RES in the electricity production.

Building Type Matrix CYPRUS

	Development Corporation	Construction Year Class	Additional Classification	SFH Single-Family House	SFH Single-Family House	TH Terraced House	TH Terraced House	MFH Multi-Family House	MFH Multi-Family House
1	CLDC Portfolio (Cyprus)	1981 ... 2006	Pilot	 CY.L.SFH.02.P	 CY.L.SFH.02.P	 CY.L.TH.02.P	 CY.L.TH.02.P	 CY.L.MFH.02.P	 CY.L.MFH.02.P
2	CLDC Portfolio (Cyprus)	2007 ... 2013	Pilot	 CY.L.SFH.03.P	 CY.L.SFH.03.P	 CY.L.SFH.03.P	 CY.L.TH.03.P	 CY.L.MFH.03.P	 CY.L.MFH.03.P
3	CLDC Portfolio (Cyprus)	2014 ...	Pilot	 CY.L.SFH.04.P	 CY.L.SFH.04.P	 CY.L.SFH.04.P	 CY.L.TH.04.P	 CY.L.MFH.04.P	 CY.L.MFH.04.P



Future Energy Upgrading Scenarios	Trend Scenario			Moderate Scenario			Ambitious (nZEB) Scenario		
	2020	2030	2050	2020	2030	2050	2020	2030	2050
Total Percentage of dwellings with roof U-value <0.75W/m2K, windows U-value <3.2W/m2K and walls U-value <1.39W/m2K /total stock	28%	26%	20%	33%	46%	55%	26%	19%	5%
Total Percentage of dwellings with roof U-value <0.4W/m2K, windows U-value <2.25W/m2K and walls U-value <0.4W/m2K /total stock (nZEB)	0%	18%	45%	0%	18%	45%	8%	45%	95%
Onsite RES contribution for heating (%) in the complete building stock	44%	49%	53%	46%	56%	78%	45%	58%	84%
Onsite RES contribution for cooling (%) in the complete building stock	0%	2%	7%	3%	17%	50%	0%	18%	70%
RES contribution in the grid electricity production (%) in the complete stock	13%	24%	46%	13%	24%	46%	17%	34%	64%



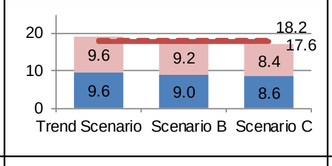
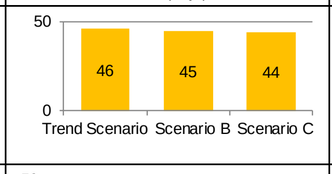
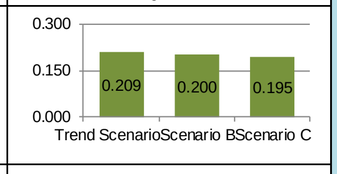
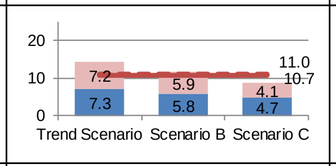
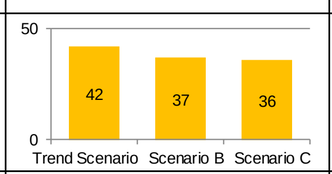
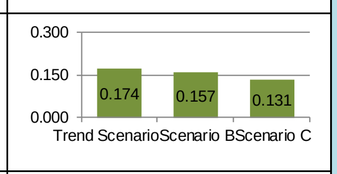
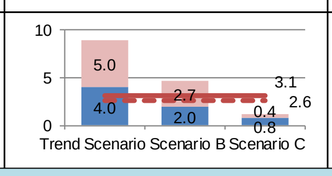
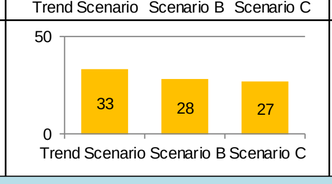
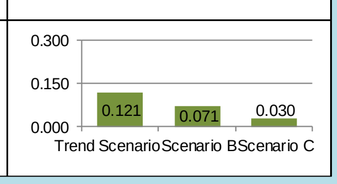
FINDINGS OF SCENARIO ANALYSES

The current trend of energy refurbishment (including new nZEB constructions after 2020), as depicted in the **Trend Scenario**, **is proven inadequate** for reaching the national climate protection targets and the EPISCOPE targets.

The **Moderate Upgrading Scenario (B)**, implementing a moderate building envelope refurbishment, combined with RES (Solar thermal) for heat supply is approaching the 2020 and 2030 targets of EPISCOPE, **with increasing deviation from the desirable results as we move from 2020 to 2050**.

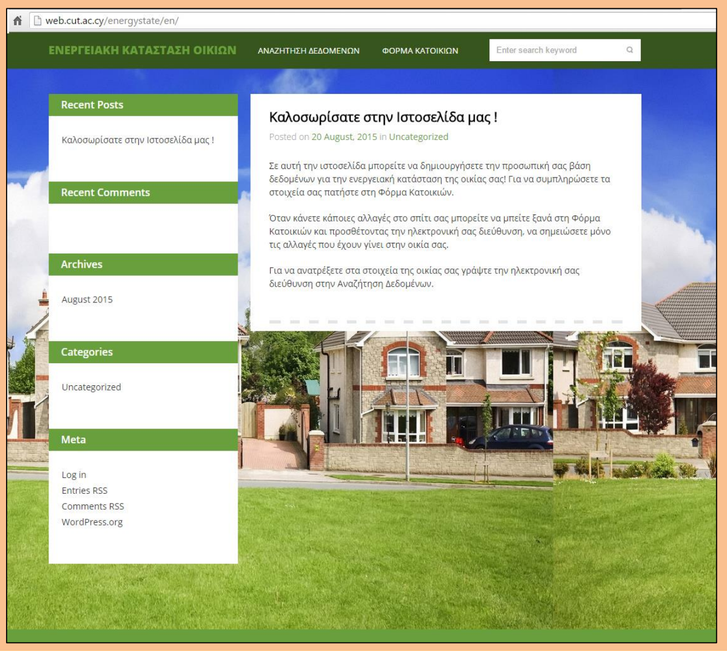
A combination of ambitious building envelope refurbishment (nZEB standard) and RES for heat supply, included in the **Ambitious Upgrading Scenario (C)**, with additional contribution of RES in the grid electricity supply, **constitutes a feasible solution to reach the CO_2 emission targets**.

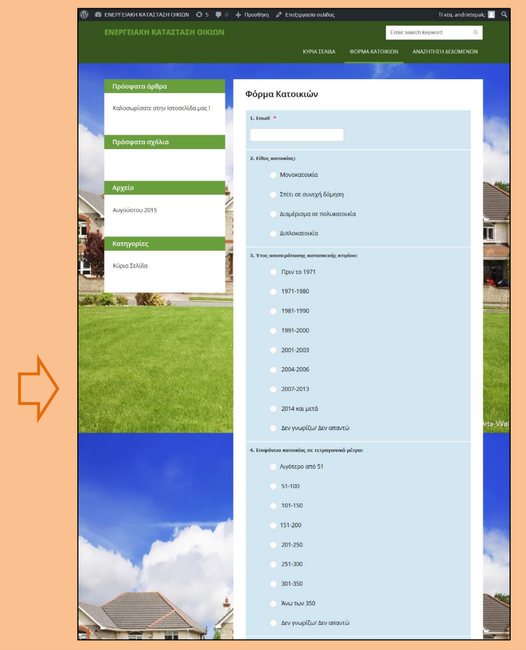
Summary Energy Performance Indicators

	EPISCOPE Ref. Area	CO_2 emissions (CO2 emissions heat supply; CO2 emissions cooling; EPISCOPE Benchmark; Individual Benchmark)	Total heat demand	CO_2 emission factor heat supply
	10^6 m^2	kg/(m^2yr)	kWh/(m^2yr)	kg/kWh
2020	0.29			
2030	0.35			
2050	0.52			

LESSONS LEARNED & RECOMMENDATIONS

- The **introduction of RES and specifically PV**, for the energy production, is currently the most **effective means of decarbonisation in Cyprus**.
- The efforts in Cyprus of **minimizing the CO_2 emissions** should focus in the **reduction of energy consumption for heating and cooling**, since cooling is responsible for more than half of the CO_2 emissions in 2015.
- The **most significant gap** presented in the **energy related information** concerns the data of the **energy consumption per energy carrier**.
- The **creation of a monitoring system**, in which the **fossil fuels energy suppliers will keep record of detailed information about the served households**, is an effective way of bridging the energy information gap.
- The **questionnaire used by the Cyprus Statistical Service** for the housing sector energy profile, **is inadequate and should be upgraded**.
- The team developed an **online accessible database**, in which the house owners could **create and update the energy profile of their home**.





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