Energy Efficiency Policies and Measures in CYPRUS

Monitoring of Energy Efficiency in EU 27,

Norway and Croatia (ODYSSEE-MURE)

Cyprus Institute of Energy

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1 Executive Summary

This report presents the case study of Cyprus for the IEE project Monitoring of energy efficiency in EU 27, Norway and Croatia (Odyssee-Mure). Firstly it provides the economic and energy background to energy efficiency and then introduces assessment of energy efficiency trends in Cyprus in the period 1995-2007. Finally the energy efficiency measures and policies are presented and evaluated. The report is based on indicators produced from the Odyssee database and the measures extracted from the Mure database both available on line.

Cyprus economy has grown by 25% in the period 2000-2007 , an annual increase of 3.5 % in the GDP. Value added increased in all sectors except agriculture. The most important sector which is services has increased by 27% and this explains the overall economic growth. The value added of industry increased by 21,6% over the same period , and the private consumption of households increased by 30%. The fiscal deficit has improved from -4.1% in 2004 to surplus of +3.2% in 2007. Cyprus has adopted the euro in 1/1/2008. The euro zone has further stimulated economic growth.

The economy is mainly services driven depending heavily on tourism but also on banking services and off-shore companies operating in Cyprus using the beneficial tax and credit system. The accession of Cyprus in the EU had a negative impact on agriculture, due to the cheaper imports from other EU countries, the long term water shortage which the Government has not resolved yet (desalination plants) but also due to the common agricultural EU policy.

The expansion of the value added of industry after 2001 is attributed to the construction of buildings (foreign demand). The private consumption has increased by 30% which is explained by low unemployment and increase in the disposable incomes of households. The conclusion is that Cyprus is a dominating services economy with good macroeconomic indicators which has managed to enter the euro zone by implementing strict policies in public finance.

Cyprus energy system is small and isolated with no interconnections and no natural gas yet. Since 1995 , primary energy consumption has in-

creased by 35% from 1970 ktoe in 1995 to 2668 ktoe in 2007. For the same period the final energy consumption has increased by 33% from 1409 ktoe to 1817 ktoe in 2007. The oil consumption has increased by 22% from 1.1 Mtoe to 1.3 Mtoe. The share of oil products has dropped by 8% since 1995; however oil remains the dominant energy source of final consumers (75%). The shares in the energy balance of 2007 are: transport 55% (17% aviation), 17% households, 10% tertiary, industry 16%, agriculture 2%.

During the period 1995-2007 primary energy intensity has decreased by 1%/year. In the same period final energy intensity has decreased 1%/year. The ratio has decreased from 72% in 1995 to 70% in 2007. The stable ratio is addressed to the transformation sector which has a low efficiency of 32%. Also Res have not been developed yet and consist only 2.5% of final consumption. The decrease of the energy intensities suggest that improvement in energy efficiency has taken place but the effects of structural changes must be taken into account.

During the period 1996-2007 the total energy efficiency index (Odex) has improved by 21% compared with 12.8% of the EU 27. The reasons for the improvement is the energy efficiency improvement of the industrial sector mainly from the ETS installations and also the contribution from the transport sector (53% of energy consumption) which has improved its efficiency from the new clean and fuel efficient vehicles.

The efficiency index of the industrial sector has improved by 33%. The improvement is attributed in the non metallic mineral branch which fall into the ETS but also in the other branches which implement energy saving measures . The ETS sector consumes around 70% of industrial energy consumption. The other energy consuming branch is the food/beverages.

Between 1996-2007 the household sector shows small improvement 4% in the Odex. Even though the quality of data in this sector is not very good we can justify some improvement after the year 2004 when Cyprus entered the EU and the measures implemented have started to create energy savings. Prior to accession no significant policies existed. The very important EU directive for the energy performance of buildings has not been implemented fully yet and therefore the large savings potential is still unexploited.

The transport sector shows an improvement of 21% in the Odex in the period 1996-2007. Since in this period the passengers traffic using public

transport has decreased drastically implies that the improvement is caused mainly by the penetration with new clean and fuel efficient vehicles. Until 2004 diesel fuel prices for transport were subsidised by gasoline. Therefore the large engine capacity private vehicles were replaced gradually when prices were liberalised. Another factor affecting the efficiency of this sector is energy consumption of aviation (17% of final consumption). From the jet fuel consumption per passenger a decrease of 43% has taken place in the same time period. In Cyprus public transport is not well developed. There is no rail infrastructure or water transport. However in 2009 a new Law was enacted for the regulation and development of public transport. The entire bus fleet will be gradually replaced and increased with new and environmentally friendly vehicles together with other infrastructure.

The total CO2 emissions from fuel combustion has increased from 4.77 MtCO2 in 1995 to 7.43 Mt CO2 in 2007. The increase is mainly caused by the low energy efficiency of the electricity generation which is 32% in the time period and is oil based since there is no natural gas. Natural gas will not reach Cyprus before 2015. The total direct CO2 emissions from all sectors have increased from 2.6Mt CO2 in 1995 to 3.7MtCO2 in 2007 (42%).

The transport sector CO2 emissions have increased from 1.15 Mt to 2.19Mt and consists the largest share in total emissions (61% in 2007 direct emissions). This is expected since the transport sector consists the largest share of final energy consumption. The industry sector CO2 emissions have changed from 0.99Mt to 1.053Mt in 1995-2007. The share is 29.3% in direct emissions in 2007. The almost same emissions are justified from the fact that 10 undertakings consuming around 69% of industry final energy consumption are within the emissions trading scheme. The household sector CO2 emissions have decreased from 0.317 Mt to 0.208Mt in the period 1995-2007. This is attributed to fuel substitutions which took place including the electric appliances. The share of households in direct emissions is 5.8% in 2007. The services sector CO2 emissions have increased from 0.039 Mt to 0.085 Mt. The share in direct emissions is small 2.5% in year 2007. The agriculture sector CO2 emissions have increased the CO2 emissions from 0.046 Mt to 0.059 Mt in 1995-2007 period.

Cyprus has significant potential for energy savings in buildings and then in transport. Since the accession in 2004 all European policies in energy efficiency have been transposed and started to be implemented gradually. It is expected that a few more years are required until all the measures

synergetic ally will deliver significant energy savings. In this respect a National energy efficiency action plan (ESD 2006/32/EC) has been submitted and approved by the Commission with all the measures necessary for achieving a target of 10% in year 2016. The emphasis is two fold firstly to implement fully the EPBD directive, provide incentives to existing buildings for efficiency improvements and then to develop an effective and modern public transport system to satisfy the needs of today.

2 The Background to Energy Efficiency

2.1 Overall economic context

Cyprus economy has shown strong economic growth in the period 1995-2007. GDP increased by 25% since 2000, that is an average of 3.5% annually. Value added increased in all sectors except in agriculture where there is a decrease by 12% in the period 2000-2007. The value added of the tertiary sector has increased by 27% and this justifies the overall economic growth since this sector consists the largest sector in terms of value added. The value added of industry increased by 21.6% over the same period, and private consumption of households increased by 30%. Figure 2.1 shows GDP and value added per sector for the period 1995-2007, and figure 2.2 has the same results in the form of indices with the 2000 to be the base year (index=100) thus demonstrating relative changes.

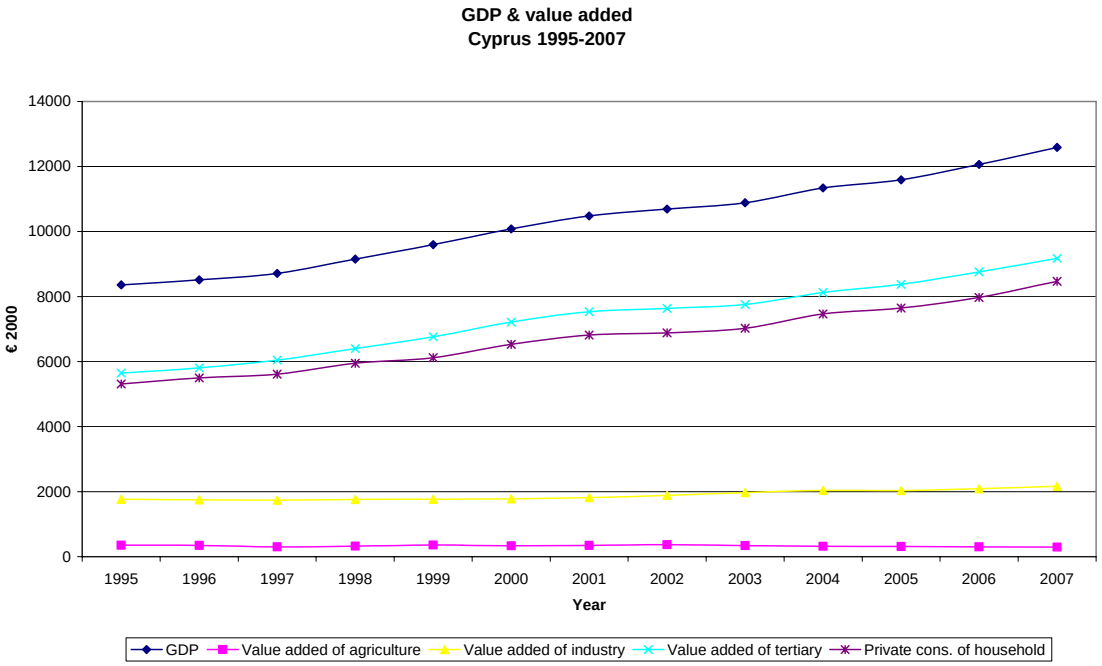


Fig 2.1 GDP and Value Added trends in Cyprus 1995-2007 (M€ in constant 2000 prices)

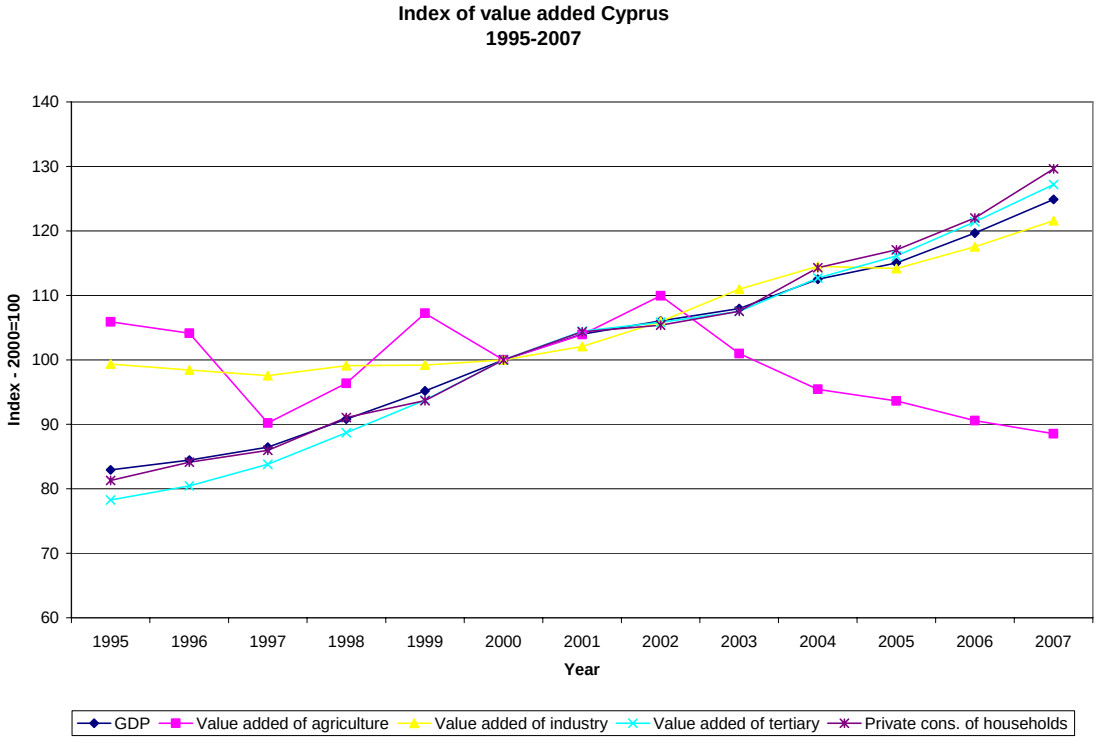


Fig 2.2 Index of Value added by sector in Cyprus , 1995-2007, (2000=100)

Cyprus economy depends heavily on services such as tourism, banking, foreign investments and lots of off shore businesses operating in Cyprus utilizing the low tax rate system (10% tax on companies). Cyprus has joined the EU in 2004 and since then agriculture has a negative impact due to importing products from overseas but also due to the long term rainfall shortage.

Industry has improved significantly after 2000 in terms of value added and this is attributed to the expansion of building construction industry to satisfy the demand from foreigners who prefer Cyprus to retire for the good weather. The high increase in the private consumption of households reflects the high disposable income of households and easy credit given by banks as well as the small unemployment rate being 3.9% in 2007.

It is obvious from the public finance main economic indicators that in the period 2004-2007 the Government has followed strict policies in order to achieve convergence with the requirements to enter the euro zone. As a result the fiscal deficit has improved from -4.1% in 2004 to surplus of +3.2% in 2007 and thus Cyprus has adopted the euro in 1/1/2008. The euro zone has further stimulated economic growth.

2.2 Energy consumption trends : by fuel and by sector

Cyprus energy system is isolated with no interconnections with other networks. There are no fossil indigenous energy sources and there is a small contribution of renewable energy sources (solar thermal) of 2% in total primary energy consumption of 2007. The RES potential in Cyprus consists primarily of solar energy, and limited wind, biomass. Government is implementing strong RES policies in order to exploit the RES potential available and presently a wind farm of 82 Mwe has been signed and will be constructed by 2010.

Since 2000 , primary energy consumption has increased by 35% from 1970 ktoe in 1995 to 2668 ktoe in 2007. For the same period the final energy consumption has increased by 33% from 1404 ktoe in 1995 to 1871 ktoe in 2007. This increase is caused by the major increase of electricity consumption (218 ktoe in 1995 to 430 ktoe in 2007) and also due to the road transport fuels for private vehicles since public transport is not developed in Cyprus.

Oil consumption in the same period has increased by 22% from 1.1 Mtoe to 1.41 Mtoe. The energy system does not include natural gas and is not expected before 2015 for electricity generation. RES has increased from 33ktoe in 1995 to 50 ktoe in 2007. Until 2007 there are around 3 Mwe of RES electricity capacity installed (PV, Biogas). The share of coal is small 2% and used in cement industry. The share of oil products in the energy balance has decreased by 8% since 1995 ; oil is still the main energy source for final consumption (75%). However the share of oil products in final consumption has decreased due to the continuous increase of electricity consumption.

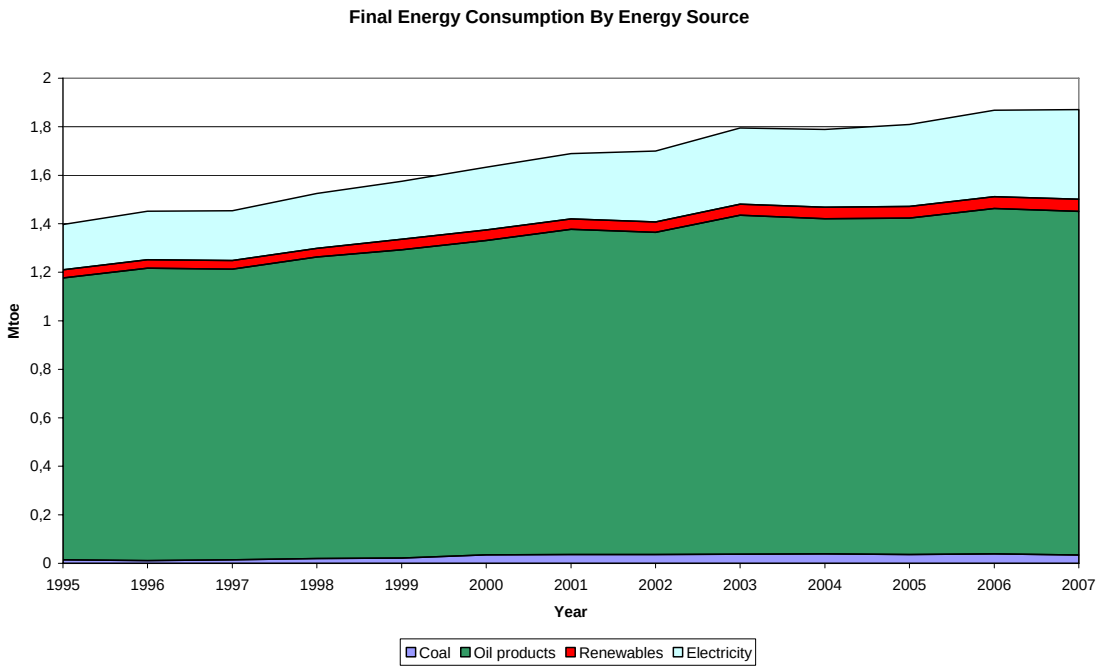


Fig. 2.3 Final energy consumption by energy source, 1995-2007

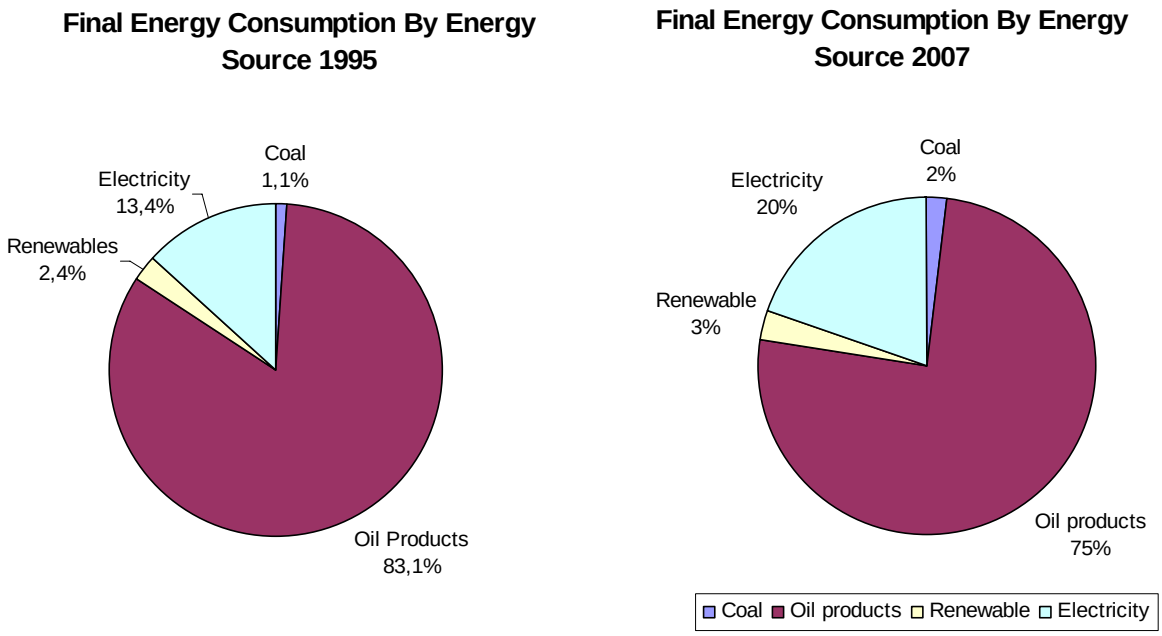


Fig. 2.4 Shares of final energy consumption by energy source, 1995-2007

From the energy balance is obvious that transport consists the largest sector in energy consumption (52%, 1.03 Mtoe) in 2007. The shares are: aviation 17%, road transport 35%. The high energy consumption of transport is caused by the fact that Cyprus is an isolated island state far from the main land of EU and also because public transport is not well developed and used by the people who depend on their private vehicles. The transport energy share has changed only slightly in the 13 year period.

Households have consumed 319 ktoe against 208 ktoe in 1995; namely a 53% increase. The contribution of households in the energy balance has increased from 14.8 % in 1995 to 17% in 2007. The tertiary has about the same share from 9% in 1995 to 10% in 2007. One interesting finding is the decease of industrial energy consumption from 20.9% in 1995 to 16% in 2007. Industry includes 10 installations within the emissions trading scheme (at least 50% of industry consumption) and energy efficiency measures have been implemented to meet the targets. The energy consumption of industry in 1995 is 295 ktoe and is 297 ktoe in 2007.

The agriculture contribution remains the same 2% during the period.

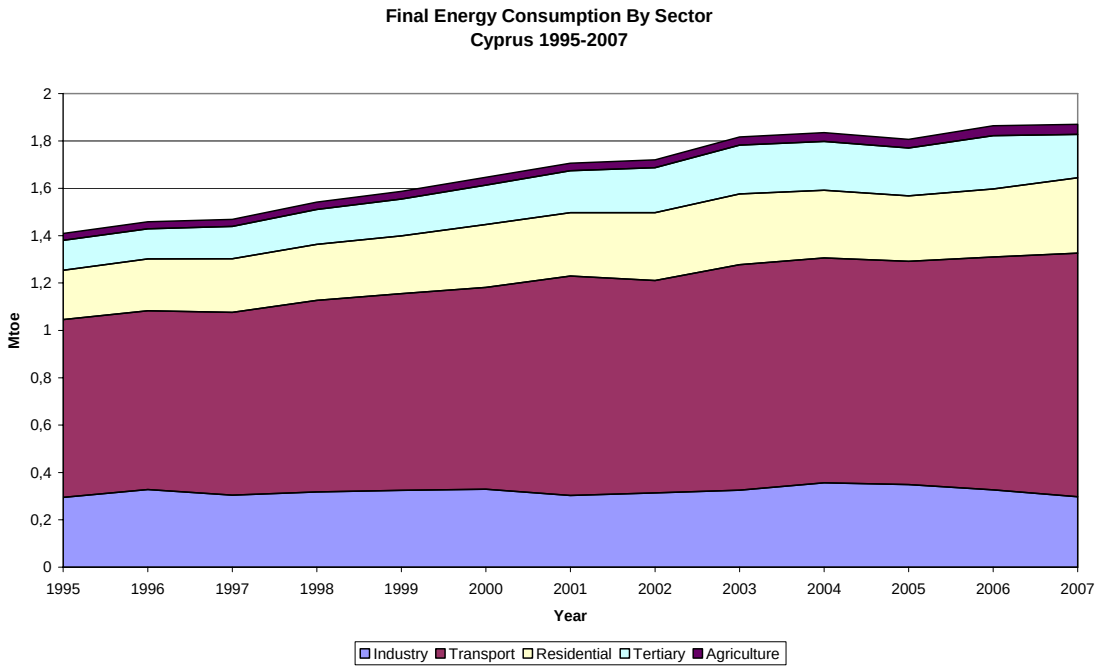


Fig. 2.5 Final energy consumption by sector, 1995-2007

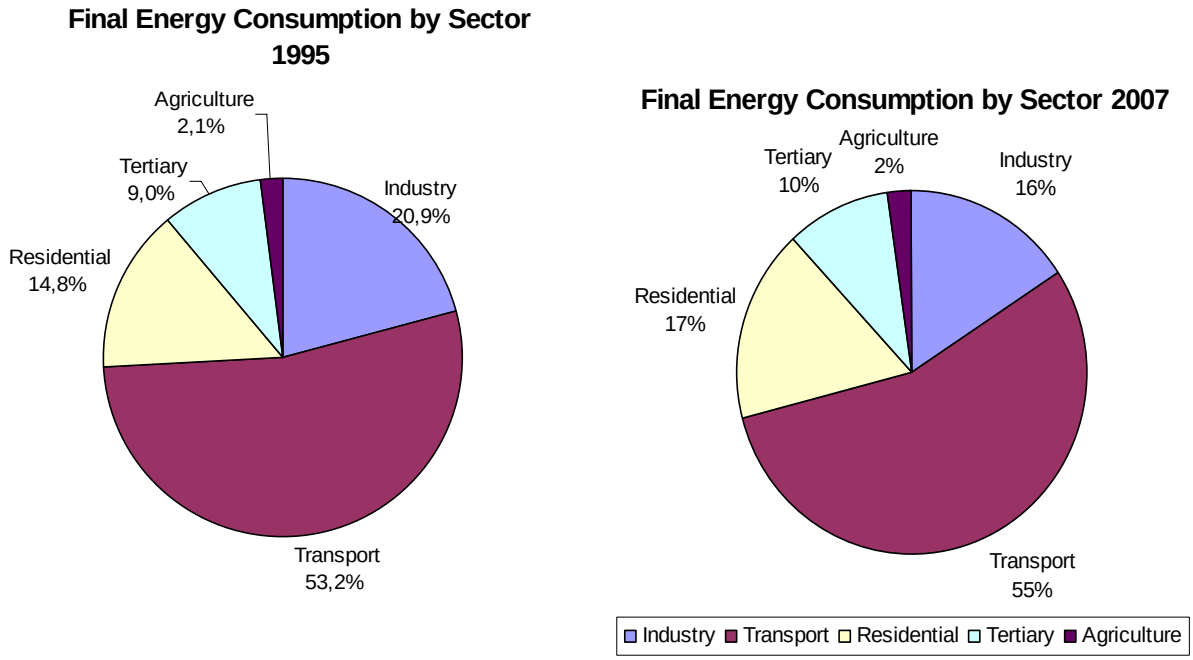


Fig. 2.6 Shares of final energy consumption by sector, 1995-2007

2.3 The policy background to energy efficiency

Cyprus energy policy is aligned with European Energy policy and its core objectives: security of energy supply, competitiveness and protection of the environment. Main changes which have taken place in the past few years are:

1) Electricity market is liberalised to 65% and has opened further since April 2009 in order to include all consumers except households. Complete opening of the market according to the exemptions granted to Cyprus will be done by 2014. However due to the absence of natural gas there is no competition in the electricity market since only one national producer exists.

2) Government has decided after long debates that natural gas will be introduced in Cyprus in the form of LNG via an on shore terminal and no other technology can be used (CNG etc.). The natural gas which will not come earlier than 2015 has caused an uncertainty among energy investors in power generation industry, penalties to be imposed to the national electricity producer due to the CO2 emissions trading scheme commitments and also no reduction in electricity prices have been realised since the present production (oil based) is done with 32% efficiency by only one national company.

3) Cyprus has carried out the last 2 years extensive sea exploration of hydrocarbons in the exclusive economic zone of the island. Thus far the preliminary findings/results/measurements are very promising for significant oil/natural gas reserves and the data collected within certain blocks have been sold to international oil companies for further investigation and exploitation via a tendering procedure. Major oil companies have shown interest and bought the data.

4) Cyprus in compliance with the emissions trading scheme Directive has prepared and submitted the second national allocation plan for green house gas emissions. The second plan covers the period 2008-2012 and includes 13 companies (3 power stations, 2 cement industries, 8 brick factories). The total allowances is 35.5 million tonnes of CO2 with 29,67 available over the second trading period. 1.15 tonnes are attributed to the set asides for CDM. The Commission has approved the plan.

5) With regard to the RES policy Cyprus has adopted an ambitious target of 13% in final energy consumption by 2020 . The target is mandatory according the EU RES Directive 2009/30/EC. The national potential is limited to solar, moderate wind and small biomass. Recently the first wind farm of capacity 82 MW has been signed and will be constructed by 2010.

6) From the energy balance is obvious that transport is the most energy consuming sector partly because the public transport system is not well developed (old inefficient buses not covering all areas , no tram, metro, trains). Government has decided to create the <New strategy for public transport>. The objectives are to develop a completely new infrastructure for building an effective sustainable transport system which will guarantee the fast, safe, comfortable, environmentally friendly and low cost mobility for the people. The new integrated mobility system includes new efficient buses (1200 nos) with the possibility of other means, new stations, electronic ticketing, bus lanes. The new system will cover all regions of Cyprus (five bus companies will cover the five regions and one company will be trans-regional). The new public transport system has been regulated by a Law and has started to be implemented.

7) The most important EU energy policy Cyprus has to implement is the energy performance of buildings directive. Since 1/1/2008 minimum energy efficiency requirements for new/renovated buildings are applied for the first time. This will have a significant impact in energy savings because prior to the directive no building regulations existed in terms of energy efficiency. Also energy performance certificates for buildings will be issued by end of 2010.

3 Overall Assessment of Energy Efficiency Trends

3.1 Overall trends in energy intensity

The macro indicators used to describe the overall energy efficiency trends in primary energy supply and final energy consumption are the primary energy intensity and final energy intensity (energy over GDP). The primary intensity shows the efficiency of the whole economy whereas final intensity deals with the energy efficiency of end use.

From the graphs it is shown that during the period 1995-2007 primary energy intensity has decreased by 1% per year. In the same period final energy intensity has decreased by almost 1% per year. The values of primary and final energy intensity in the year 2007 are 0.21 koe/EC00 and 0.15 koe/EC00 respectively. The variation of the primary and final energy intensity is explained by the ratio final to primary intensity. The ratio has decreased from 72% in 1995 to 70% in 2007. This means that the transformation sector remains the same in terms of efficiency since no measures have been applied yet to increase the energy efficiency of power production. Natural gas and combined cycle technology is not introduced yet and also there is no significant increase of electricity auto production or RES into the energy mix.

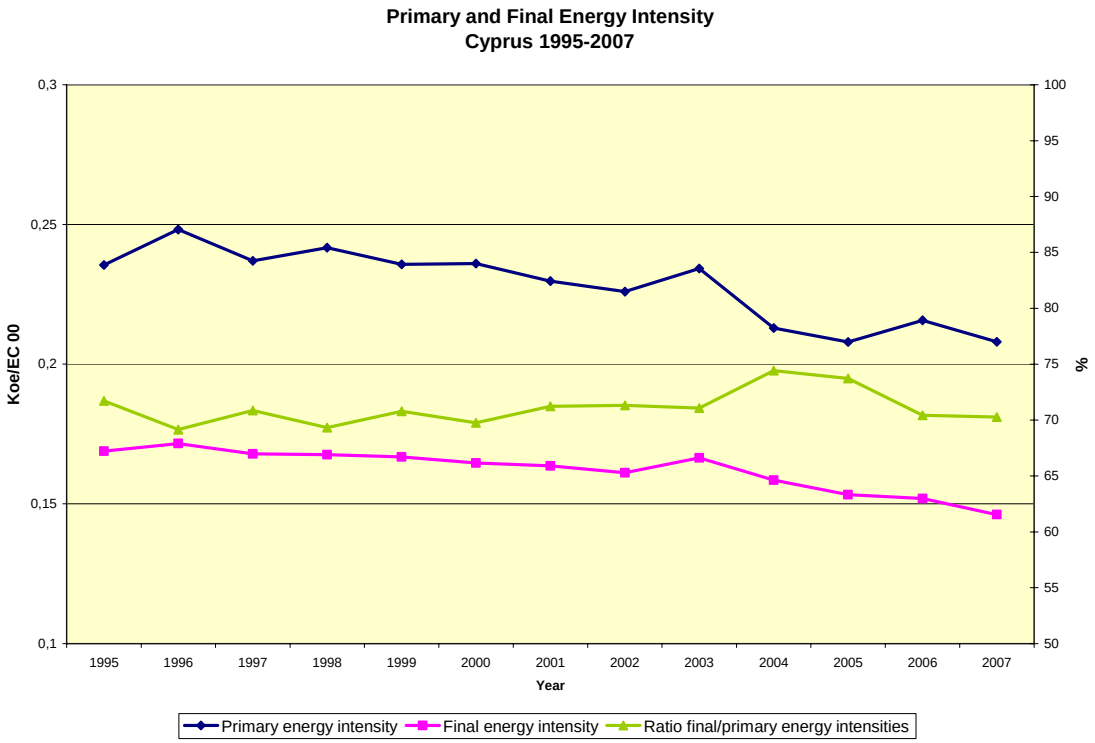


Fig. 3.1 Primary and final energy intensity, 1995-2007

3.2 Industry :

Energy consumption trend

The energy consumption of industry in 1995 is 297,000 toe and in 2007 is 302,000 toe an increase of 1.6%. The share of industry in final energy consumption is 20.9% in 1995 and 16% in 2007. The consumption has a roughly steady trend since 1995.

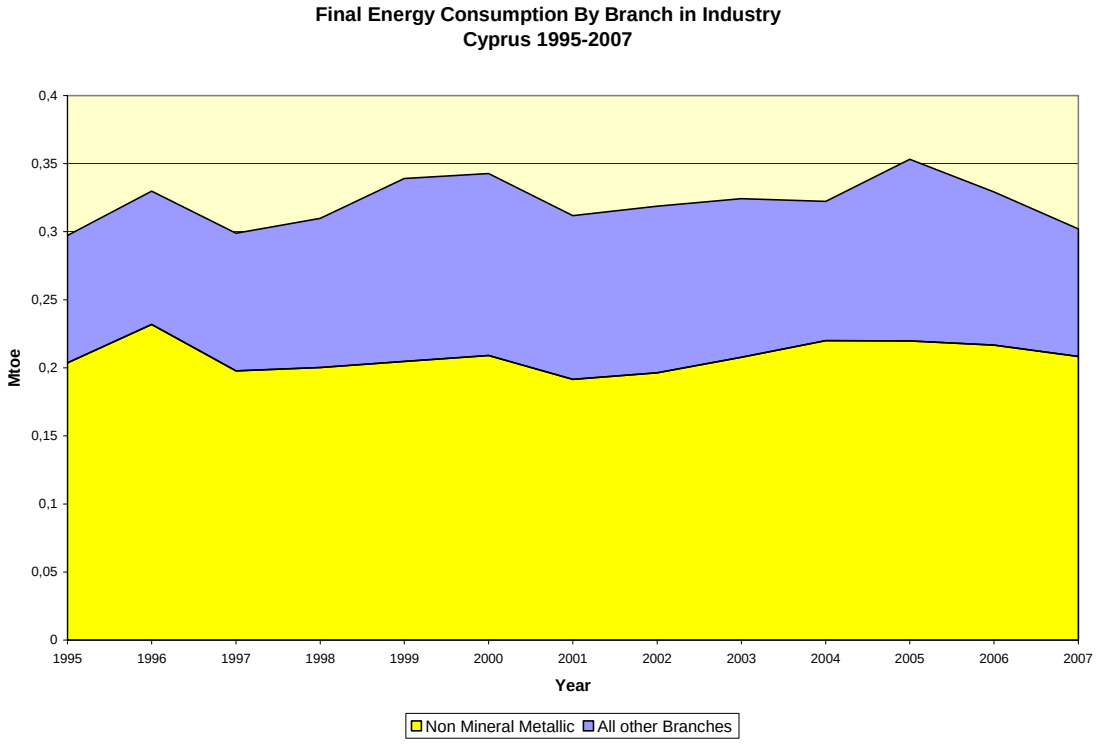


Fig 3.2 : Final Energy consumption of industry and of the most energy intensive sector

In figure 5.6 the consumption by fuel is reported. The main energy source are oil products and secondly electricity. There is also limited coal consumption by the cement industry. The share of oil products is about 65% all over the period and for the electricity is 18%.

Electricity has increased, +72% in period 1995-2007. The coal has increased by 190% in the period 1995-2007. Coal is exclusively used in the cement industry.

In the period 1995-2007 the non metallic minerals branch grew by 52% in terms of value added which is attributed to the growing building construction industry.

The share of non metallic branch in the final energy consumption of industry is 69% for the year 2007.

The value added of industry has increased by 24.7% from 1995 to 2007. The shares of the various branches in the period 1995-2007 shows no significant structural changes and still the most significant sector within manufacturing is the food industry (28%) followed by the non metallic minerals (15.7%). The only branch which has decreased severely is the leather industry. As already stated the value added of the non metallic branch has increased its share constantly to supply the growing building construction industry. However the food industry has shown a decrease in its share in terms of value added from 39% in 2004 to 28% in 2007.

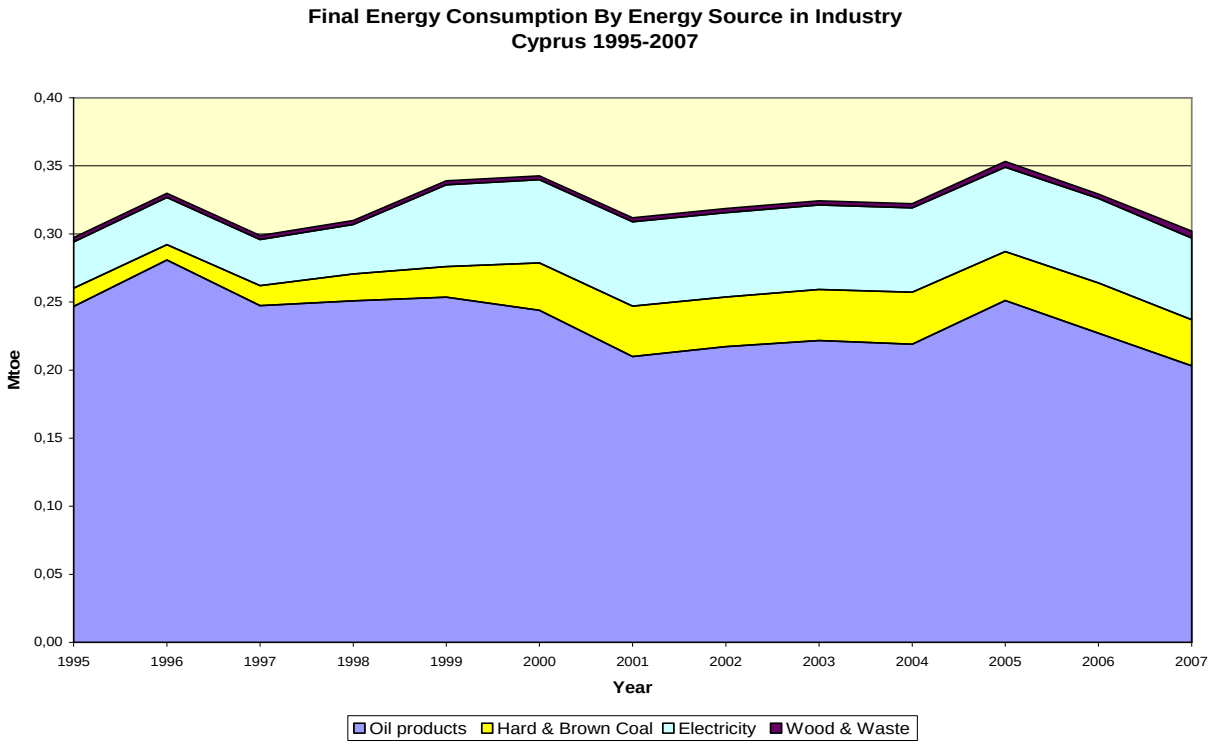


Fig 3.3: Energy consumption of industry by energy source

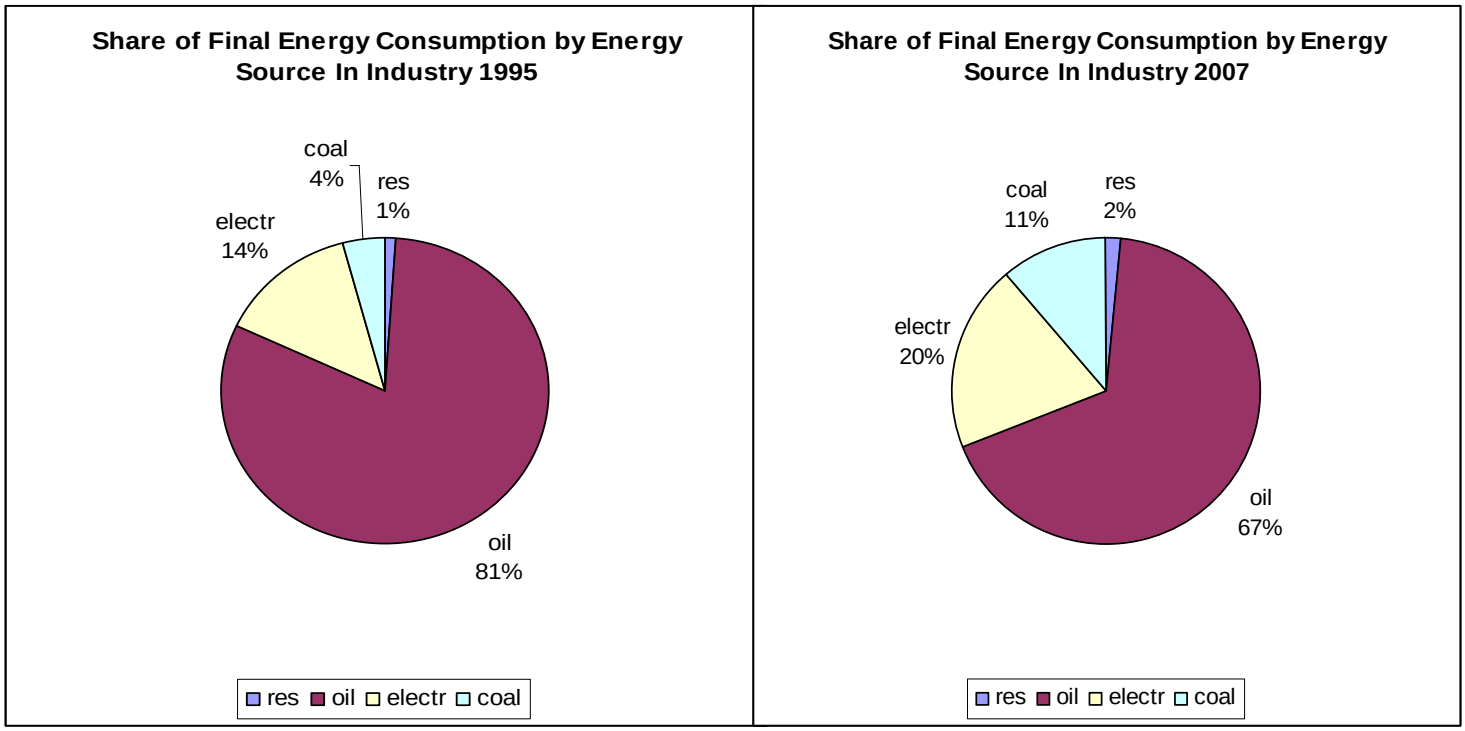


Fig. 3.4 Shares of final energy consumption by energy source in industry, 1995-2007

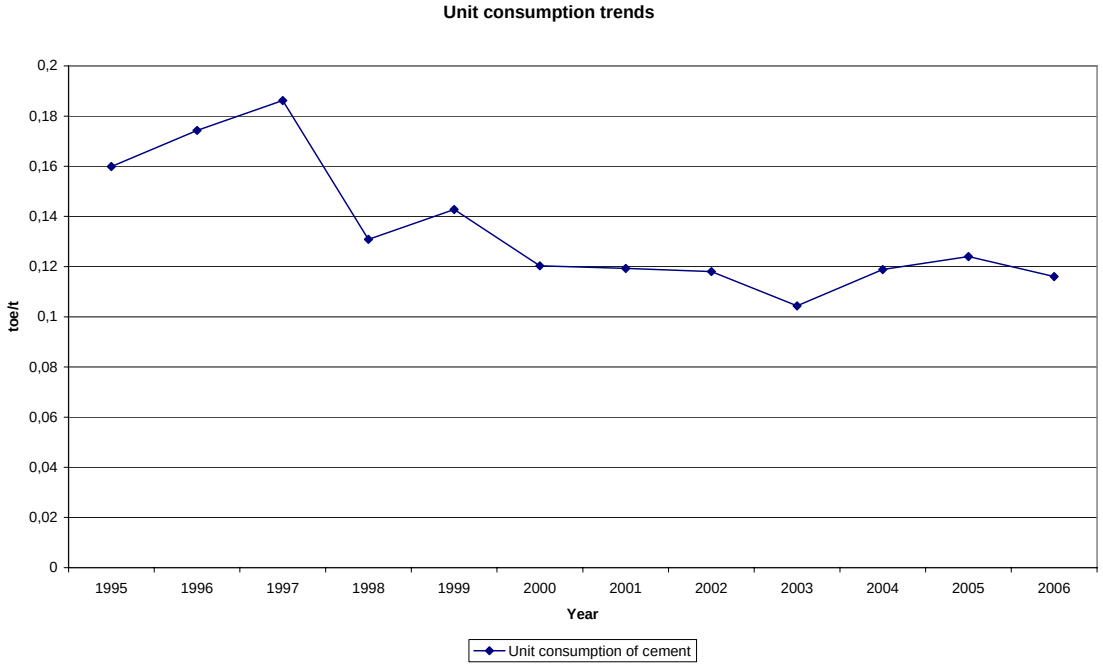


Fig. 3.5 Unit consumption trend of cement, 1995-2006

The non metallic branch is the most energy consuming in industry and includes 10 industries (2 cement, 8 brick). Since these installations fall under the emissions trading scheme (total 13 installations) in order to comply with the national allocation plan and commitments they have implemented energy efficiency, RES measures. The efficiency improvement is reflected in several indicators such as the Odex, energy intensity as well as the unit consumption shown in the above figure. One particular cement company consumes almost 100% electricity from auto production, uses waste (renewable and non renewable) and also uses CHP.

3.3 Households

Final energy consumption has increased from 199,000 toe in 1995 to 319,000 toe in 2007. Electricity consumption has increased dramatically from 65,000 toe in 1995 to 138,000 toe in 2007 (212%) and this is attributed to the increasing number of electrical/electronic appliances and the installation of air conditioners in almost every household. The space hating energy consumption has increased from 79000 toe in 1995 to 103000 toe in 2007. How-

ever this figure is not accurate as it does not include the electricity used for air conditioners used in heating mode.

Cyprus as already mentioned was not applying any building energy regulations prior to accession. The new Building directive and related calculation methodology are expected to be applied in end of 2009 with the issuing of energy performance certificates even though presently certain efficiency requirements are applied in terms of thermal insulation (since 1/1/2008 minimum U-values). Therefore there are no available data yet for the energy performance of new or existing buildings such as the asset rating or operational rating (kwh/m2/year HVAC, DHW). However from the benchmark examples run on the calculation methodology the asset rating (minimum class B) for a new household in Cyprus will be 140 kwh/m2/year (Reference building: heating, cooling, hot water, lighting).

The data presently available are in the unit consumption form which do not reflect accurately the energy performance of households.

The unit consumption of dwellings has changed from 0.958 toe/dw in 1995 to 1.171 toe/dw in 2007.

The unit consumption for heating has changed from 0.368 toe/dw in 1995 to 0.404 toe/dw in 2007.

The unit consumption for water heating has remained stable from 1995-2007 0.21 toe/dw which is justified to the solar thermal energy used for hot water covering around 70% of the needs.

The electricity consumption has increased from 3749 kwh/dw in 1995 to 5662 kwh/dw in 2007.

The electricity consumption for lighting and appliances has increased from 2527 kwh in 1995 to 3651 kwh in 2007.

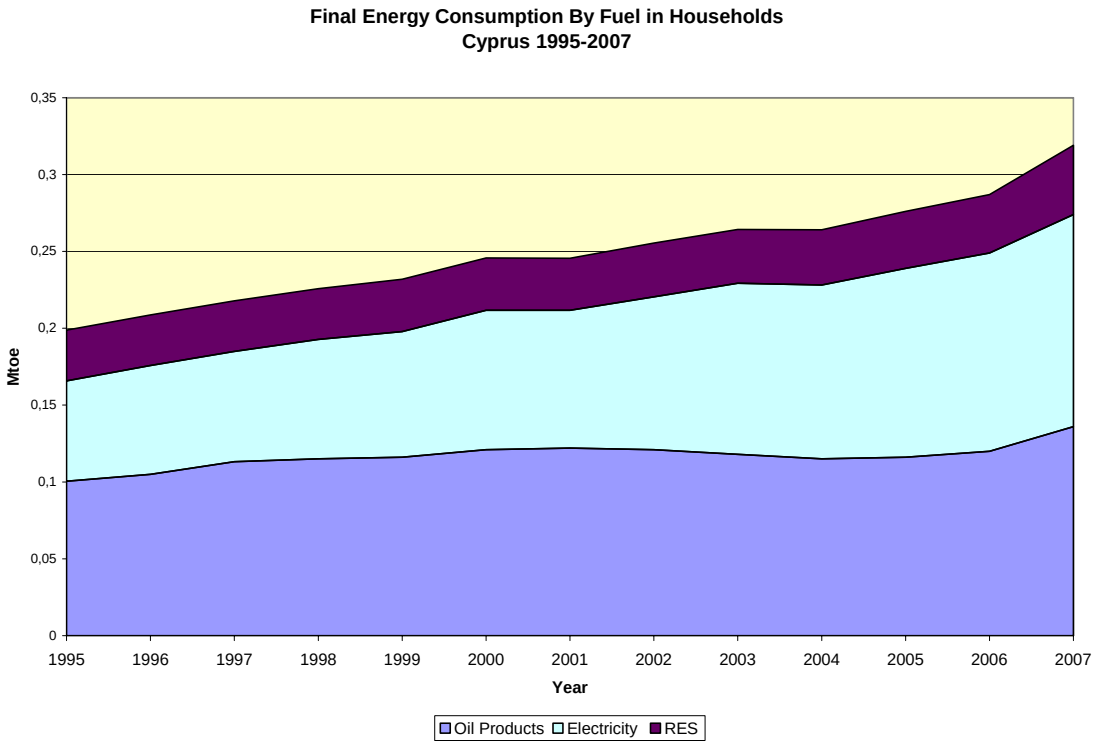


Fig. 3.6 Final energy consumption in households, 1995-2007

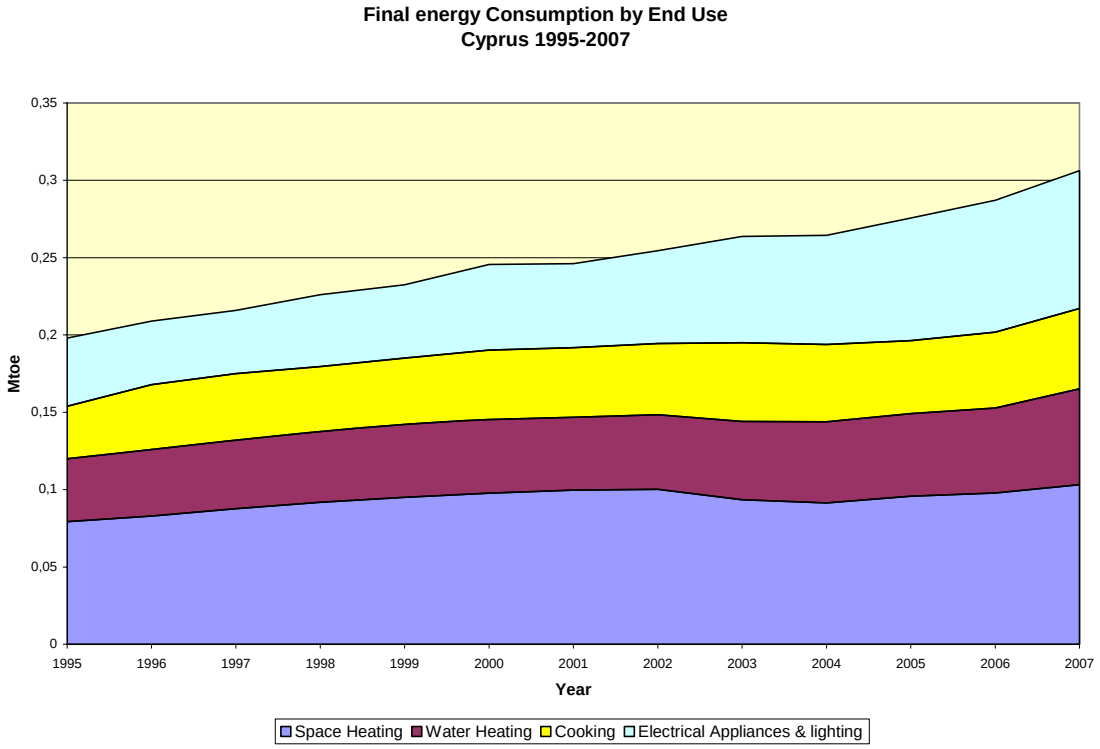


Fig. 3.7 Final energy consumption by end use in households, 1995-2007

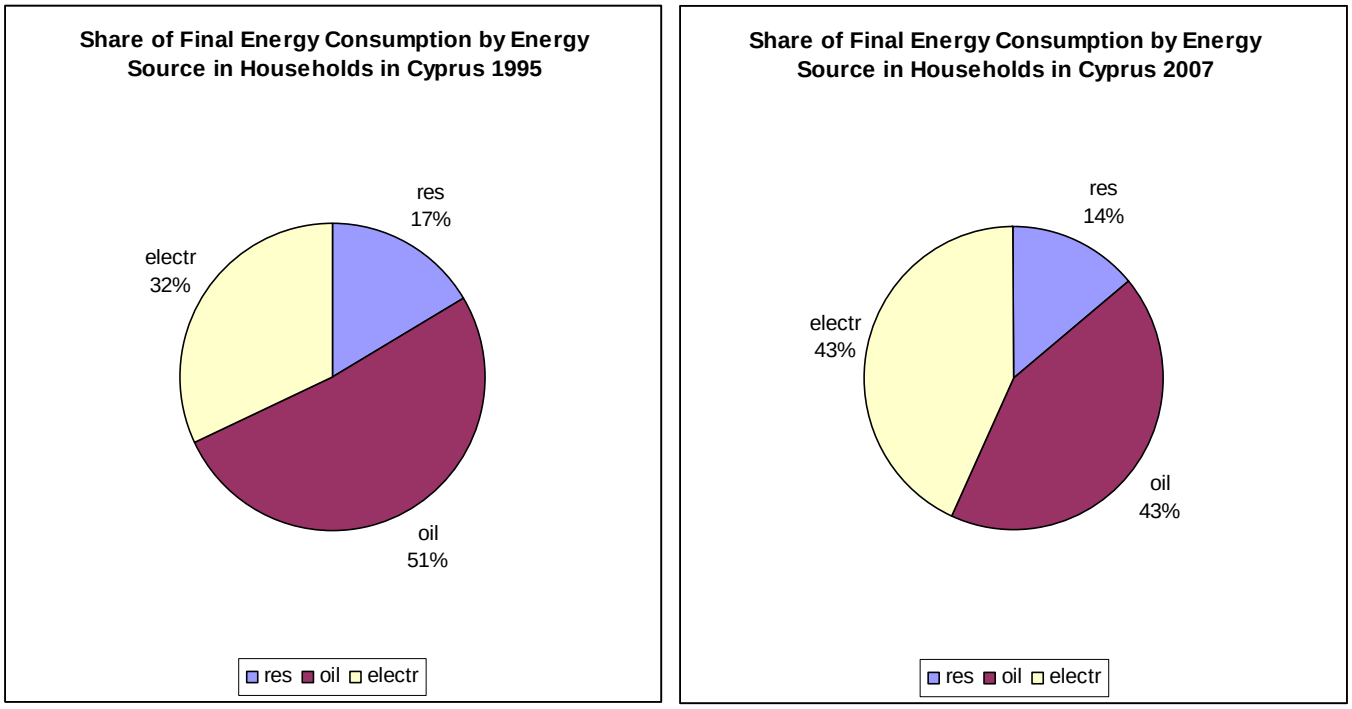


Fig 3.8 Shares of final energy consumption by energy source in house-holds, 1995-2007

3.4 Services

The energy intensity of the sector has increased from 0.022 koe/e00 to 0.024 koe/e00 in 2007. Since Cyprus economy depends heavily on services and particularly tourism the energy intensity of the branch has also increased from 0.049 koe/e00 in 2003 to 0.051 koe/e00 in 2007. During the period 2003-2007 the value added for the hotel&restaurant branch has increased slightly from 793 to 835 which indicates that the touristic product is declining with less income for an economy based on tourism. As already stated before from the electricity consumption increasing trend we note that the electricity intensities of the total sector as well as of the hotel&restaurant branch is also increasing.

Electricity intensity has increased from 171kwh/ke00 in 1995 to 198kwh/ke00 in 2007.

Electricity intensity of the hotel branch has also increased from 566 kwh/ke00 in 2003 to 599 kwh/ke00 in 2007. The explanation of the electricity intensity increase is the air conditioning energy needs

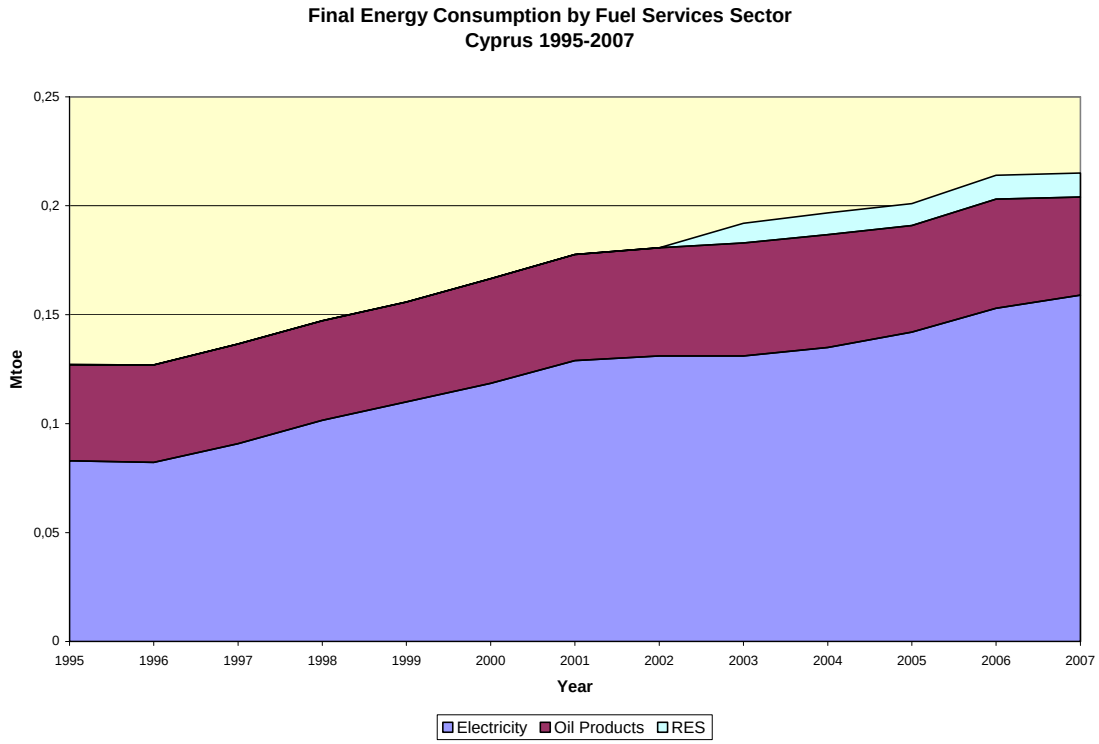


Fig 3.9 Final energy consumption by energy source Services, 1995-2007

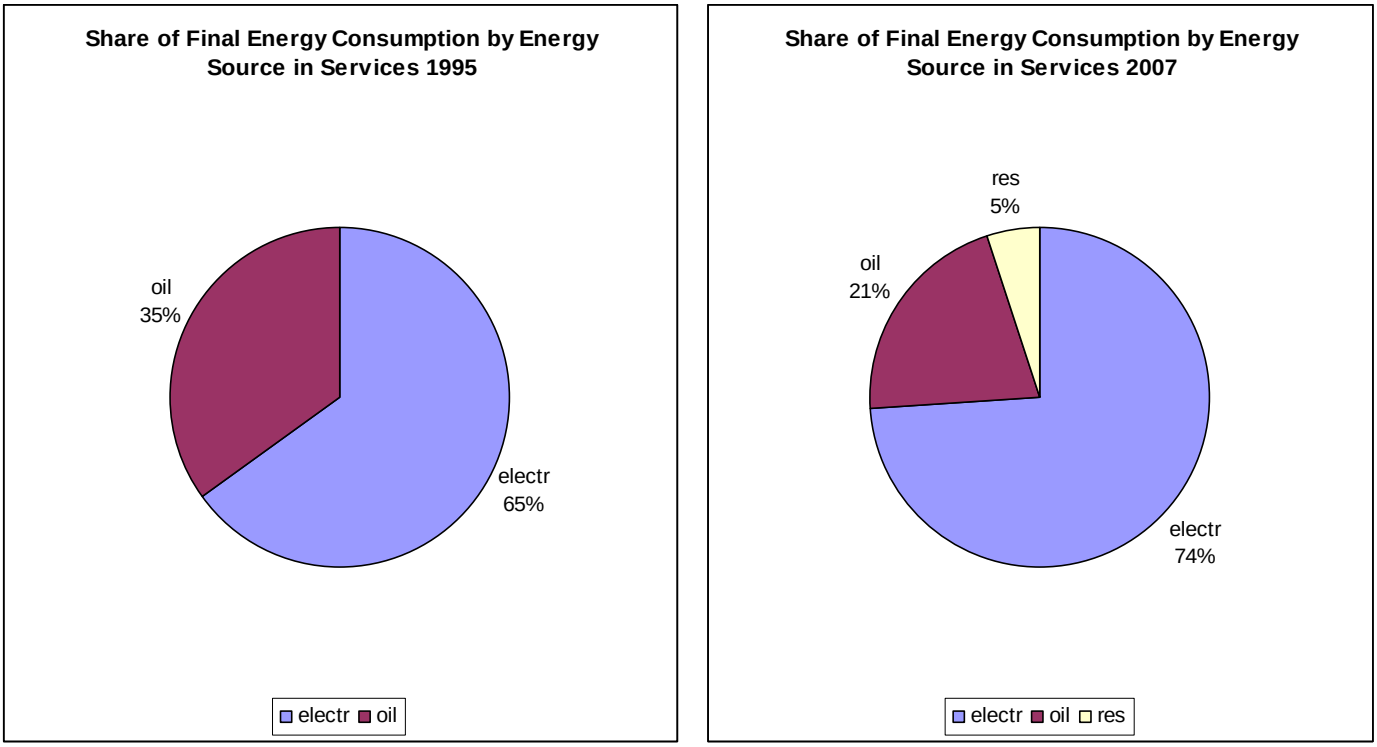


Fig. 3.10 Shares of final energy consumption by energy source in Services, 1995-2007

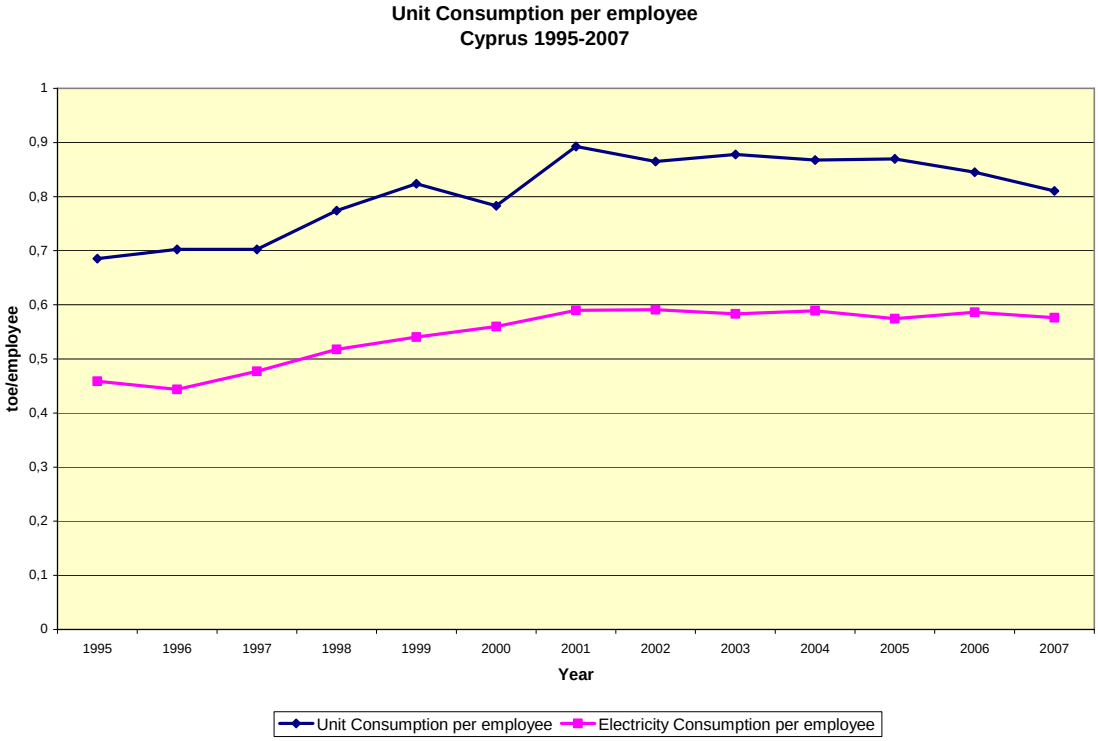


Fig. 3.11 Unit consumptions trend in services sector

From the graphs we note that the unit energy consumption of the tertiary sector has increased from 0.686 toe/employee to 0.81 toe/employee in the period 1995-2007.

The tertiary electricity intensity has also increased from 5337 kwh/employee to 6698 kwh/employee.

With regard to other tertiary sector branches these are of secondary importance due to their share in final energy consumption. For example public administration final energy consumption is estimated to be 2.5% (buildings and transport). The services sector share is 9% of final energy consumption in 2007.

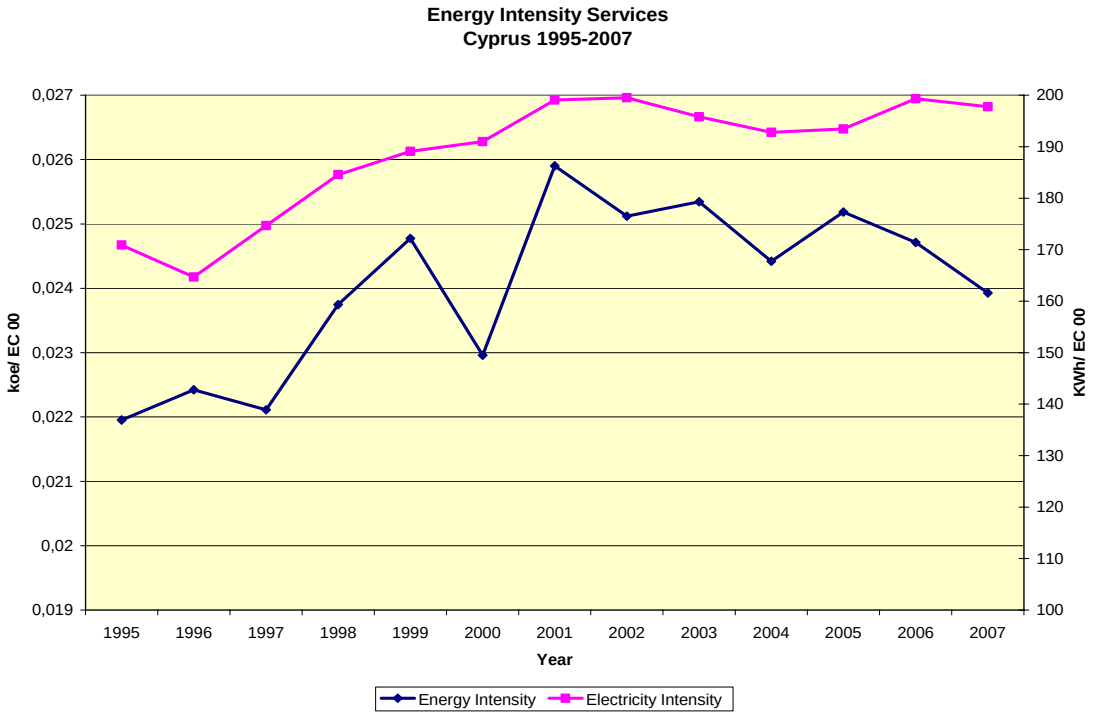


Fig 3.12 Final energy intensity in services sector , 1995-2007

3.5 Transport:

Transport sector is the most energy consuming with share 55% of final energy consumption in 2007. The aviation part is 17% and the road part is 38%. These energy data make Cyprus to have the most energy demanding transport sector as a percentage. Cyprus is isolated from the European mainland (southern boundary of EU) and the only way of transport is via air. There are no passenger ships connecting Cyprus with other countries except in the touristic period. Also Cyprus has no rail infrastructure (train, metro, tram), no domestic or international waterways and the public bus system is not well developed.

Other interesting aspects which affect energy consumption of transport is the long term political conflict and absence of settlement between Greek Cypriots and Turkish Cypriots. Since the 1974 Turkish invasion and occupation of the northern part of the island (36% of the island) the main Nicosia Interna-

tional airport stopped operating and no Cyprus airways flights can travel either to any Turkey airports or use the Turkish FIR. Therefore all Cyprus airways flights from and to Cyprus have to by pass Turkey and this increases the aviation total fuel consumption. Another factor that has to be taken into consideration is the <fuel tourism> since opening the buffer line between the two sides a few years ago. This results is spoiling the transport fuel statistics as many cars crossing the line consume fuel and there is no way to report them correctly.

Since specific energy consumptions are not available the main unit consumptions are given below.

The unit consumption per car has decreased from 0.824 toe/car in 1995 to 0.784 toe/car in 2007. For gasoline cars the unit consumption has increased from 0.906 toe/car in 2003 to 0.936 toe/car in 2007.

For trucks&light vehicles we have in 1995 2.92 toe/vehicle and 2.46 toe/vehicle in 2004.

For aviation the unit consumption has decreased from 0.074 toe/passenger in 1995 to 0.042 toe/passenger in 2007.

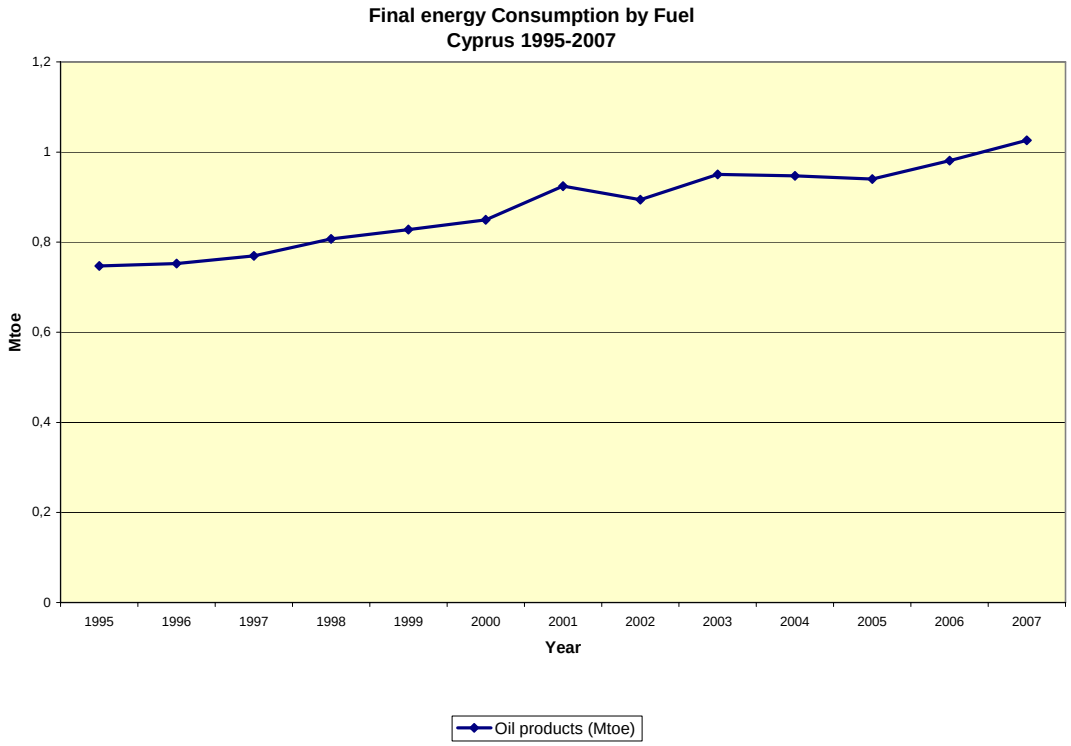


Fig 3.13 Final energy consumption by energy source in Transport

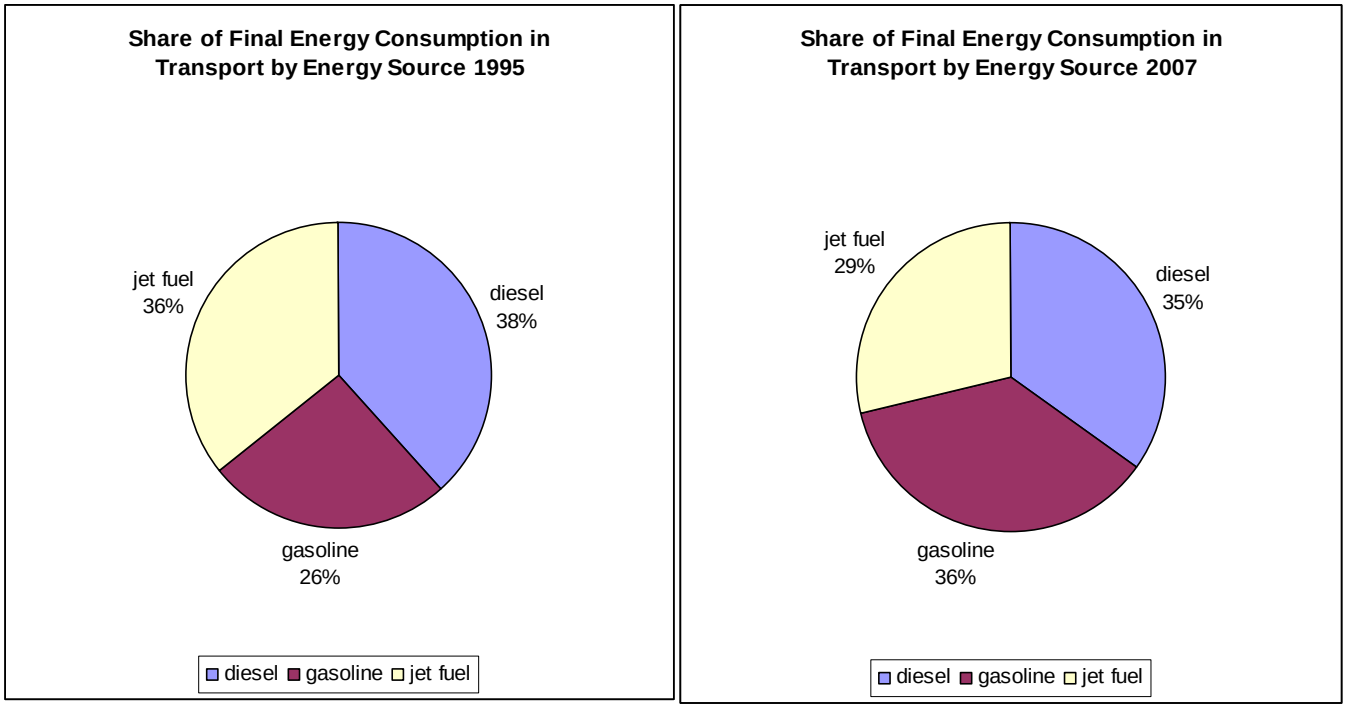


Fig 3.14 Shares of final energy consumption by energy source in transport, 1995-2007

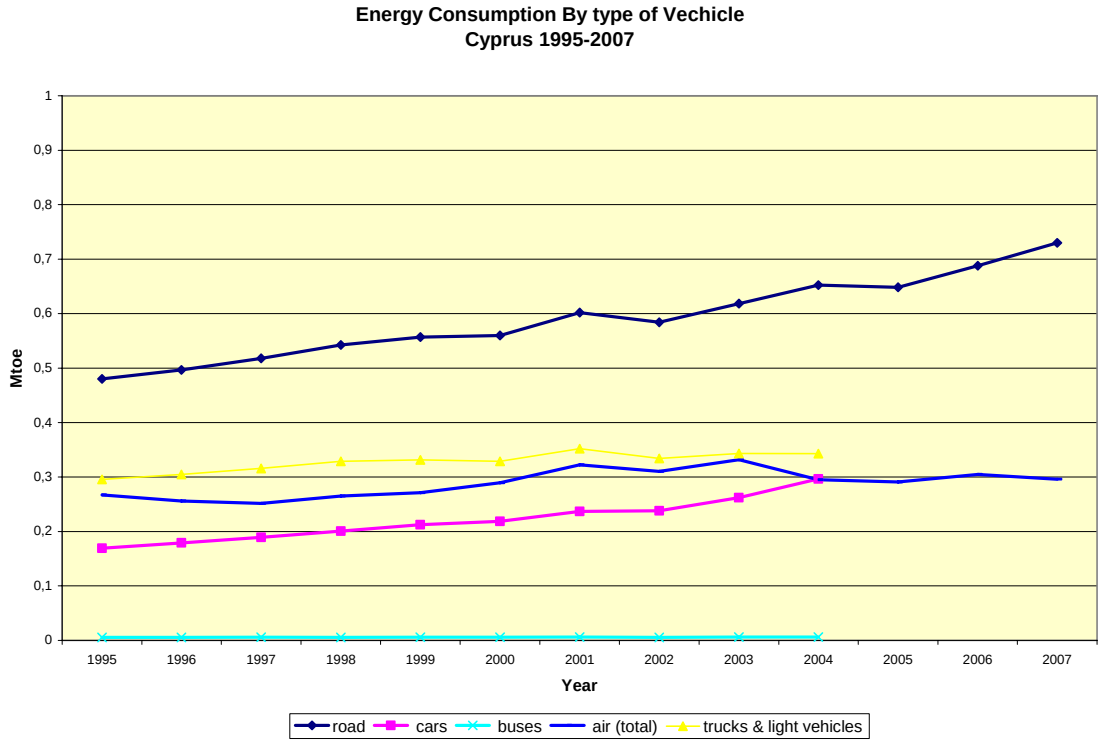


Fig 3.15 Energy consumption by type of vehicle, 1995-2007

3.6 Assessment of energy efficiency/savings through ODEX: total and by sector

During the period 1996-2007 the total energy efficiency index (Odex) has improved by 21% compared with 12.8% of the EU-27. The reasons for the improvement is the energy efficiency improvement of the industrial sector mainly from the ETS installations and also the contribution from the transport sector (55% of energy consumption) which has improved its efficiency from the new clean and fuel efficient vehicles. However we have to consider to some extent statistical errors due to the lack of quality data (complete and accurate) for all energy products and end uses particularly in the household sector. Also before 2004 the diesel fuel consumed was not calculated separately in final consumption depending on end use (heating, transport).

The efficiency index of the industrial sector has improved by 33%. The improvement is attributed in the non metallic mineral branch (cement, bricks) which fall into the ETS but also in the other branches which implement energy saving measures and conduct industrial energy audits. Typical efficiency technologies applied are waste heat recovery, auto production to avoid high electricity seasonal tariffs, waste for energy.

Between 1996-2007 the household sector shows small improvement 4% in the Odex. Even though the quality of data in this sector is not very good we can justify some improvement after the year 2004 when Cyprus entered the EU and the measures implemented have started to create energy savings. Prior to accession no significant policies existed. Actually the high impact measures such as the Buildings Directive has been implemented partly since 1/1/2008.

The transport sector shows an improvement of 21% in the Odex in the period 1996-2007. Since in this period the passengers traffic using public transport has decreased drastically means that the improvement is caused mainly by the penetration with clean and fuel efficient vehicles. Until 2004 diesel fuel prices for transport were subsidised by gasoline. Therefore the large engine capacity private vehicles were replaced gradually when prices were liberalised. Another factor affecting the efficiency of this sector is energy consumption of aviation (17% of final consumption). From the jet fuel consumption per passenger a decrease of 43% has taken place in the same time period (new fleet).

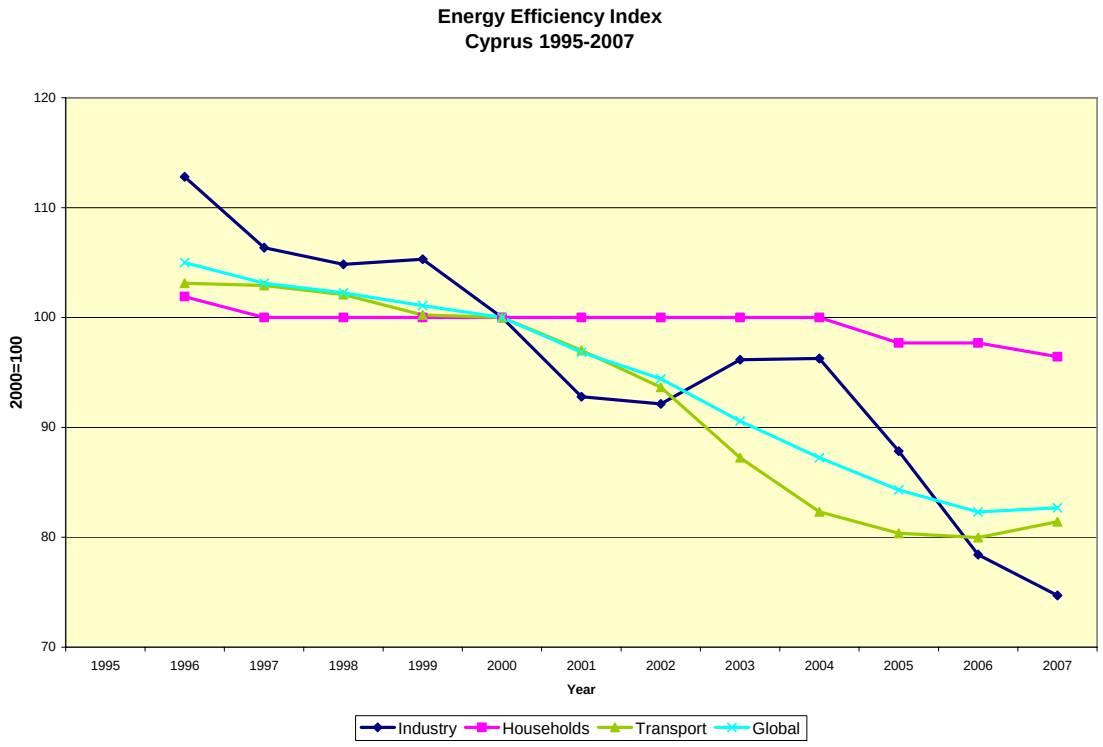


Fig 3.16 Energy Efficiency Index, 1996-2007

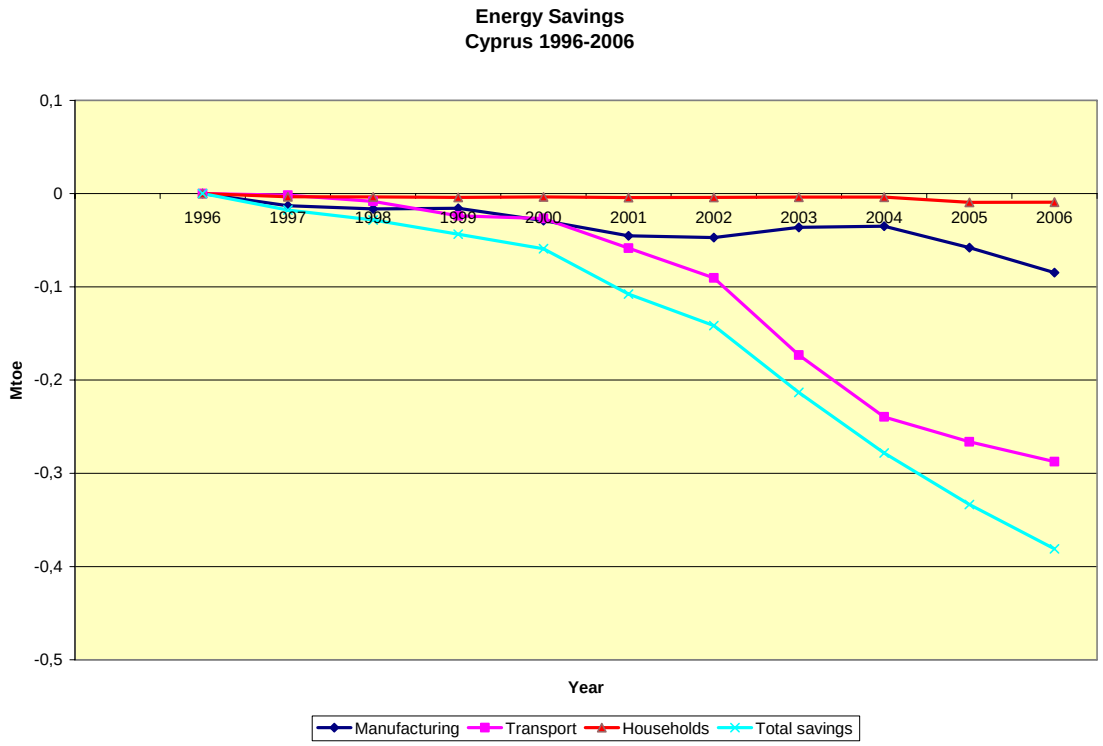


Fig 3.17 Energy Savings by Sector, 1996-2007

3.7 CO_2-emissions trends

The total CO2 emissions from fuel combustion has increased from 4.77 MtCO2 in 1995 to 7.43 Mt CO2 in 2007. The increase is mainly caused by the low energy efficiency of the electricity generation which is 32% in the time period and is oil based since there is no natural gas.

The total direct CO2 emissions from all sectors have increased from 2.6Mt CO2 in 1995 to 3.7MtCO2 in 2007. The transport sector CO2 emissions have increased from 1.15 Mt to 2.19Mt and consists the largest share in total emissions (61% in 2007 direct emissions). This is expected since the transport sector consists the largest share of final energy consumption and also because the number of private vehicles has increased significantly whereas public transport has declined drastically in the same period. Cyprus has the lowest rate in EU in public transport usage 1.7% (EU average 15%). The positive contributions in CO2 reductions from road transport are the fuel substitutions after year 2000 where light duty vehicles where phased out gradually with smaller gasoline cars since diesel fuel stopped to be subsidised and also the few measures that have been implemented since 2004 with regard to lower excise tax for registering new vehicles with low CO2 emissions , grants for hybrid/electric cars and also the incentives provided for scraping old cars.

The industry sector CO2 emissions have changed from 0.99Mt to 1.053Mt in 1995-2007. The share is 29.3% in direct emissions in 2007. The almost same emissions are justified from the fact that 10 undertakings consuming more than 65% of industry final energy consumption are within the emissions trading scheme and they are implementing energy efficiency, RES measures fulfil their obligations in the national allocation plan.

The household sector CO2 emissions have decreased from 0.317 Mt to 0.208Mt in the period 1995-2007. This is attributed to fuel substitutions which took place including the electric appliances (cooking, air conditioners for heating) and solar thermal for domestic hot water. The share of households in direct emissions is 5.8% in 2007.

The services sector CO2 emissions have increased from 0.039 Mt to 0.085 Mt. The share in direct emissions is small 2.5% in year 2007.

The agriculture sector CO2 emissions have increased the CO2 emissions from 0.046 Mt to 0.059 Mt in 1995-2007 period.

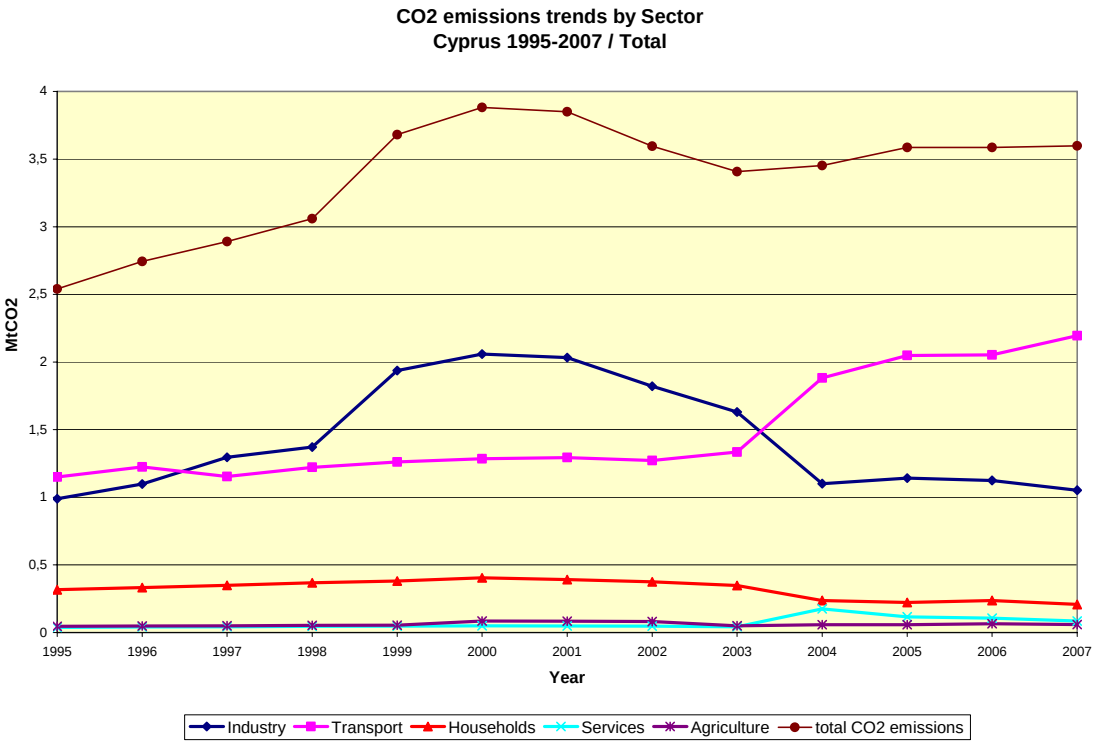


Fig 3.18 CO2 Emissions trends by Sector, 1995-2007

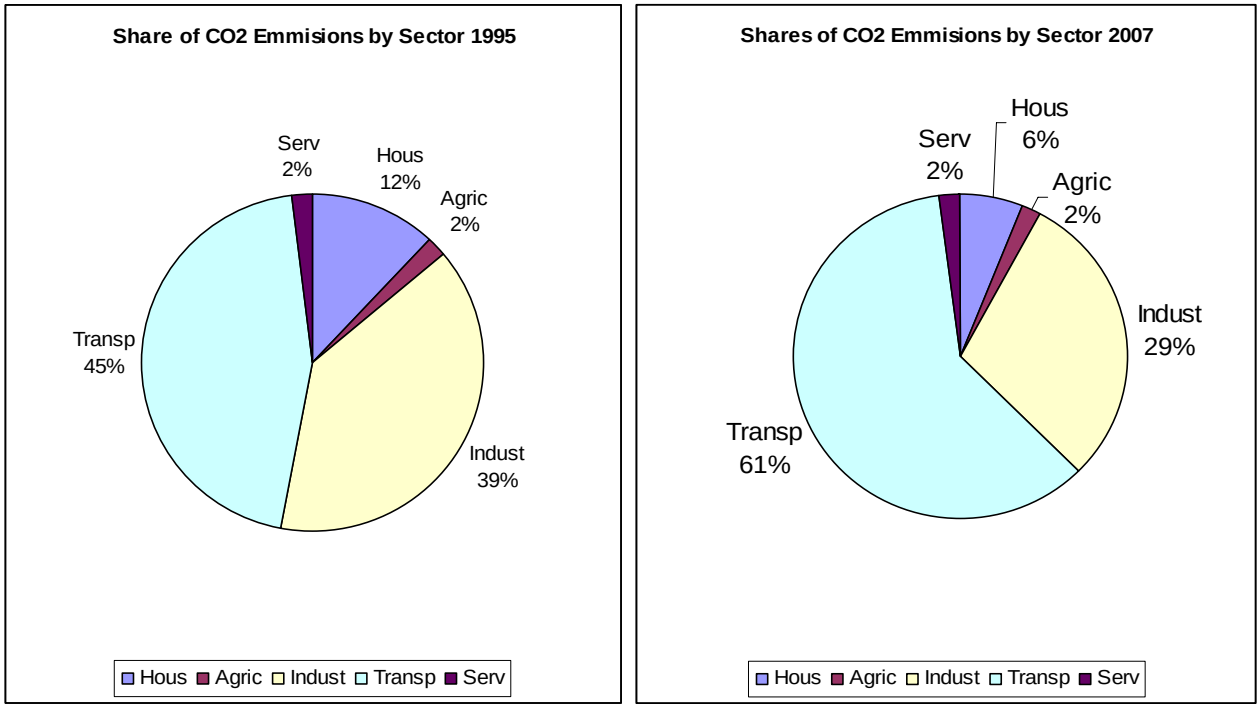


Fig. 3.19 Shares of CO2 Emissions by Sector

4 Energy efficiency measures

4.1 Recent Energy Efficiency Measures

Residential Sector

Law for the energy performance of buildings. Setting of minimum energy efficiency requirements for new/renovated buildings including U values, efficiencies of HVAC systems. A national calculation methodology is developed. Implemented since 1/1/2008.

Energy certification of new/existing buildings based on the national calculation methodology. It will be implemented by end of 2009.

Mandatory maintenance and energy inspection of heating, air conditioning systems. The regulations will be applied by 1/10/2009.

Providing free CFL lamps for every household (5 nos).

Financial incentives for thermal insulation in existing dwellings, solar thermal, PV.

Mandatory installation of solar thermal heater in new dwellings.

Transport Sector

New national strategy for public transport. Legislation for the creation of 6 new bus companies and criteria of new services provided. Replacement of all buses with environmentally friendly. Other infrastructure such as stations, bus lanes, ticketing etc.

Financial incentives for purchasing of hybrid/electric cars.

Legislation for the taxation of new vehicles based on CO_2 emissions.

Implemented since 2007 all the new vehicles are taxed with a specific tax coefficient based on the CO_2 emissions which penalises up to 30% the high polluting cars versus the small clean cars which receive reductions proportionally.

Grants provided by Government for scrubbing of old cars.

Industrial Sector

Emissions trading scheme which includes 10 installations in the non mineral sector.

Financial incentives provided by Government for investments in energy efficiency technologies.

Legislation for the promotion of cogeneration. Financial support scheme particularly for CHP including capital grants and a feed in tariff, priority access system.

Tertiary Sector

Law for the energy performance of buildings. Setting of minimum energy efficiency requirements for new/renovated buildings including U values, efficiencies of HVAC systems. A national calculation methodology is developed. Implemented since 1/1/2008.

Energy certification of new/existing buildings based on the national calculation methodology. It will be implemented by end of 2009.

Mandatory maintenance and energy inspection of heating, air conditioning systems. The regulations will be applied by 1/10/2009.

Financial incentives provided by Government for energy efficiency investments.

Action plan for green public procurement. Setting efficiency criteria for public purchasing of equipment, vehicles, appliances.

Cross-cutting measures

Financial incentives from the Government special fund for energy efficiency and RES investments. Capital grants and feed in tariffs for chp, PV, wind, thermal-electric, geo-thermal technologies. Priority access to the grid for RES and obligation of the national utility company to buy the electricity fed into the grid.

Information/awareness campaigns for energy efficiency and RES. Training workshops taylor made for energy efficiency technologies and energy management.

4.2 Patterns and Dynamics of Energy Efficiency Measures

In this section the use of spider graphs illustrates the patterns for each separate sector

of the energy policies and measures in Cyprus.

Spider diagrams are a graphical presentation of the distribution of energy efficiency

policies. They provide an overview of the type of measures a country has implemented.

Spider diagrams are constructed by assigning each energy policy and measure in each

sector to one of the following categories:

- Financial
- Fiscal
- Information-Education
- Legislative-Normative

• Legislative-Informative

• Infrastructure

• Social Planning/ Organisational

• Cooperative Measures

• Cross-cutting Measures with Sector Specifics

The wider spread the policies in a sector the more equally spread the measures on the

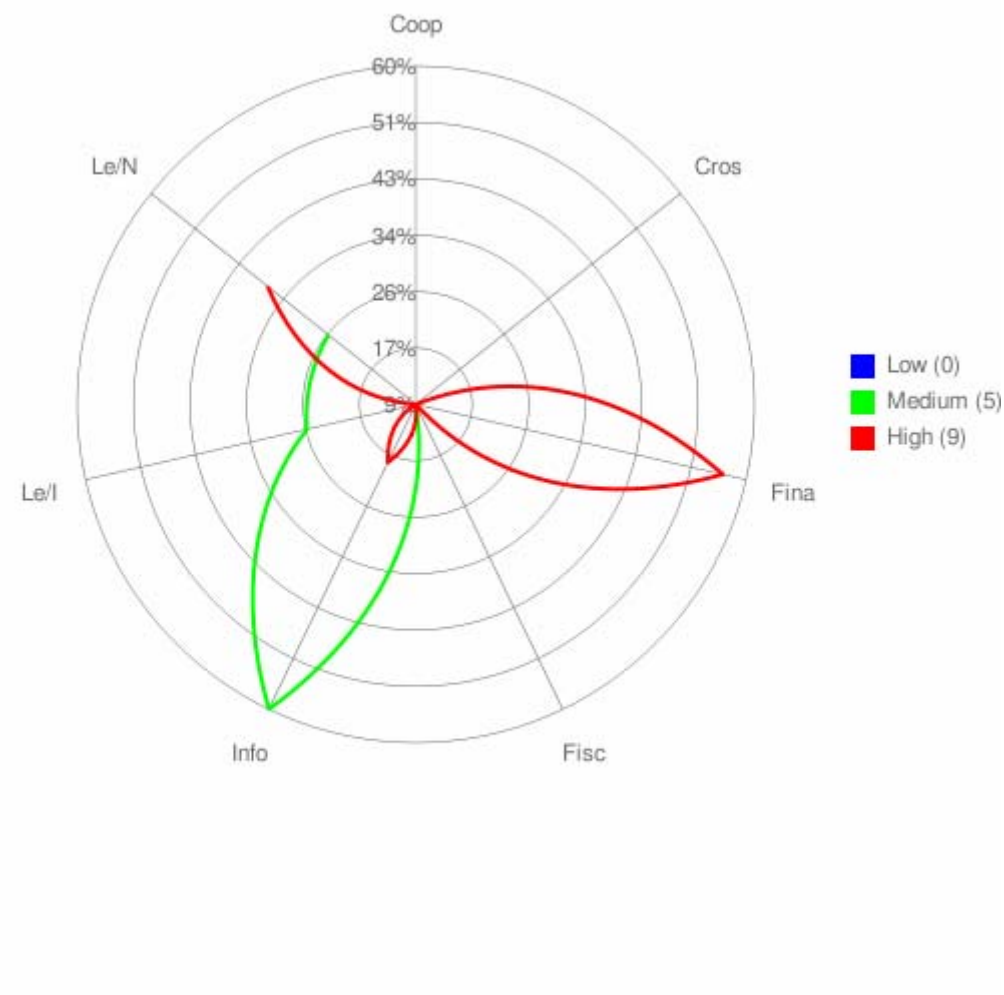
different axes.

Cyprus has joined the EU in 2004 and has transposed, implemented the European energy policy. Prior to accession no National energy efficiency policies existed. Therefore the spider graphs are based on one period after 2004.

Residential Sector

Until 2004 this sector did not have any policies and measures (building energy regulations, financial incentives etc.). Presently the EU policies are implemented giving emphasis in the full application of the energy performance of buildings directive. Additionally with the obligations arising from the EU aquis Cyprus operates a special fund for providing grants/subsidies in existing households for energy efficiency/RES. Some specific measures which are not EU imposed is the free CFL lamps program to all households and the mandatory maintenance/inspection of boilers, air conditioning systems (boiler inspection is optional according to EPBD).

Energy efficiency measure patterns residential sector: development of measure by type over quantitative impact (CY)



Coop: Co-operative Measures

Cros: Cross-cutting with sector-specific characteristics

Fina: Financial

Fisc: Fiscal/Tariffs

Info: Information/Education

Le/I: Legislative/Informative

Le/N: Legislative/Normative

Transport Sector

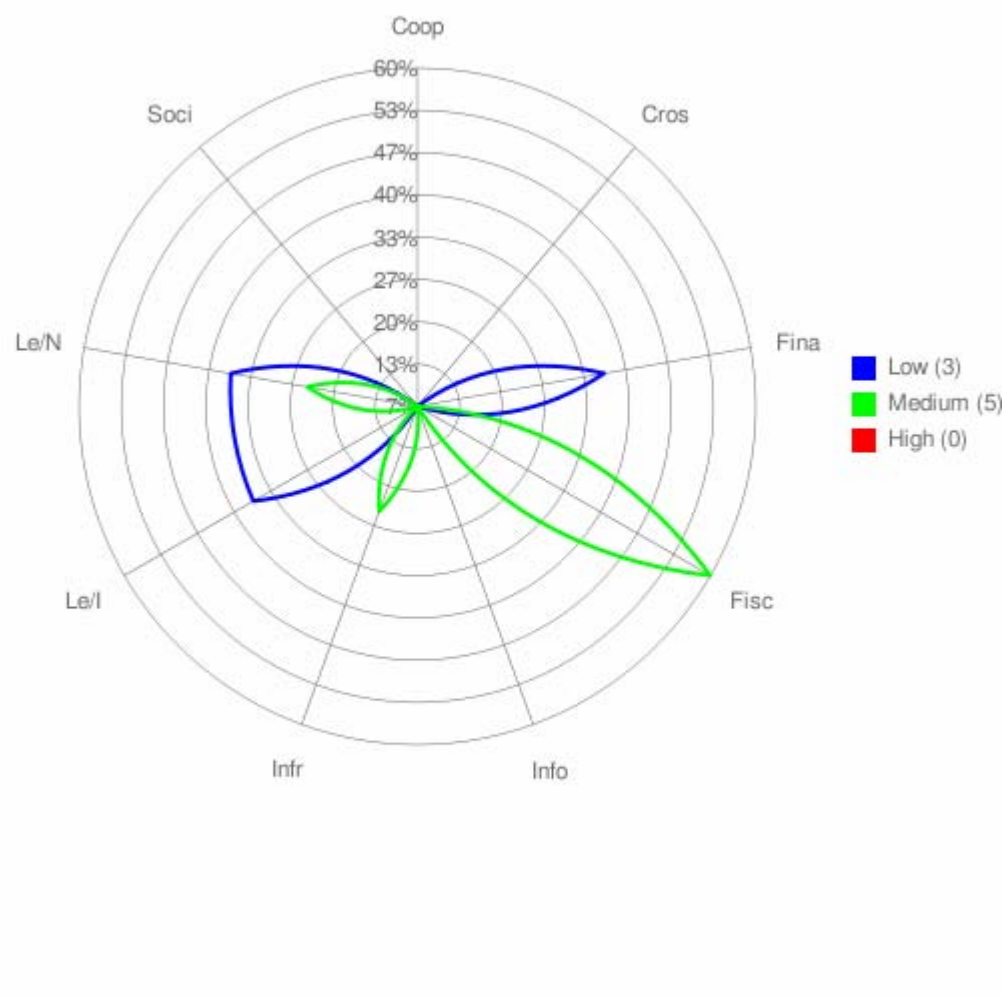
As we know there are very few EU policies for energy efficiency in transport.

This sector which is the most energy consuming has applied country specific measures such as the vehicle taxation system based on the CO2 emissions, scrabbing of old cars and financial incentives for hybrid/electric vehicles.

The most important policy however is the development of a new public transport system which will be implemented based on a Law enacted.

A special condition for Cyprus is the aviation fuel consumption which is around 17% of final energy consumption. No specific measures are applied but the inclusion in the new ETS scheme will help in energy savings.

Energy efficiency measure patterns transport sector: development of measure by type over quantitative impact (CY)

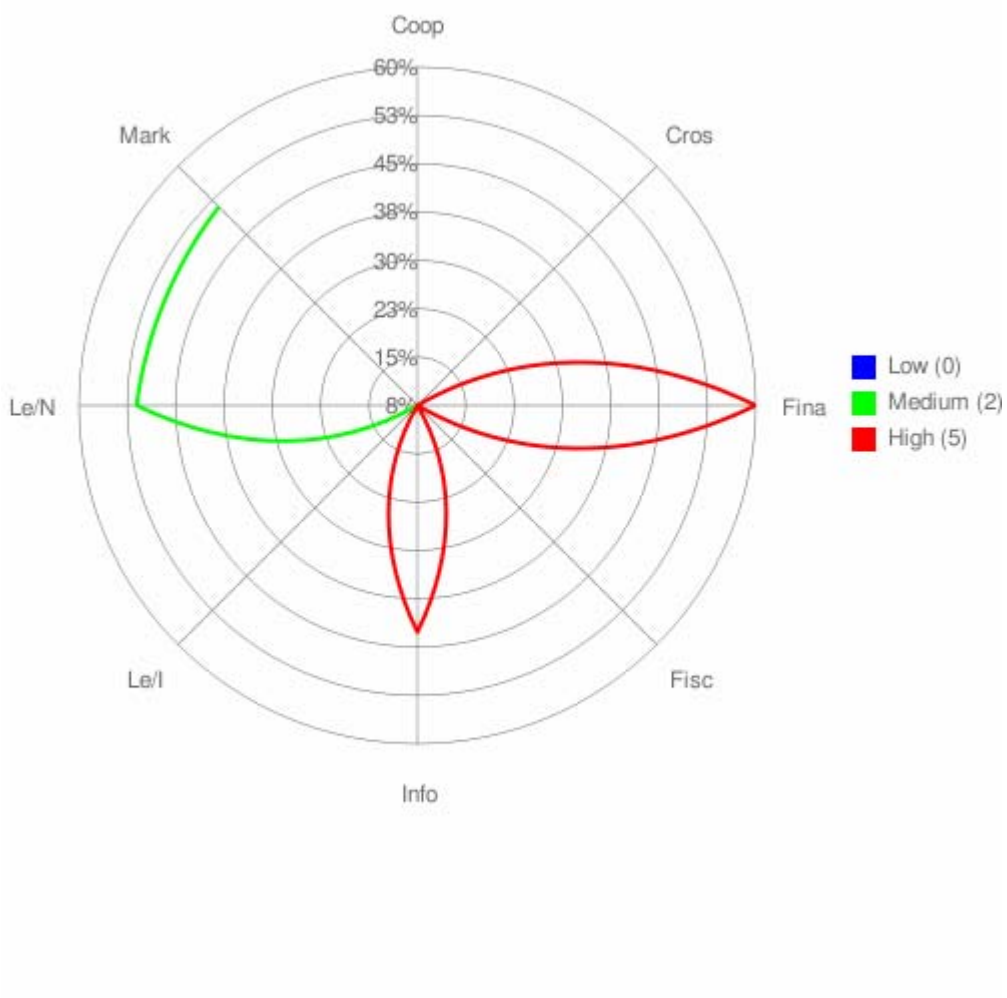


Coop: Co-operative Measures
Cros: Cross-cutting with sector-specific characteristics
Fina: Financial
Fisc: Fiscal
Info: Information/Education/Training
Infr: Infrastructure
Le/I: Legislative/Informative
Le/N: Legislative/Normative
Soci: SocialPlanning/Organisational

Industrial Sector

Around 65% of industrial energy consumption falls within the emissions trading scheme. Apart from the market based instrument the Government operates the financial support scheme which provides grants/subsidies for energy efficiency investments and all industries either in ETS or not are eligible to apply.

Energy efficiency measure patterns industry sector: development of measure by type over quantitative impact (CY)

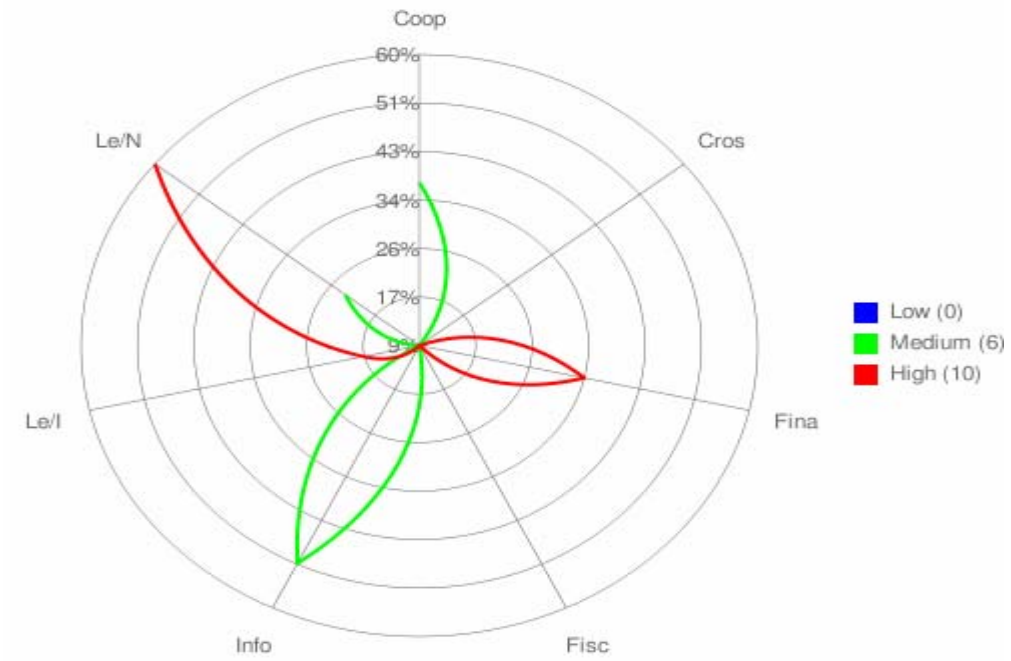


Coop: Co-operative Measures
Cros: Cross-cutting with sector-specific characteristics
Fina: Financial
Fisc: Fiscal/Tariffs
Info: Information/Education/Training
Le/I: Legislative/Informative
Le/I: Legislative/Informative
Mark: New Market-based Instruments

Tertiary Sector

Until 2004 this sector did not have any policies and measures (building energy regulations, financial incentives etc.). Presently the EU policies are implemented giving emphasis in the full application of the energy performance of buildings directive. Additionally with the obligations arising from the EU aquis Cyprus operates a special fund for providing grants/subsidies in existing commercial buildings for energy efficiency/RES. Some specific measures which are not EU imposed is the free CFL lamps program and the mandatory maintenance/inspection of boilers, air conditioning systems (boiler inspection is optional according to EPBD).

Energy efficiency measure patterns tertiary sector: development of measure by type over quantitative impact (CY)

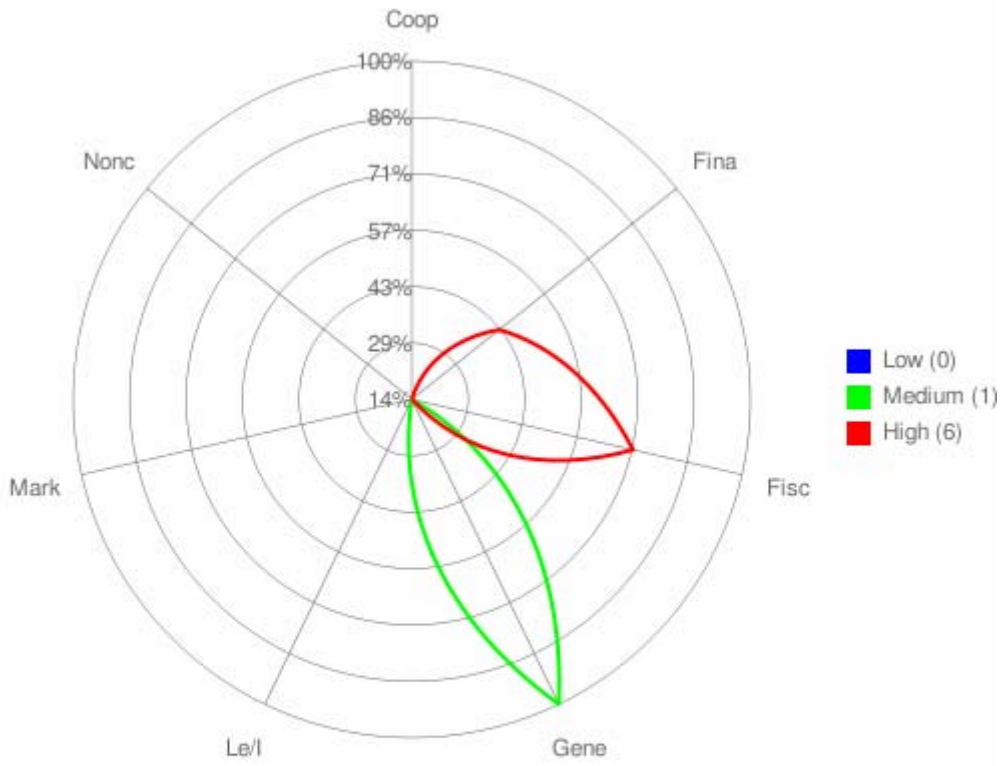


Coop: Co-operative Measures
Cros: Cross-cutting with sector-specific characteristics
Fina: Financial
Fisc: Fiscal/Tariffs
Info: Information/Education/Training
Le/I: Legislative/Informative
Le/I: Legislative/Informative

Cross-cutting measures

The main cross cutting policies are firstly the Governmental financial support schemes providing grants and subsidies for energy efficiency/RES covering all energy sectors and information/awareness campaigns and training for the general public as well as professional groups for energy savings opportunities and good practices.

Energy efficiency measure patterns general cross-cutting sector: development of measure by type over quantitative impact (CY)



Coop: Co-operative Measures

Fina: Financial Measures

Fisc: Fiscal Measures/Tariffs

Gene: General Energy Efficiency / Climate Change / Renewable Programmes

Le/I: Legislative/Normative Measures

Mark: Market-based Instruments

Nonc: Non-classified Measure Types

4.3 Innovative Energy Efficiency Measures

As mentioned earlier Cyprus joined the EU in 2004 and has transposed and is being implementing the aquis in energy efficiency. The energy savings potential is large particularly from the buildings and transport sectors. In order to exploit this potential the most important is to implement the existing EU policies such as the energy performance of buildings directive and secondly to develop an effective public transport system attractive to the citizens. Therefore the emphasis and priority is to apply the essentials in energy efficiency and not to introduce new innovative measures for further improvement.

However a few measures implemented can be considered as innovative such as:

Taxation system based on CO_2 emissions for vehicles.

Cyprus Government in order to promote the purchase of clean and efficient cars has amended in 2006 the national legislation regarding vehicle taxation (excise duty) for new and used imported. The new legislation imposes excise duties on vehicles in a more rational way by using new tax coefficients based on engine capacity, CO_2 emissions and also on the vehicle technology. It must be noted that the previous vehicle taxation policy did not have any CO_2 criteria and the excise duties were not fair for small cars. The excise duties imposed are differentiated based on the CO_2 emissions of the vehicles from a 30% discount up to 120g/km to an increase of 20% for emissions above 250g/km.

A second measure from the building sector is the mandatory installation of a solar thermal water heater in new dwellings and building provisions for installing PV. These are falling within the building regulations for complying with the energy performance of building directive. The new measure will be applied by end of 2009.

4.4 Energy efficiency measure evaluations

4.4.1 Semi-quantitative Impact Estimates of Energy Efficiency Measures

The annex 1 includes a summary of the energy efficiency measures and policies according to the MURE database. Each sector of end use is tabulated separately. The last column shows the semi-quantitative impact estimates of energy efficiency measures.

Since Cyprus does not have long experience in energy efficiency policies and measures it is difficult to make quantitative assessments in the energy savings delivered. Under the scope of the energy services directive all the measures included in the national energy efficiency action plan will be calculated in terms of energy savings according to the methodologies (top down, bottom up). These measures will be counted towards achieving the target.

From the methodologies prepared by the Commission up today some preliminaries estimates have been carried out for the energy savings caused from energy efficiency measures.

In parallel using the criteria in the MURE database the impact of measures can be characterised. From the tables we can select three measures which have the most impact namely:

1) the legislation for the energy performance of buildings, minimum efficiency requirements for new/renovated buildings. Considering that no building codes, thermal standards were applied before the new requirements will deliver according to calculations a minimum 30% energy savings comparing with the existing building stock (specific energy consumption kwh/m2/year).

2) The financial incentives provided for energy efficiency investments in buildings and industry. Most technologies are covered.

3) National strategy for the development of public transport. Radical changes and significant investments in developing high quality, effective and environmentally friendly mobility covering all regions.

4.4.2 Lessons from Quantitative Energy Efficiency Measure Evaluations

Cyprus prior to the ESD directive did not have any measurement and verification methodologies to calculate the energy savings from the measures. Up to now some basic engineering methods were applied to estimate the energy savings or via measurements from energy audits.

The financial support schemes which operate since 2004 have been evaluated in terms of energy savings. The estimates were carried out using some of the bottom up methodology formulae as proposed by the Commission in the ESD directive. Five technologies were evaluated namely:

1) thermal upgrading of existing households, energy savings in 2008, 7000 toe

2) CFL lamps , energy savings 6,600 toe

3) solar thermal heaters , energy savings 10,000 toe

4) hybrid/electric cars , energy savings 500 toe

Evaluation of building regulation

With regard to the energy savings caused by the implementation of the energy performance of buildings directive the estimates are based on the calculation methodology used for the energy certification of the buildings (asset rating, standardised conditions). The reference value for a new dwelling according to the asset rating of the EPBD will be 140 kwh/m2/year. The energy savings will be around 30% comparing with the existing building stock. The estimate of energy savings from the implementation of the new energy building regulation in new dwellings is 8,000 toe in 2009.

5 National Developments under the EU Energy Efficiency Directive and the 20% Energy Efficiency Target of the EU

Cyprus has submitted in June 2007 the first National energy efficiency action plan in compliance with the ESD directive 2006/32/EC. The European Commission has evaluated all member states national reports and has communicated to us that the plan is overall acceptable, coherent, realistic to achieve the target adopted with some minor remarks regarding over-estimating the energy savings from some specific measures. The target adopted is 10% (185000 toe) in 2016 (higher than the 9% indicative of the directive) and the intermediate target is 3% (60000 toe) in 2010.

The potential for energy savings in the building and transport sector is significant. This is due to the lack of any building energy regulations prior to the accession of Cyprus in EU and also the public transport system is not well developed and the use of buses has decrease drastically the last 10 years. In 2008 the final energy consumption of transport is around 53% (36% road, 17% air).

Therefore the first NEEAP includes new strong policies and measures to exploit the huge potential in these two sectors buildings and transport.

In the building sector the most important policy is the implementation of the energy performance of buildings directive. Since 1/1/2008 Cyprus applies minimum energy efficiency requirements for new buildings which consist part of the building authorisation procedure. It has to be noted that this is the first building energy code applied. In addition the other main provisions of the directive will be implemented by the end of 2009 such as the energy certification of buildings and the mandatory maintenance and inspection of heating , air conditioning systems. An innovative new measure adopted is the mandatory installation of a solar thermal system in new dwellings.

In the transport sector the NEEAP put particular emphasis but the most important is the recent developments where The Government has decided and implements a whole new long term strategy for public transport. In this respect a Law has been enacted in July 2009 which sets criteria and other contractual terms, aspects for establishing a new public transport system with buses. According to the new legislation 6 new consortium companies will be created from the hundreds operating today. The bus

service will cover all the regions of the island with new environmental buses and cheap fares. Also the school bus system will be applied for transferring all students for free (Government subsidies).

According to the new contracts which will be signed by end of 2009 there are terms and conditions for the purchasing of 1200 new modern, environmental buses whereas today there are 1030 old ones. Cyprus has the lowest indicator of usage of public transport means (1.7%, full dependency on private vehicles).

In general the main objective is a radically new bus system and associated infrastructure which will be effective and assure the fast, safe, comfortable, environmental friendly and affordable mobility for the general population.

The impact of the new public transport strategy in energy savings will be very high and easily monitored from the transport fuel consumption.

Annex 1

Energy Efficiency Measure Summary by Country

HOUSEHOLD

Code	Title	Status	Type	Starting Year	Ending Year	Semiquantitative Impact
CY1	Law for the enegy performance of buildings	Ongoing	Legislative/Normative	2007		High
CY2	Energy labelling and relevant information of household appliances	Ongoing	Legislative/Informative	2004		Medium
CY3	Governmental financial support schemes for investments in RES/RUE/EE	Ongoing	Financial, Information/Education	2003		High
CY4	Efficiency requirements for hot water boilers, refrigerators, lighting ballasts	Ongoing	Legislative/Normative	2004		Medium
CY6	Scheme for subsidising CFL lamps	Ongoing	Financial	2007	2011	High
CY9	Information, awareness policies for energy savings	Ongoing	Information/Education	2004		Medium

TRANSPORT

Code	Title	Status	Type	Starting Year	Ending Year	Semiquantitative Impact
CY1	Grants for purchasing hybrid, dual propulsion vehicles, electric cars	Ongoing	Financial	2005		Low
CY5	Vehicle taxation including CO2 criteria	Ongoing	Fiscal	2007		Medium
CY8	Periodic mandatory inspection of motor vehicles (MOT)	Ongoing	Legislative/Normative	1995		Medium
CY12	Energy and CO2 labelling for cars	Ongoing	Legislative/Informative	2003		Low
CY13	Fiscal incentives for old cars scrapping	Ongoing		2008		High
CY14	Registration fee and annual vehicle tax reduction for clean vehicles.	Ongoing	Fiscal	2007		Medium
CY15	Express Bus transportation to airport	Ongoing	Infrastructure	2008		Medium
CY16	Introduction of biofuels	Ongoing	Legislative/Normative	2007		Low
CY17	National Strategy for the development of public transport	Ongoing	Co-operative Measures , Infrastructure	2010		High

INDUSTRY

Code	Title	Status	Type	Starting Year	Ending Year	Semiquantitative Impact
CY2	Combined Heat and Power Strategy	Ongoing	Legislative/Normative	2007		Medium
CY3	Governmental grants/subsidies scheme for the promotion and encouragement of RES, energy saving and the creation of a special fund for financing or subsidising of these investments	Ongoing	Financial, Information/Education/Training	2003		High
CY4	Emission Trading Scheme (2008-2012)	Ongoing	New Market-based Instruments	2008	2013	Medium
CY5	Information Campaign for Energy Efficiency, RES, RUE	Ongoing	Information/Education/Training	2006		High

TERTIARY

Code	Title	Status	Type	Starting Year	Ending Year	Semiquantitative Impact
CY1	governmental financial support schemes for RES/RUE/EE	Ongoing	Financial	2004		High
CY2	Energy performance buildings regulations	Ongoing	Legislative/Informative, Legislative/Normative	2007		High
CY3	Eco design requirements for energy using products (hot water boilers, refrigerators, ballasts)	Ongoing	Legislative/Normative	2007		Medium
CY7	Action plan for green public procurrement	Ongoing	Co-operative Measures	2007		Medium
CY8	Information, awareness, training for energy efficiency and RES technologies	Ongoing	Information/Education/Training	2004		Medium

CROSS CUTTING GENERAL

Code	Title	Status	Type	Starting Year	Ending Year	Semiquantitative Impact
CY1	Governmental grants, subsidies scheme for the promotion of RES, RUE, energy saving investments (Enterprises with economic activity)	Ongoing	Financial Measures, Fiscal Measures/Tariffs	2003		High
CY2	Governmental grants/subsidies scheme for the promotion and encouragement of RES, energy saving and the creation of a special fund for financing or subsidising of these investments (natural persons and enterprices without economic activity)	Ongoing	Financial Measures, Fiscal Measures/Tariffs	2003		High
CY4	Information, awareness policies for energy savings	Ongoing	General Energy Efficiency / Climate Change / Renewable Programmes	2004		Medium

Annex 2

Country Profile

mure ODYSSEE

Energy Efficiency Profile : Cyprus

October 2008

Energy Efficiency Trends

Overview

Over the period 1996-2006, the energy efficiency index for the whole economy (ODEX) decreased by 15% compared to 13% for the EU 27. The reasons for that is partly because of the improvement of energy efficiency in industry, particularly the undertakings in the emissions trading scheme. Also energy efficiency of the household sector improved with the implementation of effective measures. However the quality and completeness of statistical data may have influenced this result. Another issue to be considered is the fact that Cyprus is a tourist destination which affects the end use energy consumption and is not steady over the years. The tourist industry has been declining the last few years.

Industry

The efficiency in the industrial sector has improved by 27%. The non metallic branch which falls under the emissions trading scheme consumes approximately 50% of energy consumption in industry. This is mainly reflecting the energy savings in the cement industry which has developed CHP technology and also using waste, biomass for energy . Also there has been systematic training of industry managers and engineers in energy management, good practices and energy auditing.

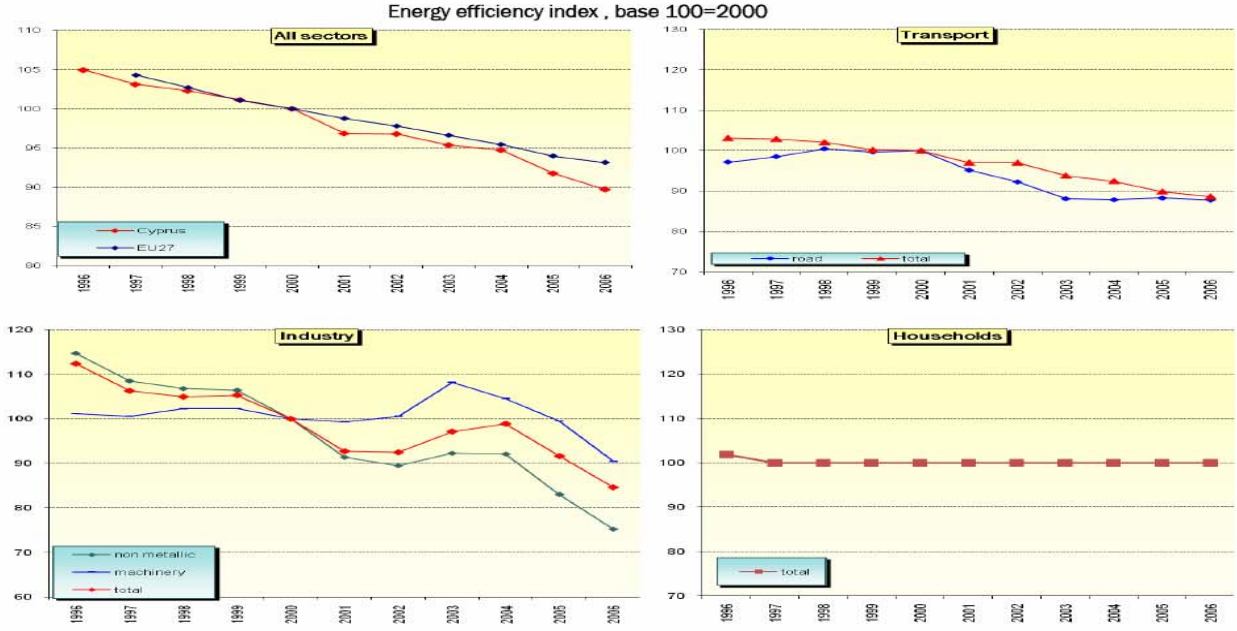
Households

Between 1996 and 2006 the energy efficiency index in the household sector is rather flat. This is due to the to the fact that Cyprus has entered the EU in 2004 and implemented policies and measures in energy efficiency afterwards. Since the accession there was no national energy efficiency policy or mandatory building codes. However the improvement is caused to energy efficient electric appliances, CFL lamps and use of solar water heaters.

Transport

This sector shows a 14% improvement in the period 1995-2006. This trend is particularly observed since 1996. This development is mainly caused by efficiency improvements in the private car stock as a consequence of the penetration of new more efficient cars. In Cyprus the public transport is not developed and has decreased drastically the last 10 years. Another important factor is that before the year 2000 diesel oil for transport was subsidised and was much cheaper than gasoline. This resulted in a stock of large high consuming vehicles. After the change of the legislation for fuel taxation, the diesel and gasoline are almost priced the same resulting the phasing out of these vehicles and the trend towards smaller and efficient cars. Also some effective measures have been applied the last few years such as the incentives provided for scrapping of old vehicles

Energy efficiency index , base 100=2000



Source: ODYSSEE data base

Energy Efficiency Policy Measures

Institutions and programmes

Ministry of Commerce, Industry and Tourism is responsible for the adoption and implementation of energy efficiency policy including RES, RUE, Energy efficiency. The Cyprus Institute of Energy was founded in 2000 to assist the Government in the promotion and implementation of policies and measures in RES and energy efficiency. One of the main tasks of Cyprus institute of energy is the operation of the Governmental financial support scheme for investments in RES/energy efficiency, the participation in IEE projects and assisting the Government with the transposition, promotion, implementation of EU energy policies in Cyprus.

Industry

The main financial instrument used is the Governmental financial support schemes for the promotion of RES/RUE/energy efficiency. The fund is created by imposing a levy of 0.22 cents/kwh for all categories of electricity consumers (10 million euro/year). All sectors are covered: households, industry, tertiary. The financial incentives are provided in the form of grants and subsidies for energy efficiency investments (30%-50% aid based on the technology) and feed in tariffs for CHP/RES electricity sold to the national grid. The basic criterion used for the evaluation of any energy savings investment proposal is to achieve a 10% primary energy saving after the investment.

Households, Services

The Governmental financial support schemes for financing energy saving investments is used extensively in this sector. Since 2004 there are thousands of applications and grants provided. For the household sector technologies subsidies include thermal insulation, solar thermal heaters, geothermal heat pumps, PV. For the tertiary sector all technologies are eligible provided they satisfy the 10% primary energy savings. Since the operation of the program more than 15,000 applications for investments were received and the majority has been approved.

Cyprus has enacted a primary legislation for the energy performance of buildings (in compliance with directive 2002/91/EC). Secondary legislation/regulations for setting minimum efficiency requirements , thermal building codes are not yet enforced. Cyprus prior to accession did not have any mandatory building codes for energy efficiency in buildings. Therefore after the full implementation of the EPBD the impact in terms of energy savings is expected to be high.

Electricity consumption in Cyprus has increased by 70% in the last 10 years. The government has decided to promote and subsidise CFL lamps (5 lamps per households for free). The scheme has a budget for the purchase of 2 Million lamps over five years. Thus far around 800,000 lamps have been distributed to consumers.

Transport

The main type of action used is to provide grants for the purchase of a hybrid, electric ,FFV vehicle and the reduction of other registration fees.

A second instrument used is the new national law for the taxation of vehicles which includes provisions integrating engine capacity and CO2 emissions criterion providing reduced coefficients for smaller, clean and efficient cars.

The Ministry of Communications and Works has submitted an action plan for public transport but no political decisions with regard to the implementation and budget of the plan is yet decided.
In 2006 a new measure has been implemented for the scrapping of old cars. The first phase includes grants to remove 15,000 vehicles. The last measure applied in the sector is bus transportation between cities and airport.

Selected Energy Efficiency Measures

Sectors	Title of Measure	Since
Households, tertiary	Law for the energy performance of buildings	2006 2007
households	Governmental financial support schemes for energy efficiency / res Thermal insulation, Double glazing, solar water heaters, PV, GHP	2004
Households, tertiary	Subsidised CFL lamps	2007
tertiary	Governmental financial support schemes for energy efficiency / res	2007
industry	Governmental financial support schemes for energy efficiency / res	2004
industry	Training and education for energy management and energy audits	2006
Transport	Grants for hybrid, electric cars	2006
Transport	Law for the taxation of vehicles including CO2 emissions criteria	2007
Transport	Grants for scrapping of old cars	2006

Source: MURE data base
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