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# **SMILEGOV**

**Enhancing effective implementation of sustainable energy action  
plans in European islands through reinforcement of smart  
multilevel governance**

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**Manual for Sustainable Energy Projects  
Implementation**

**Cluster of Cyprus**

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CB2		Conference of Peripheral & Maritime Regions	CPMR
CB3		Region Gotland – Sweden	GOTLAND
CB4		Ölands Municipal Association - Sweden	ÖLAND
CB5		Hiiu Municipality - Estonia	HIIUMAA
CB6		Saare County Government – Saaremaa - Estonia	SAAREMAA
CB7		European Small Islands Federation	ESIN
CB8		Samsø Energy Academy - Denmark	SE
CB9		Canary Islands Institute of Technology - Spain	ITC
CB10		Regional Agency for Energy and Environment of the Autonomous Region of Madeira - Portugal	AREAM
CB11		Cyprus Energy Agency	CEA
CB12		Local Councils Association – Malta	LCA
CB13		Scottish Islands Federation	SIF

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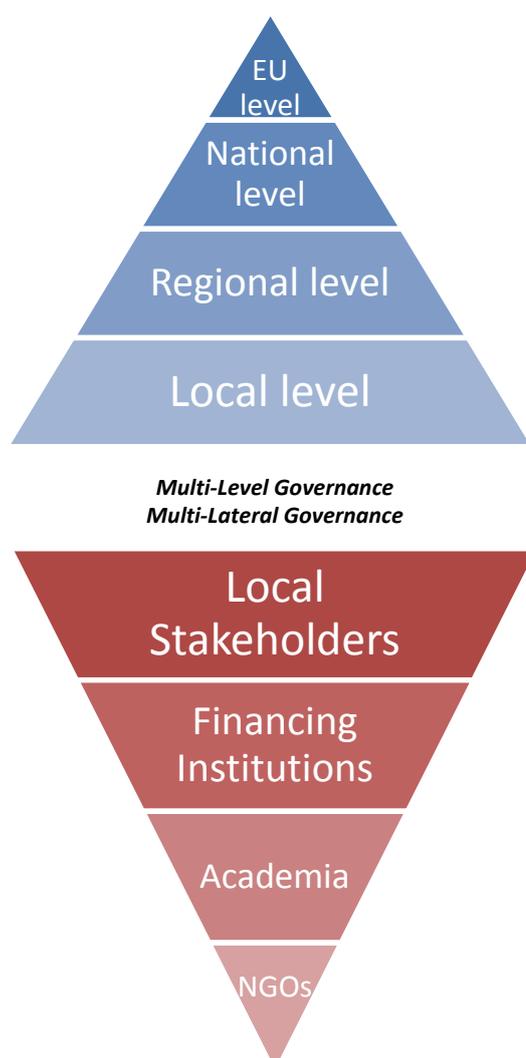


## 1 Introduction

This manual is supposed to work as support on how to approach different barriers within a good Multi-Level Governance (MLG) project. MLG can be explained as the effective interaction between different political levels for an improved coordination and coherence between the local, regional, national and European policy level.

Also good relations must be in place between each level, for example between different areas activity areas within a municipality, for processes to run smoothly. This is called Multi-Lateral-Governance.

In short, good cooperation is vital for the success of projects. Multi-level and multi-lateral governance is a key concept for SMILEGOV and for this manual.



The examples of projects included in this manual are the ones concerning the cluster of Cyprus. The manual points to known barriers and suggests a number of different solutions that can be used to overcome them. This manual does not provide all the answers and tools needed but it presents a context on why MLG is crucial together with good examples, and how the MLG work could be organized in order to overcome barriers.

## 2 Outline of the Projects and Barriers

The Sustainable Energy Action Plan (SEAP) is a strategic and operational document that defines a comprehensive framework for achieving the 2020 objectives. It uses the results of the Baseline Emission Inventory to identify the best areas of action and opportunities for reaching the local authority's CO<sub>2</sub> reduction target. It defines concrete reduction measures together with time frames and assigned responsibilities which translate the long-term strategy into action.

Implementing the SEAP will surely take the time, effort and financial resources. During the implementation phase of the measures set out in the Energy Action Plan, it is important to define a detailed work schedule with the goals to be reached. It is important to document all the activities that are implemented in relation to the different areas of the action plan because they will be taken into consideration for the monitoring process.

The priority projects identified in local SEAPs are:

- Upgrade of the street lighting efficiency in Cyprus
- Sustainable mobility infrastructure (bicycle and pedestrian paths, public transportation, Electric Vehicle charging stations etc)
- Energy efficiency in municipal/public buildings
- Energy efficiency in households
- RES applications on buildings

The main barriers identified to the implementation of SEAPs in Cyprus are the lack of Local Authorities' competences and the absence of sufficient cooperation between different levels of governance (i.e. National, local). The lack of resources and expertise on energy within the Local Authorities is an additional reason. One of the most important objectives of SMILEGOV is to set up communication structures within European Islands for better understanding of the multilevel governance (facilitation of effective co-operation between different levels of governance, Local, Regional and National) and the socioeconomic, territorial and environmental parameters that influence sustainability in practice.

Local Authorities could have a key role in the implementation and monitoring of National Energy Policies and Regulations at local level. A Local Authority with enhanced competences could support the sufficient implementation control of the "Energy Efficiency of Buildings" law and regulations. That is the monitoring of minimum energy efficiency requirements fulfilment for new and renovated buildings, the issuing of Energy Performance Certificates with correct information to be given to the prospective buyers and tenants of a building and the regular maintenance and inspection of heating and air-conditioning systems by qualified personnel.

Furthermore, local authorities are facing difficulties to identify and mobilize National and European funds for financing sustainable energy projects. This is also because of the limitation imposed on Local Authorities for participating in local investment schemes or establishing a local green tax for funding SEAPs actions or providing grants to citizens for energy efficiency applications.

Furthermore, there are technical and political barriers as well as social and environmental restrictions of different kind that vary from place to place. The approach for overcoming existing barriers that are limiting the deployment of sustainable energy projects, should include:

- Thorough analysis of the existing situation, and identification of existing barriers
- Analysis of possible solutions to overcome each of the barriers identified
- Estimation of the cost associated to the implementation of each of the proposed solutions
- Estimation of the impact of each implemented solution



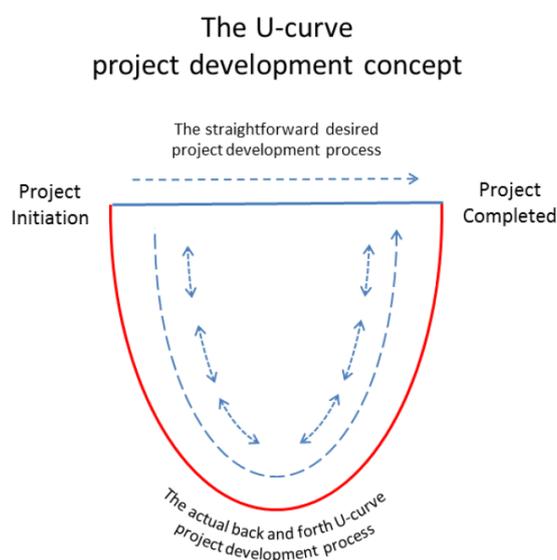
The need for enacting policies to support sustainable energy projects is often attributed to a variety of barriers that prevent investments from occurring.

As in most cases, in sustainable energy project development and policy making, time matters. If the project development moves too fast it risks leaving outside of the picture important details that can later on prove to be the small elements that can turn the success in papers into failure in real life. On the other hand if a project faces several barriers and moves too slow or remains in absolute stagnation the risk of dropping the project rises.

One of the first tasks for a project manager that faces a specific barrier / problem is to determine the timeframe within which this barrier / problem should be removed so as to maintain the interest of the involved parties ensuring a reasonable and useful outcome of the whole effort. Setting well-defined and realistic overall or partial time-related goals can prove to be very practical in avoiding stagnation of the project development.

The progress is almost never linear, a straight line from point A to point B, usually it is U-curve representing the expected downturns and upturns. The process can diverge to the right or to the left, it can even go back and forth again but small steps ahead should be maintained; this is the U-curve project development concept.

In order to define these time-relevant goals several parameters should be taken into consideration, like the type of project / policy, the maturity of the project, the involved parties, the financing instrument, the potential social and environmental impacts and others. These goals can be differentiated depending on whether they are expected to be accomplished within a short-term period (during the next months and up to a couple of years), middle term (within five years) or long-term (beyond five years). Usually the short-term goals are linked to specific projects, while the long-term ones are linked to policies, visions and strategies.



### 3 Technical Barriers

Technical barriers are the most objective and difficult barriers to be overcome. The elimination of some existing barriers will only be possible through more intensive R&D efforts to look for solutions related to energy storage and reinforcement of grid stability exposed to high penetration of intermittent RES sources.

The small and weak electrical grids are a main obstacle to maximum RES penetration, especially in island regions. The need to have back-up conventional power on standby for when the wind stops blowing or the sun does not shine, is an important cost that has to be supported by utility companies. Besides high percentage penetration of intermittent RES generated electricity induces stability problems electrical systems.

There are technical limitations and difficulties to manage power fluctuations in isolated electrical grids. The intermittence and variability of the RES such as solar and wind limits their maximum penetration in weak electrical grids. The random nature of wind, solar and other RES sources makes it necessary to have conventional power systems in stand-by for when the wind does not blow or the sun does not shine.

Energy storage systems can help so that the capacity of the interconnection line is sufficient to meet the transfer capacity.

### 4 Lack of technical expertise and funds

The majority of local authorities in Cyprus have no technical expertise on energy projects. At the same time there is lack of funds to pay for external services or funds to implement energy projects. As already mentioned the size and lack in competences of local authorities (for example no in-depth knowledge of EPC) prevents them] from accessing National or European funding opportunities..

### 5 Market barriers

#### Local Authorities

There are two types of local authorities, Municipalities and Communities, which are governed by separate laws. In principle, Municipalities constitute the form of local government in urban and tourist centers while communities constitute the local structure in rural areas.

The Republic of Cyprus is composed of Districts, Municipalities and Communities. Although there are no regions as such, the national territory has been divided into six Districts, namely Ammochostos, Kerynia, Larnaca, Limassol, Nicosia and Paphos, for administrative purposes. Local self-government however, is recognised by the Constitution and by the Law for Municipalities (demos, plural demoi) and Communities (koinotita, plural koinotites). Both have mainly administrative competences. All in all, Cyprus has currently six Districts, thirty-nine Municipalities (in urban and touristic centres) and 478 Communities (in rural areas). Of the thirty-nine (39) Municipalities in Cyprus, nine (9) are in the northern part of the island and, since 1974, have been displaced to the areas of the Republic of Cyprus which are under the effective control of the government.

Local governments in Cyprus have tax revenue from own-source taxes and fees they collect themselves. The Council of Ministers and the House of Representatives are responsible for the approval of the municipalities and communities' budgets and they received public support



through annual state grant.

Municipal and communities responsibilities include (in practice due to limited resources of communities, certain responsibilities are frequently assumed by district services):

- Public health;
- Transport: maintenance of roads within their boundaries;
- Street lighting;
- Planning: local planning, land development, including building permits;
- Public areas, including parks and cemeteries;
- Environment, including waste disposal, sewage management and treatment, as well as water supply and management;
- Economic issues (regulation of trade and business);
- Municipal markets
- Local tax system.
- Normal municipalities and displaced municipalities legally have the exact same set of competences.
- Local authorities in European countries have a wider range of competencies compared to those in Cyprus, covering areas such as social policy, education, health, public transport and even business enterprising.

### **ESCO Market**

The harmonization of Cypriot legislation with that of the European Union regarding energy end-use, efficiency and energy services, took place on 2012. In line with Directive 2006/32/EC of the European Parliament and the Council of April 5, 2006, the national legislation specifies that the energy services provided for the purpose of saving energy are only carried out by specialized energy service companies licensed by the competent authority. Also, the new Law states that energy audits are carried out only by energy auditors who have secured permission from the competent authority in accordance with the provisions of the regulations on energy efficiency in end use efficiency and energy services (energy auditors).

The ESCO market in Cyprus is at a very early stage of development. The operation of the ESCOs companies is regulated by the Regulatory Administrative Act KDP 2010/2014. The same Act regulates also the operation of foreign ESCO companies in Cyprus. Until today (10 July 2015) 10 local ESCOs companies have been registered in Cyprus. Moreover 47 licensed energy auditors have been registered by the competent authority until today (10 July 2015). From 2012, all licensed engineers who are members of the Cyprus Technical Chamber can apply to become energy auditors if they attend the obligatory training course and pass the exams. The greatest potential for energy services are in the private non-residential sector and public buildings. Rising electricity prices, public campaigns and financial incentives, have contributed to increased interest in energy efficiency.

The strongest barriers for the development of an ESCO market are the lack of awareness of the ESCO concept, mistrustful and unstable clients and the small size of projects compared to the high transaction costs. Furthermore, the financial crisis has lowered the priority of energy efficiency investments. More dissemination of information about the importance of energy savings in combating climate change is needed.

The development of expertise in the provision of outsourced energy services is not only beneficial for increased energy efficiency and lower costs; it is also contributing to the economic recovery, stimulating investment and job creation.



## 6 Examples from good practices

### 6.1 Upgrade of the street lighting in 20 local authorities in Cyprus

#### 6.1.1 Project description

The project “Upgrade of the street lighting in 20 local authorities in Cyprus” concerns twenty (20) Local Authorities in several locations and Districts in Cyprus and covers urban, rural and touristic areas.

The local authorities are the final beneficiaries of the project since they are the owners of the street lighting and they pay for the street lighting electricity consumption as well as for the street lighting maintenance. The project covers a significant population area in Cyprus, an area of population of 34,7% of the entire Cypriot population.

Energy savings in the street-lighting is a priority area for Local Authorities in Cyprus, aiming through energy saving measures to significantly reduce both carbon dioxide emissions and the annual spending for public lighting, which in many cases is more than 10% of their annual budget.

The total number of existing lighting that will be replaced with new lighting technology Light Emitting Diode (LED) are 55.940. The project will be implemented through Energy Performance Contracts (EPC), by an Energy Services Company (ESCO) that will be awarded the contract through the public procurement procedure.

All 20 local authorities in the project have already signed either the “Covenant of Mayors” or the “Pact of Islands” or both. All the local authorities have developed in collaboration with the Cyprus Energy Agency their SEAPs aiming at implementing actions for achieving their carbon emissions reduction targets by 2020. Upgrading the street lighting in order to save both energy and carbon emissions, but also to reduce their energy costs is one of the top priorities in the authorities’ agenda.

The proposed project will contribute also to achieving the national indicative 14,3% primary energy saving target by 2020 and 10% of the national energy savings end-use target by 2016.

Street lighting in the local authorities in Cyprus increases by approximately 3,8% each year, therefore the results from this project will be very useful for future projects that will be undertaken by other local authorities in the upcoming years.

The local authorities hold high on their agenda the reduction of energy consumption by making the street lighting more energy efficient. Due to the local authorities’ difficulty in accessing funds for the implementation of the project, an EPC contract with an ESCO will be implemented ensuring that the local authorities are not going to be charged for the capital investments. Having regard to the current financial situation of the local authorities as a result of the financial crisis of the country, local authorities are unable to implement such investment with their own budget.

Thus, through the EPC contracting (Shared Saving Contract), the ESCO company that will be awarded with the contract shall undertake the financial risk to implement the project (if meets the qualification award criteria), and will be paid back through the archived energy savings (measurable and verifiable).

The baseline year is the 2014 for street lighting fixtures as well as the consumed energy. Any new installation or expansion of the street lighting network will be excluded from the energy saving calculations.

The total cost of the project is estimated at approximately 20 million euros, however this is



subject to the offer of the ESCO, as well as the duration of the contract, also a subject of the award criteria. Besides the actual project implementation cost, there is a cost of preparation of the tender documents and the accompanying studies. More specifically, the studies will evaluate the important parameters such as the luminance of existing lightings, the lighting height, road width, black spots identification etc. A photometric analysis carried out to a significant number of roads according their classification (avenues, streets, pathways) and the adequacy of the existing infrastructure. At the same time, a market and technology research took place for the selection of the appropriate technologies/equipment for the purposes of the project. Consequently, all the data acquired were processed and included in the tender documents. The total cost of studies is estimated at 45.000 euros (VAT included). This cost also includes Review of tenders, contracts, purchase of traffic control services by the Cypriot Police during the street lighting measurements, in order to ensure safe and legal procedures, as well as the staff cost for the implementation of studies.

The minimum provisions of the Energy Performance Contracts according to the Energy Efficiency Directive are the following:

- Clear and transparent list of the energy efficiency measures.
- Guaranteed savings.
- Duration and milestones of the contract.
- Clear and transparent list of the obligations of each party.
- Clear and transparent list of risks not undertaken by the ESCO.
- Breakdown of the share of both parties in the monetary savings achieved.
- Provisions concerning the measurement and verification of the guaranteed savings achieved.

The tender documents were prepared by the Cyprus Energy Agency on behalf of the local authorities, inviting ESCOs for bidding the project tender, through open competition, respecting the National and EU public procurement rules. This will also lead to public-private partnerships with an ESCO model and EPC contract to be experimented for the first time in Cyprus.

This project falls under the public (green) procurement procedure and therefore should be in line with relevant legislation. The EU Directive 2004/18/EC of the European Parliament and the Council of 31 March 2004, on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts, was transposed into National Legislation, through the Law N12(I)/2006 which was amended by the Law N91(I)/2010. Provisions of both Laws N12(I)/2006 and N91(I)/2010 were amended by the Law N40(I)/2011 but still provisions of all mentioned Laws are in force.

### 6.1.2 The role of Multilevel Governance

The administrative levels involved in the street lighting project are:

- Ministry of Energy, Commerce, Industry and Tourism (Gov) - Establishment of the legal framework for ESCO's and EPC
- Police (Gov) – Defining requirements for the level of luminance
- Treasury of Cyprus (Gov) – Public procurement , financing
- Ministry of Interior – Budget for Communities (Local Authorities differ from Municipalities)
- Electricity Authority of Cyprus (Semi Governmental) – Electricity Supplier and street lighting maintenance.
- Local Authorities – Councils decisions



- Cyprus Distribution System Operator – Grid connections.

### 6.1.3 Step-by-step methodology to overcome the barrier

1. Project conception and initiation
  - a. The interested parties were invited to join and cooperate
  - b. A prefeasibility analysis was carried out
2. Involve stakeholders to overcome barriers
  - a. Address the public procurement rules
  - b. Deal with the issue of ownership and maintenance of the street lighting fixtures
  - c. Permission for intervening the Grid connected lighting fixtures
  - d. Communication with competent authorities. Legal framework for the establishment of Energy Service Companies and Energy Performance Contracts (Recently voted by the Cyprus Parliament – April 2014)
  - e. Police requirements regarding the level of luminance in streets and public places.
  - f. Willing of change (Local Authorities, Politicians, Electricity Supply)
  - g. Monopoly of Electricity Supply and street lighting maintenance
  - h. Various meetings with lighting technologies providers were realised
  - i. Various meetings with Cyprus Competent Authorities regarding the Green Public Procurement have been realised
3. Selection of partnership model
  - a. Financing opportunities were identified; applications for funding (EEEE, Governmental support) were not successful
  - b. Alternative project implementation scenarios were identified and discussed
  - c. Agreement with local authorities on the implementation plan with a public tender for the selection of Energy Service Company.
4. Project political approval
5. Project definition and planing
6. Lighting network measurements and classification
7. Market and technology research
8. Techno-economic analysis/ Feasibility study
9. Preparation of terms and conditions of the tender
10. Tender invitation
11. Offers evaluation

## 6.2 The Nicosia integrated mobility master plan

### 6.2.1 Project description

Nicosia, the Capital of the Republic of Cyprus, faces serious traffic problems depending heavily on private motorized transport. For too long, the urban transport policy has been characterized by a one sided focus on the private car. As a result, Cyprus currently has one of the highest car ownership ratios in the world (more than 600 cars per 1.000 inhabitants) and a very low use of green transport. In the Greater Nicosia Urban Area, the share of trips by Public Transport is only 3% and cycling even lower, 2%. The continuous increase of traffic problems has serious effects on the city's environment (air pollution, noise, etc.), road safety and the quality of life and as a result the city's attractiveness for business, shopping and living is reduced.

The Integrated Mobility Master Plan (IMMP) is a Turning Point for Transport Policy. The Government of Cyprus and the Local Authorities have the ambition to ameliorate this situation, by increasing the share of Public Transport, Cycling and Walking and at the same time upgrading



and completing the road network. The share of Public Transport Trips must be above 10% by the year 2020. In order to achieve these ambitious goals a sustained effort must be made to implement a series of measures. Measures related to all Transport modes must be implemented complementing and integrating with each other. In order to meet the need for co-ordinated actions/measures the Integrated Mobility Master Plan (IMMP) for Nicosia was developed.

The IMMP is about achieving sustainable mobility, using public transport, cycling and walking as modes of transport that are best suited for the urban environment. Increasing densities in specific urban areas, in other words a Polycentric Spatial Development, is an important precondition to achieve growth in sustainable modes of transport. The Local Plan for Nicosia includes such a Polycentric Spatial Development. The Polycentric Nicosia needs excellent sustainable transport provisions that can compete with the private car. This means:

- Put in place a proper Public Transport network with an excellent service
- Provide for safe cycling, in order to play a major role for short and medium length trips
- Create a pedestrian friendly Nicosia
- Balance the allocation of road space: Give space to the car where needed, but at the same time make sure that other modes of transport are well provided with appropriate infrastructure, where necessary by redistributing the available space in favor of sustainable means of transport.

The priorities of IMMP are:

1. An Excellent Public Transport Network
2. Park and Ride
3. The introduction of Trams
4. Organise/regulate Parking
5. Road System serves all modes of transport
6. Create a Comfortable and Safe Cycling Network

### 6.2.2 The role of Multilevel Governance

The IMMP is the beginning of a long term sustainable effort for improving mobility in the city. There is an agreement amongst stakeholders on IMMP proposals, but all must put considerable effort to actually achieve this change and -maybe more importantly- through their cooperation. In order to enhance cooperation amongst all stakeholders, the municipalities of the Greater Nicosia area and the government have agreed to establish a Transport Authority for the Greater Nicosia Area. In the Transport Authority the stakeholders involved (municipalities and government departments) will decide on all relevant planning issues. This will make policy making much more effective.

### 6.2.3 Step-by-step methodology to overcome the barrier

The decision making process to facilitate mobility within the Greater Nicosia Region is proposed to be carried out by a Transport Authority which should be established as soon as possible. In fact there is an agreement between the Minister of Communications and Works and the Mayors of Greater Nicosia to have such an Authority in place within two years. This Transport Authority for the Greater Nicosia Area will be in close cooperation with the Ministry of Communications and Works as well as with the Department of Town Planning and Housing of the Ministry of Interior, where the transport planning framework as well as other activities will be carried out in compatibility with a transport Policy at the national level.



## 6.3 Net metering

### 6.3.1 Project description

In the framework of ELIHMED project ([www.elih-med.eu](http://www.elih-med.eu)) and with the financial contribution of private photovoltaic companies, 11 pilot dwellings were selected and benefited from the installation of domestic photovoltaic systems. The installations were successfully completed and connected with the net metering system. This system allows the direct consumption of the PV electricity produced and the meter offsets production-consumption of electricity for a 15 minute time-frame, daily, weekly, monthly or yearly. On the 8/2/2013 the first PV net metering system was installed in Cyprus. The successful results have been used for wider spread of domestic PV net metering in Cyprus and furthered into special support schemes for LIH (in total more than 8000 households were benefited).

Net metering solves the important technical barriers of energy storage, the self consumption of local electricity production and the access of individual RES electricity producers to the grid without important impacts to the network stability. The high penetration of RES into the system is still a problem for Cyprus' electricity grid and this restriction is needed to be addressed and solved the next years because the share of RES is increasing rapidly.

### 6.3.2 The role of Multilevel Governance

The introduction of the net metering system was a challenge for Cyprus, a country with huge potential of solar energy. The Cyprus Energy Agency, acting as operational partner in the framework of ELIHMED project, selected 11 pilot dwellings of low income households to experiment with net metering. To achieve this, close cooperation was established among the interested parties and the competent authorities. More specifically, the Cyprus Electricity Regulatory Authority accepted the proposal of the Agency for this pilot experimentation, the Electricity Authority of Cyprus agreed to assist the project with their expertise and the purchase of the suitable metering equipment, local authorities agreed to support the pilot projects and their objectives and private companies offered for free photovoltaic systems to the beneficiaries.

As a result, the households benefited from zero electricity bills, the Electricity Regulatory Authority had what was needed to spread net metering, the utility company benefited from the detail recordings and the analysis of households' energy behavior and private companies benefited from the expansion of the market of photovoltaic in households. The Ministry of Energy capitalized on the results of the pilot project by launching governmental grant schemes for the installation of photovoltaic systems with net metering in low income households.

### 6.3.3 Step-by-step methodology to overcome the barrier

1. Identify the technical barriers for the introduction of net metering
2. Identification of pilot projects
3. Invite stakeholders and interested parties to support the project
4. Identification of funding resources
5. Pilot experimentation
6. Evaluation of results and feedback
7. Promotion of the results to the Competent Authorities and the Parliament
8. Launch of the net metering scheme
9. Launch of governmental grand schemes



## 7 Summary table

Barrier	Examples	Role of MLG	Key steps of the methodology
Technical	The introduction of Photovoltaic systems with net metering in buildings in Cyprus have increased the potential penetration of solar energy into the grid and limited the need for energy storage.	The access and regulation of renewable energy sources into the electricity grid needs significant contribution by all the competent authorities and the interested stakeholders. Cyprus Energy Agency successfully promoted and coordinated the implementation of pilot net metering applications. The successful results was sufficient for the wide spread of net metering in Cyprus.	The identification of the technical barriers for the introduction of net metering and the involvement of stakeholders and competent authorities for the experimentation on pilot installations.
Lack of technical expertise and lack of funds	Coordination, technical support and assistance for the launch of a call for Energy Performance Contracting for the improvement of energy efficiency in street lighting.	The involvement of many authorities for any intervention to the existing street lighting was a huge barrier. Therefore, the coordination and the cooperation among the interested stakeholders was key for the promotion of a Joint Pilot Project.	The political commitments of local authorities to achieve CO2 reductions by 2020. The role of Cyprus Energy Agency as supporter and facilitator. The identification of all the affected parameters related with the energy improvement of street lighting. The cooperation and active involvement of stakeholders and competent authorities.
Market barriers	The Joint Pilot project for the improvement of street lighting's energy efficiency with Energy Performance Contracting.	Therefore, the coordination and the cooperation among the interested stakeholders was key for the promotion of a Joint Pilot Project. The willingness of local authorities to work together for the same objective.	The role of Cyprus Energy Agency as supporter and facilitator.
	The cooperation of governmental departments and municipalities for the development and implementation of Integrated Mobility Master Plan of Nicosia.	The willingness of local authorities and government to work together for the same objective.	The establishment of Transport Authority and the cooperation of local authorities and central government.

## References

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2. BEAST project [www.beastproject.eu](http://www.beastproject.eu)
3. The Nicosia Integrated Mobility Master Plan