



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

# **SMILEGOV**

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

**Agreement No: IEE/12/047/SI2.645923**

**Deliverable D4.5**

**Consolidated summary report of Sustainable  
Energy Projects Implementation**

**September 2015**

Part. N°		Partner's name	Short name
CO1		Network of Sustainable Aegean Islands - Greece	DAFNI
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

***The contents of this publication are the sole responsibility of the contractor and can in no way be taken to reflect the views of the European Commission.***

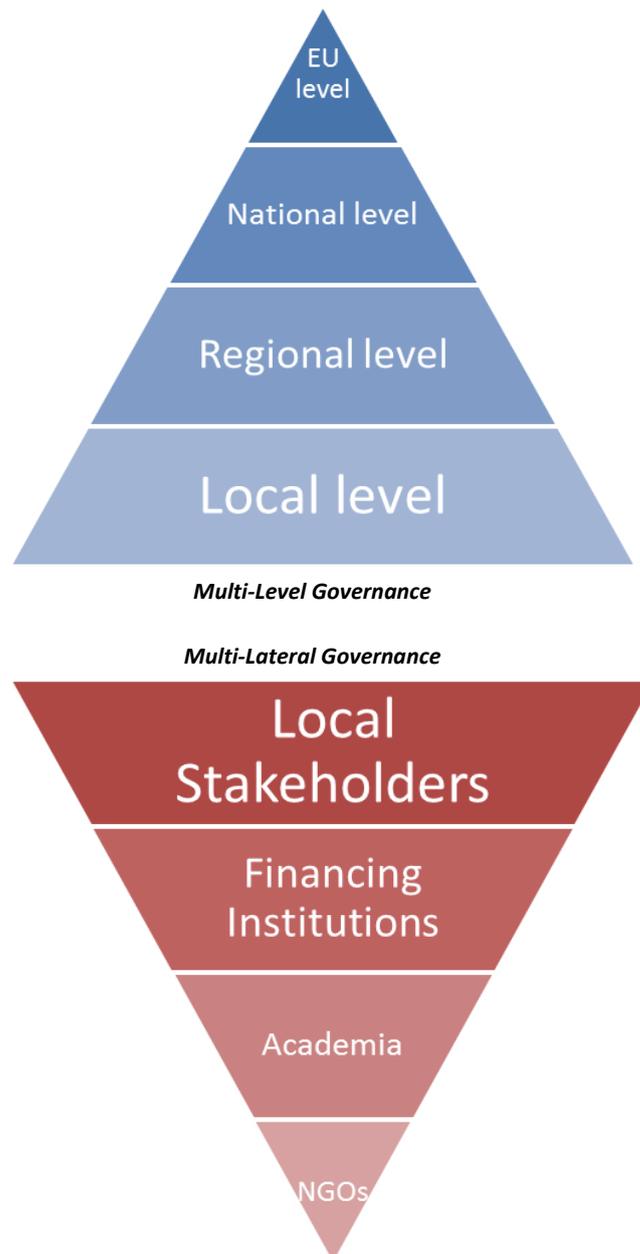
## Content

1	Introduction .....	4
2	Outline of the Projects and Barriers .....	5
3	Barrier A – Governance and legal framework.....	5
3.1	Examples from good practices .....	6
3.2	The role of Multilevel Governance .....	6
3.3	Step-by-step methodology to overcome the barrier.....	6
4	Barrier B – Expertise, information and communication.....	7
4.1	Examples from good practices .....	7
4.2	The role of Multilevel Governance .....	7
4.3	Step-by-step methodology to overcome the barrier.....	8
5	Barrier C – Technical constraints .....	8
5.1	Examples from good practices .....	8
5.2	The role of Multilevel Governance .....	9
5.3	Step-by-step methodology to overcome the barrier.....	9
6	Barrier D – Market and financing .....	10
6.1	Examples from good practices .....	10
6.2	The role of Multilevel Governance .....	11
6.3	Step-by-step methodology to overcome the barrier.....	11
7	Summary table .....	12



# 1 Introduction

This report is intended to summarize the information on how to approach the different barriers within a good Multi-Level Governance (MLG) project among the different clusters in the SMILEGOV project. Multi-level-governance can be explained as the effective interaction between the different political levels for an improved coordination and coherence between the local, regional, national and European policy levels. Also, it is important to have good relations and communication within each level, for example between the different expert areas within an organisation, for processes to run smoothly. This is called Multi-Lateral-Governance.



This summary report does not provide the answers and tools needed, but it presents a context on why MLG is crucial and how the MLG work could be organized in order to overcome the barriers.

## 2 Outline of the Projects and Barriers

From the clusters of SMILEGOV, various bankable sustainable energy projects were identified, followed and monitored.

The projects focused mainly on energy efficiency, including buildings, transports and street lighting, and on renewable energy sources, including wind, hydro, solar, biomass, biogas and renewable energy storage.

### Bankable sustainable energy projects

Cluster	Energy efficiency	Renewable energy sources
Cluster 1: Greece	2	3
Cluster 2: Sweden	1	5
Cluster 3: Estonia	3	4
Cluster 4: Spain	1	5
Cluster 5: Portugal	8	4
Cluster 6: Cyprus	5	1
Cluster 7: Malta	3	0
Cluster 8: United Kingdom	1	9
Cluster 9: Denmark	1	2
Cluster 10: CPMR	0	2
Cluster 11: ESIN	1	1

During the process of developing and implementing these projects, some barriers were identified in each project and cluster, mainly related with: problems on governance and legal framework issues; lack of expertise, information and communication among the stakeholders; technical constraints in the islands; and difficulties in the local market and sources of financing.

### Main barriers

Cluster	Governance and legal framework	Expertise, information and communication	Technical constraints	Market and financing
Cluster 1: Greece	X	X		X
Cluster 2: Sweden	X	X		
Cluster 3: Estonia	X	X		
Cluster 4: Spain		X	X	X
Cluster 5: Portugal		X	X	X
Cluster 6: Cyprus		X		X
Cluster 7: Malta	X	X		
Cluster 8: United Kingdom		X	X	X
Cluster 9: Denmark	X	X		X
Cluster 10: CPMR	X			X
Cluster 11: ESIN	X	X		

## 3 Barrier A – Governance and legal framework



These barriers are related with the institutional and political structure that hampers the implementation of sustainable energy projects, including legal constraints, lack of institutional cooperation, insufficient incentives and vision of decision makers.

Usually, these barriers are related with the lack of information on technical solutions and economic results. There are also barriers caused by national legislation, which usually does not take the island perspective or the need to shift to sustainable energy into consideration.

Most barriers related with governance and legal framework issues are complex and require a multilevel approach, which is specific to each island, depending on the local, regional and national structures.

### 3.1 Examples from good practices

The multilevel governance approach that SMILEGOV promoted is a good way of tackling governance and legal framework barriers.

The partners in all clusters were able to select sustainable energy projects which were used as a platform for communication between the stakeholders and local, regional and national authorities, to overcome the barriers and find solutions tailored to the local context.

Some islands have energy agencies and other similar organisations with technical skills and knowledge to help identify the problems, to study the solutions and to establish the necessary steps to overcome the existing barriers.

The SMILEGOV project served to boost multilevel and multilateral cooperation in participating islands and to share the experience among cluster members and other islands.

### 3.2 The role of Multilevel Governance

Communication and cooperation are key factors for enhanced multilevel governance, which can in turn help overcome some barriers related to the different levels of decision-making and legal framework issues.

Due to their specificities, islands in general and more so small islands deserve special treatment under national and European legal frameworks, which should strive to ensure enhanced multilevel governance is in place, based on efficient communication links and supported by technical knowledge and capacities. Energy agencies or similar organisations are fundamental to establish links between the stakeholders, to promote discussion and cooperation at local, regional, national and international levels, to provide support on governance, including awareness raising actions, public acceptance and access to different financial instruments, and to help adapt the legal framework to local needs.

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

The main steps proposed to overcome the barriers related to governance and the legal framework are:

1. Discussion with stakeholders about specific projects and initiatives to identify the barriers.
2. Analysis of the barriers related to governance and legal framework to identify causes and



- find solutions.
3. Discussion with stakeholders about the possible solutions to overcome barriers in order to prepare action proposals, establish priorities and adopt a roadmap.
  4. Presentation of action proposals to local and regional authorities and creation of cooperation links among different levels of governance and stakeholders committed to overcoming governance and legal barriers.
  5. Continuous assistance and follow-up to ensure effective cooperation among key actors.

## 4 Barrier B – Expertise, information and communication

These barriers are related with the lack of local expertise, insufficient information about technologies, technical solutions and financial instruments and also insufficient or non-existent communication between the stakeholders.

In smaller islands, it is very difficult to find skilled personnel to promote sustainable energy solutions. Technical support from abroad is expensive for small scale projects and not tailored to special local needs of the island.

Communication is also a problem often caused by the lack of information about problems and solutions, especially in small islands. To initiate effective communication about sustainable energy, it is necessary to have a minimum level of information to identify the needs and understand the suitable solutions.

### 4.1 Examples from good practices

Several examples of good practices are identified in the islands of the SMILEGOV consortium. These islands are experienced in sustainable energy planning. Some islands have energy agencies or other similar organisations that work on energy planning and energy projects, support the local and regional authorities and the energy users, provide expertise and create cooperation links among the stakeholders.

There are good examples of good practices from the Network of Sustainable Aegean Islands in Greece, Samsø Energy Academy in Denmark, Canary Islands Institute of Technology in Spain, Regional Agency for Energy and Environment of the Autonomous Region of Madeira in Portugal and Cyprus Energy Agency in Cyprus. These energy agencies and organizations have a long history on energy planning and sustainable energy projects, provide local authorities with expertise and promote cooperation within their islands and with other islands.

Concerning communication and participation of stakeholders in energy policy options and projects, there are good examples in the islands of Denmark and Sweden, where there is a long tradition of citizen participation in the policy-making process. Also, in Estonia and Scotland, some good activities were carried out to promote discussions on sustainable energy projects with relevance to the community.

### 4.2 The role of Multilevel Governance

In small island communities, where financial, technical and human resources are scarce, cooperation among all levels of governance is essential to optimise the available assets and to overcome the



difficulties related to the lack of expertise and information.

It is important to promote training actions and events for awareness raising and capacity building. It is also important to share technical and human resources to help develop and implement sustainable energy projects.

Energy agencies and similar technical organisations are fundamental to establish links between the stakeholders, to promote partnerships at local, regional, national and international levels, and to support awareness-raising actions and public acceptance.

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

The main steps proposed to overcome the barriers related to expertise, information and communication are:

1. Discussion with stakeholders about specific projects and initiatives to identify the barriers.
2. Analysis of the barriers related to lack of expertise, information and communication to identify causes and meet requirement needs for training and exchange of information.
3. Discussion with stakeholders to establish priorities and adopt a roadmap for cooperation, training and events for capacity building and awareness raising.
4. Promotion of training and awareness raising actions and creation of cooperation links among different levels of governance and stakeholders to overcome expertise, information and communication barriers.
5. Continuous assistance and follow-up to ensure effective cooperation among key actors.

## 5 Barrier C – Technical constraints

These barriers are related with the technical issues that prevent the implementation of sustainable energy projects, due to the particular characteristics of the islands and local energy systems that require a specific approach. This approach is inadequate by standard solutions.

Typically, electric grids in small islands that are not interconnected face limits in the amount of renewable energy they can absorb. When the electric system has significant variations on the demand load during the day and throughout the year, the intermittent renewable energy resources, such as wind and solar photovoltaic, have to be rejected when the demand is low and production is higher than the threshold limit to guarantee grid stability. This causes serious constraints to the renewable energy resources, making the investment economically not feasible and bankable, unless there is a storage system to balance the energy loads.

### 5.1 Examples from good practices

In Madeira and Porto Santo islands the electric systems are not interconnected and the solution designed to minimise the technical barrier related to the limited capacity of the electric grid to accept energy from intermittent renewable resources is to increase the energy storage. In Madeira Island the energy storage will be based on a reversible hydro power plant with water storage. In Porto Santo Island, as the electric system is considerably smaller, the energy storage will be achieved through stationary batteries.



Another example of a good practice is the micro-grid on the Island of Eigg, adjacent to the Isle of Canna, in Scotland. Both are off-grid communities, and on Eigg a community owned electricity network has been established that allows the output of micro wind, hydro, and solar to be combined and managed using battery storage, to create a reliable, low carbon electricity supply despite there being no connection to the national grid network.

The implementation of a micro-grid in La Graciosa Island is also another example of new technologies on Canary Islands. In order to avoid the fluctuations of renewable energy resources on the small electric grid, it will include energy storage systems and programmable loads to use the excess energy from renewables.

The installation of an 8 MW wind turbine in Gran Canaria is an example of a good practice when talking about the implementation of new technologies in limited electric networks. The installation of the wind turbine and its operation will give practical data on its behaviour and the effect on the insular electric grid.

In Canary Islands and Madeira there are also good practices on studies and development of simulation models related to the electric grid stability to maximise the renewable energy contribution and optimise the electric system operation. Dynamic stability studies of the electric grid are required to establish penetration limits and cost effective solutions to strengthen the grid's resilience.

The promotion of electric vehicles for improving sustainable mobility also helps to overcome some technical constraints in small islands caused by network stability. In fact, massive electric vehicle batteries recharging during off-peak hours at night also contribute to the stability of the weak electric grids in islands. There are some good practices on electric mobility foreseen in several islands in the SMILEGOV clusters.

## 5.2 The role of Multilevel Governance

The technical issues and barriers related to the islands are often complex and need multilevel and multilateral contributions to find integrated solutions, considering the political, financial, scientific and social approaches. Good communication links among the different levels of governance (national, regional and local) as well as multilateral cooperation, namely with planning and environmental departments, financial institutions, technology providers and researchers, among other players, are necessary to find the optimal solutions that meet the technical energy needs, but are also economically feasible, consider the environmental impacts and are socially accepted.

Energy agencies and technical and research organisations are fundamental to establish links among the stakeholders, to promote partnerships at local, regional, national and international levels, and to provide support on studies, research and monitoring.

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

The main steps proposed to overcome the technical barriers are:

1. Discussion with stakeholders about specific projects and initiatives to identify the barriers.
2. Analysis of the technical barriers to identify the causes and find solutions to improve knowledge and solve the problems.



3. Discussion with stakeholders to establish priorities and adopt a roadmap for studies, research and exchange of experiences with other similar islands.
4. Development of studies, research and exchange of experiences, promoting the creation of cooperation links among the different levels of governance and stakeholders committed to overcome technical barriers.
5. Continuous assistance and follow-up to ensure effective cooperation among key actors.

## 6 Barrier D – Market and financing

These barriers are related with the lack of financing sources and low acceptance/reluctance of promoters and users to implement a sustainable energy project. Usually these barriers are also related with cultural issues, including the lack of information, inadequate political support and legal constraints.

Small islands often have limited financing resources and the solutions are always more expensive in comparison to mainland areas, due to local specificities, small scale of the investment, additional transport costs and lack of local skills.

Even when the project is economically feasible, usually the risk is high and sometimes the investment is too small to be attractive for an Energy Performance Contract by an ESCO. Furthermore, it is necessary to have local knowledge to tackle the legal, financial and technical issues of an Energy Performance Contract or to prepare an application for funding.

In some cases, there is no market for a particular technology or sustainable energy carrier, even if there is potential for offer and demand. In this situation, it is necessary to start the cycle in order to create the market from the demand side or supplier, which is not easy due to the high risks involved and also public intervention is needed to break the barriers.

### 6.1 Examples from good practices

The experience from Gotland in the procurement procedures to create a sustainable biogas market from local resources to be used in local buses is a good practice on how to create an opportunity for private investment that supports a public policy, to reduce fossil fuels and CO<sub>2</sub> emissions. In this process, the public authority acted as a regulator and a facilitator with guarantees for the players to promote a new energy carrier in the island without public investment.

In Madeira and Porto Santo islands, the project of energy efficiency in street lighting represents a solution that ensures financing through a public-public partnership, between the public utility and the municipalities. Currently, municipalities have severe financial constraints and are not allowed to increase their debt or to establish an Energy Performance Contract with an ESCO. Thus, an agreement was established between the public utility, the association of municipalities for street lighting and the regional agency for energy and environment, where the public utility will be responsible for the investment, using its own funds and also resorting to an Energy Performance Contract with an ESCO, and the energy agency will provide technical expertise and assistance.

From Cyprus, there is also a good practice to implement, namely an energy efficient street lighting programme for the following years. The local authorities prioritised the reduction of energy



consumption by making street lighting more efficient. Due to their difficulty in obtaining funds for the implementation of the project, an Energy Performance Contract with an ESCO were chosen, ensuring that the local authorities are not going to be charged for the capital investments. Currently due to the financial crisis, local authorities are unable to undertake an investment with their own budget. Thus, through an Energy Performance Contract (Shared Saving Contract), the ESCO that will be awarded the contract shall take the financial risk to implement the project and will be paid back through the gained energy savings.

## 6.2 The role of Multilevel Governance

The risk perception on energy investments and knowledge about financial instruments can be improved with information and effective communication between the stakeholders on different levels of governance, including local and regional authorities, technology suppliers, installers, project designers, planners and users.

Cooperation and partnerships among organisations for common initiatives can minimize the risk and help obtain better conditions for projects and financing solutions. Islands are usually small markets and cooperation is an important instrument to obtain a larger scale and to reduce risks and costs.

Energy agencies and similar organisations are fundamental to establish links among the stakeholders, to promote partnerships at local, regional, national and international levels, and to provide support on financial instruments.

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

The main steps proposed to overcome the market and financing barriers are:

1. Discussion with stakeholders about specific projects and initiatives to identify the barriers.
2. Analysis of the market and financing barriers to identify the causes and find solutions to improve knowledge and solve the problems.
3. Discussion with stakeholders to establish priorities and adopt a roadmap to overcome market constraints and lack of financing resources.
4. Development of studies, research and exchange of experiences about innovative financial instruments, promoting the creation of cooperation links among different levels of governance and stakeholders committed to overcome market and financing barriers.
5. Continuous assistance and follow-up to ensure effective cooperation among key actors.

## 7 Summary table

Barrier	Examples	Role of MLG	Key steps of the methodology
Barrier A – Governance and legal framework	<ul style="list-style-type: none"> <li>• Multilevel governance approach in SMILEGOV.</li> <li>• Energy agencies and other organisations.</li> </ul>	<ul style="list-style-type: none"> <li>• Cooperation among different levels of governance and stakeholders.</li> <li>• Energy agencies and similar organisations to promote cooperation, support governance and help adaptation of legal framework.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion with stakeholders about specific projects and initiatives to identify the barriers.</li> <li>• Analysis of the barriers related to governance and legal framework issues to identify causes and find solutions.</li> <li>• Discussion with stakeholders about the possible solutions to overcome barriers in order to prepare action proposals, establish priorities and adopt a roadmap.</li> <li>• Presentation of action proposals to local and regional authorities and creation of cooperation links among different levels of governance and stakeholders committed to overcome governance and legal barriers.</li> <li>• Continuous assistance and follow-up to ensure effective cooperation among key actors.</li> </ul>
Barrier B – Expertise, information and communication	<ul style="list-style-type: none"> <li>• Expertise and background on energy planning and sustainable energy projects in islands.</li> <li>• Energy agencies and other similar organisations.</li> </ul>	<ul style="list-style-type: none"> <li>• Communication among different levels of governance and stakeholders.</li> <li>• Training actions and events for awareness raising and capacity building.</li> <li>• Energy agencies and technical organisations to promote cooperation, information and communication.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion with stakeholders about specific projects and initiatives to identify the barriers.</li> <li>• Analysis of the barriers related with lack of expertise, information and communication to identify causes and meet the needs for training and exchange of information.</li> <li>• Discussion with stakeholders to establish priorities and adopt a roadmap for cooperation, training and events for capacity building and awareness raising.</li> <li>• Promotion of training and awareness raising</li> </ul>

			<p>actions and creation of cooperation links among different levels of governance and stakeholders committed to overcome expertise, information and communication barriers.</p> <ul style="list-style-type: none"> <li>• Continuous assistance and follow-up to ensure effective cooperation among key actors.</li> </ul>
Barrier C – Technical constraints	<ul style="list-style-type: none"> <li>• Energy storage in Madeira and Porto Santo islands.</li> <li>• Micro-grid on the Island of Eigg combining wind, hydro, solar and battery.</li> <li>• Micro-grid in La Graciosa Island with energy storage system.</li> <li>• Installation of an 8 MW wind turbine in Gran Canaria with stability studies.</li> <li>• Dynamic stability studies of the electric grids in Madeira and Canary islands.</li> <li>• Promotion of electric vehicles to contribute to grid stability.</li> </ul>	<ul style="list-style-type: none"> <li>• Communication among different levels of governance and stakeholders.</li> <li>• Energy agencies and technical and research organisations to promote cooperation and support on studies, research and monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion with stakeholders about specific projects and initiatives to identify the barriers.</li> <li>• Analysis of the technical barriers to identify causes and find solutions to improve knowledge and solve the problems.</li> <li>• Discussion with stakeholders to establish priorities and adopt a roadmap for studies, research and exchange of experiences with other similar islands.</li> <li>• Development of studies, research and exchange of experiences, promoting the creation of cooperation links among different levels of governance and stakeholders committed to overcome technical barriers.</li> <li>• Continuous assistance and follow-up to ensure effective cooperation among key actors.</li> </ul>
Barrier D – Market and financing	<ul style="list-style-type: none"> <li>• Procurement procedures to create a biogas market in Gotland.</li> <li>• Energy efficient street lighting in Madeira and Porto Santo through an agreement between public utility, municipality association and energy agency.</li> <li>• Energy efficiency in street</li> </ul>	<ul style="list-style-type: none"> <li>• Communication among different levels of governance and stakeholders.</li> <li>• Cooperation and partnerships among organisations for common initiatives.</li> <li>• Energy agencies and similar organisations to promote cooperation and support on</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion with stakeholders about specific projects and initiatives to identify the barriers.</li> <li>• Analysis of the market and financing barriers to identify causes and find solutions to improve knowledge and solve the problems.</li> <li>• Discussion with stakeholders to establish priorities and adopt a roadmap to overcome market constraints and lack of financing.</li> <li>• Development of studies, research and exchange</li> </ul>

	<p>lighting in Cyprus through an EPC contract.</p>	<p>financial instruments.</p>	<p>of experiences about innovative financial instruments, promoting the creation of cooperation links among different levels of governance and stakeholders committed to overcome market and financing barriers.</p> <ul style="list-style-type: none"> <li>• Continuous assistance and follow-up to ensure effective cooperation among key actors.</li> </ul>
--	--	-------------------------------	--

