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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 Spain

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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

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Content

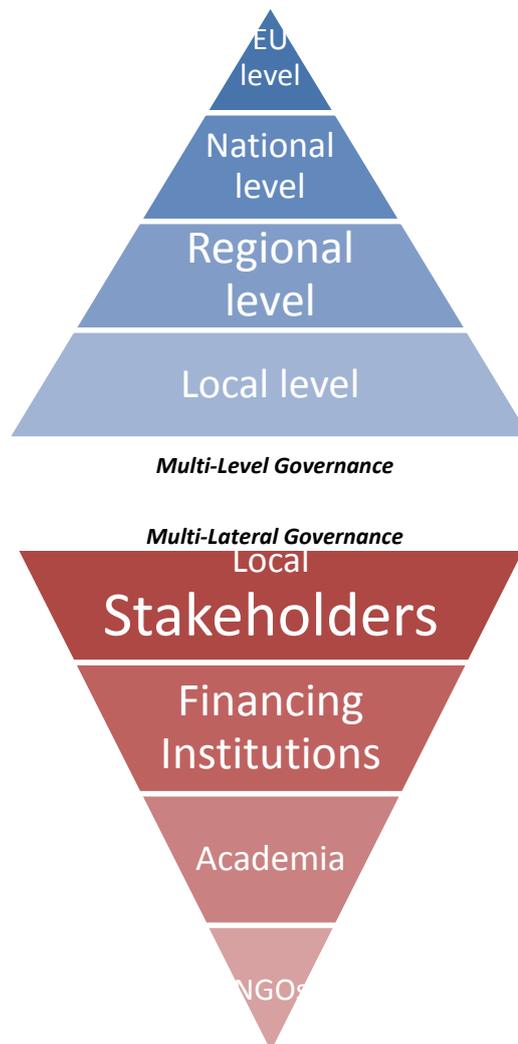
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1 Introduction

The purpose of this manual is to demonstrate 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 concern the Spanish cluster. 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

In the Spanish cluster, there are 6 bankable projects that have been worked out in the framework of SMILEGOV:

- Wind turbine for seawater desalination in Fuerteventura
- Wind turbine for seawater desalination in Lanzarote
- Micro-grid integrating photovoltaic, small wind turbines and diesel backup in La Graciosa
- Multimegawatt windturbine in Gran Canaria
- High RES penetration microgrid with hybrid system (wind turbine and diesel gen-set) in Fuerteventura
- Strategy for the promotion of electric vehicles with alternative energies in the Canaries

Barriers to the implementation of these projects have been identified and analysed. There are technical and political barriers, different social and environmental restrictions depending of the place where the initiative is proposed, and difficulties in identifying and mobilizing national and European funds for financing sustainable energy projects. Among these, the starting point was the insufficient cooperation between different levels of governance (i.e. national, regional and local). The main objective of SMILEGOV is to improve multilevel governance to provide a favorable framework for the real implementation of sustainable projects. From the studies carried out during SMILEGOV, we can highlight the main common barriers to all former initiatives, which can be grouped in three main barriers:

- a) Communication and awareness raising
- b) Deployment of new technologies
- c) Financing

3 Barrier A. Communication and awareness rising

For new projects there's lack of knowledge among stakeholders about the technologies to be implemented, uncertainty about economic feasibility and financial instruments and even about the problems to be solved with the technical solutions proposed.

3.1 Examples from good practices

There are some good examples in the Canary Islands on how to deal with this barrier. This is the case of the wind hydro pumped station on el Hierro Island, where local, insular, regional and national level institutions cooperated in the implementation of the project. In this case, as in others, the figure of a technical expertise (like the Canary Islands Institute of Technology-ITC) turned out to be necessary in order to establish communication and cooperation links among stakeholders and to provide technical assistance.

The needs of electricity supply were presented to all stakeholders and the problems linked to conventional electricity supply were explained at different level. Workshops and technical meetings were organized, press releases were sent to reach out to as many people as possible in order to achieve the broadest engagement possible, from citizens to the administrative levels involved in the necessary authorizations. It should be pointed out that communication and awareness-raising among stakeholders about real problems to be solved (mainly guarantee of the electricity supply and environmental issues) and the technical solutions available using local resources for electricity self-

sufficiency were needed for the final success of this initiative. In any case, all technical and political meetings held, were effective only when specific issues/problems were discussed with the involved stakeholders in working sessions.

The project of the multi-megawatt turbine to be installed in Gran Canaria required also many meetings among private and public stakeholders. Again the assistance of the ITC at technical and administrative level turned out to be essential during the whole process. Another example is the microgrid project in La Graciosa, which also needs social awareness for the final success of the initiative.

In the former examples listed, ITC acted as a liaison among stakeholders, driving the communication activities for the further development of the projects in the right direction.

In the SMILEGOV consortium there are some examples of good practices related to the involvement of stakeholders and communication between different levels of governance that could help to overcome communication barriers in other regions. In regions such as Öland, Samsø, Scotland and Gotland there's high community involvement in the decision-making progress. In the case of the Canaries, the methodologies applied in these regions need to be adapted to our context.

3.2 The role of Multilevel Governance

In order to get to a real and successful project implementation, good communication among stakeholders and different levels of governance has to be assured. Awareness raising among the different actors involved in the development of the project would also favour the results achieved and minimise the time needed for the whole process, including technical conception and necessary proceedings.

In this sense, a neutral adviser providing technical support and information about financial mechanisms for the different initiatives is desirable to encourage the process and link local, insular, regional, national and international levels of governance.

3.3 Step-by-step methodology to overcome the barrier

In order to overcome the communication and awareness barrier these are the steps followed in the framework of SMILEGOV:

- Workshops with stakeholders to increase awareness about needs and problems to be solved
- Round table discussions with stakeholders to identify communication barriers
- Establishment of proceedings to inform about advancement in the projects among involved stakeholders. This includes the definition of the contact person at different levels to get in contact with and the responsible person/institution for diffusion activities.
- Identification of a coordinator to ensure effective communication and collaboration among stakeholders.

4 Barrier B. New technologies implementation

The main barrier for new renewable energies technologies in insular regions are the small and weak electrical grids. There are technical limitations and difficulties to manage power fluctuations in small electrical grids. The intermittence and variability of RES such as solar and wind limits the penetration of these energy sources in weak grids. Quite often, there is significant RES potential in areas with very weak networks, limiting the capacity of energy to be transferred.



In islands, it is also challenging to transport certain RES technology components through the island. Big components of some technologies, like larger wind turbines, cannot be transferred around the island as there may be huge interventions in the local environment when trying to access the suitable location by road, thus increasing the prejudice for new technologies implementation.

Furthermore, the public funds allocated to long-term R&D are not enough to encourage investments in the sector and to ensure continuity in the improvement of new RES technologies implementation.

4.1 Examples from good practices

The installation of the multi-megawatt wind turbine in Gran Canaria is an example of good practice when talking about new technologies implementation. This will be the biggest wind turbine installed in the Canaries, with 8 MW power, operating on a harbour dock in off-shore conditions.

The installation of this wind turbine and its operation will give practical data about its behaviour and the effect on insular electrical grid, while its functioning will be certified.

The strategy for the promotion of electric vehicles with alternative energies is also the starting point for improving sustainable mobility in islands. Massive EV batteries for recharging would also affect the stability of the weak electrical grids, and the strategy needs to take this into account.

The micro-grid project on La Graciosa Island is another example of new technologies on the archipelago. In order to avoid the effect of RES fluctuation in the small electrical grid, the project will include energy storage systems and programmable loads to use excess energy from RES. Dynamic stability studies of the electrical grid are needed to realistically assess the RES penetration limits and cost effective solutions should be taken into consideration to reinforce the grid.

4.2 The role of Multilevel Governance

All initiatives mentioned involve the participation of multiple government levels. Technical barriers are objectively the most difficult barriers to overcome. To eliminate these barriers more intensive R&D is needed for solutions related to energy storage and reinforcement of grid stability exposed to high penetration of intermittent RES sources.

R&D institutes and universities, together with the Spanish grid operator (REE) are in charge of technical studies, while the regional government together with the insular Cabildos are responsible for licensing projects and environmental issues. The role of an intermediary actor like the Canary Islands Institute of Technology is key for providing technical assistance to the decision makers and facilitating communication among stakeholders with different technical capacities.

4.3 Step-by-step methodology to overcome the barrier

For overcoming this barrier R&D studies should be undertaken and a favourable framework should be approved for the implementation of the new technologies.

- R&D studies from institutes and universities: dynamic stability studies to determine the behaviour of the electrical grid when introducing new technologies.
- Technical meetings and workshops including R&D centres and personnel from the administrations involved in order to discuss the appropriate framework to be approved for the considered technologies.



- Technical meetings and workshops involving private sectors and grid operators.
- Specific training programs in new RES or EE technologies for stakeholders.

5 Barrier C. Financing

Developing new renewable resources will require large initial investments to build infrastructure. These investments increase the cost of providing renewable electricity. Besides, renewables developers and customers may have difficulty obtaining financing at rates as low as may be available for conventional energy facilities. Financing costs can greatly affect the price and competitiveness of wind energy, since cost is more related with investment capital and less with operation.

Financing is unreasonably costly for renewable energy technologies. High financing costs affect the competitiveness of renewables, since renewables generally require higher initial investments than fossil fuel plants, even though they have lower operating costs. Renewables developers and customers may have difficulty obtaining financing at rates as low as financing available for conventional energy facilities. Financial institutions are generally unfamiliar with the new technologies and likely to perceive them as risky, and thus tend to lend money at higher rates.

In addition, consumers or project developers may lack access to credit to purchase or invest in renewable energy because of lack of collateral, poor creditworthiness, or distorted capital markets.

High costs are related to technological maturity. The biggest factor, however, is the lack of economies of scale. Unfortunately, as long as relatively few units are produced, prices will remain high. This leads to low demand and therefore low production volumes. Mass commercialisation is needed for RES systems to be competitive with conventional technologies. This 'chicken-and-egg' relationship between production and consumption is one of the most fundamental challenges of commercialising a technology that competes with a mass produced incumbent.

Nevertheless, externalities are not internalised in energy/fuel prices. Without internalising environmental and other costs, renewable generation is more expensive than conventional technologies. Many of the benefits of renewables are "public goods" which not always motivate everyone who benefits to pay for them.

These constraints lead to financing barriers in all projects. Furthermore, some public institutions face financing restrictions even for proven bankable projects.

5.1 Examples from good practices

Solutions to economic barriers should aim at supporting the developers of RES by reducing the risk of these projects, and practical policies that focus more on subsidies to RE generation and the elimination of the existing ones for fossil fuels.

In the Canaries, the present regulatory framework does not support any RES development since the feed-in tariff was removed in 2012. This has discouraged new private investments in the sector. The examples from good practices in the region come from the public sector, which has promoted almost all initiatives and financed the projects from their first steps. This is the case of the wind turbines for desalination in Fuerteventura and Lanzarote or the microgrid on La Graciosa Island.



5.2 The role of Multilevel Governance

Incentives should be approved at national level for regional governments and private companies to support renewable energy development. This may include electricity feed-in tariff laws, either fixed price or premium over the power price, issuing green certificates of RES origin guarantee for the electricity sold and other public financial measures that would overcome high investments required in the short term, allow adequate R&D in the long-term as well as stimulate professional training.

The Regional Government can contribute through different public actions to stimulate the growth of the RES market and minimise the lack of economies of scale in this field.

Cooperation and partnerships among stakeholders for sustainable initiatives can minimize the risk for project financing. In this sense, an intermediary institution, like the Canary Islands Institute of Technology has proven key for the establishment of cooperation among stakeholders and partnerships at different geographical levels.

5.3 Step-by-step methodology to overcome the barrier

The methodology followed to overcome this barrier can be summarized as:

- Identification of the needs to be satisfied through the proposed sustainable action and assessment of the benefits of the project. Meetings with stakeholders to confirm common needs.
- Feasibility study of the project and identification of available resources and financing barriers.
- Meetings with stakeholders to propose financing solutions to overcome existing barriers: access to funding programs at regional, national or international level; loans; new financing schemes etc.

6 Summary table

Barrier	Examples	Role of MLG	Key steps of the methodology
Barrier A : Communication and awareness rising	<ul style="list-style-type: none"> • Micro-grid on la Graciosa • Multi-megawatt wind turbine 	<ul style="list-style-type: none"> • Exchange of information among stakeholders and awareness raising seminars for a better understanding of the projects, the needs and the solutions • Intermediary institution providing support and information about the requirements for project implementation 	<ul style="list-style-type: none"> • Workshops with stakeholders to increase awareness about needs and problems to be solved • Round table discussions with stakeholders to identify communication barriers • Establishment of proceedings to inform about advancement in the projects among involved stakeholders. This includes the definition of the contact person at different levels and the responsible person/institution for dissemination of activities. • Identification of a coordinator to ensure effective communication and collaboration among stakeholders
Barrier B : New technologies	<ul style="list-style-type: none"> • Multi-megawatt wind turbine on Gran Canaria • Strategy for the promotion of electric vehicles with alternative energies 	<ul style="list-style-type: none"> • R&D institutes and universities, in collaboration with the Spanish grid operator • Regional government and insular Cabildos responsible for licensing projects, environmental issues and territory planning • Intermediary institution to establish collaboration links among stakeholders and to 	<ul style="list-style-type: none"> • R&D studies from institutes and universities: dynamic stability studies of the electrical grid to characterise the behaviour when implementing new technologies • Technical meetings and workshops including R&D centres and personnel from the administrations involved in order to discuss the appropriate framework to be approved for the considered technologies.

		provide technical assistance	<ul style="list-style-type: none"> • Technical meetings and workshops involving private sectors and grid operators. • Specific training programs in new RES or EE technologies for stakeholders.
Barrier C : Financing	<ul style="list-style-type: none"> • Wind turbines for desalination in Lanzarote and Fuerteventura • Micro-grid on la Graciosa 	<ul style="list-style-type: none"> • Incentives should be approved at national level to support renewable energy development. • The Regional Government can contribute through different public actions to stimulate the growth of the RES market. • Cooperation and partnerships among stakeholders for sustainable initiatives. 	<ul style="list-style-type: none"> • Identification of the needs to be satisfied through the proposed sustainable action and assessment about benefits of the project. Meetings with stakeholders to confirm common needs. • Feasibility study of the project and identification of available resources and financing barriers. • Meetings with stakeholders to propose financing solutions to overcome existing barriers: access to funding programs at regional, national or international level; loans; new financing schemes etc.