



(INstruments and NETWORKS for developing logistics towards Sustainable Territorial Objectives)

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**Contract n° EVG1-CT-2001-00054**

**Local Scenario Workshops (LSW) of  
"La Vega del Guadalquivir case study"**



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## 1. Groups and Workshops

The process of work with the groups has been developing along the whole period of 30 months at which one has been working with all the persons who have formed part of the Local Advisory Group (LAG) and the Local Project Group (LPG), trying with it the maximum participation of all the persons involved in the local case study of La Vega del Guadalquivir. Along the whole process the degree of participation has been very acceptable prospering of a very productive form with all the contributions realized by the different groups.

The degree of participation of the persons and company and institutions it has not been logically homogeneous and it is of distinguishing the major participation from some from them, always motivated for the characteristics of our study and the need that some of these members, for their experience and degree of implication in the study, should inform of a more direct form in the totality of the process.

So, to realize the Local Scenario Workshops (LSW) it(he,she) we have started from the original structure established for all the study case of the INNESTO Project realizing a series of small modifications adapting it to the concrete case of study in La Vega del Guadalquivir. Along the process has been observed that it would be suitable to centre the workshops on a group of persons very directly involved in the topic object of the analysis. A study of the persons realized more directly involved in the process of work of the case of La Vega and that they could reach more to the good development of the workshop. For all this, and looking for a major operability of the same one this one carried out inviting representatives of five institutions and collective, belonging to:

- Center of Research and Technology of Waste.
- Consortium of Services of La Vega.
- Society for the Development of La Vega (SODEVEGA).
- Cooperative Society of Farmers and
- Farmers.

The process of the workshops has been simplified reducing all this to an alone session in which Grupo Entorno realizes a presentation of the INNESTO project, associates partners, cases of study, general approaches of the case of La Vega del Guadalquivir, its objectives, the process of work developed from January, 2002 and the conclusions obtained in the LCA and the DLA.

Later the workshop was presented, explaining the concept of critical phase, phase of utopia and phase of realization. It was insisted specially in the idea of that was necessary to do a contribution of ideas without discussions.

The process turned out to be of very easy comprehension and the knowledge that all the participants had of the case of study helped to build a very dynamic and rich workshop as for the realized contributions.

## 2. Main hypotheses. Correlation between the LCA, DLA and LSW

The methodological process of the INNESTO project is, for own philosophy, very flexible, adapting to the own needs of every local case study and to the modifications that the development of every case needs in each of the phases of the project. In this respect the case study of La Vega del Guadalquivir has been evolving for the dynamics of the study and for the contributions realized by all the persons involved in the project who have enriched of a very valuable form the conclusions that in every moment and in every phase of work have been extracted. This way it is considered suitable to develop in this paragraph the evolution that has taken place in the description of the hypotheses of work throughout these months in those that the local case of La Vega has been developing inside the INNESTO project.

### Main hypotheses of innovative options

The identification of the hypotheses of innovative options was realized for each of 32 aspects considered in the SWOT analysis. As synthesis, six main hypotheses have been identified that they have the key to advance towards a model of sustainable development in La Vega del Guadalquivir:

#### 1. Program for supralocal territorial development based on the sostenibility

##### **Short description**

The most global objective must be commencement of a process of planning of supralocal scale (network of cities of La Vega) directed to build a model of sustainable development, based on: the utilization of the endogenous potential, the alteration of the inadequate forms of management of the natural basic resources (water, energy, materials), the subsidiarity (supralocal application of the regional planning), and the participation of social agents.

##### **Expected results**

- Development of new forms of management and government of the territory.
- Reduction of the water consumption in the agriculture and the city.
- Improvement of the energetic efficiency and utilization of the energetic renewable resources (biomass, solar power).
- Reduction of the consumption of materials and of the generation of waste.
- Improvement of the efficiency of regional planning instruments.

- Increase of the participation and codecisión of the institutional and social agents in the governance of the territory. desarrollo de nuevas formas de gestión y gobierno del territorio.

## **2. Program for integrated management of the waste and development of the environmental industry**

### **Short description**

The integrated management of the waste generated by the cities and the productive activities (agriculture, industry, services) is based on the existence of an important infrastructure of waste management (plant of recycling and compostage) as well as a center of technological innovation of the waste. The commencement of this program, based on the principles of the sustainable logistics, has to be the base for the development of the environmental industry in the zone and the promotion of the diffusion of innovative technologies.

### **Expected results**

- Integrated management of 100 % of the urban waste. Development of the recycling, the reutilization and the recovery of materials. Introduction in all the municipalities of the selective withdrawal of paper / carton, glass and packages.
- Commencement of systems for utilization of the energetic renewable resources from the agricultural biomass and agroindustrial based on a new logistic system.
- Commencement of a program for management dangerous waste.
- Diffusion of the application of innovative technologies in the management of the waste.

## **3. Coordination of the regional planning instruments in the supralocal scale**

### **Short Description**

Coordination of the different sectorial planning instruments at regional scale (Plan of Ordination of the Territory of Andalusia, Andalusian Environmental Plan, Andalusian Plan for Development and Technological Innovation, Industrial Program for Andalusia, Andalusian Energetic Plan, Director Plan of Infrastructures of Andalusia), from the point of view of its effects in a concrete territory of supralocal scale.

### **Expected results**

- Improvement of the efficiency and territorial coherence of the planning instruments.

- Improvement of the subsidiarity (supralocal management of regional policies).

#### **4. Potentiation of new forms for governance of the territory at the supralocal scale**

##### **Short description**

The Program for Territorial Development and the process of coordination of the regional planning have to address to achieve the creation of new forms of management and governance of the territory that give answer to the need of that the supralocal areas, should possess objectives and their own instruments for the development, favoring, on one hand, a better efficiency of the regional policies and the application of the principle of subsidiarity and overcoming, for other one, the limitations of the local scale policies.

##### **Expected results**

- Development of forums of coordination and participation between the municipalities of the area.
- Development of mechanisms of subsidiarity in the policies of the regional government.
- Creation of new levels for territorial management of supralocal area.

#### **5. Participation of the institutional, economic and civil agents**

##### **Short description**

The new forms of governance of the territory have to be based on new forms of management that contemplate the participation of the institutional, economic and civil agents in the identification of objectives of development and in the application of concrete policies.

##### **Expected results**

- Development of general forums of social participation.
- Development of forums of social participation in specific sectors (farmers, industrial, citizen collectives ...).

**6. Technological development, qualification of the human resources, increase of the employment, improvement of the social well-being and the quality of life**

**Short Description**

The objectives of territorial sustainable development have to be sustained in the technological innovation and in the formation of the human resources and, at the same time, they have to give answer to the needs of creation of employment and improvement of the quality of life of the population in general.

**Expected results**

- Commencement of the center of technological innovation of the waste.
- Commencement of a program of technological modernization of the key productive sectors: agriculture, agroindustry.
- Commencement of a program for the development of the informational society.
- Commencement of a program for qualification of the human resources in the sector of the environmental management.
- Improvement of the indicators of social well-being and quality of life in the environmental sector
- Creation of employment in the sector of the environmental industry.

**Correlation between the LCA hypotheses and DLA orientations**

The development of the process of work with the DLA established the relation between the hypotheses raised in the LCA and the conclusions from the DLA with the information obtained of the local case study.

The six main hypotheses of innovative options of the LCA have been synthesized in two big paragraphs to put them in relation with the DLA:

1 <sup>st</sup> hypothesis of the LCA	DLA conclusions
<p><b>New forms of management of the territory</b>                      The most global objective must be the putting in march of an instrument of planning on a large scale supralocal (network of cities of La Vega del Guadalquivir) directed to favoring a territorial sustainable development based on the utilization of the endogenous potential, the alteration of the inadequate forms of management of the natural</p>	<ul style="list-style-type: none"> <li>• The territorial, social and economic characteristics of La Vega turn it into an area specially adapted for the development of policies of territorial cooperation between the local powers and the economic and social agents present in the zone.</li> <li>• There exists an incipient structure of territorial cooperation in several fields (waste</li> </ul>

<p>basic resources (water, energy, materials), the subsidiarity (supralocal application of the land use planning) and the participation of the social agents. Between the objectives of this planning, the integrated management of the residues has to develop and the management of the agricultural waste and its energetic utilization.</p> <p>This framework of supralocal planning needs a suitable coordination and integration with the planning of regional area and concretely, with the Plan of the Ordination of the Territory of Andalusia, the Andalusian Plan of Environment, the Energetic Plan of Andalusia and the Plan of Development and Technological Innovation.</p> <p>Likewise, the strategy of territorial development needs the involution of the instruments of government of the territory in the supralocal scale as way to manage to improve the efficiency of the regional policies (subsidiarity) and, simultaneously, to overcome the limitations of the policies on a large scale strictly locally.</p> <p>Finally, it is necessary that the new forms of management of the territory are based on the participation of the social, economic and institutional agents in the process of identification of objectives of development and on the application of the concrete policies.</p>	<p>management, economic promotion) that, nevertheless, needs to be reinforced since they do not constitute in an effective way, instruments of government and management of the territory.</p> <ul style="list-style-type: none"> <li>• The instruments of regional planning lack a suitable insertion in the different characteristics from every territory by what it must be advanced in the application of the principle of subsidiarity. Likewise, the different sectorial instruments of regional planning (energy, environment, ordination of the territory, technological development) have to establish mechanisms of coordination between them that evaluate its territorial effect.</li> <li>• This double way (reinforcement of the local structures of territorial cooperation and coordination and development of the subsidiarity in the application of the regional policies) must come together in the creation of new instruments of government of the territory in the supralocal scale.</li> </ul>
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2 <sup>nd</sup> hypothesis of the LCA	DLA conclusions
<p><b>The management of the waste. The utilization of the biomass.</b></p> <p>The second hypothesis is based on the importance that has the integrated management of the waste and the promotion of the environmental industry for the sustainable development of the area of La Vega. El desarrollo de esta gestión integrada se fundamenta en dos aspectos principales:</p> <ul style="list-style-type: none"> <li>• The existing infrastructure for the management, recycling and recovery of urban waste.</li> <li>• The creation of the Center of Technological Innovation of Waste, integrated inside the Andalusian Network of Technological Innovation put in march for the regional government.</li> </ul> <p>Regarding the most specific object of study of the INNESTO Project, the management of the agricultural biomass waste and its energetic utilization have to be outlined two principal aspects:</p> <ul style="list-style-type: none"> <li>• The existence of an instrument of supralocal</li> </ul>	<p>The principal conclusion of the DLA of the INNESTO PROJECT refers that the solution to the problem of the management of the agricultural waste cannot be confronted only as a technical question. The integrated logistics needs common way of several fundamental aspects:</p> <ul style="list-style-type: none"> <li>• Its consideration as a project linked to the social and economic development of the zone, from the perspective of the sustainability.</li> <li>• The adjustment of the project to the specific characteristics of the economic structure of the agricultural sector of La Vega and of the implied social agents (farmers, companies).</li> <li>• The development of the project of way shared by the institutional local agents: Consortium of Waste Management, Center of Technology of Waste, Society for the Economic Development of La Vega and Municipalities.</li> <li>• The consideration of the new context of regional planning that there contribute the Energetic Plan of Andalusia, the Andalusian</li> </ul>

<p>cooperation for the management of the waste and the infrastructures of recycling and recovery (plant of treatment) favors the putting in march of a new strategy for the management of the agricultural waste.</p> <ul style="list-style-type: none"> <li>• The importance of the agricultural and of the annual production of renewable resources like those of the agricultural biomass they guarantee the sufficient availability of waste to start with the system of electrical generation.</li> <li>• The normative instruments and of planning (for instance the Andalusian Plan of Environment and the Energetic Plan of Andalusia) they favor the starting of this kind of systems of management of the agricultural waste and its appraisalment in power plants.</li> <li>• The development of the most adapted technologies for the starting of the system of management of the agricultural waste comes reinforced by the lines of action of the Center of Technology of the Waste created recently in the area of La Vega.</li> <li>• The system of management of the agricultural waste in the area of La Vega needs, for its starting, the creation of a complex logistics that includes the withdrawal of waste in the farms and its transport to the power plants, giving response to a double exigency:</li> <li>• The coordination with the farmers and the food-processing industries to guarantee and to make viable the availability of the agricultural waste.</li> <li>• The availability of the waste to a viable cost for its utilization in the electrical generation.</li> </ul>	<p>Plan of Environment and the Plan of Ordination of the Territory of Andalusia and the need to advance in the subsidiarety of its application.</p> <ul style="list-style-type: none"> <li>• Specific lines of research on the integrated logistics of the agricultural waste and its utilization for the electrical generation, inside the activity of the new Center of Technology of the Waste.</li> <li>• The design of a system of withdrawal, treatment and transport of the waste from the farm to the power plants.</li> <li>• The design and decision of the size of the power plants depending on the optimization of the areas of withdrawal of r waste that guarantee a supply of stable biomass throughout the whole year and to the minor economic cost and environmental derivative of the transport.</li> <li>• Normative measures and of economic incentive for the limitation of the current practices of management of the agricultural waste, as well as for the generation of electricity with biomass.</li> </ul> <p>On the other hand, from the previous approaches of integrated logistics, the DLA concludes the need to modify the technological options considered till now for the electrical generation, choosing for a decentralized system of minor's plants promotes that they would guarantee the technical and economic viability of the project and that, simultaneously, they would turn into a factor of socioeconomic development for La Vega favoring the introduction of new productive activities (it is an improvement of the energetic local infrastructure) and generating new fields of activity in the following sectors:</p> <ul style="list-style-type: none"> <li>• The environmental industry.</li> <li>• The agricultural activity.</li> <li>• The energetic industry.</li> <li>• The local sector of the transport.</li> <li>• The research, the development and the technological innovation.</li> </ul>
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### Local workshops

It is important to comment on the process to perfect the hypotheses with which there were begun the works and the final expression of these hypotheses that were, finally, taken as base for the discussion inside the Local scenario Workshops.

The first six hypotheses contemplated in the LCA could be synthesized in two basic hypotheses enunciated as potential objectives:

- The development of new forms of government of the territory to the regional scale of the area of study (La Vega del Guadalquivir).
- The management of the waste. The utilization of the biomass.

The development of the works has been showing the need to give another step and to raise both hypotheses in the only idea.

The analysis of the components and contexts in which was predictable the starting of the main derivative project (the utilization of the agricultural waste and the creation of powerplants) has revealed the deep interrelationship between the different elements that come together in its realization.

In consequence, it is not possible, not desirably, to adopt partial or sectorial perspectives.

The questions involved in the project of utilization of the agricultural biomass need necessarily a global perspective, both from the point of view of the internal methodology of the INNESTO project and from the approach of the participation of the different responsible agents of their possible development.

It has been demonstrated with clarity that the starting of a program of energetic utilization of the biomass in La Vega del Guadalquivir cannot be thought without a context of government of the territory that it concerns the totality of public and private agents who, of a way or other one, must take part in it.

The definition of the project, even in aspects like the size of it and the technological concrete solutions that are adopted, depends in a determinant way of a social and institutional context.

Concretely, the hypothesis of the powerplant of biomass, and of its technical characteristics, it cannot separate of the following aspects that involve it:

- The social and economic development of the region, while in all that, the project will imply obligatorily an effect on the practices and the productive processes of the main economic sector of the region and of an important segment of the work market.

- The need to concentrate and coordinate a good number of initiatives of community, national, regional and local policies that affect or can affect on the development of the project.
- The need to consider the project like a key component of the global sustainability of the region, since it concerns a great quantity of basic questions of the local and regional ecology (energetic territorial balance, landscape, etc.).
- The level of social cohesion of the region, in all that the development of the project is particularly demanding with relation to the needs of coordination and cooperation between the sectorial local agents (farmers, sector of the transport, agencies of regional development, etc.) and, also, between segments and groups of the same sectors (for example, between the different social and economic components of the agricultural sector: small farmers, cooperative societies of different size and influence, big and medium farmers, each of them with particular strategies with relation to the project).
- The need to adapt the technological options to the social regional context. The debate on the technological choices (basically an option highly centralized with more conventional technology, opposite to an option for diverse powerplants well distributed in the territory and that incorporates technological own solutions), must give an important, even decisive weight, to questions related to the social and ecological impact of the project.

All this expresses with clarity the high complexity of the project and the numerous variables that are involved in it.

This perspective is coherent with the utilization of the word and of the concept of logistics that has been the base on which they have developed the totality of the local works of the INNESTO project. A conception that it does not hide but, it tries to apprehend to the logistic decisions as a totality in which they come together and there meet affected the economic, social and ecological variables.

On having accepted this complexity of the logistic requirements of an initiative as the contemplated one in the region of La Vega one is giving a step improve decisively to obtain the major synergic effects of the project.

The success of the same one is determined to an effort of coordination and cooperation between the different institutional and private, local and regional agents. This effort of coordination and cooperation is what has been revealed in the Workshops and in the general communication of the project.

The starting of the total measures tending to the most rational energetic utilization of the agricultural waste has the collateral of a few economic calculations that do it viable. But the options of design of this set of measures offer very different alternatives. In the ends of this options it can decide for a model based on a high centrality of the whole process and for technological options of more conventional or standard character, or stimulate a process more decentralized with technological options adapted to the specific conditions of the region and of its social base.

In this second supposition, the implications of the local agents (local and regional authorities, agencies of local development, association of farmers, transporters, etc.) they are determinant for the success of the project. There is needed necessarily an active and coordinated participation of all of them, so that the project places in an inevitable way in the debate on the government of the territory on more democratic bases.

It is this complexity the one that has tried to be transmitted in the different meetings of the Local Workshops. It, undoubtedly, constitutes an important methodological difficulty and of effort of comprehension of the reality for the different implied agents. But it assures, also, that the results reflect the real situation of the problems and opportunities which the project faces. It allows to place in a global determinant frame a concrete project (the energetic utilization of the agricultural residues and the powerplants), seeing with clarity the needs of transformation of the social and economic behaviors of a territorial community.

### 3. Results of the Workshops

The Workshop is divided in three principal phases, a critical phase where the participants put on the table all the negative aspects and problems that they observe on the process of logistic sustainable management of the agricultural waste in La Vega. They put in crisis the whole process, to pass later to a phase of utopia where the situation is idealized and there are contributed the most positive ideas of the consequences that would take place in case of the whole process developing. A third and lastly phase is that of realization in which the participants contribute ideas on how the whole process has to be carried out; what elements it is necessary to bear in mind fundamentally and which would be the correct process of starting the system.

The contributions realized in the workshop are synthesized in the following table. Since it is possible to estimate the richness of contemplated aspects it is very wide and they are a summary of the extensive decantation of ideas developed along the process of work of the INNESTO project.

<b>Conclusions of the Workshops</b>	
<b>Critical phase</b>	<b>Utopian phase</b>
<ul style="list-style-type: none"> <li>• Elimination of fertilizers of the land.</li> <li>• Existence of problems to convince the public authorities.</li> <li>• Analysis of the system of withdrawal of the residues. To extract conclusions on if the mechanisms of the market (interests of farmers, transporters...) they help to that the system works.</li> <li>• Modification of the mentality of work of the farmers.</li> <li>• Consideration on the part of some farmers of whom to burn stubbles is beneficial for the agricultural activities (it kills insects).</li> <li>• Problems of coordination between all the implied agents.</li> <li>• Existence of technological uncertainties.</li> <li>• Ignorance on the existence of investors ready to take part in the project.</li> <li>• Ignorance on if there are companies that are ready to build and manage the powerplants.</li> <li>• Lack of resources for studies of economic and technological viability.</li> <li>• Need of a professional consultancy.</li> <li>• Imminent prohibition of burning waste without</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction of emission of CO<sub>2</sub> in the global balance.</li> <li>• Saving of other primary sources of energy.</li> <li>• Generation distributed of energy. To bring the consumption over to the production (or the production to the consumption).</li> <li>• Technological solution is offered to the farmers (opposite to the imminent prohibition of burning stubbles).</li> <li>• Generation of employment. Principally direct employments in the powerplants of biomass and indirect in the sector of the transport.</li> <li>• Conversion of a waste in a resource.</li> <li>• It improves the social structure of the territory.</li> <li>• It contributes to the sustainable development in the territory.</li> <li>• Participation of the farmers in projects of environmental management.</li> <li>• Solution of a problem that the farmers have with the elimination of waste.</li> <li>• Constructs in network of all the powerplants of biomass. They work as small powerplants, but they produce as the big one. Improvement of the competitiveness.</li> </ul>

<p>technological alternative.</p> <ul style="list-style-type: none"> <li>• Situation of the logistic management. To guarantee supply in the necessary moment.</li> <li>• Doubt on the correct management of the logistics for the withdrawal of the waste in the farm.</li> <li>• Space for the storage the waste in the farm (while it is gathered by the transporter).</li> <li>• Technological uncertainty for the compactation of the waste in the place of withdrawal (necessary machinery for compact the waste adapted to every type of crop).</li> <li>• Doubt the farmers on the disappearance of the crop of the cotton.</li> <li>• European Policy in general and effect in the crops affected by this policy).</li> </ul> <ul style="list-style-type: none"> <li>• <b>Summarize</b></li> <li>• Technological uncertainty.</li> <li>• Logistic uncertainty.</li> <li>• Uncertainty derived from the European Policy.</li> </ul>	
<p><b>Phase of realization</b></p>	
<ul style="list-style-type: none"> <li>• Reduction of the technological uncertainties.</li> <li>• Project formulation of research to study the way of assuring the production of energy.</li> <li>• To have the opinion of the farmers to know the needs that they have of logistic organization.</li> <li>• Coordination between all the agents to assure the good management of all the logistic processes of withdrawal.</li> <li>• Elaboration of studies of economic viability.</li> <li>• Impulse of the sectors public and deprived to carry out the project.</li> <li>• Analysis of the process of starting studying to whom or who they correspond to take the initiative in this project.</li> </ul>	

The contributions most supported by the participants are the following:

- Technological uncertainty. The process needs a strong effort in research and development to study the technological and economic viability of the project.
- Logistic uncertainty. The logistic organization of the process is essential to obtain the viability of the project inside the parameters of sustainability.
- Reduction of emission of CO<sub>2</sub> in the global balance and saving of primary source of energy. Better management of the generation and the consumption of energy.
- Generation of employment and improvement of the social structure of the territory.
- Conversion of a waste in a resource.

- Coordination between all the agents to assure the good management of all the logistic processes of withdrawal.
- Impulse of the sectors public and deprived to carry out the project.

The final conclusion, summary of everything contributed in the Workshops, starts of the idea of that this is a project of interesting execution from different points of view, in which the management of the territory conjugates with a vision of set. The implied sectors are multiple and the possibility of combining all its interests in a common project they turn it into a topic of wide interest.

On the one hand there appear the technological and economic possibilities of the project, for other one the kindness from the point of view of the sustainable logistics of it, as well as the development of an idea that solves a problem of agricultural waste management, converting these into a resource, as fuel for the generation of primary energy. The sustainable character of the project comes given by diverse variables. Is added the social load of improvement of the management of the territory, creation of employment, importantly in a zone by high rates of unemployment, and puts in agreement the interests of diverse public and private agents.

The INNESTO project, with its tools of work, has been a support to put into practice one of its main approaches: that of being a useful instrument for the participation of all the local agents implied in case of study of La Vega del Guadalquivir, giving place to a wealth-producing work of synthesis of all the ideas that the implied sectors have on the needs of a process of this type.