

Promotion of biogas and its market development through local and regional partnerships
(Contract N°: **EIE/07/225/SI2.467622**)

Deliverable D 2.3
**BIOGAS Strategy conditions
for the Castilla y León region**

First Version – 4.10.2008

1. Introduction.

This document tries to complement the Bioenergy Plan of Castilla y León called PBCyL, which has been presented in public for first time during the last edition of the OPEN DAYS in Brussels.

2. Background.

The total consumption of biogas in Spain at the end of 2004 was 244,724 tep, while the consumption in the Castilla y León Region was 14,483 toe (5,43%), mainly landfill sites and waste water treatment.

The biogas consumption in Spain increased at the end of 2004 up to 266.7 ktep and although the update of this data is one of the actions of this strategy, any significant changes will be expected.

The implementation of this strategy will involve the analysis of different technologies, resources and the observation of other successful initiatives as considered “shining examples”.

On the other hand the involvement of very diverse stakeholders will be need for fulfilling this strategy with successful.

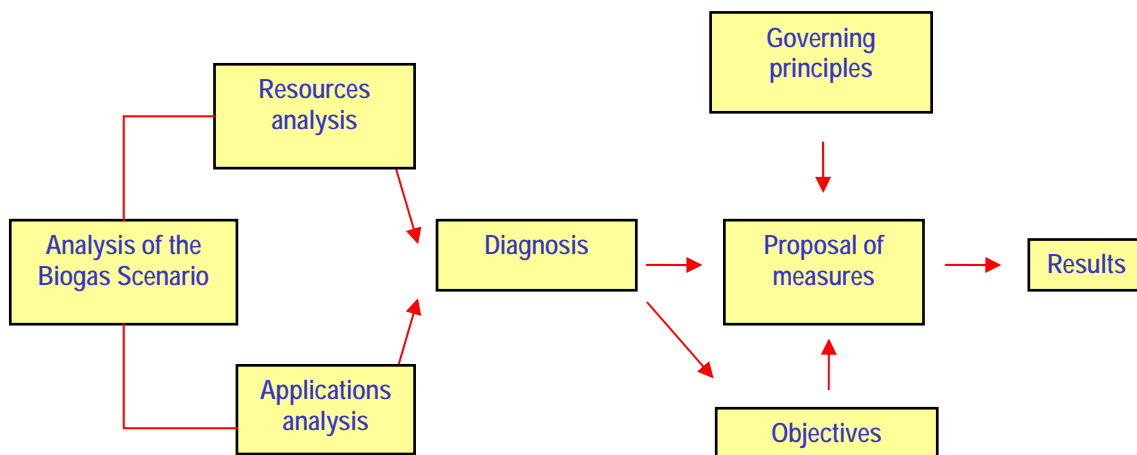
3. Justification.

The current production of biogas from the treatment of organic residues is merely by environmental causes. In this way the biogas is considered as a subproduct of the treatment.

In a first step the possibilities of biogas production in Castilla y León currently comes from two kinds of resources: sewage sludge and organic urban waste.

Instead in a second step the current potential resources could also include agro and food industrial residues and farmer residues and in a third step the use of energy crops.

4. Formal aspects: general structure.



The structure of the “Biogas Strategy” will follow the guidelines from the PBCyL.

5. Principles for the framework of the Biogas strategy.

Five general principles make the framework of the Biogas strategy in Castilla y León (as following the guidelines stands out of PBCyL):

Principle 1: rural development and social interest.

Principle 2: environmental sustainable development.

Principle 3: energy diversification.

Principle 4: economical and business development.

Principle 5: use of regional resources.

6. Resources.

Summary of the resources analysis:

| CONCEPT | | Current estimation | | | | |
|----------------------|---------------------------|--------------------------|------------------------------------|-------------------------|------------|---------------|
| | | Surface (thousand of ha) | Residues production (thousand t/a) | Primary energy (ktep/a) | Costs (€t) | Costs (€/tep) |
| Energy crops | herbaceous | 85 | 295 | 42 | 135-200 | 948-1.404 |
| Agriculture residues | | - | 1.083 | 32 | | |
| Farmer residues | | - | 4.412 | 479 | | |
| Industrial residues | From agro food industries | - | 209 | 79 | | |
| Urban residues | Organic fraction | - | 231 | 2 | | |
| | Sewage sludge | - | 13 | 4 | | |
| | Lawn cuttings | - | - | - | | |

* Own elaboration.

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7. Measures.

The following measures are foreseen to be fulfilled by the 2020 scenario.

All of these measures are considered sub measures in the PBCyL, where budget and period of implementation are considered in a global step.

In the Generation – Obtaining:

| | | |
|------------------|--|----------------------|
| Barrier: | Lack of coordination within residues policy. | |
| Action: | Promote changes in the residues planning. | |
| Measures: | | <i>means</i> |
| BRM1.1 | Make and inventory of different resources (analysis + writing) | (staff) |
| BRM1.2 | Approve a regional programme of energy crops. | (Regulation) |
| BRM1.3 | Promote in the residues planning the support for energy uses. | (Regulation + staff) |
| BRM1.4 | Subvention equipment for biogas production. | (subv + staff) |
| BRM1.5 | Guarantee and subsidize interest to farmers for energy crops | (subv + staff) |

In the Logistics and supply:

| | | |
|------------------|---|-----------------------|
| Barrier: | Logistical. | |
| Action: | Monitoring, promotion regulation and subventions | |
| Measures: | | <i>means</i> |
| BRM2.1 | Controlling trazability of Special electric generation Regime - Coordination among Regional Ministers (Economy, agriculture and environment). | (staff) |
| BRM2.2 | Promotion the adaptation for a national regulation of biogas surface transport. Create a group for putting pressure. Provide the possibility of gas evacuation, favouring and pushing the creation of national regulation in this way. | (staff + regulñation) |
| BRM2.3 | Subvention for logistics systems (collection, pre-treatment, transformation...) of biogas (as biofuel) | (subv + staff) |

In the Transformation:

| | | |
|------------------|--|-----------------------|
| Barrier: | Technology not fully mature in the region. | |
| Action: | I + D programme and purchase of plants. EREN participation in demonstration plants. | |
| Measures: | | <i>means</i> |
| BRM3.1.1 | Participation of EREN as shareholders in biogas plants (stocks acquisition) | (subv + staff) |
| BRM3.1.2 | R + D programme in small plants | (staff + subv. +inv.) |
| BRM3.1.3 | Research programme for the use of the biogas in biofuel batteries | (inv. + staff) |

| | | |
|------------------|---|----------------|
| Barrier: | Lack of knowledge of the installations. | |
| Action: | Marketing campaigns for farmers, Councils, etc. Put an end to install power plants in the Waste Water Treatment plants. | |
| Measures: | | <i>means</i> |
| BRM3.2.2 | Publicity campaigns for agricultures, farmers, related industries, landfills, etc. giving "free publicity" to significant projects. | (inv. + staff) |

| | | |
|------------------|--|-----------------|
| Barrier: | High prices of the installations. | |
| Action: | Guarantee and subsidize interest for the small and medium biogas plants. | |
| Measures: | | <i>means</i> |
| BRM3.3.1 | Create subventions for acceptability studies of small biogas plants with energy crops | (subv + staff) |
| BRM3.3.2 | Guarantee and subsidize interest of small plants | (subv + staff) |
| BRM3.3.3 | Global planning (Offer - demand, electric grid, gas grids, etc.) of the administrative authorisation - Coordination among Regional Minister involved | (staff) |
| BRM3.3.4 | End the landfill biogas exploitation programme | (inv. + staff). |

In Final use:

| | | |
|------------------|---|------------------------------|
| Barrier: | Problems in electricity & gas evacuation | |
| Action: | Priority before the PIER. Coordination for grid connection with wind power and PV. | |
| Measures: | | <i>means</i> |
| BRM4.1.1 | Digital inventory of the electric infrastructure | (staff + tec.ext. asist.) |
| BRM4.1.2 | Priority in the PIER for the evacuation of generation from this plants | (Legislation + staff) |
| BRM4.1.3 | Digital inventory of the gas infrastructure | (staff+inv.) |

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|------------------|--|----------------------|
| Barrier: | Uncertainty legal/fiscal national framework | |
| Action: | Promote in the national normative the stability of tax exemption | |
| Measures: | | <i>means</i> |
| BRM4.2.1 | Promote in the national normative the stability of tax exemption in a long security term | (staff) |
| BRM4.2.2 | Promote the energy use in transport in the residues planning | (Regimen + staff) |

Others:

| | | |
|------------------|---|--------------------|
| Barrier: | Low business presence of CyL | |
| Action: | Advising and Information service for companies. | |
| Measures: | | <i>means</i> |
| BRM5.1.1 | Advising service to promoters, farmers, councils etc... | (staff) |
| BRM5.1.2 | Specific publications - Handbooks | (staff+inv.) |
| BRM5.1.3 | Subventions for feasibility studies | (Subv. + staff) |

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|------------------|---|--------------|
| Barrier: | Not much knowledge of operators and engineers. | |
| Action: | Training courses. | |
| Measures: | | <i>means</i> |
| BRM5.2.1 | Training courses with 100% of subvention for operators and engineers. | (subv) |
| BRM5.2.2 | Promote associations of the biogas sector | (staff) |

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|------------------|--|---------------------------------|
| Barrier: | Any manufacturing of equipment. | |
| Action: | To favour promotion of biogas equipment manufacture | |
| Measures: | | <i>means</i> |
| BRM5.3.1 | To favour R + D + i in biogas in CyL (equipment manufacture, for plants' construction,...) | (staff + purchase+ subventions) |

NOTE:

Yellow means extremely priority

Green means priority

BIOGAS REGIONS

ANNEX I (14-11-2008)

| Measures: | | <i>means</i> | <i>scenario</i> | <i>Foreseen budget in €</i> | <i>Responsible / Performer</i> |
|---------------------------------------|--|----------------------|---------------------|-----------------------------|--|
| In the Generation – Obtaining: | | | | | |
| BRM1.1 | Make and inventory of different resources (analysis + writing) | (staff) | First semester 2009 | 120 000 | DGIA / DGIA,EREN,DGI |
| <i>Beneficiaries:</i> | <i>Residues authorised managers, residues producers</i> | | | | |
| BRM1.2 | Approve a regional programme of energy crops. | (Regulation) | 2009 | 2 000 | DGPAC / DGPAC,DGMN |
| <i>Beneficiaries:</i> | <i>Farmers, energy services companies</i> | | | | |
| BRM1.3 | Promote in the residues planning the support for energy uses <i>versus</i> biogas. | (Regulation + staff) | 2009-2015 | 3 000 | DGIA / DGIA,EREN |
| <i>Beneficiaries:</i> | <i>Residues authorised managers, residues producers, biogas producers</i> | | | | |
| BRM1.4 | Subvention equipment for biogas production. | (subv + staff) | 2015 | 500 000 | EREN / DGEM, ADE Investments and Services,EREN |
| <i>Beneficiaries:</i> | <i>Biogas promoters and developers</i> | | | | |
| BRM1.5 | Guarantee and subsidize interest to farmers for energy crops | (subv + staff) | 2015 | 200 000 | DGPAC/ DGPAC,DGMN |

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|-------------------------------------|--|----------------------|-----------|---------|--|
| <i>Beneficiaries:</i> | <i>Farmers, energy services companies</i> | | | | |
| In the Logistics and supply: | | | | | |
| BRM2.1 | Controlling trazability of Special electric generation Regime - Coordination among Regional Ministers (Economy, agriculture and environment). | (staff) | 2009 | 2 000 | EREN,DGEM, DGI / EREN,DGEM,SIEMCALSA |
| <i>Beneficiaries:</i> | <i>The whole biogas sector</i> | | | | |
| BRM2.2 | Promotion the adaptation for a national regulation of biogas surface transport. Create a group for putting pressure. Provide the possibility of gas evacuation, favouring and pushing the creation of national regulation in this way. | (staff + regulation) | 2009-2015 | 3 000 | DGMN, DGIA,EREN / DGT |
| <i>Beneficiaries:</i> | <i>Transport industry, biogas producers</i> | | | | |
| BRM2.3 | Subvention for logistics systems (collection, pre-treatment, transformation...) of biogas (as biofuel) | (subv + staff) | 2009-2015 | 200 000 | EREN / DGEM, ADE Investments and Services,EREN |
| <i>Beneficiaries:</i> | <i>Biogas promoters and developers</i> | | | | |
| In the Transformation: | | | | | |
| BRM3.1.1 | Participation of EREN as shareholders in biogas plants (stocks acquisition) | (inv. + staff) | 2009-2020 | 200 000 | EREN / DGEM, ADE Investments and Services,EREN |

| | | | | | |
|-----------------------|---|-----------------------|-----------|---------|---|
| <i>Beneficiaries:</i> | <i>Business biogas sector</i> | | | | |
| BRM3.1.2 | R + D programme in small biogas plants | (staff + subv. +inv.) | 2009-2015 | 200 000 | Regional Reference Centre in R + D + I in technology, manufacture and transformation of bioenergy systems / Companies, Technological and Research Centres, Universities |
| <i>Beneficiaries:</i> | <i>Companies, consumers</i> | | | | |
| BRM3.1.3 | Research programme for the use of the biogas in biofuel batteries | (inv. + staff) | 2009-2015 | 3 000 | Regional Reference Centre in R + D + I in technology, manufacture and transformation of bioenergy systems / Companies, Technological and Research Centres, Universities |
| <i>Beneficiaries:</i> | <i>Companies, consumers</i> | | | | |
| BRM3.2.2 | Publicity campaigns for agricultures, farmers, related industries, landfills, etc. giving "free publicity" to significant projects. | (inv. + staff) | 2009-2015 | 7 000 | EREN/EREN,CMA,ITACYL |
| <i>Beneficiaries:</i> | <i>The whole biogas sector</i> | | | | |
| BRM3.3.1 | Create subventions for acceptability (market) studies of small biogas plants with energy crops | (subv + staff) | 2009-2015 | 40 000 | EREN,ITACYL,CMA / GTB-CDAE |
| <i>Beneficiaries:</i> | <i>Companies, professionals, specialised students</i> | | | | |
| BRM3.3.2 | Guarantee and subsidize interest of small plants | (subv + staff) | 2009-2015 | 150 000 | EREN,DGEM / EREN,DGEM |
| <i>Beneficiaries:</i> | <i>Biogas Project promoters</i> | | | | |

| | | | | | |
|-----------------------|---|---------------------------|-----------|---------|-----------------------------|
| BRM3.3.3 | Global planning (Offer - demand, electric grid, gas grids, etc.) of the administrative authorisation - Coordination among Regional Minister involved. Include needs in rural areas. | (staff) | 2009 | 2 000 | DGI, DGMN,DGEM, / EREN,DGEM |
| <i>Beneficiaries:</i> | <i>Biogas electricity promoters especially in rural areas</i> | | | | |
| BRM3.3.4 | End the landfill biogas exploitation programme | (inv. + staff). | 2009-2015 | 500 000 | DGIA / DGIA,Local Entities |
| <i>Beneficiaries:</i> | <i>Local entities</i> | | | | |
| In Final use: | | | | | |
| BRM4.1.1 | Digital inventory of the electric infrastructure | (staff + tec.ext. asist.) | 2009-2015 | 2 000 | EREN/DGEM,EREN,DGMN,DGI |
| <i>Beneficiaries:</i> | <i>Biogas electricity producers</i> | | | | |
| BRM4.1.2 | Priority in the PIER for the evacuation of generation from these biogas plants | (Regulation + staff) | 2009-2015 | 2 000 | EREN/DGEM,EREN,DGMN,DGI |
| <i>Beneficiaries:</i> | <i>Biogas electricity producers</i> | | | | |
| BRM4.1.3 | Digital inventory of the gas infrastructure | (staff + inv.) | 2009 | 2 000 | EREN/DGEM,EREN,DGMN,DGI |
| <i>Beneficiaries:</i> | <i>Biogas producers</i> | | | | |
| BRM4.2.1 | Promote in the national normative the stability of tax exemption in a long security term for biogas as bio-fuel | (staff) | 2009-2010 | 1 000 | EREN/EREN,DGEM,DGT,DGMN |
| <i>Beneficiaries:</i> | <i>Biogas producers and consumers</i> | | | | |
| BRM4.2.2 | Promote the energy use of biogas | (Regulation + | 2009- | 2 000 | DGMN/EREN,DGEM,DGT,DGMN |

| | | | | | |
|-----------------------|--|----------------------------|-----------|---------|---|
| | in transport in the residues planning | staff) | 2015 | | |
| <i>Beneficiaries:</i> | <i>Residues management companies, biogas producers</i> | | | | |
| Others: | | | | | |
| BRM5.1.1 | Advising service to promoters, farmers, councils etc... | (staff) | 2009-2020 | 20 000 | EREN, Regional Minister of Agriculture, Regional Minister of Environment / EREN |
| <i>Beneficiaries:</i> | <i>Biogas business frame</i> | | | | |
| BRM5.1.2 | Specific publications - Handbooks | (staff + inv.) | 2009-2020 | 30 000 | Regional Bioenergy Observatory / EREN, ITACYL, Regional Minister of Environment |
| <i>Beneficiaries:</i> | <i>The whole biogas sector</i> | | | | |
| BRM5.1.3 | Subventions for feasibility studies for biogas plants | (subv. + staff) | 2009-2015 | 100 000 | EREN / DGEM, ADE Investments and Services,EREN |
| <i>Beneficiaries:</i> | <i>Biogas promoters and developers</i> | | | | |
| BRM5.2.1 | Training courses with 100% of subvention for operators and engineers. | (subv) | 2009-2015 | 21 000 | Regional Centre in Bioenergy studies / Universities,ECyL, Secondary education |
| <i>Beneficiaries:</i> | <i>Students, education staff, job-seeker</i> | | | | |
| BRM5.2.2 | Promote associations of the biogas sector | (staff) | 2009-2015 | 30 000 | GTB-CDAE / DGMN,EREN,ITACYL |
| <i>Beneficiaries:</i> | <i>Professional associations of bioenergy sector</i> | | | | |
| BRM5.3.1 | To favour R + D + i in biogas in CyL (equipment manufacture, for plants' construction,...) | (staff + financing + subv) | 2009-2015 | 300 000 | Regional Reference Centre in R + D + I in technology, manufacture and transformation of bioenergy systems |

| | | | | | |
|-----------------------|------------------|--|--|--|---|
| | | | | | / Companies, Technological and Research Centres, Universities |
| <i>Beneficiaries:</i> | <i>Companies</i> | | | | |

List of organisms involved in Biogas Regional Strategy performance:

Regional Minister of Agriculture, Regional Minister of Environment and Regional Minister of Economic and Employment.
 Companies, Technological and Research Centres, Universities.

- DGEM (Dirección General de Energía y Minas) - General Directorate of Energy and Mines.
- EREN (Ente Regional de la Energía de Castilla y León) – Regional Energy Agency of Castilla y León.
- DGMN (Dirección General de Medio Natural) – General Directorate of Nature.
- DGI (Dirección General de Industria) – General Directorate of Industry.
- DGPAC (Dirección General de Política Agraria Comunitaria) – General Directorate of Common Agricultural Policy.
- DGIA (Dirección General de Infraestructuras Agrarias) - General Directorate of Agricultural Infrastructures.
- DGIMA (Dirección General de Industrialización y Modernización Agraria) - General Directorate of Industrialization and Agrarian Modernization.
- DGT (Dirección General de Transporte) - General Directorate of Transport.
- ADE Inversiones y Servicios - ADE Investments and Services.
- Regional Reference Centre in R + D + I in technology, manufacture and transformation of bioenergy systems.
- Regional Centre in Bioenergy studies.
- ITACYL (Instituto Tecnológico Agrario de Castilla y León) – Technological agrarian Institute of Castilla y León.
- GTB-CDAE (Grupo de Trabajo Bioenergía-Comisión Delegada de Asuntos Económicos) – Bioenergy Work Group-Delegate Commission for Economical Issues.
- CMA (Comisión de medio Ambiente) – Environmental Commission.



SIEMCALSA (Sociedad de Investigación y Explotación Minera de Castilla y León S.A.) – Research and Exploitation Society of Mines in Castilla y León Public Corporation.