

UN Economic Commission for Europe

Biofuels Tax Exemption – Case Study of Spain

Workshop on Case Studies on overcoming barriers to investments in energy efficiency and renewable energy projects through policy reforms

Kiev, November 10.-11., 2009

General description of the case study

The aim of the case study is to decrease the high production costs of biofuels, which are the key barrier to their development

- In order to overcome the high production costs of biofuels Spain implemented a tax exemption on biofuels (zero rate hydrocarbon tax valid until 2012)
- This initiative has been promoted by several agencies and producers based on discussions with the European Commission

Country

- The case study was implemented in Spain
- No regional focus has been applied

Timeframe

The tax exemptions have been introduced by the Spanish Government in 2002 and last until 2012

Objectives

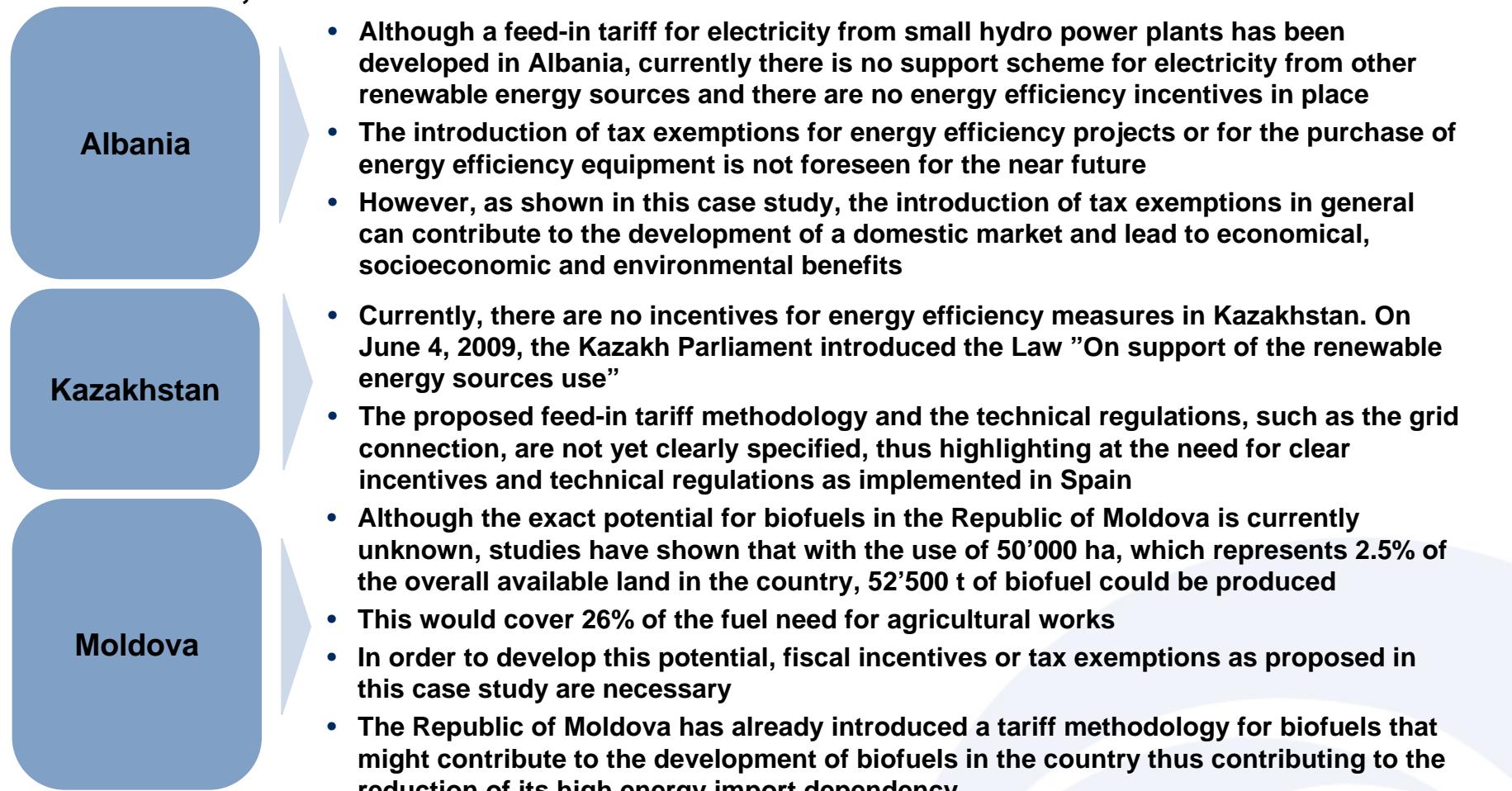
- Promote the use of biofuels in substitution of conventional fuels and so decrease GHG emissions
- Further progress in the transposition of the EU Directive 2003/30/EC
- Achieve a National Renewable Objective Plan
- Decrease production costs of biofuels as key barrier for utilization

Financing Institution

The final cost bearer of the overall costs is the Spanish Government through the provision of fiscal incentives

Removed barriers to investments in EE and RES

The case study contributes in removing financial barriers related to the implementation of EE and RES and is recommended for Albania, Kazakhstan, and Moldova



Background to the case study

In order to fulfill the Kyoto protocol it is essential to reduce GHG emissions from transport sector and produce “cleaner” fuels

- The transportation sector is responsible for 21% of the greenhouse gas emissions and this percentage is rising
- The European Union has developed several initiatives in order to get cleaner and more profitable fuels. In this framework, renewable fuels from biomass have an important role in the energy diversification in the transport sector.
- Today, Spain is the main bioethanol producer in Europe, with three plants installed
- The plant “Biocarburantes de Castilla y León”, which was built in 2006, will be the first bioethanol factory using straw as raw material
- In general, cereals are the most common crops to bioethanol production. In addition, wine alcohol is used as raw material to regulate the surplus of the wine sector. Sugar beet is planned to be used for bioethanol production, where the sugar prices are so low that the industry no longer rely on revenues from selling sugar.

Current Feedstocks for Biodiesel Worldwide¹⁾

| Country/Region | Feedstock |
|---|---------------------|
| USA | Soybeans |
| Europe/EU | Rapeseed, Sunflower |
| Africa | Jatropha |
| India | Jatropha |
| Malaysia / Indonesia | Palm |
| Philippines | Coconut |
| Some unique oilseeds used for biodiesel | |
| Spain | Linseed Oil |
| Greece | Cottonseed |

Current Feedstocks Used for Bioethanol¹⁾

| | |
|------------------------|----------------------|
| USA | Corn, Sorghum, Maize |
| South America / Brazil | Sugarcane |
| India | Sugarcane |
| Europe | Sugar beet |

1) Source: <http://www.altprofits.com/ref/report/biofuels/biofuels.html>

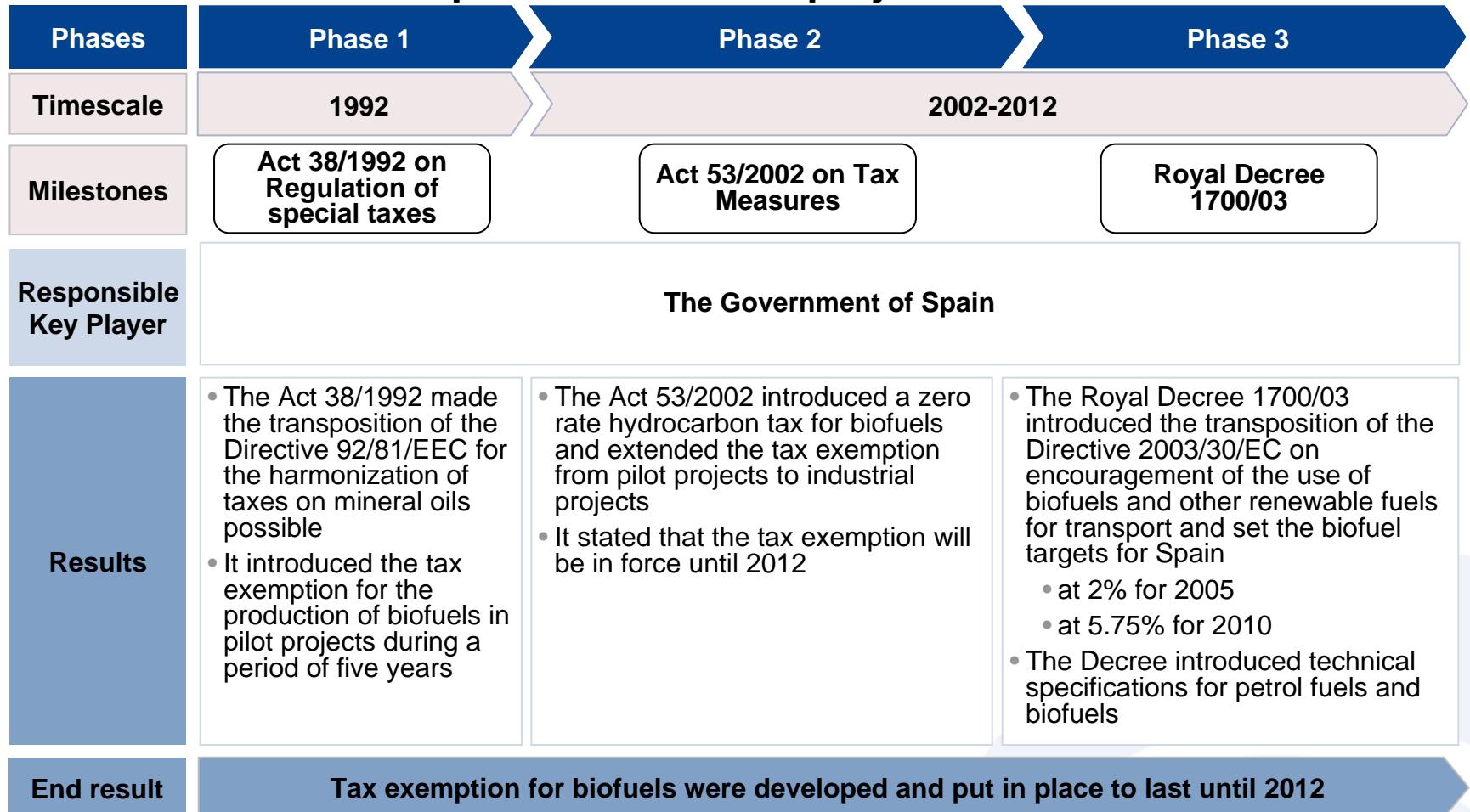
Key players involved in the implementation of the case study

The main key player is the Government of Spain, which established and adopted the tax exemption regulation described in this case study

| Key Player | Description | Role |
|-------------------|----------------------------|---|
| Government | The Government of Spain | The establishment and adoption of the tax exemption regulation has been undertaken by the Government of Spain following initial discussions with biofuel plant owners and the EU Commission |
| Consumers | Final consumers of biofuel | Responsible for buying biofuel for lower retail prices and therefore producing less GHG (no active role in the case study) |
| Producers | Biofuel plant operators | Responsible for realizing a strategic advantage due to the tax exemption and therefore invest more in the production of biofuels (no active role in the case study) |

Approach for case study implementation

After the Act 38/1992 was implemented for pilot projects, the Act 53/2002, which will be in force until 2012, introduced a zero rate tax for biofuels and extended the tax exemption to industrial projects



Impact of case study implementation

The most important impacts are the increase in production and use of biofuels, a decrease in production costs, and as a consequence the decrease of GHG emissions

| Economical Impact | Environmental Impact | Social impact |
|--|--|--|
| <ul style="list-style-type: none">• n.a. | <p>From 2002 to 2004:</p> <ul style="list-style-type: none">• Nine new biofuel plants have been commissioned in Spain• 125'500 t of biodiesel and 180'000 t of bioethanol have been produced• 50% of the 2010 objectives (Directive 2003/30/EC) have already been achieved• Decrease of greenhouse gas (GHG) emissions due to the gradual substitution of methanol by bioethanol at refineries | <ul style="list-style-type: none">• The key social benefit is the creation of employments within the domestic biofuel market in Spain (both from the demand and supply side)• In the context of the biofuel tax exemption different initiatives have been established in several Spanish cities, characterized by the collaboration between Central and Autonomous Administrations and with municipal governments |

| Overall impact |
|---|
| <ul style="list-style-type: none">• The implementation of the case study had an impact at national level since the tax exemption for biofuels has been issued for biofuel facilities, which are active in the whole country• The implementation of the Case Study has lead in particular to<ul style="list-style-type: none">• An increase in production and use of biofuels• A decrease in production costs from biofuels facilities (decrease of sourcing costs through the zero tax rate)• The availability of biofuels in public petrol stations |

Costs of case study implementation

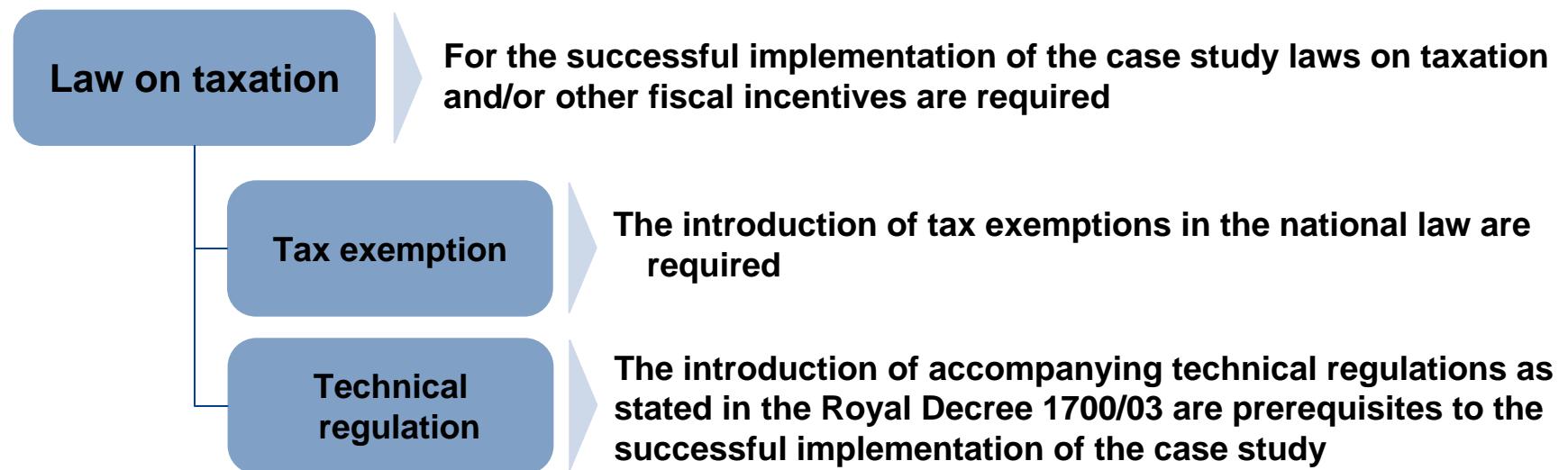
The Spanish Government is the main cost bearer and estimated the total costs of the project to at least around 400 mln EUR

| | Costs | Comments |
|---|---|---|
| Plan for the Promotion of Renewable Energies in Spain for 2000 – 2010 | <p>Total costs €407 mln</p> <p>Biodiesel €42 mln Bioethanol €365 mln</p> | <ul style="list-style-type: none">• Costs for full implementation of the EU directive 2003/30/EC²⁾ are significantly higher than the costs for the more moderate objectives set by the Plan for the Promotion of Renewable Energies in Spain for 2000 – 2010¹⁾ and therefore the fiscal support program was initially designed to support the National Plan• The final cost bearer of the overall costs is the Spanish Government since it provides fiscal incentives for biofuels |
| Implementation of EU Directive 2003/30/EC | <p>Total costs €1'088 mln</p> <p>Biodiesel €589 mln Bioethanol €499 mln</p> | |

1) Biodiesel: 100'000 toe, Bioethanol: 400'000 toe; 2) Biodiesel: 1'403'000 toe, Bioethanol: 550'000 toe

Regulatory preconditions

Preconditions for the successful implementation of the case study is the introduction of a law on taxation of products and services, including the regulation of tax exemptions and technical regulations



Critical success factors

Technical regulations, strong communication, and consistent national policies appear to be the most important success factors

| | <i>Description</i> | <i>Comment</i> |
|------------------------|---|---|
| Biofuel market | The combination between a tax exemption and technical regulations (i.e. integration of biofuels in the transport policies, obligation of a minimum production quantity) is a key success factor for a large scale penetration of biofuels in the market | Guidelines must ensure adequate market formation (e.g. availability in all filling stations) |
| Customer communication | A strong communication to all customers (i.e. residential, industrial) regarding the environmental contribution of using biofuels and the tax exemption is important | Market acceptance will be higher if the customers are aware of the environmental and economic benefits |
| National policies | <ul style="list-style-type: none">• National key authorities must share / approve the concept and benefits of fiscal incentives• Biofuels have to be integrated in transport policies | <p>Support of all key authorities is important to ensure effective implementation</p> <p>Consider obligations for public transport for deployment of biofuels</p> |

The main goal to be achieved is efficient market formation and fast integration of biofuels in the market

Risks

Main risks to the successful implementation lie within the lack of economic competitiveness of biofuels

| Risk factors | Risks | Possible effects | Comments / Recommendations |
|---------------------------|---|---|--|
| Economic competitive-ness | <ul style="list-style-type: none">Lack of economic competitiveness towards fossil fuels | <ul style="list-style-type: none">Lack of acceptance by consumers | <ul style="list-style-type: none">Increase competitiveness for biofuels by other means, e.g. subsidies for the production facilities |
| Metereological conditions | <ul style="list-style-type: none">Unfavorable meteorological conditions for production of raw materials | <ul style="list-style-type: none">Ensure possibility of import for raw materials for biofuels to ensure production continuity | <ul style="list-style-type: none">Find raw materials for biofuels, which are adjusted to wide climatic conditions, such as e.g. sugarbeet or soy beans |
| Changes in tax policy | <ul style="list-style-type: none">The tax exemption period is not long enough or the tax policy is changed abruptly | <ul style="list-style-type: none">Introduction of biofuels is not sustainable and does not last after the tax exemption period and / or economic feasibility is not given for bioplant facilities | <ul style="list-style-type: none">Ensure sufficient period for tax exemptionDefine progressive exit plan from tax exemption program |

Recommendations for replication

Concrete recommendations for replication include the definition of nationwide targets, and the support of local producers

| | Recommendation |
|-----------------------------------|---|
| Precondition | 1 Establish taxation laws to implement a fiscal incentive for the sale / use of biofuels |
| | 2 Develop technical regulations as pre-requisites to the large-scale introduction of biofuels (e.g. defining the maximum blending factor for biofuels with conventional fuels) |
| Recommendation for implementation | 3 Establish tax exemptions or add tax exemptions to the already existing tax laws |
| | 4 Define the period, for which the tax exemptions are meant to last and a progressive exit plan |
| | 5 Set nationwide biofuel targets (e.g. 2% biofuels in 2012), define an obligation for petrol stations to offer biofuels |
| | Choose a 2-step-approach: |
| | 6 1) Introduce tax exemptions for pilot projects for biofuels |
| | 2) Extend the tax exemptions from pilot projects to large-scale projects |
| | 7 Subsidize the costs / losses related to the tax exemptions with other taxes (e.g. for tobacco) |
| | 8 Integrate the concept of biofuels introduction into concepts for public transport and the logistics industry |
| | 9 Inform end consumers about environmental and economic benefits of biofuels |
| | 10 Support biofuel producers to increase their competitiveness (e.g. support them with business cases), as long as such companies are not able to generate profits, support them with subsidies |

Conclusions

This case study introduces a viable concept, which uses long term tax exemptions, established through a concrete regulation, to lower production costs for biofuels and make them competitive in the market

- In general the case study presents an approach to overcome the economic barrier for the development of biofuels caused by the high production costs compared to conventional fuels
- Tax exemptions for biofuels lead to tangible environmental benefits, invigorate the domestic market for biofuels and create new employments
- The joint action of tax exemptions and technical regulations enable a successful market penetration of biofuels within a stable legal framework. Not only are the economic barriers eliminated, but possible technical problems arising from the inclusion of biofuels on the market are foreseen
- Biofuel production costs have been the main barrier to their development for many years. With an adequate measure, materialized in the exemption established in the Act 53/2002, it has been possible to overcome this barrier
- This measure accompanied by normative modifications related to the quality of biofuels will lead to an increase in the national production supported by proper residual oil collection systems and greater crop areas assigned for biofuels production
- Although the clear benefits in GHG are out of doubt, other environmental impacts have to be analyzed in order to evaluate the biofuels contribution (e.g. eutrophication, acidification of the soil)

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Annex: Sources

List of sources used for case study elaboration

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http://www.senternovem.nl/mmfiles/Biofuels%20tax%20exemption_tcm24-116955.pdf
- Lago, C., Varela, M. & Saez, R. (n.d.). Biofuels experience in Spain, a long way to run. Retrieved September 22, 2009, from
http://www.ciemat.es/recursos/doc/Areas_Actividad/Energia/ASE/305791720_1522007122114.pdf
- Garcia Barquero, C. (2005). Case Study on Biofuels: Analysis and Policy Recommendations. Workshop. Brussels, February 25, 2009.

Annex: Approach of the case study

Comparison of final prices of conventional and biofuels (EUR / Liter)

| | Gas oil | Sunflower Bio-diesel | Unleaded Fuel | Cereal Bioethanol |
|-------------------------|---------|----------------------|---------------|-------------------|
| Production costs | 0.32 | 0.52 | 0.35 | 0.45 |
| Retail price | 0.69 | 0.61 | 0.83 | 0.53 |