JESSICA

JOINT EUROPEAN SUPPORT FOR SUSTAINABLE INVESTMENT IN CITY AREAS

JESSICA Instruments for Energy Efficiency in Greece

EVALUATION STUDY

EXECUTIVE SUMMARY

English version

REMACO SA
MANAGEMENT AND DEVELOPMENT CONSULTING

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EXECUTIVE SUMMARY

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1 Introduction

1.1 Background of the Study

The Evaluation Study "JESSICA Instruments for Energy Efficiency in Greece" was assigned to REMACO SA by European Investment Bank according to a contract signed on 15th June 2009. The inception report was delivered as scheduled on 15th of July 2009 and the final draft report was delivered on 23rd December following an extension of the initial time-schedule. Therefore, any incidents and / or facts regarding energy efficiency policies that came up following the conclusion of the current study would not be possible to be taken into consideration and are not included in the final report.

1.2 Scope of the Study – Methodological Approach

The purpose of the study is to assess and evaluate the possibility of using the JESSICA initiative to support planned interventions in Greece for energy efficiency projects in public and also private buildings which after the amendment of Regulation (1080/2006) fall within the scope of the ERDF interventions in all EU Member States.

Within this context, the main scope of the study was to review prevailing development actions in the respective area of energy efficiency; to identify the key market participants and existing financial vehicles for investment in this sector; to analyze potential market failures and how financial engineering actions and products could address any perceived deficiencies; and to establish the level of interest in using UDFs to channel such actions.

In order to comply with the above requirements, the consultant performed the following tasks:

- Evaluated the interrelationships between energy efficiency and integrated urban development so that to confirm JESSICA's eligibility in the context of financing energy efficiency initiatives;
- Analyzed the overall country's energy trends, including also analysis of Renewable Energy Sources progress, consumption patterns, generation capacity and legislation regarding energy efficiency;
- Performed a thorough desk research regarding buildings' requirements as far as energy efficiency is concerned;
- Performed a thorough mapping of energy efficiency related initiatives in the context of National Strategic Reference Framework and National Initiatives;
- Analyzed existing financial instruments and evaluated their compliance with JESSICA's philosophy and scope;

- Performed a thorough desk research in foreign markets and Greece to identify financial engineering instruments addressing energy efficiency projects, identified best practices and summarized the key findings;
- Performed a number of interviews with key market players, as identified by the consultant in order to investigate potential demand and supply for such initiatives and define their role in the context of initiating Urban Development Funds;
- Developed real case studies, simulating the impact of a UDF form of financing;
- Estimated the existing funding gap between demand and supply of financial resources regarding energy efficiency projects;
- Developed different scenarios of a revolving investment delivery structure with the participation of ERDF funding, and possibly other contributions;
- Identified the administrative and legal framework and constraints and proposed respective solutions according to Structural Funds Regulations on expenditure, monitoring and auditing activity; and
- Proposed an action plan for a short to medium-term implementation of the scheme.

The following paragraphs provide a summary of the overall analysis and recommendations included in the final report.

2 Key Findings of Environmental Analysis

2.1 Energy Trends

Greece is one of the few countries in EU27 illustrating an increase in energy consumption, especially as far as the residential sector is concerned. Per capita energy consumption in Greece, positions Greece at the high end of EU27 since the relevant index in 2005 rises to 139,5, while the European average declines to 99,7 (source: Eurostat).

Greek economy relies very much on imports in order to meet its energy needs. The average degree of dependency on energy imports for the period 1996-2007 is 68,8% while the relative number for European Union 27 is 48,4% (source: Eurostat), thereby illustrating the structural weakness of Greece relying on “traditional” energy resources such as oil and lignite.

The share of renewable energy sources in gross inland energy consumption is approximately 5%, while it does not illustrate significant increases within the period 1996-2007 (the share of RES varies from 4,9% to 5,7% - source Eurostat).

Additionally, combined heat and power generation systems have not been developed sufficiently in Greece, since the share of such systems in total energy generation ranges from 1,5% to 1,7% (for the period 2004-2007) while the relative measure for EU 27 (for the same period) ranges from 10,5% to 11,1% (source: Eurostat).

2.2 Buildings

Approximately 69% of total number of buildings was built before 1980 (source: Hellenic Statistical Service). The year 1980 constitutes a major threshold since in 1980 the new thermo-insulation regulation was put into force. According to Hellenic Ministry of Development's estimations, only 30% of the houses are thermo-insulated, while the age of the buildings, combined with the lack of environmental design, rank them among the least efficient buildings in Europe. Indicatively, the average electricity consumption per dwelling in Greece is approximately 16,8% higher than the EU 27 average while the relative energy consumption for space heating is approximately 20% lower. However, although Greece consumes less energy for heating than the EU average, it is one of the few countries (Bulgaria, Croatia and Italy) that illustrate increase in heating consumption. More particularly, the average heating consumption per m^2 in 1997 was 115 Kwh, and in 2007 it was 132 Kwh while the relative numbers for EU27 were 170 Kwh and 150 Kwh respectively.

According to the report of the National Council for Energy Strategy (Measures and Means for an Efficient Competitive Energy Policy, Spring 2008) the greatest potential for energy efficiency improvements in the residential sector are in space and water heating and lighting, since these are the most energy consuming categories. As far as space heating is concerned, energy savings may be attained by combining measures of thermal insulation, replacement of frames, doors and shutter assemblies, usage of double glazing windows, utilization of natural gas and further penetration of district heating. Total saving potential from energy efficiency measures related to space heating is estimated to reach **3,142 Twh** in 2016 (56,8% of total estimated energy savings in residential sector) . According to the report 60% of these savings will be attained by measures of insulation and double glazing windows installation.

Energy savings related to water heating will be attained by installing solar systems on buildings' roofs, combined with the penetration of district heating systems and natural gas. Total saving potential from energy efficiency measures related to water heating are estimated to reach **1,298 Twh** in 2016. According to the report 99% of these savings will be attained by the installation of solar systems on buildings' roofs.

Finally, the energy savings related to lighting will be attained by replacing old incandescent lamps by fluorescent lamps. Total saving potential from energy efficiency measures related to lighting are estimated to reach **0,5 Twh** in 2016.

2.3 Legislative Framework Regarding Energy Efficiency

As far as the regulatory framework is concerned, there are two laws that have a direct impact on energy efficiency:

- The first one is the Law 3661/2008 which sets the framework for energy efficiency in almost all kinds of buildings. The law regulates the methodology for determining buildings' energy efficiency, the minimum requirements regarding energy efficiency, the specifications of energy efficiency surveys and the competent agencies for performing these surveys, the content, frequency and the process for performing energy inspections in buildings, boilers, heating and air-conditioning systems as well as the appropriate qualifications and certification process of energy efficiency inspectors. The law provides that applications for building permits regarding new buildings or regarding renovation of existing buildings of total area that exceeds 1.000 m^2 should be accompanied by energy efficiency surveys. A joint ministerial decision and a presidential decree which specify the above have been set under public consultation.
- The second one is the draft law for Energy Efficiency Measures and Third Party Financing which incorporates into the Greek legislative framework the directive 2006/32/EC. The draft law provides for, inter alia, the incorporation of Energy Service Companies (ESCOs) and energy service contracts, third Party Financing mechanism, the establishment of a Green Fund for financing energy efficiency initiatives and the introduction of financial engineering instruments and / or other financial incentives aiming to energy efficiency measures and the development of energy services market. The draft law was set under public consultation by the previous administration. It is expected to be finalized under the new administration.

2.4 NSRF Legislative Framework

The Law 3614/2007 provides for the administration, monitoring and auditing of development interventions in the context of the programming period 2007-2013. Essentially, the law 3614/2007 describes an integrated administration system assigning roles and duties to various agencies and governmental institutions.

A critical issue in what regards JESSICA, is the **incorporation of financial engineering tools** according to the regulations 1083/2006 and 1828/2006. More

specifically, Article 24 – paragraph 1 of the L.3614/2007, provides for the establishment of funds, or funds of funds which will be financed through Operational Programs of NSRF. The establishment of the above financial engineering instruments is activated via a joint ministerial decision (Minister of Economy and the competent Minister according to the sources of funds allocated) which will also provide for the specifications, requirements and appropriate details for the organization and operation of the funds[1].

Additionally, article 24 (paragraph 3) of the L.3614/2007 provides for the modification of the constitutional law of "Consignment & Depository Trust (CDT)"[2] by expanding its range of activities adding the objective *"Operation of Urban Development Funds as defined in article 44 of the Regulation (EC)1083/06 of the Council"*. Paragraph 3 of the article 24 provides also for the issuance of a presidential decree[3] (following a recommendation of the Minister of Economy) which will define how the central and regional offices of CDT will be restructured in order to undertake the management of separate financing entities serving as Urban Development Funds according to article 44 of the Regulation (EC) 1083/06 of the Council and articles 43, 44 and 46 of the Implementing Regulation (EC) 1828/2006. The above presidential decree may determine funds' responsibilities, their organization, the number and the kind of employees required, the operational framework and any other required detail.

2.5 Financial Engineering Instruments

In Greece, there are no established financial engineering instruments addressing energy efficiency related projects, except of some banking products (loans and mortgages) addressing small scale renewable energy projects and housing renovation projects. In principle, there are some similar structures, which however do not seem to be "utilizable" in the context of JESSICA. These structures are:

- Venture capital mutual fund is the ancestor of venture capital corporations and was established as an institutional arrangement with the Law 2992/2002 (article 7). Venture capital mutual funds are closed end funds whose maximum duration cannot exceed 15 years. Venture capital mutual funds do not constitute legal entities. They are represented by fund managers assigned by the funds' shareholders with a management agreement, between the fund, the trustee of the fund and the fund manager. This is not compatible with regulations which require a UDF either to be set up as independent legal

[1] Not issued yet
[2] Consignment & Depository Trust is a State Financing Organization providing loans to Local Authorities, Municipal Enterprises and public servants. It also provides cash management services to State Institutions, and reimburses beneficiaries in cases of expropriations
[3] Not issued yet

entity or as a separate block of finance within a financial institution. A relative amendment should be made in order to utilize such a structure.

- The Credit Guarantee Fund for small size enterprises (TEMPME) is a financial institution which provides guarantees to small and very small enterprises (employing less than 50 people, namely SMEs). TEMPME is co-financed by the Greek State and EU in the context of the Operational Program "Competitiveness" (3rd CSF). TEMPME is a Societe Anonyme with total capital €240 mil. The total value of guarantees provided cannot exceed its equity multiplied by ten (€2,4 bil).
- The new economy fund (TANEO), is a fund of funds, which invests in venture capital funds (it is set up in the form of a Societe Anonyme). The sole shareholder of TANEO is the Greek State and the company is under the authority of the Ministry of Economy, Competitiveness & Shipping. TANEO is mostly funded by long term bonds (€105 mil) the Greek state being the guarantor of the loan. Its share capital is €46 mil and it was co-financed by the Greek State and EU (ERDF) in the context of the operational program "Competitiveness" (3rd CSF).

3 Main Finding of NSRF and National Programs Mapping

The consultant performed an overall analysis of NSRF Operational Programs and National Programs in order to identify energy efficiency related projects that could also be financed by JESSICA instrument. The main findings were the following:

3.1 Energy Efficiency Initiatives in the Context of NSRF Operational Programs

- **The priority axis 4 of the OP "Competitiveness & Entrepreneurship"** is being activated through the following initiatives
  - "EXOIKONOMO" which provides for energy saving activities in municipal buildings, communal areas, municipal transport means, including also activities related to publicity and sensitization of citizens and municipal employees regarding the energy consumption issues. Total budget of the initiative is €100 mil, while ERDF contribution is €70 mil. The remainder amount (€30 mil) should be covered by Municipalities' own resources.
  - "Allazo Klima" (Replace Airconditioning), which provides for replacing old air conditioning equipment by brand-new equipment in households. This initiative was terminated.

  - "Exoikonomisi Kat' oikon" (energy conservation in houses), a forthcoming initiative related to energy efficiency measures (thermo insulation, replacement of boilers, double glazing windows, frames etc) in private households. This initiative is redesigned by the new administration.
- **Priority Axis 1 of the OP Environment and Sustainable Development** is being activated through two calls for proposals regarding the development of district heating systems in West Macedonia. The total budget of the calls is €103 mil. This priority axis is financed by Cohesion Fund, It should be noted that Cohesion fund is not referred to in Act 44 of the Regulation 1083/2006 and therefore, it does not contribute resources to JESSICA.
- **All Regional Operational Programs** have a priority axis addressing urban regeneration and urban development. However, energy efficiency is only implied in the context of these priority axes and it does not constitute a direct objective. Currently, the only energy efficiency interventions that are running are in the context of the initiative EXOIKONOMO, which is co-financed by OP "Competitiveness and Entrepreneurship" for the objective 1 regions and Regional Operational Programs for Transitional Support Regions.

3.2 Other Financing Tools for Energy Efficiency Measures

- **Development Law 3299/04** is an initiative of the Ministry of Economy, Competitiveness & Shipping. Development law provides grants to enterprises from various economic sectors, such as manufacturing, tourism, telecoms, information technology, logistics etc. A special provision of the development law (article 3 paragraph e-iii) provides for investments aiming to energy savings to at least 10% of the consumed energy before the implementation of the investment. Moreover article 3, paragraph e-ii provides for investments aiming to the utilization of RES, substitution of liquid fuels or electricity with air gases, industrial waste and co-generation. In addition, paragraphs (b v) and (b vi) of same article 3, provide for investments aiming to increase energy production capacity by utilizing RES such as wind, photovoltaics and biomass, while provision b iv provides for investments in district heating venues and co-generation. The subsidy level for the above cases ranges from 15% to 60% according to the investment category, the geographic region and the size of the company (small – medium or large enterprise). Approximately 510 projects have been approved for grants for Renewable Energy Sources whose total budget is €1.273 mil and total grants are €500,61 mil.
- **The National Program for Local Authorities "THISEAS"** is a development program funded by the National Budget aiming to reduce disparities and improve competitiveness at local and national level. Through this program,

Municipal Authorities are supported to develop PPP projects in various sectors of economic activity. Especially in the energy sector, four projects are planned[4], aiming to increase energy production capacity at local level by utilizing RES. The total budget of these projects is estimated to €196,02 mil.

- "**Photovoltaics on Roofs" is a national program** which was initiated in 2009 and it will last until 2019. It addresses households and small businesses, for installing photovoltaic systems on the roofs of the buildings, of total capacity 10KWp maximum. This program does not provide for any grants since the energy produced by PV systems is sold to the electricity distributor of the building by getting into an offset agreement at specified prices[5].

3.3 Concluding Remarks

The main conclusions drawn by the mapping process are:

- The most mature initiative is EXOIKONOMO, which is at the evaluation stage. Eligible interventions in the context of EXOIKONOMO fit well to integrated urban development since Municipalities are required to implement integrated action plans aiming to achieve significant energy savings and contribute to reduction of CO_2 emissions.
- The urban regeneration related interventions of Regional Operational Programs do not include specific energy efficiency interventions. They are mostly related to "typical" urban regeneration activities, which are of course areas eligible under the scope of the Jessica initiative (such as brownfield development, promotion of cultural heritage, deprived neighborhoods improvements). Energy efficiency interventions, in this context have an ad hoc character, and are not mandatorily based on integrated energy efficiency plans.
- There is a growing demand regarding district heating systems, especially in West Macedonia region, since we have two projects which are located in this region. This is due to the fact that in West Macedonia there are large venues of PPC which are fueled by lignite.
- There is a rapidly growing demand for the construction of Renewable Energy Production Facilities, especially in the context of Development Law. These investments, however, could not be eligible in the context of JESSICA, unless they would be a part of a more integrated local development plan, which

[4] These projects are in the stage of studying the feasibility and the requirements for proceeding in a tendering procedure
[5] The price of Kwh is €0,55 for every agreement concluded until 2011. After 2011 the price per Kwh is reduced by 5% annually.

combines complementary energy efficiency projects.

- A complementary to the above point is the gradual development of Private Public Partnerships between Municipal Authorities and private corporations. We identified 4 projects that are in the planning phase (the recruited advisors, have completed the preliminary studies) and regard the utilization of Renewable Energy Sources for development of electricity production facilities. These projects could be eligible for financing, in the context of JESSICA, if included in an integrated local development plan, or under a thematic energy efficiency UDF aiming, among others, to promote PPP projects regarding utilization of RES at regional or national level.
- Housing is also a potential field of applying JESSICA as an alternative form of financing energy efficiency projects. For the time being current planning might include the provision of grants and tax incentives. However, JESSICA could be applied as a balancing instrument to finance part of the private contribution (to the extent that there is no violation of state aid regulations) or as a stand – alone financing instrument into a further stage (A large opportunity for financing would exist in the context of the national program regarding the installation of Photovoltaic systems on buildings' roofs. However, the relative legislative framework of this program does not foresee any kind of financial support, since households which will implement such measures will have a certain income from selling electricity to the network).
- As regards the overall planning environment regarding the utilization of JESSICA, according to the programming documents, it is mostly related to urban regeneration (thematic priority 61) in the context of Regional Operational Programs. Energy efficiency (thematic priority 43) does not constitute, until now, *expressis verbis* the subject of financial engineering instruments. This, however, does not constitute a serious obstacle to the implementation of JESSICA, since the budget is allocated to priority axes, not to thematic priorities (allocation is indicative not obligatory as it is in the case of priority axes).

4 Evaluation of JESSICA's Potential in the Field of Energy Efficiency

4.1 Projects' Categories Evaluation and Estimation of Funding Gap

Following the analysis of the environment, we concluded to four basic categories of energy efficiency projects:

1. Interventions in Municipal Venues (in the context of EXOIKONOMO initiative)

2. Energy conservation interventions in households' buildings
3. Establishment of thermal and electrical power production units at local level, through the utilization of Renewable Energy Sources (PPPs constitute a significant instrument to proceed to such investments)
4. Establishment of electrical power production units through the utilization of Renewable Energy Sources by private enterprises in the context of Development Law.

Four sets of criteria have been set in order to evaluate the potential of implementing JESSICA, which are:

- Contribution to Integrated Urban Development
- The existence of sufficient need / demand for financing
- The maturity of the projects
- The existence of sufficient legislative capability.

By applying the general evaluation criteria regarding the applicability of JESSICA in these projects' categories, the following conclusions arise:

- As far as the first category is concerned, it is the most mature, taking into consideration that Municipal Authorities have already submitted the integrated energy efficiency action plans to the Managing Authorities. The demand for financing is relatively fixed[6]. The integrated character of the energy efficiency action plans contributes significantly to integrated urban development.
- As far as the energy conservation interventions in households' buildings are concerned, the demand for the implementation of such projects is very clear, since the vast majority of houses have not been built according to appropriate thermal insulation specifications. Energy efficiency measures in houses is an eligible intervention in the context of JESSICA. In financial terms, however, demand cannot be defined precisely. A restricting factor seems to be the lack of an efficient energy services market due to delays in incorporating the directive EC 2006/32 into the Greek legislative framework. The National Council for Energy Strategy estimated that the total cost for energy efficiency interventions in houses will reach until 2016 €2,95 bil, an amount that exceeds by far the available ERDF allocation for energy efficiency interventions as provided by Regulation (EC) 397/2009 (4% of the total ERDF amount). Therefore, since total ERDF contribution to NSRF is €12,36 bil, the total available amount for housing interventions cannot exceed €494,4 mil

[6] It should be noted that the estimated budget (€161.9 mil) of the applications submitted exceed by far the available budget. However, according to discussions had with the Ministry and the Managing Authority the initial intention is to approve the best proposals until the available budget (€100 mil).

(€12,36 bil x 4%)[7]. It is apparent that any kind of housing initiative will address only a fraction of total demand as estimated by the national council for energy strategy.

- The establishment of energy production units through the utilization of RES and PPPs is also a very attractive field for JESSICA type financing schemes, since, these kind of projects, if developed at local level, may significantly contribute to integrated urban development. According to the mapping process we identified significant demand. However, delays in licensing production units may increase significantly financial risks.
- The establishment of electrical power production units through the utilization of RES constitutes a category with significant demand and relatively mature, since many projects have been approved by the Ministry of Economy, Competitiveness & Shipping in the context of Development Law. However, these projects constitute ad-hoc initiatives undertaken by private enterprises and are not incorporated into an integrated urban development plan.

The following tables summarize the findings of the evaluation process and the estimation of the funding gap respectively:

[7] In this amount ERDF's contribution in the initiative "Allazo Klima" should be probably deducted (approximately €32 mil)

Table 1: Evaluation of Eligible Project Categories

Projects' Categories	EVALUATION CRITERIA			
	Contribution to Integrated Urban Development	Need / Demand	Projects' Maturity	Institutional Framework
Energy efficiency Interventions in Municipal venues	Integrated energy efficiency action plans	Budget €100 mil, funds' supply €70 mil	Integrated action plans have been submitted to MAs for evaluation	Delays in incorporating the directive EC 2006/32 into the Greek legislative framework
Housing interventions	Eligible intervention in the context of JESSICA framework	The vast majority of houses (built before 1980) has not been built according to appropriate thermal insulation specifications. Households' energy consumption comprises a large share of total energy consumption. Per capita energy consumption is constantly increased, while in EU the relevant index is decreased.	Redesigned	Delays in incorporating the directive EC 2006/32 into the Greek legislative framework

Projects' Categories	EVALUATION CRITERIA			
	Contribution to Integrated Urban Development	Need / Demand	Projects' Maturity	Institutional Framework
Utilization of RES for the establishment of energy generation units through PPPs and investment in district heating venues at local level.	They contribute to integrated urban development under certain circumstances	We identified 6 projects with total budget €300 mil. There is also a call for proposals running in the context of the OP "Environment & Sustainable Development" whose remainder amount (public expenditure) is €30 mil.	Two projects (district heating) have been approved for financing by the OP "Environment & Sustainable Development. The remainder PPP projects are still in the planning phase.	Delays in licensing RES investments
RES investments by private investors in the context of Development Law 3299/04	Ad-hoc initiatives of private investors. They are not related to integrated urban development.	≈€454 mil	Under implementation	Delays in licensing RES investments

Table 2: Estimation of Funding Gap per Initiative and Project Category

Program	Beneficiaries	Project type	Status	Number of Projects	Budget (€mil)	Supply of Financing (€mil)	Potential Funding gap (€mil)
Competitiveness & Entrepreneurship and Regional Operational Programs of Transitional Support Regions	Municipal Authorities	Energy efficiency measures in municipal venues	Running	189	100[8]	70	30
	Households	Energy efficiency measures in houses	forthcoming	unknown	€2.950 (est)	€50 - €100	unknown
Environment & Sustainable Development	Water & Drainage Companies Municipal Authorities	District Heating	Calls for proposals are running	2	103,26	80,98	22,280
Development Law 3299/04	Private Enterprises	Renewable Energy Sources	Running	510	1.273,07	500,61	454,19
Public Private Partnerships	Municipal Authorities and Private Enterprises	Renewable Energy Sources	Planning	4	196,02	102,85[9]	93,17

[8] According to estimations the total budget of the proposals submitted is €161,9 mil, while the initial budget is €100 mil. That means that real demand is €91,9 mil, since the allocated ERDF and national resources (grants) are €70 mil .
[9] This number is estimated based on the potential of financing these projects by Development Law 3299/04.

4.2 Overall Assessment of JESSICA's Potential in the Area of Energy Efficiency

In making an overall assessment of the potential of implementing JESSICA in energy efficiency in Greece, we conclude that energy efficiency constitutes an appealing field of action since there is sufficient demand in terms of projects to be implemented into the future. The basic issue to be dealt with is that most of the existing projects are not incorporated into a planning framework which can be presented as "integrated plan for sustainable urban development" to justify the utilization of JESSICA. The basic driver of the market until now is indeed the utilization of Renewable Energy Sources and this does not justify integrated urban development, unless it would be incorporated into a local or regional development program stimulated by local authorities' initiatives (utilizing also PPPs).

It should be considered that the general regulation for the structural funds CE 1083/2006 is currently under revision, on the basis of a Commission proposal in response to the financial crisis. This proposal includes a modification of Article 44 which will enlarge the scope of financial engineering, to include national, regional or local incentive schemes providing loans, guarantees for repayable investments, or equivalent instruments for energy efficiency and use of renewable energy in buildings, including existing housing. If the Council and the EU Parliament will endorse the revision of Article 44 under question (according to information available, the Council and the EU Parliament would endorse the revision of Article 44 under question, which should come into force in the summer 2010 at the latest), this could be potentially a challenging development for Greece and all Member States. The JESSICA structures, could prove to be a valuable tool for accelerated implementation of such schemes and for leveraging public resources under subsidized loan schemes in the field of energy efficiency and renewables in the building stock in Greece, both private housing and public buildings

It is very urgent to put forward the incorporation of directive 32/2006, regarding Energy Service Contracts and third party financing, since the lack of such a framework does not allow the development of an energy efficiency market. This would be the major instrument for paving the way for utilizing in an appropriate way financial instruments such as JESSICA.

The cases of EXOIKONOMO and the forthcoming initiative related to housing are the most appealing - in the short to medium term- initiatives to be financed by JESSICA. The remainder initiatives, although they constitute a significant proportion of potential demand, should be approached on a more integrated way which is, according to our view, a matter of central and regional planning.

5 Recommendations

5.1 Objectives

The objectives that should be achieved in the context of establishing energy efficiency UDFs are:

- Contribution to the reduction of energy consumption and CO_2 emissions.
- Leveraging private resources, so that to magnify the impact of the interventions undertaken.
- Provision of attractive financial products easily accessible to local authorities, households and private enterprises, thereby leveraging local and regional economies.

5.2 Alternative Scenarios

The projects' characteristics as derived by the mapping process, combined with the results of the evaluation process lead us to the conclusion that we can have three different categories of actions:

1. One whose purpose will be to finance energy efficiency action plans of Municipal Authorities as a complementary financial instrument combined with the provision of grants in the context of EXOIKONOMO. The proposed action will provide long-term loans to Municipal Authorities, to cover own contribution to the initiative EXOIKONOMO. The main product to be provided will be long term loans, initially estimated to last for 10 years with constant quarterly payments. The proposed interest rate of the loan should not exceed 2% thereby being attractive to Municipal Authorities and at the same time covering part of the management costs of the fund. This scenario has two implementation options:
    a. To proceed to a tendering process through which a UDF manager will be assigned; or
    b. To assign directly the operation of the fund to Consignment and Depository Trust, since, according to National Law, CDT is assigned the role to operate UDFs
2. Another whose purpose will be to finance housing interventions aiming to energy conservation. The proposed action will provide long term loans to households for implementing energy efficiency interventions for their houses. The products to be provided should be micro-loans not exceeding €10.000 to €15.000, since the fund will focus on relatively low income households

probably as a complementary financial assistance to grants. Interest rates should be at competitive levels exceeding the reference rate plus 100-200 basis points so that not to have any state aid implications in case that these loans will be provided as a complementary financial assistance to grants. The duration of the loans is estimated to 7-10 years with monthly payments. This scenario has three implementation options:

a. Developing a co-financing scheme by utilizing NSRF resources and by leveraging private resources. Proceed to a tendering process through which a UDF manager will be assigned and will also invest own resources in developing financial products for eligible beneficiaries;
b. Developing a 100% NSRF financed UDF. Holding fund operator will design financial products and will proceed to a tendering process through which a UDF manager will be assigned;
c. Setting up a guarantee fund, which will guarantee for 80% of the loans provided and charge a fee based on safe harbor premium.

3. A third one whose purpose will be to finance PPPs or other projects utilizing RES and / or aiming to the provision of low cost and environmentally friendly energy to consumers (such as district heating). Project owners will be PPPs and / or Municipal enterprises (water and drainage enterprises, district heating enterprises etc). This fund will provide long term loans and / or equity to the above beneficiaries, in order to finance particular projects related to the above sectors. The duration of the loans should not exceed 15 years (with a grace period of maximum 2 years), while interest rates should be estimated on the basis of the reference rate + the appropriate number of basis points based on the credit rating provided to the enterprise according to directive 2008/C14/02. This scenario has two implementation options:
   a. Developing a co-financing scheme by utilizing NSRF resources and by leveraging private resources. Proceed to a tendering process through which a UDF manager will be assigned and will also invest own resources in developing financial products for eligible beneficiaries;
   b. Developing a 100% NSRF financed UDF. Holding fund operator will design financial products and will proceed to a tendering process through which a UDF manager will be assigned.

5.3 Evaluation of Alternative Scenarios

Although it is obvious that the development of each alternative scenario does not exclude the development of the other two, it is clear that resources and efforts should

be promptly focused in order to proceed quickly and effectively to the initiation of JESSICA.

As far as the priorities should be set among the alternative scenarios the following hierarchy is recommended:

1. As mentioned in many parts of the current study the utilization of JESSICA as complementary instrument to grants in the context of EXOIKONOMO is the most mature field of intervention. Energy saving in public venues is a major priority not only in Greece, but also in the EU. Municipal Authorities are expecting to have significant financial difficulties due to cuts into public expenditure, therefore, a supplementary source of financing with attractive terms would be very helpful for Municipal Authorities to implement their energy efficiency plans.
2. The Housing energy efficiency initiative, although not mature yet, is a major priority in terms of achieving the national objectives regarding the reduction of energy consumption. Additionally, such an initiative will boost the construction industry, taking into consideration that the economic environment is deteriorating and construction activity is declining (the total area of buildings constructed in September 2009 has fallen by 24,6% as compared to the relative measure in September 2008 – source: Hellenic Statistical Service).
3. The RES initiative, poses eligibility issues, since financing of such projects should be considered in the context of integrated urban development. Therefore, a lot of effort is required in order to conclude to particular projects that comply with the above requirement. Additionally, RES projects are financed in the context of Development Law, with the exception of PPP projects which can be eligible only under certain conditions. However, PPP projects require a long time to mature enough so that to assure a certain level of readiness, thus justifying the involvement of financial engineering instruments such as JESSICA.

In what regards the implementation options of each scenario the following options are suggested:

- As far as scenario 1 is concerned (Municipal energy efficiency action), option b is selected, because the fact that eligible Municipal Authorities will be those that are eligible in the context of EXOIKONOMO initiative, does not require state-of-the-art expertise in administering the fund. The energy efficiency related components of the projects will be evaluated in the context of EXOIKONOMO. Therefore, if the CDT solution is opted for, it will not be required to practice sophisticated procedures for evaluating loan applications.

In addition, CDT possesses the appropriate expertise to provide loans to Municipal Authorities and monitor debt service. Therefore, instead of launching a tendering procedure it could be advisable to directly assign this role to CDT. Additionally, as currently tendered, EXOIKONOMO is a small scale initiative which is not expected to be particularly attractive to private financial institutions.

- As far as scenario 2 is concerned (Housing energy efficiency action), option a is selected, since according to the consultant's view the most important criterion for implementing such a measure is the capability to leverage private resources, so that to enlarge, to the maximum extent, the impact of the initiative. In addition, this option exploits the expertise of specialized institutions in designing and marketing financial products. The implementation option of a guarantee fund, although it may solve the issue of assuring debt service, it is an expensive solution since it imposes a guarantee fee on top of the interest rate charged. Since we are in the middle of an economic crisis the major objective should be to ensure the minimum cost for beneficiaries. Moreover, this solution requires two more legislative amendments and probably some organizational adjustments into existing structures.
- As far as scenario 3 is concerned, likewise, option a is selected in order to leverage private resources, enhance the impact of the fund and utilize the existing investment expertise and projects' pipeline in banking institutions.

6 Further Activities

The incorporation and effective implementation of JESSICA requires a number of measures to be taken at central administration level. These are mostly related to policy priorities to be set, consultation with stakeholders and the necessary legislative adjustments to be made so that to empower the development of Urban Development Funds in the area of energy efficiency.

Very shortly, the suggested activities to be implemented are the following:

- Set the policy priorities regarding the financing modes of energy efficiency interventions and specific areas and beneficiaries to benefit by these interventions. The study concluded to proposed project categories that could be financed by JESSICA in the area of energy efficiency. Project owners were defined, however it is up to central administration to confirm the above proposals, specify the criteria to be used and proceed to specific decisions regarding its priorities. Especially in the case of housing energy efficiency interventions, central administration has to clarify the objectives regarding

geographic coverage, socioeconomic criteria to be used and the financing instruments to be utilized in this context.

- Consultation with stakeholders in order to specify local needs and priorities and to investigate the capability to leverage private resources. In addition, it is critical for stakeholders to understand the revolving character of JESSICA and its significance in local and regional development, since until now grants constituted the major financing instrument.
- Decide the organizational structure under which JESSICA will function. The major issue is to decide whether to proceed via a holding fund mechanism or directly proceed to the establishment of UDFs. Although the HF mechanism is not obligatory for member states, it seems to be the most appropriate instrument, because it presumes a central organizational scheme which allows for the utilization of significant expertise and experience, thereby accelerating investments. In addition, the need for technical assistance in such an innovative financing scheme is prevalent and the HF structure is the most appropriate one to provide it. European Investment Bank is considered the most appropriate organization to undertake such a role due to its significant expertise, and the regulatory facilitation provided by regulation 1083/2006, thereby avoiding public tendering procedures.
- Proceed to the signature of a funding agreement and decide on the sources of financing, namely from which Operational Programmes, Regional and/or Sectoral, will the funds be made available for Jessica projects. The size of the fund, as well as the proportion of resources that will be delegated from Operational Programs is a matter of policy priorities regarding the projects to be implemented in the wider context of sustainable urban development (not only energy efficiency). A (joint) ministerial decision will have to be issued providing for the establishment of the HF and regulating the terms and conditions, under which the HF will operate (legal entity, decision making bodies, product categories, beneficiaries, monitoring and auditing procedures, fund management procedures) and the resources allocated by OPs to the HF.

There are also some technical issues to be resolved such as:

- The specifications of the legal entity of UDFs and taxation issues regarding the regulation of UDF operations;
- Issuance of a presidential decree, regarding the organizational restructuring of CDT (in case this is also opted for) in order to operate UDFs. This is a necessary activity in case a Municipal Energy Efficiency Fund is decided to be established and the solution of utilizing CDT is selected.
- Other legislative amendments related to JESSICA and national law.

The time framework required implementing the required steps and resolving technicalities should also be considered. Therefore, it is critical for the central administration to proceed as soon as possible since we have almost covered half way towards the end of the NSRF programming period.