

Podbelasica region
Republic of Macedonia



WORK PACKAGE 2: **Identify schemes** **for IRES implemen-** **tation**



R.E.S. INTEGRATION

RURAL SUSTAINABLE DEVELOPMENT THROUGH INTEGRATION OF RENEWABLE ENERGY TECHNOLOGIES IN POOR EUROPEAN REGIONS

Specific Targeted Research Project (FP6-509204)

WORK PACKAGE 2: Identify schemes for IRES implementation

Project Acronym	R.E.S. INTEGRATION	
Project Full Title	Rural sustainable development through integration of renewable energy technologies in poor European regions	
Contract number	FP6-509204	
Type of action	Specific Targeted Research Project	
Project duration	1st November 2004 - 31st October 2007	
Project coordination	AUA - Agriculture University Of Athens, Greece	
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Document's title	WORK PACKAGE 2: Identify schemes for IRES implementation	
Date	31 August 2005	
Content	List of project proposals	

**Project supported by the European Commission
within the 6th framework Programme**



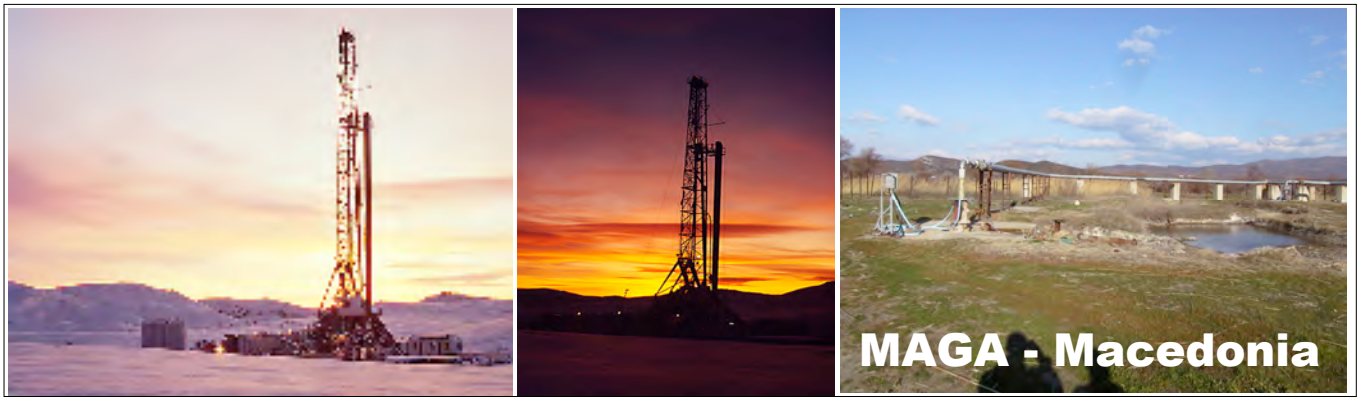
**Specific measures in support of
International Co-operation - Western Balkan Countries (INCO-WBC)**

<http://www.cordis.lu/fp6/inco.htm>



CONTENTS

1. ENLARGING AND COMPLETION OF THE GEOTHERMAL ENERGY RESOURCE
2. RECOMPLETION, MODERNIZATION AND REORGANIZATION OF THE GEOTHERMAL DISTRICT HEATING SYSTEM "BANSKO"
3. BRIQUETTING AND PALLETING FORESTS RESIDUES, AGRICULTURAL RESIDUES AND FILINGS
4. BIODIESEL PRODUCTION
5. ORGANIZATION OF THE IRRIGATION SYSTEM BASED ON SYSTEM OF BOREHOLES AND BIODIESEL DRIVEN PUMPS



Project title	ENLARGING AND COMPLETION OF THE GEOTHERMAL ENERGY RESOURCE
Short description of the intervention	Following the interrupted explorations and investigations of geothermal field Strumica in order to enable increase of the capacity of existing geotherma; resource in Banja BANSKO. Completion of at least two new exploitation boreholes.
Driving forces	<ul style="list-style-type: none"> • Energy autonomy • Rural development policy • Defined national priorities for development of renewable energy sources and environmental protection
Supporting instruments	<ul style="list-style-type: none"> • Structural funds • Donations from developing countries
Identification of local actors	<ul style="list-style-type: none"> • Local municipality • Owner of the geothermal district heating system
Description of the project	<ul style="list-style-type: none"> • Summarizing the results of previous explorations and investigations • Drilling a system of 5-10 exploration boreholes • Following necessary geophysical, geochemical and other investigations • Elaboration of the results of investigations get • Determination of the most promising locations for new exploitation boreholes • Drilling and completion of 2-3 new exploitation boreholes
Energy objectives	Increasing the capacity of the existing exploitation borehole for at least 40%, i.e. getting new 20-25 l/s geothermal water with temperature of 70°C
Environmental benefits	<ul style="list-style-type: none"> • GHS emission reduction • Avoided use of fossil fuels (up to 9 GWh/year)
Socio-economic benefits	<ul style="list-style-type: none"> • By increasing the possibilities for tourism development, new jobs creation • Increasing economy of the existing greenhouse production • Further rural and tourist sector development
Environmental & sustainability issues	<ul style="list-style-type: none"> • After a proper completion of boreholes, practically no negative impact to the environment
Economics	About 1,000,000 € for completion of the investigations and two production boreholes. 10-12 years payback periode.



Project title	RECOMPLETION, MODERNIZATION AND REORGANIZATION OF THE GEOTHERMAL DISTRICT HEATING SYSTEM “BANSKO”
Short description of the intervention	Increasing the capacity of geothermal resource, connection of new consumers, recompletion of technical/technological elements, introduction of new equipment for controlled distribution of heat, reorganization of the system with introduction of centralized government and payment of the used heat.
Driving forces	<ul style="list-style-type: none"> • European directive 2002/91/EC of 16 September 2002 on the energy performance in buildings • Energy autonomy • Rural development policy • National priorities of development and introduction of renewable energy sources
Supporting instruments	<ul style="list-style-type: none"> • Structural funds • Privatization of public utilities • Defined rights and obligations (concession issue) of the users of natural resources
Identification of local actors	<ul style="list-style-type: none"> • Private sector • Local community • State administration
Description of the project	<ul style="list-style-type: none"> • Identification of the weak points of present technical and organizational solutions • Identification of the possibilities to optimize the system, to increase its capacity, to connect new consumers, to introduce new equipment for controlled supply and measurement of heat, to introduce payment of used heat • Technical design of the interventions and determination of necessary funds for realization • Tendering the ownership of the system • Getting the concession rights • Project realization
Energy objectives	<ul style="list-style-type: none"> • Increasing the participation of geothermal energy in local energy demand • Optimization of the geothermal energy consumption
Environmental benefits	<ul style="list-style-type: none"> • Avoided fossil fuels • Avoided GHG and other noxious emissions
Socio-economic benefits	<ul style="list-style-type: none"> • Increasing the possibilities for development of the tourist sector and, with that, opening new jobs for the local inhabitants • Increasing the living culture in the village and wider
Environmental & sustainability issues	<ul style="list-style-type: none"> • None, only disturbing the environment with the (present) geothermal water distribution pipe system
Economics	<ul style="list-style-type: none"> • Very good. PBP around 5 years and risk-free profitable exploitation • Difficulties in the intervention funding with convenient credit conditions



Project title	BRIQUETTING AND PALLETING FORESTS RESIDUES, AGRICULTURAL RESIDUES AND FILINGS
Short description of the intervention	Organization of collecting the forests residues, agricultural residues and filings for production and selling the briquettes and pallets for burning.
Driving forces	<ul style="list-style-type: none"> • Energy autonomy • Rural development policy • Defined national priorities for development of renewable energy sources and environmental protection • Structural funds
Supporting instruments	<ul style="list-style-type: none"> • Structural funds • Green certificates mechanisms
Identification of local actors	<ul style="list-style-type: none"> • Local public utility for forests utilization • Local farmers and oil producers • Local municipality
Description of the project	<ul style="list-style-type: none"> • Designing the organization of collection of forest residues • Designing the organization of the agricultural residues • Designing the production plant for briquetting and palleting the residues • Designing and organization of the market for wooden briquettes and pallets • Organization of the collection of forest and agricultural residues • Completion of the production plant for wooden and agricultural briquettes and pallets. Completion of the seasonal stores • Foundation of a commercial unit for marketing and supply of the products
Energy objectives	10 - 20.000 m ³ /year wooden and agricultural residues
Environmental benefits	<ul style="list-style-type: none"> • GHS emission reduction • Improvement of the forests management • Lower risks of fires and better environmental conditions
Socio-economic benefits	<ul style="list-style-type: none"> • New jobs creation (collection of residues and plant(s) operation) • Additional income for farmers • Economic valorisation of residues
Environmental & sustainability issues	<ul style="list-style-type: none"> • Combustion of biomass (need for better stoves) • Sustainability issues related to biomass collection
Economics	Investment in the range of 3-4,000,000 €, depending on the size of the plant. Final price of the product about 0.2 €/ton.



Project title	BIODIESEL PRODUCTION
Short description of the intervention	Organization of production of oil rich cultures, collection of the products, production and marketing of biodiesel.
Driving forces	<ul style="list-style-type: none"> • Energy autonomy • Rural development policy • Defined national priorities for development of renewable energy sources and environmental protection • Structural funds
Supporting instruments	<ul style="list-style-type: none"> • Structural funds • Green certificates mechanisms
Identification of local actors	<ul style="list-style-type: none"> • Local farmers and producers of edible oil • Local municipality
Description of the project	<ul style="list-style-type: none"> • Organization of production of oil rape and corn at 200-500 ha agricultural land • Organization of production oil cultures at 40-50 ha mountain land • Organization of collection and storing the oil raw materials • Design and completion of a production plant for production of biodiesel • Completion of a central biodiesel store • Organization of the local biodiesel distribution and marketing
Energy objectives	<ul style="list-style-type: none"> • Local energy autonomy • Replacement of fossil fuels use for local mechanization and irrigation pumps
Environmental benefits	<ul style="list-style-type: none"> • GHG emission reduction • Avoided fossil fuels use
Socio-economic benefits	<ul style="list-style-type: none"> • Secure market for local agricultural production • Additional income for local farmers and oil production plants • Independence of local farmers of changes of energy
Environmental & sustainability issues	<ul style="list-style-type: none"> • Combustion of particular fuel in existing machinery • Relation of the state to the “new” local fuel
Economics	Still to be studied. According to the first estimations, production costs of the biofuel in the rang of 0.5 €/lit.



Project title	ORGANIZATION OF THE IRRIGATION SYSTEM BASED ON SYSTEM OF BOREHOLES AND BIODIESEL DRIVEN PUMPS
Short description of the intervention	Design and completion of the irrigation system for the present and new agricultural fields based on the existing sub-surface waters and local production of biodiesel for driving the pumps, plus the small river in the lower part of the territory..
Driving forces	<ul style="list-style-type: none"> • Energy autonomy • Rural development policy • Defined national priorities for development of water management and environmental protection • Structural funds
Supporting instruments	<ul style="list-style-type: none"> • National and international structural funds • National programs for water management
Identification of local actors	<ul style="list-style-type: none"> • Local municipality and water management public utility • Local farmers
Description of the project	<ul style="list-style-type: none"> • Performing necessary investigations for determination of most convenient locations for drilling water supply boreholes • Designing the water supply and management system, based on the sub-surface waters and planned distribution of users • Drilling and completion of necessary number of boreholes for gradual development of an irrigation system for about 1,000 ha agricultural land
Energy objectives	<ul style="list-style-type: none"> • Replacement of existing electrical and diesel pumps with biodiesel pumps
Environmental benefits	<ul style="list-style-type: none"> • Replacement of the existing “wild” with a properly designed and completed irrigation system
Socio-economic benefits	<ul style="list-style-type: none"> • Increasing the quality of irrigation of existing and new agricultural land management • New jobs creation
Environmental & sustainability issues	<ul style="list-style-type: none"> • Resistance of farmers to controlled use of subsurface waters • Resistance to biodiesel fuels
Economics	Wider studies are necessary. Usually, not so attractive investment.