

**Institutional and Legal
Incentives and Barriers
for the
Geothermal Industry:**

Eastern Europe & China

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INTRODUCTION

It is abundantly clear, at this point in time, that with increasing worldwide development and improved standards of living, the associated introduction of large quantities of CO₂, NO_x, SO_x, and other combustion exhaust gases into our atmosphere is producing the potential of significant global warming and numerous associated catastrophic circumstances. Even those who question whether or not global warming will take place still will readily admit that putting great quantities of unnatural gases into our atmosphere is, intuitively, inadvisable.

In this global atmosphere of environmental concern, the expanded use of geothermal energy can produce substantial alleviation of greenhouse gas emissions. Comparing geothermal use with the emissions from state-of-the-art coal plants, each 200MW of use from geothermal resources, electric generation or direct use, creates annual emissions savings of 1.7 million tons of CO₂, 315 tons of NO_x, and 11,000 tons of SO_x.

The Kyoto Conference on Global Warming, and the resulting extended debate, have produced a focus on the developing countries of the world as being key to our environmental future. If the countries of Eastern Europe and Asia choose to develop their infrastructures around coal fired electric generation, then the global environment will certainly suffer. But if these same countries can be encouraged to develop their renewable resource opportunities, such as geothermal energy, then the global environmental problems can be mitigated accordingly.

The purpose of the task described in this report was to examine a number of the developing countries in Eastern Europe and research the incentives, or disincentives, in their legal and institutional systems that would apply to geothermal development and implementation. A similar effort was applied to China. Contacts were made both at Washington, DC embassies and within the target countries to extract the necessary information. The information was then researched and examined, if available, for each country.

Generally, of the several countries focused on, some currently possess little or no present legislation or laws for incentives or disincentives to geothermal development. However, a majority of this focus group do have some type of general “economic” legal and institutional system set up in their respective countries, but not specifically toward the geothermal industry.

COUNTRY BARRIERS AND INCENTIVES

In the developing countries of Eastern Europe, emphasis within legal and institutional systems tends to begin with putting into place the fundamentals of a democratic society; namely a system of justice, a system to “privatize” formerly State-owned assets, and a system of basic taxation. The priority to develop institutional and legal incentives appears to be low, compared to the basic “underpinnings” of democracy. Therefore, there are virtually no purposely developed incentives in this part of the world, applied to geothermal or any other forms of renewable energy. An

exception is Eastern Germany, where the well developed democratic systems of the West were simply applied when Eastern Germany was assimilated into the Western system. However, this circumstance is, obviously, unique among the countries of the former Soviet bloc.

By the same token, there are a number of disincentives often in place in this region, not purposely applied, but as a result of attempts to raise tax monies from foreign sources. A prominent one is tariffs on the import of foreign equipment, such as drilling rigs, turbines, heat exchangers, and the like. In some cases, this can be overcome by using local sourcing, and in other cases, the tariff can be avoided by carrying out the venture through a country such as Cyprus, which has a unique tax relationship with many of the Eastern European countries. In any event, this is a very fluid situation, which should be checked in detail for any country in which a geothermal investment is being contemplated.

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In general, Albania may be described as a country with some promising outflows, such as Lixha-Elbasan and Kozan-Elbasan, but a country in which the resources have never really been examined, developed, or exploited. The outflows generally have small population centers nearby, and central heating is the most generally assumed possibility. BL&A has received letters from Albanian contacts requesting possible alliances with American firms to develop the geothermal resources there.

Contact was attempted twice to the Washington Embassy, with no reply. However, further research resulted in the following website address at: <http://194.51.140.1/albinfos/>.

This address provides data and information about Albania, Albanian Institutions and Enterprises as well as various possibilities of political, humanitarian, technical, commercial and cultural cooperation with Albanian partners. An E-mail was then sent to the website contact, Mr. Gjergji Themeli, who just returned from a trip to Tirana where he discussed with his Albanian partners the possibilities of including clean and renewable energy resources in their cooperation topics. He also stated:

“There are many low temperature geothermal water sources in Albania. Some of them have curative values and have been used for years, while others have been identified during oil prospecting works. The projects dealing with “clean and renewable energy resources” are susceptible to be included in the priorities of the “Albanian Public Investment Program” for the years 1998-2000.”

“The foreign investors in this field as well as the joint ventures have the same fiscal treatment as Albanian firms. In particular, different incentive measures are offered such as:

1) low or zero customs tax; 2) grant on revenue taxes for first four years; and 3) facilities for repatriation of benefits. A technical assistance service for American firms may result in obtaining updated existing data, maps and documents on geothermal potentials of Albania; the programs of future research and/or implementing geothermal projects; legal and administrative framework for the specific geothermal field joint-venture; and local staff and other facilities.”

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Bulgaria is a country with extensive geothermal resources, but few of which are above 100 Deg. C in surface temperature. The population has thousands of years of experience using these resources, but mostly for bathing. Some direct heating of houses, district heating, and greenhouse applications have occurred, and the concept of geothermal heat pumping is just now taking hold. Bulgaria is a country of entrepreneurs and represents an opportunity for American companies with advanced district heating and heat pumping technologies.

The Commercial Counselor in the Washington Embassy issued a copy of Bulgaria's "Business Guide" which gives some insight on the information we are pursuing. Bulgaria is now a parliamentary republic and took the road of new democratic development towards a free market economy in 1989. According to Mr. Penev, the Bulgarian Government took office in July 1997 and is backed by the parliamentary faction that has a majority of 34 seats.

Privatization began in 1993 and the government is aiming at improving the efficiency of the economy that will result in long-term results. In 1996, an ambitious mass privatization program was installed. This included free distribution of privatization funds. More than 1000 companies were offered to Bulgarian citizens and by 1998, 1000 to 1500 more companies will be transferred to "private hands". Foreign participation is not restricted but managers and board members need Bulgarian residency. The main enterprises include the following key industrial sectors: machine building; chemical; food processing, electric, and electronic industry.

Current legislation in Bulgaria offers incentives. In 1997, the following commodity groups became exempt from customs duties. This list included ozone friendly substitute materials and equipment, solar, wind, water and geothermal energy utilization equipment. Imports in country are levied with customs duty, import tax and customs clearance tax, however, the exceptions include crude oil, natural gas, electric power, coal, and nuclear fuel. Up to June 30, 1997, the import tax was 5% of the value of the import, but was decreased to 4% from July 1, 1997 to June 30, 1998.

There are no restrictions for repatriation of after tax profit and capital, except for profits generated by companies privatized with Brady bonds. For tax exemptions, until the year 2001, a company which is formed as a result of the privatization process and in which the state or municipality hold not more than 33% of capital is exempt from the corporate income tax for the first three years after privatization and is taxed at a reduced rate by 50% in the following two years (There are some requirements to obtain this exemption). There are also investment allowances.

According to existing legislation, Bulgarian companies are required to withhold tax on payments of dividends, royalties and fees for technical services, rental payments, and capital gains payments to nonresident companies. Any other income of foreign residents, other than business income, is not subject to withholding taxes. The general rate is 15%. Dividends paid out are not deductible from the profit base. A 15% withholding tax rate is applied when a dividend is paid to a non-resident company. Branches repatriating profit do not apply a withholding tax.

THE CZECH REPUBLIC

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The Czech Republic and Slovakia are developing countries with resources which need further exploration. The need for space heating, greenhousing, and District Heating is substantial across the country, and there is some considerable promise that geothermal resources could be harnessed to accomplish some of this. Energy, in all forms, is scarce in these countries and very expensive. American technology could certainly help.

According to Mr. Toman, at present, a new energy policy is being discussed by the Czech Government. This policy also promotes the use of renewable energy resources as one of its incentives. However, the policy has not yet been approved. The Ministry of Industry and Trade and the Ministry of the Environment have been requested by the Government to prepare an analytical report dealing with a long term strategy of the exploitation of domestic energy resources, including alternative ones.

Presently, there are eight regional electric distribution companies (REDC) and eight regional gas distribution companies (RGDC) in the Czech Republic. They are joint-stock companies and lie within the same geographic areas. Privatization of REDC and RGDC is based upon privatization projects and as stated in the Czech Energy Policy:

The Policy discusses privatization of their electric utilities through stock sales. Government decides who the strategic investors will be. The decision will be made sometime in 1998.” Investments into the energy sector and domestic and foreign stakeholder shares are not supervised by the state administration and depend on the decisions of the general assembly and investors’ strategy.

The Ministry of Industry and Trade issued their main law concerning the energy sector. There are not any laws particularly pertaining to geothermal, but their laws regarding private sales and distribution with heat as a product, applies also to the geothermal industry and its needs. It declares in Article 3 that natural or legal persons may do business in the energy sectors on the basis that a state license is granted by the Ministry of Industry and Trade. A license is then granted for a definite period of time, at a minimum of 25 years for the production and distribution of electricity, gas or heat. In other words, one must acquire a license in order to produce electricity.

Per Article 4, the conditions for granting a license to a *natural* person are: a) attainment of 21 years of age; b) fitness to perform judicial acts; c) irreproachableness; d) permanent residency in the Czech Republic; and e) professional qualification of appointment of an expert representative. The conditions for granting a license to a *legal* person are: a) a registered office in the Czech Republic and b) appointment of a representative who fulfills the conditions necessary. A natural or legal person who applies for a license must show that he is financially and technically stable and has the material prerequisites for the duties of licensed activities that will not endanger interests in environmental protection.

In Article 9, it states: A license holder is required to ensure that only the persons possessing the required professional qualifications solely be able to perform the various licensed activities, in accordance with special statutes; a licensed holder is required that all technical equipment used for the performance of licensed activities fulfills the safety and reliability requirements set by work safety and technical standards; and a holder of a license for distribution or supplier is required, if it is technically and financially feasible, to conclude a contract on the supply of a selected type of

energy with every natural or legal person who requests and fulfills the conditions of this Act and is located in the place of performance of licensed activities.

A special section is included in this energy policy regarding the Electricity Industry describing the requirements involving the supply of electricity, and the electricity connections. Any facility for electricity generation and distribution equipment are safeguarded by protective zones and in the event of contact of distribution equipment with roads, waterways, railroads and other facilities, owners and operators of distribution equipment are required to implement measures to keep up the safety standards and maintenance of the equipment. Any relocation of distribution equipment is solely the responsibility of the person who created the need for relocation.

In Article 30, the supply of heat is discussed and states that: A license holder must supply to every building owner who has a standard hot water connection/heat consuming equipment; and fulfills the conditions regarding the place, method and date of connection. The heat discussed is specifically describing space heating, preparation of hot water and other such uses and the hot water connection is equipment carrying a heat bearing medium between equipment of supplier and customer.

SLOVAKIA

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The Slovakian Embassy in Washington acknowledged receipt of our request and had no information available in their office. Correspondence with the Commercial and Economic Section in New York was made which eventually directed us to the in country contact. To date, there are no legislation or laws available.

GERMANY

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Eastern Germany has a significant amount of low enthalpy geothermal resource, and it is described by the present German government as having potential for exploitation for the common variety of direct uses. Any Geothermal development that occurs will probably be accomplished in a subsidized fashion by the German Government. The best expertise on this subject is thought to be at the Zentralinstitut für Physik der Erde, in Potsdam. A researcher named S. Glaser is often referenced.

To date, a great amount of progress has occurred in conforming the former East Germany's energy sector to the standards of the West in regards to privatization. The German energy sector is dominated by large, private power companies. The government is highly influential with energy suppliers, however, in gaining compliance with national policy objectives.

Regarding incentives or barriers, the German embassy supplied the authors of this report with some highly complex text, in German, which they stated to be present German law and policy. They had nothing available in English. It took two Professors of German a period of two weeks to decipher what the legislation's impact was, and it is not significant. At present, Germany operates 22 larger geothermal plants and a number of smaller ones, all for direct use applications. The total thermal performance is about 320 MWth. Three techniques are employed: heat pumping, direct use in district heating networks, and hot dry rock heat extraction.

There are laws in place which apply particularly to the use of hydropower, solar, methane from waste, agricultural waste, and wood waste. Excluded from these laws are plants owned more than 25% by the government of Germany. The German federal law book reference is BGBL I S 1622. The thrust of these laws seems to focus on how the electricity generated from any of these

resources must be sold, rather than tax incentives of any sort. Electricity supply firms are required to purchase electricity produced in their areas by the Federal Republic of Germany. Electric power from Solar Energy and wind is subsidized by the government up to 90% of the retail price, and electric power from wood, biomass, and methane from waste is subsidized up to 80% of retail cost. Local electricity supply firms (utilities) are required to buy electricity generated from these renewable resources.

Incentives for Geothermal use are much less clear, because geothermal energy is thought to be able to provide only heat in Germany, not electricity. The German government conducted a study of the potential for geothermal use in Germany and arrived at the following set of conclusions: The technology does not offer the prerequisites for broad market introduction, the reservoir development is a very high risk business, and each case is different and requires a large amount of initial capital. Based on this study, the government decided to encourage only the use of geothermal heat pumps.

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Hungary is a country which is moving forward on infrastructure, standard of living, and other economic improvements faster than virtually any other entity in the Eastern European block. Although Hungary originally had few surface outflows in comparison to neighboring countries, it is reported that Hungary now has over 1200 geothermal wells and outflows which are being

utilized in some fashion. Again, there are very few thermal springs, or natural geothermal outflows at the surface in this country, however, at an accessible depth below the surface, there are extensive low enthalpy resources which have been tapped and are now extensively used in a variety of applications. In addition, there is some significant evidence that high enthalpy resources may also be present at depths which will allow electric generation to occur.

The dominant geological feature in Hungary which provides for the hydro geothermal distribution is called the Pannonian Basin. The Upper Pannonian reservoir system extends nearly throughout the entire country, and even extends to adjoining countries, such as the Czech Republic and Slovakia, as well as Austria, Romania, and the countries of the former Yugoslavia. The Basin is surrounded by the Alps, the Carpathians, and the Dinarides. This overall formation results in an extensive, low enthalpy, geothermal aquifer which has been tapped by a few hundred using wells. Down to 2000 meters, the temperature gradient seems fairly linear in most regions, with temperatures up to 90 deg. C. Below 3 Km, however, discontinuities occur, and temperatures as high as 250 deg. C have been encountered.

Attempts were made with several contacts, and to date, there is no available data on any legislation or laws.

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In Poland, there are very few thermal springs, or geothermal outflows at the surface. As a result of this, and the fact that Poland has a long history of using soft coal, the geothermal resources of the region were virtually ignored until the late 1980's. At the present time, there is a significant interest in Poland in tapping underground thermal water resources for district heating, baneological purposes, greenhouses, industrial drying, and other direct uses. Even in the more promising regions of Poland, the water temperature rarely exceeds 70 deg. C, even at depths of 3 Km. In any event, using these waters, combined with natural gas "booster" heat, is being looked

at seriously for widespread heating uses. Poland is a country which would very much like to utilize their geothermal resources for environmental and energy capacity reasons. However, they are greatly handicapped by the temperature and depth of the available resources, even though the resources, themselves, are extensive.

The Economic Counselor, Ms. Magdalan Bentkowska-Kiczor, sent us a brochure of general information on economic and legal situations presently in place. BL&A also acquired a copy of the Polish Energy Law, however, there is no English version available in the U.S. and it is only published in the Polish language.

Poland has disaggregated its power sector and now allows competition among independent generation companies. However, the power generation market is still subject to a variety of regulatory requirements. Also, independent transmission and distribution companies have been created that operate separately from generating companies. Privatization of electricity generation and distribution is also being considered, although the government plans to maintain 51% ownership of the transmission grid. The privatization of State Owned Enterprises (SOE) are carried out by two methods: 1) Capital Privatization (joint stock enterprises) and 2) Direct Privatization (through liquidation). Foreign investors may also take part in the privatization process under certain requirements.

In November 1995, Poland began distributing vouchers under its mass privatization program which covers about 500 mid sized companies. The vouchers, which ultimately will be redeemable for shares in 15 National Investment Funds, now are being traded in a second market on the Warsaw Stock Exchange. The government is pursuing limited commercialization of major state owned companies in designated strategic sectors (including energy) by forming sector based holding companies prior to full privatization.

Poland's electric power sector is in the process of restructuring (with World Bank support) into 3 components: generation, transmission and distribution. Poland's electric generating capacity exceeds current demand, so investment needs relate primarily to improving effectiveness and competitiveness and addressing environmental concerns. Specific environmental needs related to Poland's energy sector include: improving coal quality; modernizing combustion methods in power plants; substituting natural gas for coal, improving heating system efficiency; and using alternative energy sources (mainly geothermal, hydropower, and wind).

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Romania is not a wealthy country, with an economy which is largely agrarian. Hydrothermal resources have only been exploited sporadically, and largely as a result of a surface manifestation (outflow), or hitting a reservoir by accident while drilling for oil and gas. Romanian resources are universally low enthalpy, and little developmental interest seems to be present. This would not appear to be a country with significant geothermal opportunities for American firms, at present.

The Economic Counselor in the Romanian Embassy did not have any information available for our requests. He directed us to the in-country contact at Romania's Ministry of Industry and Commerce. To date, there are no known legislative incentives or barriers.

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The former Yugoslavia consists of the present countries of Slovenia, Croatia, Bosnia, Yugoslavia (Serbia and Montenegro) and Macedonia. Now that the strife in this part of the world is lessening, there may be some considerable opportunities in this region for geothermal entrepreneurs. The countries of this region have over 170 natural geothermal outflows with temperatures up to about 80 degrees C. Exploration (including that for hydrocarbons) has discovered reservoirs at readily reachable depths (3 Km or so) reaching temperatures well above 100 deg. C. The promising and proven Pannonian Basin (shared with Romania and Hungary) covers a large portion of the northern part of this area.

Substantial efforts to utilize the geothermal resources began in the mid to late 1970's when much of the world was addressing the energy crisis. Worldwide interest in renewable resources provided momentum for the effort. The countries of the former Yugoslavia may well represent an inviting opportunity for American technology and geothermal entrepreneurs, once political stability returns. Higher enthalpy resources are available, and heat pump technology has already been implemented, but in more rudimentary form than American technology. The situation in this new set of countries deserves watching, from a geothermal standpoint.

To date, this is no information on laws or legislation available from the majority of countries of the former Yugoslavia. Croatia was the only one to deliver any general material about their economy. A copy of the Croatian Chamber of Economy's "How to do Business with Croatia" was submitted for general information.

The Croatian economy is currently in a state of reconstruction and is tied closely to privatization. Croatia has already begun to build a legal infrastructure that would be an incentive for foreign investors and these foreign investments are regulated by the Company Law which came into effect on January 1, 1995. According to the law, foreign investors have the same rights, obligations, and legal status within an enterprise as domestic investors. They can also acquire additional guarantees that are not offered to domestic investors. The Republic of Croatia's Constitution states that rights acquired through capital investments cannot be withdrawn by law or any other legal act. It also insures free repatriation of profits and free repatriation of capital on disinvestment.

Taxation reform is currently in progress and will be based upon the systems used in Western European countries with developed market economies. The current taxation system includes: 1) income tax; 2) profit tax; 3) tax on sale of goods and services; 4) Value added tax Law; 5) special tax on certain products; and 6) certain forms of tax levied by local authorities.

CHINA

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The Embassy in D.C. did not have any of the information requested but directed us to contact Mr. Liu Hongpeng of the Renewable Energy Division in China, who had this reply:

“There are no legislation and systematic incentives for geothermal resources in China right now. However, the Government has recently published a *Directory* on the industries, products, and technologies to be encouraged by the State at present and revised the *Guide Directory* on the industries to be invested in by foreign investors, in which the renewable energy power projects is one of the priorities to be supported by the Government. All of the projects listed in this directory will benefit from import and VAT exemption if the projects are approved by the State Planning Commission or the State Economic and Trade Commission. The Energy Conservation Law which came into effect on January 1, 1998 also indicates to promote renewable energy according to local conditions”.

UKRAINE

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In Country Contact:

Ukrainian State Geology Committee

Ye. Yacolvlev
Director of Technical Science

Contact with the Washington embassy resulted in direct contact with the Chief of Main Hydrogeological and Environmental Geological Division in Ukraine. Although there is a sincere interest with potential partnerships with American firms, Mr. Yacovlev stated that there is no current legislation or laws in place. However, he also remarked:

“Ukraine has two main perspective fields with the explored hydrogeothermal resources in Crimea and Carpathian regions. The preliminary and detail geological investigations began in two stages from the square geophysical investigations till experimental exploitation of hydrogeothermal layers due to double-borehole (pumping-injecting) systems with additional heating of the public houses in the local villages such as schools, and children’s gardens. The total geological data of the investigated upper layers are: 1) depth of boreholes- about 1-2km; 2) temperature of water - 42-56°C; 3) additional pressure (above surface) 2+3 atm; 4) distance between boreholes - 300-400 m; and yield (capacity, discharge) of pumping boreholes from 600 till 1200 m³/day. We consider that double-borehole systems is more effective in the ecological relations due to the hydrogeothermal resources utilization in regions with the complicative ecological conditions.”

TURKEY

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N/A

According to Aysen Kulakoglu, Turkey currently does not have a regulatory system set up for incentives specifically designed for the energy sector. She sent a copy of Turkey’s “Decree Concerning State Aid for Investment” which refers to all sectors in general, together with the law for “Build-Operate-Transfer Model.

The objective of the “ Law on Generation, Transmission, Distribution and Sale of Electricity by Institutions other than the Turkish Electricity Authority” is to regulate and authorize domestic and foreign utility companies with special legal status to generate, transmit, distribute and sell electricity. The Council of Ministers, upon the written proposal of the Ministry of Energy and

Natural Resources have the final authorization for utility companies to establish and operate power generation, transmission and distribution facilities and sell electricity in service areas. The Ministry will also enter into contracts with the utility companies set by the Decree of the Council of Ministry. Then with the consent of the State Planning Organization, they may grant permission for construction and operation of these facilities to utility companies solely established for electricity generation. Electricity generated at these plants is to be sold to TEK (Turkiye Elektrik Kurumu), or another utility company servicing the local area at a tariff rate determined by the Ministry. The Council of Ministers also decides the transfer of operating rights.

Energy tariffs proposed by utility companies must be approved by the Ministry and be determined to ensure necessary income to cover annual operation, maintenance and repair costs, interest expenses and exchange rate differences, according to Article 9. Expropriation costs will be paid by these appointed companies.

According to the Decree, for research and development (R&D) investments, fifty percent of the costs of material, equipment and software for such projects shall be credited from the Fund resources. The investing firm must have sufficient capacity and infrastructure for the project, and Fund Exemption shall also apply to operational material and consumption items relating to the project. In Article 12, the Value Added Tax (VAT) support for machinery and equipment purchases which are obtained as new and manufactured within the country, shall be subject to an additional ten points on their VAT amounts payable to the investors from Fund resources. This support, for investments with Incentive Certificates as a result of international tenders, shall be paid to the local firm instead of the investing firm, provided this tender is awarded to local investors.

Article 14 then describes energy subsidies for completely new investments with Incentive Certificates. A subsidy up to 25% of the electricity consumption for the initial five years, may be provided from Fund resources determined by the Money Credit and Coordination Board.

RUSSIA

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In Country Contact:

N/A

Consistent reform has developed a new economic situation in Russia. Liberalization of the economy is slowly becoming reality. The final stage of large scale reconstruction, production and investments, and enhancement of efficiency is ending. The “Guide for Investors in Energy Efficiency Projects in the Russian Federation” indicates these guidelines and states that the revival of foreign investment in the Russian economy is a priority. There is some indication that Russia is looking at privatization of some resources which will enable the private sector to be allowed leases on government owned resources rather than requiring partnerships with the government.

Serious efforts are underway to improve the framework for foreign investments and include: 1) Profit tax incentives for commercial organizations with foreign investments; 2) the exemption from the VAT of imported technological equipment and spare parts; 3) exemption of foreign exchange loans obtained by the taxpayers from foreign banks and credit agencies; and 4) exempted goods from the customs duty that are imported as a contribution to the authorized capital stock of enterprises with foreign investments.

In 1994, additional tax incentives for enterprises with foreign investments have been introduced. All manufacturing enterprises with foreign investments, provided their paid up share in the authorized capital stock is not less than 30% (\$10 million U.S. dollars), are exempt from the profit tax during the first two years, while the third and fourth are taxed at a rate of 25% and 50%. These enterprises are also exempt from any tax on profits invested in R&D. Other amendments to the current tax and customs legislation are being proposed such as : Exemption for the VAT of the contributions of foreign investors and lower customs duty on the imports of goods. However all of these incentives may not apply specifically to the geothermal industry.

In 1992, the Government of the Russian Federation approved a law for “Payment for the Right to Use Sub-Surface Resources.” These payments include payments for the right to prospect for and evaluate deposits of minerals, to survey them, and operate them, payments for the right to use the waste from mining and processing plants, and for the right to construct and operate subterranean installations not connected with the extraction of minerals.

Project financing is divided into the following categories: 1) Equity financing; 2) financial leasing; 3) the provision of credit finance, and 4) the provision of government finance. The larger companies use a combination of these methods. Energy saving projects may require an energy service company (ESC) to be established (there are no current companies available now) with the founders providing the equity finance. The shareholders of some projects could provide

some of the equipment as a direct contribution to the authorized capital, or could lease some of it to the company, with working capital being provided by banks as loans. Leasing could be of interest to these enterprises because the equipment rental payments can be included in generation costs, thus there is no need to increase profits in order to repay the loan. This is vital since the Russian profit tax is 35% . The two types of leasing are financial leasing where the lessee is responsible for the maintenance and insurance of the equipment and operating leasing where maintenance is the responsibility of the lessor.

CONCLUSION

Clearly, the incentive and/or barrier situation in the developing world, with respect to geothermal energy, is disparate, at best. Each country seems to be going its own way with its own model, and no common model is found. It behooves the potential investor or entrepreneur in a given country to examine carefully the laws regarding the use of geothermal resources and the import of the necessary equipment to explore and utilize them.

The one constant in this developing environment is continual change.