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STRATEGIC MANAGEMENT OF ENERGY PRODUCTION FROM AGRICULTURAL PRODUCTS IN KOSOVO

Author's summery

dissertation for awarding the educational and scientific degree "doctor" at scientific specialty "Organization and Management (by sectors)"

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PhD thesis consists of 149 pages, including 145 pages exhibition, 42 tables and 11 figures. Used were 85 literary sources.

The dissertation work is discussed and focused on protection department "Management and Marketing" at the Agricultural University - Plovdiv.

The defense of the dissertation will be held on ..... year ..... hours hall of Agrarian ..... University of Plovdiv.

Materials Protection are available to those interested in the library of the AU - Plovdiv.

I. GENERAL DESCRIPTION OF dissertation

1. Actuality of theme

From the perspective subsidy system for processing biomass in Kosovo, issues, efficiency and cost reduction, as well as justification of the use of public funds have a very important role. The aim of this study is to discuss and clarify a considerable number of issues and results related to energy production from biomass and government subsidies for its processing. Above all, this study focuses on the study of energy for heating, but also other ways of treating various types of biomass, such as electricity production at processing plants or biomass production of biogas. In terms of strategic and long-term consequences for the entire economy biomass processing has contributed to: price stability biomass which is a prerequisite for a stable income for farmers, security of supply, independence from imported fossil fuels and reduce the greenhouse effect. Along with izbroeneto, processing of biomass also have a positive impact on employment and increasing incomes of rural residents. The negative effects of the ambitious project for processing of biomass are high costs of realization of the project compared to other heating systems and financial burden on the public budget. Despite these arguments in the long run the high cost of fossil fuels allows revenues from biomass to cover the negative effects of its use. processing of biomass also have a positive impact on employment and increasing incomes of rural residents. The negative effects of the ambitious project for processing of biomass are high costs of realization of the project compared to other heating systems and financial burden on the public budget. Despite these arguments in the long run the high cost of fossil fuels allows revenues from biomass to cover the negative effects of its use. processing of biomass also have a positive impact on employment and increasing incomes of rural residents. The negative effects of the ambitious project for processing of biomass are high costs of realization of the project compared to other heating systems and financial burden on the public budget. Despite these arguments in the long run the high cost of fossil fuels allows revenues from biomass to cover the negative effects of its use.

In the perspective of subsidies for biomass energy systems in Kosovo raises the question of efficiency and cost, and whether the benefits of using biomass justify the spending of public funds.

The study addresses the question of whether biomass should be encouraged by public measures. The study focuses on the use of biomass for heating in Kosovo. Of course,have been considered and some links to other uses of biomass - eg. generating electricity from cogeneration of thermal energy. The analysis shows that biomass can provide heat for all households. As for the overall economy, long-term strategic effects such a scenario lead to similar effect. Because there: price stability biomass supply security, independence from imported fossil fuels and the reduction of greenhouse gases. Significant positive impact on employment and income from the use of biomass in rural areas. The negative effects of the ambitious scenario of biomass are higher external costs of air pollution in comparison to other heating systems and adverse effects on public budgets. But even in case of long-term low prices of fossil fuels can not ignore the positive effects of expanding the use of biomass. Therefore the promotion of biomass provides safeguards against the negative impact of the increase in oil prices on the economy.

2. Purpose and objectives of the thesis

The aim of the thesis It is to consider and appreciate the numerous impacts arising from the use of biomass.

In order to achieve the objective solve the following research objectives:

1) Conceptually explaining the essence of the strategic management of energy production;
2) Book Review of existing methodologies to analyze and evaluate the effects of the application of the approach of strategic management;
3) Adapting the methodology for studying, analyzing and evaluating the energy sector in Kosovo;
4) Diagnosis of agriculture as a raw material base for the production of electricity in Kosovo;
5) Collection, structuring and synthesis of empirical information on the objectives of the study;
6) Analysis of existing strategies for managing the production of electricity from agricultural products;
7) Formulation of policies and strategies to enhance the effects of the strategies in the sector.

3. Subject and object of the thesis

The subject of scientific study the processes in the strategic management of energy production from agricultural products in Kosovo.

The subject of scientific study It is the energy sector in the Republic of Kosovo.

4. Thesis dissertation

In the thesis argues that the application of strategic approach in the management of energy production from agricultural products is a prerequisite for improving the quality of the environment. This is achieved by analyzing the energy potential of the agricultural sector and design a strategy for waste management in the agricultural sector.

5. Leading podtezi in the study

• Biomass has potential as an energy resource to meet the challenges related to environmental protection and improvement of economic activity in rural areas.

• The use of agricultural products from the energy sector of the Republic of Kosovo improves the sustainability of the sector through diversification of energy sources.

• The development of management strategies leads to improving prospects of the agricultural sector as a source of products for energy production.

6. Methods of testing

In conducting the study were applied systematic approach, a retrospective analysis, situation analysis, comparative analysis, statistical methods, diagnostic assays, prognostic assays, and the like.

7. Structure of work

Dissertation consists of introduction, three sections, conclusion and list of references - a total of 149 standard pages.

In accordance with the relevant research in basic tasks exhibition in the thesis is developed in the following structure:

INTRODUCTION

Section One Strategic Framework for managing the production of energy in Kosovo
1. Theoretical Issues in the use of biomass as an energy resource
2. Basic concepts and definitions in the study of the energy potential of biomass
3. biomass products and their role

Section Two Analytical part
1. Analysis of production potential
2. Organization of the electricity production in Kosovo
3. Production of electricity from biomass in Kosovo and its sustainability
4. Evaluation of the energy potential in Kosovo

Section three strategic guidelines for the management of energy production from agricultural products IN KOSOVO
1. Integrated management of electrical system performance
2. Evaluation of the financial cost of energy produced from agro Kosovo
3. Comparative analysis of reproductive enegiya
4. Project for the production of energy from waste

CONCLUSIONS AND RECOMMENDATIONS

LITERATURE

I. MAIN CONTENTS

section One
STRATEGIC FRAMEWORK FOR MANAGING THE PRODUCTION OF ENERGY IN KOSOVO

The aim of this study is to analyze the numerous economic effects of the use of biomass - especially topics that are not affected so far aspects of regional and social distribution of resources and long-term impact of their strategies. From this study will answer the question whether it is appropriate to subsidize the processing of biomass by the state or not. The study is based on the use of biomass for heating, but not without mentioning its use to generate energy.

The positive effects of the concentration of biomass on the overall economy, especially in the case of low energy prices, are indisputable. The role of biomass in heat gain increases, even if we consider that in the future there may be an increase in the price of hydrocarbons. This is a drastic reduction of state subsidies, as the use of biomass will attract the attention of investors and private business agencies. We can also say that biomass is an element of security of the state budget, but also the private sector, compared with negative market development of hydrocarbons. Full use of biomass will also affect the overall economic situation of the country and maintain a relatively long time low price of fossil fuels and their derivatives.

In recent decades, the overall economic role of the energy use of biomass was an important topic of discussion fierce lobbying groups in the sector of hydrocarbons and biomass, as well as neutral experts. Incomplete assessments and cherry-picking arguments have repeatedly led to the multiplication of emotional and unprofessional discussions on the topic.

They are also published many articles and research that affect a number of parameters of the study of biomass, but due to the different approaches to problems or methods and data sources are achieved different results.

The main task is to analyze current studies and methods to clarify the often misleading discussions about overall economic role of biomass. A particular role in this regard is the establishment of a model for comprehensive economic assessment which takes into account both the strategic and long-term requirements for energy supplies, while providing a more detailed analysis of the least considered aspects - such as social and regional division of income and jobs.

The main issue, which is located in the center of the strategic framework is:

• What is the overall economic importance of the use of energy from biomass?

this question is directly related to another question, namely:

• Is it fair to use state funds for the processing of biomass?

Starting from these two questions arise following problems:

- What indicators are suitable to reflect the entire role of biomass and how they play the main role?
- What economic effects arising from the scenario processing (enhancement) of biomass in connection with various energy prices?
- What is the value of profits from biomass obshtenstveniya market heating (kindergartens, schools, hospitals) and what are the economic conditions and difficulties?

At the beginning of this study, briefly reflects the historical development of the use of biomass in recent years, and the potential for recovery costs for different fuels from biomass

in Kosovo. This is due to the fact that the presence of additional potential regarded as a condition for further strengthening of biomass. Countless studies conducted in recent years, most often on specific technical aspects or the economic role of biomass left little room for treatment of methodological aspects.

By relying on these practices is applied methodology that enables us to present a quantitative basic parameters in various dimensions of overall economic role of biomass as an energy source. Data on the crucial elements of the raw material of this model are derived from UNDP and relevant state institutions in Kosovo and discussed with experts in this field.

From the results of different scenarios and evaluation of various technologies and programs are designed conclusions on the methodology, subsidization and treatment of organic waste.

System constraints and range of survey

Solid fuels, liquid and gaseous fuels used in the processes of energy efficiency of biomass. They can be used in the form of heat, electricity and mechanical energy.

Besides enrichment, use of biomass plays a special role. This is particularly important in the food industry - in the case of competition for the areas of arable land - a link between them.

Figure 1 shows a detailed list of the various forms of energy utilization of biomass. Furthermore the separation of solid, liquid and gaseous transmitters, they can also be differentiated into primary and secondary products (waste, such as waste from the wood industry or the production of cereals).

Of all these fuels can be obtained for heating homes or electricity.

The focus of this study is the use of thermal energy obtained from biomass, which is achieved by using mainly solid biomass.

The primary biogas is mainly used for generating electric energy, so that its potential to heat as thermal energy in comparison with the solid biomass is considered to be inadequate (Haas & Kranzl, 2003).

In the field of liquid biomass is used primarily canola oil (rapeseed methyl ester (RME)), such as biodiesel vehicles. Although it is not clear whether the RME can be produced in such quantities as to heat the premises in this study for liquid biomass will be mentioned only where the use of solid biomass depends on it.

The use of sludge waste and sewage is only mentioned surface (see Fig. 1), after having confined to a narrow segment accurately in the paper industry and pulp and does not play a significant role in the production of energy for heating. While the benefits of electricity from these raw materials in many countries not covered by renewable materials (eg. Germany) (TÜF SÜD, 2011)

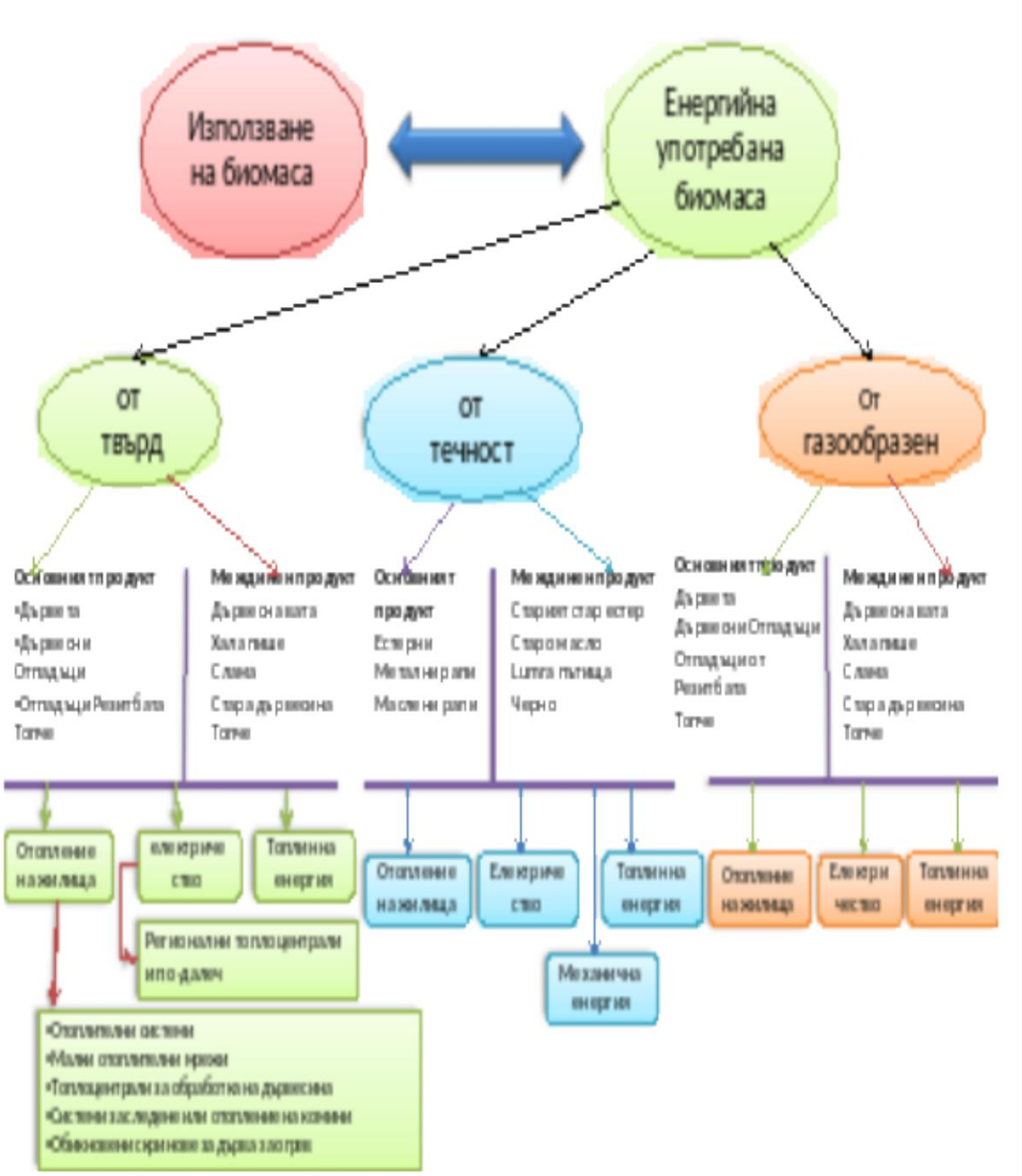

Figure 1: Restriction of the educational establishments in conjunction with other forms of use of biomass energy and impact of the biomass fuel.

As part of the objective of this study is to find and develop a method for analyzing the overall economic role of biomass, which can include many indicators acting factors that are discussed in this section. Adjacent to the individual economic effects of processing biomass should be handled and the impact on the environment, creating new jobs and income growth, regional distribution and social aspects, as well as long-term strategies, such as security of supply and prices. From this we can distinguish four different dimensions, which are shown in Figure 2.

• Environmental impacts:

- air pollutants (damage to health),
- emissions that affect climate change

- biodiversity,
- environmental aspects of forests
- irreparably use of resources
- acoustic emissions
- changing the pitch

• General economic criteria:
- Employment
- monthly income,
- balance of financial markets,
- effects on other sectors of the economy,
- the impact on the income of the state.

• Aspects of distribution:
- Regional: impact on income and employment and infrastructure in different regions,
- Social: impact through income and employment among people of different social,
- equality between generations: these are important in assessing the long-term problems (eg efficient use of raw materials and the consequences of NES action; see also environmental impact).

• Special economic criteria:
- security of supply
- price stability,
- independence from imports (balance of exchanges)
- diversity of energy products
- aspects of national security

Figure 2: Scope of overall economic role

section Two
ANALYTICAL PART

Biomass from agricultural crops

Basically there are two possibilities for the use of crops for biomass production:

Biomass residues from agricultural crops (straw, etc.).

Production of biomass of the fruits of crops (wheat, barley, maize, etc.).

Given the country's ability to meet the needs of food and drinks, as well as current technological development, the production of biomass crops is not currently a viable option for Kosovo. While looking for links to crops as a potential source of biomass production, only the operation of their waste. Agricultural crops are typically grown in Kosovo and which would have the potential to produce biomass, consist of cereals (wheat, rye, eybi, oats and maize) and a group of feed and cereal crops (green grain, hay, grass, etc. .). The evaluation of the amount of waste that can be obtained from crop plants, are usually based on the ratio between the mass of the fruit and the size of the relevant plant.

Based on this report, the relevant studies in the region and reported production in 2013, the data for the total production of biomass from waste plants in Kosovo are presented in Table 1.

type plant grain	surface (Ha)	Production of grain (T / year)	Measure eplodove / Measure nainstalatsiyata	measure e letters from plants grain (t / year)
wheat	102.918	345.627	1: 1	345.027
rye	253	740	1: 1.2	888
barley	568	1,808	1: 1	1,808;
oats	2,294	4,913	1: 1	4913
corn	22.758	60.353	1: 1	60.353
Maize (mixed)	8423	25 951	1: 1	25.951
total	137.214			438.940

Table 1 - Production of grain biomass of their residues

Although the total amount of biomass that can be obtained from the input cereals is 438.940 t / year, it can not be fully utilized for energy production. This is due to the fact that part of it is used for feeding cattle, some of their seats (later fertilization of the soil) and another part for industrial use. In general, the percentage of waste from crops that can be used for energy varies between 10-40%. Given the insufficient industrial development, there is currently no widespread use of such wastes for industrial use in Kosovo, so it can be estimated that about 30% of waste from crops can be used for energy purposes. This figure coincides with data reported in the regional resources.

With respect to the other group agricultural fibers such as forage crops and green grains at the time they are used mainly for animal feed. Technically, however, there is a possibility such plants to use biogas therefore assuming that in the future even in Kosovo can create organizational and legal opportunities to develop systems for titration is considered reasonable even in this study provide basic notes for this group of crops that can be used for initial planning of their potential energy potential. Table 2 together with the data presented and the surface of the wilderness, which in the case of farming can offer a certain potential for biomass.

Cereals green plants forage and soil without exploitation	surface (Ha)	production (T / year)	production specific biogas (M3 / t)	Production of biogas (M3 / year)
green wheat	141	456	172	69.020
Green porridge	860	2,904	172	439.549
green corn	2511	28.006	202	4.978 347
Haymaking (Meadows)	72.048	166.519	172	25.204 316
shepherd	3,677	8.980	172	135 921
alfalfa	13.330	46.828	172	7,087 886
clover	1,328	3,908	172	591.515
wilderness	17 865	-	-	-
total	111.760	257.601		38,506,554

Table 2 - Green beans, forage crops and unused land

Similar to the case of cereals, if it is assumed that in the case of green beans and forage crops, approximately 30% of them can be used for energy production, respectively, for the production of biogas, it appears that the amount of biomass which time will be able to be used for energy production by the culture of liver is 77.280 tons / year, respectively, the amount of produced biogas is 11,551,966 m3 / year. However, if the total amount of biomass produced from agricultural crops, will be dedicated to production of various forms and energy, then the total biomass of all crops, presented in Table 4 and 5, which can be used for this purpose is 696,541 tons / year.

Potential energy of crops

To meet the energy needs may be used residues of crops, by suitably stored cereals. The energy potential in addition to the amount depends on the heat of their burning, which on the other hand depends on the moisture content. Well conserved residues of cereals are characterized by a moisture of about 15% at equilibrium.

Lower calorific value of such waste is given in Table 3.

type culture	Low thermal heat Xy (kJ / kg)
wheat	14,000
rye	14,000
barley	14.200
oats	14,500
corn	3,500

Table 3 - Low burning waste from agricultural crops

The use of forage crops and green beans for the production of energy can be effected by placing the plant substrate in such a bioreactor for fermentation and biogas, which is then used as fuel in the production plants. various forms of energy.
The thus obtained low-burning biogas has a value (Hu = 21600 kJ / m3 = 6 [kWh] / m3)

Energy that can be obtained by the dialect of the biomass derived from agricultural crops

To reduce the cost of transportation and storage, as well as efficient fuel purposes, it is recommended that biomass derived from agricultural crops to be trimmed in the form of cylindrical and prismatic shapes of different sizes, depending on the technology used to waiting. For example, in the case of criminal form dimensions may be: diameter = 60 cm, length = 120 cm, in the prismatic size dimensions may be: width = 120 cm, length = 200 cm, height = 85 cm.

The process of incineration of biomass from agricultural crops is characterized by a significantly higher emission of harmful substances and ash when compared to the amount of

these substances which can be released and produced respectively by the combustion of forest biomass. This makes their fuel technology different, but not so much in terms of their performance. It can therefore be assumed that the effectiveness of the equipment for the production of electricity, heat and cogeneration of blomasa crops is the same as the effectiveness of these facilities in case of forest biomass.

electricity

Based on the identified potential for production of 131.682 tons / yr., Given the low degree of combustion of biomass from agricultural crops is 14 000 kJ / kg, and the efficiency of the power to 35% power production can be found throughout the year can be produced 179,377,220 [kWh] = 15,43 ktoe.

heat

Similarly, as forest biomass and biomass from agricultural crops can be used in any thermophilic installation in order to obtain thermal energy to meet the heating needs of some buildings or along a particular dwelling. Efficiency of these plants is around 85%, while other dimensions necessary to calculate the heat produced are the same as those of the preceding paragraph. Therefore it can be concluded that the thermal energy that can be produced during the year is 435 630 392 [kWh] = 37,46 ktoe.

Energy co-production

Energy cogeneration or otherwise cogeneration generally develops in the same way as the burning of woody biomass, so in this case can be considered that the overall energy efficiency of cogeneration is 80%, while the efficiency of electricity generation, respectively of heat energy corresponds to 20% to 60%. Therefore, it can be calculated that the total energy generated by the co-production is Ec = 410,005,075 [kWh] = 35,26 ktoe, the quantity of electricity is Eel, c = 102,501,269 [kWh] = 8,815 ktoe, while the quantity of heat is Eter, c = 31217,5133, 806 [kWk] = 26,445 ktoe

A summary of the amount of energy produced from biomass dialect originating from agricultural crops

A summary of electricity, heat and energy produced by the co-production by burning the biomass originating from agricultural crops, as illustrated in Table 4.

Quantity of biomass derived from agricultural crops (tons)	Electricity (these / years)	Electricity (these / years)	The amount of energy co-produced (These / year)	
			electrical	thermal
131.682	15:43	37.46	8815	26.445

Table 4 - Annual energy, thermal and energy source, together incinerated by burning biomass originating from linear cultures.

The energy that can be obtained by the dialect of the biogas produced by the green cereals

Biogas is produced by fermentation of green beans, a fuel that could in principle be used to produce electricity, heat and fuel management vehicles. The most common form of use of biogas in Europe, however, is its use as a source of energy for cogeneration of electricity and heat. The use of biogas for cogeneration is the most economical form of use of the boiler for combustion. The degree of use of modern generators for cogeneration to 90%, in which case the efficiency of power generation is about 40%, and the heat - about 50%. The use of heat produced by the generator joint production an important element of the economic

characteristics of these devices. For heating the substrate from a fermenter (bioreactor), and the mixing can be used to heat up from about a third of the generated heat.

The remaining 2/3 of heat output can in principle be used for heating the building complex or settlements. However, given that installations for biogas usually built on locations outside populated areas, the use of thermal energy for heating needs usually not profitable due to the high cost of infrastructure for central heating.

Therefore, heat is typically used for heating farms or management areas when they are near the biogas plant. The amount of electricity and heat produced jointly by burning biogas originating from green beans is presented in Table 5:

quantity of biomass (Tona / year)	biogas (M3 / year)	The amount of energy co-produced (these / year)	
		electrical	thermal
77.280	11,551,966	2.39	1.83

Table 5 - Annual amount of electricity and heat generated by burning biogas from green cereals.

Biomass from orchards and vineyards

Data about the types of trees and vines and for recharging, and planted by the Statistical Office of Kosovo, while the value of the specific waste resulting from the cutting of trees and vines, is provided by the respective literature. The summary results for orchards and vineyards, as well as annual recycled waste are presented in Table 6.

Type and trees	surface (IIa)	Rendirnent win (T / year)	debris specific by pruning (T / h)	debris each year pruning (T / year)
apples	1,725	8.120	3399	5,863
pears	326	1,562	3399	1,108
invite	52	506	3399	177
medlar	16	66	3399	54
plums	1,404	17.514	3399	4,772
apricot	22	83	3399	75
Peaches	39	173	3399	133
cherries	50	167	3399	170
Sour Cherry	107	1,175	3399	364
nuts	57	234	3399	194
hazelnuts	2	2	3399	7
Grapes for wine	510	7.182	3020	1,540
table grapes	960	8.689	3020	2,899
total	5.270		45.473	17.356

Table 6 - Types of trees and vines.

Energy potential of biomass from orchards and vineyards

Clones that can be obtained by the process of pruning of trees and vines can constitute a powerful energy potential, if they are collected and stored in a suitable place. Naturally, this kind of biomass energy value depends on the moisture content. Remains of unspoiled orchards and vineyards are characterized by a lag of about 14% in balance.

Evaluation of the amount of energy that can be produced from biomass derived from orchards and vineyards

The chemical composition of the biomass originating from orchards and vineyards, is similar to woody biomass, therefore, in principle, the same technology can be used to generate electricity, heat or co-generation of energy. Similar chemical composition also makes heating devices for burning approximately the same for both dealt with leeks from biomass. Therefore, using the same procedures and absorb the heat of combustion to 14,075 kJ / kg, calculated respective amounts of energy that can be obtained by the combustion of biomass of fruits and vegetables.

section Three

SECTION THREE STRATEGIC GUIDELINES FOR THE MANAGEMENT OF ENERGY PRODUCTION FROM AGRICULTURAL PRODUCTS IN KOSOVO

The potential of a country to build additional capacity based on different biomass resources, it may not be important if the cost of its use are unavailable. Therefore, the specification of potential crucial for decision-making for the development of new energy facilities is cost evaluation of their use. Of course, before any large-scale investment, what investments can be made of the potential for biomass potential is required detailed assessment of the economic and technical feasibility of the use of any of the identified potential of biomass. Numerous types of biomass as a feedstock for energy production, and various technological datasets assess the cost of production in complications.

The cost of producing energy from biomass can be broken down into:

- investment costs
- Costs of operation and maintenance
- Costs of biomass

Investment costs include all costs required to build the facility ready for the start of operations, including expenses such as costs for preparation of plans, authorization and others. These costs can be divided into equipment costs (1) and side costs (2).

1) Cost of equipment include:

- Costs for machine installations
- Costs for electric and telecommunication installations
- Construction costs (facilities, access roads, etc.).
- Infrastructure-related services (electricity network, water supply, sewerage, etc.).

2) Side costs include:

- Relevant studies (feasibility, environmental impact, etc.).
- Getting permission to build the plant,
- Supervision, construction and commissioning,
- Obtaining capital financing and return on interest rates

Costs of operation and maintenance costs to be an inevitable part of the calculation of the cost of producing energy, regardless of the type of biomass. This category of expense includes:

- Expenditures for maintenance and repairs
- Staff expenses
- The costs of providing the installation and possibly employing
- Other variable costs (water, electricity, waste, detergents, etc.).

The costs of biomass are a specific price for each location, and location of each plant biomass is a strategic decision. To ensure energy security of installations based on biomass, the supply of biomass must be uninterrupted and safe. Determining the most accurate cost of biomass is particularly important because often such costs can be decisive for the final evaluation of the economic viability of biomass. Therefore, all its factors should be taken into account during its definition. These factors include the cost of transport, storage and preparation for use of biomass. The level of these charges is dependent on the type of the selected biomass of the available space, the distance to the place of use by the buyer country etc. Part of the costs can be estimated relatively easily, while others are accepted. Given the specific technology for the use of biomass of a particular species, and the specific expenditure of the biomass below are calculated on the cost of energy production, in particular for each of the analyzed types of biomass.

Cost of producing energy from biomass cereal

Basically grain biomass can be used to produce electricity, heat or cogeneration of electricity and heat. Since stiffness is the case here, the determination of the cost of production of the energies can be used by the same parameters as those used in such calculations of forest biomass, but this time the calculation of the estimate of the biomass of 50 € / t. The results are given in the respective tables.

Type of expenditure	Value (€ / [MWh]),
investment costs	41.2
Costs of operation and maintenance) e	7.5
Costs of grain biomass	29.4
total	78

Table 7 - Cost of electricity from biomass cereal.

Type of expenditure	Value (€ / [MWh]),
investment costs	19.8
Costs of operation and maintenance) e	7.5
Costs of grain biomass	12
total	35.5

Table 8 - Costs of heat from biomass cereal.

Type of expenditure	Value (€ / [MWh])
investment costs	78.4
Costs of operation and maintenance	14.3
Costs of grain biomass	51
Profit from the sale of heat	35
total	109

Table 9 - Cost of electricity co-generated by cereals.

Costs for the production of energy from green cereals

The biogas produced by the green grains, can be used to produce various generic substances in cogeneration plants.

The benefit of these systems consists in the fact that part of the thermal energy (1/3 of works hexane) can be used for the purposes of the digester, while the other portion may be sold. This makes the price of electricity production attractive to potential investors. The price

of electricity produced equipment for burning biogas can be calculated in a manner similar to the previous cases. The investment costs of such installations are about 3300 E / MWh, while the price of biomass is about 30 € / t. The results are presented in Table 10.

Type of expenditure	Value (€ / [MWh])
investment costs	53.3
Costs of operation and maintenance	9.7
Costs of grain biomass	84
Profit from the sale of heat	15
total	131

Table 10 - Cost of electricity produced by green plants.

The low value of profits from the sale of heat arises from the fact that only 2/3 of the energy so produced can be sold as 1/3 of it is used for the digester.

Costs for energy production from cattle

The technology for the use of biogas from livestock is the same as the technology for the use of biogas plants from geese. However, due to the production of biogas and the cost of biorhiite, the cost of producing energy from this type of biomass is also changed. Where manufacturing plants and blogs are used by local farmers, the cost of biomass can be considered zero. But for larger plants it is preferable to define symbolic expenses for the cost of biomass livestock, for example. to cover transport costs. In this study, it is considered that 1 ton of biomass of cattle worth 5 euros. The corresponding results in terms of cost of electricity produced from biogas with a similar origin, are presented in Table 11.

Type of expenditure	Value (€ / [MWh])
investment costs	53.3
Costs of operation and maintenance	12.1
Costs of grain biomass	44
Profit from the sale of heat	15
total	94

Table 11 Expenditure on electricity produced by biogas from animal origin

Summary of the cost of producing energy from different types of biomass

Depending on the type of biomass used, moisture for electricity ranged from 53.1 to 88.1 euros / [MWh], from the production of heat between 26.1 to 39.6 euros / [MWh], while the cost of for electricity generation in combined power between 94-131 Euro / [MWh]. The corresponding statement of expenditure for each type of biomass and energy form is presented in the following table. Given the current cost of producing electricity from power plants Kosovo A and B of 27 euros / [MWh] and the cost of heat production from termokos of around 60 euros / [MWh], it can be concluded that the cost of production electricity from biomass are usually higher than the case of the production of lignite, but the opposite is due to the cost of production of thermal energy.

CONCLUSION

As a result of the overall development of theoretical research topic, as well as hands-on research derived the following conclusions and recommendations.

This study provides comprehensive notes on the existing potential of all types of biomass, present in Kosovo. To derive the most accurate data was drawn up detailed section on biomass as its origin, although some types of biomass are similar to theirs. For example. woody biomass is divided into forest biomass, with a number of fruit trees and vineyards and biomass from wood and sawmill industry. The division reports enable more detailed treatment of these forms of biomass in terms of quantity, condition during collection and their calorific value. Moreover, adequate systematization. Various forms of biomass, but the most accurate assessment of potential, made it possible to make appropriate conclusions about the difficulty of providing appropriate biomass

In terms of forest biomass must be noted that based on the permitted annual decrease and the current state of forests, Kosovo has a strong potential for this type of biomass. Such potential will eventually be extended to ensure adequate measures by institutions to reduce the current high consumption of forest biomass for heating needs.

In addition to the potential of woody biomass has been identified an important potential in the field of agricultural and livestock cultures from which a suitable organization can produce a significant amount of solid biomass or biogas.

As a kind of municipal biomass waste is addressed in this study to identify potentials for energy production and thus to contribute to the collection and treatment.

The data provided by the relevant reports show that less than half of the reported waste can accumulate and be placed in volume. Based on this study it can be concluded that the use of the collected amount of waste can affect energy capacity.

An important part of the report is an assessment of the costs of each type of biomass, which has been found to have potential for exploitation. The adoption was made based on data and experience of other countries in terms of investment costs, operation and maintenance and estimated costs for various types of biomass in Kosovo.

At the end of the study was made and analysis of the possibility of achieving official targets for the amount of energy produced from biomass. The analysis showed that these objectives can be accessed without difficulty if used potential identified in this study. On this basis, made the following recommendations:

1. Energy Strategy of Kosovo should include alternative forms of energy such as wind, solar, biomass and geothermal energy.
2. Regulatory Office of Energy (CEP) should review the decision to determine the incentive tariffs for renewable energy sources and increase their durability. Tariff for advance payment is not mandatory as far as the fee covers at least 15% of the investment costs.
3. The Ministry of Economic Development (MEE) should amend the Energy Act in accordance with Directive 2009/28 / EC of the European Union
4. Ministry of Economic Development should undertake detailed studies of certain segments of the renewable resources of general policy to encourage foreign investment.
5. Ministry of Economic Development, in addition to drawing up the plans must set out in detail the measures to be taken to enable the achievement of the objectives and measuring their level of excellence.
6. Facilitate and reforming the Ministry of Economic Development, Ministry of Trade and Industry and other ministries to encourage investment in alternative facilities and installations. Consider the elimination of tariffs on these products: solar panels, small wind turbines, bioenergy and other auxiliary equipment, helping to increase individual and larger investments in renewable energy. This will create favorable market situation to improve energy efficiency, investment interest and use of renewables.

8. Create a "one stop shop" within the Ministry of Economic Development, to deal with all administrative applications for RES projects. One such idea was the former minister of economic development, which has long been mentioned but have not yet taken the signs of concrete steps towards the realization of such a question.
9. Consider a system of green certificates to control the level of consumption of green energy and boost foreign investment. Such a system would help to increase investment and create a market. green certificates in Kosovo.

* * *

The proposed study does not cover all aspects of strategic management of the use of agricultural products as sources for electricity production. It answers many questions and approaching the responses to some questions remain unanswered, while being placed and new. At the same time harbored hopes that with this thesis are presented not little evidence that implementation of a strategic approach in the management of energy production from agricultural products is a prerequisite for realizing the energy potential of the agricultural sector of the Republic of Kosovo.

III. REFERENCE FOR CONTRIBUTION

PhD thesis "Strategic management of energy production from agricultural products in Kosovo" contains the following core offerings ideas and solutions for the theory and practice of corporate governance:

1. Defined and clarified the basic concepts and definitions using agricultural products as energy sources.
2. Established are the main risks that accompany the use of agricultural products for energy production.
3. Analyzed the benefits and costs of their processes of energy from agricultural products.
4. An analysis of a project to produce energy from waste.

IV. LIST OF PUBLICATIONS IN THE TOPIC

1. Hoti, I., J. Fejza. The process of training of the employees. Knowledge - International journal. September, 2018, vol. 26.6
2. Hoti, I., J. Fejza. Planning of the employess for training. Knowledge - International journal. September, 2018, vol. 26.6
3. Hoti, I. Strategic capability of the manager. Knowledge - International journal. September, 2019, vol. 31.5
4. Hoti, I. Strategic processes of management. Knowledge - International journal. September, 2019, vol. 31.5

STRATEGIC MANAGEMENT OF ENERGY PRODUCTION FROM AGRICULTURAL PRODUCTS IN KOSOVO

Izet Hoti

SUMMARY

The structure of national economy is measured by the participation of the sectors (it consists of the level of development and the achievement of a high level of development). The domination of the service sector is characteristic of the developed market economies. Services, assuming their nature and based on economic logic, have an active role and influence on the development of the production sectors in the national's economy. In this regard, it should be understood that service activities in Kosovo require a longer period of time and will have a special role to play in the development of the economy as a whole and in particular in the development of the agricultural sector. But services must be integrated with the sector and the resources of the economy in Kosovo.

The main thesis of the study is: *Applying a marketing approach in the context of globalization and increasing competition is a prerequisite for improving the supply of services to farmers. This is achieved by undertaking a business environment analysis and designing strategic marketing activities that are tailored to the specifics of the service sector.*

The aim of the dissertation is to identify the factors that improve the implementation of a marketing approach in the management of the supply of agricultural services.

In order to achieve the aim, the study includes the follow main topics: 1) Clarifying the essence of the marketing management concept; 2) Determining the characteristics of services as an economic category; 3) Clarifying the specificities of marketing in services; 4) Determining the state and trends of development of the agricultural services sector in Kosovo; 5) Assessment of prospects for development of the agricultural services sector in Kosovo. Data processing and analysis are performed using the case study and cluster analysis methods.

Structure of the dissertation. The dissertation consists of an introduction, four chapters and conclusions with a total volume of 156 pages. The first chapter covers the theoretical foundations of marketing management. The marketing approach is considered as a way of establishing a match between a firm and the dynamic changes in its environment, through it, the company transforms the impacts of the environment into an adequate response. In principle, marketing is a tool for strategic business management. From these starting positions in the first section of the study are examined: the concepts used and the main approaches to defining the marketing, as well as the requirements which should be met by the implementation process. The inherent dimensions of marketing in services are analyzed. On the basis of the theoretical analysis, a methodology for formulating the marketing strategy has been developed. The nature of agriculture is presented in the second chapter. Agricultural production has certain features that make it special, specific and complex, and experience shows that agrarian policy in any national economy is more successful if account is taken of the main features of agriculture. The author is convinced that knowing the peculiarities of the agricultural sector will enable firms offering services to farmers to develop and implement marketing strategies that build confidence in their products and attract consumers. In chapter three are analyzed marketing practices in offering insurance services to farmers. Chapter four reveals some important dimensions of development in marketing management in researched area. The nature of agriculture is presented in the second chapter. Agricultural production has certain features that make it special, specific and complex, and experience shows that agrarian policy in any national economy is more successful if account is taken of the main features of agriculture. The author is convinced that knowing the peculiarities of the agricultural sector will enable firms offering services to farmers to develop and implement marketing strategies

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Main findings of the study. On the basis of the survey conducted, several main conclusions can be made regarding the possibilities for development of services for farms in Kosovo: (1) Restricted offering of services to farmers; (2) Dinamic market environment; (3) Lack of interaction and trust between farmers and assurance companies; (4) Great potential of marketing management to improve development of services for farmers.

Key recommendations of the study. As a result of the overall theoretical development of the research theme, as well as from the practical research carried out. The following recommendations:

• Products and services should be created in a stable and timely manner. Adapting the security strategy to all levels of service will increase consumer confidence.

• All related points in the value chain between the recipient and the sender, which include information and messaging, processing, transportation and delivery, must be linked.

• It is necessary to set quality standards that are in line with the expectations of consignors and recipients, to improve these standards and to measure the space where the desired quality is incorporated.

1. The development of the service sector affects the improvement of the country's economic standard. It also promotes economic and social development by meeting the needs of the market.
2. Consumers want more efficiency, greater security and a lot of service flexibility3. Consumers are looking for a service provider that is closer, more enjoyable and more prepared to solve problems and respond to wishes

4. pric is the key to making a decision. The choice between price and quality is crucial.