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AGRIBUSINESSES AND AGROENERGY: A MODEL OF CHANGE IN AGRICULTURE

AGROPODNIKANIE A AGROENERGIA: MODEL ZMENY V POĽNOHOSPODÁRSTVE

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I. European Renewable policy: role of biomass, role of agribusiness

Over the last few years, the issue of energy production has ignited a heated debate about the best composition of the energy mix that any Country should find to satisfy internal consumption.

The widespread, if not exclusive use of fossil fuels appears to be a less and less sustainable solution for economic, strategic and, not least, environmental reasons.

The international agreements, although partially implemented by the signatories, have underlined the importance of re-defining the relationship between energy production, environmental protection, rationalization of the energy use and differentiation.

The setting aside of the most polluting sources such as coal, has led to drafting new lines of energy policy that, through the Kyoto Protocol 1997 and the Copenhagen Summit 2009, have posed in the public opinion the issue of a new correct energy mix for most consuming Countries.

Therefore, over the last decade, scientific studies, academic analysis and some far-sighted policies have found that the production of energy from renewable sources is the best solution to reach a sustainable balance between consumption and production.

In this regard, the European Union (EU) has promoted the most advanced policy and legislative proposals engendering tangible commitments by the Member States in order to increase the share of renewable sources in their energy mix.

In this case, the need to protect the environment is well attuned with the need to differentiate the production, considering that the EU is, in general, a net importer of energetic raw materials such as natural gas and oil thus being more subject to the instability of the regions where these materials come from and less autonomous in international relations[(1)].

[(1)] For example, many times the supply of the Russian gas to the

Abstract (EN)

Energy production through biomass valorization seems to find favor with the most recent energy policies: in order to reach a sustainable balance between production and energy use the agriculture seems to play an important role.
The use of biomass for energy valorization, indeed, could be further increased and meets different needs: it alleviates energy dependence, propels the technological innovation of companies and rural areas, and promotes the multifunctional nature of modern agriculture.
Nevertheless these dynamics generate a debate about the use of agricultural lands and crops for energy purpose and, finally, the same concept of agribusiness seem to be under evolution: a summary about the Italian legislative scenario on the agribusiness's concept shows how relations between energy and agriculture is extending the traditional scope and definitions of agribusiness and possible criticisms arising.

Keywords (EN)

energy policies, biomass, multifunctional agriculture, agroenergy

Abstrakt (SK)

Výroba energie prostredníctvom zhodnocovania biomasy je v súlade s najnovšími energetickými politikami, podľa ktorých poľnohospodárstvo zohráva kľúčovú úlohu pri dosiahovaní udržateľnej rovnováhy medzi produkciou a spotrebou energie.
Miera využívania biomasy na výrobu energie by však mohla vzrastať a uspokojovať rôzne potreby: zmierňovať energetickú závislosť, povzbudzovať technologické inovácie v podnikoch a vo vidieckych oblastiach a propagovať multifunkčnosť moderného poľnohospodárstva.
Takýto vývoj podnietil diskusiu o využívaní poľnohospodárskej pôdy a poľnohospodárskych plodín na energetické účely, pričom zmenám podlieha tiež koncept agropodnikania: zhrnutie talianskeho legislatívneho rámca pre agropodnikanie ukazuje, ako vzťahy medzi energiou a poľnohospodárstvom presahujú tradičný pohľad a definíciu agropodnikania a tiež podnecujú možnú kritiku.

Kľúčové slová (SK)

energetické politiky, biomasa, multifunkčné poľnohospodárstvo, agroenergia

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The EU and its Institutions have been encouraging the use of renewable sources for a long time: since the Green Paper 1996 on renewable energy sources, the effort to promote such sources is clear enough.

Lawmaking has confirmed over time, through specific Directives[2], such preferred choice: the Commission has intervened in all aspects of the field, restructuring the entire energy market in general[3], in order to allow an efficient allocation of any type of renewable energy production.

It is well-known that the European Commission, by means of the "Climate-Energy Package", has committed the EU to making its efforts to achieve some important objectives within 2020, i.e. reducing greenhouse gas emissions by 20% and reaching at least a 20% share of renewable energy in the total energy mix[4].

Along the same line, the Directive 2009/28/EC which promotes the renewable sources of energy is particularly significant: because of its clarity of purpose, it much impacted the lawmaking activity of the Member States.

Said Directive was significantly different from the previous directives on this matter since it provides stronger and legally binding targets to be reached at the Union level.

This measure, indeed, has divided the general target of reaching at least a 20% share of renewable energy in the total energy production between the Member States, through the rationale of burden sharing: according to this, Italy should reach a 17% share of renewable energy within 2020[5].

Directives 2009/28/EC defines the use of a consistent share of biomass as a key component to achieve the goals set by the European legislation by inviting the member States to establish a national renewable energy action plan including information on sectorial targets, while having in mind that there are different uses of biomass and therefore it is essential to mobilize new biomass resources. The use of biomass for energy valorization, indeed, could be further increased and meets different needs: it alleviates energy dependence, propels the technological innovation of companies and rural areas, promotes the multifunctional nature of modern agriculture.

Nevertheless these dynamics generate a debate about the use of agricultural lands and crops for energy purpose and, finally, the same concept of agribusiness seem to be under evolution: in paragraph 3., a summary about the Italian Legislative scenario on the agribusiness's concept shows how relations between energy and agriculture is extending the traditional scope and definitions in agriculture and the possible criticism of this new balance in a real current national context.

II. Biomass: Legislative evolution, sustainability criteria and criticisms

The European policy in the renewable energy promotion identified the energy use of biomass of agricultural origin as a key factor to reach the objectives settled out.

Nevertheless, the Commission warned to monitor the impact of biomass cultivation, such as through land-use changes, including displacement, the introduction of invasive alien species and other effects on biodiversity, and effects on food production and local prosperity.

Actually, the use of agricultural products for energy production, indeed, raises the issue of the conflict between such an activity with food safety, environmental biodiversity and the availability of agricultural resources.

Having in mind this phenomenon, the Commission has introduced in the abovementioned Directive 2009/28/EC sustainability criteria applicable to the biofuels and bioliquids as per art. 17 paragraphs 2 to 6.

According to the said Directive, the energy from these kind of sources could be taken into account as renewable just when it produces an effective greenhouse gas emission saving, it not come from land with high biodiversity value, from land that was peatland or continuously forested area.

In the same article, the European Commission committed itself to report on requirements for a sustainability scheme for energy uses of biomass, other than biofuels and bioliquids, by 31 December 2009: actually, in February 2010 the Commission released the Report on sustainable requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling[6].

This Report did not introduce binding criteria or new legal procedures on the biomass, considering that this would impose new costs on the operator: therefore, each member State can regulate the matter by its internal national law.

Nevertheless, European Commission introduced in said Report some – not binding – recommendation about the criteria to regulate the biomass by a general prohibition on the use of biomass from land converted from primary forest,

European market has been jeopardized by the political tensions between Moscow and Kiev. The cost of oil itself is subject to the political dynamics in the producing Countries, often located in very unstable regions.

(2) Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

(3) In 2009 the third legislative package to further liberalize the internal electricity and gas market was adopted with the Directive 2009/72 EC.

(4) In January 2014 the European Commission settled out the pillars of a new EU framework on climate and energy for 2030: in that documents the Commission described a reduction in greenhouse gas (GHG) emissions by 40% below the 1990 level, an EU-wide binding target for renewable energy of at least 27%, renewed ambitions for energy efficiency policies, a new governance system and a set of new indicators to ensure a competitive and secure energy system.

(5) DESBARATS, J. – KRETSCHMER, B. (2011) "Solid biomass energy: mapping the EU policy influences", I.E.E.P 2011; Dessai S., (1998) "A critic of the EU burden sharing agreement", Change, n. 47, pp 13-16.

(6) BOWER, C. "Delivering Sustainable Bioenergy in Europe – Commission Adopts Report on Sustainability Criteria for Biomass" I.E.E.P. 2010; Lendle A., Schaus M. "Sustainability Criteria in EU renewable Energy Directive: consistent with W.T.O. rules?" ICTDS information note no. 2/2010

other high carbon stock areas and highly biodiverse areas; a common greenhouse gas calculation methodology; a differentiation of national support schemes in favor of installations that achieve high-energy conversion efficiencies; monitoring of the origin of biomass.

However, the use of biomass is seen as a crucial factor to face the various aspects that arise when tackling the energy issue: in the first instance, this source seems to move closer to a solution to the urgent problem of energy dependence as mentioned above, by allowing the use of an internal source which is available and also renewable.

Perhaps the central importance and potentiality of biomass is not well acknowledged yet: in the decade 2000-2010, the European share of biomass energy increased by 75,9%, and in 2010 109TWh were produced[7].

Excluding the hydroelectric source, an historically deeply rooted technology and a source widely used over the last five decades, biomass represents one of the sources that significantly contribute to the greater part of production and consumption of renewable energies in the EU and, above all, it is a source that can be much developed because of its considerable unused exploitation potential[8].

The support framework has been further strengthened by the Biomass Action Plan published by the European Commission in 2005, that established measures aimed at promoting energy production by woody biomass, biomass wastes and biomass derived from agriculture through the creation of incentives and the tearing down of the obstacles hindering the development of the market.

And it is from the European law that we can infer the legal base of the concept of "biomass" that has often caused confusion, in the transposition legislation of the Member States, on the meaning of the word itself.

The Directive 2001/77/EC and the subsequent Directive 2003/30/EC read that "biomass" is the biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste.

Then after, the mentioned Directive 2009/28/EC updated the meaning of "biomass" that means the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste[9].

The regulation set up by the Directive increased the area of the biomass and has better specified the biological origin of the residues[10].

Such a definition, fairly clear, engendered some conflicts with the national legislations: indeed, since biomass is often a secondary component or waste of production, it is sometimes difficult to set the line between it and waste as such[11].

The legal uncertainty in distinguishing biomass and waste has sometimes prevented the development of production technologies[12].

Nevertheless, in the last few years the production of biomass energy in the European market has increased.

One of the policies that have given their contribution in this sense is undoubtedly EU's Common Agricultural Policy, that has been looking to take advantage from incentivizing internal production, from fighting against climate change and from rural development.

Rural development could be directly related to the energy issue: the possibility for agricultural firms to differentiate their activity and concentrate on a technologically advanced and economically advantageous production, in fact, is part of the overall concept of development of multi-functionality in the agricultural activity, increase of added value of agricultural products and conveyance to the farming industry of new production processes.

This has taken a concrete legislative shape with Regulation 74/2009/EC and with Council Decision 19/01/2009, that have changed the Community strategic guidelines to encourage a switch of investments to make agribusinesses acquire transformation machinery together with all the other factors useful to the energy production process.

This approach seems to have been confirmed by the latest agreements on the reform of EU's Common Agricultural Policy shaped with last June's agreements: the incentive to the rural development and, therefore, to the measures aimed at managing and strengthening technological energy production processes for 2013 - 2020, shall be confirmed with specific reference to innovation, transfer of expertise and investments in tangible fixed assets.

Since the introduction of the concept of decoupling, EU's Agricultural Policy, with all the limits inherent in such an agreement, has embarked on a very modern course in approaching to agriculture.

This new course could not ignore the immediate relationship between energy production and agriculture: agriculture undoubtedly could be considered the conjunction ring between environment protection, sustainable development of energy production and technological innovation[13].

(7) Data supplied by the Italian Electricity Services Management Company "G.S.E. S.p.A."

(8) See the "Biomass Action Plan" published in 2005 by the European Commission: it supposed that a reasonable and balanced development of the energy potential deriving from biomass should have provided 10% of the internal demand for energy with a total of 185million Tons of Oil Equivalent (TOE).

(9) CIANCALEONI, F. - JODICE, R. (2010) "Sostenibilità nell'uso delle biomasse a scopo energetico" ARS no. 25/2010.

(10) COSTANTINO, L. (2010). "Biomasse". In: Digesto delle discipline privatistiche.

(11) See the Italian case: at the moment, the definition of "waste" is set forth in Legislative Decree 152/2006. Article 184-bis of Legislative Decree 205/2010 implementing the Directive 2008/98/EC on the management of waste, sets out the four conditions under which a substance or object is to be considered a by-product and not waste. What is difficult in the interpretation of the law is making sure that all four conditions come true.

(12) See *"Rifiuti: bollettino di informazione normativo"* January 2012 "*Rifiuti e Biomassa: il confine"* Ed. Ambiente 2012.

(13) COSTANTINO, L. (2011). "La produzione e commercializzazione di biomasse In: Dalla riforma del 2003 alla PAC dopo Lisbona. I riflessi sul diritto agrario, alimentare e ambientale", Napoli:Jovene Editore.

However, such a trend must be controlled for agribusinesses not to denaturalize their function and not to become energy companies: maintaining a balance is the essential condition for the efficiency of an integrated approach to energy issues, able to integrate the agribusiness activity with different production stages that may close their cycle successfully and with profit.

The integration between these different steps towards energy production, for sure, benefits agribusinesses but, at the same time, many other fields take their advantages, too.

Firstly, energy transformation with the use of local products or byproducts can help managing in a more efficient way the carbon cycle, thus reaching a balance between emissions and natural absorption: this has a mitigation impact on the polluting processes and works as a countertendency against the factors that more affect climate change.

Moreover, the income reinforcement for agribusinesses would preserve those businesses themselves, which are the constitutive element of rural landscapes.

Agricultural firms, indeed, must be seen in their context as an instrument for the protection and care of the territory and specific policies must incentivize their role in the management of rural landscapes in order to preserve the functionality of rural areas and, in the meanwhile, to increase the value of biomass by transforming it into energy.

Taking care of woods, riverbeds and creeks is not only useful to protect the enjoyment of the landscape, but is also important to protect indigenous peoples, often victims of events like floods, that could be easily reduced through territory maintenance.

Finally, the important technology transfer that the installation of agro-energy production plants implies, would improve the quality of fixed assets hold by agribusinesses and would increase, especially in rural areas, the number of qualified employees in such plants.

Furthermore, the use of advanced technologies could propel youth entrepreneurship or foster the arrival of a new generation in agribusinesses and the transition from a traditional to a multifunctional, integrated management.

Nevertheless, at the European level, the debate about the uncertain boundaries between use of land for food production, use of land for renewable energy sources and the actual contribution of the use of biomass on the 2020 renewable energy production targets is still in progress.

Very often the European Institutions discussed about these items by supporting sustainable development of renewable energy sources in rural areas but recalling that the main role of agriculture in the EU is to provide food for European citizens and that any specific agricultural policy on biomass should not be detrimental to that objective.

Therefore, the main outcomes of this debate seem to be focused on the incentive to the use of locally available biomass resources, use of byproducts and residues of the agriculture and agri-food industry in order to avoid a competition between crops intended for energy purposes and food market[14].

Surely, the issue about the balance between the use of agricultural land for food or for energy production is really one of the most important item that currently engage the agricultural system independently from the source of energy we are considering.

Actually the biomass source is obviously immediately near to the agricultural production idea but the use of the agricultural land for energy is in discussion when we talk about photovoltaic plants or wind farms installation as well.

Anyway it is clear the link between the energy and agribusiness that currently is looking for a solution and a stable balance. Very often, the possibility for agribusiness to extend their traditional activities to the energy productions is influencing the concept and definition of agribusiness itself at the legislative level as well: it could be interesting to examine, as a case study, the Italian legislative evolution of the agribusiness concept and possible criticism related to the energy production occurred in the Italian agricultural field.

III. Agribusinesses: the legislative evolution balance and criticism of the concept in the Italian law

The discussion on boundaries between biomass[15] and energy has clearly demonstrated in the most recent energy policy the current relations between energy production and agriculture.

In order to verify this new role for agribusiness could be interesting to note the legislative evolution of the concept of enterprising farmer in the Italian case, since this leads to the enlargement of the scope of agribusinesses themselves.

The importance of a correct definition of enterprising farmer is crucial considering that this bears many important consequences from the point of view of taxes, incentives and to be given access to specific financing funds.

Initially, the Italian Civil Code defined in article 2135 the enterprising farmer as the person who carries out the following activities: land cultivation, silviculture, animal farming and other related activities including the transformation and placing on the market of agricultural products if they come from the **normal** agricultural activities.

This definition has risen many perplexities, as the entrepreneurial activity of farmers is in constant evolution: the idea of **normal agricultural activity** did often not fit the new activities carried out by farmers, thus creating an undeniable conflict.

As a consequence, the law was amended with Legislative Decree no.228 of 2001 which reformulated article 2135 of the Italian Civil Code, with a new definition of agricultural activity as the activity aimed at the development of an entire biological cycle or a necessary phase thereof.

The Legislative Authority, in the new version of article 2135, has moved beyond the idea of "normal agricultural

[14] Council of European Union, Brussels, September 9th 2011.

[15] The Italian Legislation defines the Biomass by Legislative Decree no.387/2003 updated by Legislative Decree no. 28/2011 that implements the Directive 2009/28/EC.

activity", including among the agricultural activities those carried out by the enterprising farmer himself such as the manipulation, conservation, processing, transformation and placing on the market of products **mainly** coming from cultivation of the land, forestry or cattle breeding as well as the activities aimed at supplying goods or services mainly recurring to equipment or resources that the company normally uses in its everyday activity, including the activities aimed at valorizing the territory and the rural and forest heritage, or reception and hospitality activities as defined by law[16].

So, the requirements for an activity to meet to be defined as agricultural have been deeply changed because if earlier on the agricultural activity had to be performed in an agricultural context, according to this new definition it has to be performed with products or equipment mainly used by agribusiness[17].

Also reception and hospitality activities and the activities aimed at promoting the territory and the rural heritage are explicitly included in the activities of the enterprising farmer.

This approach well represents the multi-functional nature of modern agriculture and, in this context, the energetic valorization of agricultural resources fits perfectly well.

Also tax legislation has acknowledged this aspect: Act. 266/2006 "Disposizioni per la formazione del bilancio annuale e pluriannuale dello Stato" (Provisions for the State's annual and multi-annual budgetary process) provides in article 1, clause 423, for energy production activities carried out by enterprising farmers from solar sources and agroforestry to be considered as activities related to the agricultural activity and, therefore, to generate agrarian income.

The definition of agribusiness seems, then, to be a definition in progress leaving room to the analysis of the interpreter of the law, that has to follow the evolution of the agricultural activity.

The law, in fact, far from adhering to a rigid definition, seems to be willing to define as agricultural any activity mainly linked to the rural world that may in the best way possible valorize any aspect of the contribution that agribusinesses can give to pursue high profile environmental targets, from promoting renewable energies to protecting and preserving the territory [18].

Nevertheless the use of agricultural land and crops for energy purpose is under discussion in Italy as well: in the recent years, a real massive increase of huge photovoltaic and wind firms installation in rural and agricultural area has showed the problem to find a correct balance between energy production and agricultural activity, mostly when traditional plantations have been uprooted to be replaced by power plants or an agricultural/rural landscape has been modified by the presence of a large power firm.

Two main solutions have been proposed by the relevant Authorities[19] in order to define when the agribusiness and agribusiness' incomes could be considered still agricultural: first, in case of biomass plants, the most of biomass to be valorized have to come directly from the agricultural activity of the plant's owner.

However, generally the income from the energy production must be lower that the income from the agricultural activities and the power plant must be installed on land owned by the farmer: out of these cases, the agribusiness loses its nature since the balance between agricultural activity and energy production has been actually deleted[20].

IV. Conclusion

Energy production through biomass valorization seems to find favor with the most recent energy policies.

The use of biomass for energy valorization, indeed, could be further increased and meets different needs: it alleviates energy dependence, propels the technological innovation of companies and rural areas, promotes the multifunctional nature of modern agriculture[21].

Nevertheless, this process is not immune from criticism recalling the need to constantly balance all the interests at stake and not to lose an overall view of the phenomenon.

The use of agricultural products for energy production, indeed, raises the issue of the conflict between such an activity with food safety and the availability of resources[22].

In this sense, the environmental benefit would be missing[23]: therefore a sustainable use of biomass must follow the sustainability criteria settled up at the European level.

In conclusion, a very concrete approach is necessary to assess the impact of bioenergies: while it is true that careful use

[16] COSTANTINO, L. (2011). La produzione e commercializzazione di biomasse In: Dalla riforma del 2003 alla PAC dopo Lisbona. I riflessi sul diritto agrario, alimentare e ambientale . Napoli:Jovene Editore.

[17] LATTANZI, P. (2008) "Agricoltura ed energia. L'impresa agricola nella filiera agroenergetica" Quodlibet 2008.

[18] FERRARA, G. (2008) "Impresa Agricola e produzione di energia" in Agricoltura Istituzioni e Mercati 2008, Ferrucci (2007) "Produzione di Energia da fonte biologica rinnovabile (quadro normativo)" in Dir. Diritto Agrario 2007.

[19] From a fiscal point of view the Italian tax Agency "Agenzia delle Entrate" has defined this parameters by Act. no. 44/2002, no. 44/2004 and no. 44/E/2007.

[20] Currently the Pv plant installation on agricultural area is regulated by Act. No. 27/2012 that restricts the possibility to access to the Feed in Tariff mechanism: actually this policy seems to be more orientated by a new general negative approach toward renewable energy that by a real interest to the agricultural land saving.

[21] ALABRESE, M.,CRISTIANI, E.,STRAMBI, G. (2013) "L'impresa agroenergetica. Il quadro istituzionale, gli strumenti, gli incentivi" Giappichelli 2013.

[22] GAMBORG, C. - TEGNER, A. H. - SANDOE, P. (2014), "Ethical and legal challenges in bioenergy governance: Coping with value disagreement and regulatory complexity", Energy Policy 28 February 2014.

[23] Nevertheless, some recent studies have questioned the benefit of recurring to biomasses to reduce CO_2 emissions: these studies indicate that, especially in the short term, the balance between Co2 emissions and e captured greenhouse gases is negative. Buchholz, T. - A. J. Friedland, C. E. Hornig - W. S. Keeton - G. Zanchi and J. Nunery. 2013. "Mineral soil carbon fluxes in forests and implications for carbon balance assessment" Dartmouth University Global Change Biology-Bioenergy 5(3). DOI: 10.1111/gcbb.12044.

may produce innumerable benefits, abuse or incorrect use would impact negatively on delicate balances in the agricultural, nutritional and environmental fields.

The current relation between energy and agriculture seems to reshape the traditional scope of agribusiness and, actually, in the Italian case, the Legislation about this matter shows how the usual concept of enterprising farmer is including new aspects of the agricultural activities.

Actually, the boundaries between energy and agricultural production -not just related to biomass- is continuously in tension: a correct balance should consider sustainability criteria, prevalent agricultural activity and local-based production and consumption[24].

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