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Criticism of Global Ecological Biomass for Liveliness

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ABSTRACT
Nowadays energy is fundamental thing to our aliveness. Global energy drifts such as advanced energy demand and prices, vast differences across provinces; structural changes in an oil and gas industry gradually dominated by national companies, the overlook of irreversible weather change, as well as demand for energy security all highlight the need for a rapid changeover to a low-carbon, effectual and environmentally benevolent energy system. The search for energy alternatives involving locally available and renewable resources is one of the main fears of governments, scientists and business people worldwide.

KEYWORDS
Biomass potential; renewable energy; bioenergy; biomass sources; sustainability.

I. INTRODUCTION

The whole thing, in essence, is about energy [1]. There is no hesitation now that energy is fundamental for our enlargement Energy is vital for the internal and external safekeeping of a country and energy matters are at the core of social, conservation and economic security experiments. Though, the economic repercussions of energy unavailability are not well understood. The key role that natural properties, energy and environmental facilities play in influential economic growth has been underestimated within neoclassical economy. Furthermore, the quantification of a direct link between energy use and financial and social development can be elusive. At least since the 1950s, it has been clear that factors additional than capital and labor must be accountable for most economic growth. Cleveland [2] suggests that only accounting for energy quality reveals a relatively strong relationship between energy use and economic output. However, the "quality" of energy sources and energy forms is not substantive and this entails that different forms of energy cannot be easily substituted for each other or aggregated into an overall index [3]. The search for energy replacements involving locally obtainable renewable possessions is one of the main concerns of administrations, scientists and business people worldwide. Biomass – the fourth largest energy source after coal, oil and natural gas - is presently the most important renewable liveliness opportunity.

II. STATISTICAL ANALYSIS

ISI Web of Knowledge products are high-quality investigation databases. ISI Web of Knowledge covers 256 castigations and brings access to journals, conference proceedings, patents [1], websites, chemical constructions, mixtures and feedbacks in a combined

platform for access to neutral content that integrates all data and search terms together permitting users to find all relevant items with one search - regardless of which database in which it instigated. Wholly indexed and searchable, it cracks raw data into dominant knowledge by linking popular multidisciplinary databases with content-specific selections and tools. High customary of gratified promises users of superior results that cannot be coordinated by a free search engine [4] or less selective database. The growing interest in bioenergy is reflected in the large number of energy articles published. We initiate that more than 50% (4,911records) of 9724 renewable energy records obtainable inside ISIWIKAD have bioenergy as their subject (Fig. 1).

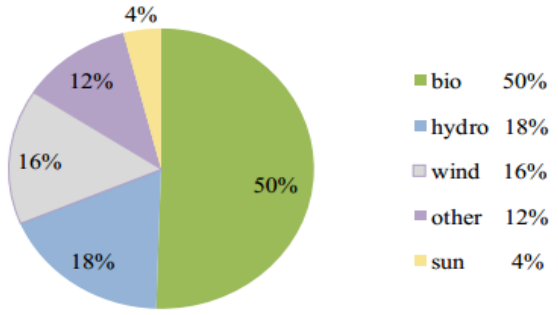


Fig.1. Relative distribution of 9,724 renewable energy records from ISI WEB [1]

Systematic research is between the most important of human actions and measured central to a knowledge-based civilization. Publications are the concrete result of scientific research [1]. As research problems are accustomed to changing global trends, the irresistible research [5] activity focused on bioenergy associated to all other renewable energy types illustrates the role of bioenergy as the most imperative renewable energy source in the near- and medium-term forthcoming. Analyzing the amount of standing research, we also found that publications on each of the four main biomass sources (Fig. 2).

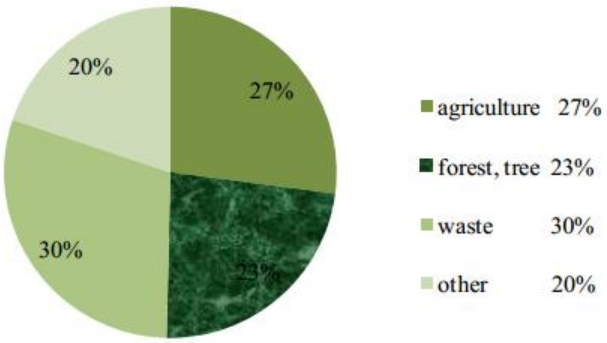


Fig.2. Relative distribution of 4,911renewable bioenergy records from ISI WEB [1]

Though, purifying the bioenergy records using dissimilar criteria discloses that sustainability and certification are not issues which number conspicuously in existing literature on bioenergy, despite the public attention both topics receive from various stakeholders and policymakers. Of the 4,911 bioenergy records retrieved, relatively few discuss certification criteria (51 records) and certification and sustainability criteria (23 records), (Fig. 3).

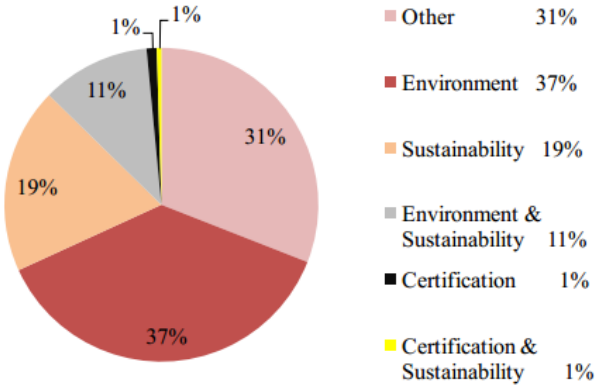


Fig.3. Relative distribution of records of different criteria within 4,911 renewable bioenergy records [1]

III. CRITICISM OF LITERATURE ON GLOBAL BIOMASS POTENTIAL

1. Worldwide energy depletion

The world's energy demand in 2006 amounted to about 490 EJ (11,703 MTtoe 3) and was made up of about 81% fossil fuels (oil, gas and coal), about 10% biomass, about 6% nuclear and about 2.2 and 0.5% hydropower and other energy respectively. However, taking into account the growing concern among scientists and economists, business people [6] and managers, governments and people regarding shortages of energy and material resources (Ulgiaty et al., 2008; Krstulovic & Barbiar, 2008) and the increasing importance of environmental issues, it is obvious there is an urgent need to change the current situation.

2. Renewable energy

Renewable energy sources that canbe either replenished continuously or within a moderate time frame through natural energy flows includesolar energy (heat and electricity), bioenergy, wind power, hydropower, and geothermal power [1]. There is also a strong commitment to financing sustainable development and renewable energy generation (Skambracks, 2007). Given that renewable energy sources are expected to play a key role in the near future, the production of renewable energy worldwide is also expected to grow quickly, increasing its share of the global energy mix. Many countries have already adopted [7] the goal of enhancing the role of renewable sources in their energy supplies. The EU has set ambitious targets to raise the share of renewable energies, particularly biofuels. Thus, the European Commission proposed a directive on the use of energy from renewable sources in January 2008 (Rosch & Skarka, 2008). Moreover, at a European level, there is a strong commitment to produce 20% of energy from renewables by 2020 (Marchal et al., 2009). The exploitation of renewable energy sources can help the European Union meet many of its environmental and energy policy objectives, comprising its compulsion to diminish greenhouse gases under the Kyoto Protocol (EC, 2002a) and the aim of securing its energy supply (EC, 2002b; EC, 2005).

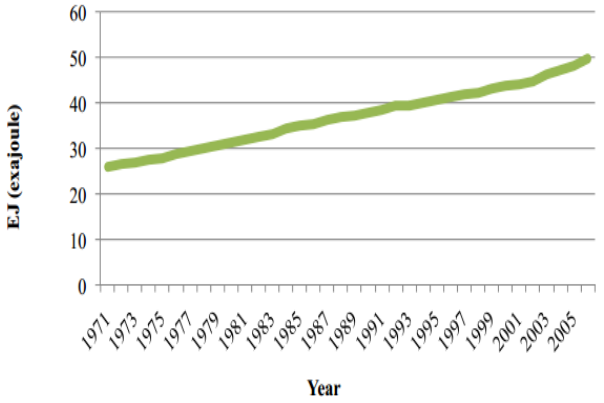
3. Bioenergy

Bioenergy is attractive at all stages of development due to its potential integration with all possible development strategies worldwide. The potential of bioenergy is widely recognized and bioenergy offers opportunities to address questions other than energy. Thus, bioenergy can be a solution for matters relating to economic, national, environmental and political security (Roberts, 2007). Moreover, bioenergy is based on resources that can be utilized on a sustainable basis all around the globe and can provide an effective option for the provision of energy services from a technical perspective. In addition, the benefits accrued go outside energy establishment, generating unique prospects for regional development (Silveira, 2005). Bioenergy production generally has a higher capital cost than fossil fuel alternatives, however the lower cost of the wood fuel provides a quick commercial payback and increasing savings over the longer term. Energy policies in European potentially affect prices for wood raw materials and can create markets for such materials as well (Hashiramoto, 2007). Unfortunately, many potential investors in bioenergy projects do not have a solid understanding of all the technical, social and environmental issues involved (Sims et. al.,2006).

4. Biomass as a renewable energy source

Since the beginning of cultivation, biomass has been a foremost birthplace of energy throughout the world. Biomass is the primary source of energy for nearly 50% of the world's population (e.g., Karekezi & Kithyoma, 2006) and wood biomass is a major renewable energy source in the developing world,

representing a significant proportion of the rural energy supply. In the former span, the number of countries exploiting biomass opportunities for the provision of energy has increased rapidly, and has helped make biomass an attractive and promising option in comparison to other renewable energy sources. The global use of biomass for energy increases continuously and has doubled in the last 40 years (Graph A). This according to the World Bank (2009) who uses IEA electronic files. Concerns about sustainable energy supplies, commitments to the Kyoto Protocol (i.e., the additional cost of carbon imposed through carbon trading increases the cost of fossil fuels and therefore makes "carbon-lean" biomass morecompetitive, increasing prices for fossil fuels and availability of stocks of wood raw material) have been major influences on the promotion of wood energy policies (e.g., Hashiramoto, 2007; Sims, 2003). Renewability and versatility are among many other important advantages of biomass as an energy source. The biomass resources currently available come from a wide range of sources (Figure 5).



Graph A. World use of combustible renewables and waste 1971 – 2006. (Source: World Bank, 2009)

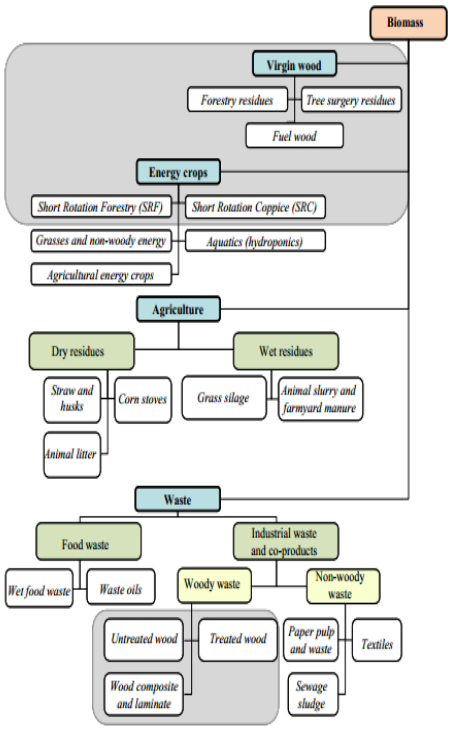


Fig.5. Classification of sources of biomass for production of energy [1]

These can be classified into woody biomass, agricultural sources and wastes. Biomass can be used in several fields (heat, power, liquid biofuels and bio based products), Fig. 6.

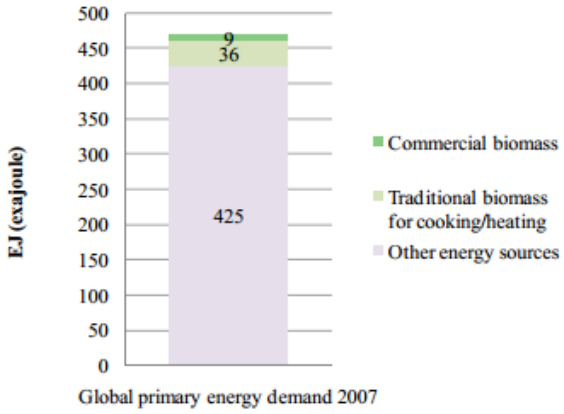


Fig.6. Contribution of biomass to global primary energy demand of 470 EJ in 2007. (Source: Faaij, 2008) [1]

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5. Biomass potential and resources on a global scale

The annual global primary production of biomass is equivalent to the 4,500 EJ of solar energy captured each year (Sims, 2004). About 5% of this energy, or 225 EJ, would have covered almost 50% of the world's total primary energy demand in 2006.

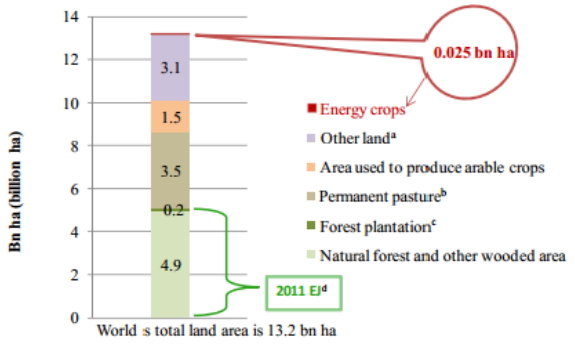

Fig. 7. Distribution of land use types in world's total land area (Source: Faaij, 2008) [1]

These 225 EJ are in line with other estimates based on models which assume an annual sustainable bioenergy market of 270 EJ (Hall & Rosillo-Calle, 1998). The future potential for energy from biomass depends to a great extent on land accessibility. Presently, the volume of land devoted to growing biofuels is only 0.025 billion hectares or 0.19% of the world's total land area of 13.2 billion hectares and 0.5-1.7% of global agricultural land (Fig.7).

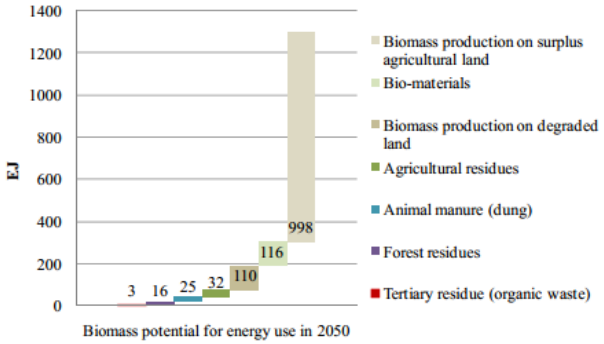

Fig.8. Contribution of each biomass resource category to the global potential of biomass [1] for energy use in 2050 (Source: Hoogwijk et al, 2003).

6. Sustainability criteria

Commercial biomass can be used to provide heat and electricity as well as liquid biofuels and biogas for transport. However, without structural changes to the energy system, the production of biomass energy crops and removal of biomass residues from forest and agricultural systems for energy production can result in negative environmental, economic, or social impact. Moreover, unsustainable biomass production would erode the climate-related environmental advantage of bioenergy. In addition, there are risks related to such factors as supply, fuel quality, and price increases, as well as issues such as competition for land area and the degree of renewability of given assets. Sustainability decreases such risks, and can be supported by certification of substrates' origin (Skambracks, 2007). Taken as a whole, it's more important than ever to reliably demonstrate that the advantages of biofuels made from biomass exceed the cost of potential environmental damage caused by their production. Therefore, sustainable production of biomass for use as fuels is the major issue in order to increase bioenergy production.

IV. CONCLUSIONS

This report takes a global perspective and synthesizes the amount of information on bioenergy and its relative distribution indifferent fields. The report contains two main sections, organized around bioenergy issues including an information survey and a literature review of bioenergy potential. The information survey reveals that the overwhelming research activity is focused on

bioenergy compared to all other renewable energy types. Given that publications are the concrete result of scientific research and that scientific research is among the most important of human activities and considered central to a knowledge-based society, this result illustrates that bioenergy may be the most important renewable energy source in the near- and medium-term future (Figure 1). It will therefore play a crucial role in integrated systems of future energy supply and will be a valuable element of a new energy mix.

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