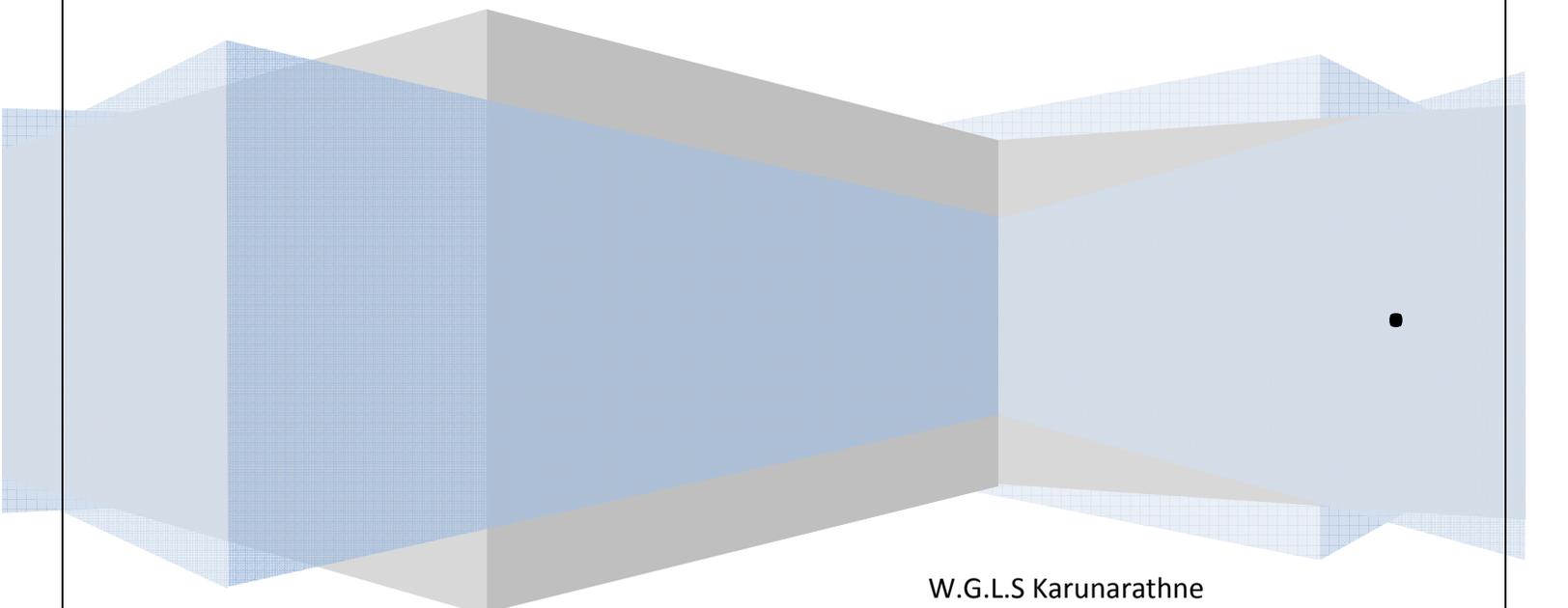


Use Ethanol in an effective manner.



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Introduction

Amongst the many renewable energy options, ethanol or ethyl alcohol produced from sugar cane has a great potential to be the fuel of choice for Sri Lanka to replace gasoline (or petrol as locally known). Ethanol is a clear, colorless, flammable oxygenated hydrocarbon, with the chemical formula C_2H_5OH . The oldest form of use of alcohol is that of a beverage. However, the history of ethanol (most common form of alcohol) as a fuel dates back to the early days of the automobile. In fact, the first automobile built by Henry Ford (model T) ran on ethanol fuel. However, cheap petrol quickly replaced ethanol, as the fuel of choice and it was not until the early 1980s, when the Brazilian government launched the ProAlcool program, that ethanol made a comeback to the market place. It may be estimated that fuel ethanol accounts for roughly 70% of world ethyl alcohol production in 2003. And, this share is forecast to rise to over 80% by the end of the decade.

What are ethanol's characteristics as a motor fuel?

Ethanol has a lower energy content than gasoline. That means that about one-third more ethanol is required to travel the same distance as on gasoline. But other ethanol fuel characteristics, including a high octane rating, result in increased engine efficiency and performance. The 15 percent gasoline used to formulate E85 is to assure cold weather engine starting and to enhance flame luminosity in case of fire. In low-percentage blends with gasoline, ethanol results in increased vapor pressure, which can be adjusted for in the fuel formulation process and/or controlled with on-board vehicle systems. All gasoline vehicles in use in the U.S. today can accept gasoline blended with up to 10 percent ethanol (sometimes called gasohol). Flexible Fuel Vehicles (VFFs) are cars and trucks that can use any level of ethanol up to 85 percent. They're built with special fuel system components designed to be compatible with higher ethanol concentrations.

World ethanol production

The top five ethanol producers in 2006 were the United States (4.855 billion US gallons per year (bgy)), Brazil (4.491 bgy), China (1.017 bgy), India (0.502 bgy) and France (0.251 bgy). Brazil and the United States accounted for 90 percent of all ethanol production. More American states

and foreign countries are becoming ethanol producers, employing traditional crop feed stocks and processes. In addition, new technologies for producing ethanol from agricultural, forestry, and municipal wastes and residues are the focus of major research and development efforts around the world. Future ethanol production projects are being planned in California using agricultural crops such as sugar cane, and, eventually, various waste and residual feedstocks when technologies for processing these materials become commercially available.

Sri Lanka ethanol production

Sri Lanka imports over 500,000 metric tons of sugar per annum, which is 90 per cent of sugar requirement valued currently at 12 billion Rupees. Imports sugar alone accounted for a quarter of the value of all food imports. Industry is currently confined to Moneragala and part of Ampara districts cultivating about 15,000 hectares and producing about 60,000 tones of sugar and 8 million liters of alcohol per annum. In the year 2003, the quantity of cane crushed at Pelwatta and Sevanagala increased by 67 per cent and 20 per cent respectively, and the total sugar production increased by 42% to 54,300 metric tons. During this period around 7.25 million liters of alcohol were also produced at the two factories. The sugar industry has potential to produce a large number of by-products such as electrical power, fiber boards and particle boards, vinegar, rum, biogas, acetic acid, animal feeds and yeast.

Ethanol Sources



Corn

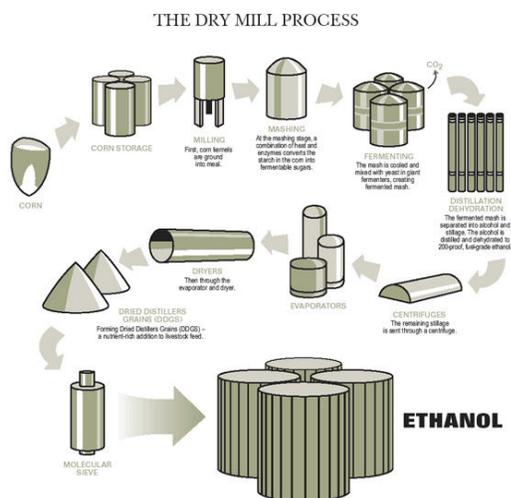


Sugarcane



Sugarbeet

Process



Benefits and Costs of Subsidizing Fuel Ethanol

Assistance to fuel ethanol has economic benefits and costs. The question that arises is whether the benefits outweigh the costs. As the Bureau of Transport and Communications Economics pointed out in a research report on transport and greenhouse gases:

The danger to the community of not basing decisions on cost-effectiveness is an unnecessary loss in welfare. Every dollar spent unnecessarily on reducing greenhouse emissions also reduces the community's ability to fund other projects such as hospitals, schools or defense.

A number of arguments have been advanced in favor of assistance to the fuel ethanol industry. They include:

- Environmental benefits
- Regional development
- Fuel security and diversity.

Current State

There are several obstacles to successful implementation of fuel ethanol policy in Sri Lanka. Most of these problems are due to our governments dependency on short term solutions for problems and lack of insight to identify problem areas and suitable solutions. First of all, Sri Lanka does not have a National Energy Policy.

Hence, there is no set target to achieve nor that there is a clear vision to find and promote new energy sources to cater for increasing energy demand. A look at Sri Lanka energy consumption clearly shows that still majority of people depend on biomass for their energy requirements. When it comes to transportation fuels, we are totally dependent on fossil fuels. For a long time the government did not give any recognition to biomass based fuel production and only recently it recognizes the importance of biomass as renewable energy resource that can be used for electricity production.

Ethanol is a controlled substance, hence, use and production is strictly controlled by the Department of Excise. Even obtaining a license to carry out scientific research by individuals and institutions became a tedious process and lack of knowledge about use of ethanol as a fuel. Public and the government officials are not knowledgeable about the use of ethanol as a fuel and they are being misinformed by the oil companies and agents working for oil companies.

No or very few research has been done to identify potential of ethanol as a fuel. No study has been done to identify resource sufficiency to produce nationally required quantities to replace gasoline and infrastructure availability and extent of existing infrastructure. Government sponsored research work in the field of biomass energy development is at a very early stage. No emphasis has been given to development of alternative transportation fuels.