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Note: This article was prepared and distributed by Global Bio-Coal Energy of Vancouver B. C. to foster awareness and understanding of existing options available to help prevent wildfires and to mitigate the effects of climate change.

BIO-COAL POISED TO LEAD IN THE STRUGGLES AGAINST WILDFIRES AND CLIMATE CHANGE

Climate change and lack of action on warnings to clean up forest debris, appear to have combined to create one of the worst wildfire seasons in British Columbia, California and in Europe. Many observers are also pointing to extreme weather events including massive hurricanes and flooding around the world as evidence of climate change.

As criticism of British Columbia's wildfire situation mounted, finger pointing has been aimed squarely on evidence that much of the blame rests with the volume of residues littering the forest floors that provide fuel for fires.

Forestry experts have issued ominous warnings for years that the problem of leaving harvesting debris in the forests would eventually come back to bite us. Sadly, many of those warnings came true in 2017.

The B.C. Wildfire Service reports that for the period from January 1st to October 23rd, 2017 there were 1,323 wildfires reported in the province. These fires destroying 1.2 million hectares or just over 3 million acres of forest, bush and grasslands in addition to a number of homes and other structures.

In the United States, 52,113 fires were reported according to statistics published by the National Interagency Fire Center (NIFC) out of Boise, Idaho. That organization also reported 8,825,062 acres were burned. That translates into 3,571,376 hectares.

Statistics related to the causes of wildfires are also startling. The NFIC in 2016 reported that a total of 6,790 fires were lightning caused. In contrast, 60,932 fires were human caused. Figures are apparently not kept on how many of the human caused fires were intentional.

After the 2003 wildfire crisis, former Manitoba premier Gary Filmon was asked to study the situation and produced a report titled Firestorm 2003. That year, the Okanagan was particularly hard-hit by wildfires.

Filmon warned in his report that there would be even more severe wildfires in the future if action was not taken to reduce fuels on the forest floor such as seedlings, shrubs and wood debris near communities.
As a result, the province did launch a wildfire prevention program that has since been criticized as being inadequate to meet the threat from forest residues. These also include the tree fibre left over from harvesting operations. That residue, consisting of crowns, branches, stumps, bark, underbrush and commercially worthless species and related material, is usually left to rot or is burned.

Six years after the release of Filmon's Firestorm 2003 report, noted BC Forest Economist Tom Hobby of SCR Management Inc. commenting in a 2009 interview with CBC News warned that "many communities in the B.C. Interior are at significant risk of potentially catastrophic forest fires this summer (2009), because critical prevention work promised by the government has not been done." He also said in a new report at the time that "forest fire fuel in the form of shrubs, branches and even pine-beetle infested trees needs to be cleared from wide swaths of the forest floor, estimated at 1.7 million hectares."

In what turned out to be a prophetic warning he added, "we're sitting on a time bomb."

On the weather front, Hurricanes Harvey, Irma, José and Maria are estimated to have caused, according to Time.Com, $200 billion in damage and will go down in the record books among the worst natural disasters in US history.

It is estimated that just a rise of 2c degrees of the Gulf of Mexico water temperature would cause the evaporation necessary to produce the winds and rainfall that has flooded Southern Texas and add to the strength of Hurricane Irma. Many scientists and others agree we can expect many more severe storms until we correct the imbalance in nature that started with the industrial revolution and has grown in intensity since.

Coal burning has been identified as the world's single largest producer of CO2. Fossil fuel burning can and must be reduced without sacrificing our economy if we are able to manage it properly.

Many forms of alternative energy are being developed and their costs are becoming more affordable. In spite of the growing variety of fossil fuels, only bio-coal has been identified as capable of replace coal without sacrificing existing infrastructure valued in the billions of dollars.

Wind and Solar major drawbacks is their inability to date to provide consistent electric supply 24/7 along with their costs, although these are being reduced, but still cannot compete with existing power suppliers without significant subsidies. They are intermittent in nature and can only be stored/transported if they are converted into units of energy such as Hydrogen. To manufacture and operate a solar collection (photo voltaic or thermal), a windmill, geothermal pumps, etc. require at some point expenditure of fossil fuels that generate GHG.

Bio-Coal can compete in price with Metallurgical coal for power plants without emissions reduction regulations and acceptable cap and trade or similar system in place. The demand is growing, especially in Europe, and Global Bio-Coal Energy Inc. (GBCE) of Vancouver has contracts in Europe and the USA for 100% of its future production.

Prior to Hurricane Harvey there was growing opposition to fossil coal mining due to the reports of high cancer rates and other medical problems in coal producing areas due mostly to the release of Selenium into waterways when coal and other minerals are mined.

Yet another reason why coal mining will be negatively impacted are the enormous quantities of fly ash that must disposed of from power plants that have become unmanageable. Fossil coal is about 12% ash on average and Bio-Coal is 0.7% av. The fossil coal ash is toxic. Allowed to escape into waterways fly ash renders them unusable. Pollution doesn't respect borders, it is not deadly but it can still be debilitating.

What has not been accounted for is what the forest industry and agriculture in general adds to the release of CO2 and CO2 equivalents that add to the greenhouse gases (GHG) like methane that is emitted with CO2 when biomass decays or is openly burned.

These are the major causes of global warming that are not taken seriously. Fossil coal is universally recognized as a major polluter. Some of the impact of that pollution could be mitigated by blending fossil coal and bio-coal to reduce emissions. The disruption caused by replacing coal-burning power plants with other forms of energy is not a practical solution in the short term.

Changing their fuel to gas is also costly and only reduces the problem by half. Replacing fossil coal with bio-coal removes the problems of greenhouse gas emissions, fly ash disposal and the release of toxic chemicals and minerals from open pit coal mining.

We need to address the cost of Bio-Coal versus thermal fossil coal. Even with the present cost per ton being twice that of thermal coal GBCE has sold out all its production with 20-year renewable contracts.

- The cost of Bio-Coal could be reduced if the regulations governing the leaving of wood waste to decay or open burning in the forests were strengthened and enforced.

- About 70 % of trees cut when clear cutting is left to decay or are burned in the forests. If removal regulations were enforced, the cost of biomass feed to the bio-energy industry would be reduced to zero or even provide income as a disposal fee allowing them to reduce the cost to the power plants that are using fossil coal.

- The present price of Bio-Coal is about double that of fossil coal, subsidies and enforcement are used to reduce fossil coal usage by an average of 20% in those countries who participated in the Paris Accord.

In British Columbia (Canada) alone, according to some estimates, there are about 25 million tonnes per year of waste wood left in the forests. The harvesting of the beetle kill trees would add onetime estimated 5.3 million tons of biomass in BC for bio-coal production.

Across Canada, according to figures published by Natural Resources Canada's State of Canada's Forests 2016 Annual Report, reveals that 148 million cubic meters of wood had been harvested. This volume would yield more than 52 million tonnes of waste biomass for use to manufacture bio-coal. A percentage of that waste, however, to provide wildlife habitat and soil remediation.
Changes and enforcement of waste biomass handling could save the present power industry from being forced to close billions of dollars of valuable capital assets.

Switching to natural gas as some have suggested, involves expensive retro-fitting of present burners and faces the anticipated price rise for gas now that all energy users are being attracted to the present low price of gas.

The demand for Bio-Coal will in the longer term increase substantially even without the changes recommended and many Bio-Coal plants will be required to meet the demand.

Meanwhile, the Union of Concerned Scientists (UCS) have issue a new report claiming to have direct evidence of the human contribution to atmospheric CO2. The Union of Concerned Scientists is a nonprofit science advocacy organization based in the United States. The UCS membership includes many private citizens in addition to professional scientists. It claims a membership of 200,000 (Report is available online).

Even if we don't accept the facts of global warning, moving to clean energy and eco-friendly policy is a simple powerful way to save life and improving people health to save our planet that we inhabit.

Global Bio-Coal Energy (GBCE) has developed the foundation for the creation of an international market of sustainable bio-fuel industry based on converting any type of waste wood fibre from forestry operations (biomass) into **Bio-Coal**. Bio-Coal is a clean, sustainable alternative to natural gas and coal and significantly reduces greenhouse gas emissions from burning fossil coal to generate electricity. It has the same properties as coal (BTU value 22-24 Gj), it can be stored, mixed, shipped and fed to the boiler just like coal without any modification to the user's fuel handling system making it extremely cost effective.

For additional information please visit our website: **www.globalbiocoalenergy.ca** or contact us at:

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