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Economy, Environment, and Energy Generation for SDGs

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Abstract

The impact of friction, lubrication, and wear at rubbing contacts of automobiles evolve environment load for rationalization of materials-energy balance. 2nd law of thermodynamics is a fundamental law of nature for the interpretation of energy direction in performing mechanical work by heat engines. The "*Sustainability*" at the forefront of socioeconomic indicators has been advanced globally for the green health of the planet. The promotion of clean energy with the advancement of sociotechnical parameters is invincible during the first half of the 21st century.

Keywords; Friction, Energy dissipation, Economy, Industrial revolution, Electric Vehicles

1. Introduction

Supramolecular interactions at rubbing mechanical contact are socioeconomically viable for balancing materials and energy during the 21st century at the forefront of the industrial revolution. Therefore, designing and manufacturing scientific interfaces can minimize friction, lubrication, and wear in tribology for a greener or more sustainable world. Investigation in leading economic countries for micro & macroeconomic savings from the friction, lubrication, and wear at tribological contacts of mechanical machines may advance to saving of 1.0% to 1.4% countries GNP by investment in research and development (R&D) of innovative mechanical surfaces [1]. The fuel economy of automobile vehicles is a strong function of Tribology for the prediction of mechanical efficiency in thermodynamic reservoirs or the influence of vehicle dynamics in impacting environmental boundaries [2-3]. Approximately 1/3rd of energy expenditure in the transport sector goes to overcome friction at the sliding/rubbing/rolling/stick-slip contact during in creation of mechanical efficiency therefore at the same time the fruitful research or manufacturing of electric vehicles powered by advanced batteries has been securing the scientific channel toward a sustainable transportation for mankind [4]. Human behavioral changes in the achievement of carbon neutrality faster are related to the incorporation of green technology, rational driving, materials-energy balance, and the sustainability of the automobile sector [5].

The global impact of tribology on energy use, CO2 emission, and economy in a heterogeneous amalgamation of internal combustion engine/electric vehicles is visible in urban cities of India (Fig. 1) for synchronization of environmental entropy against the conscious umbrella of nature.

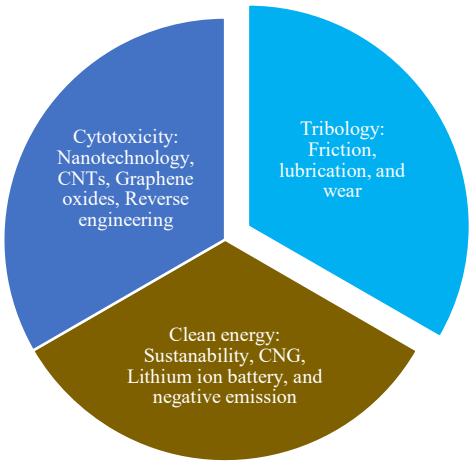

Fig. 1 The fundamental expression or a personal view point of economy, Environmental, technology impact on society for achievement of Sustainability across covid#19 pandemic at materials-energy interface of automobiles

2. Cytotoxicity

The phenomenon of the toxic environment over human health from the environmental load evolved primarily from transport sectors have been included in relationship with sustainability under SDG3 or good health and well-being. The reverse engineering is applied for elementary expression of cytotoxicity for supramolecular adhesion of air-suspended carbon nanoparticle functional group with bio-membrane functional groups such as -COOH, -NH2, and -OH locally present over functional respiratory tissues exposed dynamically with ambient air. The high specific surface area of nanoparticles creates a reactive environment due to physiochemical transformations in both environmental/biological interfaces for the mobility of cytotoxic environment influencing the health of human safety [6-7]. Carbon-based nanoparticles have created biomechanical attention for drug delivery to cancer cells due to electromechanical adhesion at the biological surface for the realization of human safety [8-9]. The random CO2 emission and engineered carbon nanoparticles such as graphene oxides (GO), reduced graphene oxide (rGO), few layers of graphene (FLG), carbon nanotubes (CNTs), fullerenes, and carbon dots are involved in the assessment of cytotoxicity of petroleum-based fuel over urban cities [10-11]. The limited amount of carbon emission from fuel oxidation by IC engines is a boon for defeating environmental reactions whereas the environmental load of particulate matter above the safe limit is a bane for the synergy of general health. Human behavior for regulation of self in the modulation of

mechanical efficiency above resting may promote sustainability as a function of the quality of fuel, enhancement of mechanical work, and environmental indicators.

3. Clean energy

Clean energy consumption relative to petroleum products is preferred at the forefront of sustainable development goals for the reduction of ecotoxicity evolved from the transport sector primarily from ground vehicles based on IC engines registered with Urban Cities. Compressed Natural Gas (CNG) provides qualities of fuel oxidation from other conventional petroleum products with reference to reduction of environmental load, fuel economy, lesser carbon content, and sociotechnical transformation. CNG is a gaseous state at atmospheric pressure in a combustion chamber compressed mechanically from the biosphere into liquid form, CNG does not contain lead, is nontoxic, extending the durability of the spark plug, and CNG does not react with the metals for antifouling performance in transport mechanism [12-13]. CNG fuels have been preferred as economical substitutes for petroleum products in India for the rendering of a relatively complete combustion as expressed in the form of a chemical equation.

$$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O \qquad \text{(i)}$$

The lithium-ion battery was initially designed and manufactured for the consumer electronics sector, expanded to further applications becoming standard requiring a portable rechargeable device, and superseded nickel cadmium/nickel-metal hydride technologies. The operation of a lithium-ion battery is to circulate electrons by creating a potential difference between two electrodes immersed in a conducive environment. The battery is electronically powering a device for accumulation of electrons over the negative electrode move or dislocate towards the positive electrode quoted discharging phase used for designing and manufacturing of electric vehicles [14-18]. Conversely, during the lithium-ion battery charging phase the electric energy is supplied by the charger the electrons reverse from the positive electrode to the negative electrode.

4. Conclusion

Friction, lubrication, and wear at rubbing contacts of automobiles influence Socioeconomy for the achievement of SDGs as per global requirements. The environmental load of the transport sector primarily from petroleum-based IC engines is influencing carbon nanoparticle cytotoxicity for the modulation of materials and energy balance. CNG-based hybrid vehicles, electric vehicles, and human behavior, in general, synchronize the

anthropogenic load of the urban environment as per the integrity of the Economy.

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Author Contribution

Author wrote paper by researching during SARS-CoV-2 pandemic in India

Conflict of Interests

None conflict of interests to declare

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