

Petroleum Engineering

August 15-17, 2016 London, UK

Review of greenhouse gas emissions in SAARC countries

N Khan, A Kalair and N Abas

Comsats Institute of Information Technology, Islamabad, Pakistan

Pakistan is one of the top ten climate change affected countries. Melting glaciers, flash floods, repetitive droughts, heat waves, epidemics, rampant population and energy crises have created water, food and energy nexus concerns. Visible signs of climate change are heat waves, famines, dead acacia and rosewood trees, fast melting glaciers, dengue virus, declining crop productivities, oil, gas, and power crises. Pakistan's annual CO_{2eq} emissions are 310 MtCO_{2eq} which are caused by energy (51%), agriculture (39%), industry (6%), LULUCF (3%) and wastes (1%). Pakistan's GHG (Green House Gas) emissions are 0.70% of global emissions, yet facing rampant consequences of climate change. Accumulative GHG emissions of all SAARC countries are less than China. Pakistan has no coal power plants yet affected by upwind coal power plants. NASA observations and data based analyses reveal the upwind GHG emissions, haze and smog pollutants flow to Pakistan through summer monsoons. Cooperative control of regional GHG emissions, exchange of mitigation technologies and adaptation seems to be the way forward. A SAARC Super Grid concept is proposed for free energy market among SAARC countries. This paper reviews CO₂ emissions in Pakistan compared to the SAARC countries and proposes GHG emissions reduction using carbon capture and storage technologies for industrial utilization of carbon dioxide.

nasrullahk@yahoo.com

Role of transitional fuels for development of sustainable energy generation systems

Sadiq Ali Shah

Mehran University of Engineering and Technology, Pakistan

Petrol, diesel, natural gas, compressed natural gas, liquefied petroleum gas and liquefied natural gas with their share around 80% in global energy market have played a great role in thermal, chemical and electrical energy generation process. For last few decades' renewable energy fuels have emerged and have succeeded in attaining a share 15-21%. There is a gradual switchover from fossil fuelled thermal power generation and transport to solar, wind and biomass energy fuels in transport and electrical power generation processes because of environmental concerns have found their places in advanced countries. There are also certain reservation regarding solar, wind and biomass fuelled energy generation because of their intermittent nature, high capital costs, technological problems, and socio-cultural barriers. However, there is a possibility of addressing both these concerns in the period of transition, by utilization of combination of traditional and renewable energy fuels (hybrid fuels), using traditional energy generation technology such as petrol and diesel cycles and heat engines. Renewable energy and petroleum industry experts in collaboration can facilitate the development of transitional (hybrid) energy fuels and common processes till synchronization of technological, financial and societal values. A scenario analysis is carried out for both scenarios; purely fossil and renewable fuel consumption, which is not favorable and realizes the need of development of processes and techniques equally applicable to both types of fuels.

[ssssadiqalishah@gmail.com](mailto:sssadiqalishah@gmail.com)