Energy consumption has an important role to determine the economic growth directly as a key input of production process and indirectly it has also a significant role in all sector of the economy. The study explores the simultaneous relationship between energy consumption and GDP growth of 5 South Asian and 5 ASEAN countries for the period of 1974-2013. To investigate the short run and long run dynamics between energy consumption and GDP growth; Pedroni (1999,2004) panel co-integration technique has been used and checked that whether these variables are co-integrated with each other or not. Dynamic OLS (Pedroni, 2001) has also been used to check the long run elasticities of the variables. Further Engle and Granger (1987) test has applied to check the direction or way of causation between these two variables.

The results of this study show that there is long run and positive relationship between energy consumption and GDP growth. All the Coefficients through Dynamic OLS are statistically significant and explaining the long run changes in GDP growth. The results of panel Granger causality test show that there is bi-directional causal relationship between energy consumption and GDP growth in short run and long run both in South Asian and ASEAN regions. Moreover these results suggest that energy consumption has a major role in GDP growth and vice versa.

The findings of this study have some important implications related to the energy consumption and GDP growth policies in case of South Asian and ASEAN regions. The implications of feedback hypothesis between energy consumption and GDP growth suggest that any shortage because of any reason such as non-policy or policy actions in these two regions retard their GDP growth directly. Further this feedback relationship also suggests that any protectionist policy of trade in case of energy resources to restrict the imports or exports of energy resources have harmful consequences for GDP growth in these two regions. Therefore it is necessary to build or discover the new energy resources such as nuclear, solar and wind power plants, new dams, coal and gas resources and tidal energy resources should be established in all of these countries to meet the rapidly increasing energy demand to promote their GDP growth.