

**APPLICABILITY OF CARBON PRICING
INSTRUMENTS TO REDUCE ENERGY BASED
CARBON EMISSIONS OF APPAREL SECTOR IN SRI
LANKA**

Thesis submitted in partial fulfilment of the requirements for the degree Master of
Science by Research

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ABSTRACT

Global warming and subsequent climate change have been identified as critical global issues which need urgent and close attention. Nevertheless, addressing this has become a problem due to the direct relationship between development and greenhouse gas (GHG) emissions. However, with the introduction of Paris agreement, countries are trying to reduce GHG emission by using various emission reduction policy instruments. Price based emission reduction instruments are deemed to be effective in achieving emission reductions, as they induce emission reductions through price signals, and also generate revenues which can later be used. Carbon tax systems and emission trading schemes are identified as the most popular pricing instruments. However, implementation of carbon pricing instruments is not that common seen. Hence, this research focuses on identifying the applicability of carbon pricing instruments to reduce GHG emissions in apparel sector, which is also a highly energy intensive sector in Sri Lanka. Data collection was done through semi-structured interviews and questionnaires. Data collected through questionnaire survey was analysed using Fuzzy Extended Analytic Hierarchy Process (FEAHP), while data collected through interviews were analysed through content analysis. A preliminary survey was done to validate literature findings, which was used in the questionnaire. Questionnaire survey was conducted to evaluate the response of apparel firms to carbon pricing instruments. When evaluating the response of firms, the importance given by firms to decision alternatives was analysed using FEAHP. Accordingly, investing in new technologies was found as the most important decision alternative for apparel firms with an importance weight of 0.24, while shifting cost to customers was found as the decision alternative with lowest importance with a weight of 0.17. From the expert interviews, it was found that the carbon pricing revenue should be used to programmes which targets emission reductions. Further, the expert interviews revealed that there could be barriers at organization level, sector level and national level when implementing a carbon pricing instrument. Hence, it was found that the necessary steps should be taken at all those three levels to overcome the barriers and implement a lasting carbon pricing instrument which is capable of achieving emission reductions.

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ABBREVIATIONS

AHP- Analytic Hierarchy Process

CEA- Central Environment Authority

CEB- Ceylon Electricity Board

CEYPETCO- Ceylon Petroleum Corporation

CFC- Chlorofluorocarbon

CSR- Corporate Social Responsibility

ETS- Emission Trading Scheme

FCM- Fuzzy Comparison Matrix

FEAHP- Fuzzy Extended Analytical Hierarchy Process

GHG- Greenhouse gas

HFC- Hydrofluorocarbon

NCPC- National Cleaner Production Center

NDC- Nationally Determined Contributions

PFCs- Perfluorocarbons

SAC- Sustainable Apparel Coalition

SEA- Sustainable Energy Authority

UNFCCC- United Nations Framework Convention on Climate Change