

**Towards the Development of an Optimal Long-Term Structure and Policy for the  
Development of Trinidad and Tobago's Petrochemical Industry  
Part 11. The Olefin-Based Complex**

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**Abstract**

With increasing natural gas production, sufficient quantity of natural gas liquids for an ethylene plant and subsequent olefin complex will be available. In this paper, the problem of selecting an optimal initial structure and policy for development of an olefin-based complex is addressed. The mathematical model used was formulated to capture the dynamic nature of the petrochemical market. The length of the planning time horizon is 17 years, during which economic parameters were allowed to vary. Uncertainty in the estimation of these parameters was taken into account. A multiobjective analysis was performed in order to address the objectives of the various interest groups involved.

It was found that the optimal policy for an olefin-based complex involves the immediate production of a blend of basic, intermediate and end-products. Based on the range of feed compositions considered, the ethylene plant should produce the maximum amount of propylene possible.