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# ECONOMIC EVALUATION OF PETROCHEMICAL PROJECTS AFTER CORONA

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## Chapter 1

# PURPOSE OF THIS PAPER

In previous papers on petrochemicals and the corona/oil price crash impact, I stated several times that planned projects have to be re-evaluated, in order to see the feasibility of these projects in the post Corona time. Methodology for evaluation of petrochemical projects and possible scenarios will be explained in this paper.

## Chapter 2

# METHODOLOGY OF ECONOMIC PROJECT EVALUATION

Before the corona crisis started, many petrochemical projects have been planned for the coming years worldwide, based on the assumption, that demand will grow continuously as before the crisis. Especially projects based on low cost feedstock, such as abundant ethane, propane or LPG had a big share in planned projects in the US, Europe, and Asia. Driver for the projects was in many cases the availability of low-cost raw material and the expectation of high margins for bulk products like PE, PP, and other polymers.

As today's planned petrochemical projects in most cases make use of the economy of scale, investments of several billion USD are required for such a project. In the post corona time and due to the oil price crash the scenario determining the economics of such large projects has changed significantly as it was already discussed in earlier papers on the effect of the oil price crash on petrochemical products.

For evaluation of the economics of a large project such as a cracker-based polymer complex for example, many factors have to be considered and have to be tested in different scenarios, to see the robustness of a project.

Major factors for economics of large projects are investment costs, cash flows, operation costs including overhead costs, product revenues, construction period, projected startup date, production ramp-up to nameplate capacity, scheduled shutdowns (turnarounds), taxation of profits, finance costs etc.

All these factors have to be put into an economic model and economic key figures have to be calculated for a defined period of typically 20 years of operation for different scenarios of for example low, medium and high oil price, as the main price setter in the domestic petrochemical and especially the target markets for the products. The target markets also determine the product demand and prices e.g. for PE grades, the demand of HDPE, LDPE and LLDPE as typical products of ethane based cracker/polymer complexes, whereas for LPG and naphtha based projects also the markets for PP, BTX, pyrolysis gasoline and fuel oil have to be considered. If the project includes other derivative units or units for aromatics extraction and separation or hydrogen export, also the revenues for these products need to be considered in the economic evaluation of the project.