Investment and Challenges in the Petrochemical and Refining Sectors

François Good
Growing demand for petrochemicals
More cracker capacity needed to meet rising demand

Main polymer demand*
Mt/y

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2018</th>
<th>2025</th>
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<tbody>
<tr>
<td>Recycling</td>
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> 3% CAGR

**Strong market fundamentals**
- Growing population
- Lighter weight materials
- Energy efficiency

Additional demand ~5 crackers per year

Recycling offers further growth opportunities

*polyethylene, polypropylene*
A clear path to creating value
Low cost feedstock key to profitability

Main polymer feedstock

Polymer price is oil-linked

Feedstock prices

Ethane and LPG discount
driven by US shale growth
Expanding high return petrochemicals
Leveraging world class integrated platforms

Petrochemical projects

**US: Total Borealis Nova JV**
- New ethane cracker
- PE capacity increase
- Start up 2021

**South Korea: Hanwha Total JV**
- Propane cracker expansion
- PE & PP capacity increase
- Start up 2019-20

**Algeria: Sonatrach Total JV**
- New Propane dehydrogenation
  + PP capacity
- > 15% IRR, FEED ongoing

**Saudi Arabia: SATORP Petrochemicals**
- New mixed feed cracker
- New PE capacity
- > 15% IRR, FEED ongoing

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**Investing in growing markets**

**Building on low cost gas feedstock**

**Founding member of new global alliance to end plastic waste**
This document may contain forward-looking information on the Group (including objectives and trends), as well as forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, notably with respect to the financial condition, results of operations, business, strategy and plans of TOTAL. These data do not represent forecasts within the meaning of European Regulation No. 809/2004.

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Financial information by business segment is reported in accordance with the internal reporting system and shows internal segment information that is used to manage and measure the performance of TOTAL. In addition to IFRS measures, certain alternative performance indicators are presented, such as performance indicators excluding the adjustment items described below (adjusted operating income, adjusted net operating income, adjusted net income), return on equity (ROE), return on average capital employed (ROACE) and gearing ratio. These indicators are meant to facilitate the analysis of the financial performance of TOTAL and the comparison of income between periods. They allow investors to track the measures used internally to manage and measure the performance of the Group. These adjustment items include:

(i) Special items

Due to their unusual nature or particular significance, certain transactions qualified as “special items” are excluded from the business segment figures. In general, special items relate to transactions that are significant, infrequent or unusual. However, in certain instances, transactions such as restructuring costs or asset disposals, which are not considered to be representative of the normal course of business, may be qualified as special items although they may have occurred within prior years or are likely to occur again within the coming years.

(ii) Inventory valuation effect

The adjusted results of the Refining & Chemicals and Marketing & Services segments are presented according to the replacement cost method. This method is used to assess the segments’ performance and facilitate the comparability of the segments’ performance with those of its competitors.

In the replacement cost method, which approximates the LIFO (Last-In, First-Out) method, the variation of inventory values in the statement of income is, depending on the nature of the inventory, determined using either the month-end price differentials between one period and another or the average prices of the period rather than the historical value.

The inventory valuation effect is the difference between the results according to the FIFO (First-In, First-Out) and the replacement cost.

(iii) Effect of changes in fair value

The effect of changes in fair value presented as an adjustment item reflects some transactions differences between internal measures of performance used by TOTAL’s management and the accounting for these transactions under IFRS.

IFRS requires that trading inventories be recorded at their fair value using period-end spot prices. In order to best reflect the management of economic exposure through derivative transactions, internal indicators used to measure performance include valuations of trading inventories based on forward prices.

Furthermore, TOTAL, in its trading activities, enters into trading contracts, which future effects are recorded at fair value in Group’s internal economic performance. IFRS precludes recognition of this fair value effect.

The adjusted results (adjusted operating income, adjusted net operating income, adjusted net income) are defined as replacement cost results, adjusted for special items, excluding the effect of changes in fair value.

Euro amounts presented herein represent dollar amounts converted at the average euro-dollar (€-$) exchange rate for the applicable period and are not the result of financial statements prepared in euros.

This document also contains extra-financial performance indicators, including a carbon intensity indicator for TOTAL energy sales that measures the weighted average greenhouse gas emissions of energy products sold by TOTAL, from their production in TOTAL facilities to their end use by TOTAL customers. This carbon intensity indicator covers, besides direct GHG emissions of TOTAL (scope 1), indirect GHG emissions (scopes 2 and 3) that TOTAL does not control (for the definitions of scopes 1, 2 and 3, refer to Total’s Registration Document).

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