US FEEDSTOCK ADVANTAGE : ALREADY A REALITY

US plants benefiting from low price of feedstock and energy
THE US ENERGY REVOLUTION & PETROCHEMISTRY

Evolution of US gas production* (Bcfd)

U.S. ethane balance

* Source : Total estimations
MORE NEW CAPACITIES TO COME IN ETHYLENE …

- US projects on ethane to add 30% regional capacity, essentially dedicated to PE derivatives
- ME projects based on mixed feedstock and allowing more diversified downstream
- Naphtha based production represent now less than 50% of world ethylene

US to become a major exporter of ethylene derivatives
... AND PROPYLENE ...

- Around 23% to come from alternative feedstock (propane, coal, methanol) in 2018 compared with 12% in 2012
- US excess of propane to be exported overseas

New routes for propylene production appear with attractive feedstock price
Will East of Suez growing demand continue to absorb additional capacity?
NORTH AMERICA TO ARBITRATE ON PE EXPORTS

North American exports to target growing South American markets but also Asia and Europe.
WITH NO LOCAL COMPETITIVE FEEDSTOCK AND LIMITED MARKET GROWTH, EUROPEAN PETCHEM INDUSTRY HAS TO ADAPT

End-2012 European ethylene capacity : 26 Mt/a

- Restoring utilization rates
- Increasing imports from US and Middle-East

Estimated 15% capacity reduction need over 2013-2020
Manage a sizeable diversified portfolio

Restructure and develop leading integrated platforms

Deliver innovative products

Develop sustainable processes and products

Our strategy: safe and reliable refining-petrochemicals focused on increasing value and redeploying towards growing markets
TOTAL : MAJOR GLOBAL PLAYER IN PETROCHEMICALS

Petrochemicals players
2012 global capacity in Mt*

TOTAL's global capacity at end-2013
(including share in Satorp)

A sizeable and diversified petrochemicals portfolio

* Portfolio: Ethylene + Propylene + Benzene + Toluene + Mixed Xylenes + Polyethylene + Polypropylene + Polystyrene + EPS + PET + PVC
TAKING UP THE CHALLENGE ON KEY PLATFORMS

**Europe**
- Priority to investments on **integrated platforms** with **feedstock diversification**: Normandy, Antwerp
- **Reducing petrochemicals exposure**: Antwerp NC1, Carling
- **Differentiate polymer** products on higher value markets

**Americas**
- Port Arthur cracker: **maximizing ethane** and LPG cracking
- Benefiting from **leading positions** in polypropylene and polystyrene
- Studying ethane **side cracker project**

**Middle East and Asia**
- Developing 3 of the world’s **best performing platforms**
- Green light for coal-to-olefin project in China
BENEFITING FROM INTEGRATION BETWEEN REFINING AND PETROCHEMICALS BEYOND PRODUCT EXCHANGE

Refining
Naphtha, LPG, refinery offgas, propylene, aromatics, …

Petrochemicals
Hydrogen, steam, low sulphur fuel oil, pyrolysis Gasoline

Synergies expected from TOTAL’s new R&C organization
Net operating income

First synergies in Normandy and Antwerp
Renegotiated energy contracts
First benefits of rightsizing central services

Leveraging on single site management, common infrastructures and size effect
QUESTIONMARKS AND CHALLENGES FOR A MAJOR PLAYER

- Demand growth in LAM and Asia
- Shale hydrocarbons phenomenon (magnitude, logistics, other regions ?)
- Gas exports from the US et potential impact on prices
- LPG associated production, “swing” demand and world trade flows

Markets

- Operational Excellence & Leading Innovation

Operations

- Access to competitive feedstock and energy
- Pace of restructuring

People

- Skills and know-how