

III LACGEC

22 - 24 April 2002, Santa Cruz de la Sierra



SMDS Experience and Outlook



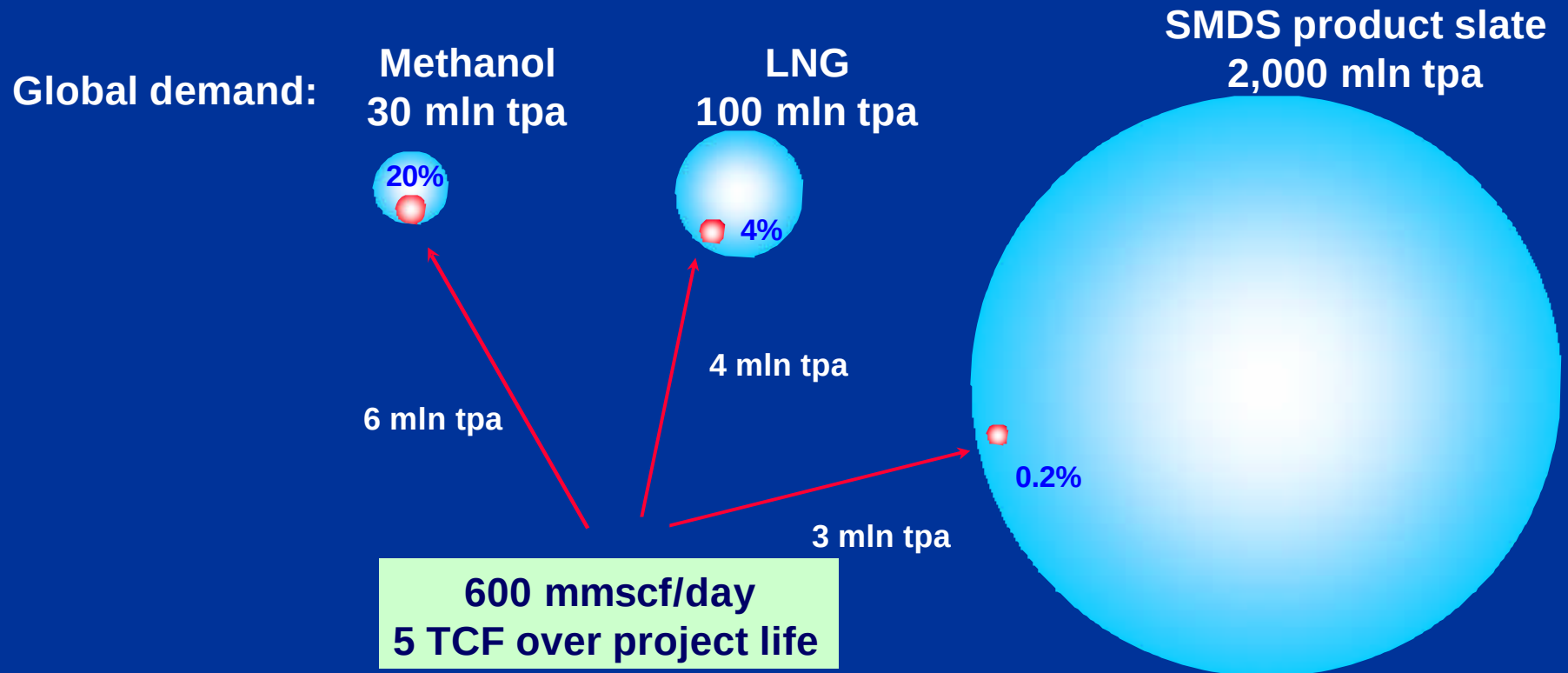
Shell Gas & Power

Driving Forces for GTL

- Develop remote gas resources
- Stimulate economic growth and industrial development in remote areas
- Ultra clean transport fuels to improve local air quality
- Decrease present/future oil imports



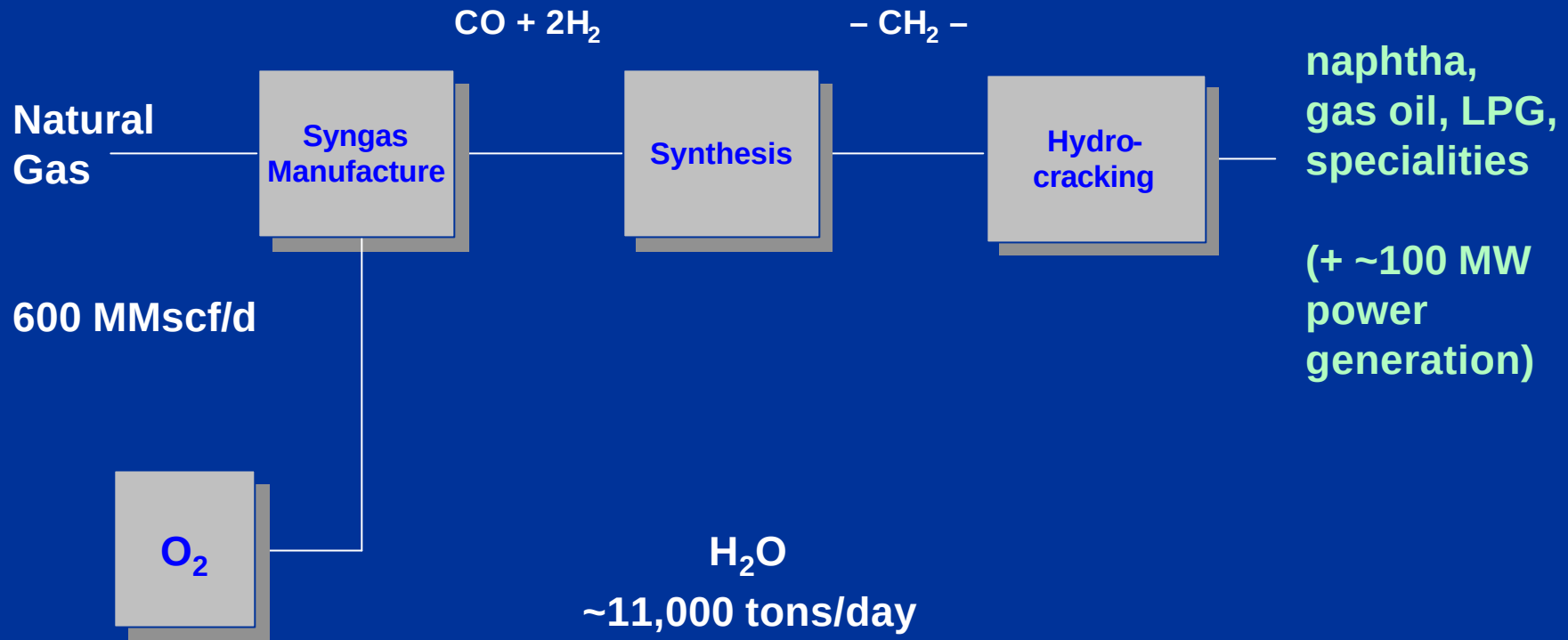
Remote Gas Development Routes



Markets for methanol and LNG are substantially smaller



SMDS Process Line-up



75,000 b/d capacity: Capex ~US\$ 1500 m



Product Properties

Gasoil

Cetane Number

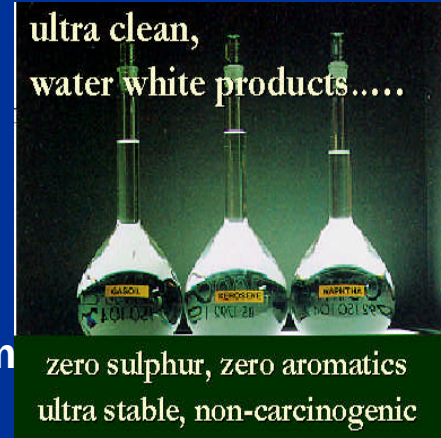
SMDS

75/80

'Standard'

46/50

Trends in Diesel specs are easily met by SMDS Gasoil,
Offering niche market opportunities or blending stock premium



Kerosene

Smoke Point

110

25

Ideally suited for domestic heating applications



Naphtha

% paraffin

~100

~70

Ideal, high yielding, feedstock for petrochemical industry



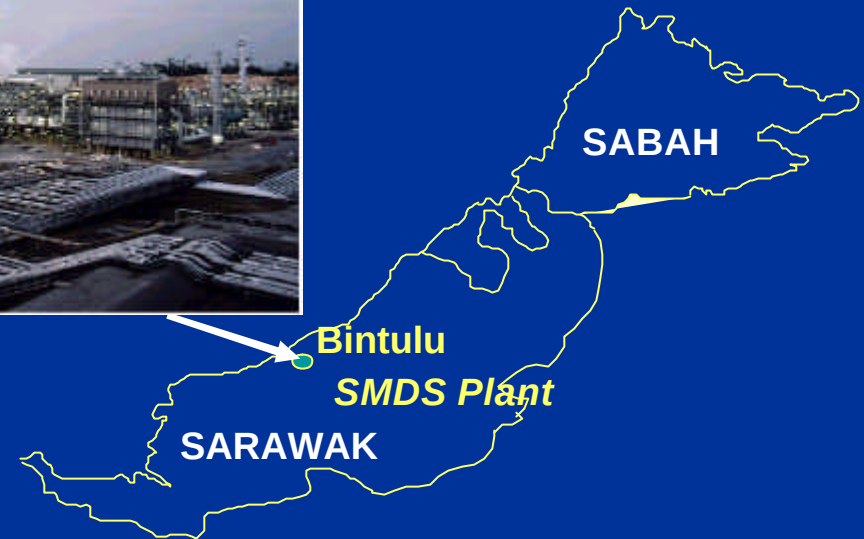
The SMDS Bintulu Project (1993 and onwards)

Project Scope

- Conversion of 100 MMscf/d NG into 470 ktpa (12,500 bpd) distillates and specialties
- Global marketing of products
- Capital investment of US\$ 850 million
- Shareholders are Shell (72%), Mitsubishi (14%), Petronas (7%) & Sarawak Govt (7%)

Selection of Bintulu

- Large gas reserves, limited domestic market
- Good infrastructure, investment climate and trained workforce
- Past experience large gas projects (eg LNG)



SMDS Bintulu Plant Layout

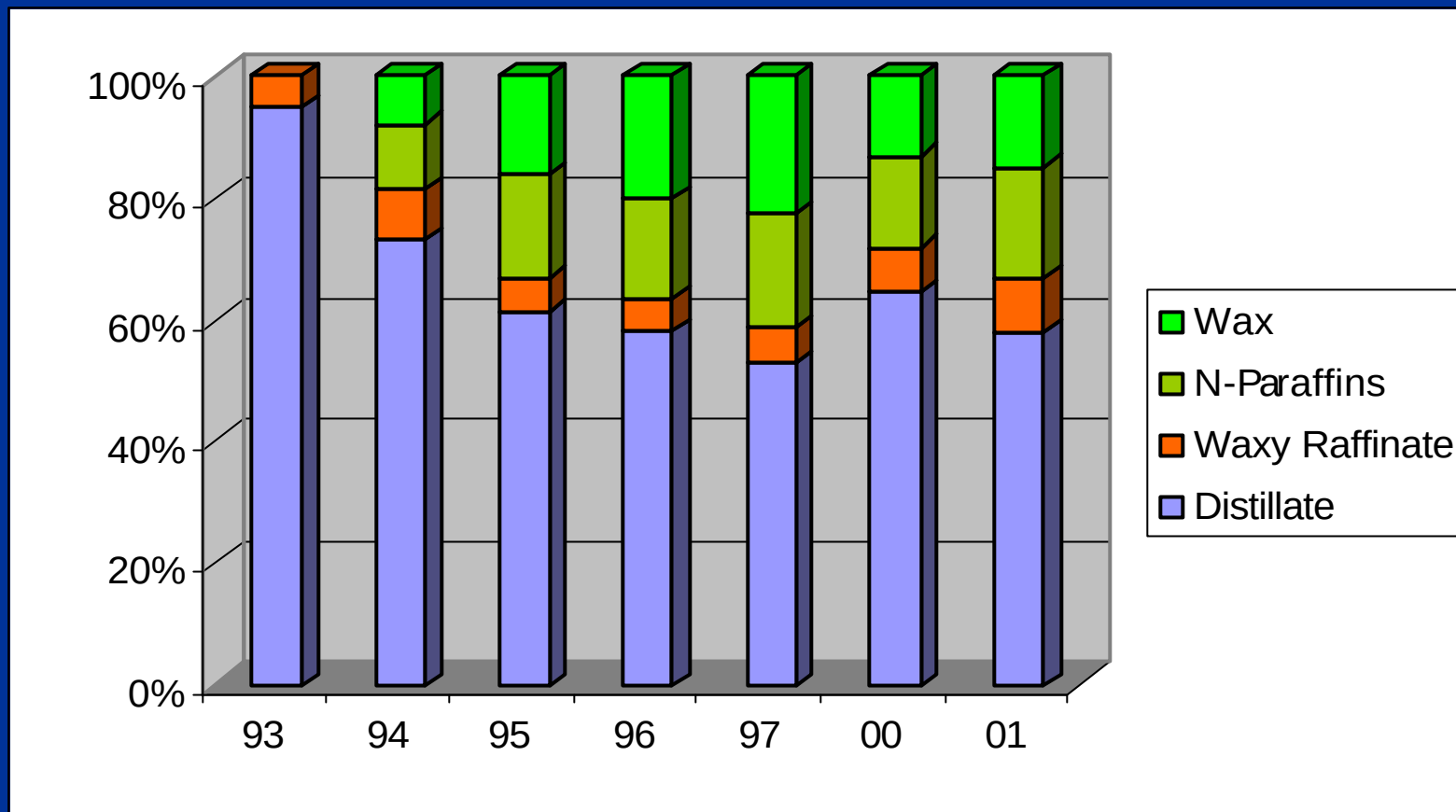


Brief History of SMDS Bintulu

1973	SMDS exploratory research
1983	Pilot SMDS plant (Amsterdam)
Apr 1986	Shell MDS(M) incorporation
July 1989	Construction agreement with JGC
Aug 1989	Joint venture agreement
Feb 1990	Gas supply agreement
May 1993	Plant commissioning
Sep 1993	First product shipment
Dec 1997	ASU incident
May 2000	Reconstruction completed



Production Mix SMDS Bintulu: 1993 - 2001

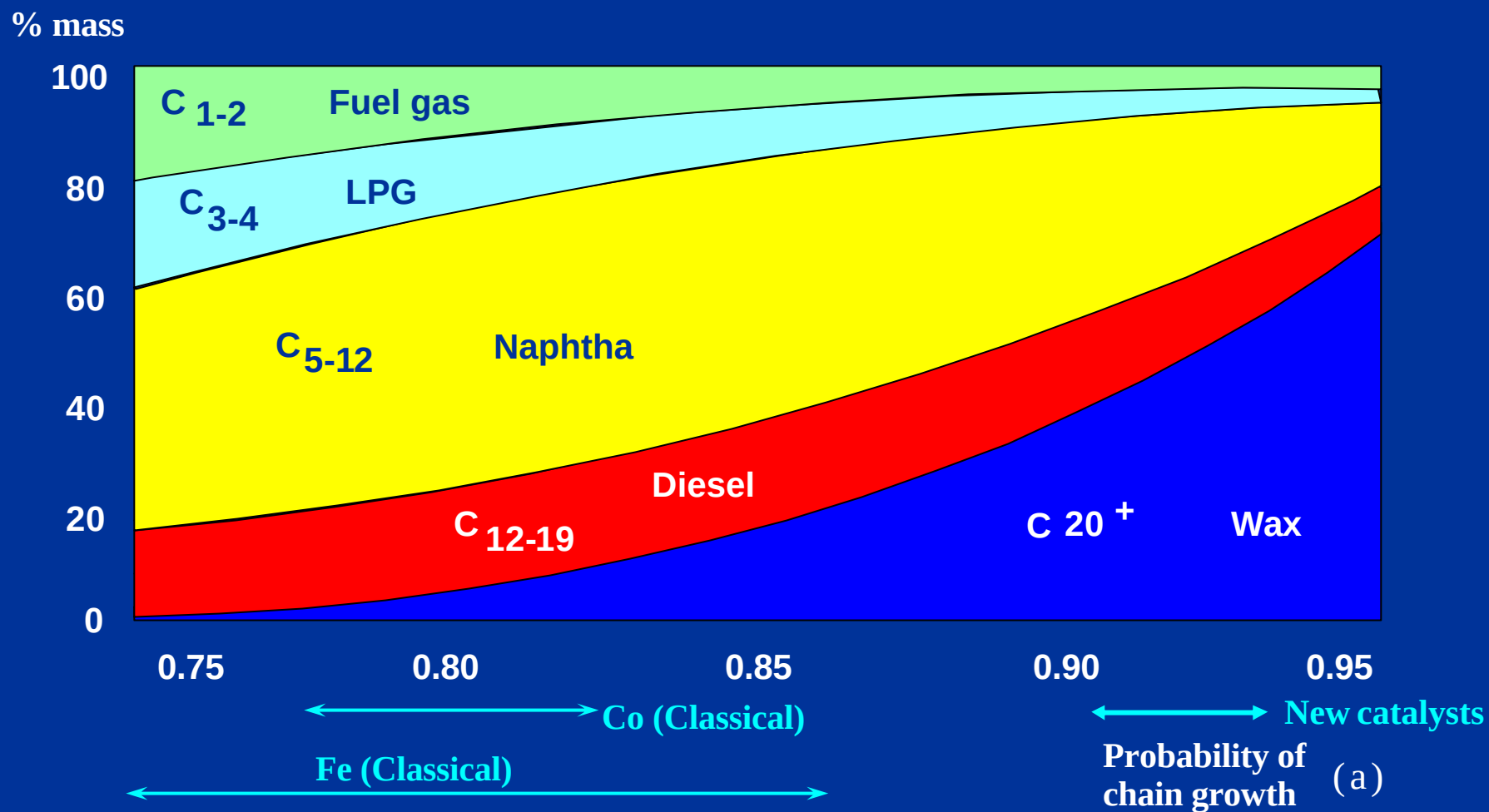


The SMDS Bintulu Experience – Summary

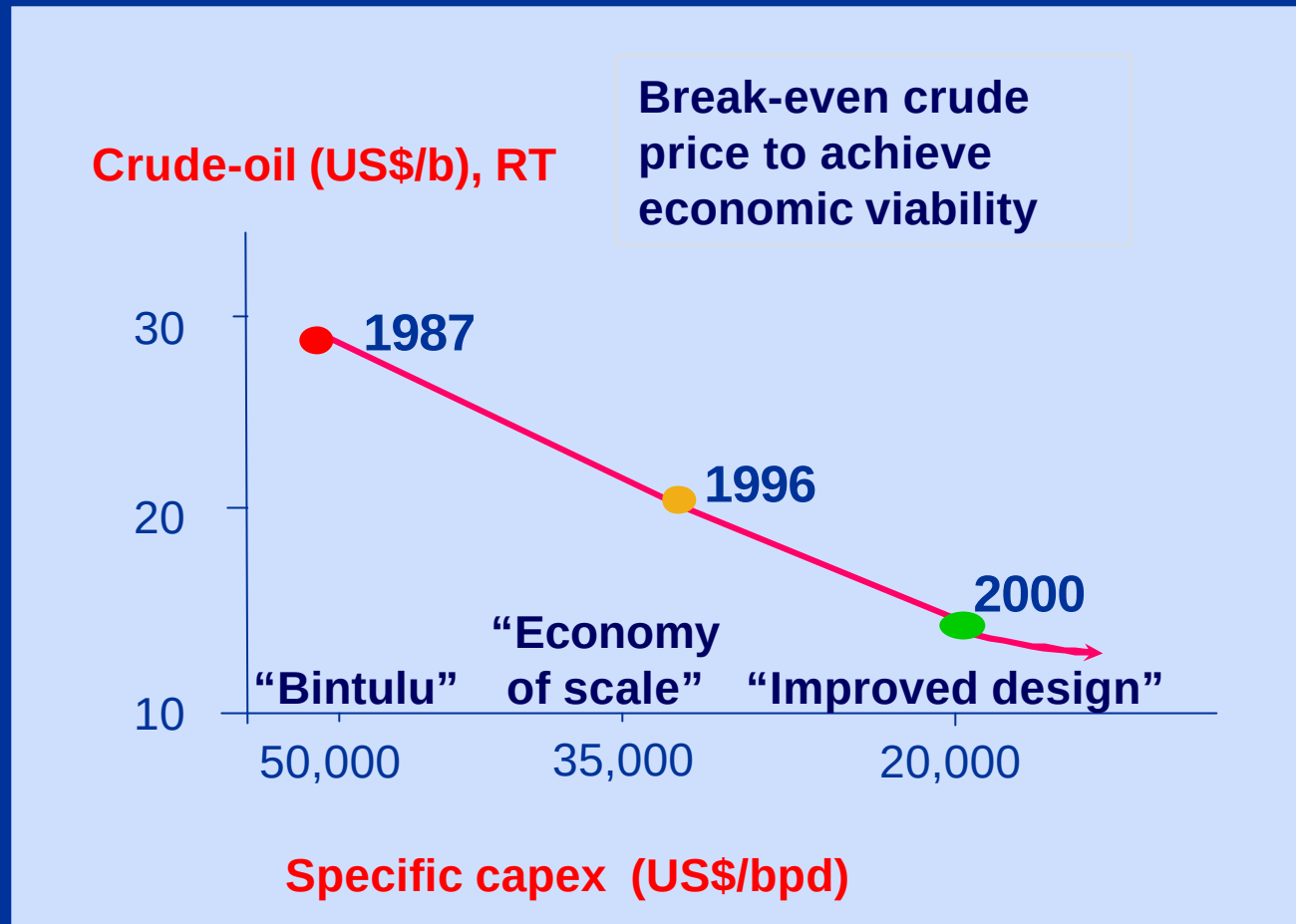
- Core SMDS technology proven after almost 30 years of R&D
- Precious operational experience in start-up, shut-down, emergency procedure and catalyst regeneration
- All learnings in the commercial plant captured in a comprehensive incident data base (do's and don'ts) - vital for new project developments
- Reconstruction of the damaged plant allowed the introduction and testing of many new developments and improvements
- Commercial plant allows the continuous testing of newly developed catalysts, process, utilities and controls optimisation, equipment testing, training, etc. beneficial for developments of new worldscale plants
- Seven years of continued presence in global markets for the unique GTL products is invaluable in developing markets for world scale GTL plants
- Seven years of operational experience with commercial plant is considered absolutely pivotal for realistic development of world scale GTL plants



Fischer Tropsch Catalysis



Evolution of SMDS Cost



SMDS Prospects

