

# The price isn't right

Thanks to unremitting cost inflation liquefaction projects are no longer the safe bet they once seemed, writes Ian Lewis

**T**HE STORY of liquefied natural gas (LNG) over the last decade has been one of non-stop growth. Solid demand has ensured almost every liquefaction plant proposed has been financed and built. However, cost inflation is prompting the biggest names in LNG to delay multi-billion dollar construction schemes. Sponsors cannot be sure of making a decent return.

Last year, no oil majors approved developments to increase LNG production, and the last final investment decision (FID) on an LNG scheme was taken 15 months – on Qatargas 3. US contractor Bechtel says the cost of building LNG plants has trebled in six years. One of the industry's big three engineering, procurement and construction (EPC) contractors – along with Japan's Chiyoda and the Japanese/US JGC-KBR consortium – Bechtel says the cost of building liquefaction plants has risen to as much as \$600 per tonne a year (t/y) of production capacity, up from about \$200/t/y in 2000.

## Over budget, behind schedule

Two of the largest projects under construction are over budget and behind schedule. Sakhalin Energy's 9.6m t/y Russian project has doubled in cost to more than \$20bn. Statoil's Snøhvit plant in Norway has experienced 50% cost inflation, to \$9.5bn.

Last year, Chevron scrapped its timetable for approving the 10m t/y Gorgon project in Australia, primarily because of financial pressures, and is consulting with its project partners, Shell and ExxonMobil, over ways to reduce construction costs. ExxonMobil said last May that the project's FID was likely to slip back to 2007 and that first deliveries would now be in 2011 rather than the original start-up date of 2010.

ExxonMobil attributed the Gorgon delay to the "complexity and size of the decision ahead". The reality, analysts say, is rises in construction costs have forced a rethink. At its outset the project was projected to cost \$11bn, but industry speculation suggests that may now be as high as \$18bn.

Algeria has also seen export schemes put in doubt. Construction on two projects, at Arzew in the northwest and Skikda in the northeast of the country, may be retendered, or cancelled, because of high costs, sources say. Materials costs are the main culprit: cost estimates submitted by the JGC-KBR team carrying out front-end engineering and design work on both projects were reportedly deemed "too tight" by the client, Sonatrach.

Time scales are becoming longer too: the stretched contracting market means build times for liquefaction plants are four years,

rather than three. An 18-month delay in the FID at BP-led 7.6m t/y Tangguh project led to a cost increase from \$400m to \$1.8bn after the original EPC bid expired.

"If you leave everything equal and just ramp up the costs then some of the economics start to look pretty miserable – not what you'd expect from an LNG project," says Frank Harris, head of global LNG consulting at Wood Mackenzie.

The underlying causes of rising construction costs are escalating raw-materials prices and the tight contracting market – both signs that the LNG industry is becoming a victim of its own success. Until 2006, technological advances and increased economies of scale pushed liquefaction plant construction costs down, forcing them below \$200/t/y of capacity. This made LNG costs more competitive when measured against alternative pipeline schemes.

However, last year saw EPC costs edge higher, to the \$250-350/t/y range, and Wood Mackenzie estimates, prices have now risen substantially above that – to the \$500-1,000/t/y range.

Cost escalations may have wiped out the economies of scale of the big new Qatari trains, of 7.8m t/y. When the Qatargas 2 EPC contract was awarded, in December 2004, the effective price was estimated in the region of \$380/t/y. A year later, costs for Qatargas 3 had risen to \$540/t/y. Now, estimates from Australia's Woodside, which is developing the Pluto LNG scheme, suggest it is as high as \$1,000/t/y.

## A significant cause

A significant cause of rising costs is the large rise in planned new supply capacity to meet rising demand, but that only a handful of EPC contractors are capable of doing the work. The big contractors were comfortable with the one or two LNG trains a year being built until 2003. However, the proliferation of new projects – 11 new liquefaction projects, comprising 13 trains, are expected to come on stream in 2007 and 2008 – has stretched resources to the limit. Although other contractor groups, such as Technip and Foster Wheeler, have taken on a bigger slice of the workload, EPC resources are insufficient.

"We're going through a transition period from where, previously, people would say, 'we'll build you a project in three years and it's going to cost you this many dollars a tonne.' The view was if that they got it wrong the contractor just ate that," says Harris. "But we've been through a phase when people got burned, so EPC contrac-

tors are saying: 'We're really maxed-out here – our ability to lay off some of this work on sub-contractors is limited because they are asking for more money.' So prices now are reflective of the conditions and they are high because there's only so many people that can do the work."

Materials costs have also risen since today's slate of LNG projects was planned, three or four years ago. Materials such as carbon steel, nickel and copper have increased by anything from 30% to 100% since 2003. Steel prices, for example, rose by over 130% between the start of 2003 and December 2004.

LNG is not the only sector suffering from rising costs. ExxonMobil's February decision not to proceed with a gas-to-liquids (GTL) scheme in Qatar confirms the wider significance of industry cost increases, at a time when oil and gas prices are largely static. High construction costs were the main reason given by ExxonMobil for the cancellation of its GTL project, where projected costs had more than doubled, to about \$18bn.



The Snøhvit plant has experienced 50% cost inflation, to \$9.5bn. © Statoil

Oil companies have various options at their disposal to rescue their schemes. At Gorgon, for example, the project partners are re-examining the engineering design to reduce costs.

Suppliers may also be able to offset higher costs by renegotiating prices already agreed with off-takers. They may also attempt to compensate for higher-than-expected capital spending by selling a greater proportion of cargoes on the spot or short-term market if prices are favourable. "For a company such as Shell, which has taken volumes for its own portfolio, you would expect maybe in the early years that, rather than taking the volumes to Mexico, they could sell to the Asian market to secure a higher price," says Harris.

Meanwhile, buyers will have to settle for a slower build-up of LNG imports and new export projects will have to take a more pragmatic view on start-up dates. The situation is unlikely to change soon. Cost increases are likely to continue for another five or six years. But no-one is panicking just yet: LNG will remain a profitable activity for all the links in the chain – even if the days of easy money are over. □