

# Global Gas Transport Report

*Information & analysis on global gas transport and storage*

## Turkmenistan–China Gas Pipeline

*Transforming dream into reality*

Pipelines carrying energy resources are key instruments of power. China National Petroleum Corporation (CNPC) announced that it has produced and shipped over 1.5 Bcm of natural gas via the Turkmenistan - China natural gas pipeline as of June 27, 2010 since the pipeline became operational in December 2009. The pipeline, which is expected to deliver 5 Bcm of natural gas to China, has significant strategic implications for Central Asian countries, China, Russia and Europe, in being the first natural gas pipeline providing Central Asian countries a transit route other than the Russian pipeline system.

### Background

Central Asia is at the intersection of Asia, Europe and the Middle East. The Central Asian countries, namely Turkmenistan, Kazakhstan and Uzbekistan, have enormous natural gas deposits. Turkmenistan has 7.94 Tcm of natural gas reserves (the world's fourth largest), Kazakhstan has 1.82

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## UGS in Australia and New Zealand

*Commercial storage gaining popularity*

Natural gas remains a cheap energy source in Australia and New Zealand when compared to the US and Europe. With growing gas-fired power generation, rising exports, and increasing short-term trading markets in gas, natural gas production in Australia and New Zealand is projected to increase by 3.5 per cent by 2020. The use of underground natural gas storage (UGS) facilities has been limited to date.

### Available Natural Gas Reserves

Australia has about 144 Tcf of natural gas, well over 100 times the present annual level of domestic consumption. Over 90 per cent of the reserves are located offshore from Western Australia (Carnarvon and Browse Basins) and in the Timor Sea to the north of Australia (Bonaparte Basin). The largest onshore accumulation of conventional gas reserves occurs in South Australia (Cooper and Eromanga Basins) and in southwest Queensland. New Zealand has 16 fields and wells that produce gas, all in the Taranaki region. Production is currently dominated by the Pohokura field, which began production in 2006, and the Maui field.

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## The Gasene Pipeline Project

*Bridging the gas divide and fostering development*

The Southeast Northeast Integration Pipeline (Gasoduto Sudeste-Nordeste), also known as Gasene, is the biggest pipeline project in Brazil to be built in the past 10 years. It is also the key project for expanding the natural gas transportation network in the country, providing it with a new configuration.

### Background

The Gasene project is part of the Growth Acceleration Program of the Government of Brazil. The pipeline project was implemented by Transportadora Gasene S.A., which is a subsidiary of Brazil-based international energy major, Petrobras. Among the country's natural gas pipelines, Gasene is exceeded in size and capacity only by the Bolivia–Brazil pipeline, which covers a distance of 3,200 km between the eastern Bolivian city of Santa Cruz and the southern Brazilian city of Porto Alegre, and has the capacity to transport 30 MMcm per day of natural gas.

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### Turkmenistan-China Gas Pipeline (Contd...)

Tcm (the world's 18th largest) and Uzbekistan has 1.58 Tcm (the world's 21<sup>st</sup> largest). Turkmenistan and Kazakhstan have a reserves-to-production (RP) ratio of over 100 years and over 60 years, respectively.

Although worldwide natural gas demand and trade have grown over the years, these natural gas-rich Central Asian countries have made limited gains given their complete dependence on Russia as the gatekeeper for gas exports. Their exported gas passes through Russia en route to foreign markets.

Turkmenistan and Uzbekistan rely on the Russian transmission system to move over 70 per cent of their annual export volumes. Russia-based Gazprom, the state gas monopoly, uses its ownership of, and exclusive control over, the region's pipelines to secure favourable terms in negotiations for Central Asian gas supplies.

#### Exports from Turkmenistan to China

Even though the idea of exporting natural gas from Turkmenistan to China was first mooted in the early 1990s, lack of relevant experience, the enormous distance to be covered, doubts about the existence of unproven gas resources, and the prevailing political climate inhibited the development of the project.

With the development of other pipeline projects (such as the Baku–Tbilisi–Ceyhan oil pipeline) and the pipeline infrastructure built within China (China constructed the 4,500 km West–East gas pipeline from Xinjiang to Shanghai), the project gained strength.

In April 2006, with political opinion in favour of the pipeline, the presidents of China and Turkmenistan signed a framework cooperation agreement for the project. Formal agreements for the project were signed in July 2007.

CNPC first signed a production-sharing contract with the Turkmen state agency for the management and use of hydrocarbon resources (to explore and develop gas fields on the right bank of the Amu-Darya River) and a natural gas purchase and sales agreement with the Turkmen state concern. This was followed by two basic-principle agreements on gas pipeline construction and operation between the Chinese government and KazMunaiGaz (owned by the Kazakh government) and UzbekNefteGaz (owned by the Uzbek government). According to the agreement, CNPC was to invest in a cross-border gas pipeline in Central Asia through which Turkmenistan would supply China with 30 Bcm of natural gas annually for the next 30 years.

#### Project Details

The pipeline has a diameter of 42 inches and a length of 1,833 km. It travels from Turkmenistan through Uzbekistan to southern Kazakhstan before entering China at the border pass of Horgos in the northwestern region of Xinjiang. It connects with pipelines inside China that carry natural gas produced in Turkmenistan to major Chinese cities such as Shanghai, Guangzhou and Hong Kong, ultimately traversing 7,000 km.

#### Financing and Construction

The project cost of about USD8 billion was largely financed by the China Development Bank which provided USD6.7 billion for the 1,115 km portion of the pipeline passing through Kazakhstan. CNPC also bought stakes in Kazakhstan's energy companies, MangistauMunaiGaz and KazMunaiGaz Exploration & Production.

Construction of the Turkmen section of the line, which cost USD400 million, was carried out by Russia's Sroytransgaz. The construction of the Uzbek section was undertaken by Asia Trans Gas, a joint venture (JV) of UzbekNefteGaz and CNPC. The Kazakh section was built by Asian Gas Pipeline Company, a JV of CNPC and KazMunaiGaz.

#### Achievements

From groundbreaking to commissioning of the first line in December 2009, the project was completed in less than 28 months. It is the longest natural gas pipeline in the world, passing through diverse and difficult geographical terrain. A number of innovative technologies, such as directional drilling and low-hydrogen welding combined with semiautomatic welding techniques, were used to meet scheduling, physical and topographical challenges.

The Turkmen section of the pipeline was extended into the desert zone. This work involved difficult operations for levelling the area with dunes as high as 5–6 m in some places. Powerful techniques and sophisticated equipment from the world's leading companies were used.

The pipeline has already pumped over 1.5 Bcm of natural gas from Turkmenistan to China since it began operations. Gas deliveries are around 10 MMcm per day. At least 5 Bcm of gas is planned to be transported through the pipeline in 2010.

#### Future Plans

Initially, Turkmenistan will be the only supplier of gas through this pipeline. By 2011, Uzbekistan and Kazakhstan will open up the second line (line B), which is also 1,833 km long. This will enable China to get gas from all three Central Asian producers.

In total, the pipeline will deliver 40 Bcm of natural gas to China by 2012, if not sooner, for the next 30 years. Of this, around 10 Bcm of gas will be supplied from Kazakhstan's Karachaganak, Tengiz and Kashagan gas fields.

In June 2010, CNPC also signed an agreement with UzbekNefteGaz to buy 10 Bcm of natural gas annually. The two firms will first work to connect Uzbekistan's natural gas transmission system with the Uzbekistan–China pipeline, which is part of the Turkmenistan–China pipeline.

CNPC and KazMunaiGaz plan to set up a new joint venture (JV) in July 2010 for building the Beyenu–Bozoi–Akbulak gas pipeline, which is seen as the second stage of the Turkmenistan–China pipeline. The 1,500 km pipeline will connect gas fields near Kazakhstan's Caspian Sea coast to Kazakhstan's southern regions around the city of Almaty.

The pipeline will unite separate gas trunklines in the south and west of the country. It will also be important for supplying gas to the domestic Kazakh market, allowing the southern

regions of the country to eliminate the need to import gas from Uzbekistan. The JV will be capitalised with USD3 billion, of which all but USD500 million will come from China. Construction of the pipeline is expected to begin later this year and be completed in 2012.

## Strategic Implications

### Turkmenistan

The pipeline challenges the Russian hegemony by providing access to export markets other than Russia, thus giving Turkmenistan and other Central Asian countries leverage in negotiations vis-à-vis Moscow in setting terms and prices.

In 2008, while the Turkmenistan–China pipeline was under construction, Russia offered to pay European netback prices for the Central Asian gas, which at the time averaged about USD350 per 1,000 cubic metres. The offered price doubled the Russian purchase price for Central Asian gas and erased Gazprom's windfall gains from the resale of Turkmen gas in Europe in the previous year. Gazprom also promised to expand the capacity of the existing pipeline network and to upgrade the aging infrastructure.

With an established relationship with China, Turkmenistan used its new leverage to obtain a USD3 billion loan from Beijing for the development of the South Lolotan gas field with an estimated capacity of 4–14 Tcm. Subsequently, Turkmenistan also raised the amount of gas that it had committed to export to China through the pipeline from 30 Bcm to 40 Bcm and granted Beijing the rights to explore and develop the gas fields at South Lolotan to pay off the loan.

In May 2010, Turkmenistan decided that it would go alone with plans to connect its gas fields via a USD2 billion East–West pipeline. The new gas pipeline will connect Turkmenistan's eastern region, where the largest gas reserves are concentrated, with the country's developing central and Caspian regions. Moscow had long expected to clinch the deal on the pipeline. However, the deal was postponed when the Turkmen president visited Moscow in March 2009. Since then, ties between the two countries have worsened.

Going forward, Turkmenistan is consolidating its diversification policy by building a new gas pipeline to Iran. The inauguration of 182 km the Dauletabad–Sarakhs–Khangiran gas pipeline in January 2010 connecting Iran's northern Caspian region with Turkmenistan's vast gas fields sends a strong message about the importance of regional energy security. The Turkmen president is also exploring the Indian gas market.

### China

The Turkmenistan–China gas pipeline is the first pipeline to bring Central Asian natural gas to China and highlights China's quest for Central Asian energy exports. The completion of the project by 2012 will ensure a sufficient and steady natural gas supply of around 40 Bcm, which is slightly less than half of the country's current level of consumption (88.7 Bcm in 2009).

China displayed its prowess even in the planning and execution of the pipeline. The Turkmenistan–China pipeline

was negotiated, signed and built within three years (2006 through 2009). In the meantime, there has been little progress on the agreement being negotiated by Russia with Kazakhstan and Turkmenistan since 2007 for the Prikaspiiskii (Caspian coastline) pipeline. Russia has also not been able to fructify its plans of building gas pipelines to China with which it has been in discussions for more than five years.

With the Turkmen gas pipeline in place, China also gains bargaining power against Russia because it no longer has to depend solely on the latter for its gas supply.

Before the pipeline came into existence, Russia did not have to compete against any other supplier, but from now on it will have to compete with Turkmenistan over Turkmen gas and the sale price of gas to China.

### Russia

Russia had come to rely on the ready availability of cheap Central Asian fuel supplies to meet its domestic energy needs while it diverted its own natural gas production to lucrative European markets.

The Turkmenistan–China pipeline has definitely threatened Russia's hegemony over the energy resources of Central Asia and weakened its position as a leading exporter in the region. The pipeline has reduced Russia's bargaining power not only with the Central Asian countries but also with China.

However, all is not lost. For Russia, it is crucial that its dominant role as Europe's number one energy provider is not eroded. The fact that the pipeline is feeding gas to the Chinese market and not to the US-backed Trans-Caspian pipeline ensures this.

In addition, Russia will not be perturbed as long as Chinese imports do not deprive it of energy for its domestic consumption or for its exports. Russia has established a deep enough presence in the Central Asian and Caspian regions to ensure that it does not have to face any energy shortage in the near future.

## Conclusion

The Turkmenistan–China pipeline marks a change in the energy situation in the region previously dominated by Russia and the West. China's willingness to assist Turkmenistan in escaping Russia's hold and its readiness to undertake the rapid construction of the new pipeline have clearly paid off, resulting in Beijing gaining subsequent contracts and ensuring even more gas supplies for itself.

Access to China provides diverse opportunities to the Central Asian countries whose gas historically has been piped to Russia. The four countries—China, Turkmenistan, Uzbekistan and Kazakhstan—have actively carried out energy cooperation and have achieved mutual benefits for all parties. Russia has seen weakening of its overall position in Central Asia shrinking.

Nevertheless, it is seeking to maintain a positive relationship with the Central Asian countries. The success of the Turkmenistan–China pipeline has emboldened the Central Asian countries to diversify their export options even further and to not be dependent on only one or two export markets. ♦

# The Gasene Pipeline Project (Contd...)

## Project Details

The 28-inch, 1,387 km pipeline connects Rio de Janeiro in the south to Bahia in the north, crossing 72 cities in three states (Bahia, Espírito Santo and Rio de Janeiro). Along the route, Gasene has eight delivery points (Itabuna, Eunapolis and Mucuri in Bahia; Cachoeiro de Itapemirim, Anchieta, Viana and Vitoria in Espírito Santo; and Campos dos Goytacazes in Rio de Janeiro) and three compressor stations (Piuma and Aracruz in Espírito Santo, and Prado in Bahia).

The project involved investments of approximately BRL7.2 billion (USD4 billion). Of this, Brazil's development bank, Banco Nacional de Desenvolvimento Economico e Social, initially provided a loan of BRL1.36 billion (USD634.4 million). BNDES also provided a second long-term financing deal of BRL4.51 billion (USD2.6 billion), which included USD750 million transferred from the China Development Bank as part of the loan.

The construction work was divided into three sections: 303 km from Cacimbas to Vitória; 125 km from Cabiúnas to Vitória; and 954 km from Cacimbas to Catu (this section is called Gascac).

While the Cabiúnas–Vitória stretch of the pipeline was initially built by the Spanish consortium Masa and completed by local engineering companies Bueno and Etesco, the latter two sections were designed and constructed by the China-based oil company Sinopec. The first two sections were completed in 2007, and have been in commercial operation since then. The third and the longest section, Gascac, was completed recently in March 2010.

The Gasene pipeline has an initial capacity of 10 MMcm per day. Based on market growth, this can be increased gradually to 20 MMcm per day by means of compressor stations. The market demand will be reassessed in 2012.

## Construction of Gascac

Gascac, the longest section of Gasene, interconnects the Cacimbas gas treatment station in Linhares (state of Espírito Santo) to the Catu gas distribution station in Pojuca (state of Bahia). In Pojuca, Gasene interconnects with the Catu–Pilar gas pipeline.

The pipeline route crosses 51 municipalities: five in Espírito Santo and 46 in Bahia. The work was divided into six fronts that operated simultaneously to meet the schedule. The 954 km route of Gascac has 151 river crossings, six of which were made using directional holes, and 88 using special crossing area projects, such as roads and railways. Part of the route shares the Orsub track, Petrobras's pipeline that connects Salvador to Itabuna.

To overcome construction challenges of this long section, a number of special technologies were adopted. For example, in rocky terrain between the cities of Ipiáu and Itabuna, rocks were blasted using explosives in a controlled, localised fashion. An innovative method called pipe sak was used in which woven polypropylene bags were filled with gravel and belted to the pipeline to prevent buoyancy in floodplains. Another technology introduced in Brazil with this project was the

vacuum lift, a device that lifts pipelines by means of vacuum suction, thus eliminating the use of wire ropes and straps. In the section between the cities of Valencia and Catu, the vacuum-lift technology reduced the pipe-lifting time from 10 minutes to 25 seconds.

## Impact

Until date, inadequate transportation infrastructure had inhibited the growth of domestic natural gas production in Brazil (especially in the interior regions) despite the country's sizeable reserves of this resource. The pipeline network in Brazil consisted mainly of systems in the southeast, northeast and in the state of Espírito Santo.

Gasene has enabled Brazil to bridge the gas divide: on the one side, the southeast, where the main producing fields and the largest consumer market are located, and, on the other side, the northeast, which produces natural gas, but in insufficient amounts to allow market growth. Gasene has changed the scenario for available connectivity and has integrated the markets in the south and the north.

In 2009, the northeast region accounted for at most 9.8 MMcm per day of average gas consumption (around 21.5 per cent of domestic natural gas consumption). The integration pipeline will allow for the supply of natural gas to the northeast to be increased substantially, ensuring greater supply reliability as well as improving operating flexibility to meet the needs of the region's thermal and non-thermal markets.

The access to clean and affordable energy will spur economic development in Brazil's impoverished northeast. For instance, in Bahia, a new market is expected to open up in the hinterlands. The distribution company in the region, Bahiagas, is building a 250 km distribution network as it expects to more than double the consumption and to increase its service from the current 13 municipalities to more than 30, given the presence of important industries such as pulp and textiles in the region. The first three customers of the gas transported by Gasene in southern Bahia are the Trifil (textiles) and Nestlé (food) industrial plants and the Posto Universal compressed natural gas (fuel) service station.

In Espírito Santo, BR Distribuidora (BR–ES), the distribution company that has been active in the region for the past 16 years, has invested some BRL40 million (USD23 million) since 2006, of which BRL31 million (USD17.6 million) was invested in 2009. The company has seen the total number of its customers increase by around 48 per cent in just the past two years. The pipeline has also opened up the option for formerly large fuel oil consumers to convert to natural gas, a cleaner fuel. BR–ES has signed a contract with Samarco, a mining company that is currently burning fuel oil, for 750,000 MMcm per day of natural gas for its plant.

## Conclusion

Gasene has given Brazil's gas pipeline network a new configuration as it enables the country's northeastern states to receive the surplus gas produced in the southeast. Today northeastern Brazil has more natural gas available to it, and thus more power to support its economic development.

1 BRL (Brazilian Real) = 0.56 USD ♦

## UGS in Australia and New Zealand (Contd...)

### Management of current demand volatility

The volatility of gas demand is driven primarily by weather; demand fluctuates in hot weather due to power generation and in cold weather due to gas heating. The demand for natural gas also fluctuates with fuel switching (switching from other fuels to gas), temporary shutdowns of gas-feed stock operations due to maintenance, or fluctuations in gas exports. Australia has coped with volatile gas demand in the past by curtailing gas production during low gas-demand periods. Producers attempt to manage operations by entering into long-term and expensive take-or-pay gas supply contracts. The use of depleted reservoirs as UGS facilities has been very limited to date, and is controlled by incumbent upstream players who also dominate the gas supply. The development and operation of UGS by gas utilities and pipeline companies in Australia is limited to the two facilities listed below:

**Mondarra Gas Storage:** The facility is operated by Australia-based Australian Pipeline Trust (APA) Group, which comprises major Australian Securities Exchange-listed natural gas companies, with interests in over 7,500 km of pipeline infrastructure. It is located near Dongara, adjacent to the two pipelines (including APA's Parmelia gas pipeline), servicing Perth and the southwest region of Western Australia.

#### Box 1: Role of UGS in the gas market

##### Downstream –

- manage demand volatility
- provide supply security
- provide freedom from expensive take-or-pay contracts

##### Midstream –

- allow load balancing in transmission pipelines
- provide liquidity for load scheduling and pricing

##### Upstream –

- allow load balancing in production facilities
- prevent idling of production facilities
- provide insurance against catastrophic outages
- increase reliability of supply for sensitive export markets
- grant option to producers to either sell or to store for sale at a later time

**Iona Gas Storage:** The facility is operated by TRUenergy. It is located near Port Campbell in southwest Victoria and is adjacent to the Otway gas plant currently under construction. It is connected to the Minerva gas plant, to the South Australian market via the SEA gas pipeline, and to the Victoria gas transmission system to Melbourne. The depleted gas field consists of a porous sandstone reservoir. Both Mondarra and Iona are commercial UGS facilities, which allow customers to inject gas for storage and to withdraw gas subject to the Maximum Hourly Quantity (MHQ) requirement and to a maximum storage volume allowance. The facilities provide retailers and wholesalers the ability to modify supply contracts for meeting peak requirements and provide a hedge against spikes in the spot market price. At Iona, storage fees consist of a fixed capacity charge for MHQ and storage volume, and variable charges per giga-joule of plant throughput.

In New Zealand, the first underground natural gas storage facility is currently under development.

**Ahuroa Gas Storage:** The development of Ahuroa UGS is being undertaken by New Zealand-based gas retailer Contact Energy. The drilling, design and operations are being managed by Origin Energy. The facility aims to provide the following:

- Provide flexible gas supplies to the company's 200 MW gas-fired power station at Stratford, which is expected to be commissioned this year at a cost of USD179 million,
- Lower the costs of inflexible take-or-pay gas supply contracts,
- Allow use of gas at times when it is cheaper to use other power-generation options such as hydroelectricity, and
- Provide flexibility to take and store natural gas during off-peak times (such as summer) and use it during times of higher demand (such as winter peaks).

With the drilling of the three final wells completed, the facility is on track to be operational by December 2010. Reconfiguration of the gas compressor to a higher pressure is due for completion by September 2010, at which time gas injection into the facility will recommence.

### Future Trends

The growing acceptance of UGS facilities can play a key role in creating a vibrant and competitive gas market in Australia. Storage appeals to gas producers because it allows production to remain flat (thereby saving costs associated with the shut-down of wells and reservoirs) while permitting delivery to match demand. UGS gives producers the option of either selling the gas immediately or storing it until a later date for a more lucrative sale.

Gas from many sources may be stored at a commercial UGS facility by third parties under fee-for-service, buy-sell, or other contractual arrangements. Gas storage provides a sink (market) or a source (supply) at the discretion of the storage operator. A market model embraces short-term trading and provision of open-access, non-discriminatory UGS services. Just as price changes affect the value of gas in storage, changes in storage activity affect gas prices.

UGS provides liquidity to support both physical and financial gas-trading activity in a short-term trading market. Excess production capacity in the early 1980s was as high as 30 per cent in the US and up to 50 per cent in Canada. Interstate and inter-country trade growth has essentially eliminated this surplus. As interstate gas trade increases in Australia, the current high level of excess production capacity could be expected to disappear as well leading to substantial efficiency gains. ♦

#### Box 2: Supply versus market region storage

The commercial drivers of UGS in a supply/production region (a net exporter of gas) are quite different from those in a market/consumption region (a net importer of gas). Supply region storage is used for balancing differences in gas production and market demand (local consumption and export markets). Market region storage is used for meeting weather- and time-sensitive loads in the gas-heating and power-generation markets.

## NORTH AMERICA

### Acadian Gas enters into contract for additional Haynesville gas supply

Texas-based natural gas transmission company Acadian Gas LLC (66 per cent owned by Duncan Energy and 34 per cent owned by Enterprise Products) has entered into an additional long-term contract with a shipper to transport natural gas on its 270-mile Haynesville extension pipeline, which is at present under construction, and has increased the total capacity commitments by 200 MMcf per day.

The Haynesville extension is an expansion of the Acadian Gas intrastate natural gas pipeline system, which provides producers developing the Haynesville Shale in northwest Louisiana with access to 150 end-use customers, including industrial and municipal consumers on the Acadian Gas system, and to markets across the eastern United States through interconnects with 12 interstate pipelines, including the Florida Gas Transmission and Southern Natural Gas systems. The pipeline construction is expected to be completed in the third quarter of 2011.

The expansion of Enterprise Product's State Line system will increase the capacity from approximately 400 MMcf per day to 700 MMcf per day.

The State Line infrastructure includes the Battlefield treating facility in southern DeSoto Parish, Louisiana, which has a capacity to treat up to 180 MMcf per day of natural gas.

As part of the expansion initiative, a new pipeline is being constructed that will have the capacity to deliver up to 250 MMcf per day of natural gas from the Battlefield treating facility to the 42-inch-diameter Gulf South Pipeline at the Kingston Station in DeSoto Parish. These expansion projects are expected to be completed in the fourth quarter of 2010.

### S&P's outlook on Questar positive after board approves demerger

US-based rating agency S&P has reiterated the positive rating momentum for Salt Lake City-based Questar Corporation after its board

authorised a tax-free spin-off of the company's natural gas and oil (exploration, production and midstream) field services businesses.

S&P continues with its 'positive' outlook on Questar Corporation, Questar Gas Company and Questar Pipeline Company, which originated on April 22, 2010 when the company said that it was weighing a spin-off of its exploration and production unit, Questar Market Resources Incorporated.

Upon completion of the demerger, the rating agency expects to hike the short-term rating of Questar to A-1, and the corporate credit and senior unsecured debt ratings on Questar Gas Company and Questar Pipeline to A from BBB+. S&P added that it would likely assign a 'stable' outlook after the spin-off.

### AGL begins permitting process for expanding gas storage facility

US-based AGL Resources (AGL) has begun the permitting process for the expansion of its natural gas storage facility in salt domes under Lake Peigneur in Iberia Parish, Louisiana, which had been on hold since 2006 because of the state suspension of leases. The company filed a notice in May 2010 to seek permission from the state Department of Natural Resources to build two more massive underground storage caverns under the lake, which will more than double its gas storage capacity.

The permit application filed in June 2010 started governmental reviews of the company's plans and a public-comment period.

Strong opposition to the granting of the permit is expected from the group of Save Lake Peigneur, which is demanding a detailed study on the environmental impact of the proposed project (including plans by AGL to use about 3 million gallons of water per day from the Upper Chicot Aquifer for more than two years to scour hollow caverns in the salt domes).

AGL will be required to test the integrity of the caverns using water before filling the caverns with natural gas. The company will be required to conduct a periodic 'integrity test', that is, filling the caverns with natural gas to test for leaks or structural problems.

### El Paso to expand 300 Line Project gas pipeline

Texas-based El Paso Corporation will expand the capacity of the existing 128-mile pipeline known as the 300 Line Project (which will run parallel to an existing line across the state's northern tier) and will include approximately 18 miles of new pipeline with a 30-inch diameter in Wayne County, Michigan.

Sections will also be built in Susquehanna and Bradford counties in Pennsylvania, which are within the existing rights of way (ROW). This is being done with a view to increasing Marcellus Shale natural gas extraction in the region and throughout Appalachia.

Earlier, in May 2010, the Federal Energy Regulatory Commission (FERC) approved El Paso's expansion plans to construct a natural gas compression station in Susquehanna County in June 2010.

The project will enhance the company's Tennessee Gas Pipeline, part of a network of transmission pipelines extending to the Gulf of Mexico. It will also serve the growing demand in the major metropolitan markets, including New York City.

### Cadeville Gas Storage announces non-binding open season

Cadeville Gas Storage Limited Liability Corporation (Cadeville), a wholly owned subsidiary of Cardinal Gas Storage Partners Limited Liability Corporation (Cardinal), has announced that it will hold a 30-day non-binding open season for 11.5 Bcf of firm working gas at a planned natural gas storage facility to be located in Ouachita Parish, approximately 10 miles southwest of Monroe, Louisiana.

The open season was conducted from June 1 to June 30, 2010. The total capacity of the storage facility will be 16.5 Bcf. It will have a peak deliverability of 420 MMcf per day and a peak injection of 420 MMcf per day. The facility will have the ability to interconnect to Tennessee Gas Pipeline Line 100, Gulf South's Middle 30, Gulf South's East Texas to Mississippi Expansion, Texas Gas Transmission, CenterPoint Energy Line CP and Tiger Pipeline. Commercial storage services are scheduled to commence in 2012.

## TransCanada reaches three-year rate deals with shippers

Canada-based natural gas storage and pipeline company, TransCanada Corporation, has announced that its subsidiaries, Nova Gas Transmission Limited and Foothills Pipeline Limited (Foothills), have reached rate deals with shippers.

The deals have been finalised at an equity return of 9.7 per cent and a 40 per cent deemed common equity capital structure for the years 2010–2012. The settlement with Nova includes the cost of capital and the cost of service, including operation, maintenance and administration, income taxes, depreciation, interest expense and property taxes.

TransCanada has filed an application with the National Energy Board (NEB) seeking approval of the settlement. The company has stated that it is not seeking a change to the 2010 Alberta rate system at present. However, Foothills has filed with NEB for the revised 2010 rates to be effective July 1, 2010.

## FERC permits Denali to hold open season

FERC has permitted the Denali group (British Petroleum (BP) and ConocoPhillips) to hold an open season for its USD35 billion pipeline from July 6, 2010 to October 4, 2010. The open season will help gauge shipper interest in the Denali pipeline, which is proposed to have a capacity of 4.5 Bcf per day (until 2020) and to transport gas from the North Slope, Alaska to Alberta, Canada.

The open season for Denali follows the open season for the competing Alaska pipeline (backed by TransCanada), which was held during April–July 2010. The successful operation of either of these pipelines depends on the future prices of gas, which at present remain depressed due to the availability of shale gas. In light of this, the higher-cost Alaska gas appears to be uneconomical.

## Ruby still tracking March 2011 start-up

Texas-based El Paso Corporation awaits a right-of-way (ROW) grant from the Bureau of Land Management (BLM) to launch the construction of the 675-mile-long, 42-inch-diameter Ruby Pipeline.

The USD3 billion pipeline, with a carrying capacity of 1.5 Bcf per day, will carry natural gas from the Opal Hub in southwest Wyoming to the Malin Hub near the Oregon–California border. It received a certificate from the FERC in April 2010 in the absence of any environmental hurdle. However, grant of ROW by BLM is necessary before a project-wide notice to proceed and construct is granted by FERC.

In May 2010, a BLM official stated that the ROW grant from BLM would not be issued before July 2010. However, El Paso is diligently pushing for earlier agency action. It remains confident of beating BLM's estimate and of keeping the construction on schedule starting in July 2010.

BLM, in turn, believes that it cannot issue its ROW grant until the memoranda of agreement (MOA) have been signed by each of the four State Historic Preservation Offices (SHPOs) in Wyoming, Utah, Nevada and Oregon as the pipeline will be crossing these four states.

MOAs for the SHPOs provide for the protection, testing, mitigation and treatment of any cultural, archaeological or historic properties affected by a project's construction under Section 106 of the National Historic Preservation Act.

The ROW grant from BLM may not be issued until the technical process under Section 7 of the Endangered Species Act (which culminates in the issuance by the US Fish and Wildlife Service of a comprehensive biological opinion) has been completed.

This opinion is expected to be issued soon. Once the ROW is granted, it will take FERC between seven and 10 days to issue the project-wide notice.

## Energy Transfer starts construction of Tiger pipeline, announces East Texas pipeline

US-based midstream natural gas intrastate transportation and storage company, Energy Transfer Partners Limited Partnership (ETP) has started construction on a 175-mile-long, 42-inch-diameter Tiger pipeline, which starts in Panola County, Texas and terminates in Richland Parish, Louisiana. It has an initial capacity of 2 Bcf per day, and will serve the Haynesville Shale and Bossier Sands regions in the two states.

Through a planned expansion project announced in February 2010, which is subject to approval by FERC, the ultimate capacity of the pipeline is expected to be 2.4 Bcf per day, all of which has been sold under long-term contracts ranging from 10 to 15 years. The expansion project is expected to be in service in the second half of 2011.

Construction of the pipeline has been awarded to two contractors: Pennsylvania-based Henkels & McCoy (78 miles) and Wisconsin-based Michels Corporation (97 miles). The pre-expansion project cost for the pipeline is expected to be USD1.095 billion, USD70 million less than the previous estimate. So far, the pipeline is on schedule both with respect to time and budget.

ETP has also requested FERC to authorise the construction and operation of Phase 1 of the Tiger pipeline expansion project. The expansion is expected to add a capacity of 400 MMcf per day to the Tiger pipeline system, bringing the total capacity to 2.4 Bcf per day, all of which has been sold out under long-term contracts ranging from 10 to 15 years.

In another development, ETP announced the construction of a 63-mile East Texas natural gas pipeline that will provide its customers additional transportation, gathering and treating services in the rapidly expanding Haynesville Shale in East Texas.

The pipeline project will originate in southeast Shelby County, before crossing San Augustine County and terminating in Nacogdoches County. It will consist of a 20–24-inch pipe and will have an initial capacity of 645 MMcf per day.

The pipeline will transport natural gas under the terms of multiple 10-year agreements that encompass approximately 264,000 acres in the East Texas area. It will interconnect with two interstate pipelines in addition to Energy Transfer's Houston Pipeline System, which gives producers the option of accessing other interstate and intrastate markets, including the Carthage, Waha, Katy and Houston Ship Channel hubs in Texas. Partial service is expected to begin on the pipeline in the third quarter of 2010. The full in-service date is expected to be in the fourth quarter of 2010.

### Boardwalk and Southcross to interconnect their gas systems

Texas-based companies Boardwalk Pipeline Partners Limited Partnership and Southcross Energy Limited Liability Company (engaged in pipeline transportation, gas gathering and processing) will work together to provide infrastructural solutions to natural gas producers in the Eagle Ford Shale production area located in South Texas.

Boardwalk plans to modify an existing section of its subsidiary Gulf South Pipeline's 30-inch pipeline in Texas from Refugio to Fort Bend County so that condensate-rich Eagle Ford Shale gas can be accepted into that pipeline segment. Southcross Energy will connect its existing gathering facilities in South Texas to the newly modified Gulf South Pipeline segment so that condensate-rich Eagle Ford Shale gas can then be transported to four Gulf Coast processing plants currently served by Southcross Energy, including its Gregory plant, located near Corpus Christi, Texas. These sections of the newly proposed infrastructural solutions (pipeline segments) will be operational later in 2010. Both companies will seek to expand their pipeline capacity in this region.

### CenterPoint holds open season on proposed expansion of Line CP

The interstate natural gas pipeline subsidiary of CenterPoint Energy Incorporated, CenterPoint Energy Gas Transmission Company (CEGT), is holding a non-binding three-week open season to gauge market interest in an additional expansion of its nearly 1.9 Bcf per day, 42-inch Carthage to Perryville (Line CP) pipeline. This expansion would support the growing volumes of gas produced from the Haynesville Shale for delivery into the Perryville Hub and to the Carthage area delivery points.

The expansion has been proposed based on the growth in demand and on the expressions of interest (EOI) due to large natural gas production volumes.

If adequate EOIs are received, the company will execute binding precedent agreements and seek necessary governmental authorisation to place expansion capacity into service as early as the fourth quarter of 2012.

### Spectra Energy to hold open houses for pipeline

Texas-based natural gas infrastructure and transmission company Spectra Energy is currently holding open houses in Bayonne and Jersey City, both in New Jersey, for its proposed pipeline.

The company held similar meetings in both municipalities in March 2010. It wants to extend its existing natural gas pipeline by 15.5 miles in Staten Island through Bayonne and Jersey City, where it would follow the route of the New Jersey Turnpike extension, eventually crossing the Hudson River into New York City. The extension is expected to bring up to 800 MMcf of natural gas per day to Con Edison customers in Manhattan.

### PNG announces open season for Pine Prairie storage

Texas-based PAA Natural Gas Storage Limited Partnership (PNG) has announced a non-binding open season for 2 Bcf of firm natural gas storage service to be available beginning in the second quarter of 2011 at its Pine Prairie salt-cavern storage facility in Evangeline Parish, Louisiana. The submission of bids will be indicative of the participants' interest in contracting for the storage services.

PNG is also soliciting expressions of interest (EOI) for firm natural gas storage service at Pine Prairie beginning in the second quarter of 2013 in order to assess the market demand for additional expansion at the storage facility. The EOIs will be used by PNG for planning purposes.

The current working gas capacity in service at Pine Prairie is 24 Bcf and an additional 18 Bcf of capacity is under construction. Pine Prairie is currently permitted a capacity of 48 Bcf. The storage facility, which is located 50 miles from the Henry Hub, has multi-cycle injection and withdrawal capabilities and connectivity to eight major pipeline systems that serve the north-eastern, mid-western and south-eastern natural gas markets.

### House subcommittee scrutinises unregulated pipelines in US

A House Transportation and Infrastructure subcommittee reviewed

oil, gas and other hazardous-liquid pipeline regulations during June 28 - July 4, 2010 in preparation for the reauthorisation of a 2006 pipeline safety bill. The Pipeline and Hazardous Materials Safety Administration (PHMSA) published rules required by the 2006 bill regarding inspection and excess control valves for major pipes in 2009.

But the Railroads, Pipelines and Hazardous Materials subcommittee has expressed its concern over the delay in finalising the regulations for smaller low-stress pipelines (for internal and external corrosion), which include 1,300 miles (2,097 km) of US pipelines. The 2006 bill authorises the pipeline safety programmes until the end of 2010.

Earlier, in June 2010, PHMSA published a second proposed rule about the regulation of small rural onshore hazardous-liquid low-stress pipelines. But the National Transportation Safety Board (NTSB) told a Senate subcommittee that the rule may still not cover onshore or offshore pipelines that connect the field well to the main pipelines in the inlet of the Gulf of Mexico.

In addition, the Pipeline Safety Trust has stated that the pipes under the safety assessment regulation should be expanded as only 7 per cent of natural gas transmission pipelines and 44 per cent of hazardous-liquid pipelines fall under the inspection programmes at present.

### TransCanada and Denali deny talks to merge pipelines

Calgary-based TransCanada Corporation (TRP), which is working on developing Alaska natural gas pipelines, and a consortium of British Petroleum Plc (BP) and ConocoPhillips, which is working on the competing Denali pipeline, have denied discussions about merging the two pipeline projects.

TransCanada along with Exxon Mobil is planning a USD32-41 billion 1,700 mile (4,422 km) pipeline from Prudhoe Bay (Alaska) to Alberta (Canada), with a capacity of 4.5 Bcf per day (further expandable to 5.9 Bcf).

The Denali consortium, on the other hand, has proposed building a USD35 billion, 1,700 mile (4,422 km) pipeline from the North Slope to Alberta, with a capacity of 4.5 Bcf per day.

The company has also proposed building an additional 1,500 mile (2,419 km) pipeline from Alberta to Chicago, and will hold a concurrent, separate open season to solicit interest in that project.

The two sides have been working separately on their rival plans. Given the size and the cost of the projects, only one gas pipeline is likely to succeed. As an alternative, the companies have proposed building an 800 mile (2,081 km) pipeline to ship gas from the North Slope to southern Alaska, where it would be liquefied for transport to Asia and other foreign markets. TransCanada and Exxon Mobil plan to undertake one or the other project, based on which one elicits the most interest from potential customers.

The North Slope holds approximately 35 Tcf of known gas reserves and the state of Alaska estimates that there could be 215 Tcf of undiscovered reserves.

#### Jefferson Island Storage files permit application for storage expansion

Jefferson Island Storage and Hub Limited Liability Company (JISH), a subsidiary of Georgia-based AGL Resources (a natural gas distribution, marketing and energy services company), has filed a permit application with the Louisiana Department of Natural Resources to add two new caverns to its natural gas storage facility near the Henry Hub.

The caverns could begin commercial operations within five years. They will expand the working gas capacity at JISH from 8 Bcf to 20 Bcf approximately. The company is confident that the environmental, safety and water-usage data submitted along with its permit application will demonstrate that Jefferson Island is among the most suitable sites for establishing new storage caverns in the region.

Earlier, in November 2009, the Louisiana Mineral and Energy Board approved an operating agreement between JISH and the state that enabled the company to resume its efforts to gain the regulatory approvals needed for proceeding with its planned expansion.

JISH currently operates two natural gas storage caverns in the Jefferson Island salt dome approximately 4,000

feet [1,200 meters] below the surface of Lake Peigneur in Iberia Parish, Louisiana. These caverns have been in use since 1994.

#### Warwick gas storage facility commences commercial operations, finalises funding

Alberta-based independent natural gas producer Paramount Energy Trust's wholly owned subsidiary Warwick Gas Storage Incorporated (WGSI) has commenced the commercial operation of its natural gas storage facility (WGSI facility) in the Warwick area near Vegreville, Alberta, with the first gas injection taking place in May 2010. The related funding arrangements for the facility have been made, and the funds are currently being held in an escrow account.

The WGSI facility is being developed by utilising a depleted 40 Bcf gas pool in the Upper Mannville formation, with approximately 10 Bcf of cushion gas in place. It has proximity to extensive mainline transportation infrastructure.

Initial injections are being limited to 22 MMcf per day as reservoir performance is monitored. WGSI plans to enter into park-and-loan transactions for up to 8–10 Bcf of natural gas storage for withdrawal in the period from December 2010 to March 2011. It also plans to utilise an estimated 17 Bcf of storage capacity in 2011 with no additional capital spending.

Upon expansion of the facility for full-scale operations, adding compression wells and 3–5 additional wells, the WGSI facility's capacity is expected to increase to 22–25 Bcf of working gas annually.

Nine horizontal injection/withdrawal wells were drilled in the last half of 2009 and the first quarter of 2010 to develop the reservoir for gas storage purposes.

Including all drilling, testing, land, facilities and seismic activities, total project expenditures up to the end of the first quarter of 2010 were USD20 million. WGSI expects to expend an additional USD37 million during the final three quarters of 2010 for the purchase and installation of two compressors and associated surface facilities designed to allow the withdrawal of up to 105 MMcf per day beginning as early as November 2010.

## LATIN AMERICA

### Government to oversee Metrogas operations

The Government of Argentina will oversee the running of gas distributor Metrogas (indirectly controlled by UK-based BG Group and Spain-based Repsol) due to the company's ongoing debt problems.

According to Metrogas, steps taken to refinance its debt have failed, leading the company's board of directors to begin insolvency proceedings.

However, services to the company's 2 million customers across the Buenos Aires metropolitan region will not be affected.

This is not the first time that the Argentine authorities have taken control of distributors operating in the country.

Natural gas regulator Enargas took control of natural gas pipeline operator Transportadora de Gas del Norte (TGN) in December 2008 after the company announced the suspension of some debt payments. It has extended the monitoring period by an additional 45 days.

### Metrogas to resolve tariff dispute with GasAndes via arbitration

Chile-based natural gas distributor Metrogas will resolve, through court arbitration, its tariff dispute with GasAndes, the operator of a cross-border gas pipeline with Argentina.

In August 2009, Metrogas began negotiations with GasAndes to change the current tariff for the transport of Argentine natural gas so that Metrogas could pay only for the delivered gas.

The current contract includes a fixed tariff for the contracted volumes, delivered or not.

Later, in December 2009, Metrogas took steps to begin the arbitration after failing to reach an agreement with GasAndes and suspended the tariff payments.

Argentina has limited its natural gas exports to Chile in the last few years to secure its domestic supply. This has caused gas supply problems in Chile, and all Chilean companies with

contracts for Argentine gas have taken steps to change the fixed transport tariffs.

### Enarsa receives four bids for Juana Azurduy pipeline stretch

Argentina-based state energy company Enarsa received four offers for the construction of the local stretch of the 50 km Juana Azurduy cross-border natural gas pipeline with Bolivia for which the economic offers are likely to be opened shortly.

The bidders were Argentina-based Victor M. Contreras y Compañía, Argentina-based Techint Compañía Técnica Internacional, Brazil-based Odebrecht-Albanesi and Brazil-based Servicios Vertua.

The USD50 million contract includes environmental studies, engineering, materials supply, construction and startup.

Bolivia's state hydrocarbons company, Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) recently announced that rules were ready to bid for the 20 km-long 32-inch-diameter Bolivian section, which will run from the Margarita field in Tarija department to Madrejones on the border with Argentina.

### Argentina starts tests at new cross-Magellan gas pipeline

Argentina has begun to inject natural gas for tests into the second cross-Magellan pipeline, built recently as a twin of the existing pipeline between the island of Tierra del Fuego (separated from the mainland by the Magellan Strait) and Santa Cruz province (in southern Argentina).

The new pipeline was inaugurated in March 2010. Upon commencement of full-scale operations, the pipeline will be able to supply 176.6 MMcf of natural gas per day from Tierra del Fuego island to Argentina's continental part.

The project, which involves an expansion of the old pipeline, was developed by local pipeline operator Transportadora de Gas del Sur with funds from the government.

It allows the start of production in the Carina and Aries gas fields, operated by France-based company

Total, Germany-based company Wintershall and British-Argentine joint venture company Pan American Energy.

### Bolivia to supply natural gas to Uruguay, studies feasibility of Bolivia-Paraguay-Uruguay pipeline

Bolivia is likely to export an initial 300,000 MMcm per day of natural gas to Uruguay. Initially, Uruguay will pipe in the Bolivian gas through Argentina.

Negotiations with Argentina have already begun. However, there is a proposal to build a pipeline to take Bolivian gas directly to Paraguay and Uruguay.

An Argentine - Bolivian consortium has won the tender to conduct pre-feasibility study for a natural gas pipeline that will transport Bolivian gas to Paraguay and Uruguay.

The consortium, including Argentina-based Quantum SA, Bolivia-based ABS SRL and Bolivia-based T&C SRL, will analyse different gas interconnection options, and will provide recommendations for the energy integration of the three countries.

The tender was called for by the three governments. The study will be financed by Andean Development Corporation (Corporación Andina de Fomento [CAF]) through its Proinfra infrastructure fund.

Uruguay is seeking to diversify its gas supplies after suffering cutbacks in deliveries from Argentina, its only existing supplier. Argentina has limited the natural gas exports in the last years to secure its domestic supply.

### Bolivia launches Carrasco-Cochabamba gas pipeline stretch

Bolivia's state-run oil and gas firm YPFB has launched the new USD57.6 million stretch of the Carrasco-Cochabamba gas pipeline. This will enable the transportation of 33 MMcf of natural gas per day to Cochabamba (Central Bolivia), Oruro, El Alto and La Paz cities via the existing Gasoducto al Altiplano pipeline, which connects Cochabamba, Oruro and La Paz departments.

The Carrasco-Cochabamba pipeline consists of following three stretches:

1. The 108 km segment inaugurated in June 2010.
2. The 65 km segment inaugurated in 2009.
3. The 78 km segment (the last and most difficult part of the pipeline) for which construction will start in August 2010.

The entire pipeline is likely to cost USD172 million. It will be able to transport 120 MMcf per day initially. Later YPFB will boost its daily capacity to 250 MMcf.

Meanwhile, in a separate development, YPFB is considering installing underground gas storage (UGS) deposits to meet the increased demand for natural gas in Brazil and Argentina during winters as these countries, which are Bolivia's sole gas export markets, register significant variations in their gas demand during different periods of the year.

The UGS deposits will be installed with technology from Russia-based Gazprom. Studies will be carried out by the two companies to evaluate the costs.

### Petrobras inaugurates Gasbel II

Brazil-based national oil company Petróleo Brasileiro (Petrobras) inaugurated the Rio de Janeiro-Belo Horizonte II (Gasbel II) gas pipeline, which will increase natural gas transport to Minas Gerais state to 12.9 Mcm per day. The new gas pipeline has an extension of 267 km and a transport capacity of 5 Mcm per day. It required an investment of USD703.3 million.

The pipeline links Volta Redonda (Rio de Janeiro) to Queluzito (Minas Gerais), and supplies natural gas to the Belo Horizonte metropolitan and the steel producing areas.

In January 2010, Petrobras inaugurated the Paulínia-Jacutinga pipeline, which, combined with Gasbel II, quadruples the natural gas volumes that can be shipped to Minas Gerais.

Previously, until December 2009, Minas Gerais had only one gas pipeline, the Gasbel I, which begun to work in 1994, with a capacity of 3.15 Mcm per day.

In another development, Brazil's federal energy planning company, EPE,

announced that the country's existing network of natural gas pipelines is sufficient to meet current demand. However, EPE will soon undertake studies to measure the need for new pipelines in the country as gas demand, led primarily by thermoelectricity generation, is likely to rise by 67 per cent to 167 Mcm per day in 2019.

### Construction of Cardon IV pipeline to begin this year

Construction on a 60 km gas pipeline connecting the offshore Perla 1x and Perla 2x gas wells, located on Venezuela's Cardon IV natural gas field, will begin by the end of the year.

The route of the pipeline, which will connect with production terminals in the south of Falcon state, has been determined in consultation with environmental experts.

The Cardon IV offshore gas field is held by the state oil company *Petróleos de Venezuela (PDVSA)* in a joint venture (JV) with European majors *Repsol* and *ENI*.

PDVSA is currently seeking to develop the country's natural gas potential after the launch of the *Mariscal Sucre* programme, which focuses on increasing Venezuela's domestic natural gas production, especially from offshore blocks.

### Gases de Occidente prepares to sell gas to industry in northern Cauca

Colombia's gas distributor *Gases de Occidente* will be able to start selling natural gas to industries in the northern part of Colombia's Cauca department by the last quarter of 2010.

The company has estimated the potential industrial demand in this region at over 3.5 Mcf.

*Gases de Occidente* will invest nearly USD5.2 million to install the necessary distribution network over the next few months.

Its local network will be supplied via the Cali–Popayan gas pipeline of local firm *Progasur*, which will be ready in August 2010.

The pipeline will connect Cauca's capital city of Popayan to the Mariquita–Cali pipeline. It will transport up to 3.7 MMcf of gas per day.

### Peru's TGP to increase gas pipeline capacity

Peru-based natural gas transmission and distribution company *Transportadora de Gas del Peru (TGP)* has signed a contract modification with the government allowing the company to increase the capacity of its natural gas pipeline (which transports gas from the Camisea fields in Peru's central jungle to the coast) to 920 MMcf per day.

The expansion, which is likely to cost USD800 million, will allow the company to meet the installed demand for gas in Lima, Pisco and in the Ica–Marcona region. Demand for gas has increased sharply since the Camisea fields went onstream in mid-2004.

TGP expects to increase transportation capacity to 530 MMcf per day in 2010 and to 920 MMcf per day by 2012. Previously, in December 2009, the company had increased transportation capacity to 450 MMcf per day.

## ASIA

### CNPC to build country's largest gas storage facility

A subsidiary of China National Petroleum Corporation (CNPC) has started building the country's largest gas storage facility in northern China, with a storage capacity of 12 Bcm. It is also expediting the expansion of some existing underground storage caves.

The Secretary General of China Gas Association has announced that all Chinese provinces except Tibet will build natural gas reserves in the coming years to prevent recurring gas shortages during periods of peak demand. Major gas producers, including *PetroChina*, have drafted emergency plans to stockpile gas.

### More cities in China to receive Central Asia gas by end 2010

CNPC has announced that more cities in Hubei province (in central China) and Jiangxi province (in southern China) will receive natural gas from Central Asia by the end of 2010. This is because several pipelines of the second West–East natural gas project will be put into operation during the year. The company is building a 1,869 km long main pipeline

linking Zhongwei in Ningxia Hui Autonomous Region and Zhangshu in Jiangxi province, two branch pipelines linking cities in Hubei and Jiangxi.

Moreover, CNPC has produced and shipped over 1.5 Bcm of natural gas as of June 27, 2010 via the Turkmenistan–China natural gas pipeline since the pipeline began operations in December 2009. China is scheduled to receive 5 Bcm of gas this year through the pipeline.

### China and Kazakhstan to build Central Asia-China pipeline Phase 2

Kazakhstan-based *KazMunaiGas* and CNPC signed an agreement to design, build, operate and finance the 1,400 km *Beyneu–Shymkent* pipeline in 50-50 partnership. The pipeline forms part of Phase 2 of the China–Kazakhstan natural gas pipeline which begins at the border of Turkmenistan, extends to *Huerguosi* in China. It will join the existing 1,833 km Central Asia–China pipeline (operational since December 2009).

The pipeline will begin operations in 2014 with an initial transmission capacity of 10 Bcm reaching up to total capacity of 15 Bcm.

The investment required for Phase 2 has been estimated at approximately USD3 billion. It will be financed by the Government of Kazakhstan and CNPC, both providing USD500 million each, while the balance will be provided by Chinese banks.

Construction of the pipeline, expected to start by August 2010, may be delayed due to financial issues facing *KazMunaiGas*.

### CNPC to buy 10 Bcm of gas from Uzbekistan

CNPC has signed an agreement with *Uzbekneftegaz*, the national oil company of Uzbekistan, to buy 10 Bcm of natural gas per year.

The two sides have also signed a memorandum of understanding to expand their cooperation in the area of natural gas, especially in connecting Uzbekistan's gas transmission system with the China–Uzbekistan gas pipeline, which is part of the 1,833 km China–Central Asia gas pipeline.

### Sichuan–Shanghai pipeline starts gas flow to Jiangxi

Sinopec (China Petroleum and Chemical Corporation), a Beijing-based oil and gas exploration, refining, storage and pipeline company, has commenced operations on the Sichuan–Shanghai natural gas pipeline, with flows to Jiujiang city in Jiangxi province.

The 53 km branch line, designed for an annual transportation capacity of 800 MMcm, is the fourth of this kind of branch pegging, with the truckline starting from Sinopec's Puguang gas field in Sichuan province in southwestern China to the economic hub of Shanghai in eastern China.

### PetroChina signs agreement with Tianjin Gas

PetroChina, China's largest oil and gas producer and distributor, has signed a cooperative agreement with Tianjin Gas Group Limited (TGGL) in a move to strengthen PetroChina's presence in Tianjin, in northern China.

As per the agreement, PetroChina and TGGL will form a joint venture to build five high-pressure gas pipelines and an underground storage tank and to operate town gas supplies in Dagang and Binhai New Area. Tianjin's annual natural gas consumption is about 1.3 Bcm, which is supplied mainly by PetroChina's gas from the Changqing oilfield via the second Shaanxi–Beijing pipeline.

### China adopts its first law to protect pipelines

China will soon adopt its first law to protect oil and natural gas pipelines. The 61-article law, which will be effective from October 1, 2010, requires companies to take safety measures during the construction of pipelines, to ensure the quality of construction materials, to patrol pipelines regularly, and to place warning signs near them.

Similarly, relevant government departments are also required to coordinate on major issues regarding pipeline protection and to supervise companies to ensure that they fulfil their responsibilities in protecting pipelines. Further, the law also authorises the country's cabinet to issue a detailed regulation on the protection of offshore oil and gas pipelines.

Currently, damages by a third party, including those who drill to steal fuel, account for at least one-third of all causes. Other causes include pipeline erosion and malpractices. However, with the new law in place, bans have been imposed on the moving, dismantling, or puncturing of any oil and gas pipelines, or on the stealing of oil and gas being transported.

China has more than 70,000 km of trunk pipelines, which transport 70 per cent of crude oil and 99 per cent of natural gas in the country. It is expected that this pipeline network will be expanded to 200,000 km by 2020.

### Turkmenistan starts construction of East-West gas pipeline

Turkmenistan has begun construction of the 1,000 km East-West gas pipeline, which originates from the South Yolotan–Osman field, near the Afghanistan border, and extends to the Caspian Sea coast. The pipeline, which has an annual capacity of 30 Bcm, will extend from the southeast of the country to the western port of Turkmenbashi. For part of the route, it will follow the course of an existing pipeline running from the Dauletabad (Davletbat) field to Turkmenbashi via the capital Ashgabat.

The pipeline development project is part of Turkmenistan's export diversification programme, which saw new links to China and Iran in 2009. The USD2 billion pipeline will bring the country's largest known source of untapped gas reserves a step closer to the European market. It will be built exclusively by domestic companies. Crossing the Caspian Sea, however, remains an unsolved problem for Turkmenistan's westward-looking gas-trading ambitions as there is still no maritime border agreement between the Caspian littoral states. The pipeline is scheduled for completion in 2015.

### Myanmar launches Yadana–Yangon gas pipeline

Myanmar Oil and Gas Enterprise (MOGE) and UK-based Total Exploration and Production have connected a 24-inch-diameter pipeline running from the offshore Yadana production platform in the Moattama basin to the city of Yangon. The offshore section of the

pipeline is 94.52 miles long, while the onshore section is 85.43 miles long. Test runs of the pipeline have been completed, and it went into operation on June 8, 2010.

Yangon has faced intermittent problems with gas supplies over the last three months due to leakages from an old gas pipeline that supplies the city. Gas leakage was also associated with power shortage.

The new pipeline connection is expected to double the power supply to Yangon to 660 MW from the present 330 MW.

### SNGPL says Pakistan Gas Act in the offing

Pakistan-based Sui Northern Gas Pipelines Limited (SNGPL) has announced that an act on natural gas is in the offing and is likely to be finalised in the next six months.

The act will help control pilferage as it will have a provision for meting out severe punishment for gas theft. The act is being formulated to facilitate gas consumers in the city of Lahore. It has also been proposed that Lahore be divided into four zones for the purpose of gas distribution.

### Iran and Pakistan finalise gas pipeline deal

Iran and Pakistan have formally completed the signing of a multi-billion-dollar gas contract that will supply Islamabad with Iranian natural gas from 2014. Iran has already constructed more than 900 km of the pipeline, which is to carry 21.5 MMcm per day of natural gas from Iran to its eastern neighbour. The first section of the pipeline will carry natural gas from Iran's South Pars gas field in Asalouyeh to the southeastern city of Iranshahr.

Iran-based National Gas Company has stated that it will start building the next 400 km of the pipeline in Iran from Iranshahr to the Pakistani border through the Iranian port of Chabahar. Meanwhile, Pakistan has stated that the construction of the pipeline in the country will begin after the completion of the feasibility study, which will take one year. Thereafter, it would take three years to build the 700 km pipeline from the Iranian border to the Pakistani city of Nawabshah.

## PTT renews investment plans for two gas pipelines

Thailand-based PTT has renewed a plan to invest USD1.23 billion in two natural gas transmission pipelines. The first pipeline will cover 150 km between Ayudhya in Ayutthaya province to Nakhon Sawan in central Thailand, while the second pipeline will cover 200 km between Saraburi in the central region to Nakhon Ratchasima in the northeast. The construction of the two pipelines is now expected to be completed by 2014 instead of 2011 as planned earlier. The earlier completion schedule was shelved following PTT's decision to review new pipeline construction plans in the wake of the global economic slowdown as oil prices tumbled and as demand from the power generation sector slumped.

The gas transmission projects are being revived in view of the increased natural gas consumption demand in the country, which is expected to grow at a rate of between 5 and 6 per cent per annum to 4,820 MMcf per day in 2014. Moreover, the Electricity Generating Authority of Thailand's (EGAT) had estimated (in February 2010) that the peak power demand will rise to 23,000 MW in 2010. Further, six new power projects with an estimated capacity of 5,500 MW will require approximately 0.9 Bcf per day of gas.

PTT was also to come up with a third pipeline from Ratchaburi to Prachuap Khiri Khan in southern Thailand, but the plan was scrapped owing to low demand for natural gas from the power generation sector.

## Abacus and Saipem may develop Batman 1 pipeline

Abacus Consolidated Resources and Holdings Incorporated (Abacus), a diversified Philippine investment company, has offered to develop the Batman 1 (Batangas–Manila) natural gas pipeline project in partnership with Italy-based Saipem (upstream company) at a cost of USD100 million. Another USD450 million will be required for setting up the component processing plant and storage facilities for natural gas.

Abacus and Saipem want an 80 per cent stake in the project, which they will finance and develop. The remaining 20

per cent will be retained by the state firm Philippine National Oil Company, which has a right to the project.

## FPIC's pipelines to transport ATF and natural gas

First Philippine Industrial Corporation (FPIC), which is a unit of First Philippine Holdings Corporation, has announced that it is willing to use its pipeline facilities to help spur economic activity in the Philippines. It has said that one of its pipelines may deliver aviation turbine fuel (ATF) directly to Ninoy Aquino International Airport and another pipeline may deliver natural gas from Malampaya to metro Manila. There is also a plan to construct a gas pipeline in Luzon, beginning with the 100 km Batangas–Manila gas pipeline, to support some power plants that plan to use liquefied natural gas.

## Indian gas companies invest in pipeline infrastructure

With the increase in gas supply from the Reliance Industries Limited (RIL)-operated KG basin fields to 175 MMscmd from 114 MMscmd in 2009, the only roadblock in the future growth of the natural gas industry in India is the transportation infrastructure. Hence, major companies have prepared heavy capital expenditure (capex) plans to extend their pipeline networks and to augment their gas-carrying capacity.

State-run Gas Authority of India Limited (GAIL) alone will invest about INR350 billion between 2009–2010 and 2013–2014 to double the size of its pipeline network. Gujarat State Petronet Limited (GSPL), which has already incurred a capex of INR28 billion in the past four to five years to establish a pipeline network, is additionally planning a capex of INR15 billion to supplement its existing pipelines and to set up a city gas distribution (CGD) system.

Over the next five years, Indraprastha Gas Limited (IGL) is also planning to invest nearly INR35 billion to expand its CGD business in the National Capital Region (NCR) as well as in Noida, Greater Noida and Ghaziabad. Gujarat Gas Limited has not drawn up any major capex plans except INR3 billion of annual capex keeping in mind pending regulatory approvals.

1 INR (Indian Rupee) = 0.02 USD

## Indian regulator approves GAIL tariff for transporting gas

India's downstream regulator, the Petroleum and Natural Gas Regulatory Board (PNGRB), has approved the tariff that GAIL will charge from consumers for moving natural gas through its two main trunk pipelines, the Hazira–Vijaipur–Jagdishpur (HVJ) and the Dahej–Vijaipur (DV) pipelines.

GAIL has been allowed to charge four different distance-based tariffs on these pipelines. For the HVJ pipeline, the MMBtu charges are as follows: INR19.83 for zone 1; INR22.48 for zone 2; INR25.10 for zone 3; and INR27.70 for zone 4. For the DV pipeline, GAIL will charge between INR42.46 and INR59.32 per MMBtu over the four zones. Each zone is 300 km in length.

Earlier, on April 19, 2010, PNGRB approved a provisional levelised tariff of INR25.46 per MMBtu for the HVJ pipeline and INR53.65 per MMBtu for the DV pipeline.

Reliance Gas Transportation and Infrastructure's (RGITIL) 1,395 km long, 48-inch pipeline from Gadimoga near Kakinada (Andhra Pradesh) to Bharuch (Gujarat) ships gas from Reliance Industries Limited's (RIL) KG-D6 fields. The pipeline has been divided into five zones of 300 km each, with per MMBtu charges for customers as follows: INR15 for zone 1; INR42 for zone 2; INR53.69 for zone 3; and two different rates in zone 4 (INR58.75 in Maharashtra and INR60.94 in Gujarat).

1 INR (Indian Rupee) = 0.02 USD

## PNGRB issues license rules for laying gas pipelines

The Petroleum and Natural Gas Regulatory Board (PNGRB) has issued license rules for companies laying gas pipelines in India. The rules come into effect even as the Ministry of Petroleum and Natural Gas (MoPNG) takes a final call on who will be the regulator for the segment.

The detailed norms say that entities such as Indraprastha Gas Limited, which began operations with the Government of India's permission before PNGRB was set up, do not require PNGRB's approval now, although the regulator will monitor the performance of these entities in laying pipelines. But new companies

planning to enter the field of city gas distribution and transportation of natural gas will come under its purview. The new guidelines issued by PNGRB (authorising entities to lay, build, operate or expand petroleum and petroleum products and pipelines) will come into force after they have been published in the government's official gazette.

#### Gas pipeline for Goa industries to be ready by 2012

The Government of India has announced that the INR4 billion, 100 km gas pipeline between Gokak (Karnataka) and Goa will be ready by 2012. This pipeline will provide an impetus to industries such as Zuari Industries Limited, Reliance power plant, Binani Glass and others that rely on gas as their primary raw material. The country's pipeline major - Gas Authority of India Limited will tap the Dabhol (Maharashtra) and Bengaluru (Karnataka) pipeline at Gokak, which supplies gas to Goa. According to Gol, the industrial requirement of gas in Goa is estimated at 4 MMcm per day.

1 INR (Indian Rupee) = 0.02 USD

#### Gazprom increases gas supply to storage facilities

TsDU-TEK, which provides data and analyses to the Energy Ministry of Russia, has reported that Gazprom, Russia's largest natural gas company, has increased gas supplies to domestic and foreign underground storage facilities to 27.145 Bcm in January-June 2010 compared to 4.149 Bcm for the same period in 2009. In June, Gazprom supplied 7.567 Bcm of gas to domestic underground storage facilities and about 664 MMcm of gas to foreign underground storage facilities.

#### Novatek to export gas via Gazprom

Russia-based Gazprom will export gas produced by the independent producer Novatek through its pipeline. In turn, Novatek will pay for the services at a maximum rate of RUR1.58 per thousand cubic metres (Tcm) to an amount of RUR42.7 million (USD1.4 million) plus value added tax (VAT). Based on the maximum sum, the total gas exports may reach 22.9 Bcm.

1 RUR (Russian Ruble) = 0.03 USD

#### Offshore section of Dzhubga-Sochi pipeline to be completed shortly

The construction of the 159.5 km offshore stretch of the 177 km Dzhubga-Lazarevskoye-Sochi gas pipeline will be completed by July 1, 2010.

By this time, more than 76,000 tonnes of pipes will have been laid, of which 74,000 tonnes will be used for the construction of the offshore stretch.

The 530 mm-diameter gas pipeline will have an annual throughput capacity of about 3.8 Bcm. It will be used by a subsidiary of Gazprom, Gazprom Transgaz Kuban.

It will run along the Black Sea to the Kudepsta gas distribution station near Sochi. Gazprom began the construction of the Dzhubga-Lazarevskoye-Sochi gas pipeline in September 2009.

The pipe-laying barge C-Master played a key role in the construction of the gas pipeline's offshore stretch.

Several special-purpose vessels, including the pipe-laying barge Bigfoot-1, were also engaged in the construction of the gas pipeline's offshore section in shallow waters.

## EUROPE

#### NordStream construction progresses on schedule

Construction of the Nord Stream gas pipeline in Finland's special economic zone began in end June 2010.

The pipeline is being laid in Finland's waters by two ships, at the rate of 2.5 km per day. Nord Stream will run about 30 km south of Finland's coast.

The total length of the pipeline's first leg in Finland's waters is likely to be 330 km. Most of the pipeline will be laid in the autumn and winter of 2010. Around 175 km of the pipeline has already been laid in offshore Sweden.

With the first cubic metre of gas delivered to the Russian town of Vyborg, the pipeline is now well on its way to being completed, with 100 km of the 470 km length already built.

Meanwhile, construction of an extension from the Nord Stream gas pipeline - the NEL pipeline - may begin in late 2010 or early 2011.

#### GOGC issued permit to construct Senaki-Poti pipeline, announces tender for pipes

The Georgian Oil and Gas Corporation (GOGC) has been issued a permit to construct the 30 km Senaki - Poti gas pipeline, which is part of the main Zestaponi - Poti pipeline. GOGC announced an international tender for the purchase of materials for the construction of the Senaki-Poti gas pipeline. The materials are to be provided by October 15, 2010.

The Senaki-Poti pipeline will be used for supplying natural gas to the gas-liquefaction terminal, to the resort and recreation area of the Black Sea coast of Georgia (town of Poti), and to the towns of Senaki and Khobi. The project will be implemented in stages under the grant allocated to the Government of Georgia by the United States Agency for International Development.

#### EVN signs gas grid deal with Croatia's Sibenik-Knin County

Austria-based multi-utility EVN has signed a 30-year concession deal worth around EUR27.6 million with Croatia's Sibenik-Knin County for the deployment of a gas grid. The contract was won by the Croatia-based unit of the company in a tender for the distribution of natural gas. The length of the gas grid in Sibenik-Knin County will add up to 435 km and will provide 22,000 customers with an opportunity to be connected to the system.

Depending on the progress of the construction works conducted by the Croatia-based gas transmission system operator Plinacro, which is responsible for Dalmatia's main pipeline connection to northern Croatia, the gas grid project is planned to begin by October 2011.

EVN Croatia has also signed concession contracts for the distribution of natural gas in Zadar and Split-Dalmatia counties, in the same part of the Adriatic state. The total investment in all three Dalmatian counties will reach nearly HRK800 million, while the combined length of the gas distribution network in the region will be 1,450 km, with the potential for 130,000 customers to be connected to it.

1 EUR (Euro) = 1.25 USD

1 HRK (Croatian Kuna) = 0.17 USD

## E.ON submits updated planning application for Whitehill gas storage

Germany-based power and gas company E.ON has submitted information update to its existing application for the proposed Whitehill gas storage facility in UK. The move follows a public consultation and information day, which gave local communities an opportunity to study the updated details of the plans, which were initially submitted in January 2007.

The Whitehill gas storage project will consist of 10 underground storage caverns, which will be built nearly 2 km below the surface. The proposed gas-processing plant will be built at Whitehill Farm, which was chosen for its natural screening. The storage facility is expected to ensure the security and affordability of energy supplies to the East Riding of Yorkshire Council.

## PSE Kinsale Energy plans to develop natural gas storage facility in Ireland

To expand its gas storage facilities at the Ballycotton gas field off Ireland's southwest coast, PSE Kinsale Energy is planning to develop a natural gas storage facility near Cork Harbour at an investment of approximately EUR400 to EUR500 million. The facility is likely to be operational in 2014.

The project, which has yet to receive regulatory and planning approval, includes the conversion of the company's current offshore storage site located 40 km south of Cork Harbour and the redevelopment of its onshore terminal at Inch in eastern Cork. If confirmed, the storage facility would quadruple Ireland's total existing storage capacity.

1 EUR (Euro) = 1.25 USD

## Shell outlines plans to build underwater pipe in UK

In its revised environmental impact statement, lodged with An Bord Pleanála (an independent statutory administrative tribunal for local authorities in Ireland), Shell E&P, Ireland has outlined plans to build a tunnel under Sruwaddacon Bay for carrying gas from the landfall at Glengad to the terminal at Bellanaboy for the Corrib gas pipeline. In 2009, An Bord Pleanála had deemed a section of the proposed

onshore pipeline unacceptable on safety grounds and had recommended that an alternate route be explored.

In the new submission, the nearest house is 234 m away from the pipeline—more than three times the original distance. According to the company, the normal operating pressure in the onshore pipeline will be 85 bar, which is similar to the pressure in the Bord Gais transmission lines throughout Ireland, and the proposed Corrib onshore pipeline meets or exceeds all relevant international and Irish pipeline codes and standards.

An Bord Pleanála will assess the new submission in the coming weeks and an oral hearing is expected to take place in August 2010. The pipeline application is the last significant development in this matter. It would be a setback for Shell if it were refused permission.

## Poland's refiner inks gas supply deal with PGNiG

Poland's second largest refiner Grupa Lotos (Lotos) has signed a deal with the country's state-controlled gas company PGNiG to receive gas supplies for its Gdansk refinery. Lotos is also building a 200 MW gas-fired power plant for which PGNiG will supply around 447 MMcm of gas per year.

To receive the gas supplies, Lotos has signed an agreement with local PGNiG subsidiary, Pomorska Spolka Gazownictwa, to build a 31 km high-pressure pipeline to connect the Gdansk refinery to the gas infrastructure network. The agreement, which runs indefinitely, is valued at more than USD666 million over a five-year period. Supplies will start in December 2011, and under the contract's first full year will amount to 403 MMcm before increasing to 447 MMcm per year.

## PGNiG receives funding to enhance gas storage infrastructure

The European Commission (EC) has granted USD198 million in state aid to Poland for state company PGNiG to increase gas storage capacity. The project, expected to be completed in 2015, is likely to increase Poland's gas storage capacity to 1.6 Bcm from the current 1 billion Bcm. It will allow Poland to increase the security of gas supply and bring Poland closer to the current

European Union (EU) reserve capacity average of 14 per cent of the annual demand.

## Lithuania to work on gas links with Poland and Latvia

Poland-based gas transmission operator, the Gaz System company, and Lithuania-based natural gas company, Lietuvos Dujos, have agreed to work together on the construction of a gas pipeline between Poland and Lithuania. The companies will prepare an initial project feasibility study and a business analysis study. They have applied to the EC for co-financing since it expressed interest in the project in May 2010.

Lietuvos Dujos is also implementing a project aimed at increasing the capacity of the gas pipeline between Lithuania and Latvia. Up to five contractors will construct the gas pipeline and seven contractors will build the distribution station.

The EC is providing EUR12.94 million for the joint project, which is worth EUR32.8 million in total, between Lietuvos Dujos and Latvijas Gaze (Latvian Gas). Out of this, EUR2.94 million will go to the Lithuania-based company, which will have to contribute the same amount from its own resources.

The project is of major importance as boosting the capacity of the link with Latvia's Incukalna underground gas storage facility will promote Lithuania's energy independence. While natural gas is supplied to Lithuania via Belarus, in case of repairs, accidents or other emergencies, Lithuania can also receive it from Latvia's Incukalna facility.

1 EUR (Euro) = 1.25 USD

## Foreign shareholders urge Lithuania to observe agreements

Even as the Government of Lithuania intends to start the restructuring of the country's natural gas transportation company, Lietuvos Dujos, into separate distribution and transmission companies, Germany's E.ON Ruhrgas and Russia's Gazprom (the shareholders of the company) have demanded that the shareholders' agreement (the basis on which they became shareholders) and the bilateral and multilateral international

investment protection agreements be fully observed. E.ON Ruhrgas holds a 38.9 per cent stake in Lietuvos Dujos while Gazprom owns 37.1 per cent of shares and the Lithuanian state holds 17.7 per cent. According to the trilateral shareholders' agreement between the state, E.ON Ruhrgas and Gazprom, and according to the Directive of the European Council (as of July 2009 concerning common rules for the 3rd Energy Package), shareholders should be consulted prior to the taking of any decision affecting the company.

Yet a request for consultations was reportedly ignored. However, according to the Government of Lithuania, Lietuvos Dujos's current shareholders (E.ON Ruhrgas and Gazprom) will be offered stakes in the new companies in proportion to their current holdings or they will be able to swap them at a favourable ratio.

The authorities will also consult the EC on this issue and consider Lithuania's investment agreements with Russia and Germany. The country has until March 2011 to adapt the directive into national law and until March 2012 to implement it.

#### Combined capacity of Belarusian gas storage units at 980MMcm

The combined capacity of the three underground gas storage facilities (Pibugskoe, Mozyrskoe and Osipovichskoe) in Belarus stands at 980 MMcm. OAO Beltransgaz, a Belarus-based gas infrastructure and transportation company, has been instructed to create natural gas reserves by November 20, 2010 in the maximum technically feasible volumes.

Gas pumping into the storages has already started, with Mozyrskoe being the first facility to receive gas. Gas will be stored based on a fixed schedule and with an allowance for the price factor.

#### Gazprom signs gas transit contract amendment with Belarus

Russia-based Gazprom signed a gas contract amendment with Belarus's national gas pipeline operator Beltransgaz according to which the fee for the transit of Russian gas via Beltransgaz's network will amount to USD1.88 per 1,000 cubic metres per 100 km in 2010.

Gazprom had paid USD1.45 per 1,000 cubic metres per 100 km in the first half of 2010, using the 2009 transit rate claiming that contract stipulates the previous year's transit rate be used until an agreement on the new rate is reached.

A dispute between Russia and Belarus over natural gas had led to cuts in gas supply to Europe. The dispute arose after Belarus demanded that Gazprom pay a higher transit fee than what had been agreed to in the contract. Overall transit shipments of Russian gas to the EU nations fell by 20 per cent in the third week of June 2010 as Belarus siphoned gas intended for export.

While Gazprom resumed supplies to Belarus after the country repaid its debt of USD200 million, Belarus stopped the transit of gas to other European countries until Gazprom settled its own debts of USD260 million for gas transit to other countries. As a result, Lithuania, which gets all of its Russian gas via Belarus, reported a 40 per cent drop in supplies. Russian natural gas resumed flow through Belarus to Europe at normal levels on June 24, 2010.

#### Gazprom moves forward with South Stream

Gazprom, the initiator of the South Stream natural gas pipeline project, hosted a meeting to discuss the progress of the execution of the South Stream project. It noted that engineering and reconnaissance surveys had been carried out in the Black Sea and that a feasibility study for the pipeline's offshore section had been completed as per schedule. Having secured intergovernmental agreements with Bulgaria, Serbia, Hungary, Greece, Slovenia, Croatia and Austria, the company is seeking to implement the project in 2013.

In another development, Gazprom and Greece-based gas transmission system operator DESFA S.A. signed an agreement to form a JV for the construction and operation of the South Stream pipeline in Greece. Additionally, South Stream Serbia AG, a joint venture of Gazprom (51 per cent stake) and Serbia-based Srbijagas (49 per cent stake), is conducting feasibility study for the South Stream gas pipeline. Srbijagas is also developing the Banatski Dvor UGS facility jointly with

Gazprom. The Banatski Dvor UGS JV was incorporated in February 2010, with Gazprom holding 51 per cent and Srbijagas holding 49 per cent.

Turkey has agreed to allow Russia to start surveys in its territorial waters in the Black Sea for South Stream, but it has yet to give its final approval for building the pipeline. Even Bulgaria has yet to give its approval for the construction of the offshore section of the pipeline. Recently, the Government of Bulgaria stated that Europe's Nabucco gas pipeline project is more important for the country than the Russia-backed South Stream project.

The pipeline will carry Russian and Central Asian natural gas under the Black Sea to the European markets. It will be split into two branches after reaching the Bulgarian coast - one branch heading south to Greece and southern Italy, and the other branch heading north through the Balkans towards Austria. The annual throughput capacity of the South Stream offshore section will be up to 63 Bcm. This section is planned to be constructed under the Black Sea from the Russkaya compressor station on the Russian coast to the Bulgarian coast, covering a distance of 900 km and at a maximum depth of over 2 km.

#### Romania receives gas price cut, shows interest in South Stream

Gazprom has agreed to cut the price of its gas supplies to Romania by 3.6 per cent to USD352 per 1,000 cubic metres. In addition, discussions on further price cuts are continuing, and Romania is expected to get an additional discount by the end of 2010. The country receives Russian gas via an intermediary, German energy company Wintershall.

Additionally, Romania's state-owned gas company Romgas has reached an agreement with Gazprom on cooperation in the South Stream gas project. It is expected to provide data to the Russian gas giant by end August 2010 for a feasibility study of Romania's participation in the South Stream project for calculating the costs of the construction of the Romanian transit leg. According to Gazprom, Romania's possible affiliation to the South Stream project does not mean the cancellation of plans for laying the gas pipeline across Bulgaria. This is in contrast to

the Russian giant's earlier intention of replacing Bulgaria with Romania in the project as Bulgaria had halted two other joint energy projects.

#### Petrom announces start-up of Hurezani gas delivery system

Romania-based oil and gas group Petrom has announced the first gas delivery of the Hurezani gas delivery system. The project, which optimises Petrom's gas deliveries from the fields situated in southwestern Romania, was initiated in 2008 to optimise gas delivery into the national transportation network during periods when the pressure in the system is high (because of low consumption, especially during summer). It increases the pressure up to 40 bars so that gas can be better delivered into the national transportation system.

The Hurezani gas delivery project is located in the southwestern region of Romania, between Craiova and Targu Jiu. The works include a new compressor station at Bulbuceni, 11.5 km of new connection pipeline and an upgrade of the Hurezani delivery point to meet the new gas flow and pressure parameters.

#### Nabucco to launch open season

The Nabucco pipeline consortium intends to launch execution phase of the open season by late 2010 or the beginning 2011. The open season process, which involves trading of the capacity of the Nabucco gas pipeline, will consist of a preparatory phase and an execution phase.

During the preparatory phase, Nabucco will work on harmonisation of the contractual framework with the regulatory requirements and on the division of responsibilities between Nabucco International Company and the Nabucco National Companies for handling transportation issues.

During the execution phase, potential shippers will be invited to express their interest in the project and to make firm bookings for pipeline transport capacity. This phase includes a separate shareholder shipper bid phase and a separate all shipper (i.e. including third party as well as shareholder shipper) bid phase. The open season will first be addressed to Nabucco shareholders for capacity up

to 15 Bcm per year (about 50 per cent of Nabucco's transportation capacity). In the second step, Nabucco will offer the remaining 50 per cent capacity to external companies, offering them the same terms and conditions.

Germany-based Bayerngas has already announced plans to book capacity in the Nabucco pipeline. Meanwhile, in a separate development, the Turkish parliament has ratified an agreement for constructing the Nabucco gas pipeline to deliver Caspian gas to Europe. The intergovernmental agreement will come into force on August 1, 2010. The Government of Bulgaria also expressed interest in working with European partners to complete the procedures necessary for starting the construction of the Nabucco pipeline by the end of 2010.

#### IPIC may join Nabucco pipeline

The Nabucco consortium, Nabucco Gas Pipeline International (which consists of Germany-based RWE, Austria-based OMV, Hungary-based MOL, Turkey-based Botas, Bulgaria Energy Holding, and Romania-based Transgaz) may add Abu Dhabi-based International Petroleum Investment Company (IPIC) as a member by end 2010. IPIC, which already holds a 20 per cent stake in OMV, is reportedly interested in taking an equity stake in the project. The consortium is open to the entry of a seventh shareholder, if the project stays strong.

The Nabucco pipeline is considered the new gas bridge from Asia to Europe and is the flagship project of the Southern Corridor. The main supplier is expected to be Azerbaijan, working in cooperation with Turkmenistan, Iraq and Egypt. However, the consortium has yet to reach a supply agreement with Turkmenistan over gas prices and transport costs.

#### ITGI natural gas pipeline agreements signed, possible cooperation with TAP

Turkey-based Petroleum Pipeline Corporation (Botas), Italy-based Edison and Greece-based DEPA have signed an agreement for the Turkey – Greece - Italy Interconnector (ITGI) natural gas pipeline, which will carry natural gas from the Caspian region to Europe. Talks about the companies' share in financing the pipeline construction are currently under way.

The Trans Adriatic Pipeline (TAP) gas consortium, a rival project, is ready to cooperate with ITGI. TAP plans to carry more than 10 Bcm of Caspian gas a year along a 520 km route through Greece and Albania to Italy, extending an existing pipeline from Turkey. The ITGI project implementation is likely to start after agreements are reached with Azerbaijan (expected later in 2010), Turkmenistan and other gas suppliers. The pipeline will go into service in 2015. It is likely to carry 11.6 Bcm of Caspian gas annually from Turkey to Europe via Greece and then Italy.

1 EUR (Euro) = 1.25 USD

#### Shell, Exxon seek offers for Germany-based gas storage JV

Royal Dutch Shell and ExxonMobil Corporation have reportedly approached potential buyers about selling their majors' jointly owned German natural gas storage assets, which are likely to be worth around EUR300 million.

The Union Bank of Switzerland (UBS) is advising Shell and ExxonMobil on the sale and has sent out invitations to potential bidders to submit offers. The first offers for the Germany-based gas storage business of Shell's and ExxonMobil's joint venture - BEB Erdgas und Erdoel GmbH - are due at the end of July 2010. While BEB's largest gas storage facility (located in Doettingen in northern Germany) is not up for sale, its other two storage facilities, one of which is near Hamburg (129 MMcm) and the other is located on the Dutch border (750 MMcm) are likely to be sold.

1 EUR (Euro) = 1.25 USD

#### VNG expands natural gas storage capacity

Germany-based gas importer and storage operator Verbundnetz Gas Aktiengesellschaft (VNG) is investing in expansion of underground storage facilities in Etzel and Jemgum (Lower Saxony, northwest Germany) and has signed cooperation agreements for these projects with E.ON Gas Storage (EGS) and Wingas, respectively. In Germany, the Jemgum storage facility links with the transmission network operated by Wingas Transport (Gaspool market area). The planned working gas volume of the project with Wingas is 1.2

Bcm, with VNG's share being one-sixth of the storage capacity. The site will be commissioned successively between 2013 and 2016.

The Etzel storage facility, which ties in with the NETRA pipeline system, will be accessible to storage customers from two market areas (NetConnect Germany and Gaspool). Together with EGS and Austria-based oil and gas corporation OMV, VNG will be constructing cavity storage with projected working gas volume of approximately 2 Bcm (with an option for an additional 1Bcm).

The plan envisages the phased commissioning of the cavities (located in a salt-rock formation) between 2012 and 2014. VNG's share of the underground storage project will amount to 150 MMcm. The new storage facilities will be constructed and operated jointly by the cooperation partners in line with their respective project shares. Each partner will, however, be responsible for marketing its share of storage capacity. Both facilities will also connect with the Dutch transmission system at Oude Statenzijl.

## MIDDLE EAST AND AFRICA

### Saudi Aramco to move forward with construction of Wasit gas projects

International engineering firms have submitted prequalification applications to Saudi Arabia-based Saudi Aramco (Aramco) for the USD3 billion plus Wasit gas development programme.

In addition to the construction of gas-processing facilities, wellhead production platforms, flow lines, etc., the project includes the following gas pipeline projects: a 145 km, 36-inch-diameter pipeline linking the platform with Wasit and a 150 km pipeline linking the facilities with Wasit. Aramco has set a deadline of September 2010 for the technical and commercial proposals, and plans to award the contract by October 2010.

### Syria eyes Azeri gas supplies

Azerbaijan has signed a contract to provide Syria with 1–1.5 Bcm of gas per year from mid-2011 to 2020. Gas supplies

from Azerbaijan will begin after the completion of the 63 km connecting gas pipeline between Aleppo (Syria) and Kilis (Turkey), which is planned for late 2011 or early 2012. Azeri gas can be shipped from Syria onwards to other Arab countries, and even to Europe via the Mediterranean coast.

### Iran inks deal to boost Turkmen gas imports

Iran and Turkmenistan have signed a supplementary contract to the existing contract to boost annual gas imports from Turkmenistan by about 40 per cent to 14 Bcm. Under the new deal, daily imports are expected to reach 40 MMcm by the end of 2010 from the present 25 MMcm per day. The additional volumes of natural gas will be exported to Iran via the recently commissioned second gas pipeline, Dovletabat–Sarakh–Hangeran.

The 30.5 km pipeline will supply Iran's Khangiran gas refinery initially with 6 Bcm per year. Domestic shortages have underlined the problems of the gas industry in Iran, which cannot develop its gas fields due to a lack of foreign investment and technology even though its reserves are second only to those of Russia.

### Iran building a gas storage facility near Qom

Iran is building a storage facility near the holy city of Qom with a capacity to hold more than 1 Bcf of natural gas. The National Iranian Oil Company has stated that the lack of gas storage facilities in Iran is a serious challenge for the country's gas industry. It has announced that while three to four gas storage facilities are under construction, more such facilities are needed to meet domestic demand.

### Egypt and Lebanon discuss energy cooperation

The governments of Lebanon and Egypt held a bilateral meeting to discuss the possibility of cooperation in the areas of oil and gas, including exploration in the Mediterranean Sea off the Lebanese coast, Egypt's cooperation for the supply of gas to Lebanon, and taking advantage of Egypt's experience to supply and implement gas pipelines across Lebanese cities.

The Government of Egypt has stated that priority be given to providing natural gas from the country to Lebanon, for use by the Deir Ammar power plant. Since November 2009, Egypt has supplied 30 MMcf of gas per day to this power plant through the Arab gas pipeline.

The two sides also announced that a meeting will be held soon between the member states of the Arab gas pipeline project - Egypt, Syria, Jordan, Turkey, Lebanon, Romania, and Iraq.

### Delek mulls future gas exports to Turkey and Greece

Israel-based oil and gas exploration and production company Delek Energy, one of the partners in the giant natural gas discoveries offshore Israel, is looking at various options for exporting future gas output, with supplies to Turkey and Greece under consideration.

The increased interest in exports follows an announcement by the Texas-based independent energy company Noble Energy and its Israeli partners that the offshore Leviathan structure has estimated potential reserves of up to 16 Tcf. This is nearly twice those of the Tamar field, discovered in 2009, which has potential reserves of 8.4 Tcf.

Meanwhile, domestic gas demand is also expected to rise as Israel's largest domestic customer for gas, the Israel Electric Corporation (IEC), plans to increase gas consumption by 1.5–2 Bcm per year.

IEC's projected demand for gas is expected to rise from 4 Bcm in 2009 to 7–8 Bcm in 2014. However, there is concern about the location of a crucial onshore gas-receiving terminal (which will get gas from the Tamar field) at Dor due to opposition from the residents of the Hof Hacarmel region.

### Israel Planning Council delays decision on gas terminal

The National Planning Council of Israel has delayed a decision due on June 1, 2010 on the location of the planned natural gas receiving terminal for the Tamar and Dalit offshore fields.

The council will also ask that an offshore option be reconsidered (which had been rejected earlier) instead of an onshore terminal, for which it has been

considering six options for the location. The delay is seen as a victory for environmental groups and for the Hof Hacarmel regional council that have been opposing the location of the terminal at Dor.

The delay in the decision would also result in delaying the development of the Tamar field and the delivery of gas to Israeli customers.

Texas-based Noble Energy Incorporated and its Israel-based partners Delek Exploration, Avner Oil and Gas, Isramco and Dor Gas have set a 2012 target for delivering gas from the field. However, the National Infrastructure Ministry has estimated that the gas will not reach the market before 2014. In May 2010, Petroleum Development Consultants Limited (PDC), on behalf of the National Infrastructure Ministry, estimated that the cost of producing natural gas from the Tamar field located off Israel's northern Mediterranean coast is at least

USD3.8 billion as compared with the USD2.8 billion estimated by the Tamar partners. PDC also stated that the cost could be even higher by USD200–250 million if the onshore receiving terminal is not located at Dor, but at the existing terminal in Ashdodor at an offshore terminal.

The pressure at Tamar, which is among the highest in the world, is the major reason for the higher-than-expected cost of developing the field. Hence, PDC has suggested the construction of an offshore facility to reduce the gas pressure before the arrival of the gas onshore, in addition to an onshore gas pressure reduction facility at the receiving terminal.

Blue Stream II pipeline unlikely to go to Israel

Turkey has shelved discussions on extending the Blue Stream II pipeline to Israel after a deadly raid by Israeli

commandos on a Gaza-bound aid ship operated by a Turkish charity. Even Russia has stated that the pipeline will not be extended to Israel (citing financial reasons) though gas would be supplied to countries such as Lebanon and Syria.

Trans-Saharan gas pipeline to ship 25 Bcm of gas from Nigeria

Nigeria will transport approximately 25 Bcm of gas per annum through the proposed USD10 billion Trans-Saharan gas pipeline to Europe. This 4,400 km pipeline, due to be operational in 2015, will travel from the Warri region in Nigeria to Hassi R. Mel in Algeria, from where it will be connected to other pipelines for gas supply to Europe.

Nigeria-based Nigerian National Petroleum Corporation has 90 per cent stake in the pipeline and Algeria-based Sonatrach has the balance 10 per cent stake. ♦

## Global Gas Transport Report

*Information & analysis on global gas transport and storage*

The mission of **Global Gas Transport** is simple and modest - to provide decision makers with up-to-date and comprehensive information and analysis on the global natural gas transport and storage industry.

**Global Gas Transport** keeps you informed on all the key developments, trends, and issues in the sector. It tracks major projects, contracts, and investments. It profiles leading natural gas pipeline and storage facility operators and discusses their strategies. It reports on regulatory initiatives and examines their implementation. It provides the latest available data and statistics. It also features the views and perspectives of experts and top industry players.

Our service package consists of three elements **Global Gas Transport Report** (a monthly newsletter), **Global Gas Transport Weekly** (a weekly update) and [www.globalgastransport.info](http://www.globalgastransport.info) (an information-enriched website).

The **Global Gas Transport Report**, the monthly newsletter, comprises 10 distinct sections:

- **News:** Latest news from across the world, with sub-sections on North America, Latin America, Asia, Europe and Middle East & Africa
- **Features:** Analytical, insightful and topical write-ups on major trends and developments
- **Tenders & Contracts:** Key information on open tenders and contracts from across the world
- **Transport/ Storage Operator:** Profile of a pipeline transport or storage facility operator, covering its history, current status, and future plans
- **Policy Review:** An examination of recent policy and regulatory initiatives
- **Deal Watch:** Developments in debt, equity, M&A deals
- **Project Update:** Current status of key projects
- **Spotlight:** A detailed look at a specific topic or area of interest
- **Company News:** News on equipment and service providers
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## TransCanada Corporation

### Gaining strength by nurturing a focused portfolio

With more than USD40 billion in assets, TransCanada is a leading North American energy infrastructure company, with interests in pipelines, natural gas storage facilities and power generation. Its businesses are organised into two segments: pipelines and energy. While the pipeline business consists of the operation of pipeline networks, the energy business includes power operations, natural gas storage and LNG operations.

#### Pipeline Infrastructure

The company has 60,000 km of wholly owned and 8,800 km of partially owned gas pipeline networks in Canada, the US and Mexico. These pipelines, which link gas supplies (from western Canada, the US mid-continent and the Gulf of Mexico) to North American markets, transport approximately 20 per cent of the natural gas consumed in the continent.

In North America, the company's Alberta system gathers a large quantum of natural gas (over 66 per cent in 2009) produced in the Western Canada Sedimentary Basin (WCSB) and transports it to eastern Canada and to the US West, Midwest and Northeast through three wholly owned pipeline systems (Canadian Mainline, GTN and Foothills), and through partially owned natural gas pipeline systems (Great Lakes, Iroquois, Portland, Trans Quebec and Maritimes (TQM) Pipeline, Northern Border and Tuscarora). Some of these pipeline systems are held through TransCanada's 38.2 per cent stake in TC PipeLines, which it acquired in 2007 through its wholly owned subsidiary, TransCan Northern.

In addition, the ANR system transports natural gas from producing fields located primarily in Texas, Oklahoma, the Gulf of Mexico and Louisiana to markets located in Wisconsin, Michigan, Illinois, Ohio and Indiana. It also connects with numerous other natural gas pipelines.

TransCanada also operates in Mexico through its Tamazunchale and North Baja pipelines, and is in the process of expanding its footprint in the region with the Guadalajara pipeline, which is under construction.

#### Upcoming Projects

With the purchase of ConocoPhillips's stake in August 2009, TransCanada became the sole owner of the Keystone crude oil pipeline. The company is constructing Phase 2 of the approximately 6,200 km Keystone pipeline, which is expected to transport 1.1 million barrels of crude oil per day from Alberta to the US Midwest markets at Wood River and Patoka (Illinois), Cushing (Oklahoma), and the US Gulf Coast markets. It expects to deliver crude oil to refineries in Illinois later this year. The company crossed a key milestone in March 2010 when the National Energy Board (NEB) approved its application to construct and operate the Canadian portion of the Keystone Gulf Coast expansion project.

The company also received NEB approval to construct and operate the 77 km Groundbirch pipeline connecting new natural gas supplies in the Montney shale formation in northeast British Columbia. It expects to complete the project by end 2010.

Finally, in the pipeline segment, the Bison project, which has long-term shipping commitments of 407 MMcf per day, received the Federal Energy Regulatory Commission (FERC) certificate in April 2010. Construction is expected to commence in the second quarter of 2010, with an expected in-service date in December 2010.

TransCanada, along with ExxonMobil, is also involved in the USD41 billion, 2,700 km Alaska pipeline project, which extends from a new natural gas treatment plant at Prudhoe Bay, Alaska to Alberta. It is amongst the largest and most expensive civil engineering projects ever undertaken in North America. TransCanada is holding separate but coordinated open seasons in Alaska and Canada, from April 30 to July 30, 2010. There has been significant interest in booking capacity but a deal is yet to be finalised.

#### TransCanada Pipeline System

Pipeline system	Length km (miles)	Average throughput 2009 (Bcf per day)
<b>Wholly owned</b>		
Alberta System	23,905 (14,854)	9.7
Canadian Mainline	14,101 (8,762)	5.6
Foothills System	1,241 (771)	3.3
ANR Pipeline	17,000 (10,563)	4.3
GTN	2,174 (1,351)	2.2
Tamazunchale Pipeline	130 (81)	0.2
<b>Partially owned</b>		
Great Lakes Transmission Company (53.6 per cent direct ownership; 19.8% indirect ownership)	3,404 (2,115)	2.0
Iroquois Gas Transmission System (44.5 per cent ownership)	666 (414)	1.0
North Baja (42.6 per cent indirect ownership)	129 (80)	0.3
Northern Border Gas Transmission System (21.3 per cent indirect ownership)	2,250 (1,348)	1.7
Portland Natural Gas Transmission System (61.71 per cent direct ownership)	474 (295)	0.1
Trans Quebec and Maritimes Pipeline (TQM) (50 per cent direct ownership)	572 (355)	0.5
Tuscarora Gas Transmission (42.6 per cent indirect ownership)	491 (305)	0.1

Source: TransCanada Corporation

According to industry experts, the company is unlikely to get a deal that covers the cost of construction as the owners of the gas need to structure a price for shipping that is low enough for them to make money on what they pump out of the ground. The economics of gas pipeline construction is unlikely to be favourable until the price of gas reaches about USD8 per MMBtu. It is now just over USD4 per MMBtu.

### Energy Infrastructure

The energy segment builds, acquires, operates and owns interests in power plants in Canada and in the US. TransCanada's energy business has grown to more than 11,700 MW in 2009 from 754 MW in 1999. Its power generation portfolio of primarily low-cost, base-load and long-term contracted facilities comprises a total of 20 plants in Alberta, Arizona, eastern Canada, New England and New York City.

The company's Western Power business comprises approximately 2,600 MW of power supply in Alberta and in the western US. This supply portfolio includes some of the lowest-cost and most competitive generation in the Alberta market area. The Eastern Power business consists of approximately 2,900 MW of power generation capacity, including facilities under construction.

TransCanada's US power assets have approximately 3,800 MW of power generation capacity, including facilities under construction. The operating assets in the US power portfolio consist of Ravenswood, TC Hydro, OSP and Phase I of Kibby Wind. Phase 2 of Kibby Wind is under construction and is expected to be operational in the third quarter of 2010.

### Natural Gas Storage

TransCanada is one of the continent's largest providers of gas storage and services, with about 380 Bcf of storage capacity. In 2003, TransCanada developed a significant non-regulated natural gas storage business in Alberta. It currently owns (or has rights to) 129 Bcf or approximately one-third of the natural gas storage capacity in the province. This includes the following:

- wholly owned Edson facility (working gas storage 50 Bcf, maximum injection/withdrawal capacity 725 MMcf per day);
- 60 per cent ownership interest in the independent storage facility CrossAlta located near Crossfield in Alberta (working gas storage 68 Bcf, maximum injection/withdrawal capacity 550 MMcf per day); and
- long-term contract up to 2030 subject to early termination rights in 2015 for storage capacity from a third party (working gas storage 38 Bcf).

Meanwhile, in 2007, TransCanada, along with American Natural Resources Company, acquired ANR Storage Company, which gave a further boost to its gas storage business. ANR owns and operates regulated underground natural gas storage facilities in Michigan, with a total working capacity of 250 Bcf available to customers on the Great Lakes Gas Transmission and ANR Pipeline systems. Its revenues are accounted for in the pipeline segment.

As of end December 2009, TransCanada had contracted approximately 75 per cent of the total 129 Bcf of working gas storage capacity in 2010 and 51 per cent of storage capacity in

2011. Earnings from third-party storage capacity contracts are recognised under the terms of the contracts.

Enstar Natural Gas, Alaska's regional gas utility, had been negotiating with TransCanada subsidiary ANR Storage about developing a large gas storage facility on the Kenai Peninsula, south of Anchorage. However, the negotiations ended as the companies were unable to reach an agreement on the commercial terms.

### Capital Programme

The company is currently halfway through a USD22 billion capital programme that entails the implementation of a number of low-risk projects over the next five years. The projects include the Keystone pipeline system, the Alberta System's North Central Corridor project and the Bison pipeline. As of March 2010, TransCanada had invested approximately USD11 billion of this capital programme. Upon completion of the programme, these assets are expected to generate additional annual earnings before interest, taxes, depreciation and amortisation (EBITDA) of approximately USD2.5 billion.

The capital programme is being funded through an internally generated cash flow, the dividend reinvestment programme and capital markets.

### Financial Performance

TransCanada's net income was USD1,380 million in 2009, 4 per cent less than its net income of USD1,440 million in 2008. This may be attributed to weaker power prices and higher business development costs associated with advancing the Alaska pipeline project. Of the total net income, 53 per cent came from the pipeline segment and 47 per cent came from energy segment. The funds generated from operations increased to USD3.1 billion in 2009 from USD3 billion in 2008.

The total capital expenditure for the pipeline and energy segments in 2009 was USD6.3 billion. Of this, USD3.9 billion was invested for pipeline projects, including the construction of the Keystone and Bison pipeline projects, and the expansion of the Alberta system. Further, USD1.5 billion was invested in energy projects. The acquisition of ConocoPhillips's remaining interest in Keystone cost USD0.9 billion. The total assets of TransCanada increased by USD4.4 billion in 2008 to USD43.8 billion in 2009, mainly due to investments made in the pipeline and energy capital projects.

Going forward, the company is clearly on a strong growth path and is well positioned to complete its ambitious capital investment programme, driven by the strong financial results posted by its pipeline, power and gas storage businesses against the backdrop of a world economy that is slowly moving towards recovery. ♦

Financial Performance 2009			
	Pipeline segment	Energy segment	Total (USD million)
EBITDA	3,093	1,131	4,107*
Revenue	4,729	4,237	8,966
Net income	464	916	1,380

\*sum of pipeline segment and energy segment minus corporate sector  
Source: TransCanada Corporation

## Intra-Gulf Gas Transport

### *Policy on domestic gas prices drives investments in gas infrastructure*

Natural gas consumption in the Middle East is expanding at a rate of over 7 per cent per year, which is more than double the global rate of 2.6 per cent. Gas is rapidly gaining geo-political importance as it continues to grow from being a marginal fuel consumed in disconnected regional markets to being a fuel that is transported across great distances for consumption in various sectors of the economy.

#### Availability of gas in the Gulf region

The Gulf Cooperation Council (GCC) countries account for almost 25 per cent of the world's proven reserves of natural gas. Qatar, Saudi Arabia, United Arab Emirates (UAE) and Kuwait have natural gas reserves that are ranked third, fourth, fifth, and twentieth, respectively. In addition, Saudi Arabia, UAE and Qatar are ranked tenth, eleventh, and nineteenth in terms of production.

Despite the enormous reserves in the region, gas is in short supply in most GCC countries. Gulf governments have traditionally supplied inexpensive gas associated with oil production for domestic use. A combination of factors such as rising domestic demand due to strong economic growth, government-sponsored industrialisation and low domestic gas prices has contributed to a crisis of gas availability.

Low domestic gas prices are making domestic markets less attractive than global export markets. Growing domestic demand in such a scenario has pushed gas-rich countries to import gas for local consumption. Oman and UAE are perhaps the most prominent examples of gas-exporting countries that simultaneously (and ironically) import gas for domestic use.

Oman has adopted a strategy that requires it to secure gas imports in order to extend the life of domestic gas reserves, while allowing it to fulfil its liquefied natural gas (LNG) export commitments. The country's ambitious 'Oman 2020' initiative promotes the use of natural gas for economic growth.

Low domestic prices make it more attractive for the UAE to import gas rather than to develop its own supply and distribution network. The past few years have seen the UAE shift to natural gas-fired power plants and to transform the Taweelah commercial district into a natural gas-based industrial zone.

According to the Abu Dhabi Economic Vision 2030, the UAE government estimates that the dependency of the government sector on oil could be reduced to 40 per cent by 2020 and to 35 per cent by 2030.

The only country that enjoys an absolute abundance of gas is Qatar, which is positioning itself to take advantage of the worldwide increase in gas demand, and subsequently the increase in gas prices. The small nation is strategically placed in the Gulf region, located at the tip of Saudi Arabia, where it straddles Bahrain and the UAE. Most of Qatar's natural gas lies in the largest field of non-associated gas (natural gas independent of oil) in the world, the offshore North Field.

#### GCC regional gas grid

The pan-GCC pipeline, envisioned at the November 1989 GCC summit meeting, was the most ambitious domestic Middle Eastern gas project ever undertaken. As originally conceived, a transnational pipeline was to connect the national gas grids of Saudi Arabia, Kuwait, Bahrain and the UAE into a single integrated bloc, with the North Field as the supply source.

Despite the initial optimism, political tensions, minor diplomatic squabbles and border disputes derailed the proposed project. Some GCC countries expressed dismay at Qatar's increasingly close relationship with Israel. Kuwait's participation lagged because of the reconstruction efforts it undertook after Operation Desert Storm. Saudi Arabia found its own significant domestic gas discoveries.

#### The Dolphin project

The Dolphin project is a much reduced form of the originally planned and more ambitious pan-GCC pipeline. It brings together three GCC nations—the UAE, Qatar and Oman—into an integrated gas network for the first time. The project has been designed to produce and supply large quantities of natural gas from Qatar to the UAE and Oman for 25 years, beginning in 2007. Dolphin Energy, the developer and operator for the pipeline, is 51 per cent owned by the Government of Abu Dhabi through the wholly owned Mubadala Development Company, and 24.5 per cent each by Total of France and Occidental Petroleum of the USA.

Qatar was the force behind the creation of the Dolphin project. Dolphin's primary purpose was not merely commercial. It provided an opportunity to Qatar to strengthen its political links with the UAE and Oman and undertake a major initiative without the traditional Saudi Arabian input.

#### Future challenges

With the Dolphin project, not only is the Qatari state losing substantial revenues from profits that it could have made on LNG exports but is also possibly subsidising industrial development in the UAE and Oman. Qatar's willingness to agree to low prices reflects its desire to forge political and economic links with regional countries independent of the GCC, perhaps even extending to the idea of establishing a Southern Gulf Union. However, it is not certain that the same logic could be applied to the future expansion of Dolphin. Indeed, higher prices for intra-regional gas trade are expected to become the norm.

Qatar's decision to extend the moratorium until at least 2012 implies that an additional long-term contract for Qatari gas cannot be realised before 2014. Qatar has already advised Oman and the UAE that future North Field gas deliveries through Dolphin will be priced at a minimum of USD4 per MMBtu. Tensions between Qatar and Iran over the North Field's maritime boundary may also lead to political conflict as both countries seem determined to produce as much natural gas as possible to pre-empt the other side from unfairly taking its gas.

The policy on domestic gas prices will determine the future of gas infrastructure development in the Gulf region and influence the viability of the GCC pipeline project, which remains a long-standing ambition of the GCC members. ♦

## Nabucco Pipeline Project

### *Recent developments may turn fate of project*

With an approximate budget of EUR8 billion, a length of 3,300 km, and a transport capacity of 31 Bcm per annum, the Nabucco pipeline is envisaged as one of Europe's main strategies in its effort to secure energy resources as well as to reduce its energy dependence on Russia by diversifying its natural gas supply. The Nabucco pipeline, part of the Trans-European Networks–Energy (TEN–E) programme, will run from Erzurum in Turkey via Bulgaria, Romania and Hungary to Baumgarten, a major natural gas hub in Austria. In Bulgaria, Nabucco will have interconnections with the national gas network, and will have two off-take systems, compressor stations and pig stations.

The project is being developed and operated by a special project company, the Nabucco Gas Pipeline International, GmbH. The shareholders of the company are: OMV (Austria), MOL (Hungary), Transgaz (Romania), Bulgargaz (Bulgaria), BOTAS (Turkey) and RWE (Germany). Each shareholder has a 16.67 per cent stake in the company. In addition, as of July 2010, Abu Dhabi-based International Petroleum Investment Company (IPIC) has also shown interest in taking an equity stake in the project.

### **Stalled Progress**

While construction is expected to begin in 2011 and be completed in 2014, the project has been dogged by doubt and uncertainty since its inception almost a decade ago in 2002. Perhaps most importantly, there is the issue of financing the pipeline, which is expected to cost about EUR7.9 billion. This is due to the lack of internal consensus on financial support for the pipeline. Some European countries, notably Germany, France, Italy and Greece, are doubtful about the viability and necessity of the project and have been somewhat reluctant to allocate European Union (EU) funds for Nabucco, thus slowing down the project's progress.

Second, the pipeline needs to secure gas supplies. As the Nabucco partners are not simultaneously natural gas producers, all of the pipeline's capacity has to be contracted elsewhere, as in the Caspian Sea area or in the Middle East.

However, due to political instability (such as disagreements between Turkey and Azerbaijan over gas pricing) and Russia's preferential links with natural gas-exporting states in the Caspian region, the Nabucco consortium's ability to attract gas suppliers has been limited; this factor threatens the viability of the project.

Industry experts have serious doubts about the reliability of gas supply from Turkmenistan and Azerbaijan, from where Nabucco is targeting more than half of the planned 31 Bcm per year capacity. Nabucco's shareholder RWE has also pushed back the expected date of the signing of an important supply deal with Turkmenistan from the first to the second half of 2010. All these events clearly do not augur well for the project.

On the demand side, securing and maintaining a share of Europe's natural gas market is a formidable task. This has become even more difficult due to the current global economic

crisis, which has affected European economic growth and energy consumption. In addition, the partners have failed to come to an agreement on the economic terms of natural gas transit. Turkey, where the longest part of the pipeline is planned to be located (2,000 km), has been insisting on extracting a 15 per cent discount on the gas price.

Other issues also need to be addressed. For instance, with the involvement of three members of the Nabucco consortium (OMV, MOL, and Bulgargaz) in the rival South Stream pipeline (see below), the possibility of a conflict of interest, and even the risk of termination of collaboration, on Nabucco on the part of these three companies cannot be ruled out. Questions have been raised over whether European countries are too diversified in their interests to undertake the Nabucco project.

### **Alternatives gaining traction**

Currently, two pipeline projects promoted by Russian gas giant Gazprom, Nord Stream and South Stream, are challenging the Nabucco pipeline.

The Nord Stream pipeline links Russia with northern Germany (travelling under the Baltic Sea) through a 1,200 km pipeline, thus reducing risks and possible problems with transit countries such as Ukraine and Poland. The project consortium, which has already secured several long-term contracts for the sale of gas, will deliver 55 Bcm of natural gas annually to Europe.

In contrast to the Nabucco project, Nord Stream has been able to secure all necessary permits as well as arrange for the EUR7.4 billion needed for its construction. Gazprom began construction in April 2010 and expects the pipeline to be operational in 2011, years before Nabucco is ready.

The 900 km South Stream pipeline, which will be built jointly by Gazprom and Italy-based Eni, will eventually take 30 Bcm of Russian natural gas annually. It aims to link Gazprom's Siberian gas fields with Europe, with the pipeline landing at Varna in Bulgaria. South Stream poses a more direct threat as it puts the Nabucco pipeline at risk of irrelevance given that it, coincidentally, targets the same customers that Nabucco plans to serve. It will also undermine Turkey's role as a potential competitor in supplying Azerbaijani (and later Iranian and Iraqi) gas to Europe via the South Caspian pipeline and as a vital energy bridge through Nabucco. In a significant development, the project has already secured the supply of gas necessary to fill the pipeline, and talks for long-term contracts are well under way.

Clearly, South Stream is a more realistic project vis-à-vis Nabucco. In 2015 (by the time it goes operational, its capacity is expected to be four times the anticipated initial capacity of Nabucco. As a result of the above-mentioned reasons, the EU, despite having pledged EUR200 million for the Nabucco project, has declared its willingness to support the South Stream pipeline, and has also been looking at other alternatives to the Nabucco pipeline. Meanwhile, another viable replacement for the Nabucco project, the Azerbaijan–Georgia–Romania–Interconnection (AGRI) project, has also come up on the industry's radar. In April 2010, Romania, Azerbaijan and Georgia took a major step towards the implementation of a substitute energy distribution network by signing a new agreement pertaining to the gas sector.

Under the current agreement, the details for exporting gas to the rest of the EU region via Romania have been finalised. If properly expanded, this new trans-Black Sea shipping route can be covered under the current agreement between Azerbaijan and Russia because Azerbaijan owns the terminal facilities.

On the other side of the Black Sea, natural gas can be shipped from Constanta in Romania via the existing pipelines into the original system envisioned for Nabucco, and can also be shipped in barges going up the Danube river and into Europe's canal-and-river system, thereby enhancing Europe's energy security and diversifying suppliers more rapidly than had been anticipated originally.

Moreover, given that Azerbaijan is ready to commit the gas originally earmarked for Nabucco and also given that Turkmenistan is willing to reconsider its support for future exports via a Trans-Caspian pipeline, the Azerbaijan-Georgia-Romania route has become a more viable, faster and cheaper alternative to Nabucco.

This project has the potential to make Romania an energy hub in its geographical region within five years. It also has profound ramifications for limiting Turkey's ability to hold the EU hostage in the area of energy supplies passing through the country's territory, thereby offering relief from energy pressures in Europe.

Table 1 provides a comparison of Nabucco pipeline with other natural gas pipeline projects in the region.

Recent positive developments

The Nabucco project has moved at a snail's pace because of political disputes over routing, funding and gas supplies. However, a significant breakthrough occurred in 2009 when the five countries involved in the project (Austria, Bulgaria, Hungary, Romania and Turkey) signed an intergovernmental accord to build the pipeline. This development finally gave the project the political support it urgently needed. In addition, as a result of some significant developments (discussed below)

over the last few months, hope has risen anew about the Nabucco project becoming a reality.

First, Turkey and Azerbaijan have reached an agreement on the terms and conditions for the sale and transit of Azerbaijani gas. This makes it increasingly likely that an open season for the proposed Nabucco gas pipeline and the final sanction for the giant Shaikh Deniz gas field's second phase will go ahead this year. The Shaikh Deniz partners will now concentrate on securing gas supply agreements with shippers wishing to secure access to Azerbaijani gas by means of the Nabucco pipeline.

Second, northern Iraq (regarded as a key gas supplier for the Nabucco project) can provide 14-15 Bcm of natural gas annually. These developments have played a key role in making the Nabucco pipeline feasible.

The project has already secured approximately 12 Bcm of natural gas supplies from Azerbaijan, but given its requirement of 31 Bcm for operations, negotiations are being held to obtain more gas supplies.

With progress being made on the gas supply issue, the project developers are confident that funding will not be a hurdle once the transportation contracts for the pipeline are finalised. This is because the Nabucco consortium intends to launch the execution phase of the open season process by late 2010 or early 2011, and the transportation contracts are likely to be finalised this year.

During the execution phase, potential shippers will be invited to express their interest in the project and to make firm bookings for pipeline transport capacity. This phase includes a separate shareholder shipper bid phase and a separate all shipper (i.e. including third party as well as shareholder shipper) bid phase. The first step of the open season will be addressed to the Nabucco shareholders for an amount up to 15 Bcm per year (50 per cent of Nabucco's transportation capacity). In the second step, the remaining 50 per cent capacity will be offered to external companies ("third party access"), offering them the same conditions and transparency as provided to the Nabucco shareholders.

**Table 1: A comparison of Nabucco with other proposed pipeline projects in the region**

Particulars/Pipeline	Nord Stream	South Stream	Nabucco	AGRI
<b>Length</b>	1,200 km	900 km	3,300 km	NA
<b>Route</b>	Russia-Germany	Russia-Bulgaria-Greece-Italy-Serbia-Hungary-Croatia-Slovenia-Austria	Turkey-Bulgaria-Romania-Hungary-Austria	Azerbaijan-Georgia-Romania
<b>Capacity</b>	55 Bcm	63 Bcm	31 Bcm	7 Bcm
<b>Shareholders</b>	Gazprom (51 per cent stake), BASF and E.ON (both have 20 per cent), and N.V. Nederlandse Gasunie (9 per cent)	Gazprom, Eni, Bulgargaz, Srbijagas, Hungarian development Bank MFB, Geoplin Plinovodi	OMV (Austria), MOL (Hungary), Transgaz (Romania), Bulgargaz (Bulgaria), BOTA <sup>a</sup> (Turkey) and RWE (Germany) with 16.67 per cent stake each	NA
<b>Expected date of completion</b>	Construction began in April 2010 and expected to be completed in 2011	Construction is expected to begin sometime in 2010 and complete by December 31, 2015	Construction expected to begin in 2011 and complete in 2014	NA
<b>Cost</b>	EUR 14.8 billion	EUR 19-24 billion	EUR 8 billion	EUR 4-6 billion

Source: Global Gas Transport Research

The final investment decision on the project is expected to be taken in late 2010. The project consortium plans to settle all financial issues by mid-2011.

In another important development, in June 2010, the Turkish parliament ratified an agreement to construct the Nabucco gas pipeline to deliver Caspian gas to Europe. The agreement, which will become effective from August 1, 2010, will prioritise the Nabucco project vis-à-vis the South Stream project. Recently, similar agreements in Hungary and Bulgaria have improved the chances of the Nabucco pipeline becoming a reality.

Meanwhile, spurred by these developments, Nabucco Gas Pipeline International, the operator of the project, launched the pre-qualification process valued at around EUR3.5 billion. It is currently in the process of assessing the tenders for the pre-qualification process. Invitations for pre-qualification were sent to potential suppliers for pipelines, bents, compressors

and other material needed for the construction phase scheduled for late 2011. The pre-qualification process enables the Nabucco consortium to thoroughly assess the supplier market on a worldwide basis before launching the respective tenders.

The project consortium has also completed the selection of the route corridor for the first phase of the project. The right-of-way and permission process for environmental and social assessment as well as the process for construction permits in the Nabucco countries are currently underway.

While all these developments are clearly a substantial advance in Nabucco's progress and could potentially put to rest many doubts regarding its sustainability, it remains to be seen whether the project will be able to secure the gas contracts and funding needed to ensure its viability. A clear roadmap for the Nabucco project is likely by early next year.

1 EUR (Euro) = 1.25 USD ♦

### Box 1: Nabucco Shareholders

**Bulgarian Energy Holding (BEH):** BEH is a joint stock company with 100 per cent Bulgarian state ownership. Its subsidiary, Bulgartransgaz, is the proprietor and operator of the gas-transmission network in the territory of the country for the transmission of natural gas to Turkey, Greece and Macedonia. The total length of the main gas pipelines is over 2,645 km, out of which over 1,700 km of gas pipelines form the national gas transmission network.

The gas transmission network for local consumers and for transit transmission of natural gas also includes 10 compressor stations and 68 gas pressure-reduction stations. A total of 124 Bcm of natural gas was transited by Bulgartransgaz to the countries of the Balkan region in 2009. The company also possesses an underground gas storage (UGS) facility. Meanwhile, Bulgargaz possesses the only natural gas public supply licence in Bulgaria. In 2009, Bulgargaz sold 2,530 Bcm of natural gas in the domestic market.

**BOTAS:** Turkey's state-owned company, headquartered in Ankara, was established in 1974 to transport Iraqi crude oil to the Gulf of Iskenderun. It operates crude oil and natural gas systems throughout the country. It operates around 12,000 km of gas pipeline in the country.

**MOL:** A leading international integrated and independent oil and gas company, headquartered in Budapest, it has operations in EMEA (Europe, the Middle East and Africa) and the CIS (Commonwealth of Independent States) member states.

MOL owns five refineries in Hungary, Slovakia, Croatia and Italy, with a refinery capacity of 23.5 million tonnes per annum. The MOL Group is active in regional gas transmission and trading, and operates over 1,600 filling stations in Europe and runs a nearly 5,500 km long, high-pressure natural gas pipeline network in Hungary. In 2009, MOL established an UGS facility.

**OMV Gas & Power:** The company, OMV's central company for the gas and power business, comprises three business units—Supply, Marketing & Trading, and Gas Logistics & Power. With an exchange volume of 23 Bcm in 2009 and with the expansion of the service portfolio through gas-exchange activities, the Central European Gas Hub has developed into one of the most important gas hubs in continental Europe. In addition to supplying gas to Austria, the OMV gas pipeline system carries gas to Germany, Italy, France, Slovenia, Croatia and Hungary.

**RWE:** The company, among Europe's five leading electricity and gas companies, is active in the generation, trading, transmission and supply of electricity and gas. RWE Supply & Trading is one of the leading European energy trading companies. With an annual gas procurement volume of 50 Bcm, it is also among the leading companies in the European gas industry. It has a European focus and acts as the RWE Group's hub for all tradable commodities such as power, gas, coal, CO2 certificates and oil in their physical and derivative forms. In addition, the company optimises the complete gas portfolio of the RWE Group, from short- to long-term procurement to delivery commitments.

**TRANSGAZ:** The Romanian national gas transmission company was established in April 2000 following the legal unbundling of Romgaz, the former vertically integrated national gas company. The main operations of Transgaz are natural gas transmission, dispatching and international transit, as well as research and design in the natural gas transmission field. Currently, the company operates over 13,000 km of pipelines. The registered capital of Transgaz is owned 73.5 per cent by the Romanian state (represented by the Ministry of Economy and Finance), 15 per cent by the Proprietatea Fund, and 10 per cent was listed on the Romanian stock exchange in January 2008 and another 1.5 per cent in May 2009. The turnover of the company in 2009 was EUR280.2 million.

Source: Global Gas Transport Research

## USA: Largest 30 interstate natural gas pipeline systems by system capacity, 2008

The US natural gas pipeline network is a highly integrated transmission and distribution grid that can transport natural gas to and from nearly any location in the lower 48 States. The interstate portion of national natural gas pipeline network represents about 71 percent of all natural gas mainline transmission mileage installed in the US. The 30 largest interstate pipeline companies own about 77 percent of all interstate natural gas pipeline mileage and about 72 percent of the total capacity available within the interstate natural gas pipeline network. The following is data on 30 largest US interstate natural gas pipeline systems ranked by system capacity (MMcf per day).

Table 1: USA's largest 30 interstate natural gas pipeline systems, 2008

Pipeline system name	Primary supply regions	States in which pipeline operates	System capacity/ <sup>1</sup> Mileage
Columbia Gas Transmission Company	Southwest, Appalachia	DE, PA, MD, KY, NC, NJ, NY, OH, VA, WV	9,350 / 10,365
Transcontinental Gas Pipeline Company	Southwest	AL, GA, LA, MD, MS, NC, NY, SC, TX, VA, GM	8,466/ 10,450
Northern Natural Gas Company	Southwest	IA, IL, KS, NE, NM, OK, SD, TX, WI, GM	7,442/ 15,874
Texas Eastern Transmission Corporation	Southwest	AL, AR, IL, IN, KS, KY, LA, MI, MO, MS, NJ, NY, OH, OK, PA, TX, WV, GM	7,332/ 9,212
ANR Pipeline Company	Southwest	AR, IA, IL, IN, KS, KY, LA, MI, MO, MS, NE, OH, OK, WI, GM	7,129/ 10,600
Tennessee Gas Pipeline Company	Southwest, Canada	AR, KY, LA, MA, NY, OH, PA, TN, TX, WV, GM	6,686/ 14,463
Dominion Transmission Company	Southwest, Appalachia	PA, MD, NY, OH, VA, WV	6,655/ 3,505
Gulf South Pipeline Company	Southwest	AL, FL, LA, MS, TX, GM	6,260/ 6,886
El Paso Natural Gas Company	Southwest	AZ, CO, NM, TX	6,182/ 10,302
Centerpoint Gas Transmission Company	Southwest	AR, KS, LA, OK, TX	5,385/ 6,374
Northwest Pipeline Corporation	Canada, Central	CO, ID, OR, UT, WA, WY	4,950/ 3,880
Natural Gas Pipeline Company of America	Southwest	AR, IA, IL, KS, LA, MO, NE, OK, TX, GM	4,848/ 9,306
Colorado Interstate Gas Company	Central, Southwest	CO, KS, OK, TX, WY	4,099/ 4,143
Texas Gas Transmission Corporation	Southwest	AR, IN, KY, LA, MS, OH, TN	4,065/ 5,671
Southern Natural Gas Company	Southwest	AL, GA, LA, MS, SC, TN, TX, GM	3,967/ 7,635
Algonquin Gas Transmission Company	Southwest	CT, MA, NJ, NY, RI	3,347/ 1,128
Questar Pipeline Company	Central	CO, UT, WY	3,192/ 1,858
Trunkline Gas Company	Southwest	AR, IL, IN, KY, LA, MS, TN, TX, GM	3,025/ 4,202
Great Lakes Gas Transmission Company	Canada	MI, MN, WI	2,958/ 2,115
Panhandle Eastern Pipeline Company	Southwest	IL, IN, KS, MI, MO, OH, OK, TX	2,840/ 6,445
Southern Star Central Pipeline Company	Central	CO, KS, MO, NE, OK, TX, WY	2,801/ 5,803
Wyoming Interstate Gas Company	Central	CO, WY	2,736/ 848
Gas Transmission Northwest Corporation	Canada	ID, OR, WA	2,636/ 1,356
Northern Border Pipeline Company	Canada	IA, IL, IN, MN, MT, ND, SD	2,626/ 1,400
Transwestern Gas Company	Southwest, Central	AZ, CO, NM, TX	2,439/ 2,387
Columbia Gulf Transmission Company	Southwest	KY, LA, MS, TN, GM	2,386/ 4,124
National Fuel Gas Supply Company	Canada, Appalachia	NY, PA	2,312/ 1,481
Florida Gas Transmission Company	Southwest	AL, FL, LA, MS, TX, GM	2,217/ 4,889
Alliance Pipeline Company (US)	Canada	ND, MN, IA, IL	2,053/ 888
Kern River Gas Transmission Company	Central	CA, NV, UT, WY	1,833/ 1,680
Sub-total			132,217/ 169,270
Other interstate systems	—	—	50,673/ 48,036
<b>Total</b>			<b>182,890/ 217,306</b>

Source: Energy Information Administration, Natural Gas Transportation Information System, Natural Gas Pipeline Projects Database, as of December 31, 2008.  
Notes: 1 - Capacity figures are presented as volumetric (MMcf per day = million cubic feet per day); GM = Gulf of Mexico

## USA: Details of completed natural gas pipeline projects by region, 2008

Pipeline construction activity typically follows long-term trends in the natural gas industry given the lengthy regulatory approval process and the substantial capital investment requirement. The pipeline construction activity recorded in 2008 reflects natural gas business climate earlier this decade, when domestic production was declining and industry began searching for alternatives. The following table presents region-specific distribution of natural gas pipeline projects completed in year 2008.

Table : USA's completed natural gas pipeline projects, 2008

State of origin/ State of termination	Pipeline project name	Type of project	Estimated cost/Miles/ Additional Capacity
<b>Southeast Region</b>			
AL/AL	Gulf South - Mobile Compressor Expansion	Compression	23 / 0 / 250
MS/AL	Gulf South - Southeast Expansion	Extension	1296 / 111 / 1272
MS/AL	Southern Pines - Florida /Transco Header	New pipeline	52 / 26 / 1000
LA/AL	Southeast Supply Header Pipeline	New pipeline	842 / 270 / 1140
AL/FL	Gulfstream - Phase 4 (Bartow)	New pipeline	117 / 18 / 155
FL/FL	Gulfstream - Bayside Lateral	Lateral	30 / 28 / 200
FL/FL	Gulfstream - Phase 3 a Expansion	Extension	129 / 34 / 185
FL/FL	Florida Gas - East Leg Expansion	Looping	16 / 7 / 10
GA/GA	SONAT - Cypress Phase 2	Compression	21 / 0 / 100
KY/KY	Equitrans - Big Sandy Pipeline Phase I	New pipeline	60 / 68 / 70
KY/KY	Equitrans - Big Sandy Pipeline Phase II	Compression	20 / 0 / 60
MS/MS	Southern Pines - Destin Line	New pipeline	6 / 3 / 1000
MS/MS	Gulf Crossing - Mississippi Loop	Looping/Compression	25 / 18 / 1000
MS/MS	Mississippi Hub - Storage Lateral	Lateral	0 / 11 / 1200
MS/MS	Monroe Storage Field - TETCO Lateral	Lateral	42 / 23 / 465
TX/MS	Gulf South - Texas to Mississippi Expansion	New pipeline	767 / 243 / 1700
VA/NC	East Tennessee - CNX Increase	Compression	5 / 0 / 90
VA/NC	East Tennessee - Patriot Extension III	Compression	20 / 0 / 75
TN/TN	Midwestern - Eastern Extension Project	Extension	26 / 31 / 120
<b>Total (Southeast Region)</b>			<b>3497 / 891 / 10092</b>
<b>Southwest Region</b>			
AR/AR	TXG - Fayetteville Lateral Phase 1	New pipeline	205 / 66 / 967
AR/AR	Centerpoint - Cove Compressor Station	Compression	26 / 0 / 200
AR/AR	Ozark - Standing Rock Compressor	Compression	19 / 0 / 100
GM/GM	Enbridge - Neptune Deepwater Project	Gathering lateral	50 / 29 / 200
GM/GM	Williams - Blind Faith Extension	Gathering	255 / 71 / 200
LA/LA	Port Barre - Bobcat Storage Lateral	Laterals	30 / 20 / 1200
LA/LA	Trunkline - NTX Extension	Extension	20 / 14 / 625
LA/LA	Sempra - Cameron Interstate Pipeline	Lateral	115 / 36 / 2350
LA/LA	Cheniere - Sabine Pass LNG Line	Lateral	350 / 16 / 2600
LA/LA	PetroLogistics - Choctaw II Storage Lateral	Lateral	15 / 10 / 300
LA/LA	Columbia Gulf - Henry Hub Expansion	Compression	25 / NA / 230
TX/TX	Centerpoint Perryville Expansion Phase 3	Compression	41 / 0 / 316
TX/TX	NGPL - Louisiana/Gulf Coast Line Expansion	Looping/Compression	69 / 5 / 200
NM/NM	TW San Juan Lateral Expansion	Looping	72 / 25 / 375
NM/NM	MarkWest - Lea County Expansion	Looping	3 / 3 / 110
OK/OK	Enogex - Woodford Shale Gathering Header	Lateral	50 / 30 / 350
TX/TX	Freeport LNG - Brazoria Interconnector	Lateral	56 / 30 / 2600
TX/TX	NGS - Tres Palacios Storage Lateral	Lateral	60 / 42 / 2500
TX/TX	Freeport LNG Pipeline	Lateral	18 / 10 / 1750
TX/TX	Energy Transfer - SE Boosier Pipeline Phase 1	New pipeline	360 / 165 / 900
TX/TX	Enbridge - East Texas System Extension	Extension	465 / 190 / 700
TX/TX	Energy Transfer - Carthage Loop Expansion	Looping/Compression	94 / 32 / 500
TX/TX	Energy Transfer - Maypearl to Malone	New pipeline	50 / 25 / 600
TX/TX	Enterprise Products - Sherman Extension	Extension	400 / 178 / 1100

## Data & Statistics

TX/ TX	Energy Transfer - SE Boosier Pipeline Phase 2	Compression	70 / 165 / 400
TX/ TX	TETCO Cedar Bayou Lateral Project	Lateral	17 / 4 / 360
TX/ TX	Energy Transfer - Northside to Paris Loop	Expansion	260 / 145 / 350
TX/ TX	Kinder Morgan - Tejas/Texas Pipeline Link	New pipeline	72 / 58 / 225
TX/ TX	El Paso - Hobbs Lateral	Lateral	17 / 7 / 150
TX/ TX	Trunkline - Field Zone Expansion II	Lateral	23 / 7 / 95
<b>Mexico</b>			
TX/MX	Encinal - Petrolero Project	Border crossing	1 / 0 / 60
<b>Total (Southwest Region)</b>			<b>1 / 0 / 60</b>
<b>Central Region</b>			
CO/ CO	Questar - White River Header Pipeline	Lateral	58 / 6 / 2565
CO/ CO	CIG - High Plains Project	New pipeline	216 / 164 / 900
CO/ CO	EnCana - East Dry Hollow Loop Pipeline	Gathering lateral	12 / 7 / 250
CO/ CO	Kinder Morgan - Colorado Lateral Project	Lateral	30 / 41 / 74
UT/CO	Questar - Greesewood/Meeker Expansion	Compression	12 / 0 / 75
WY/CO	WIG - Medicine Bow 08 Expansion	Compression	32 / 0 / 330
IA/ IA	Northern Natural - East Leg I Expansion	Looping	7 / 8 / 13
CO/KS	Cheyenne Plains Kirk Compressor Station	Compression	20 / 0 / 90
CO/MO	Rockies Express (REX-West)	New pipeline	1930 / 718 / 1500
WY/ND	WB East/West Mondak Subsystem Expansion	Compression	7 / 0 / 41
NE/NE	Kinder Morgan - Grand Island Expansion	Looping /Compression	23 / 26 / 22
NE/NE	Northern Natural - West Leg II Expansion	Looping	9 / 12 / 11
WY/ WY	Fort Union - Gathering Header Expansion	Gathering header	69 / 106 / 450
WY/ WY	WIG - Mainline Expansion	Compression	22 / 0 / 150
WY/ WY	MIGC - Southern (Python) Expansion	Compression	4 / 0 / 45
<b>Total (Central Region)</b>			<b>2452 / 1088 / 6515</b>
<b>Northeast Region</b>			
NJ/CT	Algonquin - Ramapco Expansion	Compression /Line upgrade	192 / 5 / 325
NY/CT	Iroquois - 08 /09 Expn Phase 1	Looping	58 / 9 / 95
PA/DE	Eastern Shore - Expansion	Looping/Compression	8 / 9 / 11
MA/ MA	Neptune - LNG Lateral	Coast Guard lateral	23 / 13 / 750
NB/MA	Maritimes & Northeast Phase IV LNG	Looping/Compression	321 / 2 / 420
PA/MD	Dominion - PA Expansion	Looping/Extension	175 / 113 / 700
OH/NJ	TETCO - TIME II Expansion Phase 2	Looping/Compression	54 / 10 / 150
PA/NJ	Transco - Sentinel Expansion Phase I	Looping/Compression	33 / 4 / 40
CT/NY	Iroquois - MarketAccess Project	Compression	42 / 0 / 100
NY/NY	Millennium Pipeline	New pipeline	664 / 182 / 525
NY/NY	Wycott - Greyhawk North Lateral	Lateral	5 / 4 / 400
NY/NY	Central New York - Stagecoach Lateral	Lateral	16 / 9 / 400
NY/NY	Empire/Millennium Expansion	Compression /Extension	187 / 78 / 250
MD/VA	Dominion - Cove Point Expansion	Looping/Compression	160 / 48 / 800
WV/ WV	Dominion - TL -2 63 Expansion Project	Looping/Compression	15 / 6 / 21
<b>Total (Northeast Region)</b>			<b>1952 / 491 / 4987</b>
<b>Western Region</b>			
AZ/ AZ	El Paso - Picacho Compressor Station	Compression	24 / 0 / 30
NV/NV	Tuscarora - System Expansion	Compression	17 / 0 / 40
<b>Total (Western Region)</b>			<b>41 / 0 / 70</b>
<b>Midwest Region</b>			
MI/ MI	MichCon - Jamestown Pipeline	Lateral	80 / 16 / 120
MN/ MN	Greater Minnesota - Cannon Falls Pipeline	Lateral	7 / 13 / 91
WI/ WI	We - Fox Valley Lateral	Lateral	15 / 13 / 100
<b>Total (Midwest Region)</b>			<b>102 / 42 / 311</b>

Source: Energy Information Administration, Natural Gas Pipeline Projects Database, as of May 2009.

Notes: Capacity figures are presented as volumetric (MMcf per day); cost is estimated in million USD

Inter-regional projects are marked in bold font.

## USA: Largest 20 planned natural gas pipeline projects by capacity addition for 2010 and 2011

Gas pipeline construction in the US is booming and is expected to remain strong for several more years. The following table indicates capacity to be added in each region.

Table 1: USA's largest 20 planned natural gas pipeline projects by capacity addition for 2010 and 2011

State of origin/ State of termination	Developer	Project name	Type of project/Miles/ Additional capacity
<b>For the year 2010</b>			
<b>Southeast Region</b>			
MS/ MS	NGS Investments LLC	Leaf River Dome Headers	Lateral/7/2,500
AL/ AL	McMoran Exploration Incorporated	Coden Onshore Pipeline	New pipeline/5/1,600
AR/ MS	Fayetteville Express Pipeline	Fayetteville Express Pipeline	New pipeline/187/1,600
GA/ GA	Southern Natural Gas Company	Elba Express III	Extension/189/1,175
MS/ MS	Southeast Gas Storage LLC	Black Warrior Field Lateral	Lateral/5/500
LA/ LA	Gulf South Pipeline Company	Haynesville/Perryville Expansion	Compression/0/500
<b>Southwest Region</b>			
LA/ LA	DCP Midstream Partners LP	Haynesville Connector	New line/150/1,500
TX/ TX	Enbridge/Atmos Energy	BIG Pipeline Project	New pipeline/100/1,000
TX/ TX	ENSTOR Energy	Houston Energy Center Header Line	New pipeline/2/1,000
LA/ LA	Liberty Gas Storage LLC	Liberty Storage Pipeline Expansion	Lateral/5/1,000
LA/ LA	Stark Gas Storage LLC	Stark Storage Pipeline	Lateral/35/800
<b>Central Region</b>			
WY/ IA	Kinder Morgan Energy Partners	REX/NGPL Phase 1	New pipeline/175/1,000
WY/ WY	Questar Overthrust Pipeline Company	Overthrust Wamsutter/Opal	Looping/43/800
WY/ MT	Bison Pipeline LLC	Bison Pipeline Project	New pipeline/289/400
<b>Northeast Region</b>			
ME/ ME	Downeast LNG LLC	Downeast LNG Lateral	Lateral/30/625
ON/ CT	Iroquois Pipeline Company	MetroExpress Project	Looping/Compression/0/500
<b>Mexico</b>			
TX/ MX	Sonora Pipeline LLC	Northeast Hub Progresso Line (US part)	New border crossing/13/500
TX/ MX	Sonora Pipeline LLC	Burgos Hub Mission Line (US part)	New border crossing/16/500
<b>Canada</b>			
MI/ ON	Great Lakes Gas Trans Company	Dawn Eclipse Pipeline Project	Compression/0/400
MI/ ON	Spectra Energy Incorporated	Dawn Gateway Project	Compression/0/400
—	—	Others (35 projects)	—/819/6,305
<b>Total (for 2010)</b>			<b>—/2,070/24,605</b>

For the Year 2011

Southeast Region

MS/ MS	Gulf LNG Pipeline LLC	Gulf Landing Pipeline	new pipeline/5/1,500
MS/ MS	NGS Investments LLC	Leaf River East-West Header	Lateral/37/ 2,500
LA/FL	Cheniere Energy Company	Southern Trail LNG Line	New pipeline/348/1,050
BH/FL	AES Ocean Express Pipeline LLP	Ocean Express Offshore Pipeline Project	New pipeline/46/842

Southwest Region

LA/LA	Henry Gas Storage LLC	Henry Storage Lateral	Lateral/12/2,600
LA/LA	NGS Investments LLC	Gulf Coast Connector	Lateral/40/2,000
LA/LA	Port Barre Investments LLC	Bobcat Storage Expansion	Laterals/20/1,800
LA/LA	Atmos Pipeline and Storage LLC	Fort Necessity Storage Lateral	Lateral/8/1,500
TX/LA	Energy Transfer Company	Tiger Pipeline	new pipeline/180/1,250
LA/LA	Black Bayou Storage LLC	Black Bayou Storage Lateral	Lateral/7/1,200
OK/ OK	Enogex LLC	Heartland Crossing	New pipeline/0/1,000
TX/LA	Enbridge Pipeline Company	LaCrosse Pipeline	New pipeline/300/1,000
TX/ TX	Pivotal Energy Development	Golden Triangle Storage Lateral	Lateral/9/900

Northeast Region

OH/ NJ	Kinder Morgan Energy Partners	REX Northeast Express Project	new pipeline/415/1,500
NY/NY	Broadwater Energy LLC	Broadwater Energy Pipeline	new pipeline/22/1,250
Western			
WY/ OR	Sunstone Pipeline LLC	Sunstone Pipeline Project	New pipeline/601/1,200
WY/ OR	El Paso/Bear Energy	Ruby Pipeline Project	new pipeline/680/1,500
OR/ OR	Palomar Gas Pipeline LLC	Palomar Gas Transmission Line	new pipeline/217/1,300

Midwest Region

OH/ OH	Kinder Morgan Energy Partners	REX Northeast Express Phase	Compression/0/1,000
IA/ IL	Kinder Morgan Energy Partners	REX/NGPL Joint Project Phase 2	New pipeline/240/1,000
NA/NA	—	Others (27 projects)	NA/1,342/9,556
<b>Total (for 2011)</b>			<b>NA/4,528/37,448</b>

Source: Energy Information Administration, Natural Gas Pipeline Projects Database, as of May 2009.

Notes: Capacity figures are presented as volumetric (MMcf per day); ON = Ontario, Canada; BH = Bahamas

The following table summarizes proposed natural gas pipeline project expansions by region in years 2010-2011.

Table 2: USA's proposed natural gas pipeline expansions by region, 2010 - 2011

Region (within or into)	Proposed for 2010			Proposed for 2011		
	Added capacity	Estimated cost	Miles	Added capacity	Estimated cost	Miles
Southeast	9,911	2,006	601	9,364	3,748	1,000
Southwest	6,283	577	293	13,915	2,162	688
Central	3,655	1,820	871	1,528	491	290
Northeast	2,491	1,276	249	4,318	2,465	569
Mexico/Canada	1,920	NA	29	980	49	41
Western	345	107	27	5,276	5,377	1,686
Midwest	0	0	0	2,067	1,416	254
<b>US Total</b>	<b>24,605</b>	<b>5,786</b>	<b>2,070</b>	<b>37,448</b>	<b>15,707</b>	<b>4,528</b>

Source: Energy Information Administration, Natural Gas Pipeline Projects Database, as of May 2009.

Notes: Capacity figures are presented as volumetric (MMcf per day); Cost is estimated in million USD

A project that crosses inter-regional boundaries is included in the region in which it terminates. Offshore Gulf of Mexico projects are included in the Southwest region.

## NORTH AMERICA

### TransCanada issues senior notes, preferred shares

TransCanada Corporation's wholly owned subsidiary, TransCanada PipeLines Limited, has successfully completed an offering consisting of two parts: USD500 million of 3.40 per cent senior notes due June 1, 2015, and USD750 million of 6.10 per cent senior notes due June 1, 2040. The offering was made in the US under TransCanada PipeLines Limited's previously filed shelf prospectus dated December 17, 2009 and led by Deutsche Bank Securities Incorporated and HSBC Securities (USA) Incorporated.

In another development, the company has announced issue of 12 million cumulative redeemable first preferred shares, series 5 at a price of USD25 per share, for aggregate gross proceeds of USD300 million, to a syndicate of underwriters in Canada led by Scotia Capital Incorporated, RBC Capital Markets and BMO Capital Markets.

The holders of preferred shares will be entitled to receive fixed cumulative dividends at an annual rate of USD1.10 per share, payable quarterly on the 30th day of January, April, July and October, as and when declared by the board of directors of TransCanada, yielding 4.40 per cent per annum, for the initial fixed rate period ending January 30, 2016. The first quarterly dividend payment date is scheduled for November 1, 2010.

The dividend rate will be reset on January 30, 2016 and every five years thereafter at a rate equal to the sum of the then five-year Government of Canada bond yield plus 1.54 per cent. These shares can be redeemed on January 30, 2016 and on January 30 of every fifth year thereafter.

The net proceeds of both offerings will be used to partially fund capital projects, to fund other general corporate purposes and to reduce the short-term indebtedness of TransCanada and its affiliates. The preferred shares will be offered to the public in Canada pursuant to a prospectus supplement that will be filed with the securities regulatory authorities in Canada under TransCanada's short-form base shelf prospectus dated September 21, 2009.

### Emera closes offering of six million preferred shares

Canada-based Emera (engaged in power generation and distribution and natural gas pipelines) has completed its public offering of six million cumulative five-year rate reset first preferred shares, series A for aggregate gross proceeds of USD150 million. The offering was first announced on May 25, 2010 when Emera entered into an agreement with a syndicate of underwriters in Canada led by Scotia Capital Incorporated, RBC Capital Markets and CIBC World Markets Incorporated. The net proceeds of the offering will be used for general corporate purposes.

### Consol Energy to acquire remaining shares of CNX Gas

Pennsylvania-based Consol Energy Incorporated has entered into an agreement with CNX Gas Corporation (CNX Gas) to commence a tender offer for the acquisition of all the shares of the latter at a price of USD38.25 per share in cash. The

tender offer price of USD38.25 per share represents a 24 per cent premium on the closing price of USD30.80 on March 19, 2010, and a 46 per cent premium based upon the closing price of USD26.23 on March 12, 2010. Consol Energy currently owns around 83.3 per cent of the approximately 151 million shares of CNX Gas common stock outstanding.

Consol Energy plans to finance the acquisition of CNX Gas's shares by means of a combination of internally generated funds, borrowings under its credit facilities and offerings of securities.

T. Rowe Price Associates Incorporated (an investment banking firm) will tender to the offer its shares of CNX Gas's common stock from its investment advisory clients.

### Buckeye Partners to buy Buckeye GP Holdings for USD1.16 billion

Buckeye Partners Limited Partnership (BPL), engaged in gas storage, refined products transmission and fuel distribution, agreed to acquire Buckeye GP Holdings Limited Partnership (BGH), which owns the general partner of Buckeye Partners, in an equity deal valued at USD1.16 billion.

Under the agreement, BGH holders will receive 0.705 of a BPL unit, valuing BGH at USD41.01 a unit. About 20 million units will be issued as part of the deal, which is expected to dilute the distributable cash flow per unit by 6–7 per cent next year. BPL has about 52 million units outstanding. The deal will reduce its quarterly distribution payouts and also cut the capital costs of both the companies.

The accord was unanimously approved by the audit committee of the BPL general partner and the BGH board. The current management team will remain in place.

The deal requires a majority vote of the unit holders of both the companies, set for the fourth quarter. Affiliates of energy-investment firm ArcLight Capital Partners Limited Liability Company and private-equity firm Kelso and Company, which control about 62 per cent of Buckeye GP, have committed to supporting the deal.

### CenterPoint Energy raises funds through IPO

Texas-based CenterPoint Energy Incorporated (engaged in natural gas and electricity distribution, competitive natural gas sales and services, interstate pipelines and field services operations) has priced its initial public offering (IPO) of 22 million shares of its common stock at a price of USD12.90 per share, pursuant to an underwriting agreement dated June 9, 2010. In addition, CenterPoint Energy has granted the underwriters an option of purchasing up to an additional 3.3 million shares to cover over-allotments, if any. The offering is expected to close on June 15, 2010.

The company intends to use the net proceeds from this offering for general corporate purposes, including repayment of borrowings under its money pool and for making loans to its subsidiaries, including to CenterPoint Energy Resources Corporation, to fund its subsidiary's gas gathering and treatment projects.

J.P. Morgan, Credit Suisse, Morgan Stanley and Wells Fargo Securities acted as joint book-running managers in connection with the offering. Barclays Capital and Goldman Sachs and

Company served as senior co-managers for the offering. Comerica Securities, Macquarie Capital and Mitsubishi UFJ Securities served as co-managers for the offering.

The offering was made pursuant to CenterPoint's shelf registration statement filed with the Securities and Exchange Commission (SEC) on October 9, 2008, which became automatically effective by means of a prospectus and a related prospectus supplement.

### Fitch assigns BB rating to MarkWest Energy

International ratings agency Fitch Ratings has assigned an initial rating of BB with a stable outlook to Colorado-based natural gas gathering, processing and transportation company MarkWest Energy Partners Limited Partnership (MarkWest). The rating has been assigned in case of the issuer default rating (IDR), the senior unsecured rating and the senior secured rating. It will affect approximately USD1.17 billion of debt outstanding as of March 31, 2010.

The ratings reflect MarkWest Energy's success in maintaining fairly steady operating results and margins despite a challenging economic environment and a volatile commodity pricing period over the last few years.

Increased fee-based revenue sources and effective hedging have helped decrease cash flow volatility and have provided greater cash flow predictability for the company. Fitch notes that the company follows a layered hedging strategy to mitigate exposure to commodity prices, with the stability of margins being further enhanced by long-term contracts with key customers.

MarkWest Energy benefits from the increasing diversity of its geographic footprint and scale in its core regions, including leading positions in the Marcellus and Woodford shales. Given the significant growth potential in the Marcellus Shale and MarkWest's modest size, the company has enhanced its financing flexibility through a joint venture with an affiliate of the Energy and Minerals Group (EMG), a private equity fund focused on energy investments.

### El Paso Pipeline issues equity, buys stake in SNG

Delaware-based natural gas transportation and storage company El Paso Pipeline Partners Limited Partnership (El Paso) issued 10 million common shares priced at USD28.80 per share. The net proceeds from this offering will be used by El Paso as partial consideration for the acquisition of an additional 16 per cent general partner interest in Alabama-based pipeline company Southern Natural Gas Company (SNG) from El Paso Corporation, raising its stake in SNG to 41 per cent.

El Paso had also given its underwriters the option to purchase 15 million additional common units. Given that the underwriters exercised their option in full providing USD42 million of net proceeds, El Paso will acquire a further 4 per cent stake in SNG at USD100 million in the next 90 days. This will raise its stake in SNG to 45 per cent.

Barclays Capital, Bank of America–Merrill Lynch, Goldman Sachs & Company, JP Morgan Securities, Morgan Stanley and Wells Fargo Securities are acting as joint bookrunning managers of the offering. Citi, Credit Suisse, RBC Capital

Markets and UBS Investment Bank are acting as co-managing underwriters of the offering.

Separately, El Paso Pipeline intends to price USD100 million in an add-on round of junk bonds which will bring the total bond tranche to USD525 million. The company initially priced USD425 million in the 6.5 per cent senior notes due 2020 on March 30, 2010. The bonds have received a rating of Ba1 from Moody's Investors Service and a rating of BB from Standard & Poor's. The Royal Bank of Scotland is the sole bookrunner.

### Kinder Morgan enters into new USD2 billion credit facility

Texas-based oil and gas pipeline and storage company Kinder Morgan Energy Partners Limited Partnership has entered into a new USD2 billion three-year unsecured revolving credit facility scheduled to expire in June 2013. This new credit facility replaces a previous unsecured credit facility for USD1.85 billion that is scheduled to expire in August 2010. Borrowings under the new credit facility can be used for general partnership purposes. The new credit facility is also indicative of the company's ability to access the capital markets.

### TorqueEnergy sells rights to develop natural gas storage facility

Vancouver-based oil and gas exploration and production company Torque Energy Incorporated (Torque) has sold natural gas storage facility development rights for the Chatham Gas Storage in Ontario to Union Gas Limited.

The agreement was made along with the Calgary-based exploration and production company Liberty Oil and Gas Limited, with which the capacity rights for storage are split evenly (50 per cent from Torque and 50 per cent from Liberty).

If the Ontario Energy Board (OEB) approves all the reservoirs for the designated storage, Torque could receive payments aggregating to USD3.88 million over the next six to eight years. The first storage reservoir could be in service as early as July 2012 if the OEB's approval is obtained, as targeted by June–July 2011. In case this happens, Torque would receive payments aggregating to USD1.25 million.

### Fitch affirms Rockies Express Pipeline's IDR at BBB

Fitch Ratings has affirmed Rockies Express Pipeline LLC's (REX) issuer default rating (IDR) and senior notes rating at BBB and a short-term IDR of F2 with a stable outlook. A total of USD3 billion of senior unsecured debt issued by the company for funding the construction of the pipeline will be affected by the ratings.

The ratings are based on several parameters, some of which are as follows: the stability in revenues generated under 10-year firm shipper contracts with a nine-year average remaining life; moderate counterparty exposure with the majority of volumes committed to creditworthy shippers; low regulatory risk with Federal Energy Regulatory Commission (FERC) approval received in May 2008 and transportation rates fixed for 10 years; favourable pipeline route with 31 delivery interconnections that provides shippers significant market flexibility and competitive pricing advantage; completion of the project construction; and minimal post-construction liquidity requirements.

REX is the builder and owner of the 1,679-mile Rockies Express interstate natural gas pipeline (REX pipeline). REX is 50 per cent owned by Kinder Morgan Energy Partners Limited Partnership, 25 per cent by Semptra Energy, and 25 per cent by ConocoPhillips. The three partners have made a total of USD3.8 billion in equity contributions to the project. REX is currently undertaking a compression expansion on the western leg (713 miles) of its system, which is targeted for completion in the third quarter of 2010. The company expects the final cost to be less than its FERC authorised cost of USD78 million.

#### Pioneer forms JV with RIL for shale gas

In order to develop shale gas assets in the Eagle Ford gas field in Texas, Pioneer Natural Resources Company (Pioneer) has entered into a joint venture (JV) with India-based Reliance Industries Limited (RIL), which is engaged in the exploration, production, refining and marketing of oil and natural gas. RIL will work jointly with Pioneer in its midstream assets in the Eagle Ford Shale region as a 49.9 per cent partner.

Under the terms of the agreement, Pioneer will sell a 45 per cent interest in approximately 212,000 net acres leased by the company in the Eagle Ford Shale play for an amount of USD1.15 billion. RIL will pay USD266 million in cash (at the closure of the deal), with an additional USD879 million to carry Pioneer's share of future drilling costs.

#### Atmos Energy announces USD100 million stock buyback

Texas-based gas gathering, storage and pipeline company, Atmos Energy Corporation, has entered into a USD100 million accelerated share-repurchase agreement with Goldman Sachs Group Incorporated thereby becoming the latest company to join the buyback phase to raise funds.

Moreover, the company's profit in the second quarter of 2010 declined by 12 per cent due to weak results in its transmission and storage segment.

#### Fitch affirms ratings of Boardwalk and Texas Gas

Fitch Ratings has affirmed an issuer default rating (IDR) and a senior unsecured debt rating of BBB to Texas-based Boardwalk Pipelines (Boardwalk). Likewise, it has affirmed a rating of BBB+ on long-term debt and senior unsecured debt to Boardwalk's operating subsidiary, Texas Gas Transmission (Texas Gas). The rating outlook for both the companies is stable. These ratings will affect USD1.68 billion of long-term notes and debentures.

Boardwalk's ratings reflect a combination of the stable and predictable cash flows generated at Boardwalk's natural gas pipeline subsidiaries and the support of its majority owner, Loews (IDR 'A' with a positive outlook). Loews' commitment to Boardwalk was important in ensuring the funding of Boardwalk's recent capital expansion projects, which are substantially complete.

Boardwalk's pipeline expansion projects (East Texas Pipeline, Southeast Expansion, Gulf Crossing Project, and Fayetteville and Greenville Laterals) at an estimated investment of USD5 billion are substantially complete, with a significant amount of external financing.

#### Dominion agrees to 15-year transportation deal for Marcellus shale gas

Virginia-based Dominion's natural gas transmission and storage subsidiary Dominion Transmission has signed an agreement with the gas subsidiary of Pennsylvania-based CONSOL Energy Incorporated (largest producer of high-bituminous coal in the US) for the firm transportation of Marcellus Shale natural gas for 15 years. Under the agreement, Dominion will provide CONSOL with year-round access to the growing Northeast markets. The project, which is capable of transporting 200,000 dekatherms per day, will move supplies from various receiving points in central and southwestern Pennsylvania to a nexus of market pipelines and storage facilities in Leidy, Clinton County, Pennsylvania. Dominion sold its natural gas exploration and production business to CONSOL earlier in 2010.

## LATIN AMERICA

#### Chile's Colbun to cancel gas transport contract with Argentine TGN

Chile-based electricity producer Colbun has decided to cancel its gas transport contract with Argentina-based pipeline operator Transportadora de Gas del Norte (TGN) due to allegedly unfulfilled terms by TGN and burdensome difficulties linked to the contract. TGN said that the unilateral decision was unacceptable and urged Colbun to comply with its contractual obligations.

Argentina has limited its natural gas exports to Chile in the last few years to secure its domestic supply. This has caused gas supply problems in Chile. In 2009, Chile-based natural gas distributor Metrogas decided to cancel its gas transport contract with TGN due to undelivered gas.

#### Argentine Enargas to set up fund for gas pipeline

Argentina's gas regulator Enargas has established a special fund to finance the construction of the USD10.2 million gas pipeline called Integracion. The pipeline will increase the natural gas supply to Neuquen and Rio Negro provinces, benefiting over 8,000 residential, commercial and industrial customers. The project includes the construction of the main pipeline of nearly 18.6 km and related distribution networks.

## ASIA

#### Gas Natural completes deal with Mitsui and Tokyo Gas

Spain-based gas utility Gas Natural Fenosa has completed the sale of part of its Mexican assets to Japan-based companies Mitsui and Tokyo Gas. Earlier, in December 2009, the companies signed an agreement under which the Japanese firms received 76 per cent in each of the companies that owns the electricity generation plants Rio Bravo II, III and IV, Electricidad Aguila de Altamira and Saltillo, with a total capacity of 2,233 MW. The transaction also includes the purchase of a gas pipeline and the services provider Compania

Mexicana de Gerenciación Operación. Now the remaining 24 per cent has also been sold to Mitsui and Tokyo Gas. The divestment is part of Gas Natural's plan to reduce its debt after the purchase of Union Fenosa. The total value of the operation is estimated at USD1.225 billion.

### ADB to provide USD266 million to Bangladesh for gas sector development

The Asian Development Bank (ADB) has signed an agreement with the Government of Bangladesh to provide USD266 million in loans under the Bangladesh Natural Gas Access Improvement Project with an estimated cost of USD542 million. The project includes the building of new gas transmission and distribution pipelines, installation of compressors and metering systems, development of four new wells and installation of gas-processing plants at the Titas gas field to increase gas production by 120 MMcf per day.

ADB will provide USD261 million in the form of ordinary capital resources (OCR) and USD5 million in the form of concessional loans. In addition, the Export Import Bank of Korea is expected to provide USD45 million, while the balance USD231 million will be provided by the Government of Bangladesh in the form of equity and loans. ADB will provide USD173 million for implementing the Ashuganj and Elenga compressor projects.

The loan by ADB has a maturity period of 32 years (including a grace period of eight years), with an interest rate of 1 per cent during the grace period and 1.5 per cent thereafter. The interest rate for the OCR loan is the London Inter-Bank Offered Rate (LIBOR) plus 0.60 per cent.

The project will be implemented during the period 2010–2015 by the state-owned Petrobangla and some of its companies, including Gas Transmission Company Limited, Bangladesh Gas Fields Company Limited, Sundarban Distribution Company Limited and Titas Gas Transmission and Distribution Company Limited. Nearly 200,000 new households in the southwestern part of the country, along with 1,400 industrial and commercial establishments, will benefit from the expanded distribution network.

### ConocoPhillips and PGN sign gas agreement

Texas-based ConocoPhillips has signed an amended gas sales and purchase agreement with Indonesia's state-owned gas company, Perusahaan Gas Negara (PGN), for volumes produced at the former's Corridor block in South Sumatra. ConocoPhillips will deliver up to 12.5 billion Btu per day from the Corridor block for five years starting June 2010. The gas will be transported through Transportasi Gas Indonesia's (TGI) transmission pipeline to PGN's customers in Riau province. PGN, in tandem with the signing of the agreement by ConocoPhillips, has also sealed an interim gas transport agreement with TGI.

Meanwhile, PGN and Pertamina recently signed a second amendment to the gas sales and purchase agreement covering PGN's Offshore North West Java (ONWJ) block. The deal extends gas supply to PGN's Muara Karang power plant by 3.78 trillion Btu, which will be delivered between May and December 2010. Pertamina Hulu Energi operates the ONWJ block with a 46 per cent controlling stake.

### Moody's changes Towngas China's outlook to positive

Moody's Investors Service has changed the outlook for Hong Kong-based pipeline and gas distribution company Towngas China Company Limited (TCCL) to positive from stable. However, it has retained its earlier rating of April 2009 at Baa3 on issuer and senior unsecured bonds and at Ba2 on stand-alone credit. The rating will have an impact on approximately USD141 million worth of debt securities.

The improvement in outlook is due to the company's improved financial and operational performance, especially in its piped gas projects in which it has a dominant position in mainland China. Moreover, Moody's expects the company's profitability and credit profile to improve further with the disposal of its low-margin LPG business.

In addition, the company's equity-funded acquisition of six projects from its parent company, Hong Kong and China Gas Company Limited (HKCG), is expected to further enhance TCCL's presence on China's east coast and to improve its financial and cash-flow profiles.

### GAIL India targets INR200 billion for DMDIC

GAIL (India) Limited has decided to invest INR200 billion in setting up gas-based power plants and related infrastructural facilities along the 1,500 km Delhi Mumbai Dedicated Industrial Freight Corridor (DMDIC). The investment will be focused on laying the pipelines for, and setting up the gas distribution network connecting, industrial hubs coming up along the DMDIC.

DMDIC has planned six gas-based power-generating projects of 1,000MW each for supplying energy within its region. GAIL is eager to build some of these power plants jointly with DMDIC, in addition to supporting it in sourcing and supplying natural gas for all the planned power projects. In addition, GAIL is considering developing a gas distribution network, including connectivity to small-scale industries and commercial establishments in the DMDIC region. It is also weighing the option of creating a joint venture entity for supplying compressed natural gas (CNG) along the corridor.

1 INR (Indian Rupee) = 0.02 USD

### Gazprom and Yaroslavl Oblast government sign partnership agreement

Russia-based Gazprom and the Government of Yaroslavl Oblast have signed a partnership agreement for 2010–2014. The agreement involves gas supplies from Russia to Yaroslavl Oblast, a regional gasification project (construction of inter-settlement gas pipelines), and promoting the use of natural gas as a transportation fuel. The agreement confirms the necessity of continuing the comprehensive development of Yaroslavl Oblast with due regard to the importance of implementing the projects for the Pochinki–Gryazovets gas trunkline system and the Bovanenkovo–Ukhta gas trunkline system.

Priority will be given to the possible engineering and construction of gas pipelines in Tutaev town across the Volga river, Rybinsk town, the Glebovo settlement with a gas lateral to the Tikhmenevo settlement, the Kubrinsk settlement, the Nagorye settlement, and the Solba settlement. Particular attention was paid to the construction of the Ananyino gas

distribution station (GDS). It was noted that in 2010 Gazprom would allocate RUB271 million for the construction of the GDS, scheduled for completion in the same year.

1 RUB (Russian Ruble) = 0.03 USD

#### Monadelphous acquires KT Pty Ltd for USD10 million

Monadelphous Group Limited, an Australia-based engineering company with over two decades of experience in the oil and gas sector, has acquired 100 per cent shares in KT Proprietary Limited (KT), an Australia-based oil and gas pipeline company, for a cash payment of USD10 million and an issue of 4.2 million ordinary shares (of Monadelphous). A further deferred component is payable, subject to KT achieving certain financial targets over the period to December 31, 2011. The deferred component will comprise approximately one-third cash and two-thirds shares. The total consideration payable will not exceed USD30 million.

KT Pipeline Services has delivered projects for major companies, including Alinta Energy, Origin Energy, Santos, Epic Energy and Oil Search. It had an average annual turnover of approximately USD30 million in the past three years.

The agreement follows the signing of a memorandum of understanding in April 2010. The acquisition was part of Monadelphous's strategy of diversifying outside traditional resource markets to continue to drive the company's long-term growth.

#### Sinopec acquires 30 per cent stake in ZNGUC

Sinopec has acquired a 30 per cent stake in Zhejiang Natural Gas Utilisation Company (ZNGUC). This will help Sinopec meet its goal of piping gas to Zhejiang province from its Puguang field in Sichuan province. Before the acquisition, Zhejiang Energy Group (ZEG) held a 53 per cent stake in ZNGUC, China National Offshore Oil Corporation Limited (CNOOC) held 37 per cent, and Zhejiang Southeast Power Generation Company (ZSPGC) held 10 per cent. ZSPGC sold its 10 per cent stake to Sinopec. CNOOC now holds a 30 per cent stake in the company, ZEG holds 40 per cent, and Sinopec holds another 30 per cent.

Sinopec will soon start pumping Puguang gas to Zhejiang through its Sichuan-Shanghai pipeline, with volumes estimated at 1.35 Bcm in 2010, increasing to 1.85 Bcm in 2011 and eventually going up to 2.7 Bcm per annum. Zhejiang currently receives 1.4 Bcm of gas from PetroChina's first West-East gas pipeline and some small volumes from the CNOOC-operated Chunxiao field in the East China Sea. Zhejiang is also set to receive 2.9 Bcm per annum of gas beginning in 2012 from PetroChina's second West-East gas pipeline, with volumes increasing to 3.4 Bcm by 2015. Zhejiang's gas demand is pegged at 8 Bcm for 2010 and is expected to increase to 12 Bcm by 2015.

#### AGL makes AUD123.2 million takeover bid for Mosaic Oil

AGL Energy Limited, Australia's largest energy retailer, has made an AUD123.2 million takeover bid for a small oil and gas explorer, Mosaic Oil, to gain access to Mosaic's gas-storage capabilities in Queensland state. AGL has also struck a gas-storage deal with BG Group, which was conditional upon its

successful acquisition of Mosaic. Under the storage deal, AGL will fund the development of a storage facility at Mosaic's depleted SilverSprings gas fields in the Surat basin. This is because more gas can be stored in natural underground reservoirs than in artificially constructed storage tanks, which are also expensive to build. BG will make a one-off capital contribution to the development of the storage facility. Mosaic said that it hasn't yet considered the incomplete and non-binding offer but will meet with AGL to discuss the bid in further detail.

1 AUD (Australian Dollar) = 0.84 USD

#### CRGGL enters into an agreement with TGGL

China Resources Gas Group Limited (CRGGL), an investment holding company that engages in the sale of liquefied natural gas (LNG) and gas pipeline connections, and Tianjin Gas Group Company Limited (TGGL), a natural gas distribution company, have entered into an agreement to form a JV for the supply and provision of natural gas through gas pipelines in China's Tianjin region. Under the JV, CRGGL will hold 49 per cent interest and the remaining 51 per cent interest will be held by TGGL. The JV will be established with a total investment of between USD589.64 million and USD737.05 million.

## EUROPE

#### SSE buying bulk of Hess North Sea gas assets

Power group Scottish and Southern Energy (SSE), the second largest supplier of energy in the UK, is in the process of buying 80 per cent of the North Sea gas and infrastructural assets of global energy firm Hess for about GBP223 million. SSE's new assets will include a stake in the BP-operated Central Area Transmission System (CATS), which delivers more than 10 per cent of the UK's gas demand through a pipeline from the central North Sea to a processing terminal on Teesside.

1 GBP (British Pound) = 1.45 USD

#### Gasunie will join German NEL gas pipeline project

Dutch natural gas pipeline operator Nederlandse Gasunie NV will join a northern German gas pipeline project that is aimed at linking the Baltic Sea transit pipeline Nord Stream to the German grid. The company will take a 20 per cent stake in the 440 km North European Gas Pipeline (NEL). As a result, the stakes of Wingas and Ruhrgas will be reduced to 70 per cent and 10 per cent respectively.

Wingas, a 50-50 joint venture between BASF SE's Wintershall AG and Gazprom, previously held 75 per cent in NEL, with E.ON Ruhrgas, the natural gas arm of Germany's utility E.ON AG, holding the remaining 25 per cent.

The NEL consortium expects the pipeline to cost around EUR1 billion. A final investment decision has yet to be made, as talks with Germany's network operator on regulatory conditions are still ongoing. The grid operator had previously denied a request for exempting the pipeline from regulation, which effectively forced the partners to open a certain share of the NEL capacity to competitors.

NEL will link the Nord Stream pipeline to European pipeline networks, allowing Russian gas to reach consumers in Germany, the Netherlands, France and the UK. It will stretch over 440 km through Germany, from the Nord Stream landfall in Lubmin, near Greifswald, to Rehden in Lower Saxony.

1 EUR (Euro) = 1.2 USD

### GDF Suez acquires 9 per cent stake in Nord Stream AG

Following its acquisition of a 4.5 per cent stake each from the founder members of the Nord Stream Consortium, Germany-based E.ON Ruhrgas and Wintershall Holding, France-based GDF Suez is now the consortium's fifth shareholder, with a 9 per cent holding. The two German energy companies now each have a 15.5 per cent holding. The consortium's other shareholders are Gazprom and the Dutch gas infrastructure company Nederlandse Gasunie, with 51 per cent and 9 per cent stakes respectively.

Construction of the pipeline project, which will connect Russia and Germany through the Baltic Sea, passing through the waters of Finland, Sweden and Denmark, started in April 2010. The pipeline is expected to begin deliveries next year.

### Gazprom secures deals for South Stream project

Russia-based Gazprom, Italy-based Eni and France-based EDF have signed a trilateral memorandum of understanding (MoU) that provides for specific steps towards the French company's entry into the shareholding structure of the South Stream project. The MoU contemplates EDF's participation in the project as not being less than 10 per cent and as being accomplished before the end of 2010 through a reduction in Eni's stake in the joint venture.

In a separate development, Greece's national natural gas company DESFA and Gazprom have founded a new company, South Stream Greece, which will manage the Greek section of the South Stream natural gas pipeline. Both DESFA and Gazprom will have a 50 per cent stake in the new company.

Given Macedonia's interest in joining the project, Gazprom will conduct a study in the next two to three months to determine if it is feasible to build a pipeline to Macedonia.

### eCorp International to buy stake in Ireland UGS

Texas-based energy company eCorp International is investing GBP13.5 million to take a 40 per cent stake in GBP250 million underground gas storage (UGS) facility planned for Islandmagee (Ireland). The investment, which will fund the project development costs up to the construction phase, is subject to final due diligence and formal agreements being put in place. Following the deal, the interests of the existing partners in the project, Infrastrata Plc and Mutual Energy, will be reduced to 39 per cent and 21 per cent respectively.

The 500 MMcm natural gas storage facility will be constructed in Permian salt beds a mile (1.62 km) beneath Larne Lough. Plans for its construction were first submitted in March 2010. Drilling is likely to start in 2011, with the first gas being stored there in 2015 if planning permission is granted.

1 GBP (British Pound) = 1.51 USD

## MIDDLE EAST & AFRICA

### Kuwait to execute USD9.4 billion natural gas projects

Kuwait National Petroleum Company (KNPC) (engaged in downstream operations) will execute new natural gas projects worth USD9.4 billion as part of its strategy to meet surging domestic demand. The project will include a USD5.98 billion gas pipeline with a production capacity of 850 MMcf per day. The company will also build an acid gas treatment unit at an estimated cost of USD3.45 billion. Both projects are expected to be completed by the end of 2013.

Kuwait, being the fourth largest member of the Organization of Petroleum Exporting Countries (OPEC), still faces a shortage in gas supply, and has to rely on gas imports to meet growing domestic demand.

### Azerbaijan and Turkey finalise gas supply deal

Azerbaijan and Turkey have signed a memorandum of understanding on the gas supply volume and price after finalising a deal in principle in April 2010. The two countries have agreed that the price will be above the previous price of USD120 per 1,000 cubic metres and will be in line with market prices, such as imports from Russia.

Moreover, Turkey will pay at the agreed price retroactively for all gas purchased since April 15, 2008. In case of gas transit to Europe, the two sides have agreed to establish a separate company in Turkey.

Turkey is likely to receive a total of 11 Bcm of gas from Azerbaijan (including the existing 6.6 Bcm under the earlier deal) from 2016, although it remains to be decided how much of this gas will be consumed in Turkey and how much will be re-exported to Europe.

Azerbaijan has stated that it would supply 10 Bcm of gas per year to Europe from Shah Deniz phase 2, but with Turkey already re-exporting a small amount of Azeri gas to Greece and aiming to send more once Shah Deniz phase 2 comes onstream, this volume could go up.

Part of the uncertainty is due to the difference of opinion on Turkey's ability to re-export gas from Azerbaijan, although this issue may be resolved in time as the State Oil Company of the Azerbaijan Republic (SOCAR) works out the details of its own direct gas supplies to the Turkish domestic market.

Petkim, the former Turkish state petrochemical firm that is now owned by a joint venture between SOCAR and Turkey-based Turcas group, is likely to receive the right to import gas directly from Azerbaijan for its own use. Still, a formal agreement clarifying Turkey's right to re-export Azeri gas, or its prohibition from doing so, has yet to be reached.

The agreement between Azerbaijan and Turkey is of the utmost importance for the 'southern corridor' gas infrastructure projects, such as the Nabucco and the Trans-Afghanistan pipelines, for supplies from the Caspian Sea region to Europe, which have been hampered by the impasse between the two countries for over two years. Moreover, the agreement will not have any impact on Russian gas supplies via the Blue Stream pipeline. ♦

## NORTH AMERICA

Alaska natural gas pipeline

**Countries** - USA, Canada

**Project description** – Construction of a 1,700-mile natural gas pipeline in general direction north-south from Alaska North Slope to Calgary, Alberta

**Developers** - BP and ConocoPhillips or TransCanada and ExxonMobil

**Background** - Estimated to cost about USD40 billion, this pipeline project would be the largest civilian construction project in the history of North America. The pipeline is expected to be operational by 2020. There are two competing proposals to build the pipeline: one, by TransCanada Corporation and ExxonMobil (Option 1) and another, by BP and ConocoPhillips (Option 2).

### Option 1

The scope of the joint project includes the following components:

- a gas treatment plant (GTP) near Prudhoe Bay, Alaska, which will condition the gas for pipeline transportation;
- a gas transmission pipeline connecting the Point Thomson field in Alaska to the GTP; and
- a gas transmission pipeline that will extend, subject to shipper confirmation during the Open Season process, from the GTP in Alaska to either the Alberta Hub (Alberta Case) or Valdez, Alaska (Valdez LNG Case).

For the Alberta Case, shippers would have the ability to deliver into the Alberta Hub and then to other takeaway pipelines to major North American markets. For the Valdez LNG Case, shippers would have the ability to deliver into a liquefaction facility (to be developed by others) for subsequent delivery to LNG markets.

The primary project regulator for the Alberta Case is the US Federal Energy Regulatory Commission (FERC) for the Alaskan components of the project, and the Northern Pipeline Agency for the Canadian components. The primary regulator for the Valdez LNG Case is the FERC.

The GTP will initially be designed to process up to 5.3 Bcf per day of raw gas and deliver 4.5 Bcf per day of pipeline quality gas to pipeline at 2,500 psig. It will handle up to 0.6 Bcf per day of CO<sub>2</sub> at 4,000 psig.

TransCanada has secured funds worth USD500 million and a licence from the state of Alaska to build and operate the pipeline but does not have the federal approvals needed to start construction. The company has partnered with ExxonMobil, which leases the largest deposit of North Slope gas.

### Option 2

The consortium of BP and ConocoPhillips has created a 50-50 joint venture called Denali to build the pipeline. Denali project would follow a right of way similar to the TransCanada project. At the pipeline terminus in Alberta, Denali would provide shippers the flexibility to move their gas to the market through the existing pipeline system, or, if required, through a new 1,500-mile-long pipeline from Alberta to Chicago to supply gas to the Lower 48 US states.

### Point Thomson transmission pipeline

Pipeline length	60 miles (approximately 97 km)
Pipeline diameter, grade, operating pressure, capacity	To be determined

### Alberta Case (Prudhoe Bay to Alberta)

Total length	1,700 miles (2,737 km)
Pipeline diameter and grade	48 inches X80
Maximum operating pressure	2,500 psig
Pipeline capacity (maximum compression)	4.5 Bcf per day (base design), 5.9 Bcf per day

### Valdez LNG Case (Prudhoe Bay to Valdez)

Pipeline length	803 miles (1,293 km)
Pipeline diameter and grade	48 inches X80
Maximum operating pressure	2,500 psig
Pipeline capacity (maximum compression)	3.0 Bcf per day (base design), 5.9 Bcf per day

### Number of compressor stations in Alaska

For Alberta Case	6 (for 4.5 Bcf per day), 13 (for 5.9 Bcf per day)
For Valdez LNG Case	2 (for 3.0 Bcf per day)

### Number of compressor stations in Canada

For Alberta Case	11 (for 4.5 Bcf per day), 20 (for 5.9 Bcf per day)
For Valdez LNG Case	Not available

Pipeline from Prudhoe Bay to Alberta

<b>Total length</b>	<b>1,730 to 2,000 miles (depending on terminus)</b>
Gravel requirements	25 million cubic yards
Outside diameter	48 inches
Grade	High strength steel
Maximum operating pressure	2,500 psig
Wall thickness	1 inch
40 foot joint weight	10 tonnes
Number of compressor stations in Alaska	4 to 6
Number of compressor stations in Canada	8 to 12

ConocoPhillips and BP continue to work on the competing Denali pipeline outside the Alaska government process.

**Current status** – In May 2010, The US Senate Energy and Natural Resources Committee increased the federal loan guarantee for builders of the pipeline to USD30 billion (based on current prices) from USD18 billion (based on 2001 cost estimates). TransCanada is conducting open season which began in May 2010 and will end on July 31, 2010. In June 2010, Denali obtained FERC’s approval to go ahead with an open season from July 6, 2010 to October 6, 2010. Additionally, Denali Canada will conduct a separate concurrent open season for Canadian facilities, which will be subject to review by Canada’s National Energy Board. The results of the open season will be used to determine the route of the proposed pipeline.

Ruby natural gas pipeline

**Country** - USA

**Project description** - Construction of approximately 675.2-mile natural gas pipeline with an initial design capacity of up to 1.5 Bcf per day

**Developer** - El Paso Corporation (El Paso)

**Background** - Beginning at the Opal Hub in Wyoming and terminating at interconnects near Malin, Oregon, the project represents an investment of approximately USD3 billion in new pipeline infrastructure that will connect natural gas reserves in the Rocky Mountains region with growing markets in the western US.

The pipeline will have 1,440 psig of maximum allowable operating pressure and a diameter of 42 inches. It will have four compressor stations (with approximately 140,000 HP under peak summer conditions) installed near the Opal Hub in southwestern Wyoming, south of Curlew Junction in Utah, north of Elko in Nevada (mid-point of the project), and northwestern Nevada.

The following initiatives are being undertaken to build the Ruby pipeline as the first carbon-neutral pipeline in the country-

- Compressors to be powered by both gas and electricity
- Purchase of renewable power (e-tags) to run e-motors
- Internal coating of the pipeline
- Adoption of best methane management practices
- Leadership in Energy and Environmental Design certification

- Reforestation
- Purchase of voluntary emission reduction credits
- On-going greenhouse gas mitigation costs to be recovered as part of tariff fuel charge

El Paso will finance the Ruby pipeline through a combination of free cash flow, project financing and other forms of capital, including an estimated USD1.5 billion in debt financing. Credit Suisse is the financial advisor for the project. In July 2009, El Paso and Global Infrastructure Partners (GIP) formed a 50-50 partnership in the pipeline project. El Paso will provide security for GIP’s investment, until the completion of the project, in the form of a portion of its 55 million El Paso Pipeline Partners LP common units and a portion of its equity in the Cheyenne Plains Pipeline. In December 2009, Wyoming’s State Loan and Investment Board approved the purchase of USD300 million of corporate bonds in the Ruby pipeline project.

Pipeline contractors include US Pipeline, Precision Pipeline and Rockford Corporation.

In January 2010, the Federal Energy Regulatory Commission issued the Environmental Impact Statement declaring that the environmental impact of the pipeline could be reduced through proposed mitigation efforts. In February 2010, the Cache County Council approved the rezoning of land to make way for the 18 miles of the pipeline in southern Utah.

**Current status** - All pipes have been purchased and compression equipment has been ordered. Construction of the pipeline will begin in July 2010. It is expected to be in service by March 2011. In June 2010, FERC granted pre-construction authorisation to use three contractor yards/ pipe storage and staging areas in Lake County, Oregon (Township 39 South, Range 20 East).

Tiger natural gas pipeline

**Country** - USA

**Project description** – Construction of 175-mile-long, 42-inch diameter pipeline from Carthage, Texas to Perryville, Louisiana

**Developer** - ETC Tiger Pipeline Company LLC, a wholly owned subsidiary of Energy Transfer Partners Limited Partnership

**Background** - The pipeline will commence at an interconnect with Houston Pipeline Company in Panola County, Texas and will travel east to the Perryville Hub in Richland Parish, Louisiana. Its route will follow the route of two existing pipelines for approximately 98 per cent of its path - CenterPoint’s Carthage-to-Perryville pipeline and Gulf South’s East Texas-to-Mississippi pipeline. Spreads 1 and 2 of the pipeline together measure 78 miles and spreads 3 and 4 of the pipeline together measure 97 miles. The project is estimated to cost USD1 billion.

The pipeline, with an initial capacity of 2 Bcf per day, will provide a takeaway capacity from the East Texas Carthage Hub, Haynesville shale, Bossier sands, and Fort Worth basin production areas. The pipeline will deliver gas to seven interstate pipelines and to one intrastate pipeline for ultimate delivery to the Midwest and the Northeast. The entire capacity has been sold out under long-term contracts ranging from 10 to 15 years. The contractors on the project are as follows:

- Henkels & McCoy - construction of pipeline spreads 1 and 2

- Michels Corporation - construction of pipeline spreads 3 and 4
- AUT Specialists LLC - non-destructive evaluation service contract for spreads 1 and 2
- EMS - installation of compressor stations at Carthage, Bienville and Chatham
- JVI - installation of compressor stations at Cannisnia
- Midway Group - installation of meter station groups 1 and 2
- LedCor Pipeline, Incorporated - installation of meter station groups 3 and 4
- TRC - environmental permitting
- Tetra Tech - environmental inspection

**Current status** - Construction began in June 2010. Pending the necessary regulatory approvals, the expanded section is expected to be in service in the last half of 2011. In June 2010, Energy Transfer Partners filed an application with the Federal Energy Regulatory Commission requesting approval for the Tiger pipeline expansion project, Phase I. The expansion is expected to add 400 MMcf per day of capacity to the Tiger pipeline system, bringing total capacity to 2.4 Bcf per day, all of which is sold out under long-term contracts ranging from 10-15 years.

## LATIN AMERICA

### Rio de Janeiro - Belo Horizonte gas pipeline II (Gasbel II)

**Country** - Brazil

**Project description** - 267 km long, 18-inch diameter pipeline, capable of carrying 5 MMcm of natural gas per day, and connecting Volta Redonda (state of Rio de Janeiro) to Queluzito (state of Minas Gerais)

**Developer** - Brazil-based Petrobras

**Background** - Gasbel I, capable of transporting 3.15 MMcm of gas per day, was the only natural gas pipeline in Minas until December 2009. Gasbel II is a project being carried out under the federal government's Growth Acceleration Programme (GAP). The pipeline serves the Belo Horizonte metropolitan region (the so-called Steel Valley) where the mining, steel and pulp industries are concentrated. It ensures reliable natural gas supply for the simultaneous operation of the power plants Aureliano Chaves (226MW) and Juiz de Fora (87 MW), which together require 1.5 MMcm of natural gas per day.

In addition to the main line, the construction of Gasbel II includes the installation of three compression services and three natural gas delivery points. The Tapinhoá station (Etap) and the Mantiqueira station (Esman) compression services were installed, respectively, in Rio das Flores (state of Rio de Janeiro) and in Santos Dumont (state of Minas Gerais), to replace the existing Gasbel I compression services. Additionally, the Congonhas compression service was installed in the municipality of São Brás Suaçuí (state of Minas Gerais). Finally, the Betim II, São Brás Suaçuí and Brumadinho delivery points were installed, all three along the route of the pipeline. The investment for the project is BRL1.28 billion.

**Current status** - In June 2010, Petrobras held the inauguration ceremony for the pipeline.

### Juana Azurduy natural gas pipeline

**Countries** - Bolivia, Argentina

**Project description** - Construction of 50 km natural gas pipeline, of which a 20 km long, 32-inch diameter section will join the Bolivian production fields to the Argentine borders, and the other 30 km long, 30-inch diameter section will join the Argentine border with Salta pipeline system

**Developer** - Argentina-based state energy company Energía Argentina Sociedad Anónima (Enarsa) and Bolivia-based state energy company Yacimientos Petrolíferos Fiscales Bolivianos (YPFB)

**Background** - The pipeline will run parallel to the existing 8-inch-diameter Madrejones pipeline, which travels between the Madrejones gas field in Bolivia and the Refinor refinery in Argentina. The Bolivian section of the pipeline will cost about USD43 million and the Argentine section is estimated to cost about USD50 million. The pipeline will have an initial capacity of 7.7 MMcm per day, which will be increased gradually to 27.7 MMcm per day.

**Current status** - In June 2010, Enarsa received bids from Argentina-based Victor M. Contreras y Compañía, Argentina-based Techint Compañía Técnica Internacional, Brazil-based Odebrecht-Albanesi and Brazil-based Servicios Vertua in response to the tender that it had launched in May 2010 to build the Argentine section of the pipeline. This section will be constructed under a turnkey agreement, and the contract will involve environmental studies, engineering, procurement, construction and commissioning. In addition, YPFB has called for tenders for the provision of essential equipment for the Bolivian section of the pipeline. The project is scheduled for completion in May 2011.

## ASIA

### Batman 1 natural gas pipeline

**Country** - Philippines

**Project description** - 100 km natural gas pipeline from Batangas to Manila

**Developer** - Philippine National Oil Company (PNOC)

**Background** - The Batman project (Batman 1 and Batman 2) represents the downstream natural gas infrastructural development programme of the Government of the Philippines. It aims to make gas from Malampaya, the country's largest field, available to potential users in metro Manila.

The Malampaya consortium, which is 10 per cent owned by PNOC and 90 per cent owned by Royal Dutch Shell and Chevron, provides natural gas to three power facilities, which provide power to distributors such as the Manila Electric Company.

The pipeline will deliver natural gas from Tabangao, Batangas to the decommissioned 850 MW Sucat bunker fuel-

fired power plant. The winning bidder will convert the Sucat plant, owned by National Power Corporation, into a natural gas facility.

In addition to the construction of Batman 1, the PNOC JV entails the establishment of an LNG reception terminal and the development of a 600–800 MW power plant, which will run from the estimated 300 MW excess capacity of the Malampaya deep-water gas-to-power project.

The USD1.2 billion project is a joint venture (JV) between PNOC, UAE-based conglomerate Sultan International Holdings, Philippines-based Abacus Consolidated Resources and Holdings (Abacus), and Italy-based Saipem Eni.

Because it is an unsolicited proposal, the JV's bid will be subject to the so-called Swiss challenge from other interested international groups. Already, Thailand-based PTT, Japan-based Marubeni Corporation, Russia-based Gazprom, and China-based Petrochina Company Limited have expressed interest.

**Current status** - In June 2010, Abacus offered to develop the Batman 1 pipeline in partnership with Saipem at a cost of USD100 million. Another USD450 million will be required for setting up the component processing plant and storage facilities for natural gas.

The power plant is expected to cost another USD650 million. Abacus and Saipem want an 80 per cent stake in the project and have PNOC retain the remaining 20 per cent. The pipeline is expected to be completed in 2013.

### Myanmar-China gas pipeline

**Country** - Myanmar (Burma), China

**Project description** - The project comprises the development of a 2,806 km, 40-inch gas pipeline from the Burmese port of Kyaukpyu to Kunming, capital of China's Yunnan Province. The pipeline will have a capacity of 12 Bcm per year in its first stage.

**Developer** - China National Petroleum Corporation (CNPC)

**Background** - CNPC holds the majority 50.9 per cent equity in the project, which is estimated to cost USD2 billion.

A group led by the Daewoo International Corporation comprising the Myanmar Oil & Gas Enterprise, India's state-owned Oil & Natural Gas Corporation Videsh Limited (OVL) and Gas Authority of India Limited (GAIL), and the Korea Gas Corporation will sell gas to CNPC under a 30-year contract, with a plateau gas production rate of 500 Mcf per day.

South Korea-based Hyundai Heavy Industries and joint-venture partner Doris Engineering will build a 40,000 tonnes gas production and processing platform, a subsea production system, subsea pipelines, an onshore gas terminal, a jetty and a supply base.

In February 2010, the Indian government approved GAIL to acquire a 4.17 per cent stake and OVL to acquire an 8.35 per cent stake in the pipeline. This move would take GAIL's total investment to USD502.06 million and OVL's total investment to USD1.01 billion in the project.

**Current status** – Work on the pipeline began in June 2010. Southeast Asia Pipeline Company, one of the affiliates of CNPC, has been put in charge of the design, construction, operation and maintenance of the pipelines. Gas delivery is scheduled for April 2013.

### West–East natural gas pipeline

**Country** - China

**Project description** - Construction of four natural gas pipelines from the western part of China to the eastern part of the country

**Developer** - China National Petroleum Corporation (CNPC)

**Background** - The West–East natural gas pipeline project connects the resources in the west with the markets in the east. The four West–East pipelines (WEP) are described below.

**WEP-I:** WEP-I extends from Tarim in Xinjiang in the west to Shanghai in the east, passing through 66 counties in 10 provinces. The 3,843 km pipeline had an initial annual capacity of 12 Bcm of natural gas.

This was raised to 17 Bcm with the installation of 10 new gas compressor stations and the upgrade of eight existing stations in December 2009.

WEP-I is connected to the Shaan–Jing pipeline by three branch pipelines. The pipeline has two sections: the eastern section links Shaanxi to Shanghai, and the western section links Xinjiang to Shaanxi.

Full commercial supply of natural gas commenced in 2005. The equipment for the pipeline was supplied by US-based GE Oil and Gas. WEP-I will be operational in June 2011.

**WEP-II:** WEP-II travels about 8,653 km from Horgos in Xinjiang in the west to Shanghai in the east and to Guangzhou and Hong Kong in the south. It comprises 4,843 km main line and eight sub-lines with an annual capacity of 30 Bcm, supplied by the Central Asia–China gas pipeline.

The pipeline is divided into the following two sections:

1. Western section from Horgos in Xinjiang to Zhongwei in Ningxia Hui autonomous region: This section is connected to WEP-I and to the second Shaan–Jing gas pipeline via the Jingbian cross-link station, which was commissioned in December 2009
2. Eastern section from Zhongwei to Guangzhou (capital of Guangdong) and also reach Shanghai and Hong Kong: A section of the pipeline goes up to Gansu province. It will be parallel to and interconnected with WEP-I.

The contractors for the project include the following:

- China-based Maanshan Iron and Steel, Baosteel, Taiyuan Iron and Steel, and Shandong Shengli Steel Pipe: They will supply X80 coil used for manufacturing line pipes and spiral submerged arc-welded pipes.
- US-based GE Oil and Gas: It will supply pipeline compression equipment for boosting stations in Xinjiang and Gansu provinces.

WEP-II, when completed, will be connected to more than 10 established pipelines in China. It is expected to cost USD20 billion.

**WEP-III:** CNPC has begun a feasibility study on the proposed 8,000 km pipeline from the Xinjiang Uyghur autonomous region in the west to Guangdong province in southeastern China.

The pipeline will run parallel to WEP-II as far as Zhongwei in Ningxia region in northern China, with the possibility of being extended further. It will have an annual capacity of 30 Bcm. It will deliver imported natural gas from Central Asia. WEP-III will consist of the following two sections:

1. Western section from Xinjiang to Zhongwei: to be operational in 2014
2. Eastern section from Zhongwei to Shaoguan in Guangdong province: to be operational in 2014

The investment requirement is estimated at USD14.6 billion.

**WEP-IV:** Plans are underway for a fourth West–East natural gas pipeline from the Tarim basin or from the Sichuan gas fields to the Sino–Myanmar natural gas pipeline.

**Current status** - In June 2010, PetroChina selected US-based Honeywell to manage the operations for the WEP-II project.

### Central Asia–China natural gas pipeline

**Countries** - China, Turkmenistan, Uzbekistan, Kazakhstan

**Project description** - Construction of a 2,700 km long, 42-inch diameter pipeline from Central Asia to China, with a capacity of 40 Bcm per year

**Developer** - China National Petroleum Corporation (CNPC), with the state oil and gas companies of Turkmenistan, Uzbekistan and Kazakhstan having 50 per cent stakes in the respective parts of their pipelines

**Background** - The China–Central Asia gas pipeline is China's first large pipeline project to import natural gas. It is a double-line pipeline, including lines A and B, each with a length of 1,833 km and a diameter of 42 inches.

The total length of the pipeline will be about 7,000 km, of which 188 km will be in Turkmenistan, 530 km in Uzbekistan, 1,300 km in Kazakhstan, and over 4,500 km in China.

Line A was put into operation at the beginning of December 2009. It travels from Turkmenistan through Uzbekistan to southern Kazakhstan before entering China at the border pass of Horgos in the northwestern region of Xinjiang.

At Horgos, the pipeline connects with China's second West–East gas pipeline, which extends 8,653 km across 14 provinces, municipalities and regions, including Shanghai and Hong Kong. The project cost of about USD8 billion was largely financed by the China Development Bank.

CNPC also bought stakes in Kazakhstan's energy companies, MangistauMunaiGaz and KazMunaiGaz Exploration & Production.

The construction of the Turkmen section of the pipeline, which cost USD400 million, was carried out by Russia-based Stroytransgaz, a subsidiary of Gazprom.

The main contractors were China Petroleum Pipeline Bureau, China Petroleum Engineering and Construction Corporation (CPECC) and Zeromax.

The construction of the Uzbek section was undertaken by Asia Trans Gas, a joint venture (JV) of UzbekNefteGaz and CNPC. The Kazakh section was built by Asian Gas Pipeline Company, a JV of CNPC and KazMunaiGaz. The main contractors of this section were KazStroyService and CPECC.

Initially, Turkmenistan will be the only supplier of gas through this pipeline. By 2012, Uzbekistan and Kazakhstan will open up the second line (Line B), enabling China to get gas from all three Central Asian producers.

In total, the pipeline will deliver 40 Bcm of natural gas to China by 2013, if not sooner, for the next 30 years. Of this, around 10 Bcm of gas will be supplied from Kazakhstan and 30 Bcm from Turkmenistan.

### Phase 2 comprises two segments -

The first segment of the pipeline will extend from the Uzbek–Kazakh border to the Kazakh–China border through Shymkent in South Kazakhstan and will reach Horgos in China. It will have an annual capacity of 40 Bcm and a length of 1,300 km.

The second segment (Beyneu–Bozoi–Kzyl–Orda–Shymkent) will have a length of 1,480 km. It will link pipelines in the Beyneu area of southwestern Kazakhstan to the number-four gas compressor in Shymkent, where it will join the Central Asia–China gas pipeline. It will be launched at the beginning of 2014 with an initial capacity of 10 Bcm per year, which later will be increased to 15 Bcm per year.

The pipeline will connect gas fields near Kazakhstan's Caspian Sea coast to Kazakhstan's southern regions around the city of Almaty, uniting separate gas trunklines in the south and west of the country and thereby eliminating the need of the southern regions of the country to import gas from Uzbekistan.

The investment required for Phase 2 has been estimated at approximately USD3 billion. Of this, USD1 billion will be financed by the Government of Kazakhstan and CNPC (both providing USD500 million each) and the remaining will come from Chinese banks. CNPC and KazMunaiGaz plan to set up a new joint venture (JV) in July 2010 for building the Beyneu–Bozoi–Akbulak gas pipeline.

**Current status** - In June 2010, CNPC and KazMunaiGaz signed an agreement to begin constructing Phase 2 of the pipeline. However, the construction has been delayed due to shortage of financial resources on the part of KazMunaiGaz.

The construction of Phase 2 is expected to begin in August 2010. In June 2010, CNPC also signed an agreement with UzbekNefteGaz to buy 10 Bcm of natural gas annually. The two firms will first work to connect Uzbekistan's natural gas transmission system with the Uzbekistan–China pipeline.

## EUROPE

**NEL (Norddeutsche Erdgas-Leitung – Northern German Gas Link)** natural gas pipeline

**Country** - Germany

**Project description** – Construction of a 370 km (230 mile) natural gas pipeline with a capacity of 20 Bcm per year

**Developer** - OPAL NEL Transport GmbH (Wingas 70 per cent, E.ON Ruhrgas 10 per cent, Gasunie 20 per cent)

**Background** - The NEL pipeline is one of two projected pipelines aimed at connecting the Nord Stream pipeline to the existing pipeline grid in Middle and Western Europe, the other one being the OPAL (Ostsee Pipeline Anbindungs Leitung) pipeline. The NEL pipeline will run from the Baltic Sea coast near Lubmin, past Schwerin and Hamburg, to the Rehden natural gas storage facility in Lower Saxony. The planned investment for the NEL project is approximately USD1.22 billion, but the final investment decision has yet to be made.

The future network operators of NEL are OPAL NEL Transport GmbH and E.ON Ruhrgas Nord Stream Anbindungsleitungs GmbH, which will operate the pipeline together according to their respective shares in the joint ownership agreement.

**Current status** - In June 2010, Dutch natural gas transport company NV Nederlandse Gasunie took a 20 per cent stake in the NEL pipeline. Talks on the regulatory conditions are being conducted with the Federal Network Agency and public consultations for the project are already underway in Mecklenburg-Vorpommern and Lower Saxony. The proposed commissioning date for the NEL pipeline is 2012.

### Nord Stream natural gas pipeline

**Countries** - Russia, Finland, Sweden, Denmark, Germany

**Project description** - Construction of a 1,223 km offshore natural gas pipeline from Vyborg in Russia to Greifswald in Germany on the Baltic Sea floor, bypassing Eastern Europe. The pipeline will consist of two parallel lines of 27.5 Bcm per year each.

**Developer:** The Nord Stream offshore pipeline is being ordered and will be operated by the special project company - Nord Stream AG. Nord Stream AG is a joint venture in which OAO Gazprom holds a 51 per cent stake, BASF SE/Wintershall Holding AG and E.ON Ruhrgas hold 15.5 per cent each, N.V. Nederlandse Gasunie holds 9 per cent, and GDF Suez holds 9 per cent.

**Background:** Nord Stream is a gas pipeline that links Russia and the European Union via the Baltic Sea. It will run across exclusive economic zones in Finland, Sweden and Denmark. In Germany, it will connect with the European grid and supply to markets in Germany, Denmark, UK, Netherlands, Belgium, France, and the Czech Republic. The total investment is projected at EUR7.4 billion.

### Dimensions of the gas pipeline from Russia to Germany

Length	1,223 km – twin lines
Diameter	48 inches
Pressure	220 bars
Capacity	55 Bcm per year – combined for the twin lines

The two lines that make up the Nord Stream pipeline system will require a total of 200,000 pipes. Without their concrete coating, these pipes would weigh about 2.3 million tonnes. During a 24-hour period, facilities in Mukran (on the German island of Rügen) and Kotka (in Finland) will apply a concrete coat that doubles the weight of the pipes.

The coated pipes will then be shipped to one of three interim stockyards located in the Swedish ports of Karlskrona and Slite and in Hanko in Finland. As the pipeline construction proceeds, the pipes will be transferred to the pipelay vessels.

The technical contractors on the project are as follows:

- Italy-based Saipem Energy Services SpA has the lead for the engineering process.
- Germany-based Europipe is supplying 75,000 pipes for the first line, to be delivered by DB Schenker Rail Deutschland AG to Mukran.
- Russia-based OMK is supplying 25,000 pipes for the first line from where they will be delivered by the Russian national railway company to Kotka.
- Sweden-based AtoB@C Shipping AB is transporting the concrete-coated pipes from Mukran and Kotka to the interim stockyards at Karlskrona, Slite and Hanko.
- Norway-based NorSea Group is responsible for pipe handling and storage at the three interim stockyards.
- France-based EUPEC is coordinating the logistics (concrete coating, pipe storage, transport) for the two lines in a EUR650 million contract.
- Italy-based Saipem is responsible for pipe-laying.
- Russia-based PeterGaz is responsible for technical engineering in Russia.
- Italy-based PetroValves is supplying valves.
- Germany-based Holcim is supplying 370,000 tonnes of cement, with delivery via DB Schenker.

Further, 370,000 tonnes of sand and gravel will arrive by sea from Scandinavia. Anodes for the active protection of the pipeline will be delivered by ship from Italy.

In January 2010, contracts were awarded for the second line, which is due to start construction in early 2011. Germany-based Europipe, Russia-based OMK and Japan-based Sumitomo won the contract for supplying 1 million tonnes of steel pipes. Of the total contract value of EUR1 billion, Europipe will be awarded 65 per cent, OMK 25 per cent and Sumitomo 10 per cent. Delivery of the pipes for the second pipeline is scheduled to begin in May 2010.

In February 2010, Nord Stream AG received the last of the permits required for commencing construction. The Regional Administrative Agency for Southern Finland approved the gas pipeline along the 374 km route through Finland's exclusive economic zone.

In March 2010, France-based GDF Suez signed a deal with Gazprom to take a 9 per cent stake in the pipeline. As part of the deal, GDF Suez will get 1.5 Bcm per year of gas from 2015.

In March 2010, the project secured the financing for Phase I of the pipeline project, amounting to EUR3.9 billion. While 30 per cent of the project cost will be financed by Nord Stream's shareholders in proportion to their holding in the company, 70 per cent of the project financing is from the bank market comprising 26 banks, including Bank of Tokyo-Mitsubishi UFJ, Deutsche Bank AG, BNP Paribas SA, Credit Suisse AG, Royal Bank of Scotland and Commerzbank AG.

Export credit agencies Hermes and Sace are providing cover for the deal, with support also coming from Germany's untied loan guarantee scheme.

The amount covered by these agencies totals approximately EUR3.1 billion. RBS, Commerzbank and Societe Generale are the financial advisers to the project, and Unicredit has limited advisory role in connection with the untied loan programme of the Government of Germany.

White & Case are the legal advisers to the project and Clifford Chance is acting on behalf of the lenders.

**Current status** - Construction of the first line began in April 2010. The first line is due for completion in 2011 and the second line is due in 2012. Nord Stream will be approaching the financial markets for the financing of Phase II in 2010.

In June 2010, GDF Suez acquired 9 percent stake in Nord Stream AG following its acquisition of 4.5 per cent stake each from the founder members of the Nord Stream consortium - E.ON Ruhrgas and Wintershall Holding.

1 EUR (Euro) = 1.2 USD

### Nabucco natural gas pipeline

**Countries** - Turkey, Bulgaria, Romania, Hungary and Austria

**Project description** - Construction of 3,300 km natural gas pipeline from Erzurum (Turkey) via Bulgaria, Romania and Hungary to Baumgarten (Austria). The pipeline is designed to transport up to 31 Bcm of gas per year.

**Developer** - The pipeline is being ordered and will be operated by a special project company, Nabucco Gas Pipeline International, GmbH. The shareholders of the company are OMV (Austria), MOL (Hungary), Transgaz (Romania), Bulgargaz (Bulgaria), BOTAS (Turkey) and RWE (Germany). Each has a 16.67 per cent stake in the company.

**Background** - A part of the Trans-European Networks - Energy (TEN-E) programme, the Nabucco pipeline project is aimed at reducing Europe's dependence on Russian energy. A feasibility study for the Nabucco pipeline has been performed under a European Union project grant.

According to the report, 2,000 km of the pipeline will be laid in Turkey, 412 km in Bulgaria, 460 km in Romania, 390 km in Hungary and 46 km in Austria.

In Bulgaria, the Nabucco pipeline will be connected with the national gas network and two off-take systems, compressor stations and pig stations. However, the project's viability is in question due to the consortium's excessive demands for international guarantees that Russia would not attack the feeding pipeline on Georgian territory.

Moreover, the long-term disagreements between Turkey and Azerbaijan over the pricing of gas for Nabucco make the availability of gas from Azerbaijan (which is the only confirmed supplier for the project) unlikely.

Estimated investment costs including financing costs for the new pipeline system is EUR7.9 billion. While the sources of financing are yet to be decided, 30 per cent of the cost will be financed by the project's partners and the rest by commercial financial institutions.

The European Commission has also decided to allocate EUR200 million from the European Economic Recovery Plan for the project.

### Dimensions of the gas pipeline from Turkey to Austria

Length	3,300 km
Diameter	56 inches
Capacity	31 Bcm per year

The front end engineering and design (FEED) services of the pipeline, including the overall management of local FEED contractors, the review of the technical feasibility study, route confirmation, etc. is being managed by UK-based consultancy firm, Penspen.

**Current status:** With the Turkish Parliament ratifying the intergovernmental agreement signed between Bulgaria, Turkey, Romania, Hungary and Austria in March 2010, the Nabucco consortium is one step closer to gaining funding for the pipeline. Meanwhile, the European Commission has pledged USD273 million to resume the construction of the Nabucco pipeline. The aid is being provided to the participating companies as they would require money for ordering some of the pipes.

In addition, there is a possibility that the pipeline may clinch a supply contract with Turkmenistan (the only Central Asian country with enough reserves to supply gas to Europe for years). The construction of the pipeline is scheduled to be completed by 2014.

1 EUR (Euro) = 1.2 USD

### South Stream natural gas pipeline

**Countries** - Russia, Bulgaria, Greece, Italy, Serbia, Hungary, Slovenia, Austria, Croatia

**Project description** - Construction of a 900 km pipeline from Russia, via the Black Sea, to Bulgaria, where it will divide into two - one pipeline leading to Greece and Italy and another to Serbia, Hungary and Austria

**Developer** - Gazprom (Russia) and Eni (Italy)

**Background** - It is proposed that the South Stream pipeline will transport Russian natural gas across Europe. The project will partly replace the planned extension of the Blue Stream pipeline from Turkey through Bulgaria and Serbia to Hungary and Austria. It is seen as a rival to the planned Nabucco pipeline.

The South Stream pipeline will cost EUR19 to 24 billion. This includes the construction of an offshore section, which will cost EUR8.6 billion. The actual cost of the onshore sections will depend on the exact route of the pipeline.

Gazprom is confident that the planned annual capacity of 63 Bcm for the South Stream gas pipeline across the Black Sea to Europe will be met as the figure is based on the company's long-term contracts for gas supplies to European countries. However, all contracts for the full volume have yet to be finalised. The pipeline's annual capacity, which was initially planned at 31 Bcm, was raised to 63 Bcm.

In addition, all inter-governmental agreements have also been signed for the commencement of the construction of the South Stream pipeline.

The pipeline will run from the Beregovaya compressor station on the Black Sea coast to the city of Varna in Bulgaria. It will be built and operated by South Stream AG, a joint company (JV) of Russia-based Gazprom and Italy-based Eni.

Since South Stream will be a linkage of four pipelines, the route needs to be optimised by economic and geological parameters.

To construct the onshore section abroad, Gazprom has set up JVs with the gas companies of the countries through which the pipeline will traverse to build and operate the different sections. The pipeline sections in Serbia, Hungary and Slovenia will have a capacity of at least 10 Bcm per year.

Hungary-based oil and gas company MOL Group has offered its empty natural gas field at Pusztaföldvár as a 9 Bcm storage facility.

Gazprom will also construct an underground storage facility in Hungary with a capacity of 1 Bcm.

In January 2010, Gazprom and the Hungary Development Bank signed a project agreement for the construction of the pipeline on Hungarian territory. The Hungarian section is expected to cost USD2 billion.

Croatia joined the South Stream gas pipeline and a 50-50 Russian-Croatian JV will be established for building the Croatian section of the pipeline.

Romania has shown interest in the project and provided Russia with the data required for preparing a feasibility study for a pipeline route across Romania.

In June 2010, Gazprom announced Romania's possible affiliation to the South Stream project does not mean the cancellation of plans to lay the gas pipeline across Bulgaria. This is in contrast to Gazprom's earlier intention of replacing Bulgaria with Romania in the project.

Macedonia has expressed interest in joining the project. Gazprom will conduct a preliminary feasibility study within the next two to three months to determine if it is feasible to build a pipeline to Macedonia.

In March 2010, the European Commission (EC) stated that the South Stream project may be endorsed by the EC if it meets all safety standards.

**Current status** - The construction of the pipeline is likely to start in December 2010. It is expected to be commissioned in December 2015. Construction of the Serbian stretch is scheduled to start in 2012.

In June 2010, Gazprom and Eni signed an agreement with France-based Electricite de France (EDF) to outline specific steps towards the French company's entry in the shareholding structure of the South Stream project.

The agreement contemplates EDF's participation in the project to not be less than 10 per cent and be accomplished before the end of 2010 through a reduction in Eni's stake in the joint venture.

1 EUR (Euro) = 1.2 USD

## MIDDLE EAST & AFRICA

Trans-Sahara gas pipeline (also known as NIGAL pipeline and Trans-African gas pipeline)

**Countries** - Nigeria, Niger, and Algeria

**Project description** - Construction of a 4,400 km long, 48-56 inch diameter pipeline from Nigeria to Algeria with a capacity of 30 Bcm per year

**Developer** - Nigerian National Petroleum Corporation (NNPC) with a stake of 45 per cent, Sonatrach with a stake of 45 per cent, and the Republic of Niger with a stake of 10 per cent.

**Background** - The pipeline will start in the Warri region in Nigeria and run north through Niger to Hassi R'Mel in Algeria. It is expected to supply gas to Europe either through Spain or Italy. The cost has been estimated at USD10 billion with an additional USD3 billion for the gas-gathering centres. The project will also include 10 compression stations.

In Hassi R'Mel, the pipeline will connect to the existing Trans-Mediterranean, Maghreb-Europe, Medgaz, and Galsi pipelines. These pipelines supply gas to Europe from the gas transmission hubs at El Kala and Beni Saf on Algeria's Mediterranean coast.

The Trans-Sahara gas pipeline will cover a distance of approximately 1,050 km in Nigeria, 850 km in Niger, and over 2,300 km in Algeria.

The project will be developed in the following four phases:

- Phase 1 (2002-2005) - design, preliminary studies, signing of MoU, budget determination;
- Phase 2 (2005-2007) - feasibility study, bid invitation, selection of consultant;
- Phase 3 (2007-2011) - joint venture agreements; and
- Phase 4 (2011-2016) - engineering, procurement, construction

UK-based Penspen Limited (a specialist in oil and gas facilities and pipeline engineering) jointly worked with IPA Energy Consulting Limited to conduct a feasibility study for the project.

In 2009, NNPC and Russia-based Gazprom agreed to invest USD2.5 billion to develop Nigeria's oil and gas sector, including building the first part of the Trans-Sahara pipeline. Later, in July 2009, Nigeria, Niger, and Algeria signed an intergovernmental agreement on the pipeline.

The pipeline has attracted several major players such as France-based Total, Italy-based Eni, and Anglo-Dutch Royal Dutch Shell, which have expressed interest in participating in the project. Even Europe has shown interest in financing the pipeline through the European Investment Bank.

**Current status** - On June 3, 2010, the Government of Algeria announced that the pipeline will transport 25 Bcm of natural gas per year.

The pipeline is expected to deliver the first supply of gas in 2016. However, the scheduled start-up date is subject to security concerns due to strong opposition from militant groups in Nigeria. ♦

## NORTH AMERICA

### AUT Specialists wins Tiger pipeline contract

US-based Henkels&McCoy has awarded AUT Specialists LLC the non-destructive evaluation service contract for spreads 1 and 2 of the Tiger pipeline located in Texas.

Henkels and McCoy is the contractor for the installation of spreads 1 and 2, which measure 82.9 km and 42.5 km respectively. Michels Corporation will install spreads 3 and 4 of the pipeline.

The 289 km long, 42-inch-diameter interstate natural gas pipeline will be owned and operated by ETC Tiger Pipeline Company, a wholly owned subsidiary of Energy Transfer Partners (ETP).

The pipeline, with a capacity of 2 Bcf per day, will connect to ETP's dual 42-inch-diameter pipeline system near Carthage, Texas, and extend through Haynesville Shale and end near Delhi, Louisiana.

Once in service, the pipeline will serve the Northeast, Southeast, Mid-Atlantic and Midwest markets in the US. Pipeline construction began in June 2010, with the first gas flow scheduled for early 2011.

### Pioneer enhances pipeline scheduling functionality in software

US-based Pioneer Solutions LLC, a regulatory compliance and risk management software provider, has improved pipeline scheduling functionality in its software platform, TRMTracker.

The software has been enhanced to include from-the-wellhead-to-the-burner-tip scheduling capability with automated Web-based confirmation, dynamic workflow, pool balancing management, and the ability to clone repeat schedules.

Added features include a configurable gas contract management template (designed to manage complex contracts, including structured deals, gas gathering, processing, and storage contracts) and a "what if" scenario analysis tool (to project a profit-and-loss outcome for evaluating proposed deals).

## LATIN AMERICA

### Wellstream wins Brazilian pipeline contract

US-based Wellstream, a supplier of flexible pipe systems and solutions to the offshore oil and gas industry, has secured a contract from Brazil-based OGX Petroleo e Gas to supply flexible risers and flowlines, mid-water arches, umbilicals, and other associated equipment and services.

The contract value has not been disclosed. Wellstream's Brazil operations team will deliver the contract. The flexible risers and flowlines will be manufactured in Wellstream's Niterói facility in Brazil.

The contract comes on top of new work that Wellstream has won this year in the Brazilian and North Sea oilfields. Wellstream is already working with Petrobras in Brazil.

### Global Industries awarded pipeline project in Mexico

US-based Global Industries has been awarded a project contract by Mexico-based state-owned company Petroleos Mexicanos (Pemex) for pipeline work in Pemex's Ku-Maloob-Zaap field in the Bay of Campeche.

The project, worth approximately USD125 million, is scheduled to begin in July 2010 and is likely to be completed by end-December 2010.

Global will be utilising the Hercules as the pipelay vessel and the Titan II as the main operating vessel, with other additional support vessels assisting the pipeline construction.

It will install a 36-inch-diameter, 27 km-long pipeline at a depth of around 300 feet from the E-KU-A2 platform to the AKAL-C6 platform.

The project also includes 29 pipeline crossings, risers and expansion curves.

## ASIA

### CNPC to construct Sino-Myanmar pipeline and Phase 2 of China-Kazakhstan pipeline

China's largest oil and gas company, China National Petroleum Corporation (CNPC), will begin construction of the Sino-Myanmar oil and gas pipeline, following an agreement signed between China and Myanmar on June 3, 2010.

The project will open the fourth route for China's oil and natural gas imports, after ocean shipping, the Sino-Kazakhstan crude oil and natural gas pipelines and the Sino-Russian crude oil pipeline.

The Sino-Burma Oil and Gas Pipeline Programme is scheduled to be completed at the end of 2011. The gas pipeline will start from Kyaukryu port on the west coast of Myanmar and will enter China at the border city of Ruili in China's Yunnan province.

Within China, the natural gas pipeline will extend from Kunming in Yunnan province to Guizhou province and the Guangxi Zhuang autonomous region, covering a total of 2,806 km. It is expected to transport 12 Bcm of gas annually to China.

In another development, CNPC signed an agreement with a Kazakh national oil company, KazMunaiGaz, pursuant to which both sides will begin constructing Phase 2 of the China-Kazakhstan natural gas pipeline.

Phase 2 of the pipeline will have length of 1,400 km. The pipeline will meet the natural-gas demand in southern Kazakhstan and supply natural gas from the Caspian Sea area to China.

Phase 1 of the pipeline has a length of 1,300 km and was put into operation in December 2009. It connects China with Uzbekistan and Kazakhstan.

### Honeywell to provide control and safety systems for West-East pipeline II

China's largest oil producer PetroChina has selected US-based Honeywell International (Honeywell) to provide control and safety systems for the West-to-East II pipeline in China, which is the world's longest gas pipeline.

The 8,704 km pipeline is the second of two massive pipelines to be constructed for transporting fuel from energy-rich western China to the country's eastern (Shanghai) and southern regions (Guangzhou and Hong Kong).

The new pipeline crosses 14 Chinese provinces, autonomous regions and municipalities. It will transport approximately 30 Bcm (1,059 Bcf) of natural gas per year. PetroChina, the county's largest oil producer, is the operator of the pipeline.

PetroChina will use Honeywell's Experion as the main integration and control software platform at the pipeline's 73 control stations.

Experion will integrate alarm and event subsystems to give the pipeline operators a complete view of how the pipeline is functioning.

By integrating safety management into the overall system, Experion will help improve process-safeguarding practices such as emergency shutdowns, equipment protection, fire and gas monitoring, and critical control.

## EUROPE

### MinijosNafta to survey Lithuania's underground gas storage, new N-plant

An international consortium comprising Lithuania-based oil exploration and production company Minijos Nafta, Denmark-based Odin Energy and Hungary-based Acoustic Geophysical Services will conduct geological surveys for Lithuania's planned underground natural gas storage facility in Syderiai, in the northwestern district of Telsiai, and will undertake seismic surveying of potential sites for the construction of the Visaginas Nuclear Power Plant.

The contract, worth approximately LTL14 million, was signed on June 1, 2010 with the winning bidder. Of this amount, more than LTL4 million has been allocated for the surveying of nuclear power plant sites and more than LTL9 million for the surveying of the underground gas storage facility.

The survey will be conducted in an area of around 85 square km. If the survey confirms that the site's geological structure is suitable for gas storage, the designing work on

the Syderiai facility, which will be built at a depth of about 1.5 km, is likely to be launched in early 2011.

Based on preliminary estimates, the planned gas storage facility in the village of Syderiai would be able to store up to 1 Bcm, an amount sufficient to meet Lithuania's needs for more than two months.

1 LTL (Lithuanian Litas) = 0.38 USD

### Bunde Etzel Pipeline selects Telvent automated control solution

Telvent (US-based information technology solutions and business information services provider) has signed a contract with Bunde Etzel Pipeline GmbH & Company KG (BEP) to deliver a turnkey control system for the Bunde Etzel pipeline.

The complete information management solution optimises the security and operational efficiency of BEP, connecting gas storage facilities in Germany with the natural gas pipeline network in the Netherlands and assuring reliable delivery of natural gas to Western Europe.

Telvent's solution is based on its advanced-technology supervisory control and data acquisition (SCADA) system. High-technology gas-measurement devices will be included to feed pipeline data to the SCADA system and to run integrated pipeline modelling applications.

BEP is a joint venture of a number of companies from the energy industry in Europe: Deutsche BP Aktiengesellschaft, EDF Gas Deutschland GmbH, IVG Caverns GmbH, OMV Gas and Power GmbH, DONG Energy A/S, Energie Baden-Wurttemberg AG, Gazprom and Germania GmbH.

## MIDDLE EAST & AFRICA

### COWI to conduct feasibility study for Tanzania gas pipeline

The East African Community (EAC) signed a contract with Denmark-based engineering, planning, construction, supervisory and advisory company COWI (COWI Tanzania Limited) and Kenya-based Runji & Partners of Kenya to carry out a feasibility study on the 530 km Dar es Salaam-Tanga-Mombasa natural gas pipeline project at a cost of USD0.5 million. The study is expected to be completed by February 2011.

### Saipem wins Kuwaiti contract worth USD900 million

Italy-based Saipem SpA has won a USD900 million onshore contract in Kuwait from the Kuwait Oil Company. The project involves the construction of a new pumping station with three lines of high and low pressure (for producing approximately 234 MMcf per day of dry gas and 69,000 barrels of condensates) and the construction of a pipeline network. Construction is expected to be completed by the second quarter of 2013. ♦

## NORTH AMERICA

Development of Natural Gas Initiative Program

**Country:** USA

**Organisation:** General Land Office

**Description/scope of work:** Tenders are invited for the Natural Gas Initiative Program Grants.

**Closing date:** August 24, 2010

**Contact:** Attn: Patti Troiano, 1700 North Congress Avenue, Stephen F. Austin Building, Room 706, East Austin, TX 78701-1495, Phone: +1 (512) 463-5245, Fax: +1 (512) 463-1795

E-mail: patti.troiano@glo.state.tx.us

## ASIA

RfP for 60 km gas pipeline

**Country:** Bangladesh

**Organisation:** Gas Transmission Company Limited (GTCL)

**Description/scope of work:** Requests for proposal are invited for a 60 km long, 20-inch diameter gas transmission line, which includes river and other crossings, from Bakhrabad gas field (in Muradnagar thana of Comilla district) to Siddhirganj power station (in Siddhirganj thana of Narayanganj district), along with associated aboveground and underground installations, valve stations, scraper trap stations, etc. In addition, the transmission line will include six river crossings by the HDD method (Gomuti-1,900 metres; Kajla-850 metres; Meghna-1,650 metres; Asariar Char-750 metres; Old Brahmaputra-550 metres; and Sitalakhya-550 metres), along with one metering station at Bakhrabad, one regulating and metering station (RMS) at Haripur, one RMS at Siddhirganj, cathodic protection system of the pipeline and the facilities, SCADA/telecommunication facilities, laying of optical fibre cable and hook-up, hook-up with existing SCADA networks at Meghnaghat, Haripur, and Siddhirganj, and hook-up of existing SCADA and proposed SCADA network at Siddhirganj with existing Master Control Centre at Demra.

**Closing date:** September 20, 2010

**Contact:** Md. Aminur Rahman, Managing Director, Red Crescent, Borak Tower (Level-3), 71-72 Old Elephant Road, Eskaton, Dhaka 1000. Phone: +88 02-8311011, Fax: +88 02-9358100, 9342307, E-mail: gtcl\_bsp@yahoo.com, Website: www.gtcl.org.bd

EPC for gas processing plant and gas gathering pipelines

**Country:** Bangladesh

**Organisation:** Bangladesh Gas Fields Company Limited

**Description/scope of work:** Tenders are invited for the design, engineering, procurement, supply, installation, testing and commissioning of one glycol dehydration type gas processing plant with a capacity of 75 MMscf per day and two gas gathering pipelines with a diameter of 6 inches and a length of 3,500 metres with associated facilities on a turnkey basis at Titas gas field, Brahmanbaria.

**Closing date:** July 29, 2010

**Contact:** A. K. Faziul Haque Chowdhury, Head Office, Birashar, Brahmanbaria 3400, Phone: +880 851-58399, 57758, Fax: +880 851-57429, 58758

EPC of submarine pipeline

**Country:** India

**Organisation:** Oil and Natural Gas Corporation Limited

**Description/scope of work:** Tenders are invited for design, engineering, procurement, fabrication, load out, tie down/sea fastening, tow-out/sail out, transportation, installation, hook-up, installation of submarine pipeline, modification of existing facilities, testing, pre-commissioning and commissioning of all facilities.

**Closing date:** July 30, 2010

**Contact:** Engineering Services (Offshore), 4th Floor, 11 High Building, Bandra-Sion Link Road, Sion (West), Mumbai 400017  
Website: <http://etender.ongc.co.in>

## EUROPE

Prequalification for tender for seismic services

**Country:** UK

**Organisation:** Scottish and Southern Energy PLC

**Description/scope of work:** Tenders are invited for conducting a seismic survey of the subsurface formation of the area of the Aldborough phase 2 gas storage project in East Yorkshire.

**Closing date:** September 29, 2010

**Contact:** Attn: Hamish Myles, Head Office, 200 Dunkled Road, UK, Perth PH1 3AQ

Phone: +017 38456385

E-mail: hamish.myles@scottish-southern.co.uk

Gas distribution in Zirndorf

**Country:** Germany

**Organisation:** Stadtwerke Zirndorf GmbH

**Description/scope of work:** Tenders are invited for gas distribution and related services. Stadtwerke Zirndorf GmbH operates the gas distribution system in the city of Zirndorf in an area of 28 square km. The line length is 86 km, of which about 50 km is low pressure. The technical management includes benefits of operating the gas distribution system based on the rules and regulations of the DVGW G 1000 in the city of Zirndorf / Mittelfranken.

**Closing date:** August 5, 2010

**Contact:** Schützenstraße 12 Contact: Rödl & Partner GbR Attn: Rechtsanwältin Ute Beckmann LL.M. 90513 Zirndorf

Phone: +49 91191933553, Fax: +49 91191933549

E-mail: ute.beckmann@roedl.de

## MIDDLE EAST & AFRICA

RfP for natural gas distribution equipment

**Country:** Tunisia

**Organisation:** La Societe Tunisienne de Lelectricite et du Gaz (Tunisian Company of Electricity and Gas)

**Description/scope of work:** Tenders are invited for natural gas distribution equipment—tag indicating gas networks (15,000), surface box gas (7,000). Contract duration is nine months. Criteria used for evaluating the offer—compliance with the constitutional documents of the tender and the lowest price per item. The record of the complete tender can be obtained by sending a request to the above address against payment of a non-refundable fee of 70,000 DT, equivalent to 50.00 EURO, Société Tunisienne de Banque, Rue Hedi Nouira, Tunis, Account number 10404100009280378859.

**Closing date:** July 28, 2010

**Contact:** 38 Rue Kamel Ataturk, BP 190 6 Tunis, Phone: +216 71-34-1311-4851, Fax: +216 71-33-0174 / 71-34-9981 / 71-34-1401, E-mail: dpsc@steg.com.tn

# Global Gas Transport Report

Information & analysis on global gas transport and storage

## ABOUT US

The mission of **Global Gas Transport** is simple and modest - to provide decision makers with up-to-date and comprehensive information and analysis on the global natural gas transport and storage industry.

**Global Gas Transport** keeps you informed on all the key developments, trends, and issues in the sector. It tracks major projects, contracts, and investments. It profiles leading natural gas pipeline and storage facility operators and discusses their strategies. It reports on regulatory initiatives and examines their implementation. It provides the latest available data and statistics. It also features the views and perspectives of experts and top industry players.

Our service package consists of three elements **Global Gas Transport Report** (a monthly newsletter), **Global Gas Transport Weekly** (a weekly update) and [www.globalgastransport.info](http://www.globalgastransport.info) (an information-enriched website).

The **Global Gas Transport Report**, the monthly newsletter, comprises 10 distinct sections:

- **News:** Latest news from across the world, with sub-sections on North America, Latin America, Asia, Europe and Middle East & Africa
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- **Deal Watch:** Developments in debt, equity, M&A deals
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- **Spotlight:** A detailed look at a specific topic or area of interest
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- **Data & Statistics:** Tables and charts with relevant and latest information
- **Global Gas Transport Weekly**, published every Tuesday, provides you with a summary of key events and developments that took place in the natural gas transport and storage sector during the previous week from across the world.

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