

Annual Gas Production and Consumption, 2010-2011

October 2011



Hydrocarbon Unit

Energy and Mineral Resources Division

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1. Summary:

Annual gas production and consumption report is based on daily well wise gas production data received from production companies. Consumption data is collected from MIS report of Petrobangla. In addition to this “Gas & Condensate Production and Distribution Report”, also prepared by Petrobangla is used.

In 2010-2011 fiscal year 83 wells in 17 gas fields of the country produced 708 Bscf gas. Average daily production rate was 1941 MMcfd. During the year field wise minimum daily production was recorded at 6.3 MMcfd (Shahbazpur) and maximum production rate was 695.6 MMcfd (Bibiyana). During the year some wells remained shut-in for a period ranging from few days to several days.

Well wise maximum production rate during the year was recorded at 104 MMcfd from Bibiyana well 3. Total production of Bibiyana logged 235.9 Bscf. Titas gas field, largest of the country, produced 149.5 Bscf gas and average daily production rate was 409.7 MMcfd. Annual production of Habiganj gas field, third largest, logged 93 Bscf and average daily production rate was 254.9 MMcfd. Well wise gas production in MMcfd is displayed as Figure 1.

Effect of Eid holidays is clearly marked by low production rate. During Eid-UI-Fitr holidays production went down to 1300 MMcfd. Similarly during Eid-UI-Azha production went down to as 1365 MMcfd. This effect is quite clear in Figure 2 and figure 3.

Figure 4a and 4b this two line graphs shows comparison of production rate between different gas fields. Low producing gas fields are separately shown (Fig. 4b). In figure 5 comparison of production by national companies and IOCs is shown. During the year maximum and minimum daily production rate was recorded at 2036 MMcfd and 1265 MMcfd respectively. On occasions daily production rate touched 2000 MMcf mark, but only for couple of days.

During the year IOCs produced 370.5 Bscf (1003.8 MMcfd) and national company's contributed 330 Bscf (903 MMcfd). Out of 17 producing gas fields, average production rate of only four gas fields, i.e. Bibiyana, Titas, Habiganj, and Jalalabad exceeded 150 MMcfd. These Four gas fields account for 76 percent of total production.

Due to high production rate Bibiyana, Titas and Habiganj gas fields can be easily picked up in figure 3. In figure 4a production (MMcfd) of individual gas fields is displayed in line graph. For convenience, gas fields producing less than 110 MMcfd is shown separately in figure 4b.

Comparison of production between national and international companies is displayed in Figure 5.

In figure 6 company wise share in annual gas production in MMcfd and Bscf is shown. Chevron top the list with annual production of 323 Bscf (885 MMcfd). BGFCL occupied

second position and it produced 269 Bscf gas and average daily production rate was 737 MMcfd.

Field wise share in annual gas production in MMcfd and Bscf is shown in Figure 7. Bibiyana gas field top the list with a production figure of 254 Bscf which equals to 696 MMcfd. Annual production of Titas gas field, second largest producer, logged 149 Bscf gas, which equals to 410 MMcfd. Habiganj produced 93 Bscf gas and it equals to 255 MMcfd.

Table below shows company wise annual gas production in Bscf for two years.

FY	SGFL	BGFCL	BAPEX	Chevron	Santos	Tullow	Total
2009-10	56.6	259.2	13.2	321.5	13.5	38.5	704
2010-11	55.8	269	13.2	323	6.5	41	708

Field wise annual condensate production in 1000 bbl is shown in figure 8. In figure 9 gas fields are arranged according to gas production rate.

During the year 3.7 MMbbl liquid product was recovered. This includes 2.3 MMbbl condensate. Field wise condensate production in 1000 bbl can be seen in figure 10A. Three quarter of the total volume of liquid is recovered from IOC operated gas fields.

In addition to condensate, 1.1 MMBL refined product was also recovered. Details can be seen in table below and in figure 10B. share in production of finished product can be seen.

Liquid Production in bbl		
	2009-10	2010-11
Octane	3,794	44,868
MS	345,000	437,276
HSD	318,012	412,705
NGL	151,082	196,377
Condensate	3,1727,725	2,332,375
Kerosene	8,088	140,698
Total Liquid Product	4,134,229	3,743,939

Data Source: MIS Report of Petrobangla, 2009-10 and 2010-11

Out of 3.74 MMbbl, IOC operated gas fields produced 1.75 MMbbl. Gas fields operated by national companies produced 0.59 MMbbl condensate. Some decrease in liquid production is observed.

In terms of total condensate production Bibiyana gas field occupied the top position. This field produced 1187 thousand bbl condensate. Second position is occupied by Jalalabad gas field and this field produced 424 thousand bbl. Kailas Tila gas field produced 286 thousand bbl condensate. In addition to this, Kailas Tila produced 275 thousand bb other liquid.

Field wise maximum production was recorded from Bibiyana gas field which produced 1.28 MMbbl. Jalalabad gas field was the second largest condensate producer and this field produced 0.504 MMbbl during the year. Kailas Tila gas field produced 0.296 MMbbl condensate during the year. Apart from condensate, Kailas Tila field also produced 4.07 MMbbl refined product, i.e. MS, HSD, NGL and kerosene.

In p32-33 of MIS report sector wise gas sales by the distribution companies is provided. According to this table, total gas sales by distribution companies was 20306.45 MMCM or 717,116 MMcf. This figure is more than the total produced volume.

In page 54 of MIS report gas purchase and sales figure for the month of July is quite low in comparison with the figures for remaining months. It was gathered from Petrobangla that due to some audit objection gas purchase and sales figures of this month for Titas Gas T & D co. is not included.

2.0. Production

2.1.National Companies:

Bangladesh Gas Fields Co. Ltd (BGFCL), Sylhet Gas Fields Ltd (SGFL) and Bangladesh Petroleum Exploration & Production Co. Ltd (BAPEX), these three companies produced 338 Bscf gas which equals to daily production rate of 926 MMcfd. In 2010-11 fiscal year. National companies share in annual production was 46.8 percent of total production. During the year 2010-11 Maximum daily production rate of national company was 946.8 MMcfd and the minimum rate was 691.4 MMcfd. Well wise gas production of national companies in MMcfd is shown in Figure 11. Figure 12 shows company wise gas production in MMcfd. In figure 13 (pie graph) comparison of company wise production in MMcfd by national companies is displayed.

During the year 1,824 thousand bbl liquid product was recovered from the gas fields operated by the state own enterprises. This includes 592 thousand bbl condensate (figure . In addition to condensate 1232 thousand bbl finished product was extracted. condensate was recovered from 11 gas fields.

Figure 12 shows company wise gas production in MMcfd by BGFCL, SGFL and BAPEX. Production volume of the state own enterprises is dominated by BGFCL. During the year national companies produced 317.77 Bscf gas and average daily production rate was 870.53 MMcfd. Maximum daily production was recorded at 1023.77 MMcfd, but for a day. For remaining 364 days production rate fluctuated within 914.8 to 689.8 MMcfd. Daily production in MMcfd for three national companies can be seen in Figure 8. The figure is overwhelmingly dominated by BGFCL. Effect of Eid holidays is quite prominent in Figure 7.

2.1.1 Bangladesh Gas Fields Limited (BGFCL):

BGFCL is the largest gas producer among state own companies. The company operates five gas fields i.e. Titas, Habiganj, Narshingdi, Bakhrabad and Meghna. Meghna gas field was brought in to production after workover of the well. In 2010-11 the company produced 268.9 Bscf gas and daily average production rate was 736.8 MMcfd. During the year 175,879 bbl condensate was recovered. Field wise annual production in MMcfd can be seen in figure 14. In figure 15 company wise gas production share in annual production is displayed.

2.1.1.1. Titas Gas Field is the largest gas field of the country as well as largest producer among state own gas fields. It is also the main producer of BGFCL. Well 12 resumed production in December after work-over operation. During 2010-11 fiscal year Titas field produced 149.5 Bscf gas at an average flow rate was 409.7 MMcfd. In the previous year 147.6 Bscf gas was produced and daily average production rate was 416.3 MMcfd. During the year maximum production rate was recorded at 142.7 MMcfd and the minimum flow rate was 341.1 MMcfd. During the year 1,398,831 bbl condensate was recovered from this gas field. Condensate recovery factor was 0.94 bbl/MMcf gas. Average daily production rate was 383 bbl/day.

2.1.1.2. Habiganj Gas Field is the third largest gas field of the country. In 2010-11 this field produced 93.1 Bscf gas and average production rate was 254.9 MMcfd. During the year maximum daily production was 266.9 MMcfd and the minimum flow rate was recorded at 185.1 MMcfd. Well # 8 and # 9 were shut down earlier. During the year 422 bbl condensate was recovered. Habiganj gas is quite dry and condensate recovery rate was 0.06 bbl/MMcf.

2.1.1.3. Bakhrabad Gas field produced 12.2 Bscf and average daily production rate was 33.5 MMcfd. During the Maximum production rate was 36.01 MMcfd and the minimum rate was and minimum flow rate was 31.71 MMcfd. During the year, 7237 bbl condensate was recovered. Daily condensate recovery rate was 19.8 bbl/day and extraction rate was 0.61 bbl/MMcf gas.

2.1.1.4. Narshingdi Gas Field: During 2010-11 average daily gas production rate of Narshingdi was 30.7 MMcfd. Total production during the year was 11.2 Bscf. On one occasion gas production was shut down for a day only. During the year 24105 bbl condensate was recovered. Average recovery rate was 2.15 bbl/MMcf gas.

2.1.1.5. Meghna Gas Field: In September 2010 Meghna gas field resumed production in September 2011 after a work-over job. During the year this gas field produced at an average rate of 8.09 MMcfd and annual production logged 2.95 Bscf. During the year 6071bbl condensate was recovered. Condensate recovery rate was 2.06 bbl/MMcf of gas.

2.1.1.6. Feni Gas Field: BGFCL operated Feni gas field until it was shut down in 1997-98 due to excessive water production.

2.1.2. Sylhet Gas Fields Co. Ltd. (SGFL)

The company operates four gas fields, i.e. Sylhet (Haripur), Beani Bazar, Kailas Tila and Rashidpur gas fields. Sylhet and Chattack gas fields were discovered by Pakistan Petroleum Ltd., a subsidiary of former Burmah Oil Company. The company was producing gas from Sylhet and Chattak gas fields. After independence PPL abandoned this gas fields and Bangladesh Government took over the company and later it was renamed as Sylhet Gas Fields Ltd (SGFL). Later Kailas Tila and Rashidpur gas field were brought under production by SGFL.

During the reported year SGFL produced 55.8 Bscf gas and average production rate was 152.8 MMcfd

In the reported year maximum gas production rate was recorded at 230.4 MMcfd and minimum production rate was 106.3 MMcfd. During the year the company produced condensate at an average rate of 1077.3 bbl /day. Figure 16 shows field wise daily production in MMcfd. Figure 17 shows a comparison of field wise gas production in MMcfd.

2.1.2.1 Kailas Tila Gas Field is the main gas producer of SGFL. In 2010-11 Kailas Tila gas field produced 31.1 Bscf gas and the figure is nearly half of the production of SGFL. Daily average gas production rate of Kailas Tila gas field was 85.3 MMcfd and total production during the year was 31.12. Maximum daily production was recorded at 103 MMcfd and the minimum production rate was 23.7 MMcfd. During the year 275,182 bbl condensate was recovered. In addition to this 150,179 bbl NGL was recovered. Condensate recovery rate was 8.82 bbl/MMcf gas. In addition to this, by processing NGL and condensate 19,686 bbl MS, 4330 Mt LPG and 34.5 bbl HSD was recovered.

2.1.2.2. Rashidpur Gas Field: During the year this field produced 17.8 Bscf gas and average daily production rate was 48.7 MMcfd. During the year maximum production rate was 51.7 and minimum was 32 MMcfd. However, Low production rate below 40 MMcfd was recorded on three occasions. During the year 13,756 bbl condensate was recovered. The gas is quite dry and gas condensate recovery ratio was 0.77 bbl/MMcf gas.

2.1.2.3. Beani Bazar Gas Field: In 2010-11 fiscal year this field produced 4.38 Bscf gas at an average of 12 MMcfd. Maximum daily production rate was 14.5 MMcfd and minimum was as low as zero. Production remained suspended for about a week. This field is quite rich in condensate. During the year 13,756 bbl condensate was recovered. MMcf. During the year 13,756 bbl condensate was recovered from this field.

2.1.2.4. Sylhet Gas Field: This is the oldest gas field of the country which was discovered in 1955. Production from this field started in 1962. In 2010-11 Sylhet field produced 2.41 Bscf gas and average daily production rate was 6.6 MMcfd. During the year 29,115 bb condensate was recovered. Condensate recovery rate was 12.1 bbl/MMcf gas.

2.1.3. Bangladesh Petroleum Exploration and Production Co. Ltd (BAPEX)

The company operates. Salda Nadi, Fenchuganj and Shahbazpur gas fields. During the year the company produced 13.3 Bscf gas and average production rate was 36.3 MMcfd. Maximum daily gas production rate was 41.4 Bscf. During the year minimum rate was recorded at 20.4 MMcfd. During the year 9077 bbl condensate was recovered. Figure 18 and 19 shows field-wise gas production in MMcfd. Figure 18 shows share of gas fields in MMcfd and Bscf.

2.1.3.1. Fenchuganj Gas Field:

This gas field is the main producer of BAPEX. In 2009-10 fiscal year this field produced 9 Bscf gas at an average rate of 24.7 MMcfd. Maximum production rate was recorded at 43.2

MMcfd and minimum rate was 31.1 MMcfd. During the year 22671 bbl condensate was recovered, which equals to daily rate of 62.1 bbl/day. Average condensate recovery rate was 2.18 bb/MMcf.

2.1.3.2. Salda Nadi Gas Field:

BAPEX started production operation with Salda Nadi gas field. In 2009-01 fiscal year this gas field produced 3.08 Bscf gas and average production rate was 8.4 MMcfd. During the year maximum flow rate was recorded at 10.67 MMcfd and the minimum figure was 7.67 MMcfd. 1668 bbl condensate was recovered during this period. Average recovery rate was 0.54 bbl/MMcf gas. Daily condensate recovery rate was 4.6 bbl/day.

2.1.3.3. Shahbazpur Gas Field:

During the year Shahbazpur gas field produced 2.3 Bscf gas and average production rate was 6.3 MMcfd. Maximum production rate was 10.1 MMcfd. On few occasions the field remained shut down and total period was less than 3 weeks. During the year 134 bbl condensate was recovered. Condensate gas ratio was 0.06 bbl/MMcf.

2.1.3.4. Semutang gas Field:

This field was discovered by Oil and Gas Development Corporation in 1970-71. After independence Shell Oil was awarded an area in Chittagong Hill Tract covering Semutang gas field. Shell drilled one exploratory well and also drilled one well in Semutang (Semutang 5). However Shell relinquished the area and left. BAPEX was awarded Semutang gas field. BAPEX completed well 5 as a production well. Production is depending on the completion of gas transmission line, which is under progress.

2.1.3.5. Sundalpur Gas Field:

Recently BAPEX discovered a gas field named as Sundalpur. The company is working on development of this field.

2.2. International Oil Companies:

Chevron, Santos (Former Cairn Energy), and Tullow Oil are the international oil companies engaged in gas production during the year. These companies produced 421.3 Bscf gas during the year. Average daily production rate was 1154.5 MMcfd. During the year maximum daily production rate was 1378.9 MMcfd and minimum production rate was 481.8 MMcfd. Share of IOCs in total production is 53.16 %.

Well wise gas production in MMcfd is shown as figure 20. Effect of Eid Holidays is quite prominent in this figure. Figure 21 displays company wise share in gas production in MMcfd and Bscf.

During two Eid holidays production from IOC operated fields was significantly reduced and the minimum figure was 628 MMcfd and 516 MMcfd. IOCs production is dominated by Bibiyana gas field, which account for 64% of IoC production.

Condensate production from IOC fields is quite high. In 2010-11 fiscal year IOCs produced 1.75 MMbbl condensate. This is more than 3 times the production of national companies.

2.2.1. Chevron.

This company operates 3 gas fields, Bibiyana, Jalalabad and Moulavi Bazar. Average daily production of the company was 882.5 MMcfd and during the year the company produced 322.1 Bscf gas. Maximum daily production was 723 MMcfd and minimum production rate was 154 MMcfd. During the year the company recovered 1.63 MMbbl condensate. Chevron produced nearly 72 percent of total condensate produced during the year. Figure 22 shows field wise gas production in MMcfd. Share in gas production of three fields is shown in Figure 23.

2.2.1.1. Bibiyana Gas field is the second largest gas field of the country and top most gas producer in 2010-11. This field produced 253.2 Bscf gas at an average rate of 694.8 MMcfd. During the year maximum daily production was 758.9 MMcfd and the lowest production rate was 140.5 MMcfd. During the year well 12, 3 and 6 remained shut down for few days. Well 2 remained shut down for a day only. Low daily production was recorded during Eid holidays.

During the year 1.19 MMbbl condensate was recovered from this gas field. Condensate recovery rate was 4.7 bbl/MMcf gas.

2.2.1.2. Jalalabad Gas Field is the second largest field of Chevron. During last fiscal year this field produced 51.1 Bscf gas at an average rate of 139.9 MMcfd. During the year highest production rate was recorded at 202 MMcfd. Minimum production rate was recorded at 22.3 MMcfd. Production remained suspended on two occasions. During the year 427,663 bbl condenser was recovered from Jalalabad gas field. Condensate recovery rate was 8.35 bbl/MMcf gas.

2.2.1.3. Moulavi Bazar gas field produced 17.8 Bscf gas at an average production rate of 48.9 MMcfd. During the year maximum daily production rate was 57.3 MMcfd and the minimum rate was 2.5 MMcfd. During the year 3742 bbl condensate was recovered. Average daily condensate production rate was 10.3 bbl and condensate recovery rate was 0.85 bbl/MMcf.

2.2.2. Tullow Oil:

2.2.2.1. Bangura Gas Fiels was discovered by Tullow oil. The field started production in 2004-05. During the year (2010-11) Tullow Oil produced 40.9 Bscf gas at an average rate of 112 MMcfd. Figure 24 shows well wise gas production in MMcfd. This rate remained fairly uniform for first nine months of the year. From April production started to decline and during the last couple of months of the year gas flow rate was over 90 MMcfd. Total production during the year logged 41 Bscf. Production rate fluctuated from 125.2 MMcfd to 16.5 MMcfd. During the year 124 thousand bbl condensate was recovered. Average condensate recovery rate was 3.02 bbl/MMcf of gas. Daily average condensate production rate was 339.7 bbl/day.

2.2.3. Santos:

Cairn Energy sold their interest to Santos. Sangu is the lone offshore gas field of the country. During the year average daily production rate was 17.7 MMcfd. Total production during the year logged 6.4 Bscf. During the year daily production started at about 15 MMcfd and this gradually went down to 10-11 MMcfd. However during the later part of the year production rate gradually increased to 20-25 MMcfd. However production started to decline slowly and at the end of the year it was 16-17 MMcfd. Well wise gas production in MMcfd can be seen in figure 25.

3. Gas Supply and Consumption:

According to daily production data received from production companies during the year gas production logged 708.5 Bscf. This figure is 708.9 Bscf in the MIS report of Petrobangla (June 2011). Both are quite close and any one of this can be considered. For this report daily data received from production companies is considered. For gas sales and consumption data MIS report is used.

Gas purchase and supply data is taken from MIS report of June 2011. According to this report (p32, 33) total sales of gas by the distribution company was 20306.4 MMCM or 717,116 MMcf. This figure is about 10 Bscf more than the annual production figure obtained from production companies. It may be mentioned here that gas production companies consume certain quantity of gas to run gas process plants and other equipment. As a result these companies cannot sale entire produced volume.

Table (next page) shows category wise gas consumption. Data is taken from MIS report of June,2011 and MMCM is converted into Bscf.

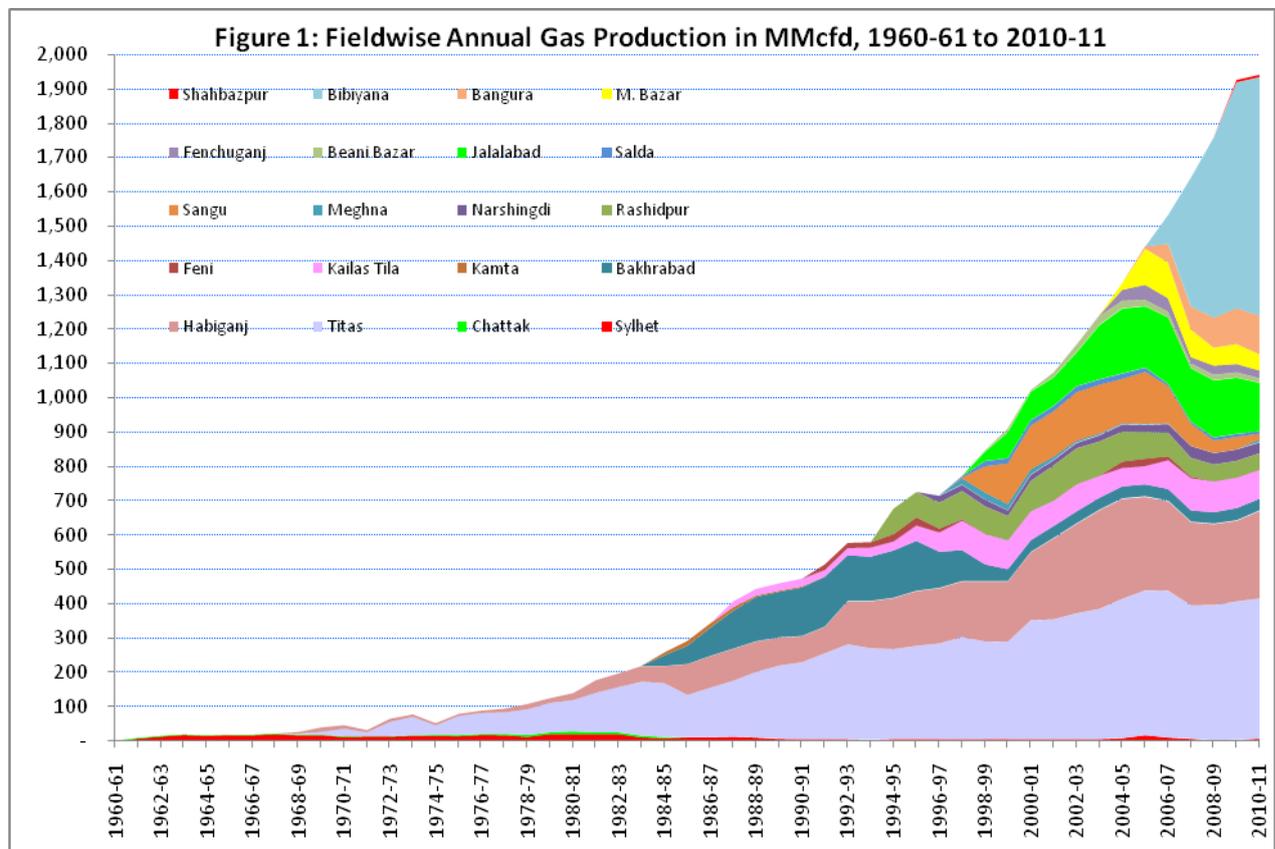
Sector wise Gas Consumption in Bscf and % of total, 2010-11		
Power	273.7	38.31
Captive Power	121.2	16.97
Total Power	394.5	
Industry	121.5	17.00
Domestic	87.5	12.25
Fertilizer	62.8	8.78
CNG	38.5	5.39
Commercial	8.5	1.19
Tea	0.8	0.12
Total	714.5 Bscf	100 %

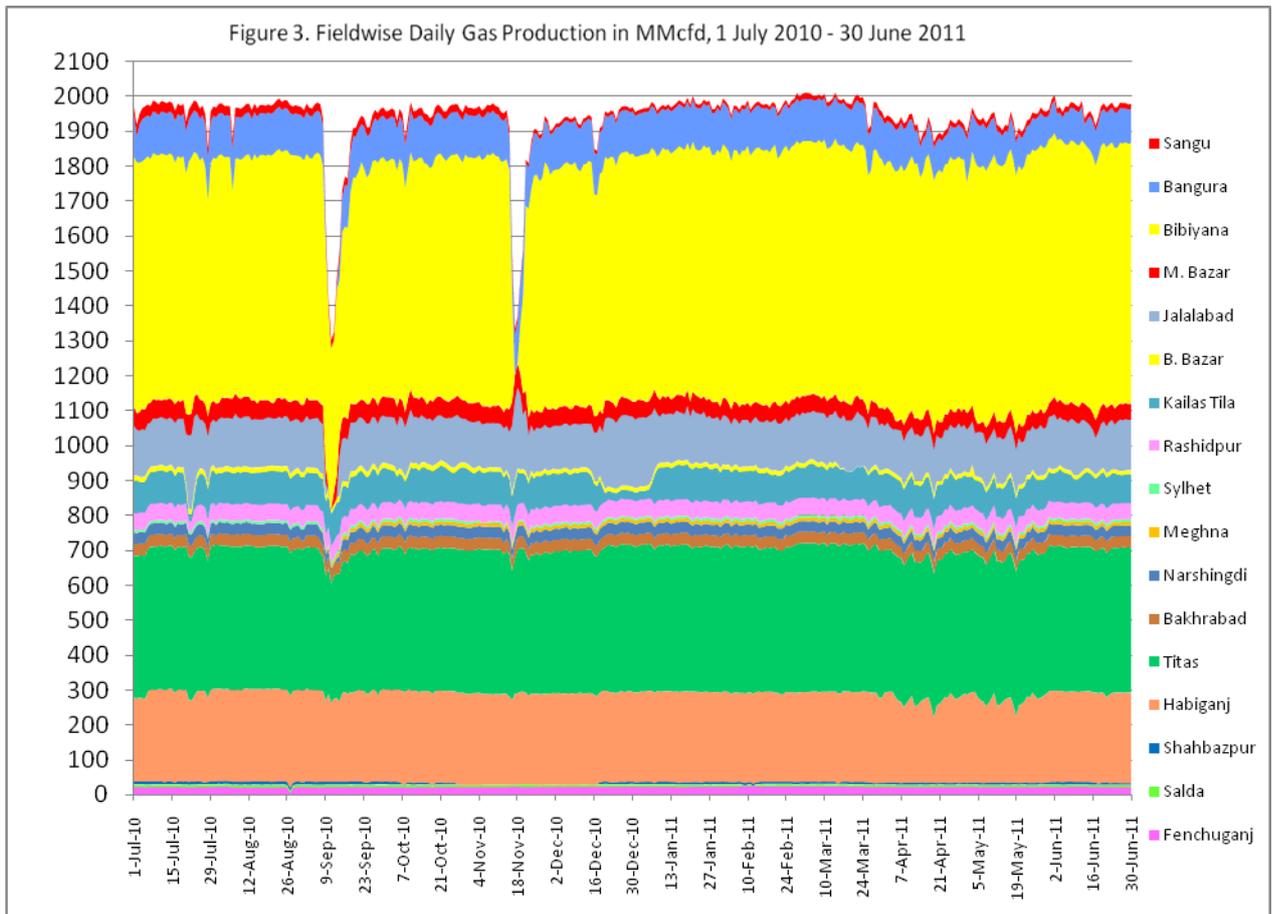
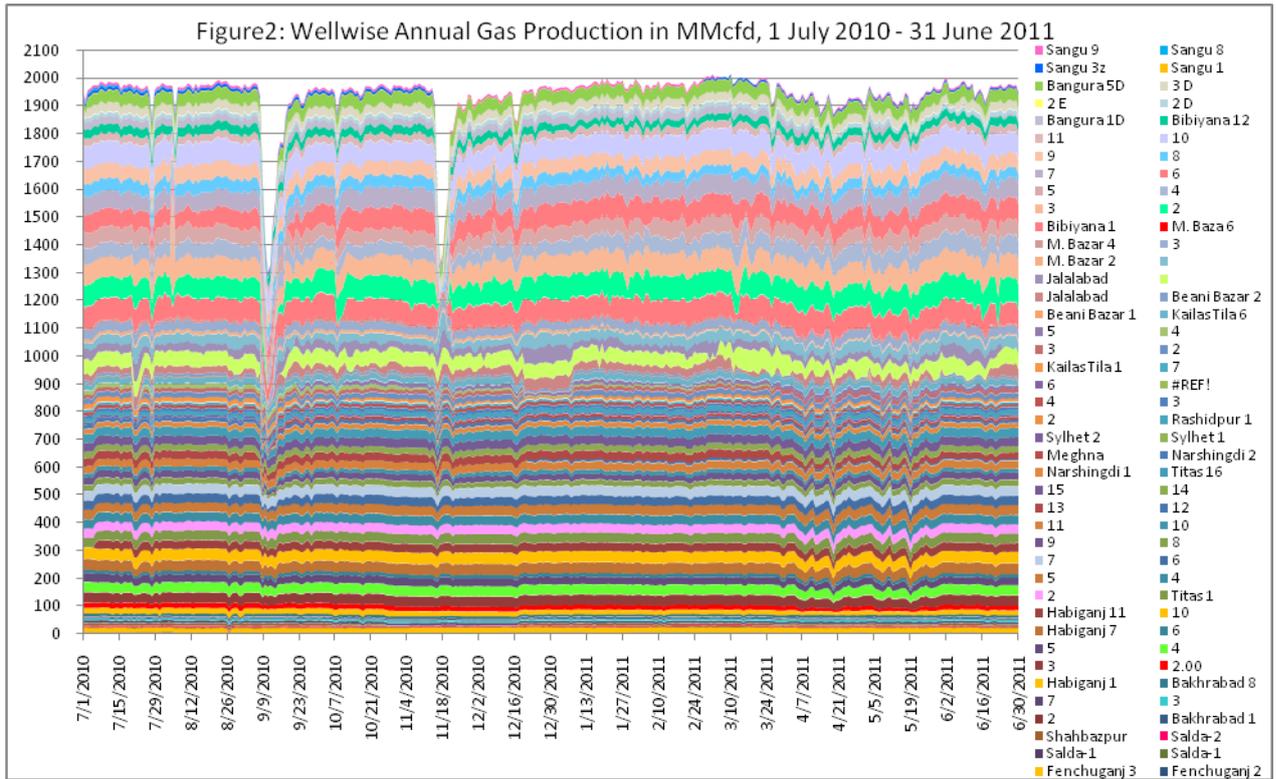
55.3 percent of total gas purchased is consumed by power sector. Industries consume was 17 percent. Gas consumption by household or for cooking accounted for 12 percent (Figure 26).

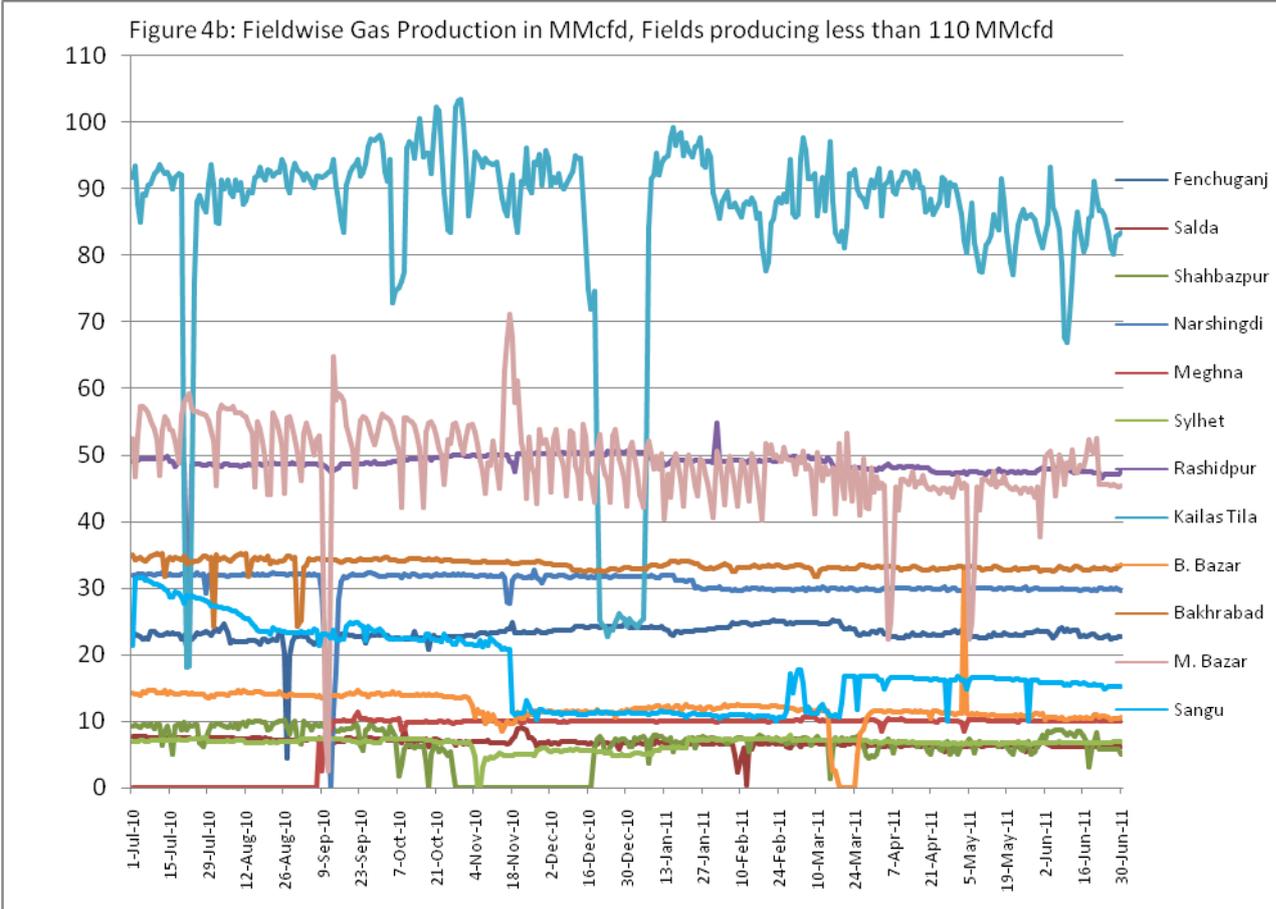
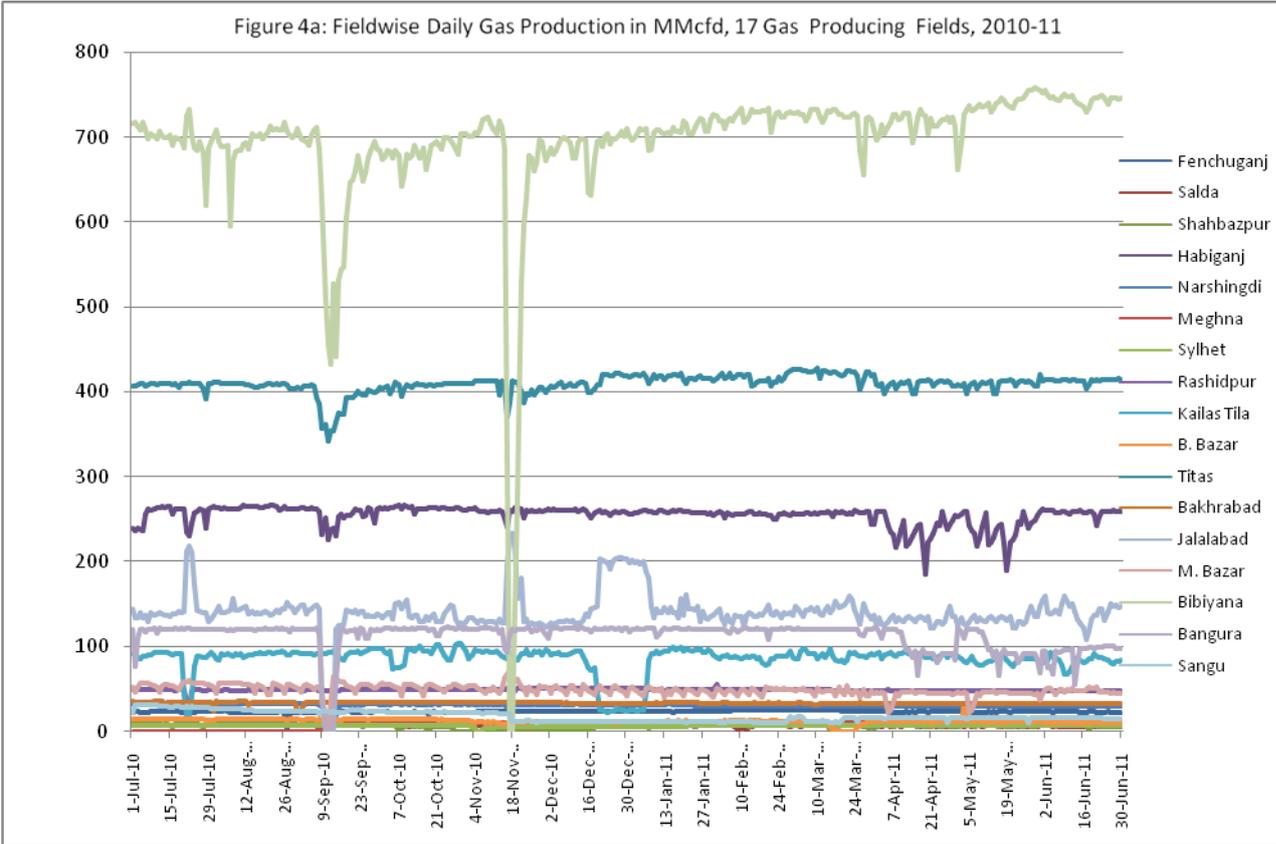
In p54 of the MIS report volume of gas sales by the gas distribution companies was recorded at 18735.8 MMCM (661.6 Bscf) and gas purchase was 19018.8 MMCM (671.6 Bscf). It shows that gas sales volume is 238 MMCM (9998 MMcf) more than purchase volume.

It is understood (from Petrobangla) that due to audit objection, gas sales volume of July 2010 of Titas Gas T & D company is not include gas purchase and gas sales figure of that company. As a result purchase and sales volume for the month of July is quite low in comparison with that of other months.

For the purpose of this report , based on 11 months gas purchase and sales data annual figure is calculated. This shows gas purchase volume at 704.5 Bscf (1932.2 MMcf) and sales volume at 715.2 Bscf (1960 MMcf). This shows that sale volume is 10.7 Bscf (29.3 MMcf) more than purchase volume. This is graphically presented as Figure 30.







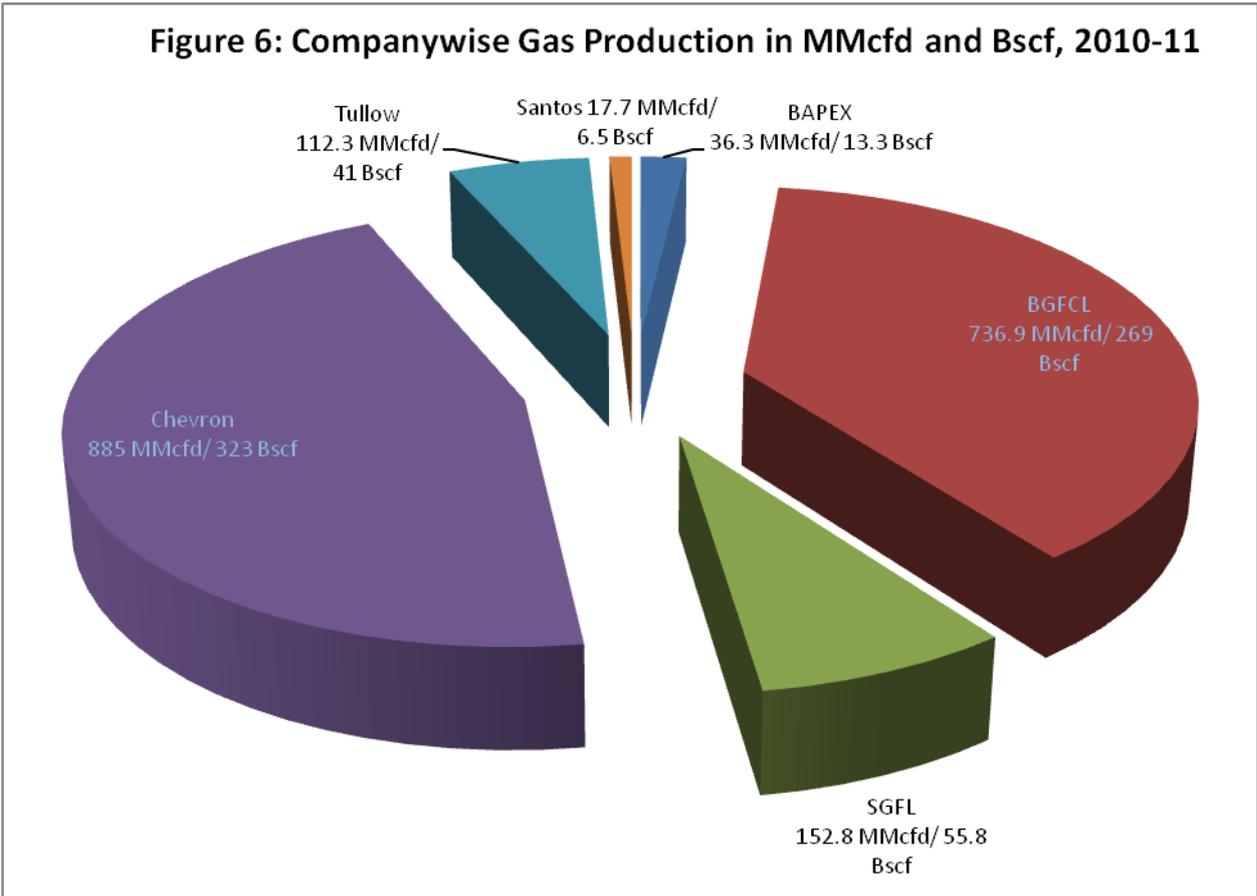
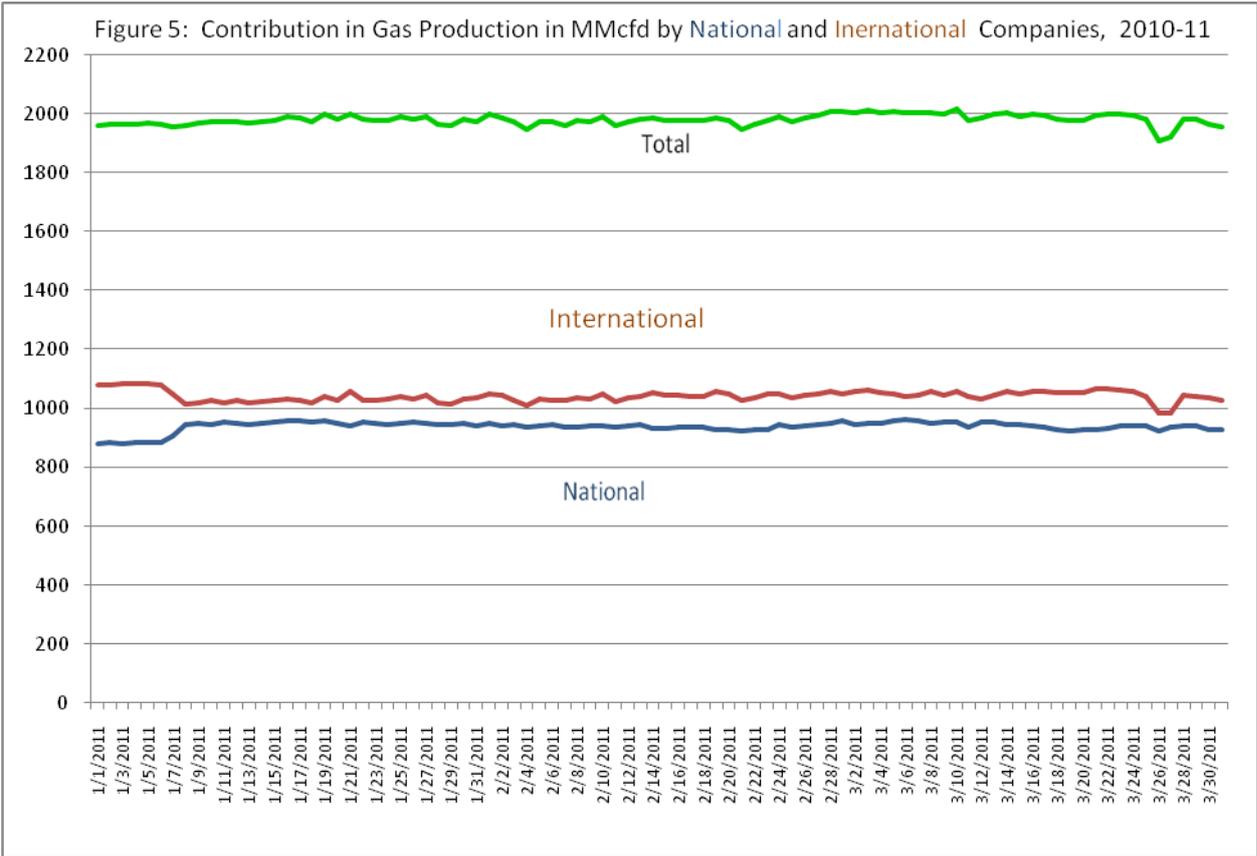


Figure 7: Fieldwise Gas Production in MMcfd and Bscf, 2010-11

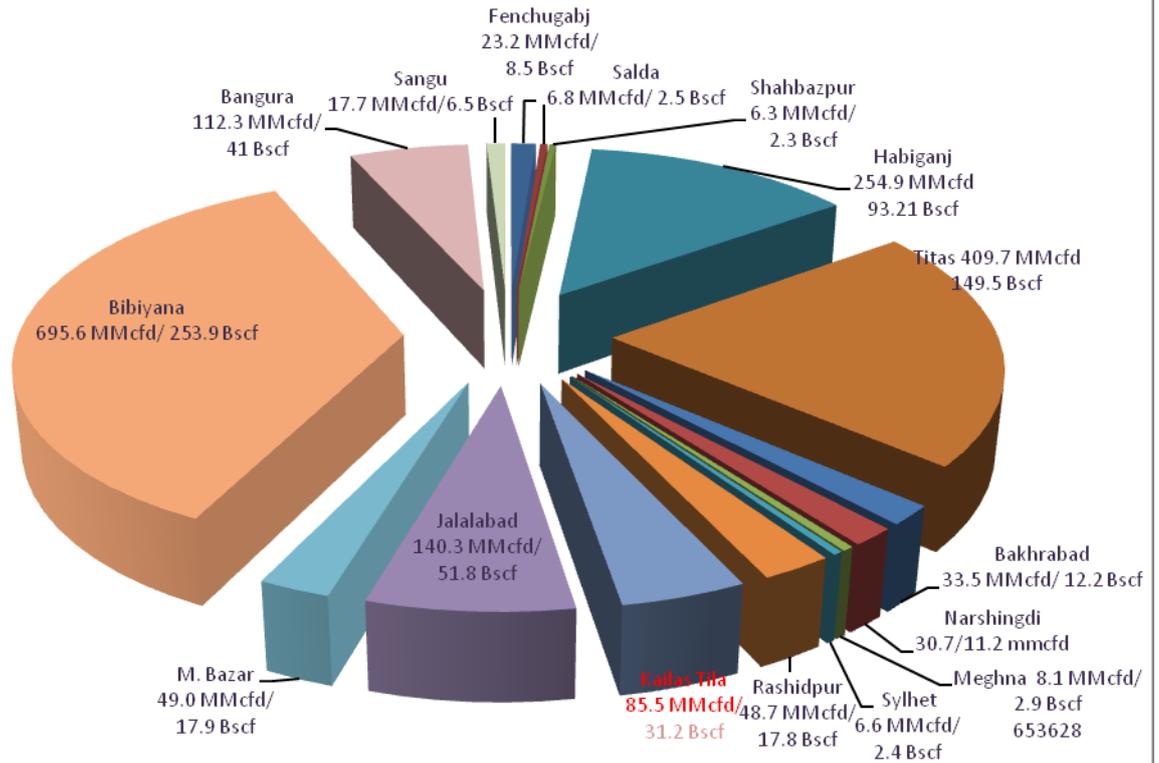
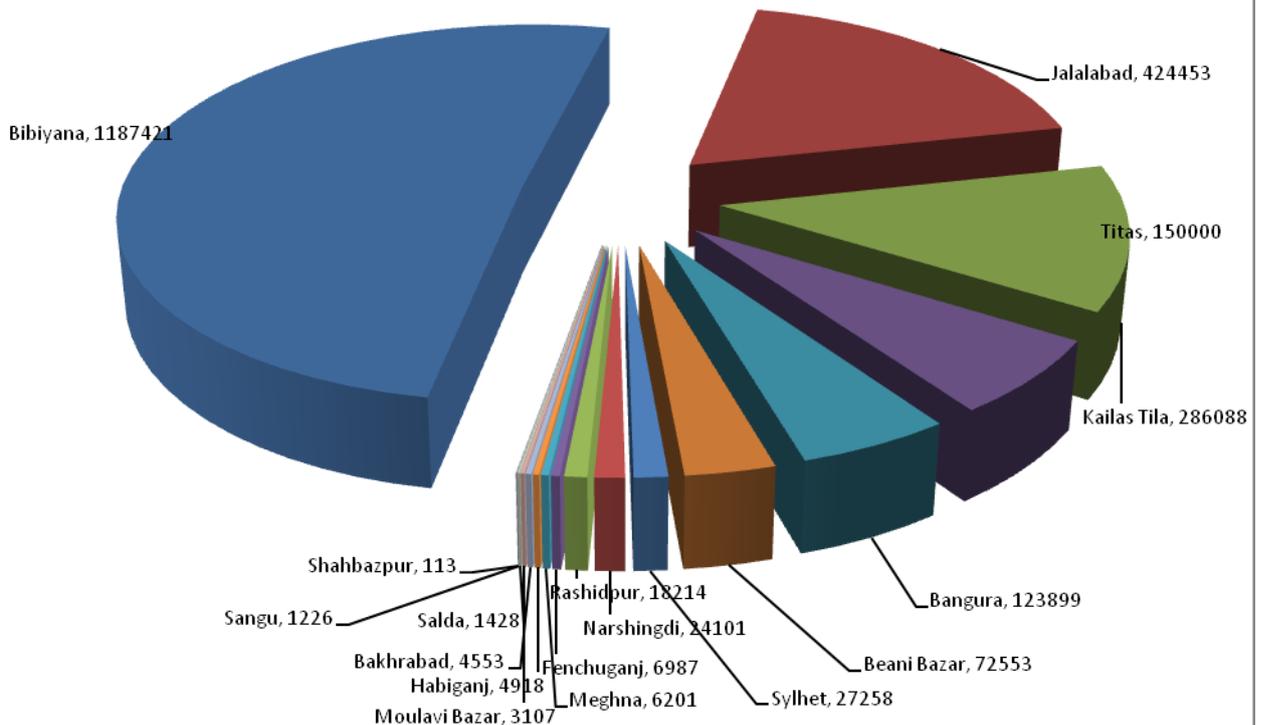


Figure 8. Fieldwise Annual Condensate Production in 1000 bbl, 2010-11



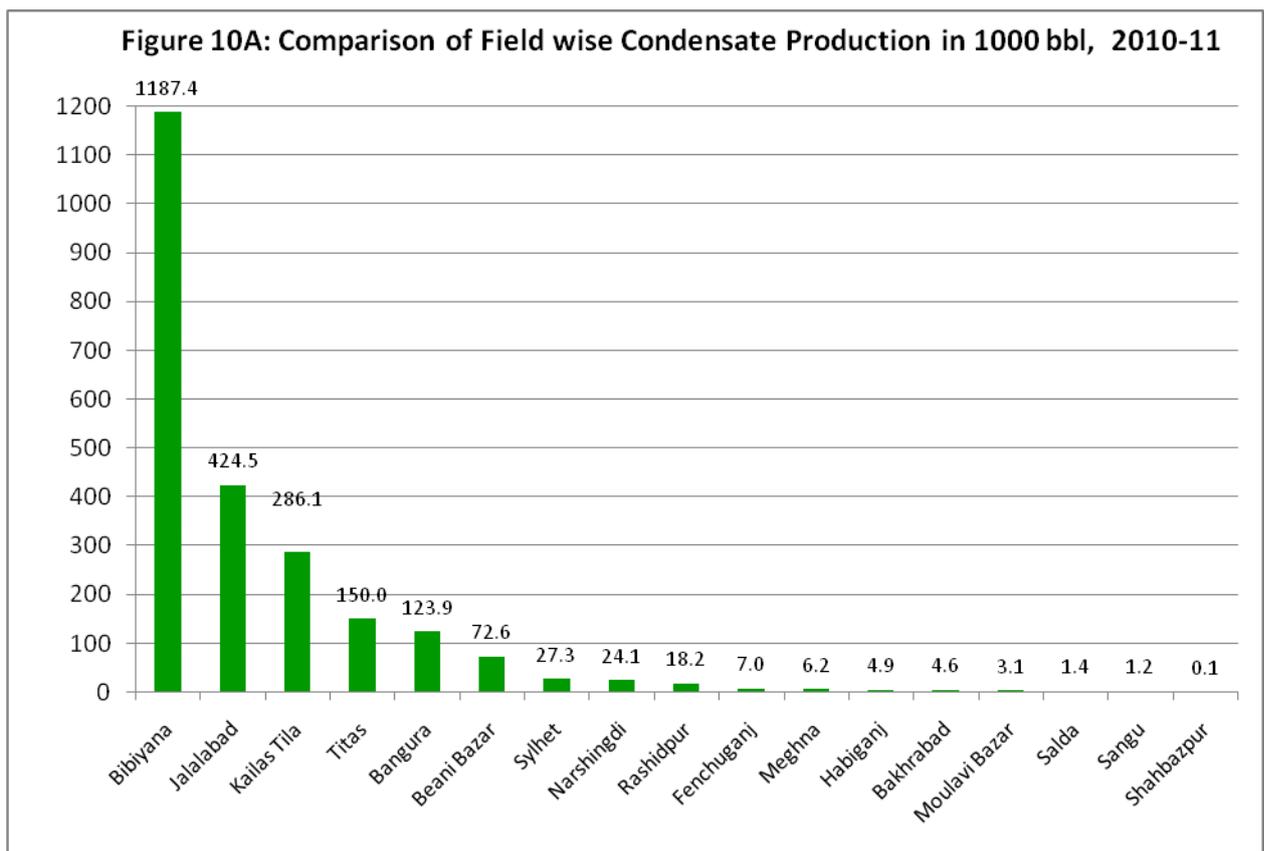
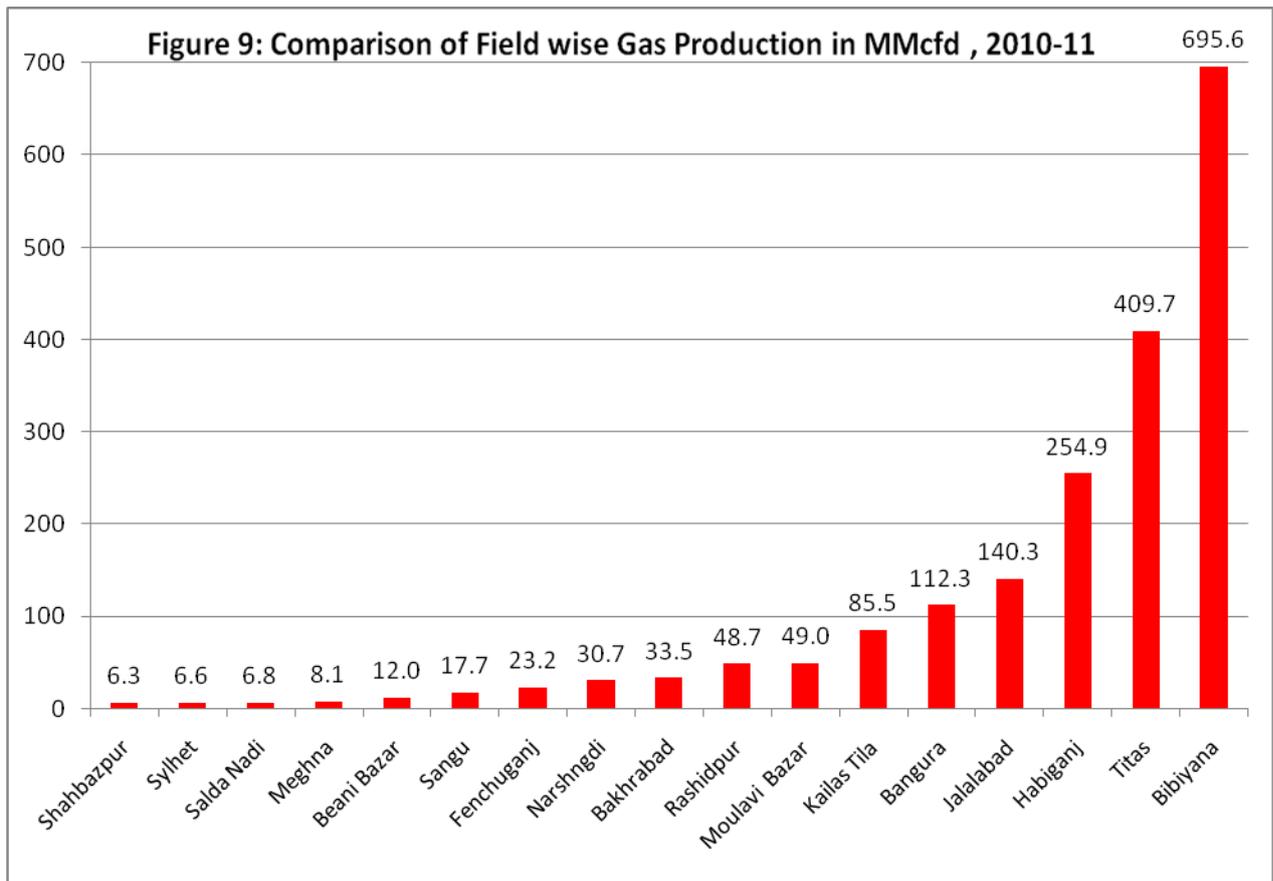


Figure 10B: Recovery of Finished Petroleum Product in bbl, 2010-11

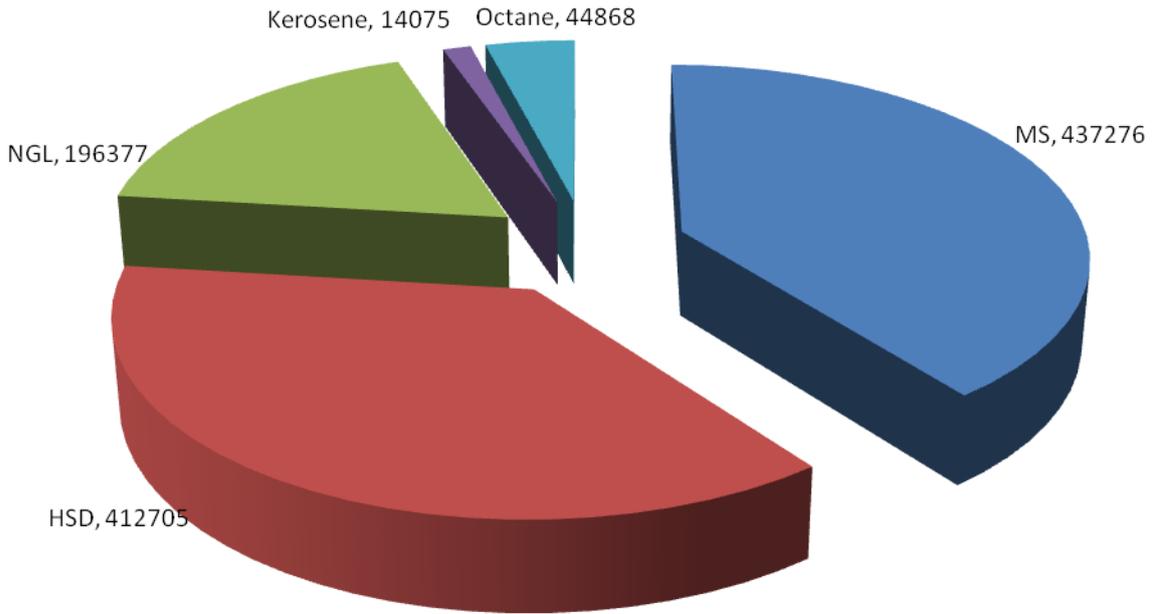
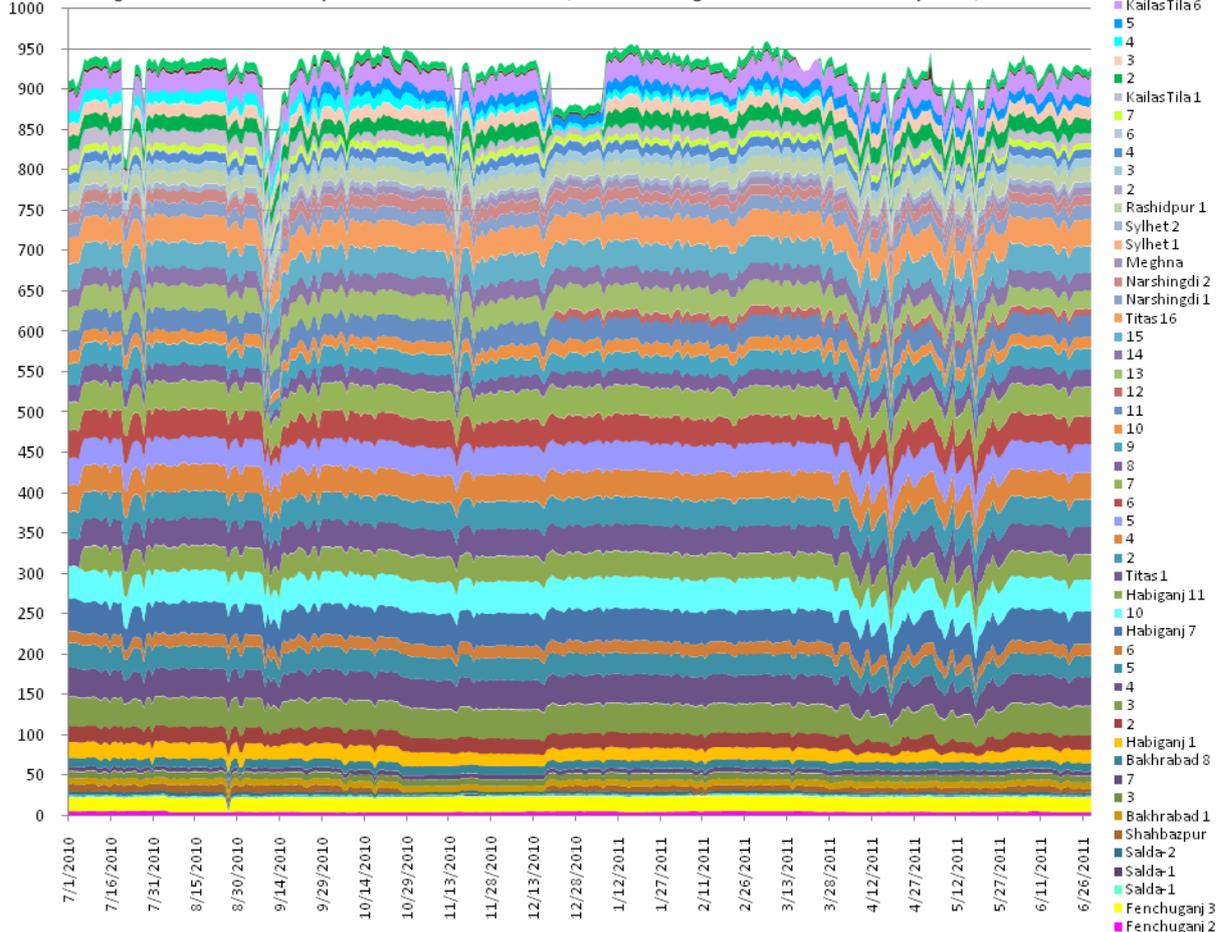


Figure 11: Well wise Daily Gas Production in MMcf, All Producing Wells of National Companies, 1010-11



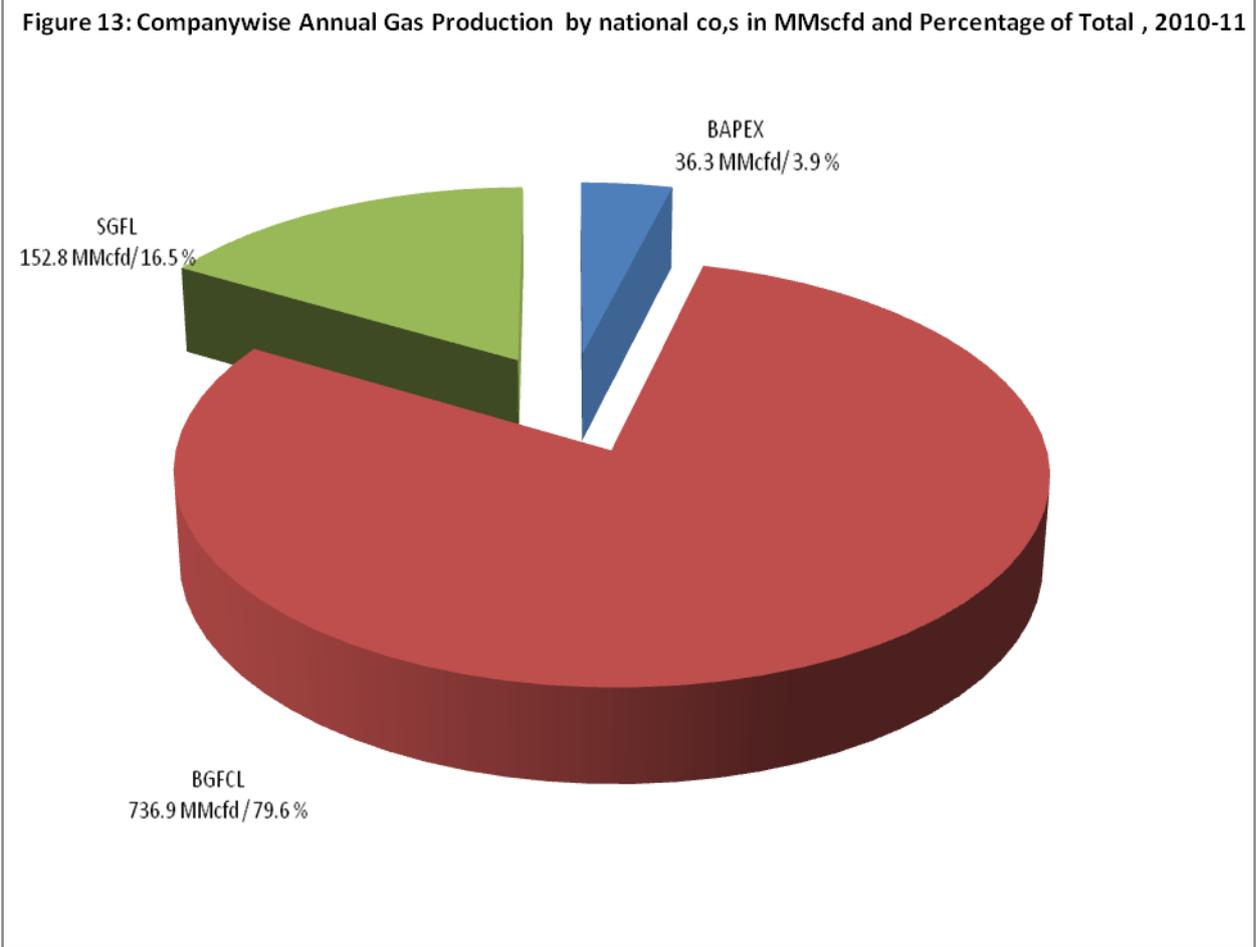
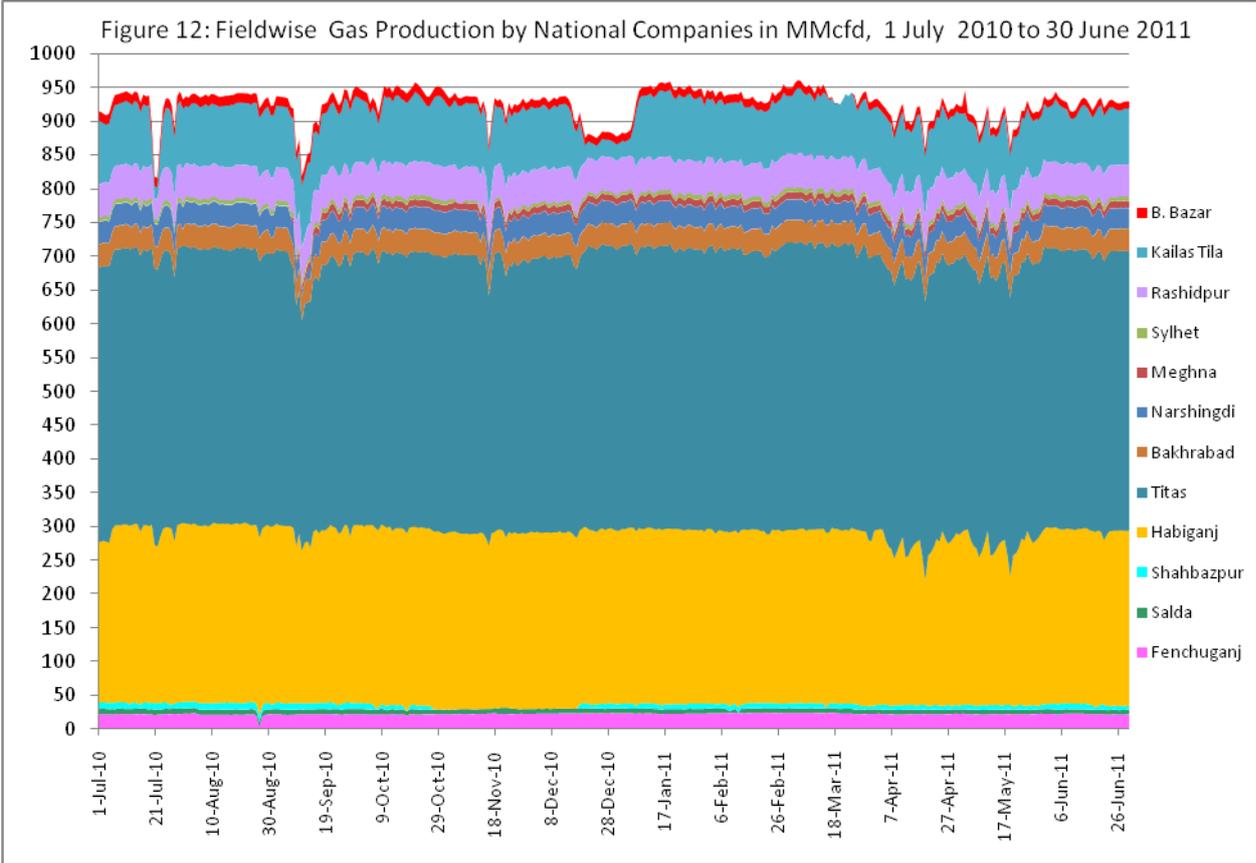


Figure 14: Daily Gas Production in MMcfd, Five Gas Field, BGFCL, 2010-11

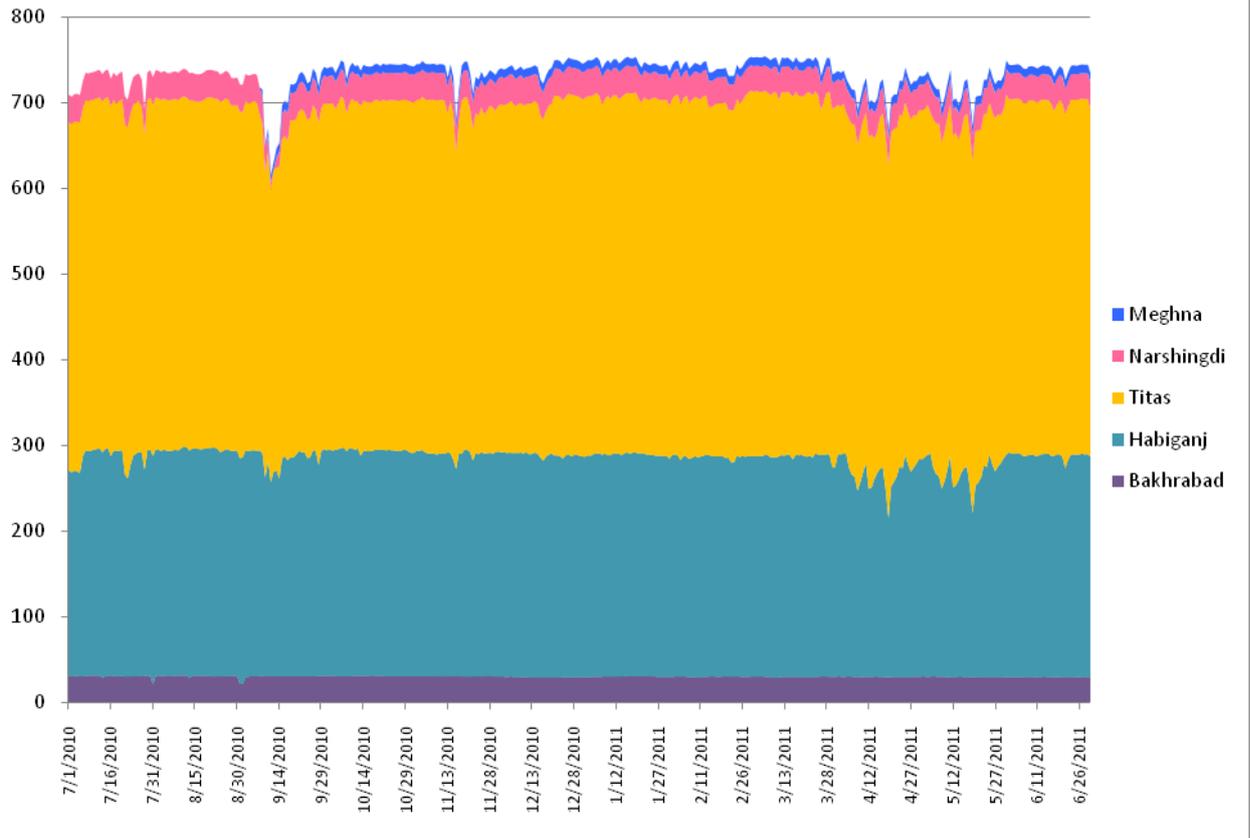
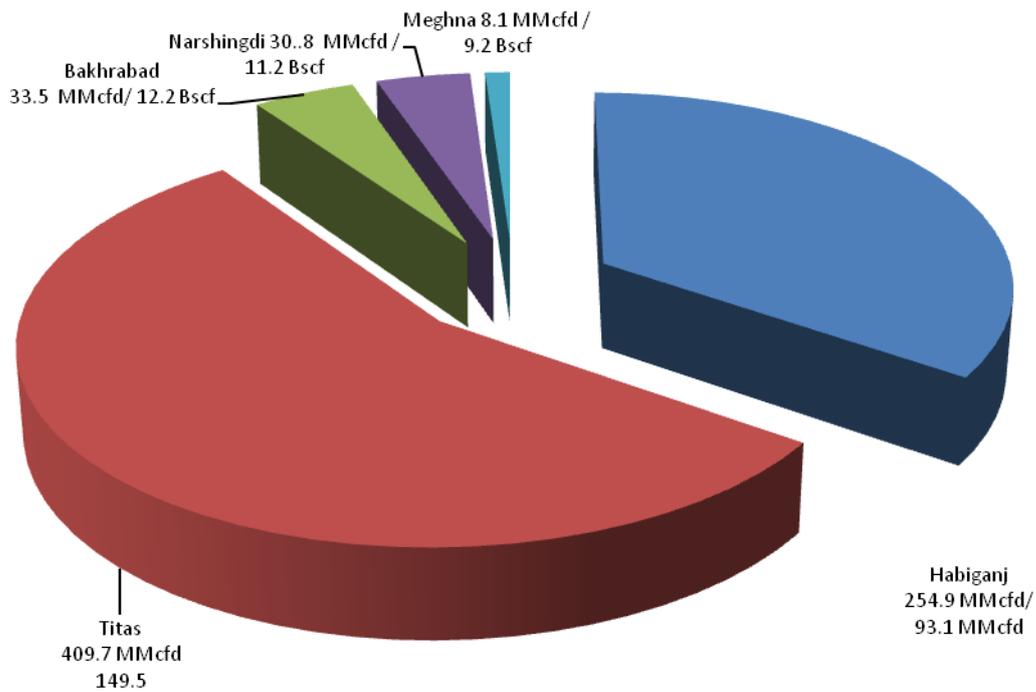
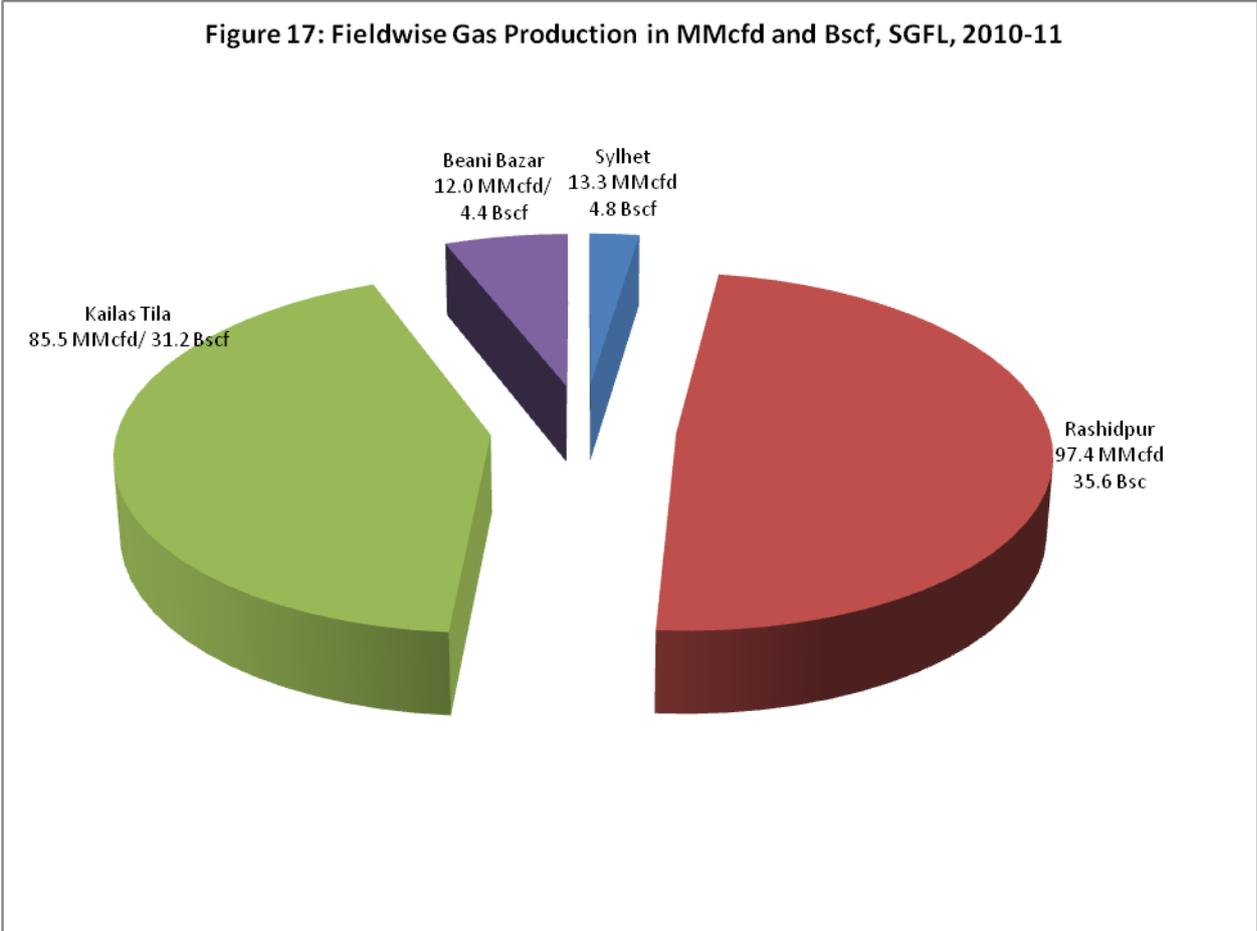
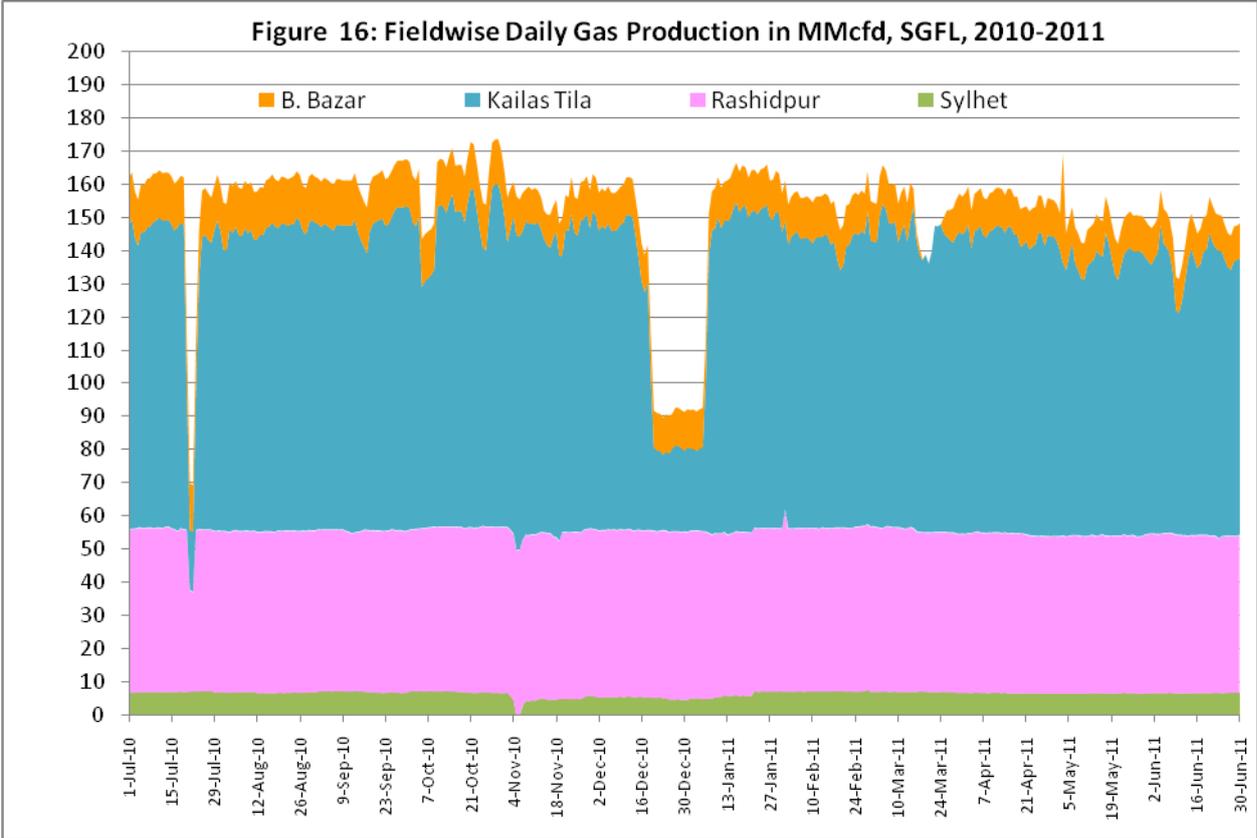
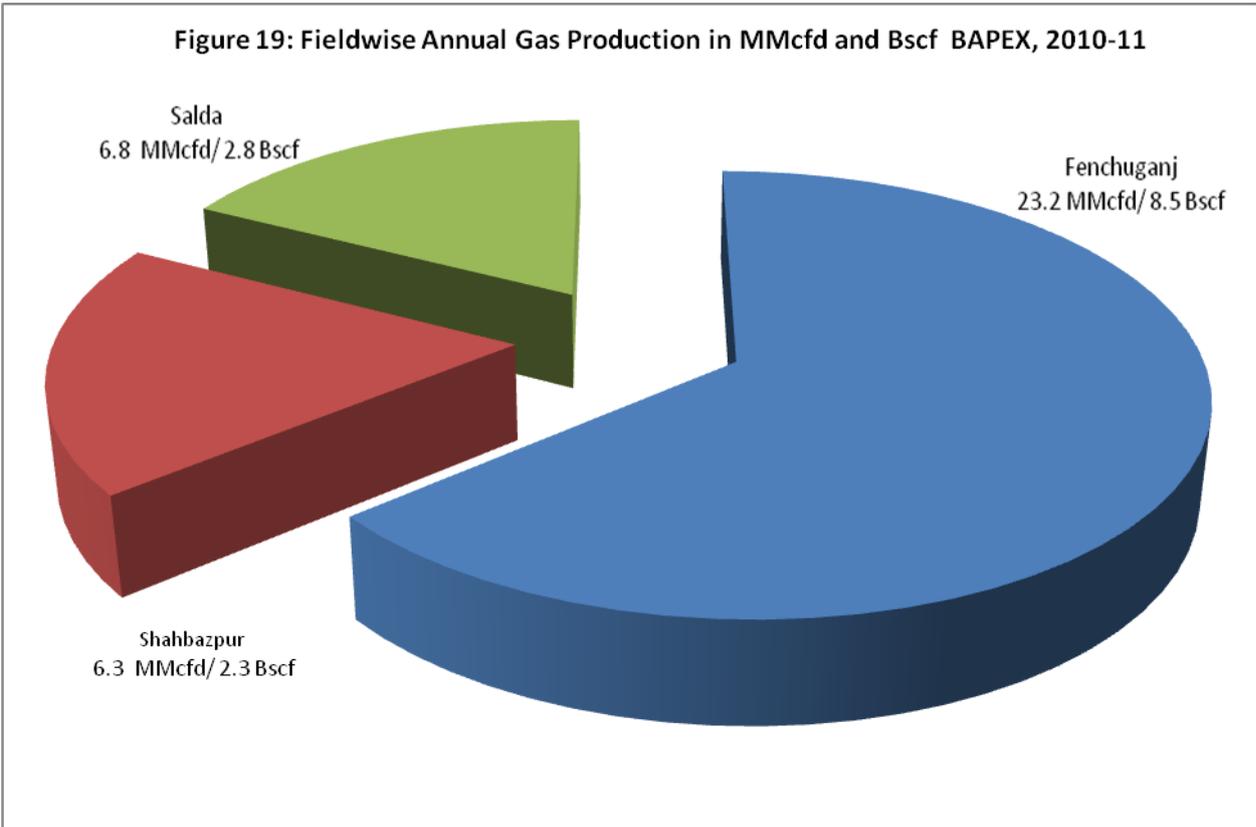
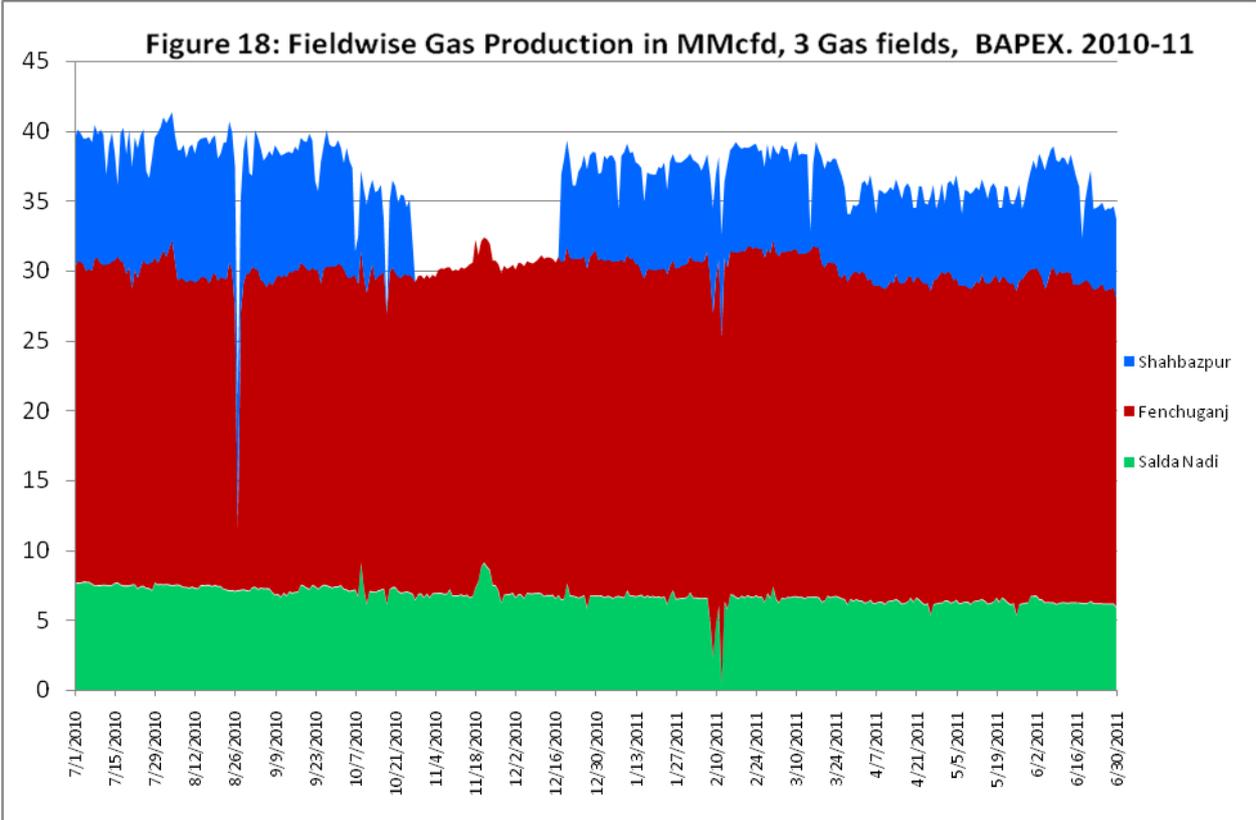
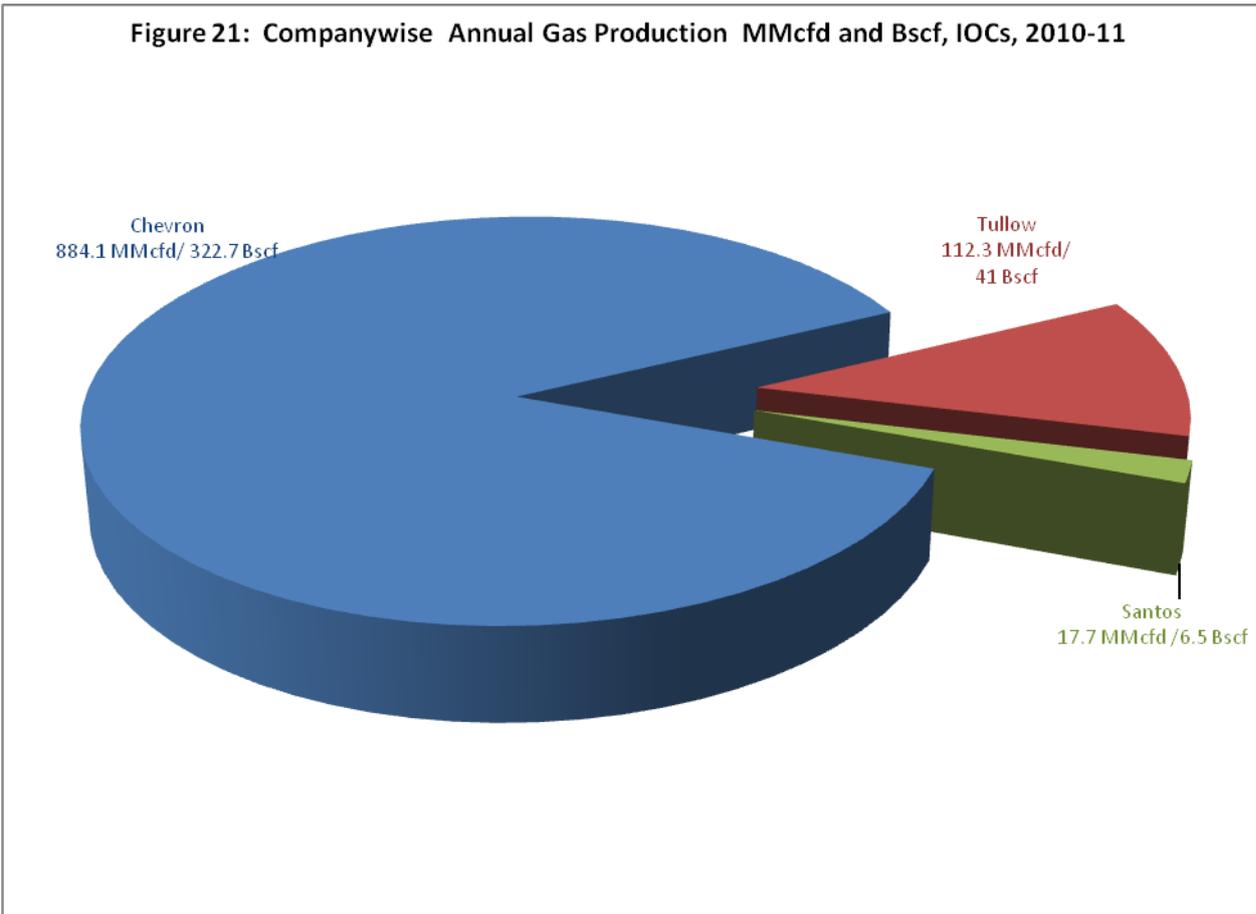
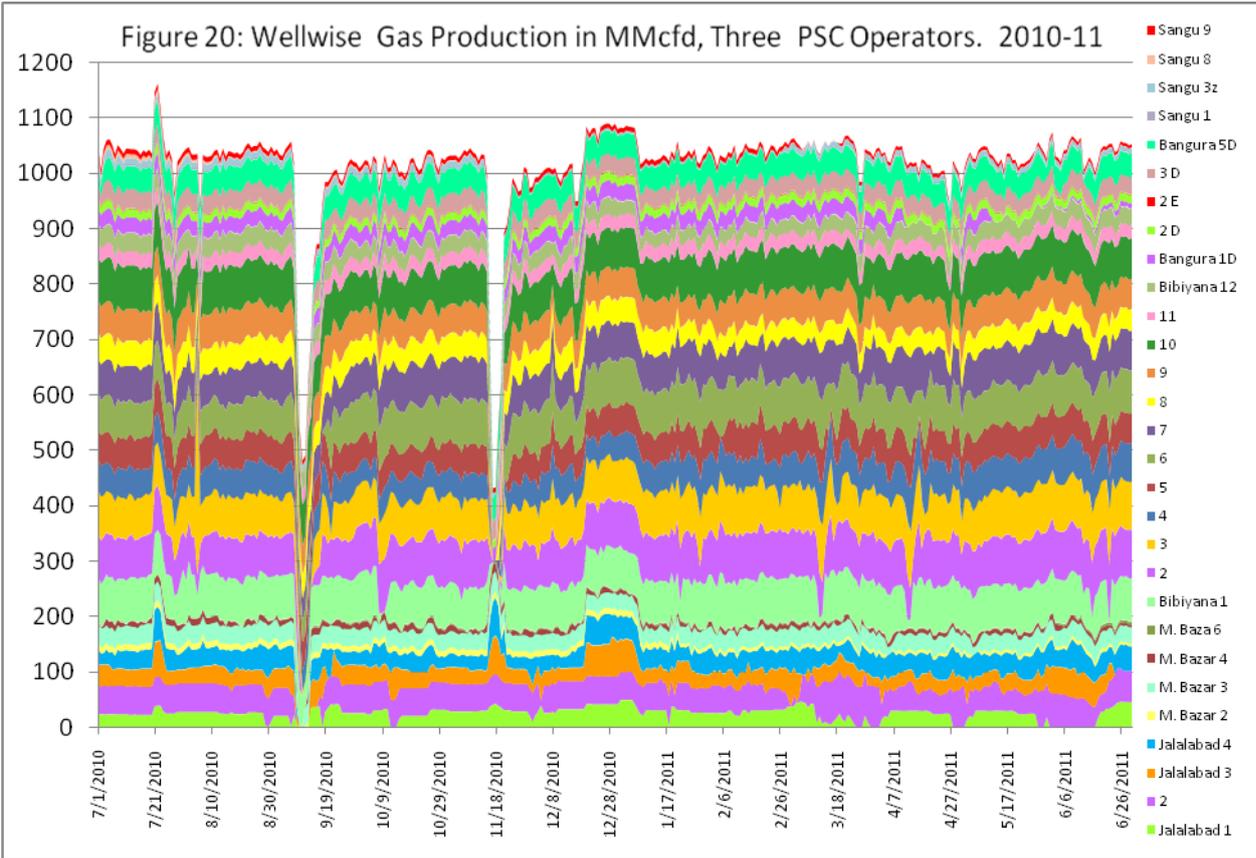


Figure 15: Fieldwise Annual Gas Production in MMcfd and Bscf. BGFCL, 2010-11









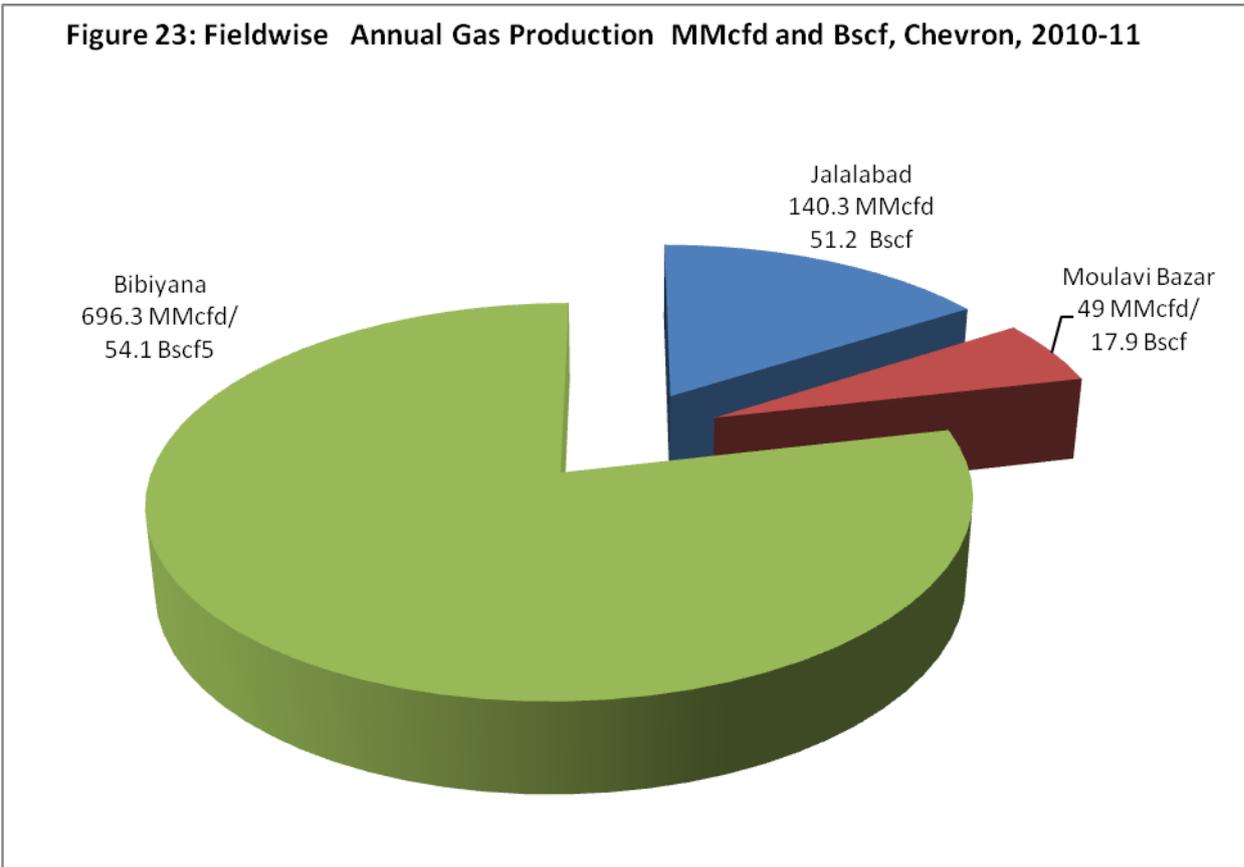
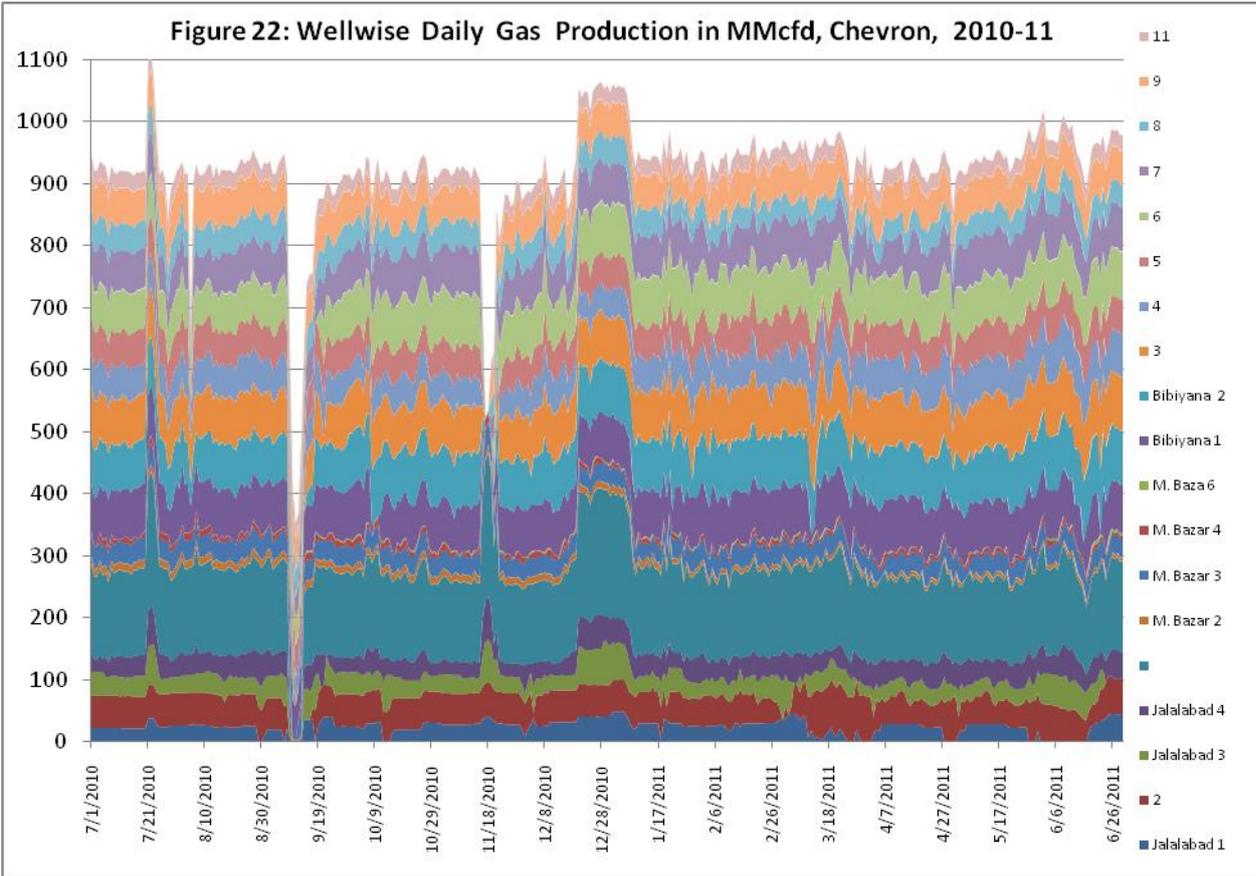


Figure 24: Well wise Daily Gas Prpduction in MMcfd, Tullow Oil, 2010-11

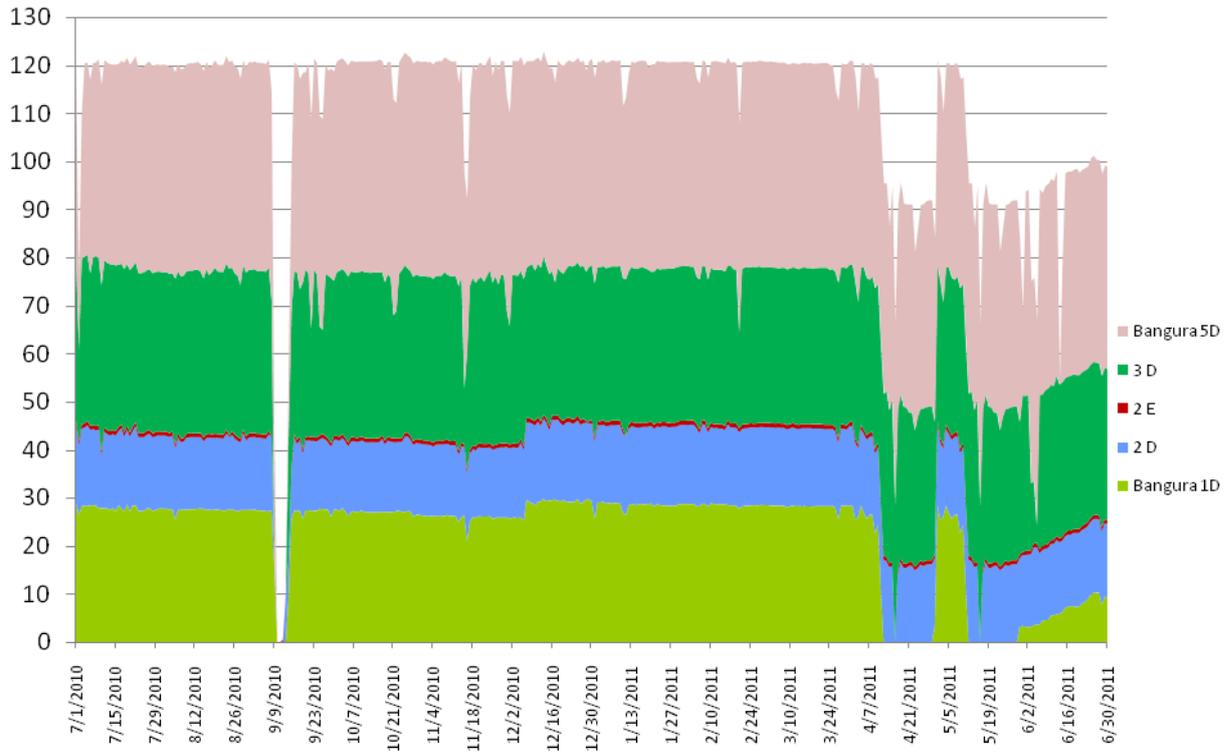


Figure 25: WellWise Daily Gas Production in MMcfd, Santos, 2010-11

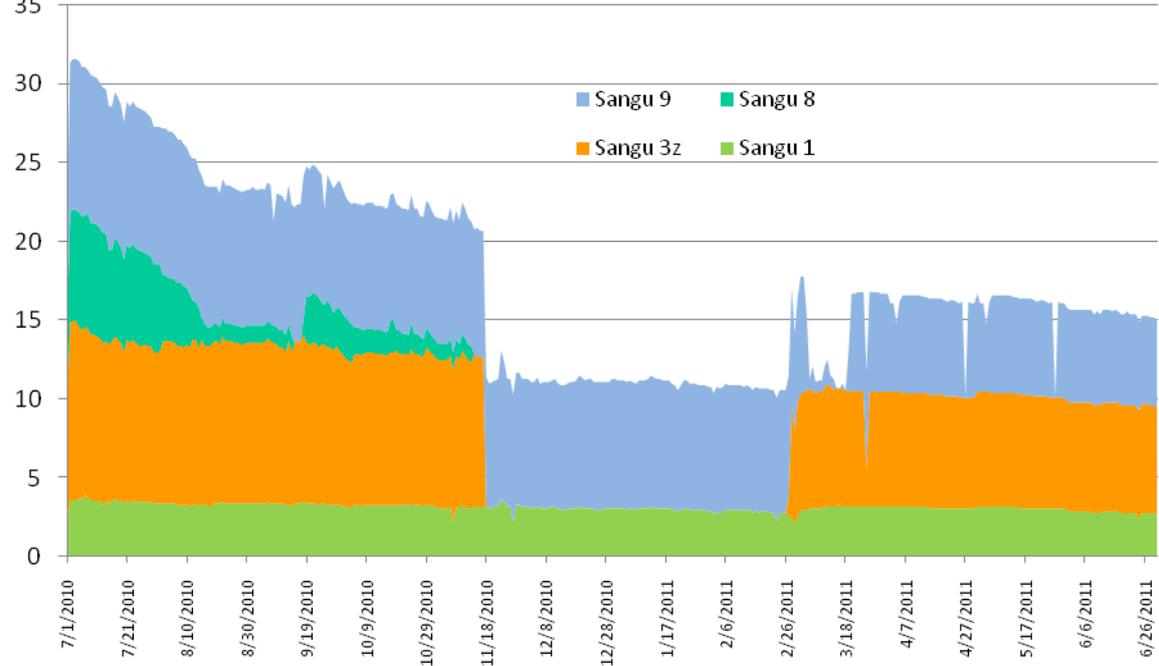


Figure 26: Sectorwise Annual Gas Consumption in Bscf and percentage of Total: 2010-11
 Data Source: MIS Report, p33, June, 2011

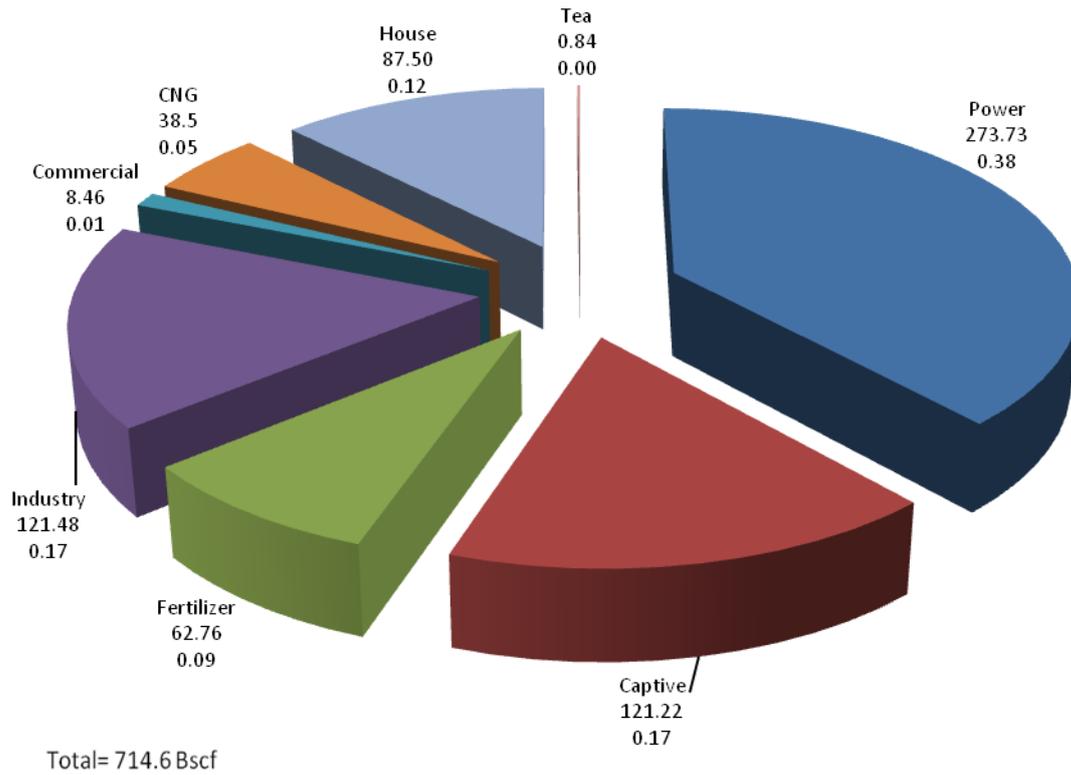


Figure 27: Sectorwise Monthly Gas Sales in MMcf/d by Distribution Companies, 2010-11

