



# **POLICY & EFFORTS MADE FOR CBM IN INDIA**

**Directorate General of Hydrocarbons**

*Ministry of Petroleum & Natural Gas*

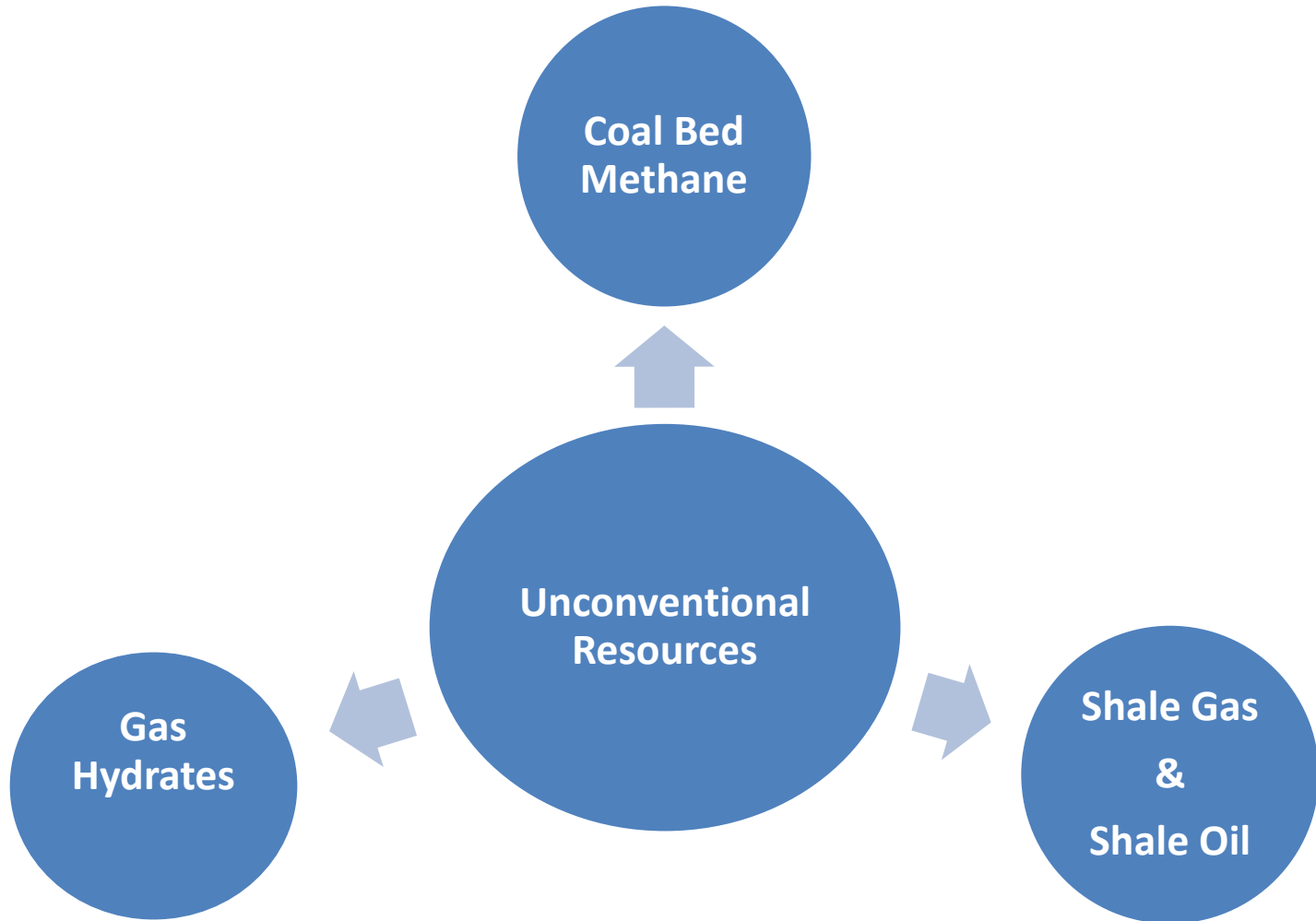
*Government of India*



# UNCONVENTIONAL RESOURCES IN INDIA

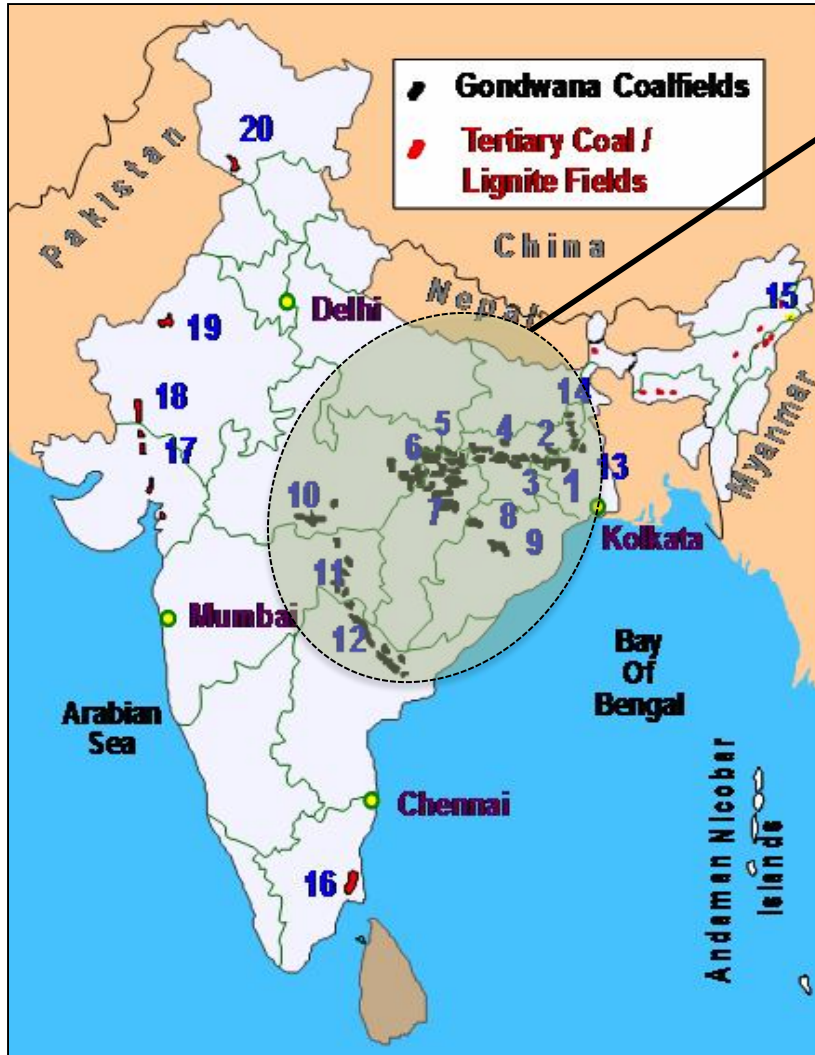


Global petroleum exploration is currently undergoing a strategic shift from **Conventional to Unconventional** hydrocarbon resources.





# MAJOR COALFIELDS IN INDIA



## GONDWANA COALFIELDS

- |                 |              |
|-----------------|--------------|
| 1. Raniganj     | 8. Ib-valley |
| 2. Jharia       | 9. Talchir   |
| 3. Bokaro       | 10. Satpura  |
| 4. N. Karanpura | 11. Wardha   |
| 5. Singrauli    | 12. Godavari |
| 6. Sohagpur     | 13. Birbhum  |
| 7. Korba        | 14. Rajmahal |

## TERTIARY COAL FIELDS

- |                     |                     |
|---------------------|---------------------|
| 15. Assam-Meghalaya | 18. Barmer-Sanchor  |
| 16. Neyveli         | 19. Bikaner         |
| 17. Cambay          | 20. Jammu & Kashmir |



# CBM PROSPECTIVITY



Coalfield	CBM Blocks awarded	CBM Prospectivity
Jharia	Jharia	High
Raniganj	RG (East)-CBM-2001/I, Raniganj (South) & Raniganj (North)	High
Sohagpur	SP (East)-CBM-2001/I, SP (West)-CBM-2001/I, SP (NE)-CBM-2008/IV & SP (N)-CBM-2005/III	High
Bokaro	BK-CBM-2001/I	High
North Karanpura	NK-CBM-2001/I	High
Sonhat	SH(North)-CBM-2001/I	Medium
Satpura	ST-CBM-2003/II & ST-CBM-2008/IV	Low
Wardha	WD-CBM-2003/II	Low
Barmer Sanchor	BS(1,2,3,4,5)-CBM-2003/II	Medium to Low
Singrauli	SR-CBM-2005/III	Medium
Mand Raigarh	MR-CBM-2005/III	Low
Tatapani Ramkola	TR-CBM-2005/III	Low
Rajmahal	RM-CBM-2005/III & RM (E)-CBM-2008/IV	To be ascertained
Birbhum	BB-CBM-2005/III	Low

CBM prospectivity yet to be ascertained in Godavari, Talcher, IB Valley, Mannargudi, Assam, Kothagudem coalfields



# CBM EXPLORATION-EXPLOITATION, INDIA

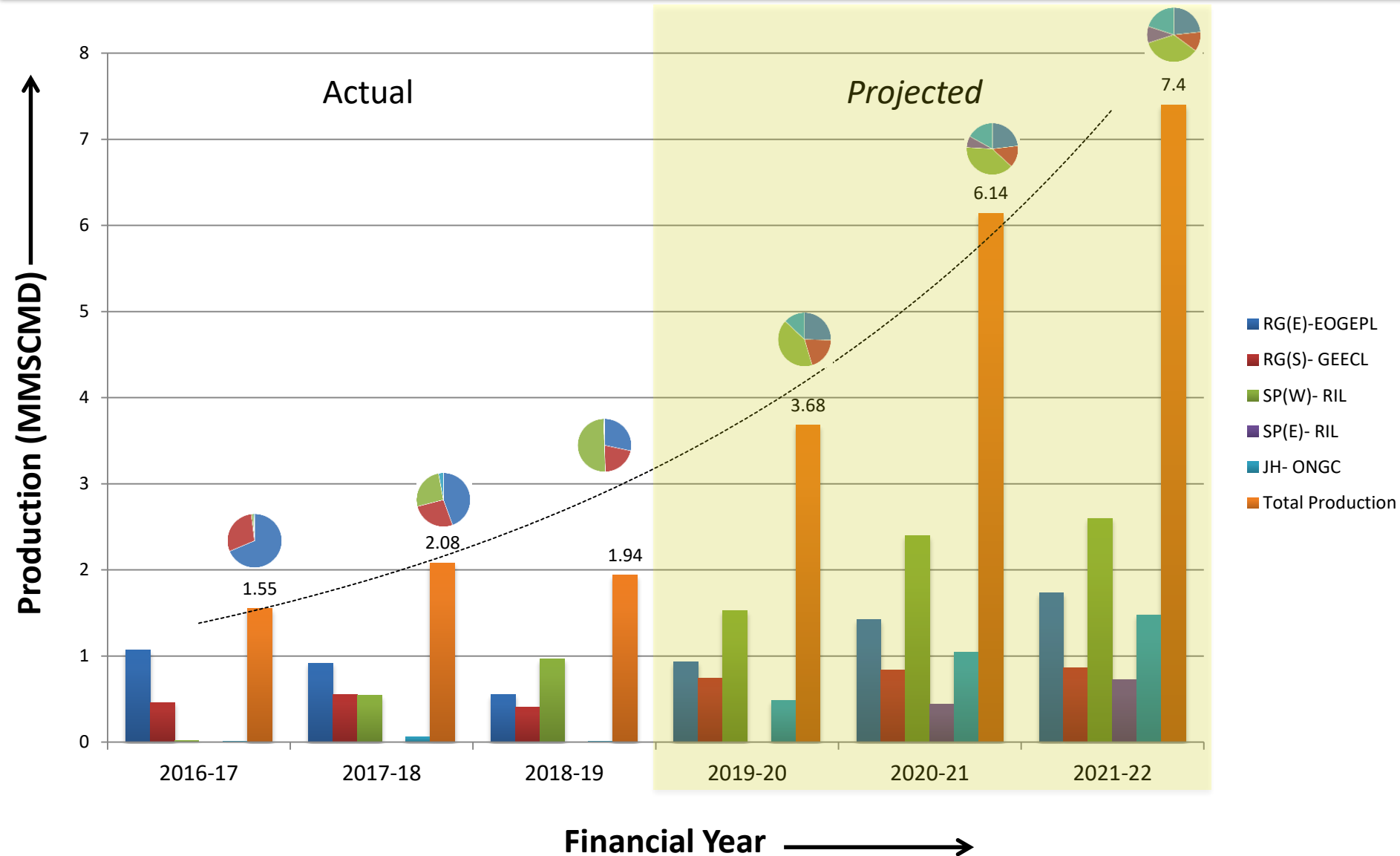


<b>Year of CBM policy formulation</b>	1997
<b>Total CBM rounds</b>	4
<b># CBM Blocks awarded</b>	33
<b>Coal bearing Area identified for CBM</b>	26,000 Sq. Km.
<b>Area covered under 33 blocks</b>	16,613 Sq. Km. (64%)
<b>Total CBM Resources</b>	2600 BCM (91.8 TCF)
<b>CBM Resources (from 33 Blocks)</b>	1767.06 BCM (62.4 TCF)
<b>Established CBM Reserves (GIP)</b>	280.8 BCM (9.9 TCF)
<b>Commencement of Commercial Production</b>	July 2007
<b># Wells drilled</b>	835
<b>Average Gas Production</b>	1.94 MMSCMD (from 4 CBM blocks)
<b># Blocks in Development/Production Phase</b>	8 (5 + 3)
<b># Blocks in Exploration phase</b>	3
<b># Blocks under relinquishment</b>	11
<b># Blocks Relinquished</b>	10
<b>Annual CBM Production in FY 2018-19</b>	710 MMSCM

Source: Figures as obtained by the Contractors



# CBM PRODUCTION: ACTUAL & PROJECTED



Source: Figures as obtained by the Contractors



# **CBM POLICIES & INTERVENTIONS FOR “EASE OF DOING BUSINESS”**



1997

- CBM Policy Formulation

2007

- Policy for extensions Phases

2015

- Permission to CIL & its subsidiaries to explore CBM under CML (amended in 2018)

2016

- New Unified Licensing Policy under HELP- wherein all types of hydrocarbon resources, both conventional and unconventional can be explored & exploited- OALP & DSF

2017

- Early Monetization of CBM: Gas-Marketing & Pricing freedom, Resolution of long pending issues

2018

- Exploration & exploitation of Unconventional hydrocarbons in existing acreages under PSC, CBM & Nomination Fields
- ER Policy-Fiscal incentives to be provided since first day of the entire production from future discoveries of unconventional hydrocarbons





# CBM POLICY(1997)- KEY FEATURES



- Allotment of blocks through International Competitive Bidding
- No participating interest of the Government
- No cost recovery & No Signature Bonus except in Nomination Blocks
- Biddable Production Level Payment (PLP)
- Nomination Blocks: Fixed Rate of PLP @ 2.5 %
- Other Blocks: At the rate as committed by bidder
- Royalty and Taxes as per Govt. rule
- Exemption from customs duty on imports of goods and materials required for exploration and exploitation of CBM
- One time lumpsum commercial bonus @ US\$ 0.3 Million, once commerciality is declared
- Freedom to sale gas to domestic market on arms' length transaction

***Blocks offered under four Bidding Rounds from 2001 to 2009***



# CBM PHASES & EXTENSIONS (2007)



- Phase-I: Exploration phase
  - Duration: 2-3 years + 3 extensions of 6 months under CBM extension policy
  - Major activity: Drilling of Core holes and Test wells
- Phase-II: Pilot Assessment Phase
  - Duration: 3-4 years + 3 extensions of 6 months under CBM extension policy
  - Major activity: Drilling of Pilot wells, Environmental studies, Techno-economic Evaluation, Market survey
- Phase-III: Development Phase
  - Duration: 5 years
  - Major Activity: Drilling, completion and testing of development wells
- Phase-IV: Production Phase
  - Duration: 20 -25 years
  - Major Activity: Commercial production from the Block



# POLICY INTERVENTION (2015)



In Nov 2015 (**amendment in 2018**), Government of India granted permission to Coal India Limited (CIL) & its subsidiaries to explore and produce CBM from its areas under Coal Mining Lease.

- Done to enhance and accelerate the CBM production in the country from Coal Mining areas.
- Results in increase in area under CBM exploration

## **Major highlights of the policy are:**

- Non requirement of additional license from Ministry of Petroleum and Natural Gas
- Royalty, requisite leases & taxes payable as applicable (Royalty @ 10%, Signature Bonus @ 0.3 MMUSD to GOI, PLP @ 2.5% of sale under of CBM)
- Agreement between CIL & subsidiaries and MOPNG & FDP submission within 24 months under intimation to MOC



# UNIFIED LICENSING POLICIES- OALP



Unified Licensing Policy under Hydrocarbon Exploration and Licensing Policy (HELP) was introduced wherein all types of hydrocarbon resources, both conventional and unconventional can be explored and exploited.

Policies within the HELP regime-

- **Open Acreage Licensing Policy (OALP)** to carry out exploration and production from areas which are either, free or relinquished
- **Discovered Small Field (DSF)** Policy to exploit resources from already discovered fields

**Highlights of OALP are:**

- Single license for Conventional & Unconventional hydrocarbons
- Self carve out of Blocks
- Revenue Sharing Model
- Full Marketing and Pricing Freedom for sale of Hydrocarbons



# OALP- MAJOR REFORMS



## Category-I Basins

More weightage to Work Programme

- MWP-70%
- Revenue Share-30%

50% cap on fiscal quote at HRP

Shorter Exploration Period

## Category-II & III Basins

Evaluation only on Work Programme

Revenue share only on Windfall Gains

## Other Incentives

Concessional Royalty rates to expedite production

Flexibility in FDP revision

Ease of exit and transfer

Committees for Empowered Coordination & Dispute Resolution



# EARLY MONETIZATION POLICY (2017)



The Policy intends to incentivize the CBM operation in the country to boost gas production

## Major Highlights are:

- Marketing & Pricing Freedom (Arm's length Price Discovery and Sales)
- DGH empowered to approve exit cases without payment of COUWP where:
  - Contractor does not accept the reduction in Contract area
  - Delay in PEL grant for more than 2 years
  - Non grant or delayed grant of clearance by State/Central Government beyond 2 years
  - Contractor demonstrates low prospectivity after drilling committed core holes, COUWP of pilot/test wells are waived off
- Entry into subsequent phase after paying cost of unfinished WP
- Excusable Delay in Development Phase without set off
- COUWP calculation @ \$0.25 MM/core hole & \$ 0.60 MM/test well



# POLICY FRAMEWORK (2018)



## Major highlights are:

- Exploration and exploitation of unconventional hydrocarbons such as Shale Gas and Oil along with CBM in the existing PSCs, CBM and Nomination Fields.
- Payment of additional Production Level Payment (PLP) of 10% over and above the PLP percentage for CBM as specified in the existing CBM Contract, in respect of the Shale gas/oil or other hydrocarbons produced under the Contract
- In the case of Shale oil production in CBM contract, oil will be converted into equivalent gas volume in energy terms for the purpose of payment of royalty etc. The conversion scale used will be 1 million barrel of oil equivalent to 10.25 MMSCM of gas.



# ER POLICY (2018)



The Policy promotes and incentivizes Enhanced Recovery Methods for Oil & Gas. Under this policy, fiscal incentives shall be provided since first day of the entire production from future discoveries of unconventional hydrocarbons (Shale Oil & Gas, tight oil/gas and gas hydrates)

## **Fiscal Incentives:**

- For Unconventional Projects, waiver of 50% of OIBD Cess on entire commercial production
- In cases where cess is not there; a notional cess waiver will be made available & reduced from GOI share of Profit Petroleum
- In cases where less or no Profit Petroleum or revenue share is available to GOI, the incentive amount can be carried forward to subsequent financial years for 120 months





# ISSUES IN CBM IN INDIA



- Overlap Issues with Coal Blocks/ Oil/ Gas/ Other projects
- Land Acquisition and Water handling problems
- Delay in grant of PML/PEL from State Govt.
- Delay in grant of Statutory Clearances (CTE/CTO/EC/PNGRB/GA)
- Other Issues: Law & Order



**THANK YOU**



# BACK UP SLIDES



# Initiatives: To Enhance CBM in India **DGH**

- Periodic review of CBM activities by Committee of Secretaries and MOP&NG
- A core group comprising officials from MOP&NG, MoC, DGH, ONGC, DGMS and SAIL have been constituted to finalize Co-development of CBM operations and coal mining in the same area
- Government in November, 2015 allowed CIL and its subsidiaries to explore and produce CBM from the coal mining lease areas held by them
- Provided Pricing freedom to existing CBM contractors
- Policy intervention to relax CBM contractual terms and conditions



# STATE-WISE DISTRIBUTION



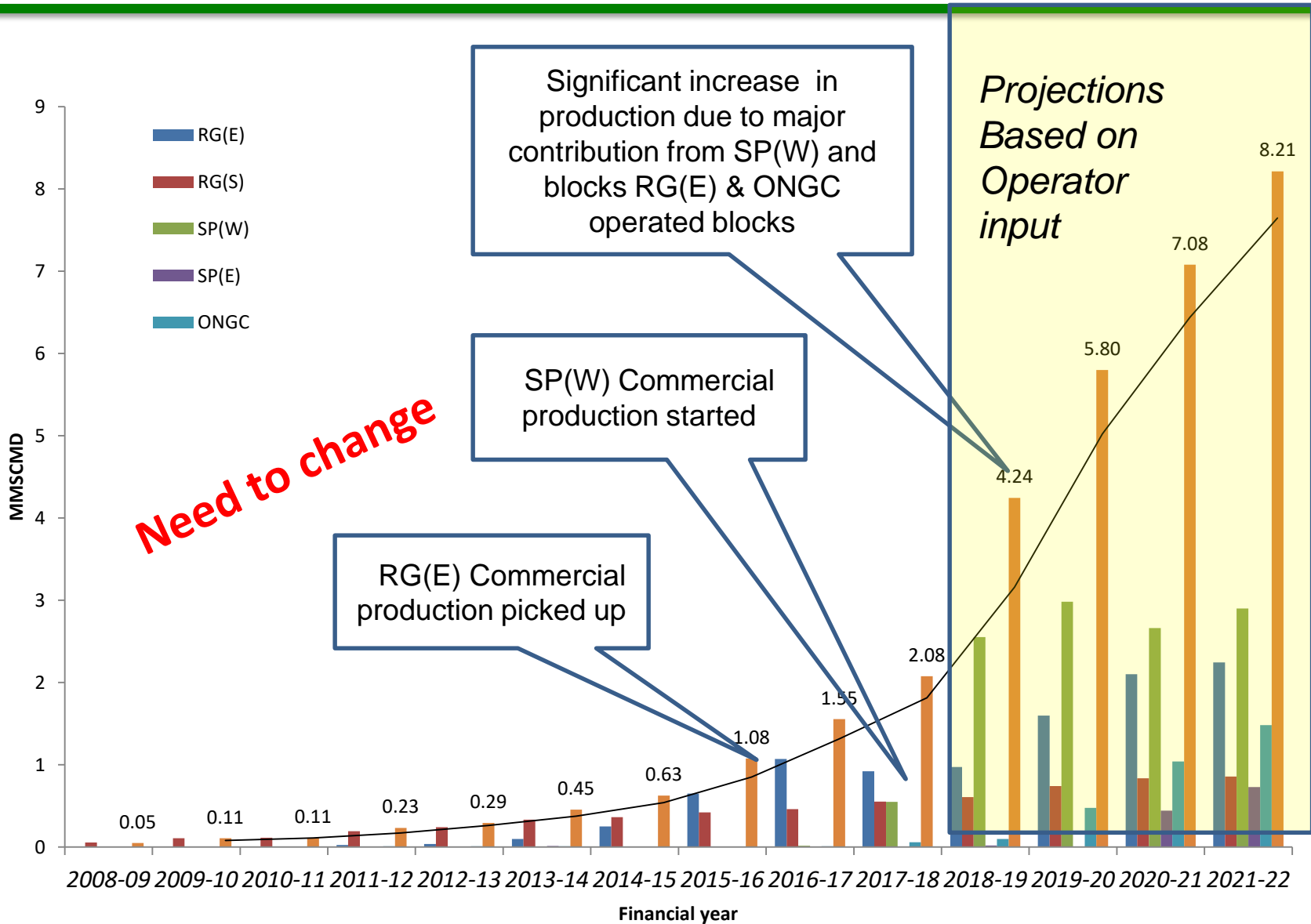
Sl. No.	STATE	ESTIMATED CBM RESOURCES (IN BCM)	ESTIMATED CBM RESOURCES (IN TCF)
1	JHARKHAND	722.08	25.5
2	RAJASTHAN	359.62	12.7
3	GUJARAT	351.13	12.4
4	ORISSA	243.52	8.6
5	CHATTISGARH	240.69	8.5
6	MADHYA PRADESH	218.04	7.7
7	WEST BENGAL	218.04	7.7
8	TAMILNADU	104.77	3.7
9	ANDHRA PRADESH	99.11	3.5
10	MAHARASHTRA	33.98	1.2
11	NORTH EAST	8.50	0.3
TOTAL CBM RESOURCE		2599.48	91.8

State wise present status

Source??



# CBM PRODUCTION TREND





# Reserves established in CBM blocks

**DGH**

Sl. No.	Block name	Consortium (PI)	Approx area (SQ.KM.)	Current Status	GIIP (in TCF)	Recoverable Reserves (in TCF)
1	RG(E)-CBM-2001/1	<b>EOL</b> (100)	500	On prodn.	2.15	0.993
2	SP(W)-CBM-2001/1	<b>RIL</b> (100)	500	On prodn.	1.96	0.670
3	Raniganj South	<b>GEECL</b> (100)	210	On prodn.	1.92	1.340
4	SP(E)-CBM-2001/1	<b>RIL</b> (100)	495	Under Dev.	1.69	0.620
5	BK-CBM-2001/1	<b>ONGC</b> (80) - IOC (20)	95	Under Dev.	1.06	0.130
6	Jharia	<b>ONGC</b> (90) - CIL(10)	85	On prodn.	0.52	0.107
7	NK-CBM-2001/1	<b>ONGC</b> (80) - IOC (20)	340	Under Dev.	0.34	0.052
8	Raniganj North	<b>ONGC</b> (74) - CIL (26)	350	Under Dev.	0.26	0.066
<b>TOTAL</b>					<b>9.9</b>	<b>3.978</b>



# CBM PRODUCTION: ACTUAL & PROJECTED

**DGH**

CBM Block	Operator	Actual	Actual	Actual*	Production Projection		
		2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
RG(E)	Essar Oil	1.07	0.92	0.55	0.93	1.42	1.73
RG(S)	GEECL	0.46	0.55	0.41	0.74	0.84	0.86
SP(W)	RIL	0.02	0.54	0.97	1.53	2.4	2.6
SP(E)	RIL	0	0	0	0	0.44	0.73
JHARIA	ONGC	0.01	0.06	0.01	0.48	1.04	1.48
Total		<b>1.55</b>	<b>2.08</b>	<b>1.94</b>	<b>3.68</b>	<b>6.14</b>	<b>7.40</b>

All figures are in MMSCMD

\* March 2019 figures are projected

Source??





# CBM RESOURCES: WORLD & INDIA



Sl. No.	COUNTRY	COAL RESOURCES (BILLION TONNES)	CBM RESOURCES (TCM)
1	CANADA	7000	6.5 – 76.4
2	RUSSIA	6500	13.3 – 73.6
3	CHINA	4000	16.4 – 34.0
4	USA	3970	12.7 – 25.5
5	AUSTRALIA	1700	8.8 – 14.2
6	<b>INDIA</b>	<b>495</b>	<b>1.4 – 2.6</b>
7	GERMANY	320	1.7 – 2.5
8	U.K	190	1.1 – 1.7
9	POLAND	160	1.4 – 2.0
10	SOUTH AFRICA	150	1.4 – 2.0
11	INDONESIA	17	0.1 – 0.2
12	ZIMBABWE	8	0.04 – 0.05
	<b>TOTAL</b>	<b>24,500</b>	<b>64.84 – 234.75</b>

Source??



# Differences in Conventional and CBM



- Conventional
  - Distinct accumulations
  - Free Gas saturation
  - Reservoir must reach critical gas saturation levels for gas to flow
  - Darcy flow
  - Gas peaks at start of production
  - Low to moderate permeability variation
- CBM
  - Pervasive accumulations
  - Sorbed Gas content
  - Reservoir must reach critical desorption pressure for gas to flow
  - Diffusion + Darcy flow
  - Peaks initially and decays with long taper
  - High to extreme permeability variation