



# VIETNAM COAL POTENTIAL AND DEVELOPMENT ORIENTATION

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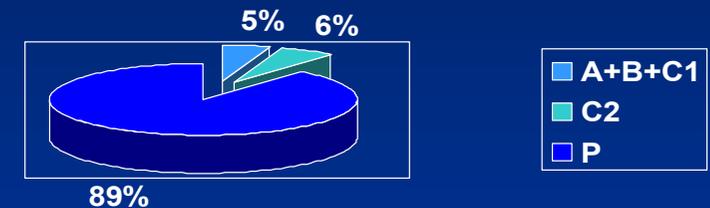
- “ Coal resource potential
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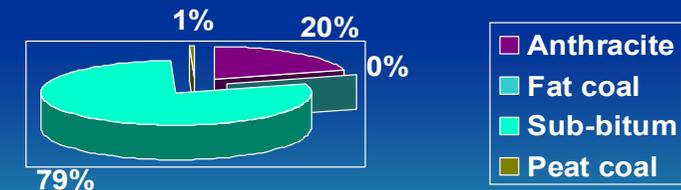
# Vietnam Coal Resource Potential

- “ Total coal resources in Viet Nam: 49.8 billion tons
- “ In Quang Ninh coalfield : 8.7 billion tons (anthracite);
- “ In Red River Delta coal basin : about 39.4 billion tons (sub-bituminous).
- “ Some fat coal deposits in the North and peat in Mekong river delta.

Categories of Resources



Types of Coal



# Specification of anthracite coal for export



Grade	Size (mm)	Moisture %	Ash %	Volatile matter %	Sulphur %	Calorific value Kcal/kg	Fixed carbon %
Mixed	20-100	5	10 max	7	0.65	7,350 min	83
3	35-50	4	3-5	7	0.65	8,000-8,200	88
4	15-35	5	4-6	7	0.65	7,900-8,200	87
5	6-18	5	5-7	7	0.65	7,900-8,100	86
6	0-15	8	6-8	6-8	0.65	7,800-8,000	84
7	0-15	8	8-10	6-8	0.65	7,600-7,800	82
8	0-15	8	10-15	6-8	0.65	7,200-7,600	78
9	0-15	8	15-22	6-8	0.65	6,500-7,200	70
10	0-15	8	22-32	6-8	0.65	5,500-6,500	65
11	0-15	8	32-43	6-8	0.65	4,600-5,500	52 <sub>4</sub>



# Coal production from 2007÷2015

Items	Unit	2007	2008	2009	2010	2011	2012	2013	2014	2015 (Est)
<b>Raw coal</b>	MT	45	45	46	47	48	44	43	37	41
<b>O/P</b>	MT	27	25	26	27	26	22	21	17	18
<b>U/G</b>	MT	16	18	18	20	21	21	22	20	22
<b>Others</b>	MT	2.39	1.84	2.02	0.50	0.71	0.51	0.65	0.50	1.00
<b>Ratio of O/U</b>	%	59	57	56	57	54	51	48	46	43
<b>Overburden removal</b>	Mm3	211	216	209	229	274	233	212	174	185
<b>Stripping ratio</b>	m <sup>3</sup> /T	8	9	8	8	11	10	10	11	11
<b>Tunnel drifting</b>	10 <sup>3</sup> M	275	281	319	349	383	350	343	270	280
<b>Export</b>	MT	25	17	24	19	17	15	12	6	3



# Energy demand forecast, Ktoe

Year	2000	2010	2020	2030	2040	2050
Industry	4,363	12,430 13,343	26,329 29,915	45,077 50,480	71,149 79,747	107,988 121,010
Agriculture	815	1,217 1,228	1,763 1,774	2,316 2,365	3,071 3,148	3,830 3,947
Transport	4,337	9,529 9,891	17,708 18,975	27,188 29,226	38,791 42,107	52,073 57,067
Household	1,766	4,407 4,606	8,867 9,500	12,619 13,799	17,604 19,313	24,138 26,594
Service	896	2,337 2,438	4,733 5,133	7,835 8,547	12,156 13,394	17,935 19,964
Total	12,177	29,920 32,506	59,220 65,296	95,035 104,419	142,771 157,710	205,964 228,580

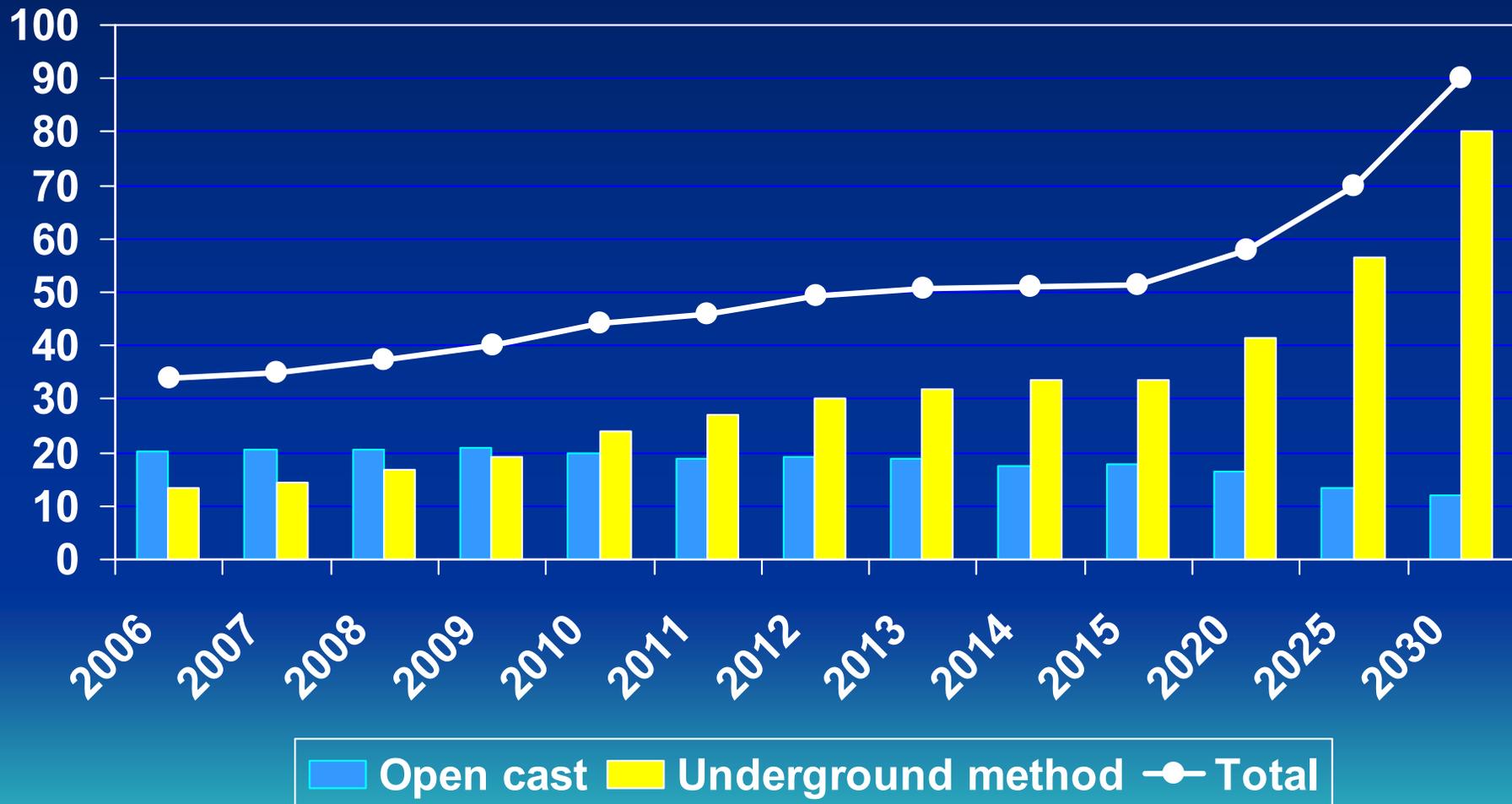


# Final energy demand forecast by fuel types, Ktoe

Year	2000	2010	2020	2030	2040	2050
<b>Coal</b>	3,223	6,802 7,372	12,857 15,058	23,468 26,816	38,532 43,909	60,005 68,139
<b>Electricity</b>	1,927	6,922 7,251	15,390 16,940	23,231 25,763	33,975 37,975	49,045 55,282
<b>Oil product</b>	7,009	14,467 15,139	26,893 29,107	41,439 44,826	59,256 64,473	79,793 87,409
<b>Gas</b>	18	1,350 1,350	2,700 2,700	3,874 3,791	5,537 5,378	7,940 7,649
<b>New and Renewable</b>		379 394	1,380 1,492	2,970 3,223	5,472 5,976	9,181 10,101
<b>Total</b>	12,177	29,920 31,506	59,222 65,296	95,035 104,419	142,771 157,710	205,964 228,580



# Coal supply forecast, Mt (Base scenario)

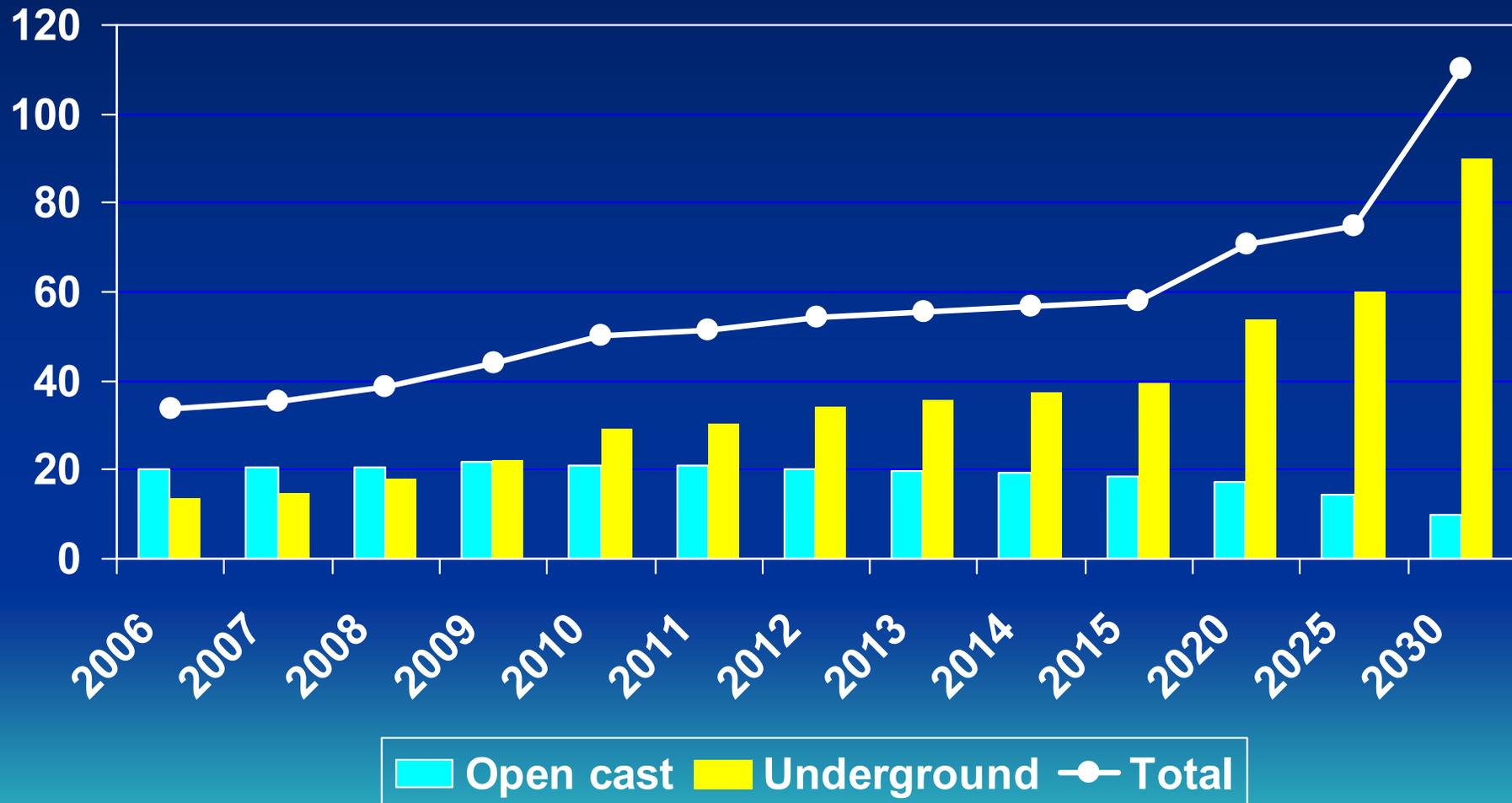


Source: Vinacomin



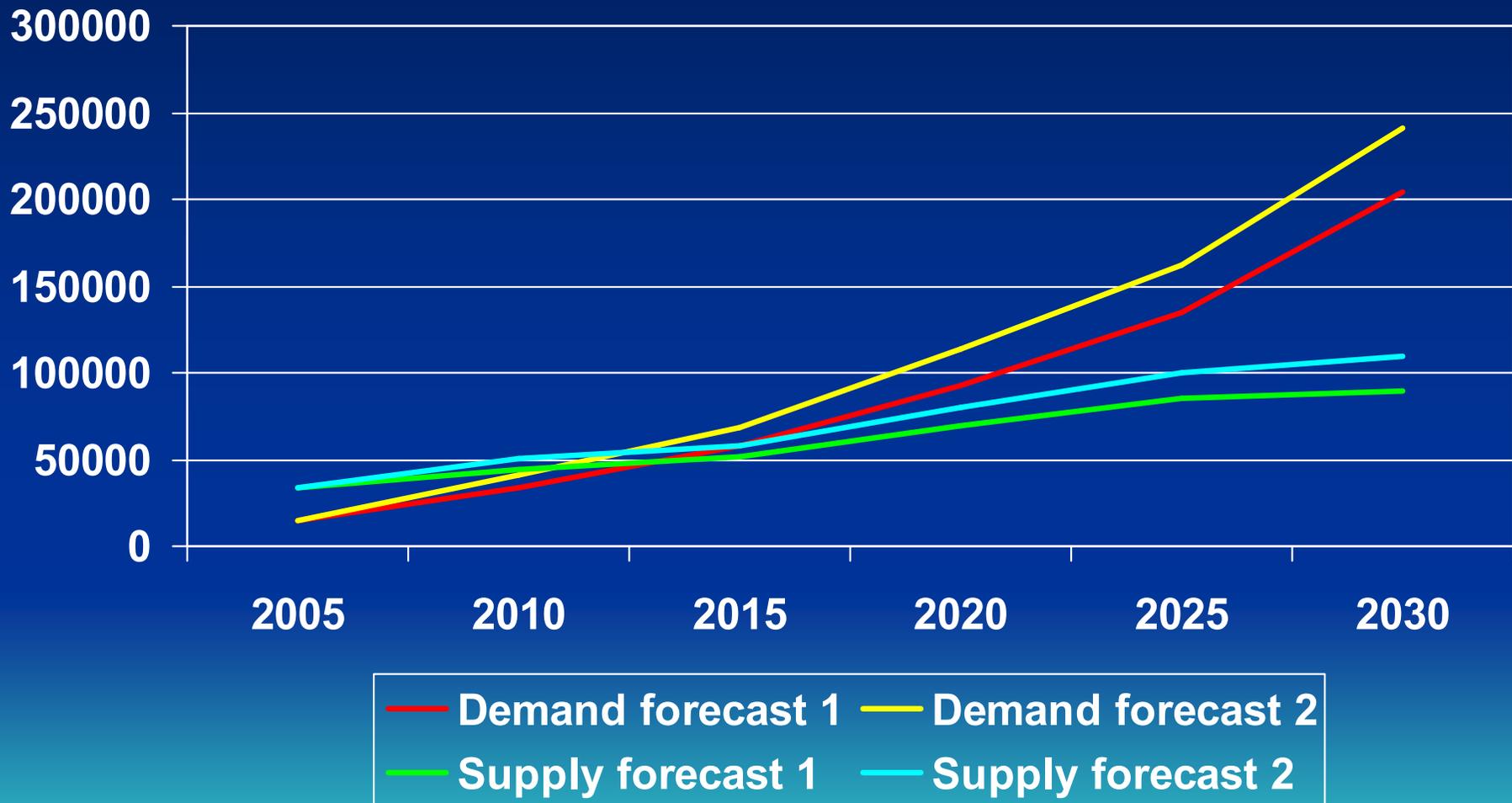
# Coal supply forecast, Mt

*(High scenario)*



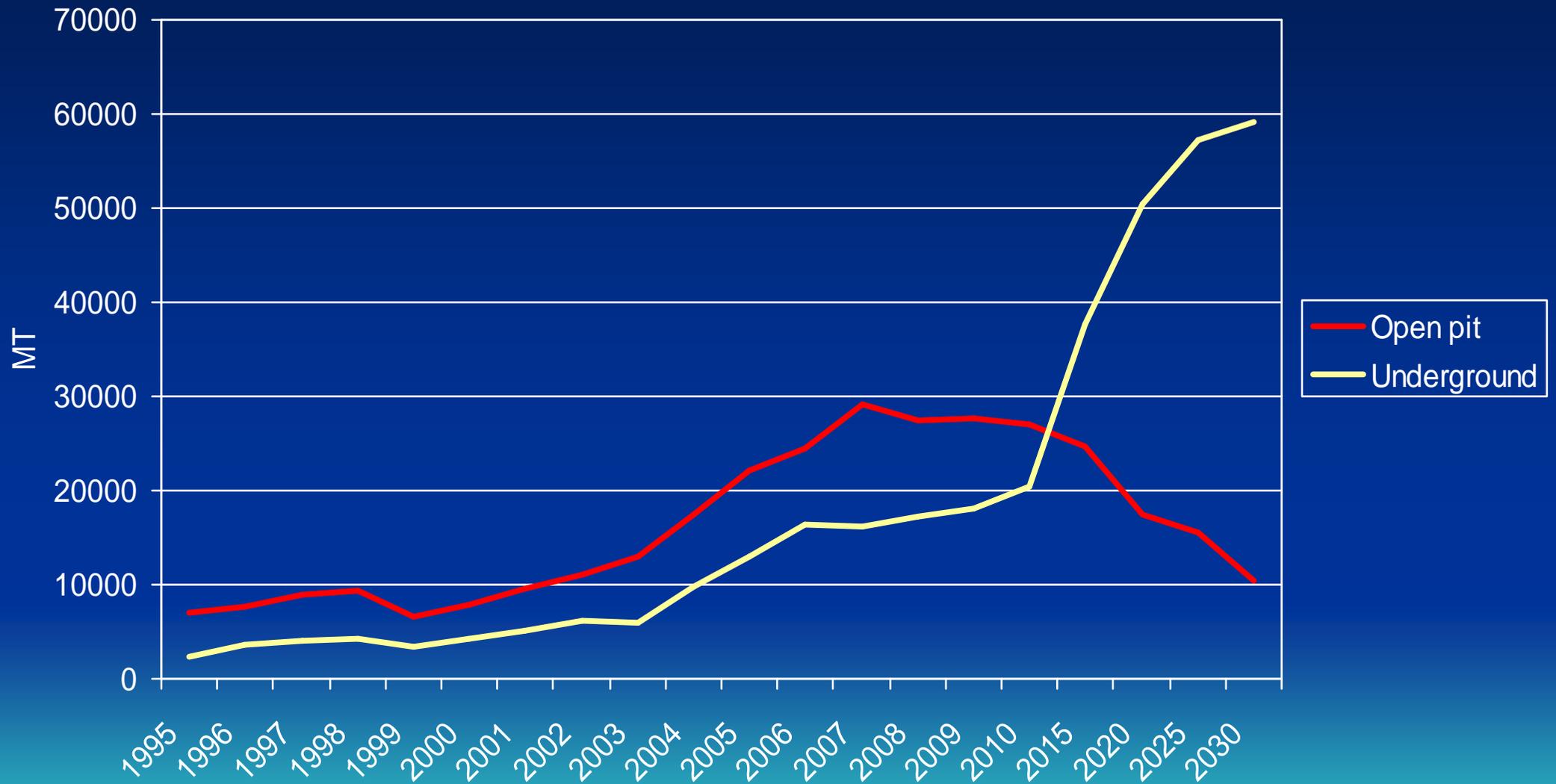
Source: Vinacomin

# Coal demand and supply forecast (Kt)



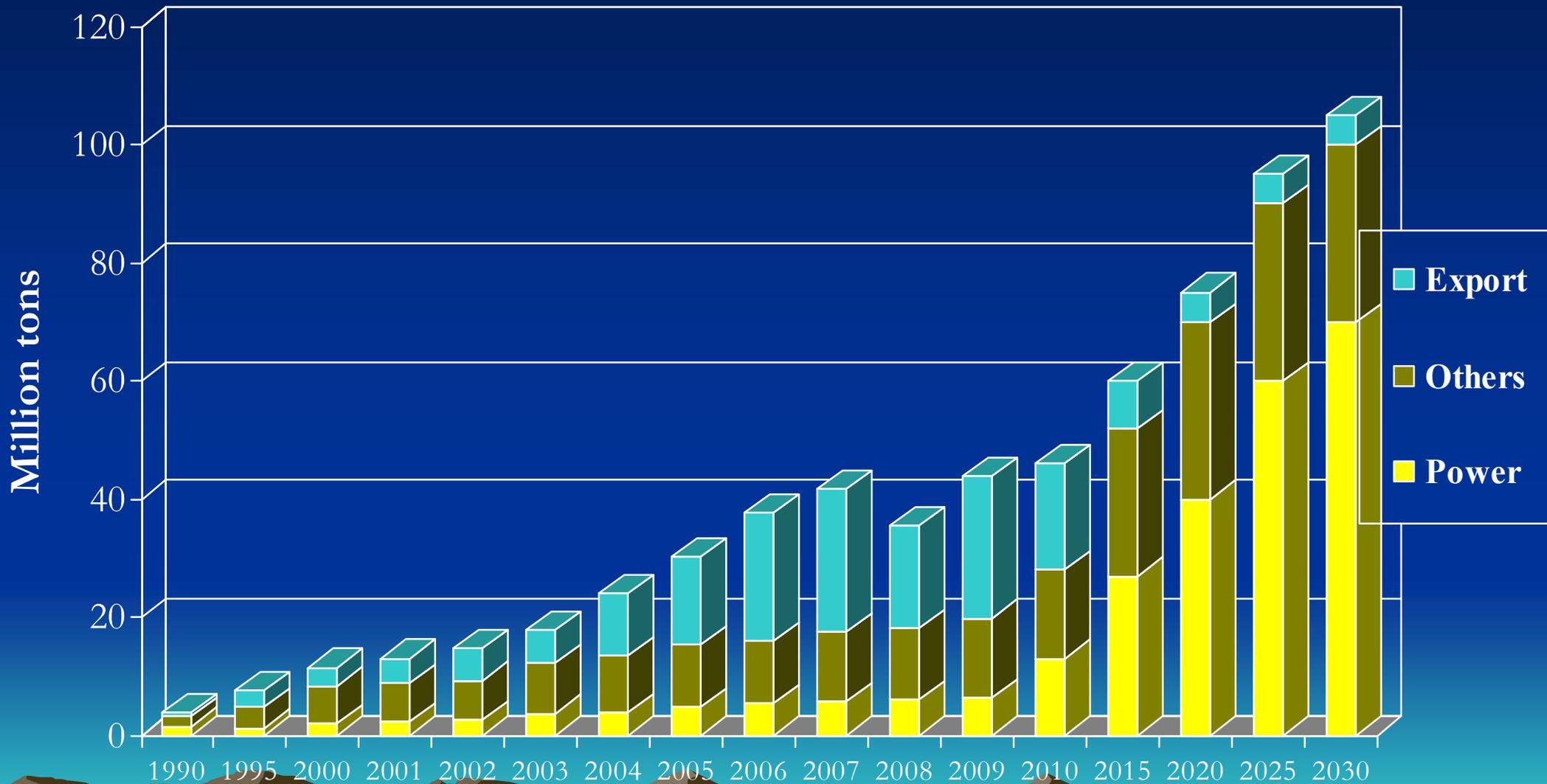
Source: Vinacomin

# Coal production by underground and open pit technology



Source: Vinacomin

# Coal for Power, Export and others



Source: Vinacomin

# Solutions to Ensure Security of Coal Supply



- É In period of 2011 ó 2030: 19 mines with capacity 11 MT/y mines to be closed.
- É To 2025-2027: 19 new mines with capacity 51 MT/year to be constructed.
- É 25 mines with total capacity 50 MT/year to be maintained and upgraded.
- É Until 2015: constructing 6 washing plants (40MT/year): Khecham (15 MT/year); Mongduong (2 MT/year); Lepmy (6 MT/year); Halam (10 MT/year); Vangdanh 2 (3,5 MT/year); Khethan 1 (4 MT/year). Between 2016-2025: constructing washing plant Khethan 2 or Baodai (6 MT/year); Dongtrieu-Phalai (6 MT/year) with 4 coal mines in the area.

# Solutions to Ensure Security of Coal Supply



- É To enhance geological exploration in deep, new mining areas and in the Red River Delta coal basin.
- É To increase the capacity of existing mines Invest & Construct new underground coal mines;
- É To enhance applying mechanization in underground coal mines;



# Solutions to Ensure Security of Coal Supply

- É To plan and to invest in infrastructure in mining area like centralization of washing plants with modern processing lines, transport system and loading port.
- É To select suitable technology like coal gasification and conventional mining method in Red River Delta coal basin



# Solutions to Ensure Security of Coal Supply

- É To strengthen cooperation in the region, construct a coal terminal in the South
- É To co-invest with foreign coal producers to import coal;
- É To cooperate in development of human resources for mining activities.





# Conclusions

- É Coal demand of Viet Nam increases highly, while technology, infrastructure and management skills are limited;
- É To meet the coal demand for the country in the future, coal sector has to implement large projects like exploration & exploitation of anthracite in Quang Ninh, sub-bituminous coal in Red River Delta basin and infrastructure projects;
- É To cooperate with organizations and institutions worldwide to develop coal industry in a sustainable manner, friendly to environment, with safety, making contribution to the economy development and stability in the region.
- É To establish national commission for importing coal, supporting law and policy to mobilize investment fund from domestic and foreign capital markets for investing in development of coal mines in the country and abroad, importing coal for domestic uses.



**Thank you for attention!**