Perlengkapan Sistem Tenaga Listrik

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Selayang Pandang …
Masalah Ketenagalistrikan
di Indonesia

Neraca Sistem Jawa Bali

Tahun	1997	1998	1999	2000	2001	2002	2003	2004
Kapasitas terpasang awal (MW)	11407.7	14693.6	15817.7	15510.9	18140.9	18140.9	18140.9	19460.9
Penambahan kapasitas (MW)	3285.9	1124.1	-306.8	2630.0	0.0	0.0	1320.0	0.0
Total kapasitas terpasang (MW)	14693.6	15817.7	15510.9	18140.9	18140.9	18140.9	19460.9	19460.9
Beban puncak*)	10016.0	9876.0	11032.0	12231.0	13332.0	14532.0	15839.0	17265.0
Beban puncak**)	10016.0	9876.0	11032.0	12231.0	13699.0	15343.0	17184.0	19246.0
Cadangan*)	46.7	60.2	40.6	48.3	36.1	24.8	22.9	12.7
Cadangan**)	46.7	60.2	40.6	48.3	32.4	18.2	13.3	1.1

*) Skenario Lower Bound: rata-rata ~ 9% (2001-2004)

**) Skenario Upper Bound: rata-rata ~ 12% (2001-2004)

Cadangan (%) = [(Total Kap Terpasang – Beban Puncak)/(Beban Puncak)] x 100%

10/16/2016

Dualisme Pemikiran …

- Listrik sebagai infrastruktur:

  Diperlukan sebagai kebutuhan dasar masyarakat

- Listrik sebagai komoditas:

  PT PLN dituntut supaya untung.

Penyebabnya…. Krisis Ekonomi (1997)

Dampak	Sebelum krisis	Sesudah krisis
Tarif (US$/kWh)	0.08	0.03
Harga pokok penjualan (US$/kWh)	0.055 – 0.060	0.055 – 0.060
Konversi Rp/ US$	2400	10000
Pendapatan per kapita (US$)	1500	300 – 400
Aliran kas PLN	surplus	defisit

Masalah BBM

- Sebagian besar pembangkit listrik di Indonesia adalah PLTU, yang membutuhkan BBM.

- Diperlukan bahan bakar alternatif sebagai pengganti BBM.

Ilustrasi…

- Investasi PLTU US$ 250 juta untuk kapasitas 200 MW (PLTU Takalar)
- Investasi PLTU US$ 500 juta untuk kapasitas 450 MW (PLTU Banten)
- Asumsi penggunaan bahan bakar minyak PLTU 200 MW sebanyak 5000 barrel/hari.
- (*1 barrel = 114,41 liter*)

- Misalkan harga minyak mentah dunia adalah US$ 60 per barrel.

- Jika digunakan minyak diesel untuk PLTU, maka harga termasuk biaya pengolahan adalah US$ 64 per barrel.

- Harga minyak diesel di Indonesia adalah Rp 2300 /liter, berarti industri membeli minyak diesel seharga US$ 28 per barrel, sisanya disubsidi pemerintah.

- Jadi untuk membeli BBM per hari diperlukan biaya:

5000 barrel/hari x US$28/barrel

= US$ 140.000 per hari.

Jika berproduksi selama 1 tahun:

US$ 140.000 /hari x 365 hari / tahun

= US$ 51,1 juta per tahun

Batu Bara

- Harga batu bara 1 ton = US$ 40
- 1 ton batu bara setara 4 barrel BBM
- Jadi untuk membeli batubara per hari diperlukan biaya:

5000 barrel/hari x US$ 10/barrel

= US$ 50.000 per hari.

Jika berproduksi selama 1 tahun:

US$ 50.000 /hari x 365 hari / tahun

= US$ 18,25 juta per tahun

Selisih….

- US$ (51,1 – 18,25) juta / tahun

  = US$ 32,25 juta / tahun

  (pembelian batu bara yang setara dengan BBM)

Cadangan batubara

- Kalimantan (61%)
- Sumatera (38%)
- Daerah lain (1%)

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10/16/2016