

JAMINAN ENERGI PRIMER UNTUK KEBERLANJUTAN SISTEM KELISTRIKAN NASIONAL

PERAN INSINYUR DALAM MENYELESAIKAN MASALAH ENERGI & KELISTRIKAN NASIONAL



FT UGM, 5 DESEMBER 2007

INSTITUTION OF ENGINEERS, INDONESIA



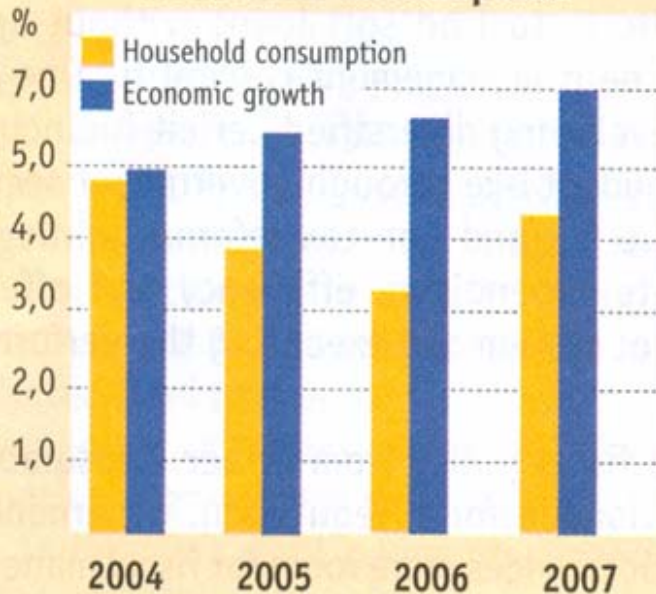
INDONESIA POSITION

Indonesia becomes oil net importer and accused as no 3 country causes global warming from forest fires

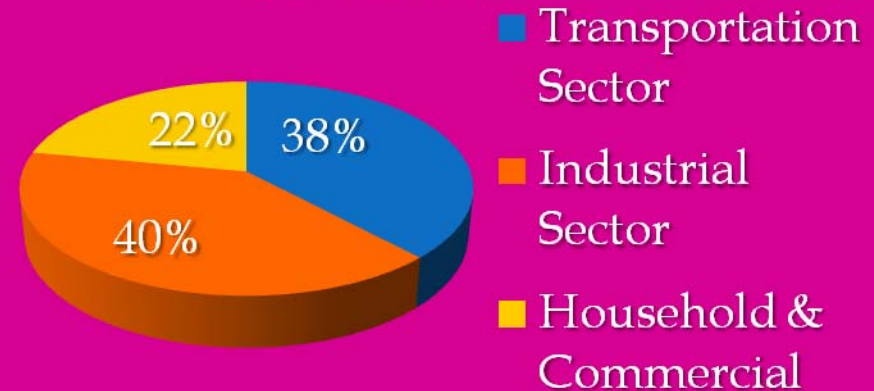


ECONOMIC GROWTH & ENERGY CONSUMPTION

Economic growth & household consumption



ENERGY CONSUMPTION BY SECTOR



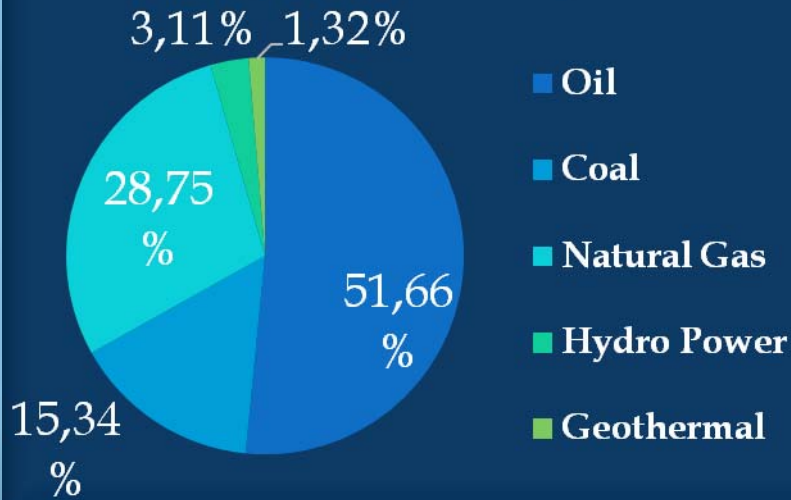
Sector	(Thousand BOE)
Transportation	205.412
Industry	208.331
Household & Commercial Sector	119.362
Total	533.106

Poverty and Unemployment, are reducing by 9.8% and 5.6%

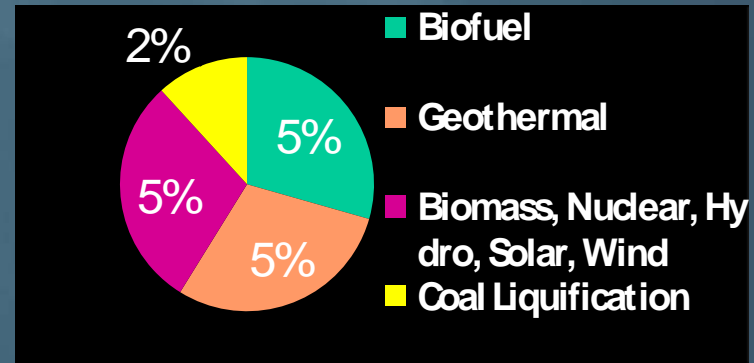
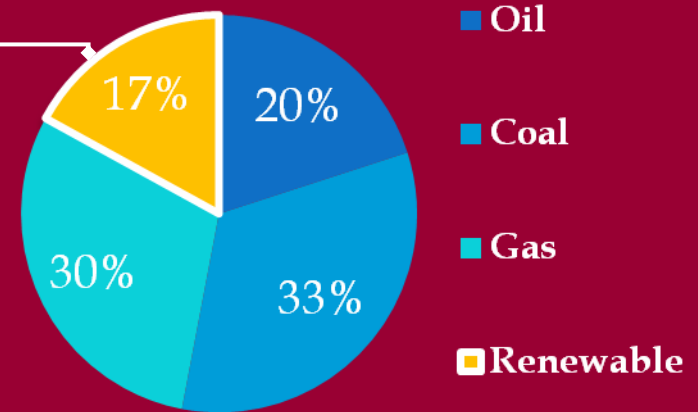


ENERGY MIX POLICY

CURRENT ENERGY MIX (1 billion BOE)



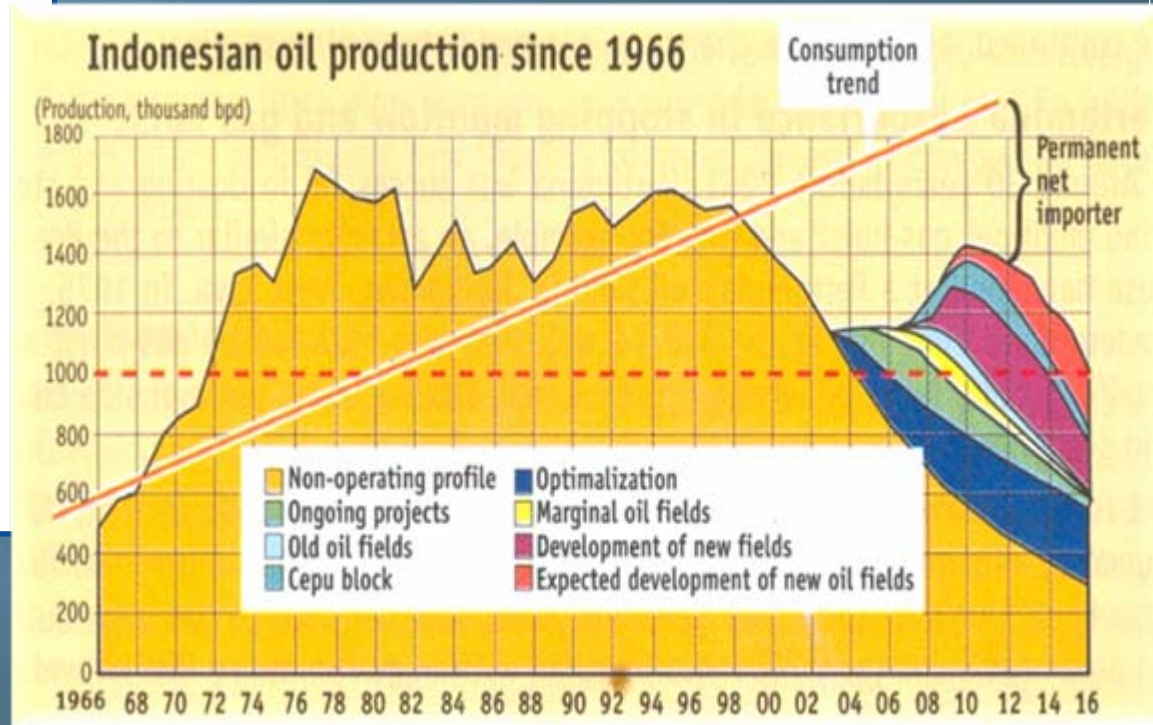
NATIONAL ENERGY MIX 2025 (3 billion BOE)



ENERGY SECURITY POLICY

INDONESIAN ENERGY RESERVES (2006)

Oil	8,9 bill barrels
Natural Gas	187,1 TSCF
Coal	19,3 billion ton
Geothermal	27,00 GW
Hydro	75,67 GW
Biomass	49,81 GW
Wind	9,29 GW
Solar	4,8 kWh/m ² /hr
Mini/Micro hydro	0,45 GW



The urge for energy security to reduce oil dependency has led to a shifting paradigm on domestic setting from a supply-side management towards a more demand-side management approach

COAL FOR ELECTRICITY

Figure 1
Distribution of Indonesian
Coal for Domestic Use

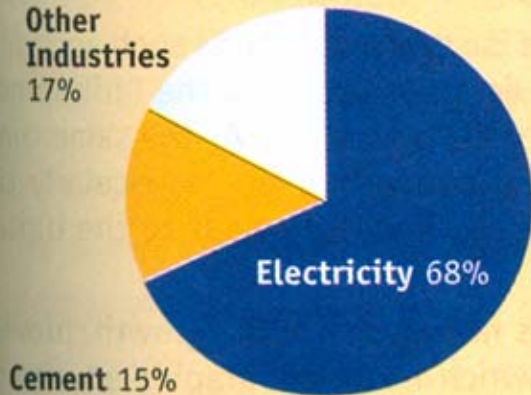
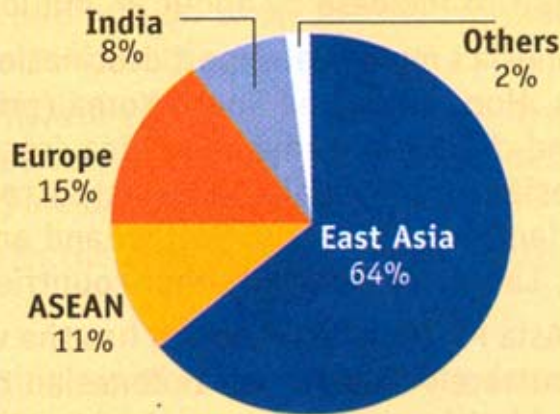


Figure 2
Distribution of Indonesian
coal export destination

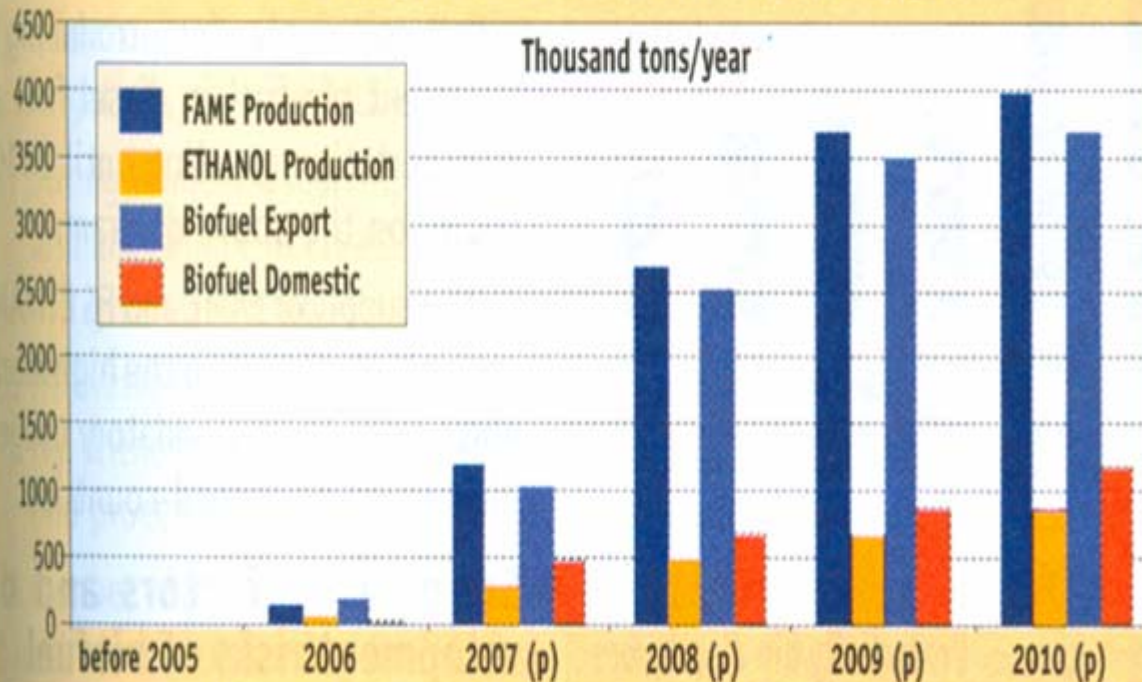


ADD 10.000 MW ACCELERATION PROJECTS

Location	Project Capacity (MW)
Jawa Bali	6,900
Sumatera	1,428
Kalimantan	400
Sulawesi	220
Maluku	44
Nusa Tenggara	114
Papua	34

BIOFUEL TARGET

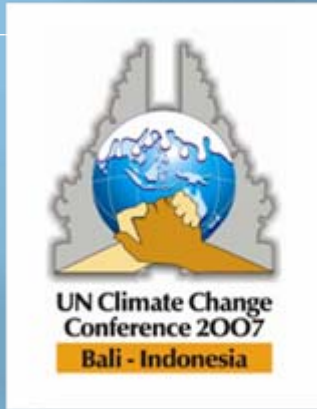
Biofuel production & domestic target



Biofuel target until 2010:

- Job creation for 3.5 million unemployment
- Development of biofuel plantation in 5.25 million ha unused land
- 1000 Energy Self Sufficient Villages and 12 Special biofuel Zone
- Reducing Fossil Fuel for transportation up to 10%

TO BALI DECEMBER UNFCCC



2007: A Momentous Year

- **IPCC Report:** Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly
- **Immediate action is needed to prevent the most severe impacts**
- **International process is at a turning point.**
- **Overall acknowledgement of the need for a more comprehensive climate change regime post-2012**

The Bali Roadmap

An important outcome from Bali:

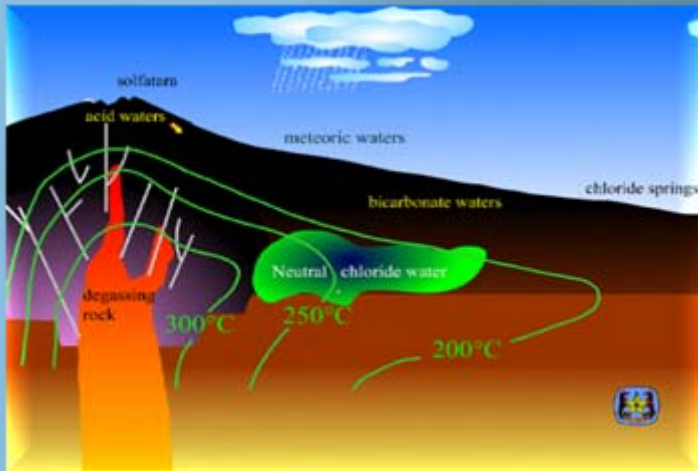
- **Adoption of a roadmap towards a significant global agreement to enhance the implementation of the UNFCCC beyond 2012.**

A Bali Roadmap should ensure an agreement that:

- **Addresses the concerns of all countries of the world**
- **While aspiring to the highest possible commitment**



TARGET FOR MORE CLEAN ENERGY



Technology innovations and competences should be directed to (i) shifting to clean energy, (ii) renewable energy, (iii) more efficient energy, and (iv) carbon capture and gas separation.

INVESTMENT OPPORTUNITIES ON NEW AND RENEWABLE ENERGY

Coal Bed Methane (CBM):

- Potential 453 Tscf
- Target, end of 2007 1st Contract for CBM Development

Geothermal:

- Potential 27 GW
- Utilization until 9500 MW in 2025

Liquefied Coal:

- Technology
- Target 2% of energy mix in 2025

Nuclear:

- Target 4000 MW in 2025
- 1st 1000MW in 2017



55 TAHUN PII 1952-2007

23 MEI 2007

INDONESIA ENGINEERS



INSTITUTION OF ENGINEERS, INDONESIA

OPPORTUNITIES IN ENERGY PROJECTS

INVESTMENT OPPORTUNITIES IN OIL AND GAS INDUSTRIES



Upstream

- Exploration and exploitation in oil and gas fields (out of 60 hydrocarbon basins, only 15 already producing oil and gas)
- EOR and marginal field developments
- LPG Processing plants

Downstream

- Refineries
- LNG Trains and Terminals
- Oil and gas pipelines
- Oil storage and transit terminals



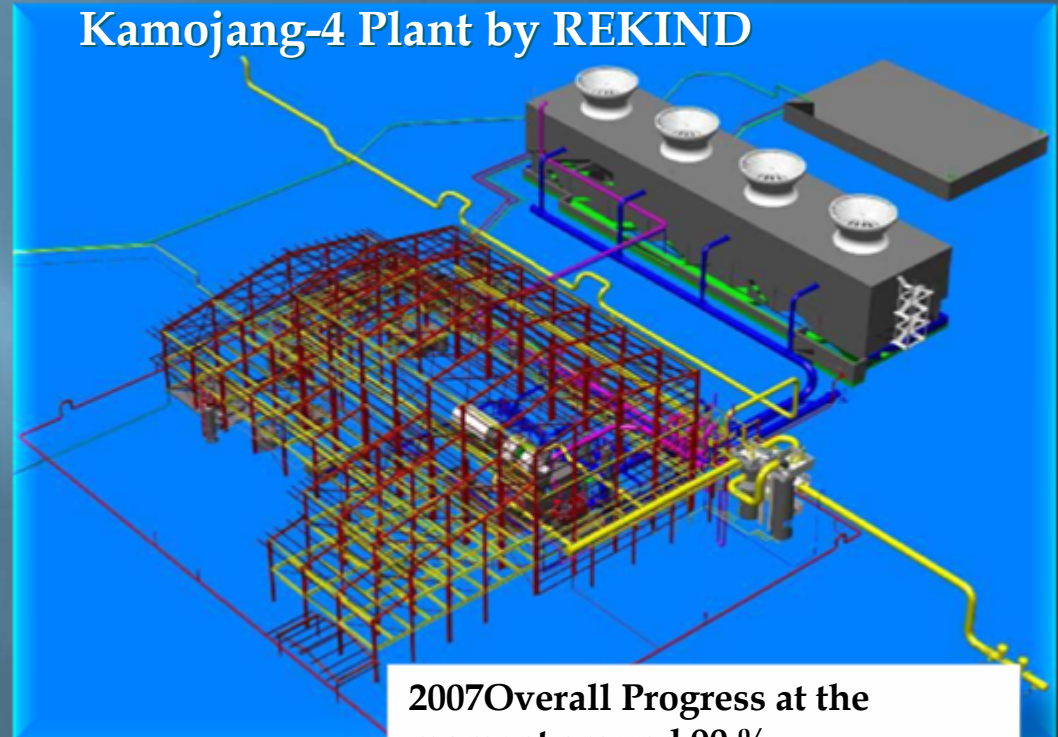
ENGINEERS ACTIVITY 2007 IN ENERGY



Mangrove Rehabilitation

Technology:

- Scaling up cooperation in CCS;
- Low emission transportation fuels;
- Vehicle efficiency and electrification;
- Uptake of low-carbon technologies
- Overcoming market barriers to promote energy efficiency;
- Innovative financial mechanisms



Kamojang-4 Plant by REKIND

2007 Overall Progress at the moment around 90 %
Kamojang4 Ready to Supply West Java Grid By End of January 2008 ; 60 MW



PERKEMBANGAN MINAT SISWA (rata-rata PTN 2003-2005)

Perbandingan Minat antara masing-masing 25 tertinggi, program studi Teknik & Science dan Ilmu-Ilmu Sosial:

Minat ke Teknik & Science*: rata-rata 1514 siswa, lebih rendah daripada Yang berminat ke Ilmu Sosial: rata-rata 3154 siswa (*di luar Kedokteran)

26 program studi yang terbanyak JUMLAH PEMINAT rata-rata:

1. Komunikasi-UNPAD	6838
2. Manajemen-UNPAD	5399
3. Kedokteran-UNPAD	5237
4. Hukum-UNPAD	4795
5. Akuntansi-UI	4716
6. Akuntansi-UNPAD	4683
7. Hukum-UI	4536
8. Manajemen-UI	4009
9. Komunikasi-UI	3901
10. Kedokteran UI	3881
11. Hub.Int'l-UNPAD	3742
12. Kedokteran-UNAIR	3718
13. Farmasi-UNPAD	3624
14. Kedokteran-UNS	3613
15. Psikologi-UI	3596
16. Psikologi-UGM	3441
17. Manajemen-UNAIR	3388
18. Kedokteran UNDIP	3275
19. Kedokteran-UNIBRA	3199
20. Kedokteran UGM	3179
21. Akuntansi-UNIBRAW	3176
22. Manajemen-UNDIP	3145
23. Farmasi-UNAIR	3105
24. Manajemen-UNIBRAW	3096
25. Komputer-UI	3017
26. Hukum-USU	3007

26 program studi TERKOMPETITIF (%) karena keterbatasan penerimaan

1. Kedokteran-UNILA	1
2. Komputer- UNIBRAW	1
3. Hub. Int'l.-UI	1,17
4. Komunikasi-UI	1,21
5. Komunikasi-UGM	1,78
6. Hub. Int'l.-UGM	1,88
7. Manajemen-UDAYANA	2
8. Akuntansi-UDAYANA	2
9. Komunikasi-UNDIP	2
10. Manajemen-UGM	2,06
11. Hub. Int'l.-UNAIR	2,07
12. Akuntansi-UGM	2,10
13. Sastra Inggris-UGM	2,15
14. Komunikasi-UNAIR	2,22
15. Sastra Inggris-UI	2,27
16. Komputer-UGM	2,37
17. Adm. Niaga-UNPAD	2,72
18. Hub. Int'l.-UNPAD	2,76
19. Adm. Fiskal-UI	2,78
20. Manajemen-UNPAD	2,80
21. Sastra Inggris-UNPAD	2,85
22. Akuntansi-UNDIP	2,89
23. Sastra Inggris-USU	2,91
24. Manajemen-UNAIR	2,96
25. Keperawatan-UNPAD	2,96
26. Akuntansi-UNPAD	2,99

**PERKEMBANGAN
MINAT LULUSAN
SMA KE PERTI
TEKNIK & SCIENCE
NEGERI
2003 - 2005
BERDASAR
PERINGKAT SKOR
KELULUSAN SMA
(URUTAN 1-25)**

	PTN	PROGRAM STUDI	SKOR NAS'L	2003	2004	2005	RATA RATA	
1	ITB	Teknik Informatika	659	3241	2909	2353	2834	▼
2	ITB	Teknik Elektro	625	2609	2098	1459	2055	▼
3	ITB	Teknik Kimia	618	1202	1008	831	1014	▼
4	ITS	Teknik Informatika	595	2305	2384	2414	2368	▲
5	ITB	Teknik Industri	588	2322	1900	1524	1915	▼
6	UI	Teknik Elektro	586	1540	1545	1329	1471	▼
7	UI	Farmasi	584	1481	1747	1925	1718	▲
8	ITS	Teknik Elektro	577	1499	1578	1608	1562	▲
9	UI	Teknik Kimia	574	1014	815	1230	1020	▲
10	ITB	Farmasi	574	1616	2149	1203	1656	▼
11	UGM	Teknik Elektro	574	2216	1838	591	1548	▲
12	ITS	Teknik Kimia	566	1081	1160	1190	1144	▲
13	UGM	Ilmu Komputer	565	3246	2513	873	2211	▼
14	ITB	Teknik Perminyakan	552	1416	810	1050	1092	▼
15	ITB	Teknik Fisika	551	670	530	519	573	▼
16	ITB	Teknik Lingkungan	548	1027	579	643	750	▼
17	UGM	Teknik Kimia	548	1543	1336	360	1080	▼
18	ITB	Matematika	546	717	585	554	619	▼
19	ITB	Teknik Pertambangan	542	962	1114	605	894	▼
20	UNDIP	Teknik Elektro	541	1563	1272	1230	1355	▼
21	UI	Teknik Industri	540	1358	1459	1401	1406	▼
22	ITS	Teknik Industri	538	1604	1683	1713	1667	▲
23	UNAIR	Farmasi	538	3042	3121	3151	3105	▲
24	ITB	Teknik Mesin	534	2534	1775	1612	1974	▼
25	ITB	Teknik Penerbangan	529	1109	739	668	839	▼

Catatan: tiap peminat dapat memilih 2(?) program studi

▲ Rata-rata > 2005

▼ Rata-rata < 2005

Sumber: Quantum Institute

PII ENGINEERS

No	DICIPLINE	2006	2007	1	2	3	4	5	6	7	8
1	Electrical	1429	1688								
2	Physic	213	226								
3	Geodetic	177	203								
4	Industrial	410	442								
5	Chemical	801	858								
6	Mechanical	1883	2092								
7	Environment	361	415								
8	Oil	79	90								
9	Mining	220	246								
10	Civil	6653	8114								
11	Agriculture	353	392								
12	Aviation	30	31								
13	Oceanology	35	40								

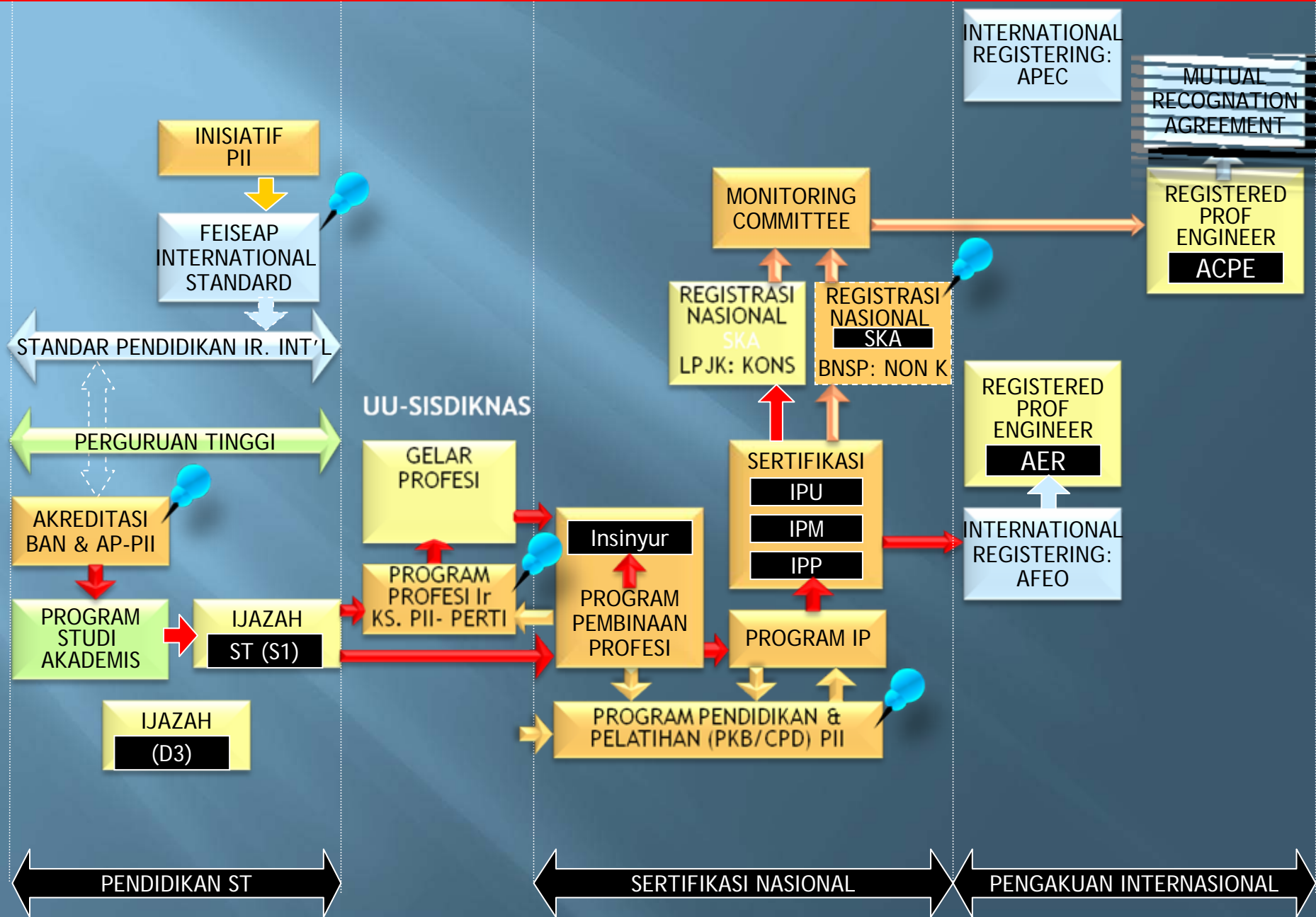
Per Oct 2007

Increase 2,193 new members, from 12,644 in 2006 to 14,837 Engineers in October 2007

12.644 14.837 Member



KESETARAAN PROFESIONALISME IR



PII PROFFESIONAL ENGINEERS

No	DICIPLINE	2007	Total	.5	1.0	1.5	2	2,5	3,0
1	Electrical	136	530						
2	Physic	3	87						
3	Geodetic	17	126						
4	Industrial		75						
5	Chemical	7	281						
6	Mechanical	84	532						
7	Environment	39	115						
8	Oil								
9	Mining								
10	Civil	669	3275						
11	Agriculture	6	28						
12	Aviation								
13	Oceanology								

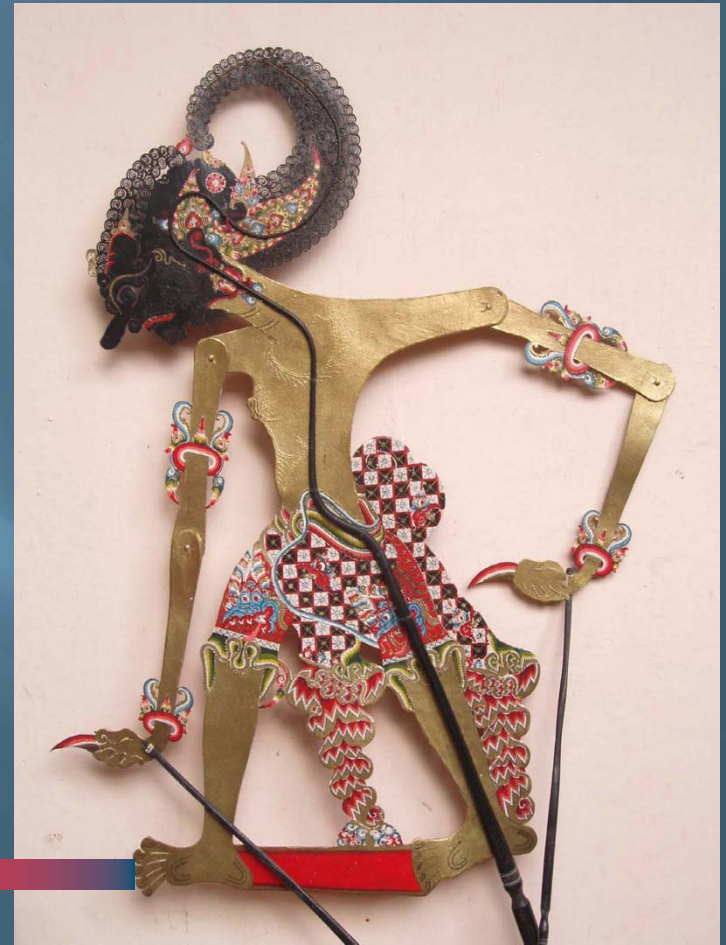
Increase
961 new PE,
from 4108 PE in
2006
to 5049 PE
in October 2007

Per Oct 2007

961 5.049 Proffesional Engineers



I thank
you



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