



MINI HYBRID CONVENTION 2021



The Challenges & Opportunities of Engineers in Sabah.

By: Ir. Tan Kok Jyh, JP
(Hon. Secretary, IEM Sabah)



PY KONSEP PERUNDING SDN BHD



16 NOVEMBER 2021



ENGINEERS in Malaysia



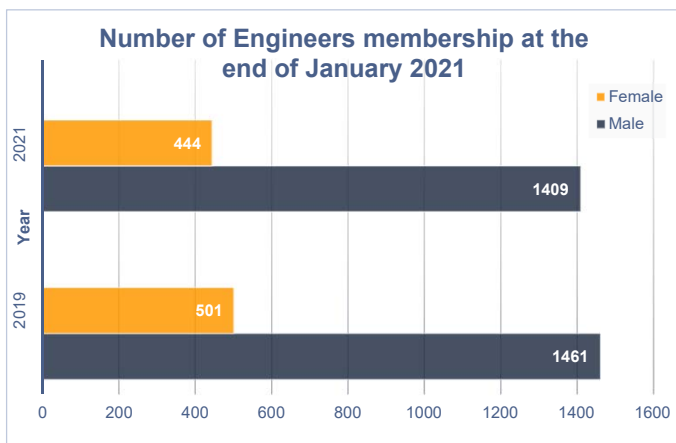
1. Engineers are crucial in helping the country achieve developed nation status.
2. Based on the Education Ministry's statistics from 1997 to 2017, the average number of engineers produced per year by local institutions of higher learning - excluding graduates from foreign universities - is about 16,000. The cumulative total of all engineers produced from 1997 to 2017 is estimated to be about **341,109**.
3. Total of 128, 000 professional and graduate engineers registered with the Board of Engineers Malaysia (BEM).



ENGINEERS in SABAH



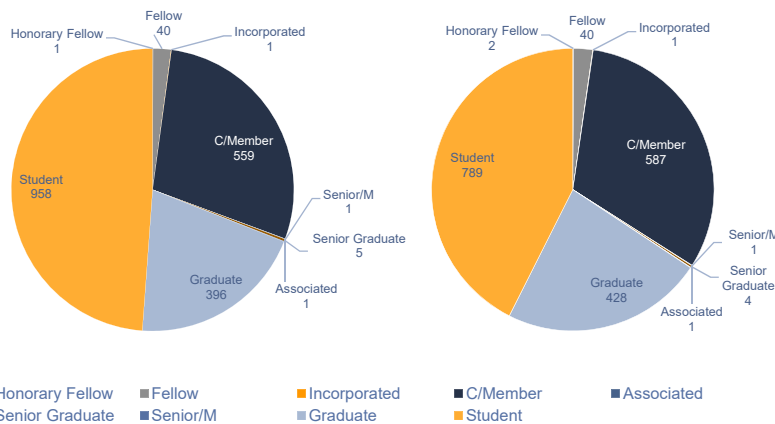
1. The Sabah membership at the end of January 2021 stood at 1853.



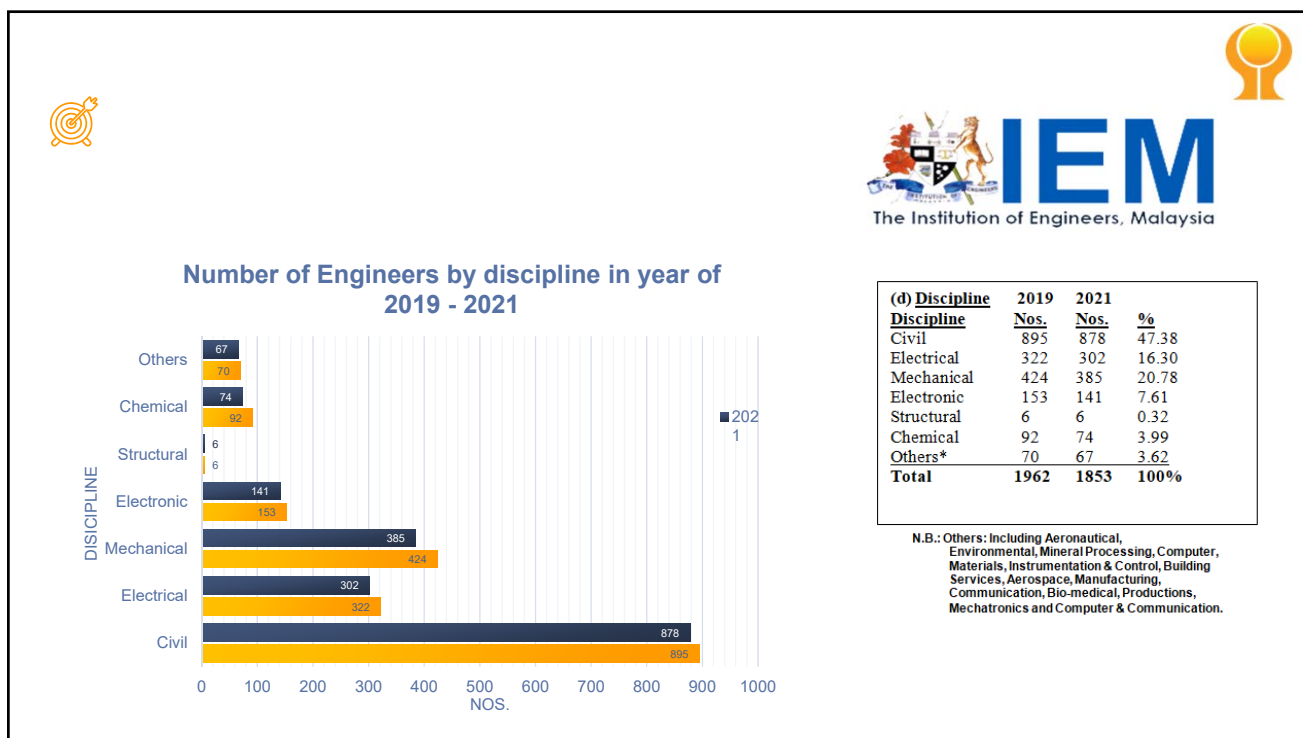
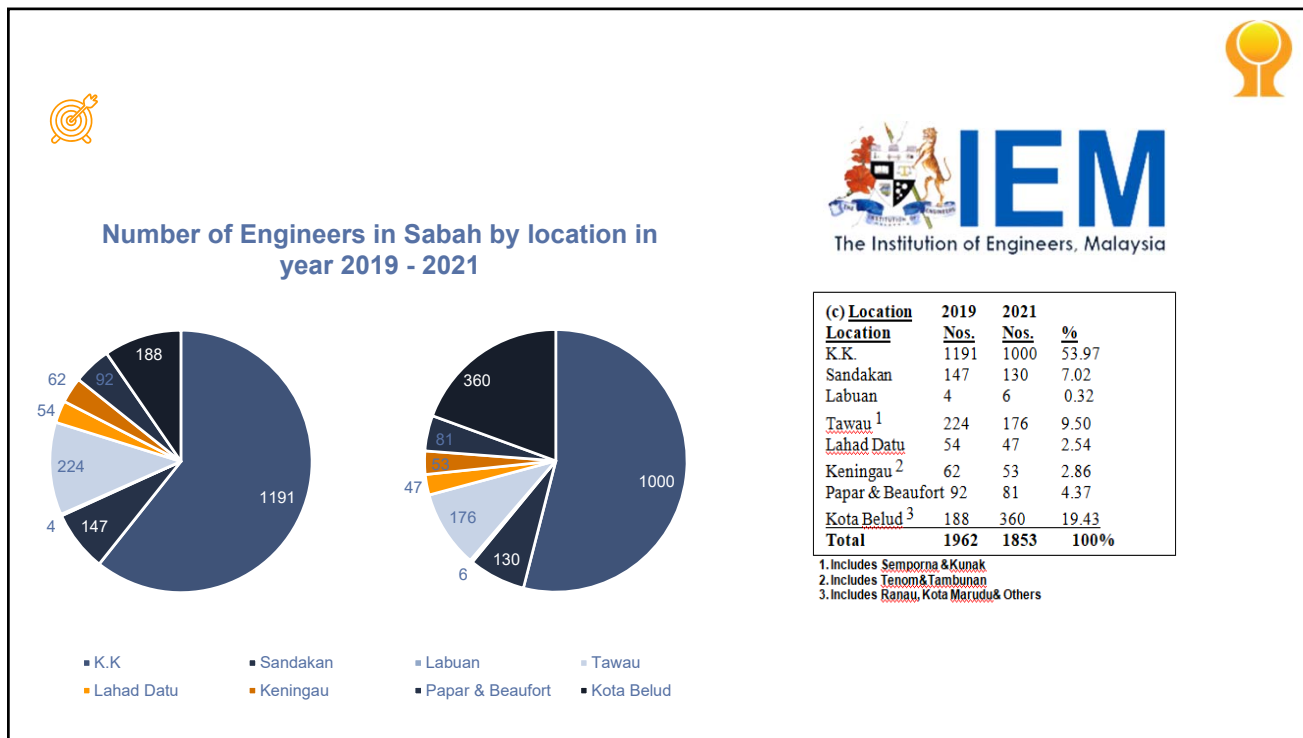
(b) Gender	2019 Nos.	2021 Nos.	Nos.%
Male	1461	1409	76.04
Female	501	444	23.96
Total	1962	1853	100%

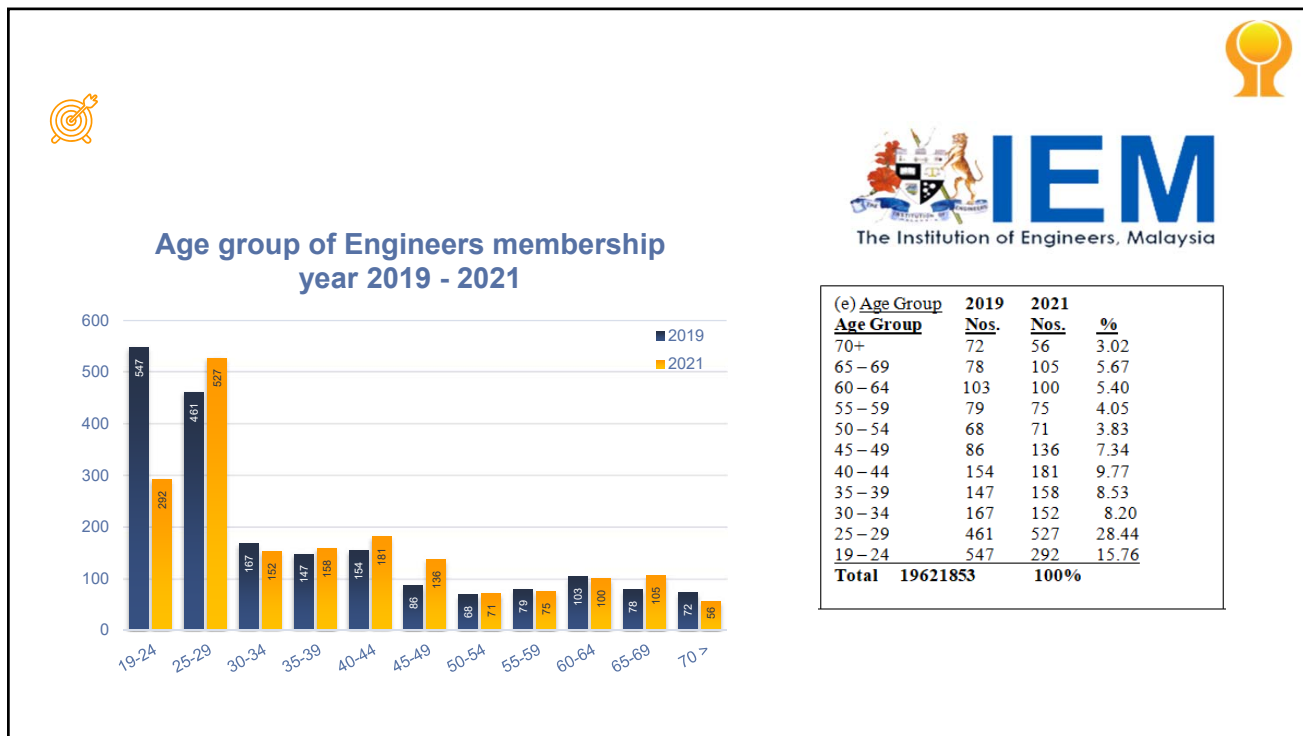


Number of Engineers in Sabah by grade in year of 2019-2021



a) Grade	2019 Nos.	2021 Nos.	%
Honorary Fellow	1	2	0.11
Fellow	40	40	2.16
C/Member	559	587	31.68
Incorporated	1	1	0.05
Associated	1	1	0.05
Senior/M	1	1	0.05
Graduate	396	428	23.10
Student	958	789	42.58
Total	1962	1853	100%





“The Challenges of Engineers In Sabah ”



The Challenges for Engineers in Sabah

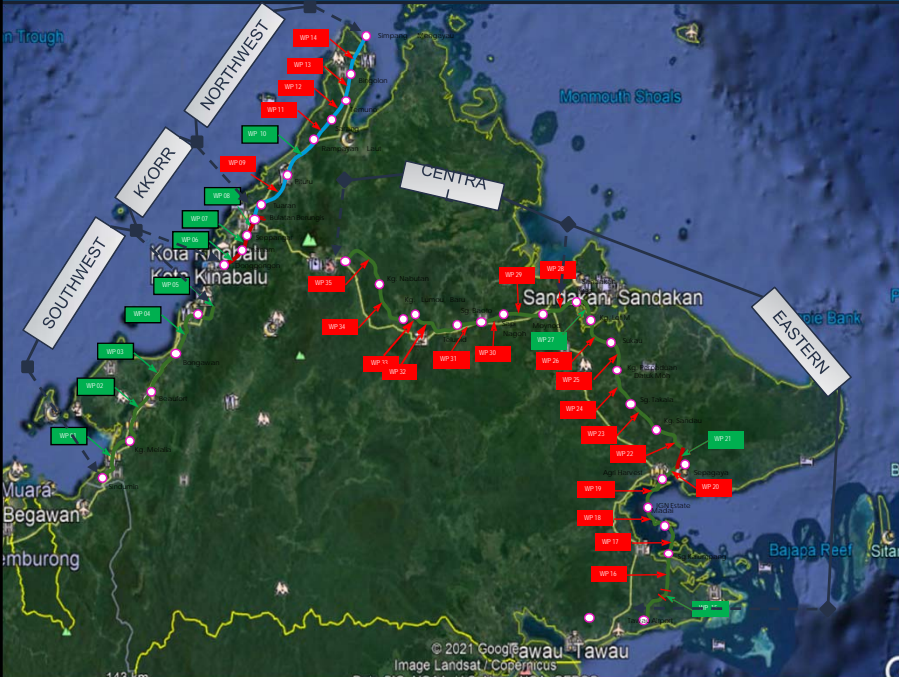


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1. Alignment Selection
2. Land Acquisition
3. Flooding Issues
4. Geotechnical Issues
5. Relocation Of Services
6. Lack of Financial Funding (Implemented 16 Work Packages Contract out of 35)



THE IMPLEMENTATION OF PAN BORNEO HIGHWAY, SABAH (PHASE 1)





PAN BORNEO SABAH

35 PAKEJ

12 PAKEJ	23 PAKEJ
59%	0%

Panjang: 706 KM
 Nilai: RM15.272 Bilion (Anggaran)
 35 Pakej
 - 12 Pakej dijangka Siap **2023**
 - 4 Pakej baru hendak dilaksanakan
 - 19 tunggu peruntukan
 - Status Kemajuan: 59% (12 dari 35)
 - PDP ditamatkan tanpa Pembiayaan Sukuk/Bon



The Challenges for Engineers in Sabah



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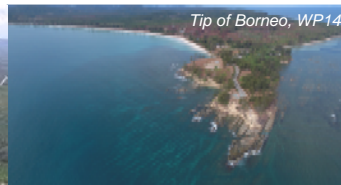
Alignment Selection (Geographical Challenges)



Kota Belud District, WP10



Taringai, WP13



Tip of Borneo, WP14



Lema'as Forest, WP09



Sarang, WP12



Usukan Bay, WP11



The Challenges for Engineers in Sabah



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Infrastructure Development Challenges

52 Serving eviction notice to land/home owner.





The Challenges for Engineers in Sabah



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Infrastructure Development Challenges

52 Flood Impact



The Challenges for Engineers in Sabah



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Infrastructure Development Challenges

52 Utility Services Relocation





The Challenges for Engineers in Sabah

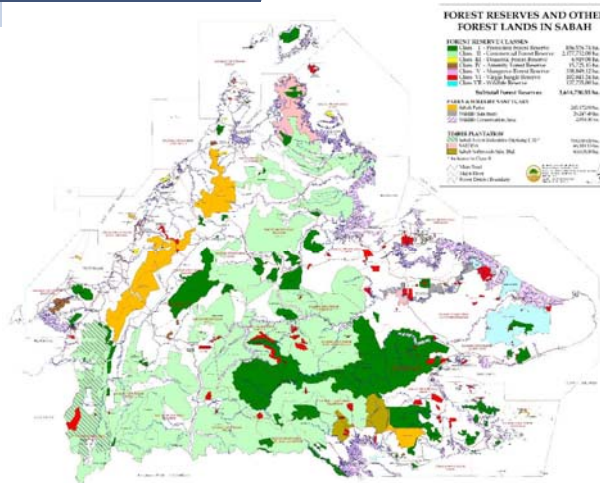


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➤ Encroachment to sensitive area (Forest Reserve)

Forest Reserve Classification

- **Class 1** – Protection Forest Reserve, **STRICTLY PROTECTED**
- **Class 2** – Commercial Forest Reserve
- **Class 3** – Domestic Forest Reserve, native living
- **Class 4** – Amenity Forest Reserve, recreational
- **Class 5** – Mangrove Forest Reserve
- **Class 6** – Virgin Forest Reserve, research / Biodiversity
- **Class 7** – Wildlife Reserve, **STRICTLY PROTECTED**



Kudat & Marudu Bay
Mangrove
Forest Reserve

Class 5

Kudat & Marudu Bay
Mangrove
Forest Reserve

Class 5

Kudat & Marudu Bay
Mangrove
Forest Reserve

Class 5

Abai
Mangrove
Forest Reserve

Class 3

Lema'as
Forest Reserve

Class 5

Sulaman Lake
Mangrove
Forest Reserve

Forest Reserve Classification

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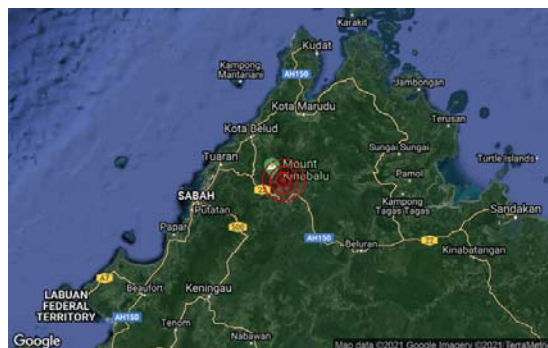
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The Challenges in Natural Hazards



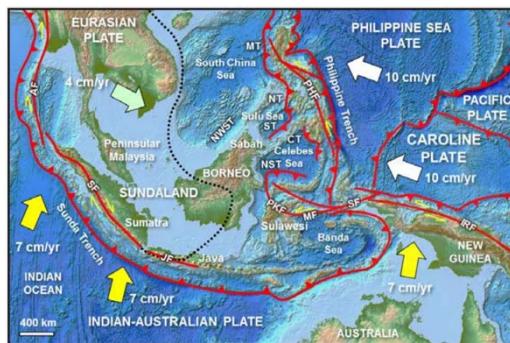
1. The June 5, 2015 magnitude 6 earthquake which jolted the town of Ranau and Kundasang spectacularly reinforced active tectonics in Sabah.
2. Earthquake records from Sabah shows seismic activities since 1897 generated by intra-plate active faults.



The Challenges in Natural Hazards



1. Sabah has long been known as the most tectonically active area in Malaysia due to its relative proximity to the major plate boundary faults in the Philippines and Sulawesi active subduction zones.
2. Sabah is located close to the most seismically active plate boundaries between the Indian-Australian Plate and Eurasian Plate in the west and between Philippine Plate in the east.



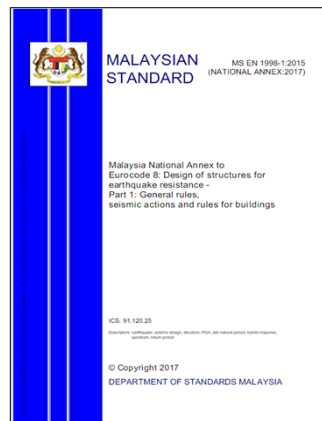


The Challenges in Natural Hazards



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1. Engineers face tremendous responsibility and need more outcome, capability and ideas on designing robust building to withstand earthquake and to minimize structure failure and collapse of building.



The Challenges for Engineers in Sabah



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1. Due to the frequent flooding, engineers are required to carry out hydrological analysis modeling to analyse the flooding, development plan should comply JPS Urban Storm water management.





The Challenges for Engineers in Sabah



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1. Few areas within the rural areas in Sabah are facing challenges on obtaining a clean water supply. Some are still using gravity water and rain water for their daily use.
2. A lot of consideration will be taken by Engineers in providing a clean water supply. Few of it are the river discharge, raw water intake, type of treatment plant to be used, location of treatment plant, water quality etc...

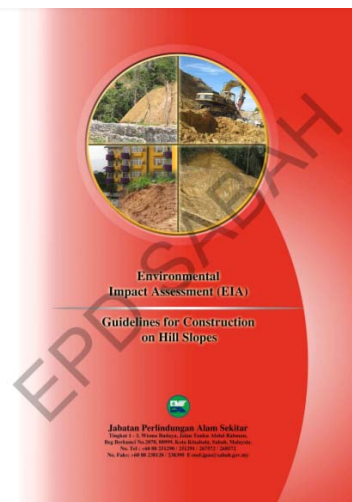


The Challenges for Engineers in Sabah



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1. As we all know, Sabah is filled with beautiful natural hills and with Mount Kinabalu as a Symbol of Pride for the Sabahans.
2. All these hills are to be protected and every construction on it must comply with the Environment Impact Assessment (EIA) on the Construction on Hills Slope to ensure the surrounding area are not disturbed and cause natural disaster in the future.





The Challenges for Engineers in Sabah



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- 52 Sabah is rich with natural resource that has potential towards a reliable and sustainable power supply.
2. It is a challenge to the Engineers in designing to provide power to all areas in Sabah especially due to the insufficient of infrastructure. Sabah's geographical structure is a mix of mountainous regions, breaches and tropical rainforest. This has made the implementation to be very difficult and expensive because of land access is far from main grid connection.



The Challenges for Engineers in Sabah



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Some of the relevant regulations and acts are as follows, but not limited to:

- Environmental Quality Act
- Environmental Protection Enactment
- Land Ordinance
- Local Government Ordinance
- Town Planning Ordinance
- Revised Registration Of Engineers Act
- BEM Circulars
- Occupational Safety & Health Guidelines



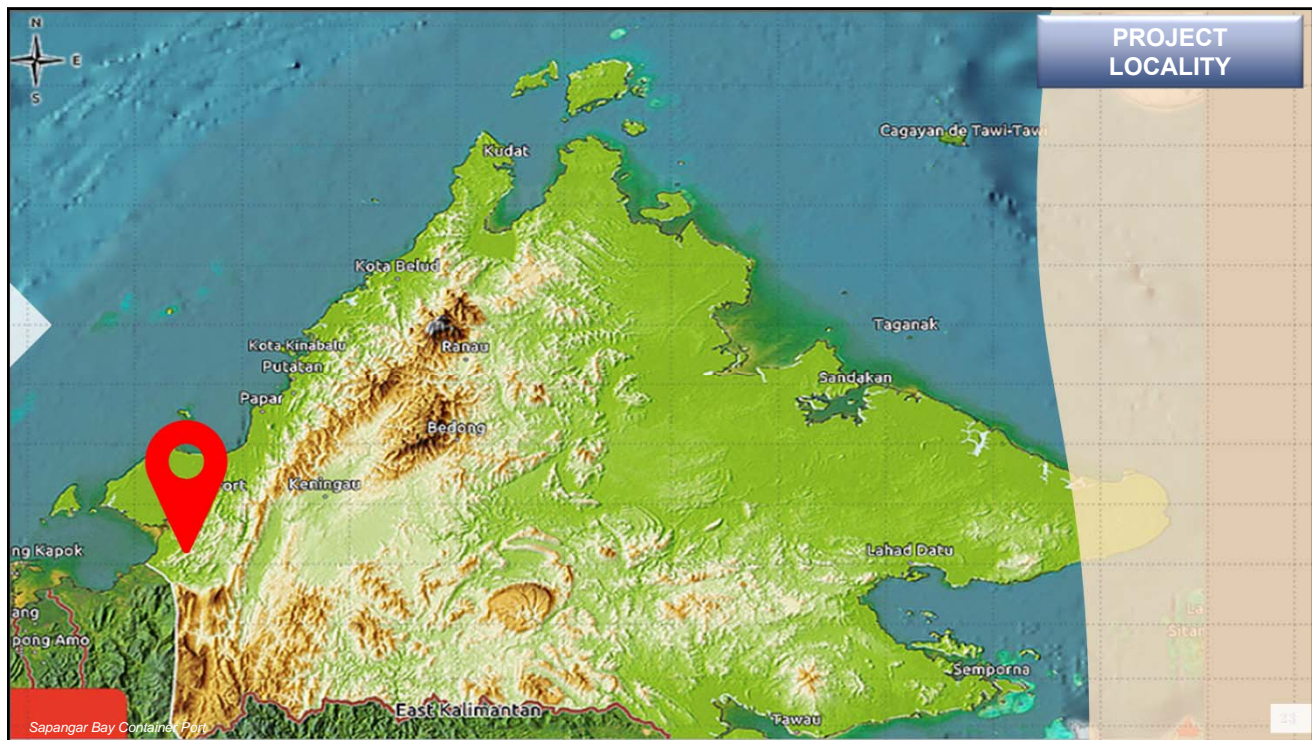


The Challenges for Engineers in Sabah



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1. Sabah has abundant Oil & Gas resources, but don't have adequate local Oil & Gas Engineers
2. Lack of expertise engineer in handling deep water project in order to maintain largest crude oil production hub in Malaysia with compliance of local authority HSSE.





The Challenges for Engineers in Sabah



Opportunities Towards Development of Sabah

1. SAMUR IN SIPITANG DISTRICT
2. REQUIRE OIL & GAS ENGINEERS TO OPERATE & MAINTAIN THE PLANT



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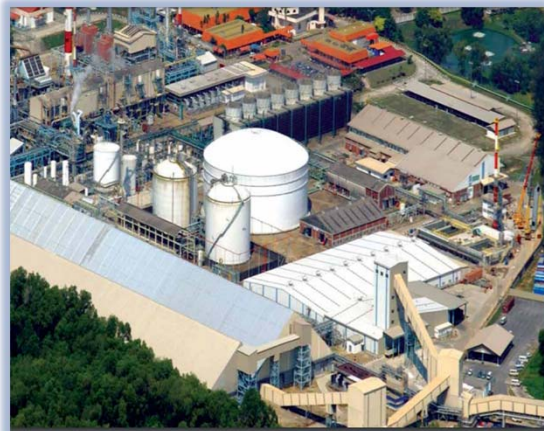


The Challenges for Engineers in Sabah



Opportunities Towards Development of Sabah

1. Develop & optimise oil & gas related downstream businesses
2. Develop Research & Development centre for petrochemicals product that will make sabah selfsufficient, relevant and sustainable for its residents.
3. Increase GDP and employment opportunities for sabahan.



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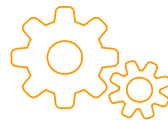
The Challenges for Engineers in Sabah



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1. Sabah is still backward compared to many other states in Malaysia.
2. Sabah's economic performance is 'underperforming' due to inadequate allocation from the federal government, lack of autonomy in decision-making and infrastructure, among other things.

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“The Opportunities of Engineers ”



The Opportunities of Engineers In Sabah



01

Opportunities to equip themselves with the latest design code, and also latest software.

02

Increase themselves in self-competence in-lined with engineering ethics and have capability to serve the public.

03

Application of new operating modes and methods of multi-disciplinary in computational modeling for overall complex design and process control.



The Opportunities of Engineers In Sabah



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1. The need to provide linkages for both countries (Indonesia & Malaysia) in order for economic impact to take place.
2. Sabah is the land of opportunities.
3. Opening more job opportunities for ENGINEERS.





The Opportunities of Engineers In Sabah



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- Position Sapangar Bay Container Port (SBCP) a Logistic Transshipment Hub and value add for cargo between Kalimantan–South Philippines (ASEAN) and North Asia (China, Japan, Korea). Integration of KKIP as Free Economic Zone with the Sapangar Bay Transshipment Hub.



The Opportunities of Engineers In Sabah



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1. Attracting world class companies and building local entrepreneur capacity to accelerate growth of downstream manufacturing.
2. More future collaboration with international market.





CONCLUSION

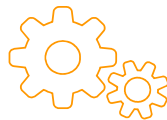


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- ~ Sabah has vast potential development & Opportunities For Engineers.
- ~ Engineers must have:
 - 1) Good attitude
 - 2) Competence
 - 3) Integrity.
- ~ BEM & IEM to enhance the professionalism & standard by providing training and seminars.

“SABAH MAJU JAYA”

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Sekian, terima kasih