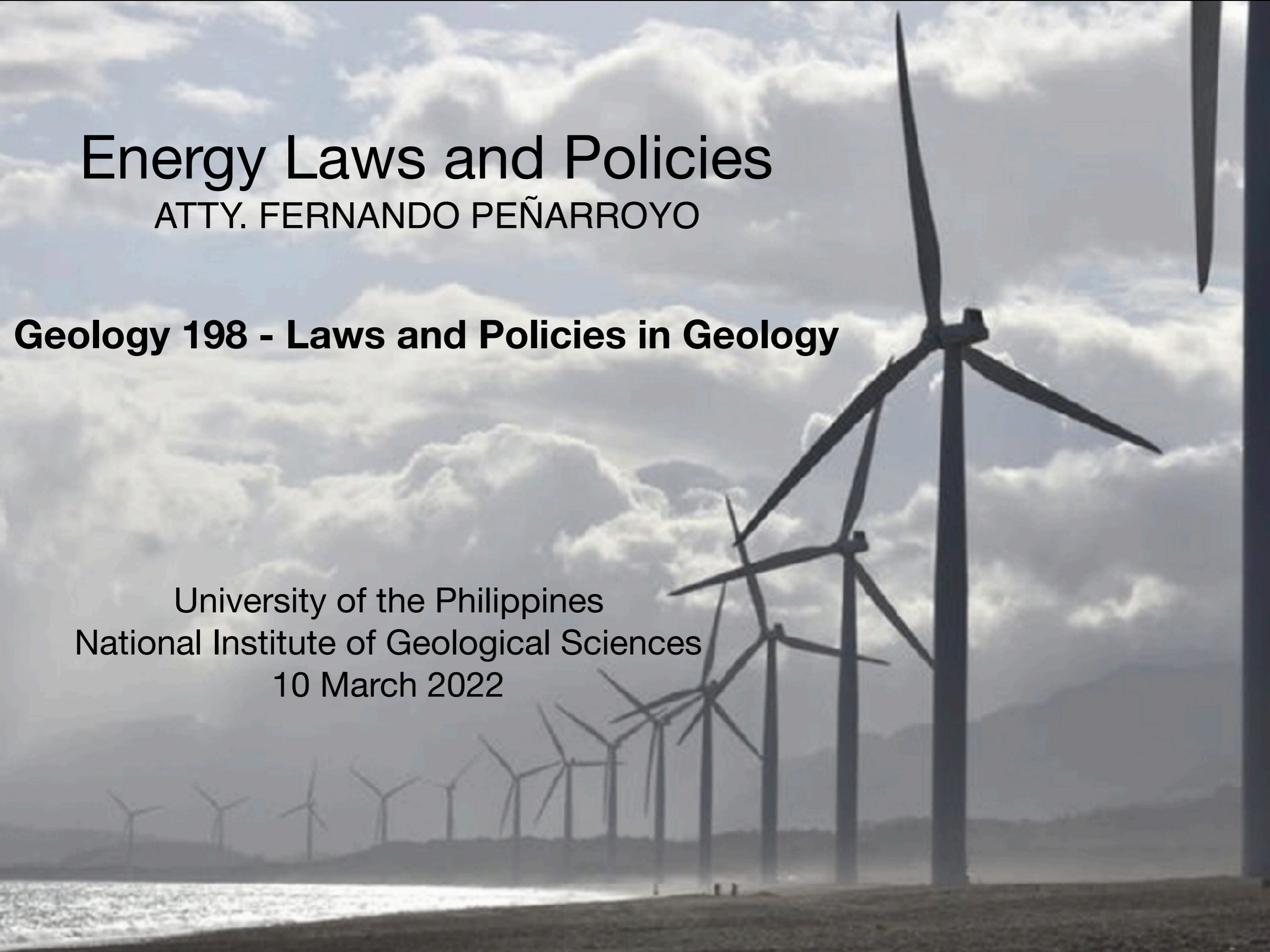


Energy Laws and Policies

ATTY. FERNANDO PEÑARROYO

Geology 198 - Laws and Policies in Geology

University of the Philippines
National Institute of Geological Sciences
10 March 2022



- Master of Laws (Univ. of Melbourne), Bachelor of Laws & Bachelor of Science in Geology, (UP)
- Managing Partner, Peñarroyo and Palanca Law
- Group's Legal Counsel and General Manager for Business Development, Polyard Petroleum International Group Co. Ltd (energy company listed at the HK Stock Exchange)
- Past President, Geological Society of the Philippines
- Presidential Adviser on Energy, Integrated Bar of the Philippines
- VP and Trustee, Philippine Mining and Exploration Association
- Legal Counsel - National Geothermal Association of the Philippines and Philippine Chamber of Coal Mines
- Legal Committee, Petroleum Association of the Philippines
- Geology Board Reviewer in Resources and Environmental Law
- Former Lecturer, Asian Institute of Technology (Bangkok), UP National Institute of Geological Sciences
- Contributes articles on legal, regulatory and policy issues on resources and energy to Philippine Resources Journal <http://www.philippine-resources.com/>



ATTY. FERNANDO PEÑARROYO

<https://penarroyo.com/>

Outline of Lecture

- ❖ Legal and institutional framework
- ❖ Energy update - upstream petroleum, coal, geothermal, downstream natural gas, power, alternative fuels
- ❖ Issues and challenges
- ❖ Opportunities in the energy transition and digital transformation
- ❖ Summary



LEGAL AND INSTITUTIONAL FRAMEWORK

- Constitution
- Energy Laws
- Indigenous Peoples Rights Act
- Local Government Code
- Environmental Impact Statement System
- Rules of Procedures for Environmental Cases
- Department of Energy and other Government Agency Issuances



CONSTITUTION

- Regalian doctrine - The exploration, development and utilization of these natural resources are under the full control and supervision of the State.
- The State has the option of entering into energy agreements with Philippine citizens or Philippine corporations or associations. At least 60% of the capital of a corporation or association must be owned by Phil. Citizen to qualify as a Philippine corporation or association.
- Exception to the nationality requirement: The Constitution authorizes the President to enter into agreements with foreign-owned corporations involving either financial or technical assistance, for large-scale exploration, development and utilization of minerals, petroleum and other mineral oils.

THE 1987 PHILIPPINE CONSTITUTION

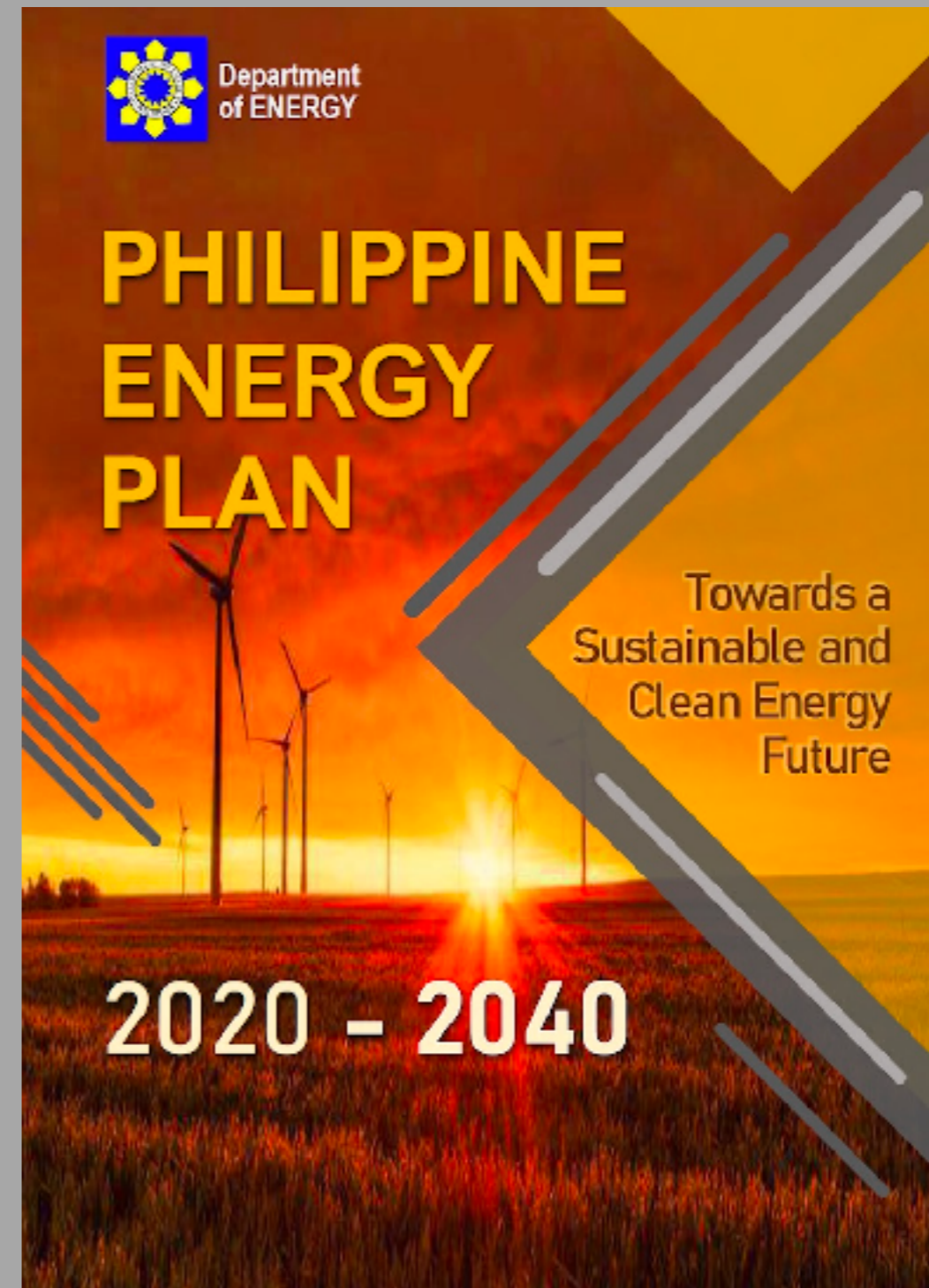
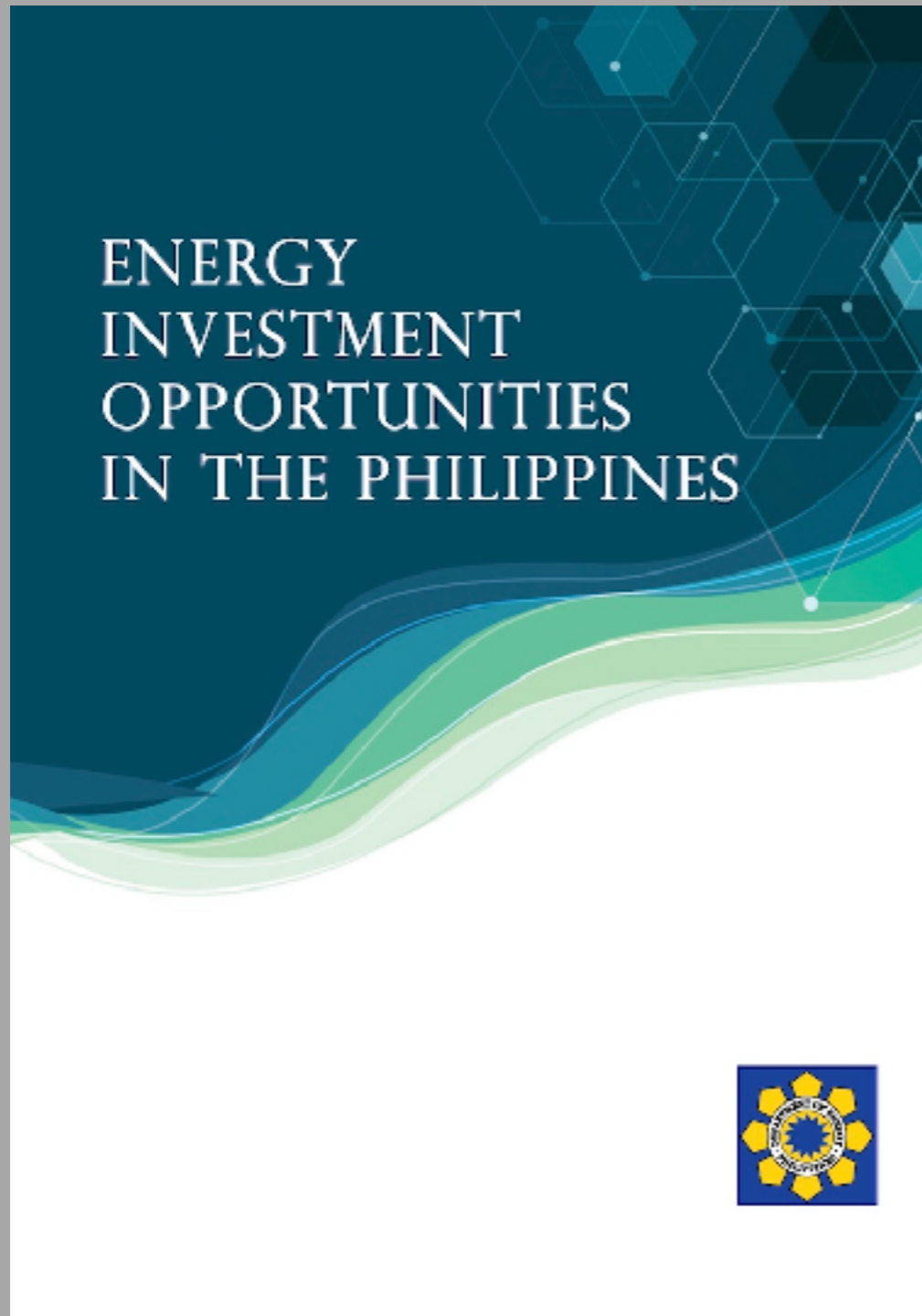
INVESTMENT LAWS IN ENERGY RESOURCE DEVELOPMENT

- Presidential Decree (P.D.) 87, as amended, "Oil Exploration and Development Act of 1972" for petroleum service contracts – allows 100% foreign ownership <https://www.officialgazette.gov.ph/1972/12/31/presidential-decree-no-87-s-1972/>
- PD 972, as amended, introduced the coal service contract system and established the guidelines for coal operations – 60/40 coal operating contracts <https://www.officialgazette.gov.ph/1976/07/28/presidential-decree-no-972-s-1976/>
- RA 9513 "Renewable Energy Law of 2008" for renewable energy service contracts including geothermal <https://www.officialgazette.gov.ph/2008/12/16/republic-act-no-9513/>

IMPORTANT LAWS RELATED TO ENERGY RESOURCES DEVELOPMENT

- Indigenous Peoples Rights Act (“IPRA”) <https://www.officialgazette.gov.ph/1997/10/29/republic-act-no-8371/>
- Environmental Impact Statement (“EIS”) System <http://eia.emb.gov.ph/wp-content/uploads/2016/06/PD-1586.pdf>
- Local Government Code of 1991 <https://www.officialgazette.gov.ph/downloads/1991/10oct/19911010-RA-7160-CCA.pdf>
- National Integrated Protected Areas System Act (“NIPAS”) <https://www.officialgazette.gov.ph/1992/06/01/republic-act-no-7586/>
- Forestry Code <https://www.informea.org/en/legislation/forestry-reform-code-philippines-presidential-decree-no-705>
- Rules of Procedure for Environmental Cases https://philja.judiciary.gov.ph/files/learning_materials/A.m.No.09-6-8-SC_Rules_of_Procedure_for_Envi_Cases.pdf

Energy Situation Update



Upstream Oil & Gas

Petroleum Service Contracts Exploration & Development

22 Petroleum Service Contracts (PSCs) As of June 2018

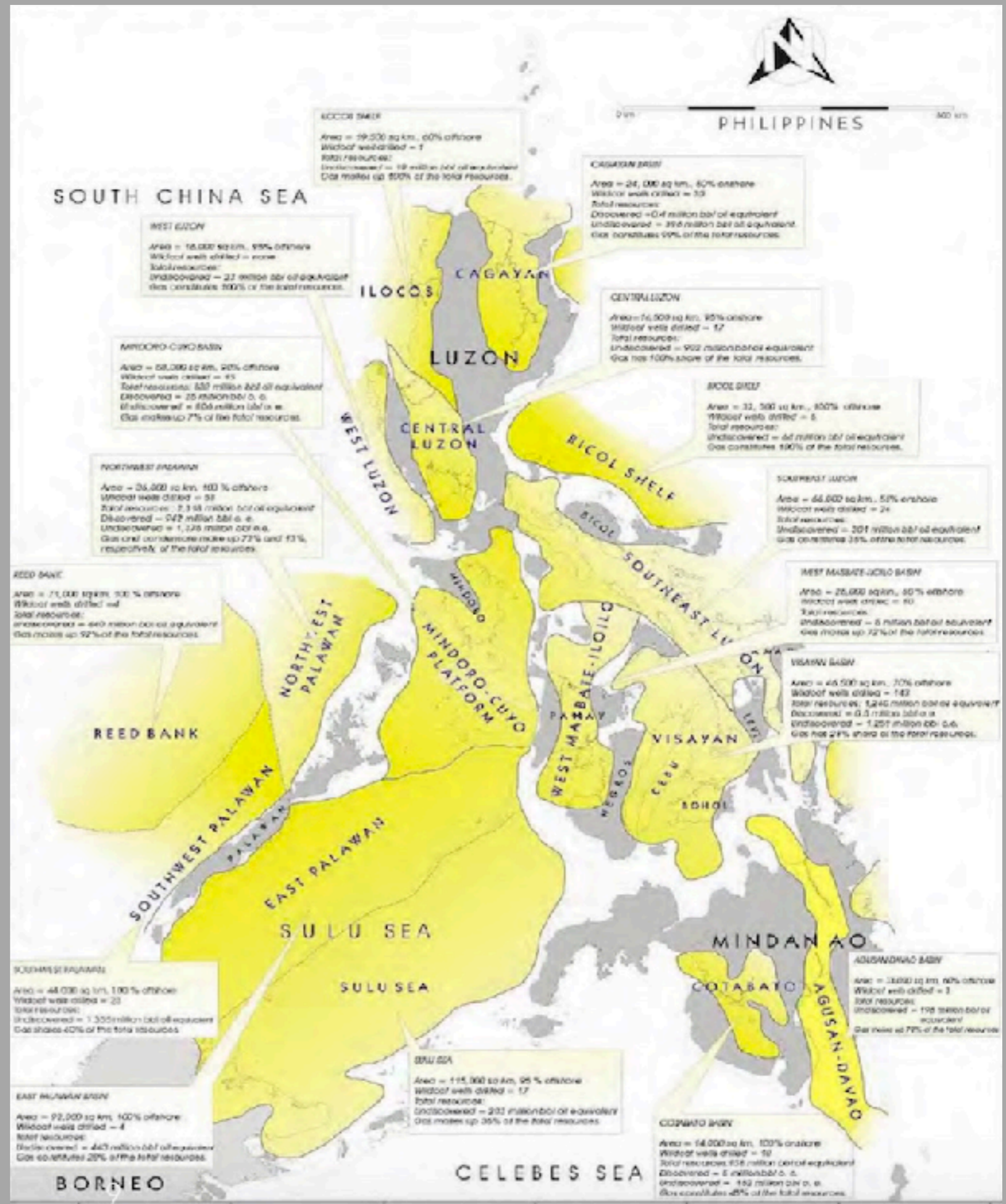
- 7 PSCs in the Production Stage
- 15 PSCs in the Exploration Stage

Philippine Sedimentary Basins

Total area: 709,000 sq km

Combined Potential: 4,777 MMBFOE

1. Ilocos Shelf
2. Cagayan Basin
3. Central Luzon Basin
4. Bicol Shelf
5. Southeast Luzon Basin
6. Mindoro-Cuyo Basin
7. West Masbate-Iloilo Basin
8. Visayan Basin
9. Agusan-Davao Basin
10. Cotabato Basin
11. Sulu Sea Basin
12. East Palawan Basin
13. Southwest Palawan Basin
14. Reed Bank Basin
15. Northwest Palawan Basin
16. West Luzon Trough



Coal Operating Contracts Exploration & Development

73 Active Coal Operating Contracts (COCs) As of June 2018

- 41 COCs in the Exploration Stage
- 32 COCs in the Development and Production Stage



Coal

Summary of Regional Coal Reserves (in Million Metric Tons)

QUEZON Resource Potential - 2.00 In-situ Reserves - 0.09
MINDORO Resource Potential - 100.00 In-situ Reserves - 1.44
SEMIRARA Resource Potential - 570.00 In-situ Reserves - 112.32
NEGROS Resource Potential - 4.50 In-situ Reserves - 2.01
BUKIDNON Resource Potential - 50.00
ZAMBOANGA Resource Potential - 45.00 In-situ Reserves - 37.99
MAGUINDANAO Resource Potential - 108.00
SULTAN KUDARAT Resource Potential - 300.30
SOUTH COTABATO Resource Potential - 230.40 In-situ Reserves - 81.07

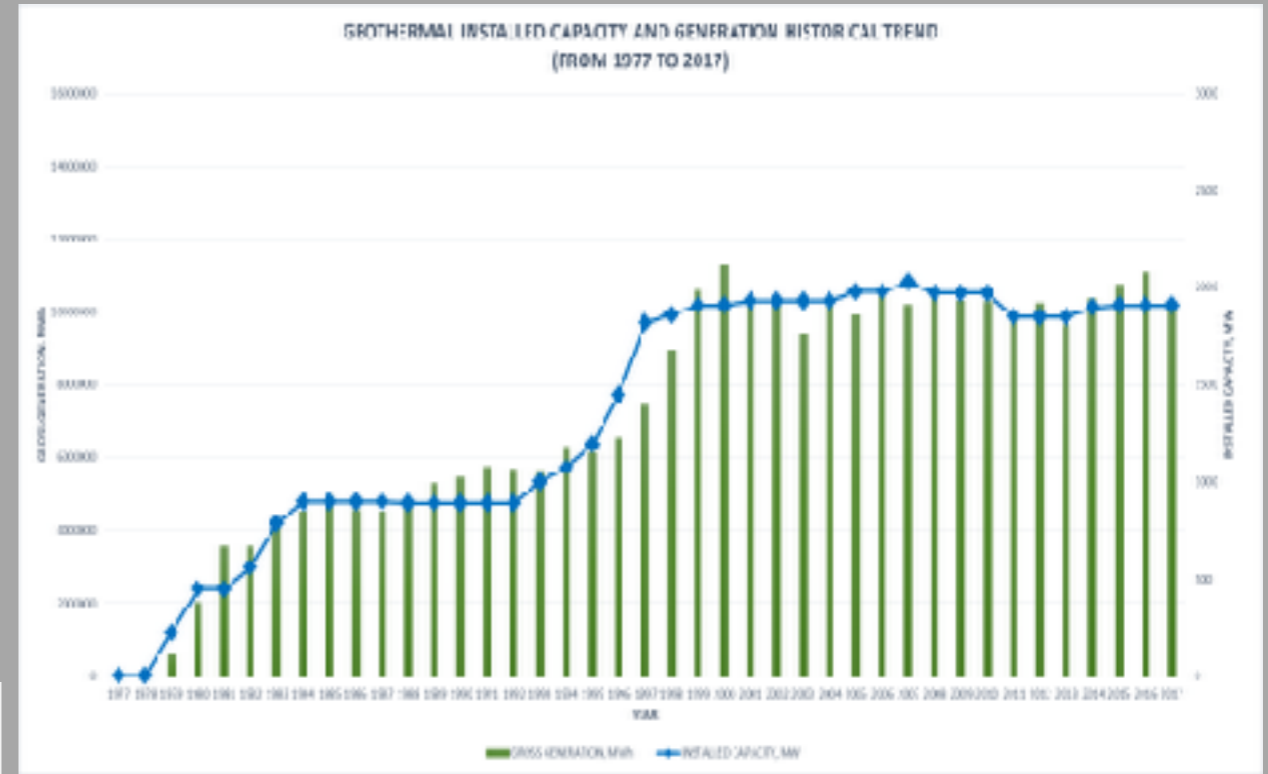


CAGAYAN VALLEY Resource Potential - 336.00 In-situ Reserves - 82.57
BATAN-POLILLO-CATANDUANES Resource Potential - 17.00 In-situ Reserves - 6.02
MASBATE Resource Potential - 2.50 In-situ Reserves - 0.08
SAMAR Resource Potential - 27.00 In-situ Reserves - 8.59
CEBU Resource Potential - 165.00 In-situ Reserves - 11.63
SURIGAO Resource Potential - 209.00 In-situ Reserves - 69.55
DAVAO Resource Potential - 100.00 In-situ Reserves - 0.21
SARANGANI Resource Potential - 120.00

Department of Energy
Empowering the Filipino

Geothermal Power Plants

1,918 MW - Total Installed Capacity
(as of April 2018)



MALAMPAYA DEEPWATER GAS-TO-POWER PROJECT

- Employs deepwater technology to draw natural gas that fuels three gas-fired power plants and provides 30% of Luzon's power generation requirements
- Delivers through 6 Gas Sales and Purchase Agreements and fuels 2,700 MW of power stations (baseload plants) and 500+ MW (mid-merit and peaking plants)
- Data from the DOE indicated that given the present production level and continuous decrease in reservoir pressure, drop in supply is expected by 2022.



Additional Reserves and Resources

SC 38 Reserves & Resources

Field		Remaining Gas Reserve (Billion Cubic Feet) as of June 2020
Malampaya-Camago	(1)	863 BCF (High Case)

Field/Prospect		Unrisked Volume Gas Resource (BCF)
Bagong Pagasa - Nido	(4)	358
San Martin	(9)	280
Iloc	(3)	260
Bagong Pagasa - Galoc	(5)	232
Malampaya East	(2)	140
San Martin North	(12)	133
San Martin SE Ext.	(11)	80
San Diego	(10)	55
Destacado East	(8)	43
Camago East	(6)	25
Camago South	(7)	21
Total		1,607 BCF



Downstream Natural Gas

Integrated LNG Terminal



- Safeguard against the anticipated depletion of the Malampaya gas facility in 2024.
- Initial 200-MW power plant, storage facilities, liquefaction and regasification units.
- Output will serve PEZA areas.



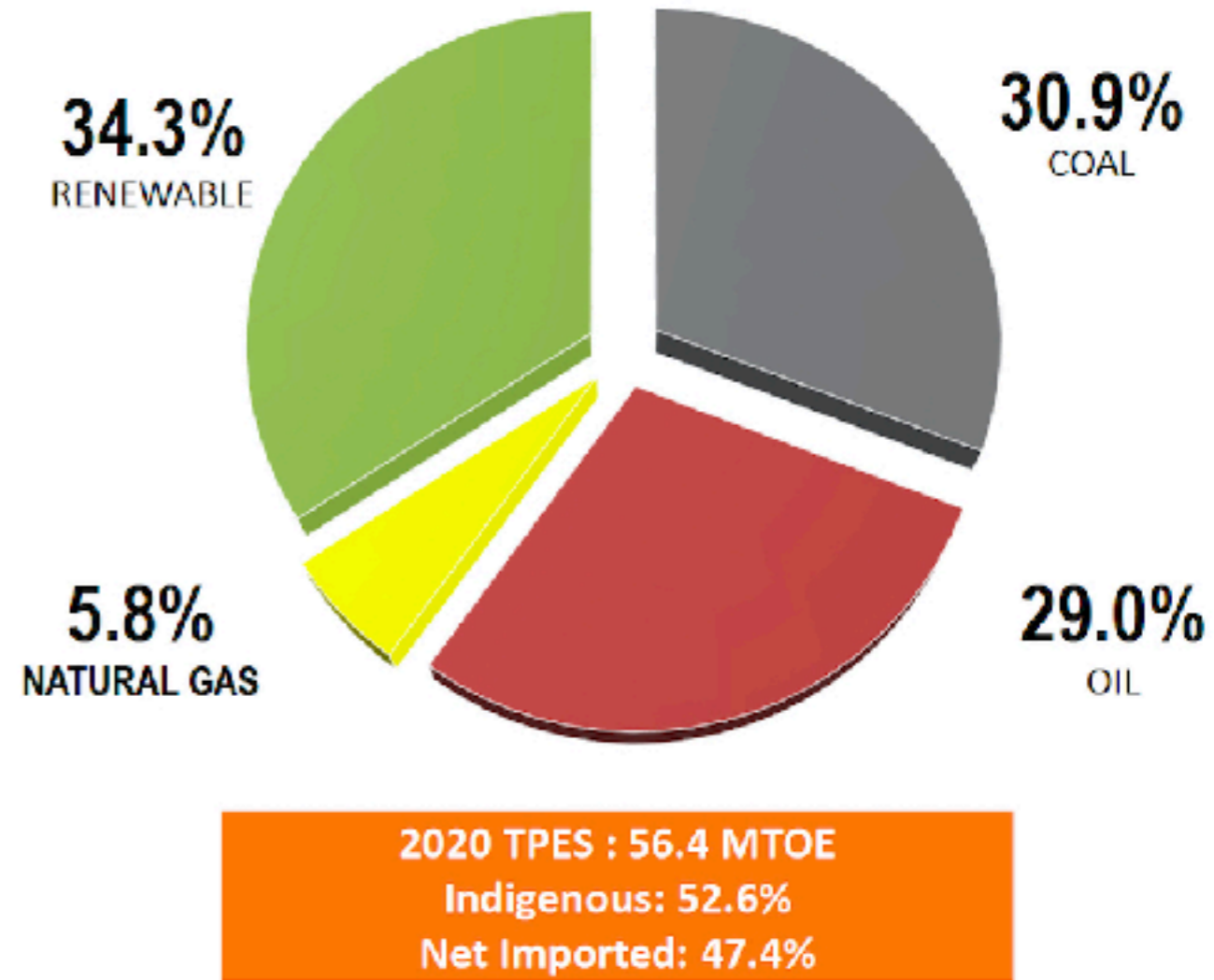
Ongoing LNG Projects

Proponent/ Partner Company (% Participating Interest)	Project	Location	Capacity (MTPA)	Estimated COD	Total Construction Cost	Application Status
<ul style="list-style-type: none"> • FGEN LNG Corporation (80%) • Tokyo Gas Ltd (Japan) (20%) 	Interim Floating Storage and Regasification Unit (FSRU) Liquefied Natural Gas (LNG) Terminal	Barangays Sta. Clara, Sta. Rita, Aplaya and Bolbok in Batangas City	5.26	Q3 2022	PHP 13.284 B (USD 260 M)	Permit to Construct for ancillary facility for the interim FSRU issued on September 23, 2020
<ul style="list-style-type: none"> • Excelerate Energy L.P • Topline Energy & Power Dev Corporation (planned for 30%) 	FSRU LNG Terminal	About 9.5 km offshore in Bay of Batangas	4.4	Q3 2022	PHP 6.387 B (USD 125 M)	Ongoing evaluation of its Application for Permit to Construct
<ul style="list-style-type: none"> • Energy World Gas Operations Philippines Inc 	LNG Storage and Regasification Terminal	Barangay Ibabang Polo, Pagbilao Grande Island, Quezon Province	3	Q4 2022	PHP 7.408 B (USD 145 M)	Ongoing evaluation of its Application for Permit to Construct Extension for 24 months
<ul style="list-style-type: none"> • Atlantic Gulf & Pacific Company of Manila, Inc (AG&P) (100%) • Osaka Gas Ltd. Co (Technical Services Agreement with AG&P) 	FSU and Onshore Regasification and 60,000 cbm buffer LNG Storage Tank	Barangay Ilijan and Dela Paz, Batangas City	3	Q2 2022	PHP 15.327 B (USD 300 M)	Notice to Proceed (NTP) issued on February 24, 2021
<ul style="list-style-type: none"> • Shell Energy Philippines Inc. (SEP) 	FSRU Terminal	Tabangao, Batangas City	3	Q3 2022	PHP 2.524 B (USD 49.4)	Notice to Proceed (NTP) issued on March 16, 2021
<ul style="list-style-type: none"> • Vires Energy Corporation 	FSRU Terminal	Barangay Simlong, Batangas City	3	Q1 2023	PHP 6.284 B (USD 123 M)	Notice to Proceed (NTP) issued on April 22, 2021

Energy Mix By Fuels

	2018	2019
OIL	33.5%	32.1%
RENEWABLE	33.1%	32.8%
COAL	27.4%	29.1%
NATURAL GAS	6.0%	6.0%
TPES	59.7 MTOE	60.1 MTOE

	2018	2019
INDIGENOUS	50.9%	51.4%
NET IMPORTED	49.1%	48.6%



Power Sector Plans and Programs

1. Coal Moratorium

- To be complemented by assessment and evaluation as the power system is envisioned to be more sustainable and flexible.

2. Power Plant Decommissioning

- Conduct studies and draft guidelines to appropriately define, clarify, and direct the power industry.

3. Interconnection of Major Grids

- The interconnection of LVM enables the optimization of all available energy resources resulting in a more stable and secure supply of power in the country.

4. Competitive Selection Process (CSP)

- Amend provisions and supplement the policy to further ensure efficiency and effectiveness.

5. Retail Competition and Open Access (RCOA)

- Implement retail aggregation in Luzon and Visayas.
- Implement RCOA in Mindanao.
- Adopt a lower threshold for RCOA in LVM.

6. WESM Mindanao

- Full commercial operation of WESM in Mindanao.

7. Reserve Power Market

- Commercial operation of the reserves market.

8. Smart Grid Policy and Roadmap

- The country to have a smart grid in place by 2040.
- Transition considers the aspects of safety, reliability, efficiency, flexibility/sustainability, resiliency, and consumer empowerment.

9. Rationalization of the UCME Subsidy

- Promulgate a policy that has a holistic framework and details strategies to achieve graduation and rationalization of subsidies in missionary areas.

10. Total Electrification Program

- Achieve 100% electrification of targeted and identified households by 2022 based on 2015 Census.
- Attain 100% electrification of targeted and identified HH based on latest available Census.

Alternative Fuels and Energy

Hydrogen

- *Implementation of forged MOUs with Star Scientific Ltd. of Australia and Tokyo-based Hydrogen Technology Inc. (HTI)*

To explore the use of hydrogen as a fuel for power generation and the role that hydrogen can play in the economy of the Philippines

Nuclear Energy

- *Development of a Strategic Communication (StratCom) Plan for Nuclear Energy*

To develop a holistic communication campaign in order to enhance knowledge, attitudes and behaviors of target population on nuclear energy in the Philippines

- *Conduct of more training courses for capacity building to be implemented by NEPIO and NEP-IAC*

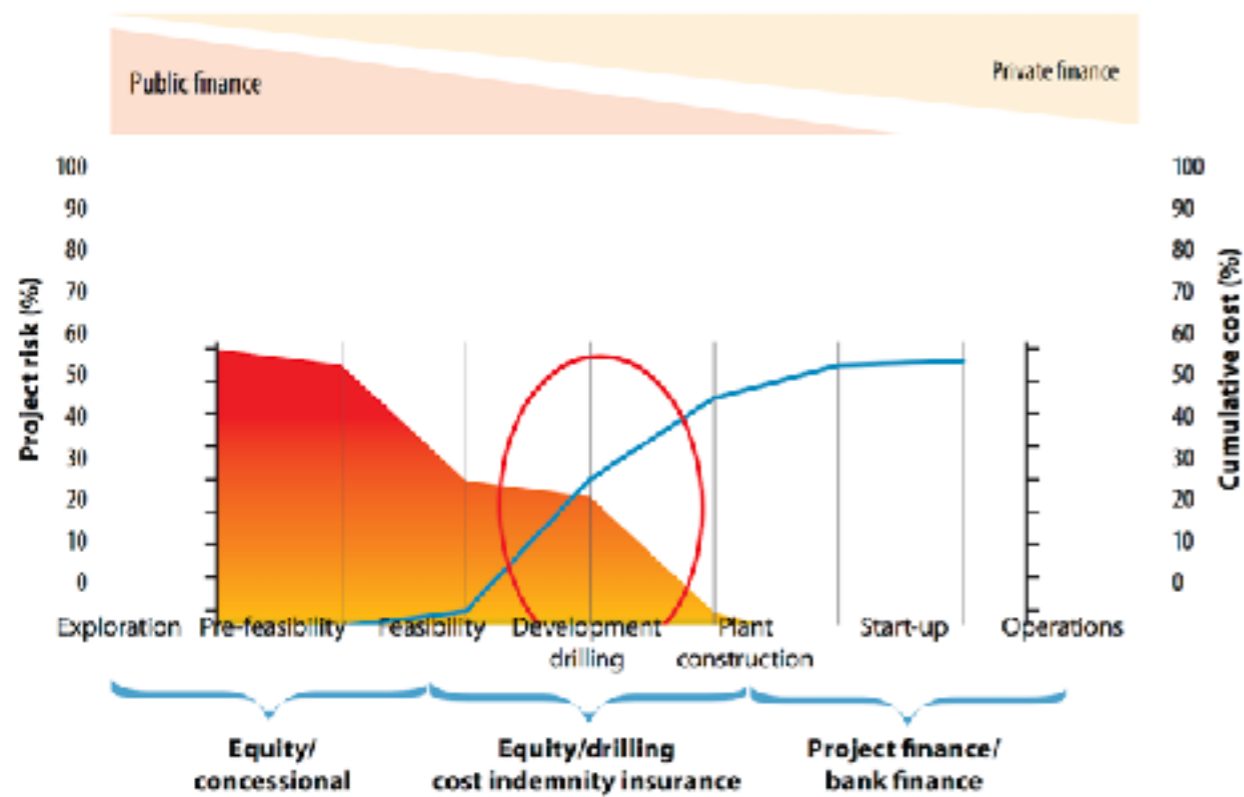
To strengthen and establish readiness in various fields of group members on embarking in a nuclear power program



Issues and Challenges

NATURE OF THE UPSTREAM ENERGY INDUSTRY

- **Highly regulated and controlled** – Energy resources are owned by the State. Exploration and production activities can only be undertaken under a Service Contract with the Government.
- **High risk** – Petroleum success rate in the Philippines is about 10%. Thus, the risk of failure (no oil or gas found) is about 90%. Geothermal exploration is also high risk.
- **Capital intensive** – The most promising petroleum areas are located offshore. Depending on the location and water depth, drilling one exploration well could cost between USD50 million to USD 100 million. Same is true for onshore geothermal wells.
- **Requires long-term commitment** – The standard Service Contracts awarded by the Government provide for an exploration term of 7 years (extendible for 3 years) and a production term of 25 years (extendible for 15 years).



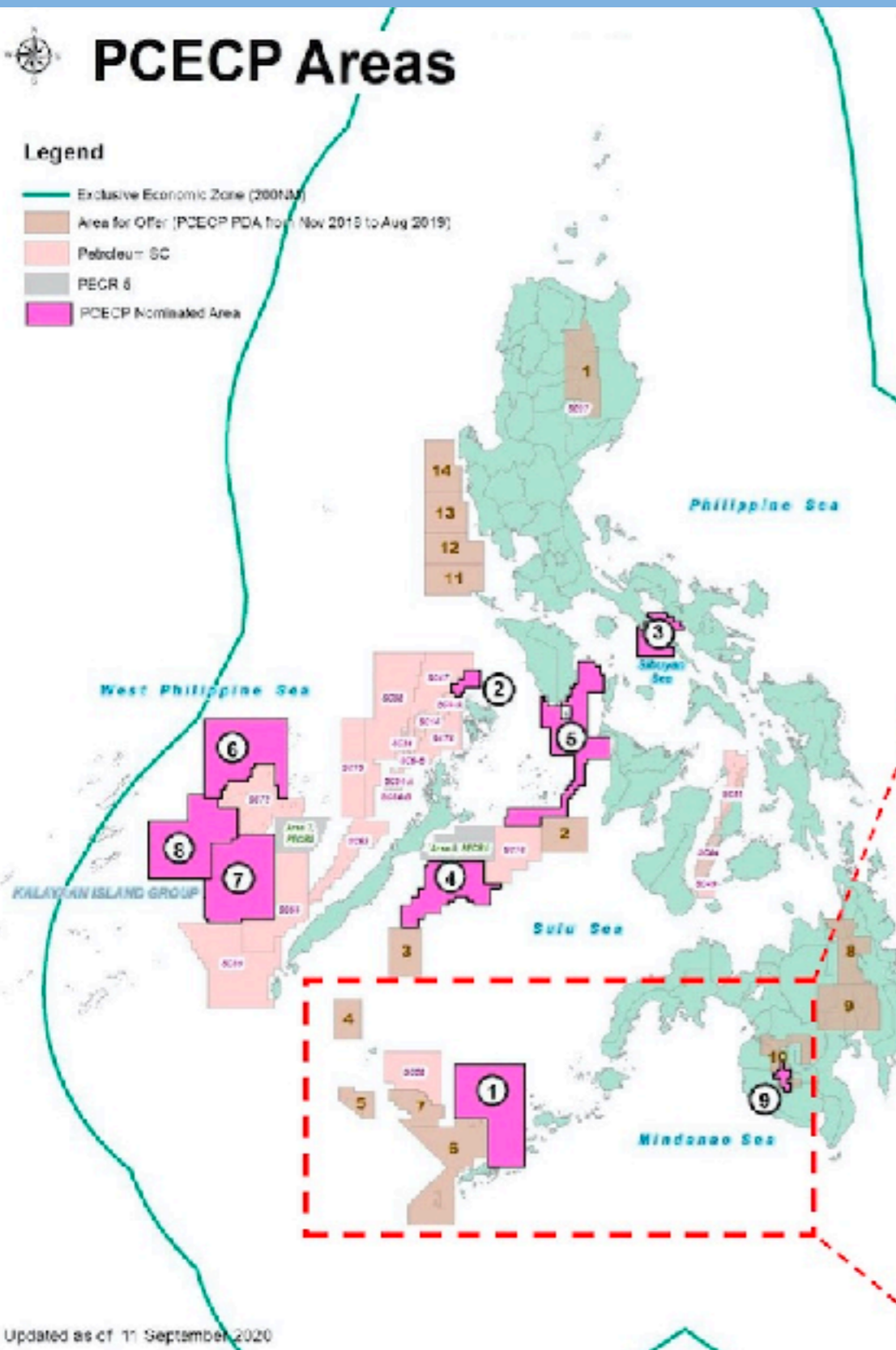
What needs to be done

Source: Parhelion and GeothermEx (2014) and ESMAP (2012), unpublished

Apply and incentivize technological innovations
 Address financing challenges
 Foster partnerships among stakeholders

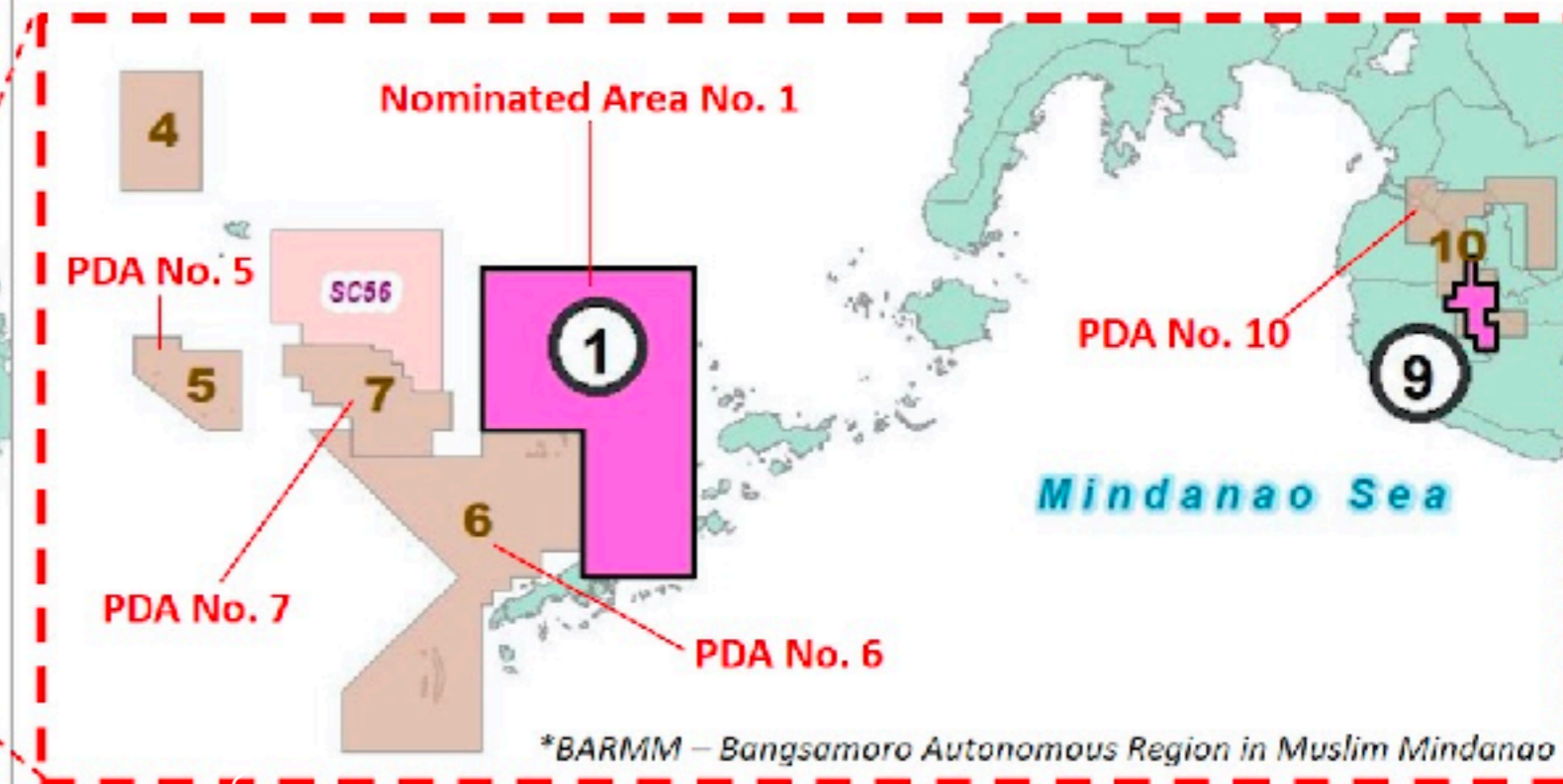


Petroleum Exploration Challenges BARMM



1. Implementation of Republic Act (RA) No. 11054

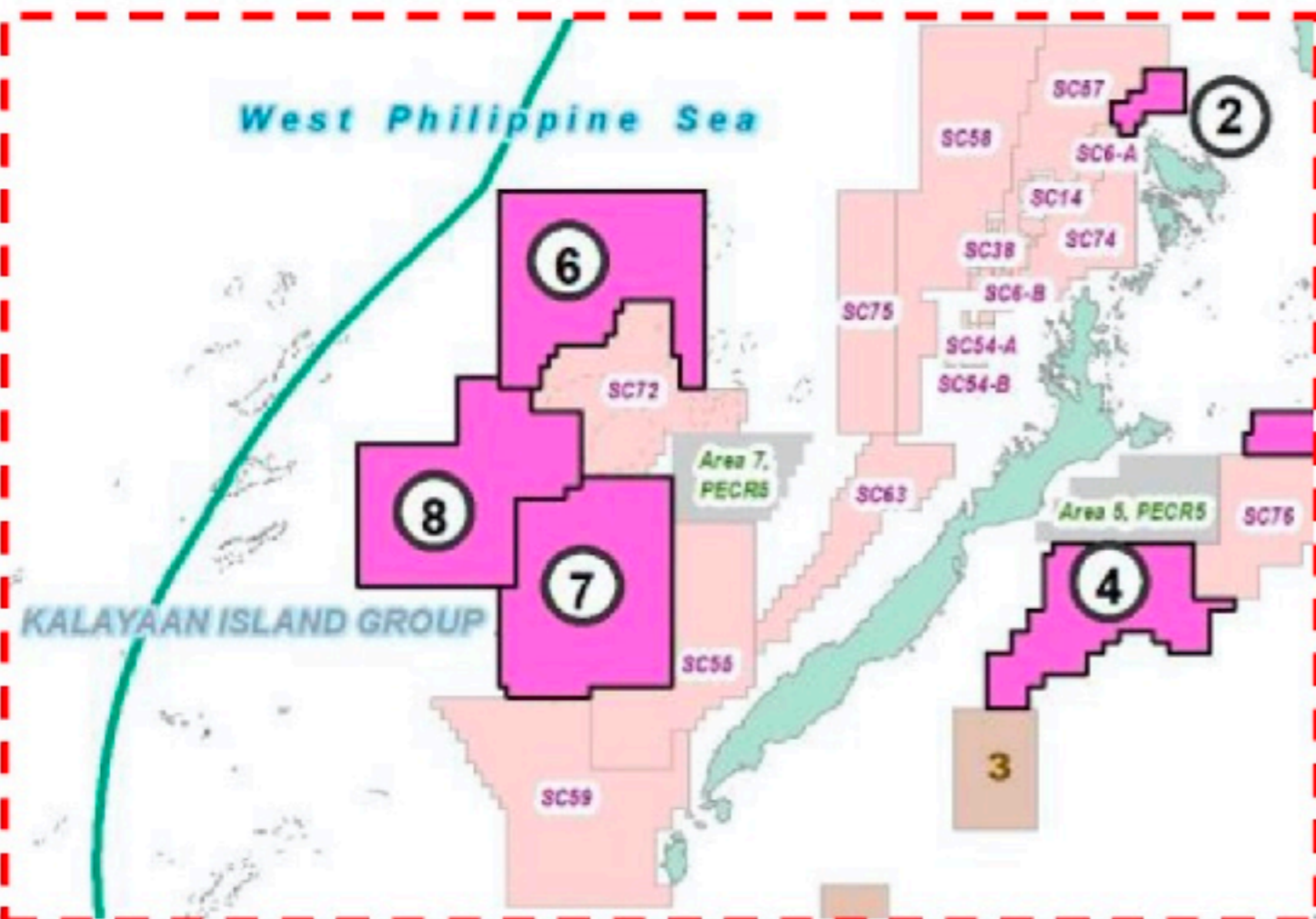
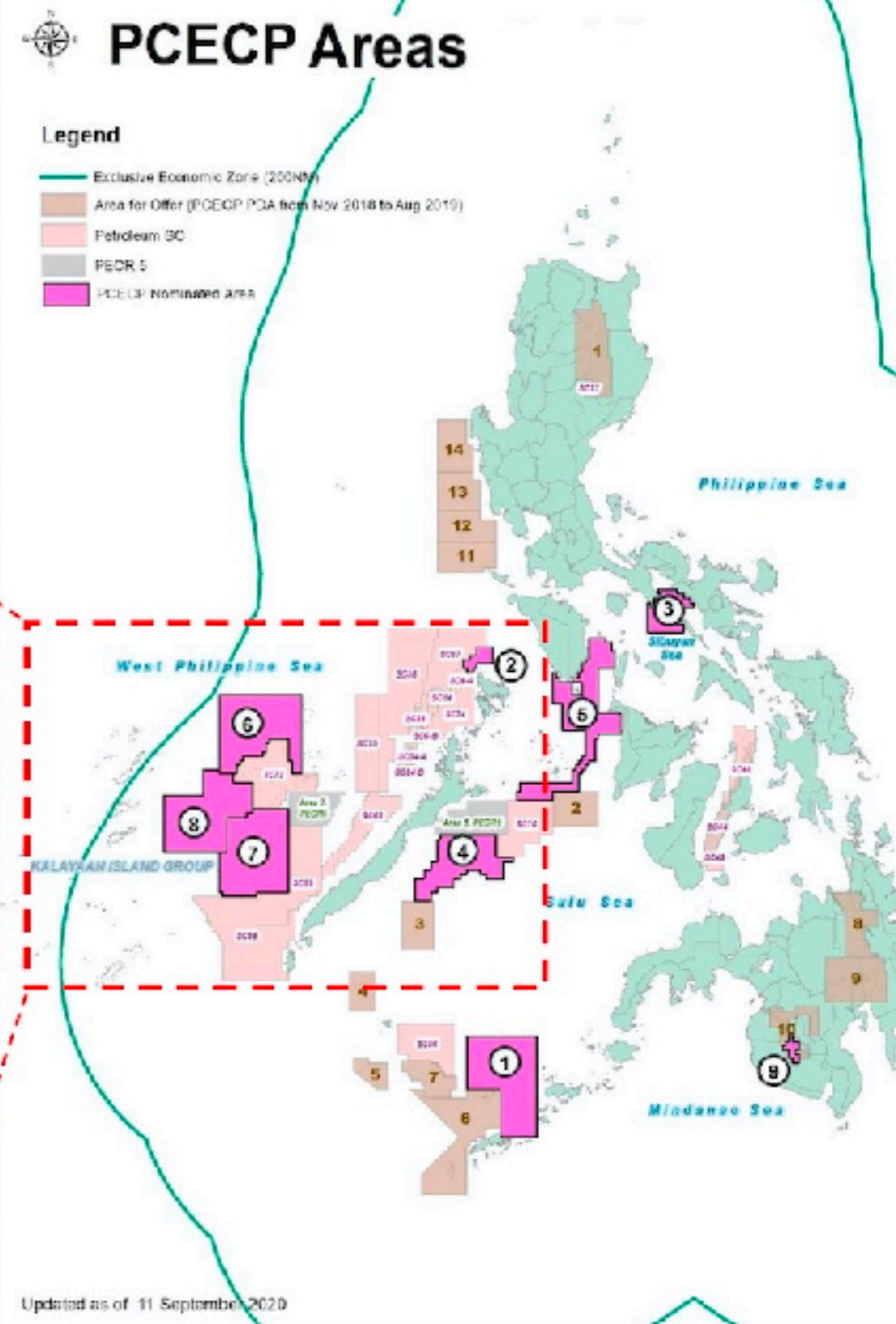
- On 20 August 2019, the BARMM* Government requested DOE to hold in abeyance the bidding of PDAs in the Bangsamoro jurisdiction pursuant to RA 11054, providing for joint development on fossil fuel resources in the region
- Processing of PDAs and NAs (incl. Area Clearance requests) in the BARMM were held in abeyance subject to formulation of joint policies/guidelines for licensing of areas in the Bangsamoro Region through an Intergovernmental Relations Body (IGRB) created under RA 11054
- Affected PCECP areas: PDA-5, PDA-6, PDA-7, PDA-10, NA-1
- IGRB consultations are ongoing



Petroleum Exploration Challenges WPS

2. West Philippine Sea (WPS)

- 4 PDAs (PDAs 11 to 14) in the West Luzon Basin were offered despite the prevailing maritime dispute; no applications were received
- 3 Nominations were submitted and processed (NAs 6, 7, 8) in the Recto Bank Basin; currently in the recommendation / endorsement stage for awarding of a PSC
- DOE shall continue to facilitate the PCECP application process for WPS areas especially now that the Moratorium on all petroleum exploration activities has been lifted



WEST PHILIPPINE SEA DISPUTE ARBITRAL RULING



CHINA'S NINE-DASH LINES



PERMANENT COURT OF ARBITRATION RULING

- China's Claim to historic rights under the Nine-Dash Lines is contrary to UNCLOS and cannot be the basis of any maritime entitlements (territorial sea, exclusive economic zone, extended continental shelf)
- All historic rights in the EEZ were extinguished upon the effectivity of UNCLOS
- China violated the exclusive right of the Philippines to its EEZ by interfering with the petroleum activities of Filipino vessels within the EEZ
- **However, China does not recognize the ruling.**

Senate Committee on Energy Investigation in Aid of Legislation

- Divestment of Chevron's and SPEX's Interest
- Udenna's Capitalization and Financial Situation
- No Proper DOE Evaluation
- PNOC's Right to Match under Joint Operating Agreement
- DOE's Position/Udenna's Defense
- Other Implications of Udenna Takeover



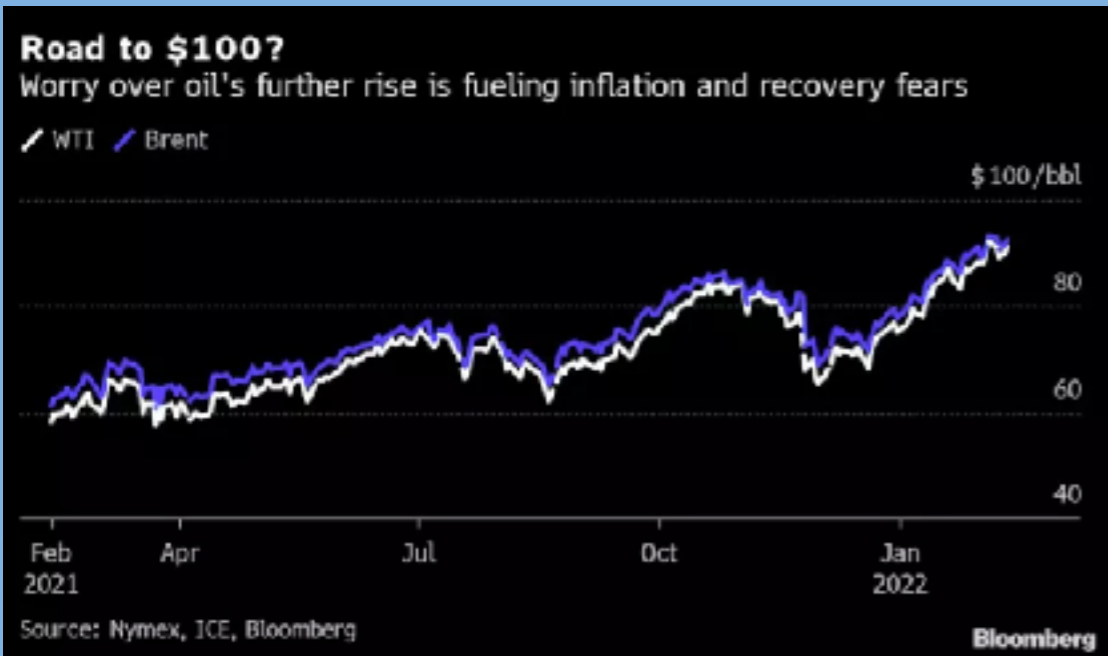
Criminal Complaint with the Ombudsman

Regarding the transfer of Chevron's 45% interest to Udenna's subsidiary, UC Malampaya, a criminal complaint was filed with the Ombudsman on 18 October 2021 against officials of the DOE, Udenna, Chevron, SPEX, and the state-owned Philippine National Oil Corporation ("PNOC") and its subsidiary PNOC-Exploration Corporation,

- Udenna's subsidiary is financially and technically unqualified to be the assignee of the interest;
- The DOE and PNOC grossly and inexcusably neglected government's right to match Udenna's offer to buy out Chevron's 45% interest; and
- Officials of the DOE and PNOC criminally conspired with the private respondents to give unwarranted benefits to Udenna and its subsidiary causing undue injury to the government arising from the questioned sale transaction.



Russian Invasion of Ukraine





Energy Transition and Digital Transformation

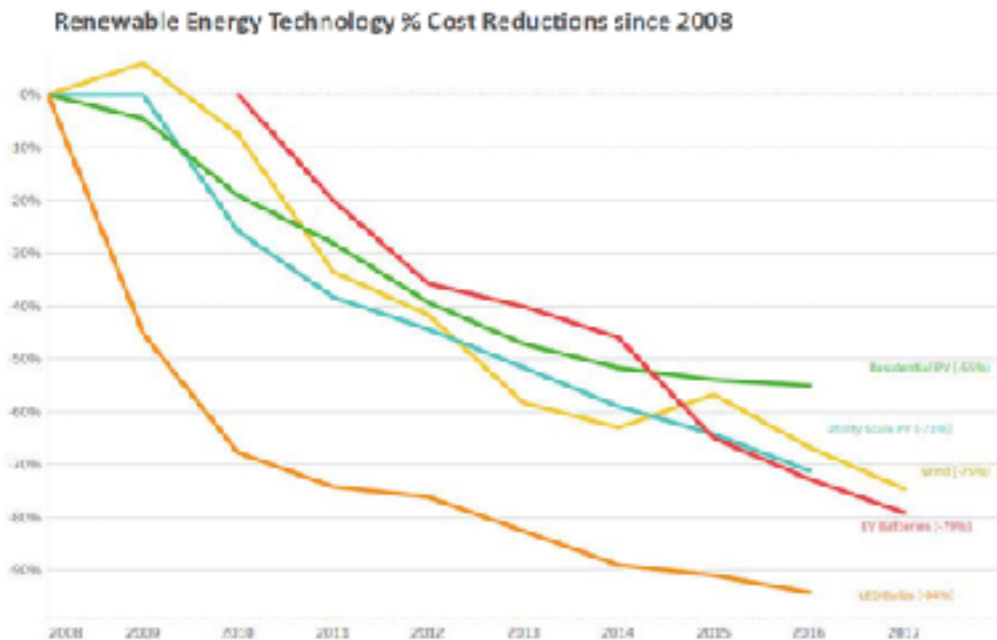
Paris, France



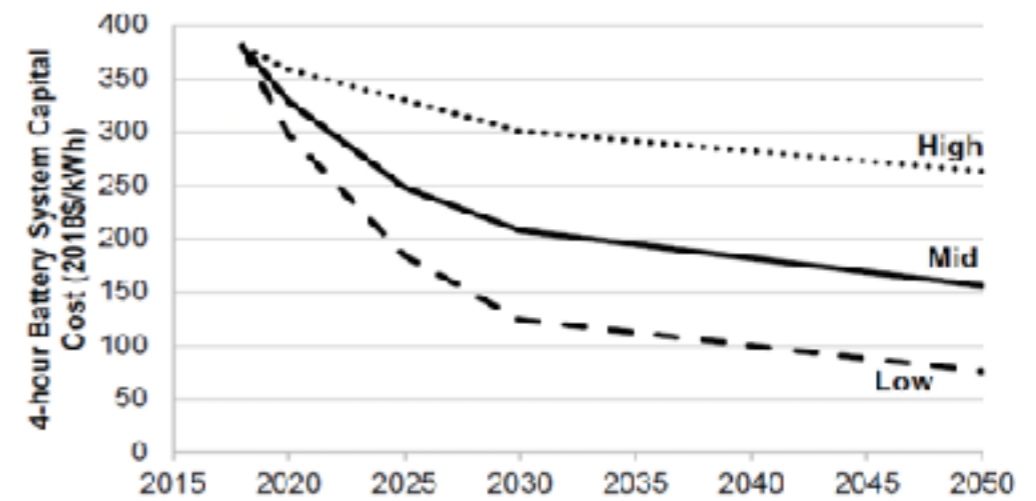
21st Conference of the Parties to the UN 1992 Framework Convention of Climate Change “Paris Agreement”



Costs for RE Technologies are Falling



Projected Battery Storage Cost Declines

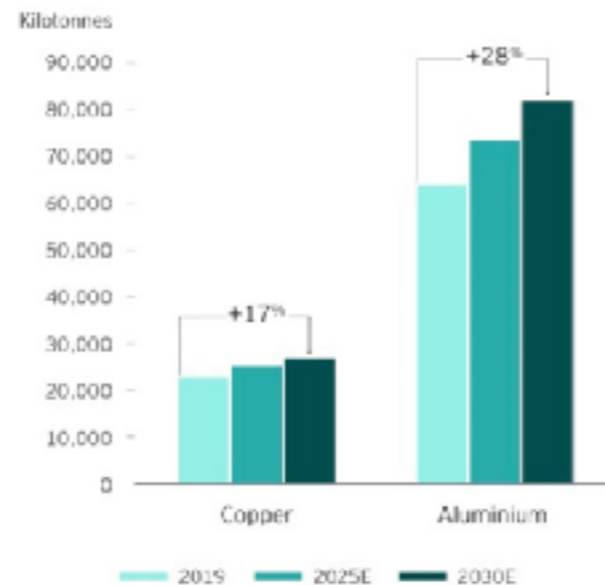


Source: NREL, 2019. Cost Projections for Utility-Scale Battery Storage

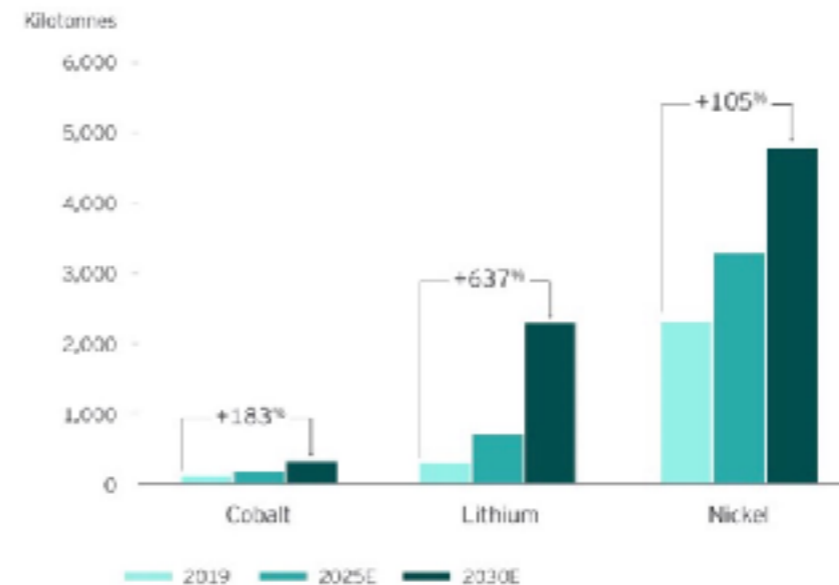
Cost of producing renewable energy has fallen dramatically

Rising commodity demand (kilotonnes)

Copper and aluminium



Battery minerals



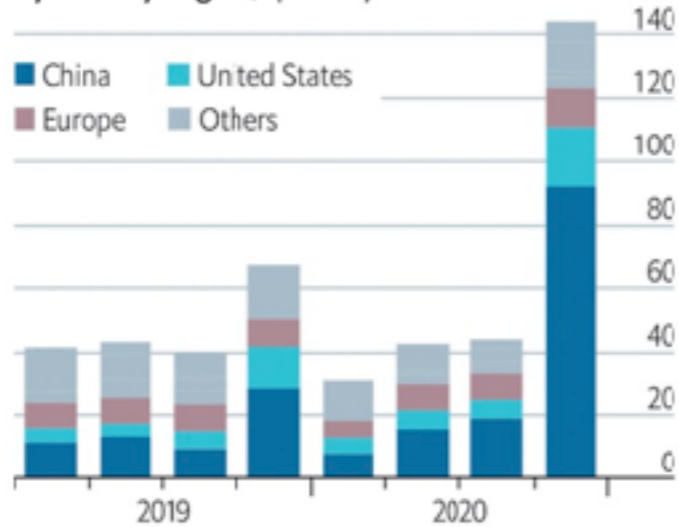
Source: Morgan Stanley; Cochilco; Canaccord Genuity; Perspectives on Cobalt Supply Through 2030 in the Face of Changing Demand (Xincai Fu, et al.)

Production of minerals, such as nickel, lithium and cobalt, could increase by nearly 500% by 2050, to meet the growing demand for clean energy technologies.

Green shoots

World, renewable energy capacity additions, MW

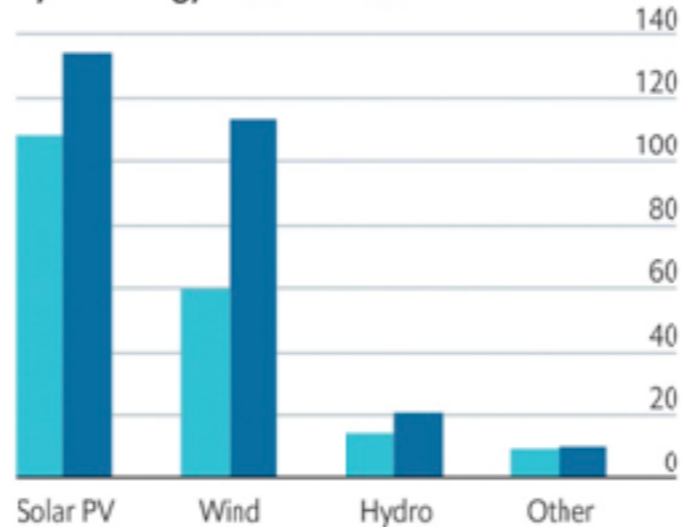
By country/region, quarterly



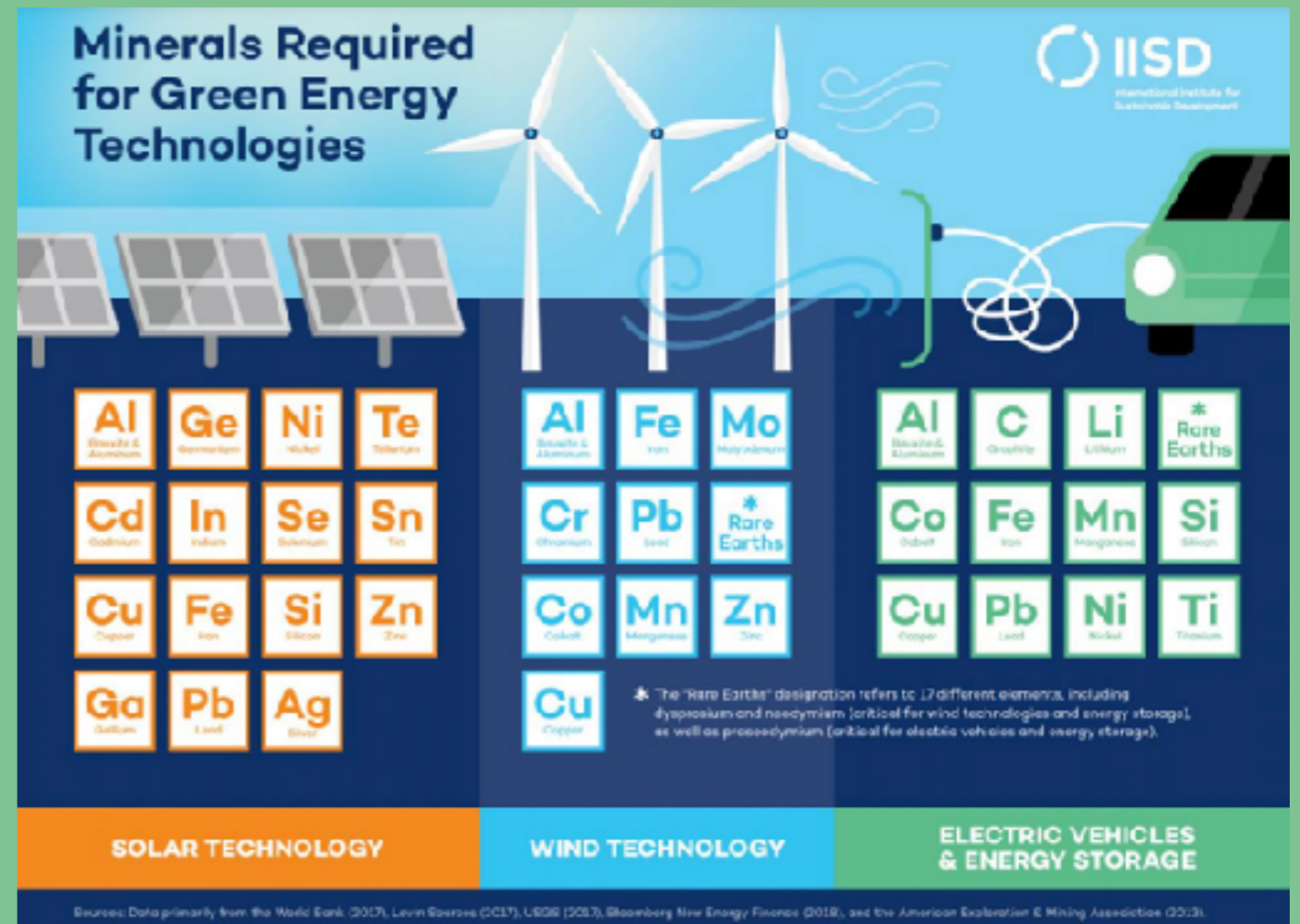
Source: IEA

The Economist

By technology



Over 3 billion tons of minerals and metals will be needed to deploy wind, solar and geothermal power, as well as energy storage, required for achieving a below 2°C future in accordance with Paris Agreement/COP21.



Summary of Lecture



LICENSE TO OPERATE AN ENERGY FIELD

- **Technical and financial qualifications** to engage in large-scale energy operations in the Philippines;
- **The area being applied for is open** and available for energy exploration and development activities and is not located within any of the areas where operations are prohibited;
- **An approved ECC**, showing that the impacts in the area can be mitigated and/or remediated through proper environmental protection measures;
- An approved Declaration of Commerciality, showing that the area has enough energy reserves to operate profitably, and can give government a fair share in revenues.
- The **endorsement/approval of the local government units** (Province, Municipality/City, and Barangays) that will be impacted by the proposed activity;
- The **approval of the indigenous peoples**, if the area being applied for is within their ancestral domains; and
- **Requirements for power plant operations**, GIS, Approved PPSA, Certificate of Compliance as a Generation Company.

ENERGY RESOURCES ISSUES

- **Oil** - West Philippine Sea maritime dispute
- **Natural Gas** - Malampaya gas field depletion, no new gas fields discovered, no legal midstream framework, lack of available natural gas infrastructure network, Udenna acquisition
- **Coal** - modest indigenous reserves, new coal power plants moratorium, decommissioning of coal power plants in Mindanao
- **Geothermal** - dropped in world ranking, permitting requirements, grid connectivity, incentives for new technology, risk financing

ENERGY RESOURCES CONSTRAINTS

- Permitting - local governments, indigenous peoples, right of way, protected areas, grid impact studies, ECCs, approval of Power Supply Agreements
- Energy-focused legislative agenda - EPIRA amendments, natural gas industry framework, energy projects of national significance/ease of doing business, review of RE Law, nuclear energy law
- Geopolitical tensions - disruption in energy supply

For more references on the energy industry and a copy of the presentation materials, visit my website

penarroyo.com

Fernando "Ronnie" Sanchez Peñarroyo

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experienced in risk
mitigation and
business development.

Look around and learn more about my professional blog. Take a moment to comment or we can sit down to discuss mutually interesting matters.

Additional Reading and Acknowledgment

- <https://penarroyo.com/blog/f/philippine-international-geothermal-conference---closing-keynote>
- <https://penarroyo.com/blog/f/nuclear-energy-option---is-the-philippines-ready>
- <https://penarroyo.com/blog/f/how-do-you-solve-a-problem-like-malampaya>
- <https://www.youtube.com/watch?v=M1IYARYSqRw>
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- <https://penarroyo.com/blog/f/blast-from-the-past-the-myth-of-velasco%E2%80%99s-energy-legacy>
- Department of Energy <https://www.doe.gov.ph/>