Act of Partial Revision of the Act on Rationalizing Energy Use and Other Acts* in Order to Establish Stable Energy Supply and Demand Structure

*Act on Rationalizing Energy Use, Act on the Promotion of Use of Non-Fossil Energy Sources and Effective Use of Fossil Energy Materials by Energy Suppliers (Sophisticated Methods Act), Act on Japan Oil, Gas and Metals National Corporation, Mining Act, The Electricity Business Act

Background

✓ In accordance with the 6th Strategic Energy Plan (decided by the Cabinet in October 2021), **achieving carbon neutrality by 2050 and realizing the ambitious greenhouse gas reduction goals for FY2030** will require establishing a system to **ensure a stable supply of energy** while **shifting Japan's energy supply and demand structure**.

Outline of the Act

✓ In order to advance (i) Transformation of the demand structure, (ii) Transformation of the supply structure, and (iii) The securing of stable energy supply, METI has reviewed the definition of energy under the Act on Rationalizing Energy Use and established new measures to **promote the transition to non-fossil energy, strengthen support for decarbonized fuels and decarbonization technologies, change the notification system regarding power supply suspension or abolition to recommend that notifications be submitted before the fact rather than after, include the use of large storage batteries in power generation business, etc**.

(1)Transformation of the demand structure
(Act on Rationalizing Energy Use)

(i)An overall rationalization of energy use including non-fossil energy

・ Due to the expanded dissemination of non-fossil energy, the shift of the supply side to non-fossil energy is progressing. **Non-fossil energy is being added to the targets of energy consumption rationalization (improvement in the basic unit for energy consumption).** Without being limited to fossil energy, overall energy use will be rationalized.

(ii)Promotion of shift to non-fossil energy

・ Regarding the energy use in factories, etc., **a shift from fossil energy to non-fossil energy (increase in the ratio of non-fossil energy) will be requested.**
・ Enterprises above a certain size will **be requested to draw up mid-to long-term plans concerning the shift to non-fossil fuels.**

(iii)Optimization of electricity demand of Demand Response(DR), etc.

・ In order to shift demand to the periods of renewable energy output control, and to decrease energy demand in tight demand periods, **there will be a policy change from "leveling of electricity demand" to "optimization of electricity demand".**
・ Electric utility companies will be **requested to draw up plans to support measures for optimization of electricity demand (Plans regarding the preparation of electricity rates that will support the optimization of electricity demand).**

(2) Transformation of the supply structure
(Sophisticated Methods Act, Act on Japan Oil, Gas and Metals National Corporation, Mining Act)

(i)Promote the use of renewable energy

・ **Surveys on geological structure, etc., conducted for offshore wind power generation** will be added to the JOGMEC functions.
・ **Overseas geothermal exploration projects including large-scale geothermal power generation, etc.** will be a subject of JOGMEC's equity financing functions**(the necessity of obtaining approval from the Minister of Economy, Trade and Industry will be included).**

(ii)Promote the use of decarbonized fuels such as hydrogen and ammonia

・ Further promote the use of decarbonized fuels by including **hydrogen and ammonia as non-fossil energy sources.** (Sophisticated Methods Act)
・ **The production/liquefaction and storage of hydrogen and ammonia** will be added to the equity financing/ liability guarantee functions of JOGMEC.

(iii)CCS* use promotion

・ **CCS projects and sub-bottom profiling surveys conducted for that purpose** will be added subjects for JOGMEC's equity financing/liability guarantee functions.
・ Promote the use of **thermal power utilizing CCS (Sophisticated Methods Act)**

(iv) Securing rights of rare earth/metals

・ **Add rare earth minerals as subjects of applications for the right to mine under the Mining Act,** and prohibit mining rare earth without permission from the Minister of Economy, Trade and Industry. (Mining Act)
・ **Domestic processing and smelting of rare metals, etc.** will be added as subjects for JOGMEC's equity financing /liability guarantee functions.

*Carbon dioxide Capture and Storage

(3) The securing of stable energy supply (Electricity Business Act)

(i)Secure necessary supply capability (power sources)

・ Taking into account the situation where the numbers of suspended and abolished power plants are increasing, and risks to stable energy supply are becoming apparent, in advance, ascertain and manage information that a generation plant will be suspended or abolished; and, in order to obtain the time to develop measures to secure the necessary supply capability, **the notification policy is changed from a "notification after the fact system" to a "notification in advance system".**
・ Toward the realization of stable energy supply in a decarbonized society, **the Minister of Economy, Trade and Industry, in collaboration with The Organization for Cross-Regional Coordination of Transmission Operators (OCCTO), will strengthen the system that manages Japan's overall supply capability.**

(ii)Increase of the flexibility of the electrical system

・ **"The large storage battery", a device whose introduction is expected to contribute to the supply capability/adjustment capability of the decarbonized society, is positioned as "electricity generation" in the Electricity Business Act, and sustainable environments are being prepared to connect them to the power grids.**

* In addition to the above, JOGMEC also makes plans to provide information to operators and decarbonization of the refining process, etc.

1. Transformation of the Demand Structure

A shift to non-fossil energy as a re-examination of the definition of energy

- It is important not be limited to fossil energy, but to maintain the stable supply of energy by the rational use of non-fossil energy (hydrogen, ammonia, etc.). To achieve this, the definition of "energy" in the current the Act on the Rationalizing Energy Use has been re-examined, and **the target of the rationalization of energy use has been expanded to all energy, including non-fossil energy.**
- Toward the achievement of carbon neutrality, it is important to promote the shift to non-fossil energy not only for the supply side but also for the demand side. For this purpose, **high volume energy users are requested to draw up mid-to long-term plans for the shift to non-fossil energy, and to make regular reports, etc. on the status of use of non-fossil energy.**

Energy efficiency

Current situation

◎**Rationalization of fossil energy use** based on the Act on Rationalizing Energy Use

- **Improvement of the annual energy consumption efficiency by 1%,** establish benchmarks by industry category, implementation of **energy efficient activity in factories, etc.**

➡ As necessary, **guidance/advice, penalties, etc.** (**secure on a system basis**)

【Re-examination matter(i)】
Re-examine the definition of energy

After amendment

◎**Rationalize the use of all energy**

– Further advance energy efficiency through regulations and subsidies, etc., based on the Act on Rationalizing Energy Use

Shift to non-fossil energy

◎**Partial use of non-fossil energy** to achieve the voluntary goals of the Act on Rationalizing Energy Use
◎Measures toward a Low Carbon Society, Challenge Zero, RE100, EV100, etc.

➡ **Voluntary efforts** by businesses

【Re-examination matter(ii)】
Draw up mid-to long-term plans, regarding the shift to non-fossil energy, etc.

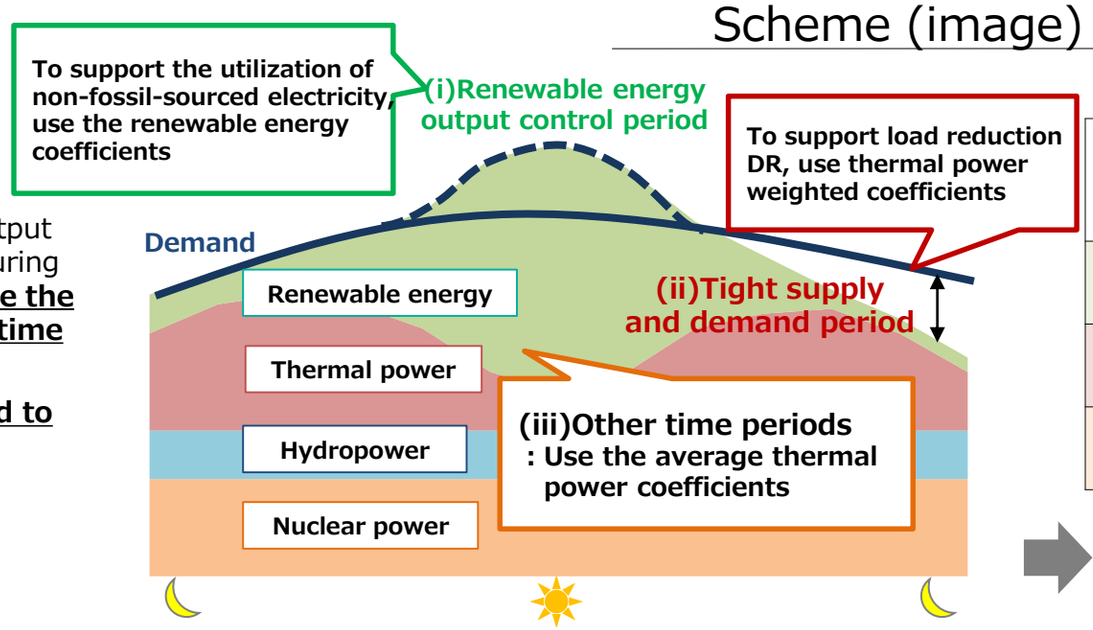
◎**Promote the shift to non-fossil energy**

– Improve the ratio of use of non-fossil energy
– Electrification of the production process, hydrogenation, etc.
– Shift to purchase of non-fossil energy

Optimization of electricity demand of Demand Response, etc.

- Taking into account the spread of variable-type energy such as solar photovoltaics, etc., by measures such as increase in the volume of electricity demand during renewable energy output control periods, control of electricity demand during tight supply and demand periods, etc., **promote the shift of demand according to the season or time period.**
- Also, **electric utility companies are requested to prepare electricity rates, etc., that support measures to optimize electricity demand.**

Scheme (image)



*The averages are provisional

Supply and demand status	Coefficient calculation of primary energy (energy usage when using 1kWh of electricity)
(i)Renewable energy output control periods	3.6 MJ／kWh 【Renewable energy coefficient】
(ii)Tight supply and demand periods	(9.5×α) MJ/kWh 【Thermal power weighted coefficient】
(iii)Other time periods	9.5 MJ/kWh 【Thermal power average coefficient】

By **shifting demand to the renewable energy output control period, the energy use stated in the Act on Rationalizing Energy Use can be reduced (**Evaluated to be energy efficiency).

2-1. Transformation of the supply structure

(i)Promote the use of decarbonized fuel such as hydrogen/ammonia, etc.

- In order to expand the use of hydrogen and ammonia, etc. in the fields of power generation and transport/industry, etc., in the same manner as for LNG, it is necessary to promote domestic production and to build an international value chain that spans the range of production/liquefaction, etc./transport and storage. In order to reduce the risk of foreign operations conducted by private companies, **JOGMEC conducts equity financing and liability guarantees for the production/liquefaction, etc. and storage, etc. of hydrogen and ammonia, etc. in addition to promoting domestic production.**
- In order to promote the use of **hydrogen/ammonia** by energy providers, the above fuels **are positioned in the Sophisticated Methods Act as non-fossil energy sources, and energy providers are requested to draw up plans concerning the use of non-fossil energy sources including hydrogen/ammonia, etc.**
- In order to promote activities by oil refiners that demonstrate consideration for the reduction of environmental loads, the definition of the effective use of fossil energy has been modified, **and they are requested to draw up plans that include decarbonized fuel use such as the introduction of hydrogen into the refining process and co-combustion of ammonia.**

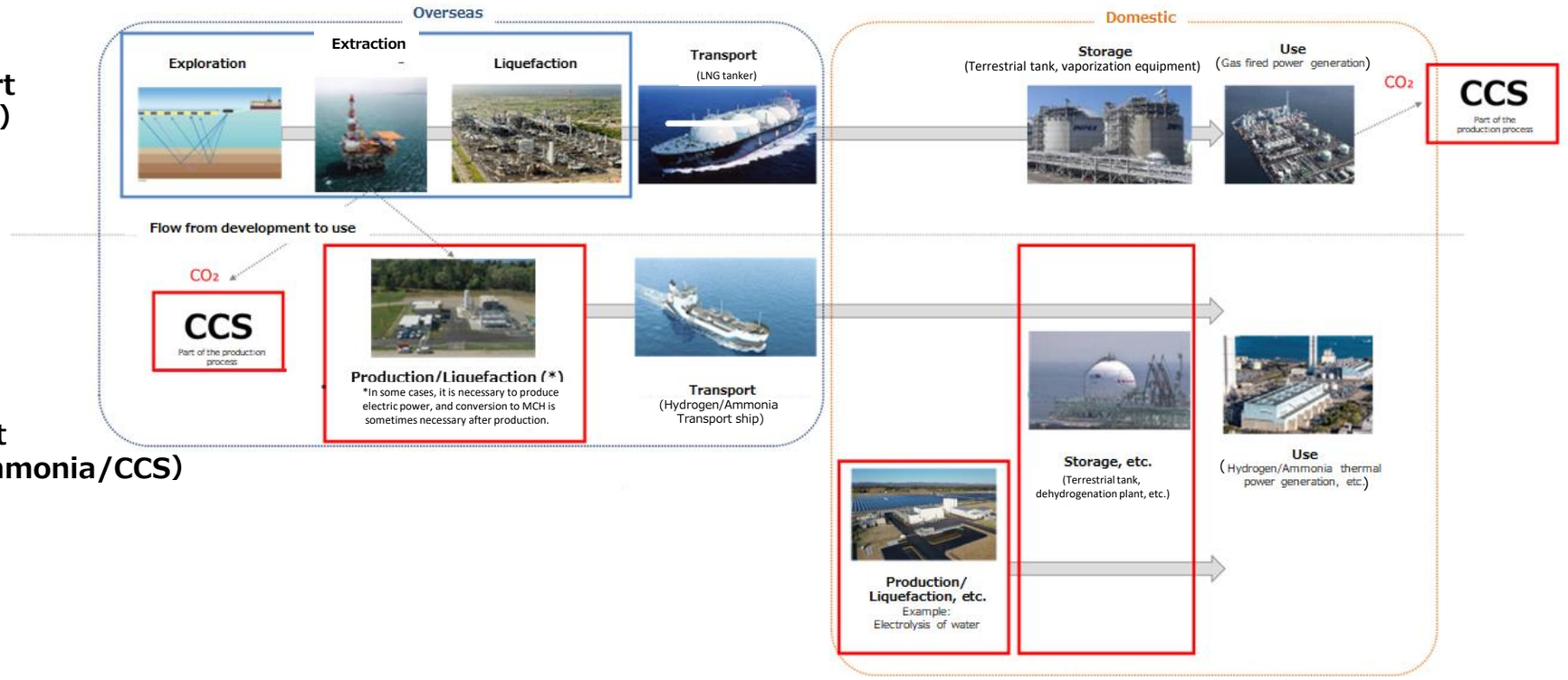
(ii)Promotion of CCS

- Regarding CCS projects, as there is underground risk due to the difficulty of accurately grasping the storage volume, **JOGMEC conducts equity financing and liability guarantee for CO_2 storage and the sub-bottom profiling surveys for that purpose.**
- To promote the use of CCS installed thermal power generation with CCS by electric utility companies, **it is permitted to enter the use of CCS installed thermal power generation with CCS in the plans that they are required to draw up in the Sophisticated Methods Act.**

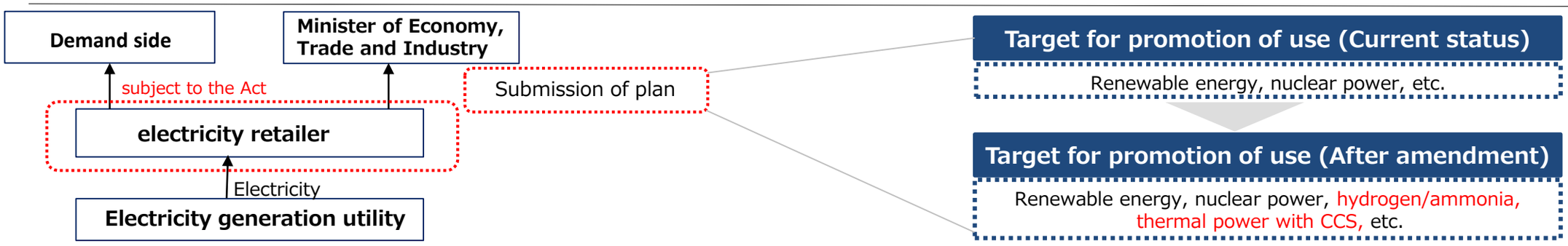
Add of functions to support for production of hydrogen, etc. and CCS projects (Domestic business is also a support target)

Existing support
(Example: LNG)

New support
(Example: hydrogen/ammonia/CCS)



Sophisticated Methods Act scheme (Example : Electric utility company)



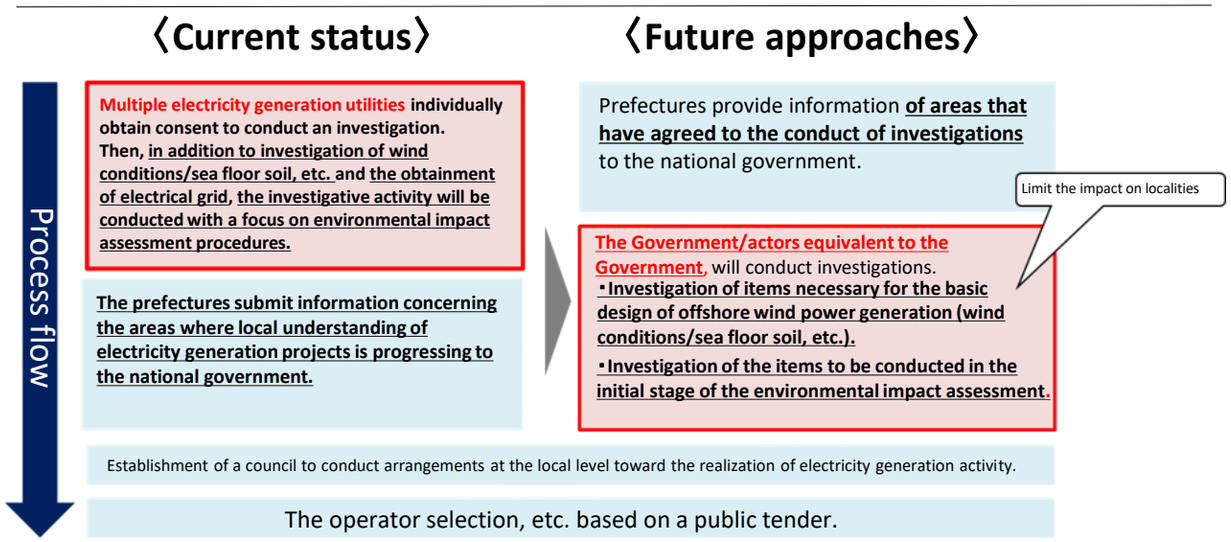
2-2. Transformation of the supply structure

(iii)Promote the introduction of renewable energy

- Concerning the development of offshore wind power resource development, **JOGMEC,** whose expertise includes the investigation of the geological structure of sea areas, **is in charge of part of the "Japanese version of the centralized model*".**

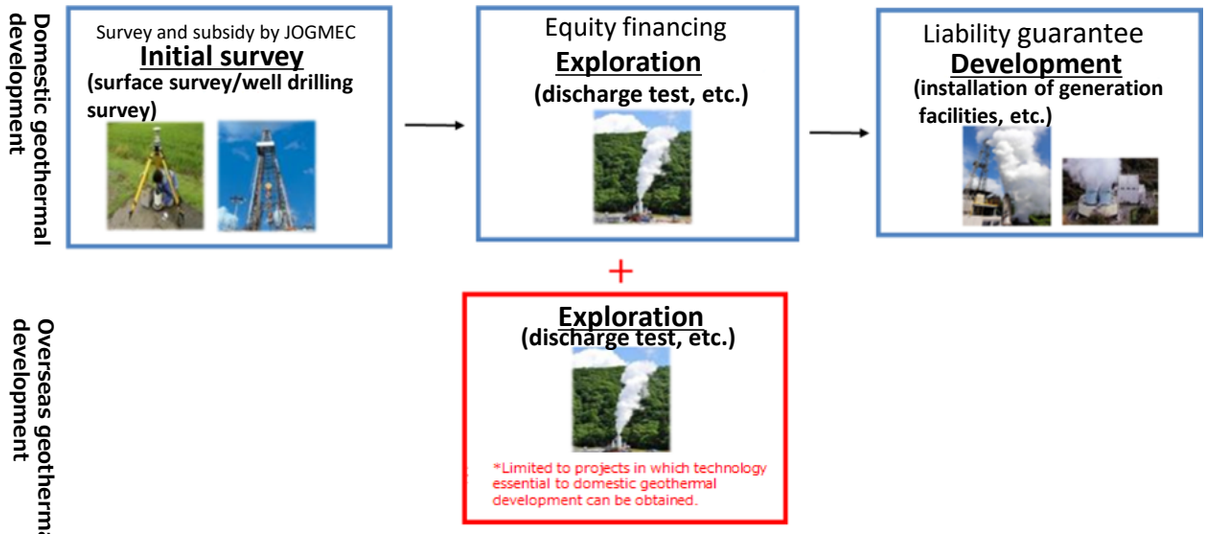
*A consolidated scheme including investigation, etc. that is being conducted by The Netherlands, Denmark, etc.

An image of project formulation in the "Japanese version of centralized model"



- For the advancement of geothermal development in Japan, leading technology and knowhow gained through participation on overseas exploration projects are necessary. For this purpose, **JOGMEC conducts equity financing regarding overseas exploration of geothermal development projects,** limited to projects in which the technology and knowhow that are essential to domestic geothermal development can be obtained .

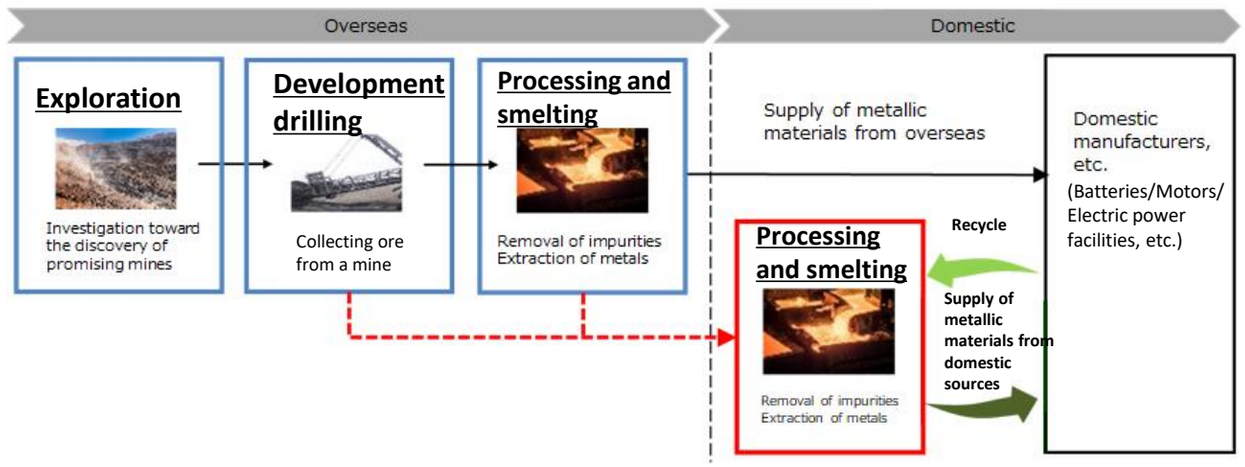
Add overseas geothermal development project activity



(iv)Securing interests of rare metals

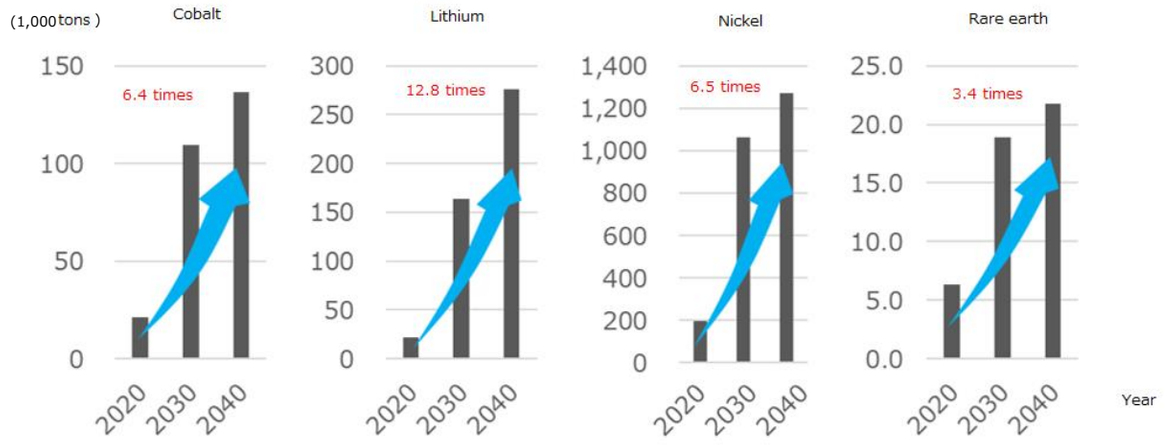
- **JOGMEC conducts equity financing and liability guarantee for domestic processing and smelting projects** to reduce the overseas supply risk, promote the recycling of useful resources including used products, etc. and to realize the stable supply of metallic materials to domestic manufacturers.

Add activity to support for domestic processing and smelting projects



- Accompanying the spread of power generation equipment and electric cars, etc., the demand for rare earth is expected to increase. In recent years, rare earth has been identified in our exclusive economic zone, and going forward, the possibility of commercial development has arisen. Accordingly, to properly manage the resource and create the conditions for smooth domestic production, **rare earth is added as the subject of an application for the right to mine under the Mining Act.**

Rare metals demand estimate



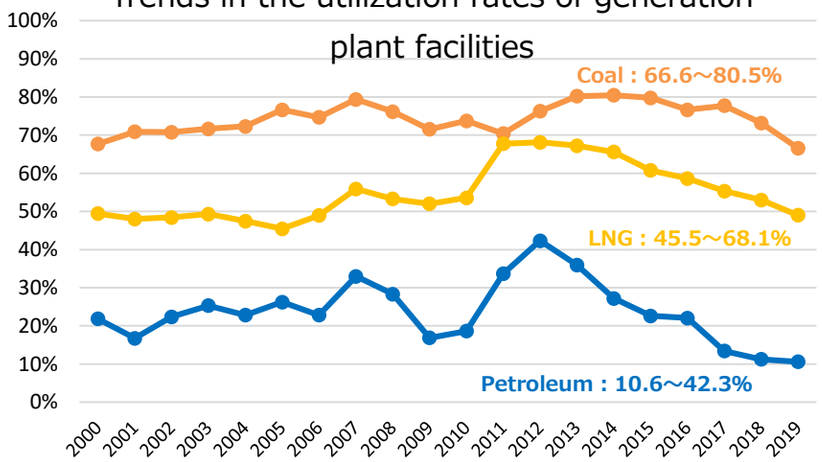
【Source of reference】The Role of Critical Minerals in Clean Energy Transitions, IEA, 2021

3. Securing Stable Energy Supply

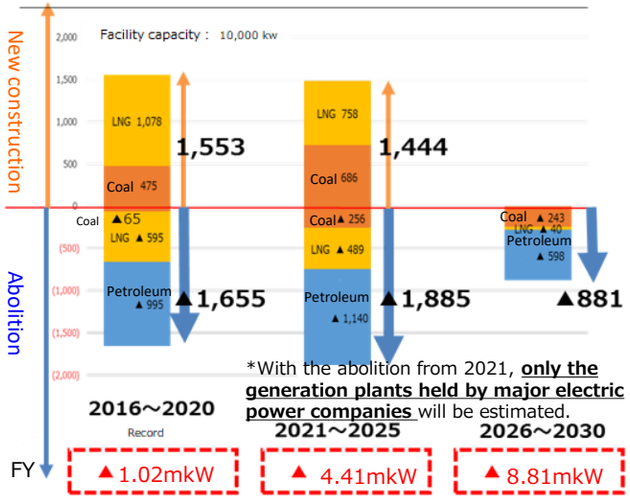
Securing the necessary supply capability

- Due to the reduction in the utilization rates of generation plant facilities, the suspension and abolition of generation plants whose operational profitability has worsened has increased, and the risk of the occurrence of obstructions to stable supply has increased.
- For this reason, concerning **the suspension and abolition of generation plants**, through **the change from "notification after the fact system" to a "notification in advance system"**, in advance, the national government can ascertain and manage the information about the suspension and abolition of generation plants and thus obtain the time necessary to develop measures to **secure the necessary supply capability(public tender for additional supply capability).**
- Also, toward the realization of stable energy supply in a decarbonized society, the Minister of the Ministry of Economy, Trade and Industry, in collaboration with The Organization for Cross-Regional Coordination of Transmission Operators (OCCTO), will strengthen the system that manages Japan's overall supply capability.

Trends in the utilization rates of generation plant facilities

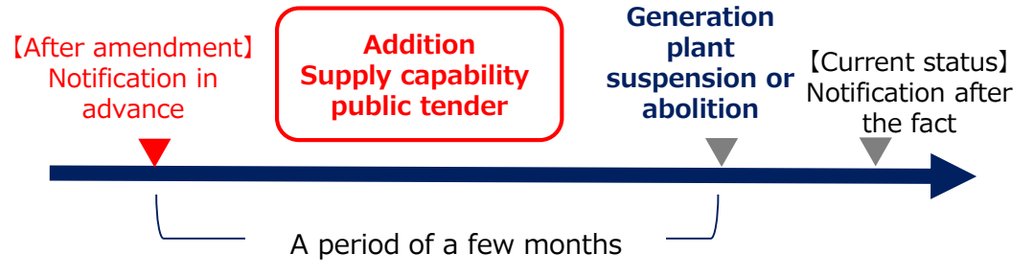


New construction /Abolition of thermal power



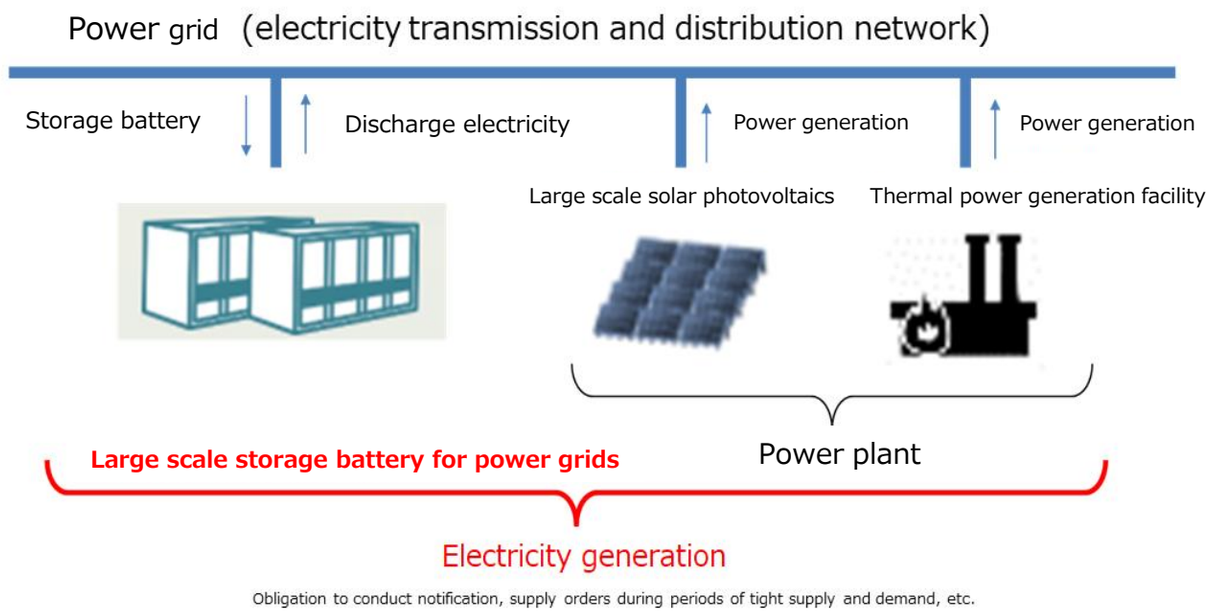
*With the abolition from 2021, **only the generation plants held by major electric power companies** will be estimated.

Re-examination of the suspension or abolition of generation plants



Increase of the flexibility of the electrical system

- In the midst of the expansion of the introduction of renewable energy, functioning as decarbonized supply capability/adjustment capability, the large storage battery is expected to make a big contribution to the stable supply of energy.
- For this purpose, operations in which **large storage batteries discharge electricity will be positioned as electricity generation (notification system)** to grasp their facility capacity appropriately and make them available for utilization as supply capacity during tight supply and demand periods.
- Also, when there are request to connect large storage batteries for power grids to the power grids, in principle, **an environment will be prepared that allows them be connected**.



安定的なエネルギー需給構造の確立を図るための エネルギーの使用の合理化等に関する法律等（※）の一部を改正する法律の概要

※エネルギーの使用の合理化等に関する法律、エネルギー供給構造高度化法（高度化法）、JOGMEC法、鉱業法、電気事業法

背景

✓ 第6次エネルギー基本計画（2021年10月閣議決定）を踏まえ、**「2050年カーボンニュートラル」や2030年度の野心的な温室効果ガス削減目標の実現に向け**、**日本のエネルギー需給構造の転換を後押し**すると同時に、**安定的なエネルギー供給を確保**するための制度整備が必要。

法律の概要

✓ **省エネの対象範囲の見直しや非化石エネルギーへの転換促進**、**脱炭素燃料や技術への支援強化**、**電源休廃止時の事前届出制の導入や蓄電池の発電事業への位置付け**等の措置を講ずることで、①需要構造の転換、②供給構造の転換、③安定的なエネルギー供給の確保を同時に進める。

（１）需要構造の転換（エネルギーの使用の合理化等に関する法律）

① 非化石エネルギーを含むエネルギー全体の使用の合理化

- 非化石エネルギーの普及拡大により、供給側の非化石化が進展。これを踏まえ、**エネルギー使用の合理化（エネルギー消費原単位の改善）の対象に、非化石エネルギーを追加**。化石エネルギーに留まらず、エネルギー全体の使用を合理化

② 非化石エネルギーへの転換の促進

- 工場等で使用するエネルギーについて、**化石エネルギーから非化石エネルギーへの転換（非化石エネルギーの使用割合の向上）を求める**
- 一定規模以上の事業者に対して、**非化石エネルギーへの転換に関する中長期的な計画の作成を求める**

③ ディマンドリスポンス等の電気の需要の最適化

- 再エネ出力制御時への需要シフトや、需給逼迫時の需要減少を促すため、**「電気需要平準化」を「電気需要最適化」に見直し**
- 電気事業者に対し、**電気需要最適化に資するための措置に関する計画（電気需要最適化を促す電気料金の整備等に関する計画）の作成等を求める**

（２）供給構造の転換（高度化法、JOGMEC法、鉱業法）

① 再生可能エネルギーの導入促進

- JOGMECの業務に、**洋上風力発電のための地質構造調査等**を追加
- JOGMECの出資業務の対象に、**海外の大規模地熱発電等の探査事業（経済産業大臣の認可が必要）**を追加

② 水素・アンモニア等の脱炭素燃料の利用促進

- 位置づけが不明瞭であった**水素・アンモニアを高度化法上の非化石エネルギー源として位置付け**、それら脱炭素燃料の利用を促進（高度化法）
- JOGMECの出資・債務保証業務の対象に、**水素・アンモニア等の製造・液化等や貯蔵等**を追加

③ CCS※の利用促進

- JOGMECの出資・債務保証業務等の対象に**CCS事業及びそのための地層探査**を追加
- **火力発電であってもCCSを備えたもの（CCS付き火力）は高度化法上に位置付け**、その利用を促進（高度化法）

④ レアアース・レアメタル等の権益確保

- **レアアースを鉱業法上の鉱業権の付与対象に追加**し、経済産業大臣の許可がなければ採掘等できないこととする（鉱業法）
- JOGMECの出資・債務保証業務の対象に、**国内におけるレアメタル等の選鉱・製錬**を追加

※Carbon dioxide Capture and Storage(二酸化炭素を回収・貯蔵すること)

（３）安定的なエネルギー供給の確保（電気事業法）

① 必要な供給力（電源）の確保

- 発電所の休廃止が増加し、安定供給へのリスクが顕在化している状況を踏まえ、発電所の休廃止について事前に把握・管理し、必要な供給力確保策を講ずる時間を確保するため、**発電所の休廃止について、「事後届出制」を「事前届出制」に改める**
- 脱炭素化社会での電力の安定供給の実現に向けて、**経済産業大臣と広域的運営推進機関（広域機関）が連携し、国全体の供給力を管理する体制を強化**

② 電力システムの柔軟性向上

- 脱炭素化された供給力・調整力として導入が期待される**「大型蓄電池」を電気事業法上の「発電事業」に位置付け、系統への接続環境を整備**

※上記のほか、JOGMECによる事業者に対する情報提供や石油精製プロセスの脱炭素化などの措置を講ずる。

1. 需要構造の転換

エネルギーの定義の見直しと非化石エネルギーへの転換

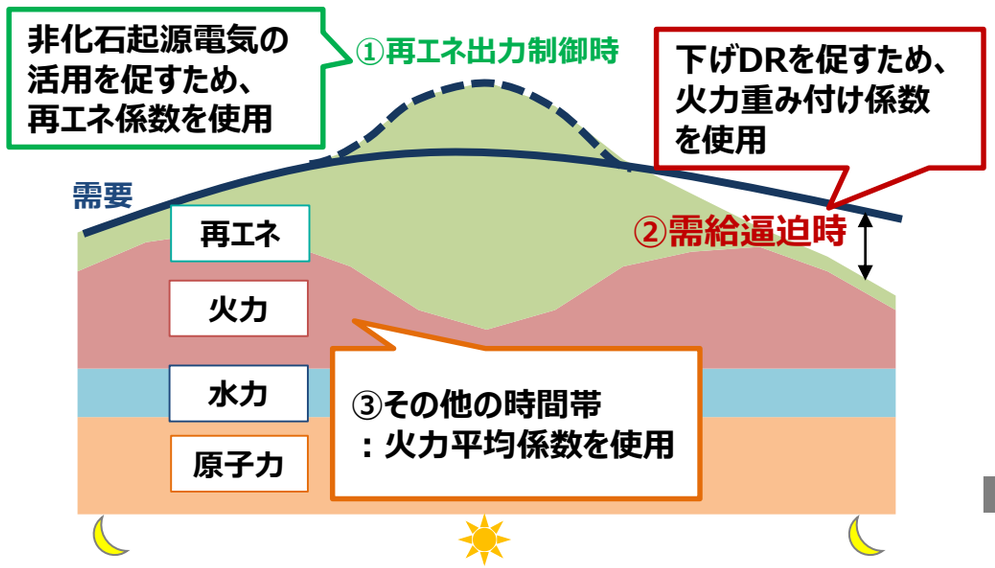
- 化石エネルギーのみならず、非化石エネルギー（水素・アンモニア等）の使用も合理化することで、エネルギーの安定供給の維持につなげていくことが必要。このため、現行省エネ法の「エネルギー」の定義を見直し、**使用の合理化の対象を非化石エネルギーを含む全てのエネルギーに拡大**する。
- カーボンニュートラルの実現に向けては、供給サイドのみならず、需要サイドでの非化石エネルギーへの転換を進めていくことが必要。このため、**エネルギー多消費事業者に対し、非化石エネルギーへの転換に関する中長期計画の作成や、非化石エネルギーの使用状況の定期報告等を求める**。

	省エネルギー	非化石エネルギーへの転換
現行	◎省エネ法に基づく**化石エネルギーの使用の合理化** • エネルギー消費効率の**年１%改善**、業種別**ベンチマーク目標、工場等における省エネ取組**の実施 ➡ 必要に応じて**指導・助言、罰則等**（**制度的に担保**）	◎省エネ法の努力義務達成のための**非化石エネルギーの一部活用** ◎低炭素社会実行計画、チャレンジゼロ、RE100、EV100等 ➡ 事業者の**自主的な取組**
改正後	**【見直し事項①】** エネルギーの定義の見直し **◎全てのエネルギーの使用の合理化** – 省エネ法に基づく規制と補助金等のインセンティブを組み合わせ、省エネを更に深掘り	**【見直し事項②】** 非化石エネルギーへの転換に関する中長期計画の作成 等 **◎非化石エネルギーへの転換の促進** – 非化石エネルギーの利用割合の向上 – 製造プロセスの電化、水素化等 – 購入エネルギーの非化石化

ディマンドリスポンス等の電気の需要の最適化

- 太陽光発電等の変動型再エネの普及拡大を踏まえ、再エネ出力制御時の電気需要量の増加や、需給逼迫時の電気需要量の抑制など、**季節又は時間帯の電気の需給状況に応じた需要のシフトを促す**。
- また、**電気事業者に対し、電気需要最適化に資する取組を促すための電気料金等の整備を求める**。

スキーム（イメージ）



※数値は暫定値

需給状況	一次エネルギー換算係数（1kWhの電気使用した際のエネルギー使用量）
①再エネ出力制御時	**3.6** MJ／kWh【再エネ係数】
②需給逼迫時	**（9.5×α）** MJ/kWh【火力重み付け係数】
③その他の時間帯	**9.5** MJ/kWh【火力平均係数】

➡ **再エネ出力制御時に需要をシフト**することで、**省エネ法上のエネルギー使用量を削減**することが可能。（省エネと評価される。）

2-1. 供給構造の転換

①水素・アンモニア等の脱炭素燃料の利用促進

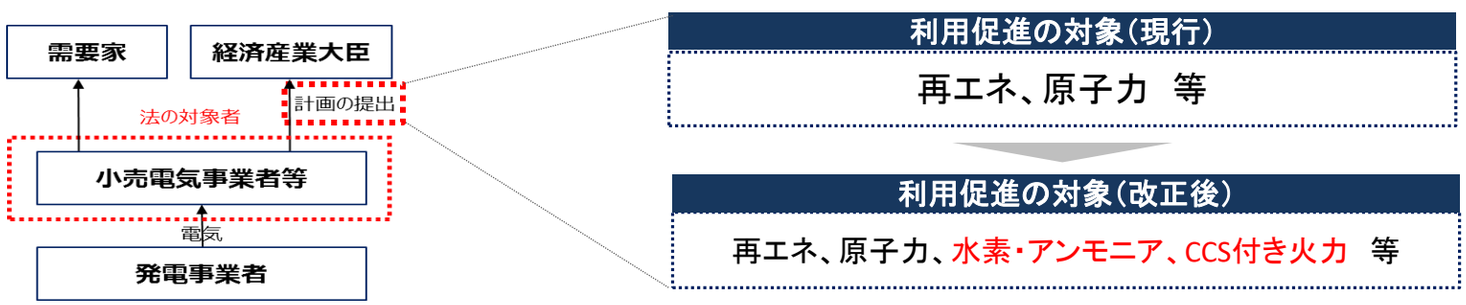
- 水素やアンモニアの利用等を発電や輸送・産業分野で拡大するためには、国内での製造を促進するとともに、LNGと同様、製造・液化等・輸送・貯蔵等に至る国際バリューチェーンの構築が必要。民間企業による海外での操業リスク低減を図るため、**JOGMECが水素やアンモニア等の製造・液化等や貯蔵等への出資・債務保証を行う**。
- エネルギー供給事業者に対して**水素・アンモニア**の利用を促進するため、それらを高度化法上の**非化石エネルギー源として位置付け**、**エネルギー供給事業者に水素・アンモニアを含めた非化石エネルギー源の利用に関する計画の作成を求める**。
- 石油精製業者に対して環境負荷の低減に配慮した取組を促進するため、化石エネルギー原料の有効な利用の定義を改め、**精製プロセスへの水素の導入やアンモニア混焼といった脱炭素燃料の使用を含めた計画の作成を求める**。

②CCSの利用促進

- CCS事業については、正確な貯留量の把握が困難といった地下リスクがあるため、**JOGMECがCO_2の貯蔵及びそのための地層探査への出資・債務保証等を行う**。
- 電気事業者に対してCCS付き火力発電の利用を促進するため、高度化法上、**電気事業者が作成することが義務づけられている計画にCCS付き火力発電の利用を記載できることとする**。

水素等の製造、CCS事業支援の業務追加（国内事業も支援対象）

高度化法のスキーム（例：電気事業者）



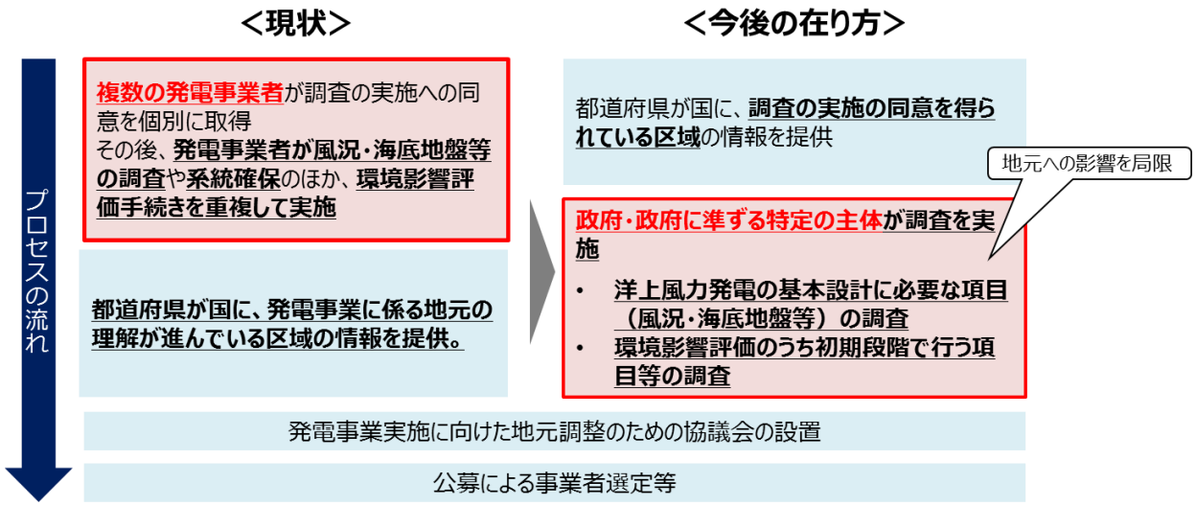
2-2. 供給構造の転換

③再生可能エネルギーの導入促進

- 洋上風力資源開発について、海域の地質構造調査等に強みのある**JOGMECが「日本版セントラル方式※」の一部を担う**。

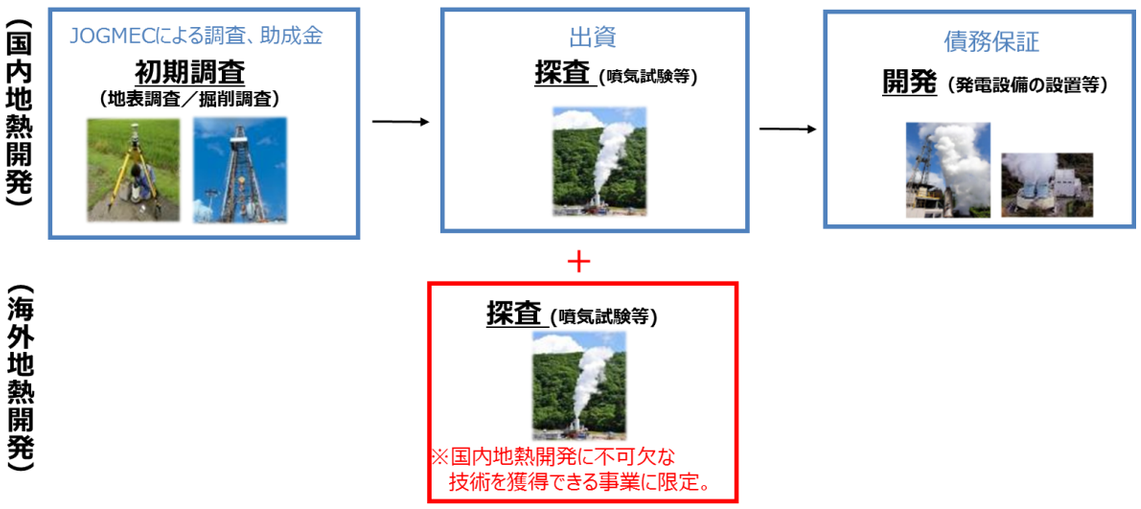
※　オランダ、デンマーク等で実施されている、政府主導の洋上風力の一括調査等のスキーム

「日本版セントラル方式」における案件形成のイメージ



- 日本の地熱開発を進める上では、海外の探査事業への参画を通じて得られる先進的な技術やノウハウが必要。このため、国内の地熱開発に不可欠な技術やノウハウを獲得できる事業に限定して、**JOGMECが海外の地熱発電の探査事業に対する出資を行う**。

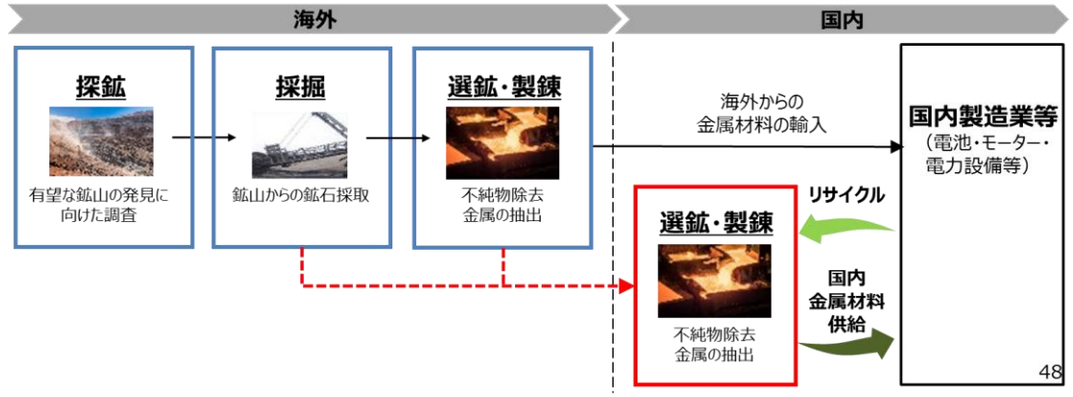
海外地熱開発の業務追加



④レアメタル等権益確保

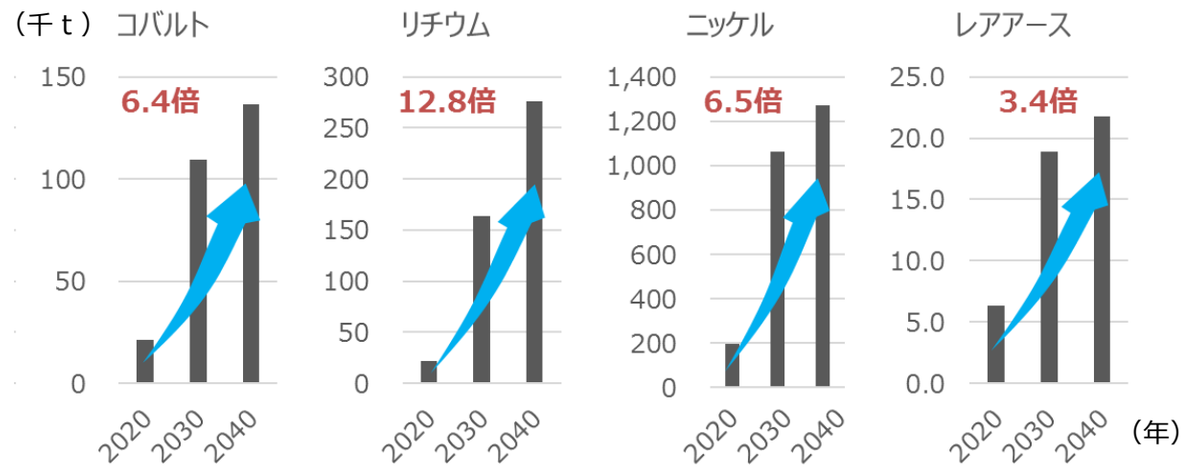
- 海外からの資源供給リスク低減や使用済み製品等に含まれる有用資源の循環を推進し、国内製造業への金属材料の安定供給を実現するため、**JOGMECが国内の選鉱・製錬事業への出資・債務保証を行う**。

国内の選鉱・製錬事業支援の業務追加



- 風力発電機器や電動車等の普及拡大に伴い、レアアースの需要が増加していく見込み。近年、我が国の排他的経済水域内でレアアースが確認され、今後、商業的に開発される可能性が出てきている。したがって、資源を適正に管理し、レアアースの国内生産を円滑化するため、**鉱業法の適用鉱物にレアアース（希土類金属鉱）を追加する**。

レアメタルの需要予測



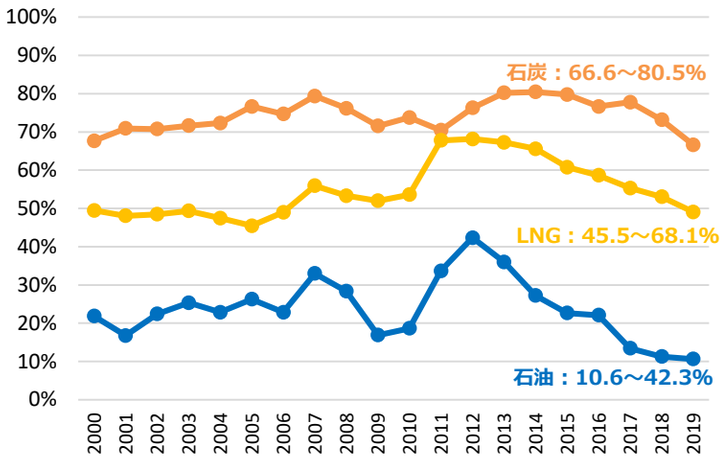
【出典】The Role of Critical Minerals in Clean Energy Transitions, IEA, 2021

3．安定的なエネルギー供給の確保

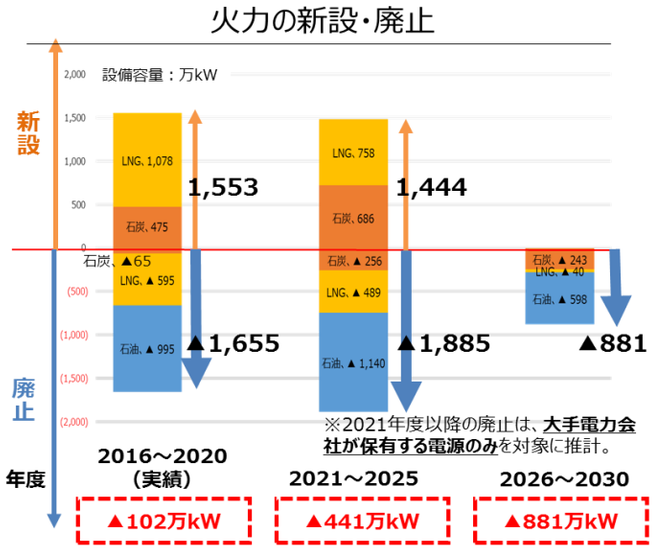
必要な供給力の確保

- 電源の設備利用率の低下等により、事業採算性が悪化した電源の休廃止が増加しており、安定供給に支障が生じるリスクが高まっている。
- このため、**電源の休廃止**について、**「事後届出制」から「事前届出制」に改める**ことで、電源の休廃止について国が事前に把握・管理し、**必要な供給力確保策（追加供給力公募）を講じるための時間を確保**。
- また、脱炭素化社会での安定供給の実現に向けて、経済産業大臣と電力広域機関が連携し、国全体の供給力を管理する体制を強化。

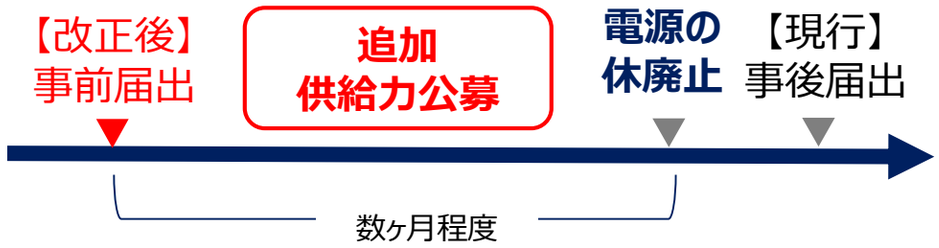
設備利用率の推移



火力の新設・廃止



電源の休廃止手続きの見直し



電力システムの柔軟性向上

- 再エネの導入が拡大する中、大型の蓄電池は、脱炭素化された供給力・調整力として、電力の安定供給に大きく貢献することが期待される。
- このため、設備容量を適切に把握し、需給逼迫時に供給力を活用できるよう、**大型の蓄電池から放電する事業**を、**発電事業（届出制）に位置づける。**
- また、大型の系統用蓄電池を系統に接続することを求めた場合は、原則として**接続を可能とする環境を整備**する。