



Policy Report

The Climate Bailout Plan as a new monetary tool for the ECB

The example of RWE's open cast lignite mines

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Summary

The majority of known and also already developed fossil resources must remain in the ground and not be burned if there is still a chance of keeping within the 1.5°C limit. It is therefore necessary to discuss measures that have so far been considered unconventional. The 'Climate Bailout Plan' developed here shows how companies can sell their "stranded" fossil assets - mediated by development banks - to central banks so that they remain in the ground. In return, they must commit to investing heavily in renewable energy, storage systems and other energy efficiency measures. It can also be shown that this gives central banks a new (unconventional) monetary policy tool that expands their ability to act. Finally, a concrete example of RWE's open cast lignite mine is used to show how the Climate Bailout Plan can work in practice.

1. The problem¹

When Mark Carney, then head of the Bank of England, first raised the issue of central banks' responsibility in tackling climate change in his famous speech in 2015, it was a sign of hope. After all, central banks had shown their great economic potential in dealing with the 2008 financial crisis. The prospect that, after the "bank bailout", they would now also use this potential for a "climate bailout" with the financing of the global energy transition and the rapid phase-out of fossil fuels, brought compliance with the 1.5° C target back within reach. Unfortunately, this hope has not been confirmed so far. Despite diverse climate protection rhetoric, central banks are hardly using their large economic scope for action and have so far limited themselves to monitoring and assessing climate-relevant risks for the financial system. This restraint is all the more deplorable because by promoting renewable energies they could directly counteract the inflationary impulse of fluctuating fossil

energy prices.² We aim to show here how a "Climate Bailout Plan" could constitute a new monetary policy tool for central banks, in particular the ECB, and how it would work.

The majority of known fossil raw materials, but also 40 percent of those already tapped must remain in the ground if the 1.5°C limit is not to be exceeded^{3,4}. The companies who own these fossil raw materials face the problem of a massive loss of value if they are no longer allowed to be burned: half of all fossil raw materials would become worthless by 2036 if the measures required to achieve the climate goals of net zero were implemented.⁵ It can be deduced from this that the owners of fossil assets threatened with stranding will use their considerable lobbying power to postpone the loss-making phase-out of fossil energies as far as possible. The aim of the Climate Bailout Plan is to overcome this conflict which could have disastrous consequences for society as a whole.

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- 1 Part of the text contained in this Policy Report was originally published as: Kroll, M., Kühne, K. "Climate Bailout": a new tool for central banks to limit the financial risk resulting from climate change. *International Environmental Agreements* 24, 217–232 (2024). <https://doi.org/10.1007/s10784-024-09630-4>
 - 2 See: LINGO, World Future Council; Central banks, energy transition and controlling inflation, Policy Note, 04/2022; <https://www.leave-it-in-the-ground.org/wp-content/uploads/2022/04/Fossil-Inflation-Solutions-Policy-Note-LINGO-WFC-2022.pdf>
 - 3 See: Energiezukunft; Öl, Gas und Kohle müssen im Boden bleiben; 20.05.2022; <https://www.energiezukunft.eu/klimawandel/oel-gas-und-kohle-muessen-im-boden-bleiben/>
 - 4 See: Kelly Trout et al; Existing fossil fuel extraction would warm the world beyond 1.5 °C, in: *Environmental Research Letter*, Vol.17, No.6, 17.05.2022; <https://iopscience.iop.org/article/10.1088/1748-9326/ac6228>
 - 5 See: The Guardian; Half world's fossil fuel assets could become worthless by 2036 in net zero transition, 04.11.2021; <https://www.theguardian.com/environment/ng-interactive/2021/nov/04/fossil-fuel-assets-worthless-2036-net-zero-transition>



2. The solution: a “Climate Bailout”

The basic idea of the Climate Bailout Plan is to give fossil fuel companies a way out of their current, obsolete business model, so that the fossil raw materials that are no longer allowed to be burned remain in the ground, and at the same time renewable energies are built up that can replace the fossil energies. The plan is based on earlier work by the World Future Council,⁶ and has been modified and expanded here.

More recently, the Asian Development Bank (ADB) has launched a project with a similar basic idea. In a pilot project with Indonesia and the Philippines, coal-fired power plants are to be bought up and then closed before the end of their service life. However, it is unclear how the projected financing in the billion-dollar range is to be achieved through grants from private donors, as there are no plans for central banks to participate.⁷

Converting stranded assets into renewable energies

To implement the Climate Bailout Plan developed here, it is first necessary to identify the fossil raw materials that must remain in the ground because their burning would make it impossible to achieve climate goals. The companies that own these raw materials and have already accounted for them as assets fear that the value

⁶ See: World Future Council; How to convert fossil fuel stranded assets into renewable energy investments; Policy Brief, 02/2018; <https://www.worldfuturecouncil.org/wp-content/uploads/2018/02/Stranded-Assets-Climate-Bailout-Paper-02-2018.pdf>

⁷ See: Euromoney; ADB mechanism will buy out coal power in southeast Asia, 03.11.2021; <https://www.euromoney.com/article/299s69449g78r25m8nytc/esg/adb-mechanism-will-buy-out-coal-power-in-southeast-asia>

of these raw materials might fall sharply in the near future, if they can no longer be used for energy. This threatens the companies with high and possibly existential balance sheet losses, even threatening financial stability. The Climate Bailout is a last resort out of this dilemma because it enables companies to sell their fossil assets which are in danger of becoming stranded before they become worthless. However, the sale of these commodities is only made possible if the companies simultaneously commit to investing in renewable energies (RE) and the associated infrastructure with the proceeds.

The coupling of the expansion of RE with the non-use of fossil raw materials envisaged in this Climate Bailout Plan has an important energy-related reason. If fossil raw materials remain in the ground, they are no longer available for energy use and must be replaced by RE. This applies equally to oil, gas and coal. With the conversion from fossil energies to electricity from renewable sources, great efficiency gains are realised. In this way, the current high primary energy consumption can be reduced to about one third.⁸ Thus, only a part of the current energy production needs to be replaced. Nevertheless, the supply of renewables must be increased in the course of the phase-out of fossil energy sources. The Climate Bailout Plan links these two elements and thereby improves the stability of the energy sector.

Who buys the stranded assets?

The fossil fuel companies can sell their unmined fossil resources (and associated infrastructure, such as mines and refineries) to

designated financial institutions, such as national or multilateral development banks (MDBs). The MDBs bundle the stranded assets into new “Climate Bailout Bonds” (CBBs). Since the market value of fossil resources that can no longer be extracted and the associated infrastructure will fall sharply in the future, the MDBs must be enabled to sell on the CBBs directly and without loss to central banks such as the ECB. To this end, the central banks must establish in advance how many CBBs they are planning to buy from the MDBs.

What is a fair price for a stranded asset?

First, the price for the fossil raw materials remaining in the ground must be determined. Here it seems sensible to take the CO₂ content of the raw materials remaining in the ground as a reference. A fixed amount of money could be paid per tonne of CO₂. This amount must be high enough for companies to have an interest in getting rid of their fossil assets that could get stranded. At the same time, it must not be too high, because only the losses threatened by stranding are to be limited and no extra profit is to be financed. Here, the MDBs could apply a trial-and-error procedure that allows timely price adjustments in order to find the price corridor that achieves the desired steering effect. Potential sellers must also be aware that the sales price will fall over time, so waiting too long is not a sensible strategy.

Bidding competition

Once a price (or price corridor) for the tonne of CO₂ has been

⁸ Germany's primary energy consumption before the Covid 19 pandemic was around 3,700 TWh. It is estimated that it would only be 1,200 - 1,300 TWh after a completed energy transition. (e.g. DIW Wochenbericht 29+30, (2021), 100 Prozent erneuerbare Energien für Deutschland: Koordinierte Ausbauplanung notwendig; Quaschnig, Volker; Sektorkopplung durch die Energiewende, Hochschule für Technik und Wirtschaft Berlin, 2016, p.32.)

determined, the process can continue with a bidding competition between the companies willing to sell. Only the companies that will build the most renewable energy (RE) with the sales proceeds will be selected. Where and how much renewable energy they want to build up must be explained in detail by the companies in advance in a transparent and credible manner. Only new and additional RE projects would be eligible that do not crowd out other RE investors.⁹

If the expansion targets are not met, sanctions must be imposed, such as the repayment of the sales price. RWE, the fossil company examined as an example in chapter 5 of this study, would then have to participate in the bidding competition along with other fossil companies.

Bidders can also invest in other infrastructure necessary for the energy transition, such as green hydrogen and/or green methane facilities, associated storage facilities or the necessary reconversion plants. It would also be possible to invest in better thermal insulation and the construction of heat pump systems, as well as the conversion of the industry's process heating needs to electricity from renewable sources.

It is also important for a functioning bidding competition that the central banks participating in the procedure must determine in advance a maximum amount with which the MDBs can buy up the stranded assets, bundle them into CBBs and resell them to the central banks. The bidding process ensures that the largest possible renewable capacity is achieved per CBB bought up by the

central bank. However, in order to reduce emissions as much as possible, the maximum amount of CBBs to be bought up by the ECB should not be too tight. Rather, the aim should be a bidding competition in which the majority of companies can sell their stranded assets in exchange for the creation of new RE. However, there must also be a minimum amount of renewable energy to be built up per fossil raw material unit sold. If this is not achieved, no purchase is made by the MDBs.

Which banks can be involved in a Climate Bailout?

The task of buying up and bundling in CBBs could be taken on by banks, such as the Kreditanstalt für Wiederaufbau (KfW) and the European Investment Bank (EIB). However, other national as well as international development banks could also participate. In any case, the procedure must be coordinated with the ECB and the banks must receive a fee for the service of bundling in CBBs and monitoring the implementation of the contractually agreed RE build-up, which must be paid by the sellers of the fossil assets.

⁹ How this goal of not crowding out other RE projects is to be achieved depends on the specific circumstances of the investment framework. A kind of investment privilege for new RE plants for other investors would be conceivable.



The long-term value of stranded assets: non-burning uses of fossil fuels

The fossil commodities and infrastructure needed to extract them are not worthless. CBBs consisting of fossil fuels that are also suitable for non-energy use can continue to generate a financial return if the raw materials are sold for this use. Therefore, the infrastructure required for extraction and processing (e.g. wells, pipelines, mines and refineries) may still be able to generate a partial return when non-energy uses are continued. It should be noted that non-energy use accounts for only a very small proportion of the use of coal, oil and fossil gas to date. The amount of raw materials that continues to be extracted and generate a return is therefore also expected to be relatively small. The CBBs can thus continue to generate a small return for the ECB. Other assets (buildings, land, etc.) of fossil fuel companies associated with mining infrastructure can also be repurposed for other productive uses and thus continue to generate income. Those assets that can no longer generate revenue (e.g. lignite remaining in the ground) can and should be bundled with revenue-generating assets into the bonds. This will further reduce the earning power of the bonds.

The fact that a return will be generated is important when it comes to including CBBs in a central bank balance sheet. Even if, from a purely economic point of view, the return is not absolutely necessary and will probably play a subordinate role in view of the high balance sheet totals of central banks, it is nevertheless a factor for the balance sheet aesthetics that should not be underestimated. Because the bonds yield a return, even if small, the CBBs can remain on the ECB's balance sheet permanently at the nominal value purchased, as there are no (falling) market prices for

them to which a possible write-down could be linked. However, a revaluation of CBBs is also not in the logic of the instrument, as they are by their nature, a barely liquid, permanent asset with low yield.

The value of avoiding climate damages

But even fossil infrastructure that will no longer generate income because it is closed after purchase - like power plants - and not mixed with income-generating assets in CBBs has an economic value. In order to disclose this, a new monetary valuation approach for CBBs would be helpful that includes indirect economic returns. This is because the purchase and decommissioning of fossil power plants will lead to avoided CO₂ emissions, which in turn will reduce the economic costs arising from climate change and improve financial stability.

Refinancing via the central bank

The possibility for the MDBs to refinance the CBB purchases at the central bank without losses is crucial for the Climate Bailout Plan. No private economic entity whose objective is to make profits can buy such barely liquid, very low yield CBBs. Public budgets would also be overburdened in view of the extent of the decommissioning of fossil raw materials and their infrastructure necessary to save the climate. The same applies to other private financiers. The central bank takes the CBBs onto its balance sheet as a new asset at their nominal value.

3. A new monetary policy tool for the ECB

This chapter aims to clarify why a central bank like the ECB, besides preventing climate damages, should have an interest in buying up largely illiquid low-yield bonds like CBBs and adding them to its balance sheet at nominal value.

The aftermath of the great financial crisis of 2008 has shown that the ECB (and most other central banks) have no monetary policy tool to directly stimulate economies when interest rates are already very low. This lack led the ECB - as a substitute action - to buy a wide variety of assets on a large scale in order to pump new liquidity into the markets. However, this measure, intended as an expansionary stimulus, mainly led to an increase in asset prices, while the hoped-for investments in the real economy could hardly be stimulated by the additional liquidity.

This shortcoming could be remedied with a monetary policy tool that exerts a direct effect on real investments in the green energy transition, e.g. via purchases of CBBs.

At the same time, current political developments show that the ECB does not have an effective tool against inflation triggered by rising fossil energy prices (“fossilflation”) either. Rapidly rising energy prices can only be countered in the long term by the classic monetary policy tool of raising interest rates, if at all. And this can only be done by deliberately causing a demand-reducing recession and the associated destruction of investments and jobs¹⁰.

¹⁰ The economic fact that fighting inflation through higher interest rates is also only possible via the lengthy and expensive diversions of recession and increased unemployment is only reluctantly discussed. As an example of an exception: Non-

A monetary policy tool that has a direct, dampening effect on rising energy costs would make it much easier for the ECB to fulfil its main mandate of price stability in the medium term. This could be achieved through a tool that leads to the expansion of renewables and lowers the economy's dependence on price-volatile fossil fuels. RE prices are significantly more stable than fossil fuels and show a declining trend in the long term.

The price-stabilising effect would be even greater if the substitution of fossil energies were promoted not only in Europe but on a global scale.¹¹ In addition, the ECB could avoid the dilemma of making urgently needed investments in the energy transition more expensive and thus more difficult by raising interest rates. Furthermore, a Climate Bailout would reduce the number of fossil energy assets stranded by the energy transition and thus also improve the overall stability of the financial sector.

The Climate Bailout & the ECB mandate

A Climate Bailout would significantly expand the ECB's monetary policy toolbox. Before the new monetary policy tool is presented in more detail, it must first be examined whether it is compatible with the ECB's current mandate. In principle, an adjustment of the mandate is also possible, but could require a time budget that is no longer available with regard to the climate crisis.

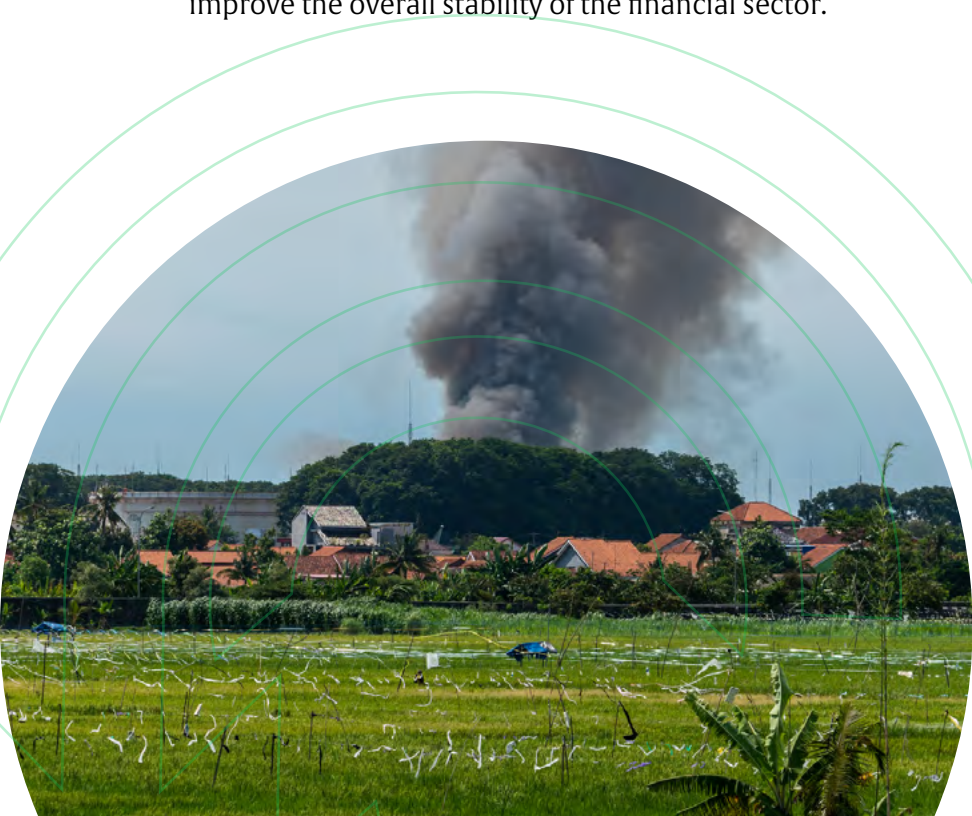
The current Treaty on the Functioning of the European Union (TFEU) provides that the primary objective of the ECB is to maintain price stability (Article 127 TFEU).¹² At the same time, Article 127 TFEU states that the ECB shall support the general economic policies of the Union with a view to contributing to the achievement of the objectives laid down in Article 3 of the Treaty on European Union (TEU). This applies as soon as the primary objective of price stability is not thereby jeopardised. Among other things, Article 3 of the TEU explicitly names “a high level of protection and improvement of the quality of the environment” as an objective. At the latest with the ratification of the Paris Agreement by the EU states, it can be claimed that the “high level of environmental protection” also means global climate protection.

Thus, two reasons can be identified in the European Treaties that make a Climate Bailout Plan as a monetary policy tool appear not only permissible, but even imperative: first, it supports the ECB in achieving the goal of price stability, and second, it helps it

¹¹ [transitory inflation may force BoE to raise unemployment](#), OMFIF, 31.05.2022.

¹² [Development Finance Institutions and a Climate Bailout. A short briefing](#). World Future Council, 2020.

¹² Currently, the goal of price stability is considered to have been achieved when the inflation rate is around 2 per cent in the medium term. Short-term overshoots or undershoots are acceptable. (see [Tasks and monetary policy](#). ECB.)



fulfil its (secondary) mandate to support the EU in implementing climate protection. This also disproves recurring criticisms that the ECB's activities in the area of climate protection represent an overstretching of its mandate.

A Climate Bailout is not state financing

Other critics, however, might object that the purchase of CBBs, with very long, even perpetual maturities and low earning power, constitutes a form of monetary state financing, because indirectly objectives are pursued that could be met with ordinary budget funds. However, the acquisition of bonds from public development banks (such as MDBs) by the ECB is permitted under Art. 123, para. 2 (TFEU) and thus does not fall under the prohibition of monetary state financing. This would also apply to CBBs issued by MDBs in the context of a Climate Bailout.

In addition, budget financing through the purchase of government bonds by the ECB (monetary government financing) is only prohibited if it is carried out directly (Art. 123, para. 1, TFEU). As soon as these purchases are made indirectly, they are permitted. This view has also been confirmed by the European Court of Justice.¹³

The ECB made very successful use of the monetary policy tool of indirect purchases of government bonds and purchases of bonds of other issuers both in dealing with the financial crisis of 2008 and with the Covid 19 pandemic. It was only through the mass purchase of these bonds that the enormous financial tasks that the states had to perform could be borne by the public budgets and the crises could be mastered. The management of the climate crisis

cannot be financed from ordinary, tax-based budgetary resources alone either. An approach similar to the one taken to deal with the financial and Covid crises is urgently needed here.

The permanent part of a central bank balance sheet does not need liquidity

The ECB's new climate bailout tool means that the part of the asset side of the ECB's balance sheet consisting of CBBs has very little, if any, liquidity left and is therefore no longer available for balance sheet-reducing monetary policy actions, such as asset sales to the financial markets by the ECB. However, in any case only a relatively small part of the balance sheet needs to be available for such measures. Empirical evidence shows that the balance sheets of the major central banks grow moderately and continuously in economically normal times and are only reduced again when existential crisis situations have previously led to a very strong and rapid increase in the balance sheet total. It is thus plausible to regard a substantial part of a central bank balance sheet as permanent.

13 [EuGH: PSPP-Anleihekaufprogramm der EZB mit EU-Recht vereinbar](#), Beck, 11.12.2018.

4. Additional benefits

Reversing incentives: fossil fuel companies become lobbyists for renewable energy

Another effect of the Climate Bailout Plan is the reversal of incentives. Up to now, fossil fuel companies have a strong interest in ensuring that the use of coal, oil and fossil gas continues for as long as possible. Accordingly, they use their lobbying power precisely for this purpose and block the rapid expansion of RE and strict climate policies. Under the plan, as soon as they want to sell their fossil assets, which are in danger of stranding, they have to prove an investment plan with as much renewable energy as possible, which has to be made in addition to the investments of other investors. They therefore suddenly have a great interest in ensuring that the legal and economic framework conditions on the part of policymakers are as wind- and solar-friendly as possible. Wind and solar energy blockers thus become a new pro-RE expansion lobby group.

Protection against compensation claims by energy companies

Companies that are forced to reduce their fossil fuel emissions by government climate action can seek compensation under the Energy Charter Treaty (ECT) and other trade agreements.¹⁴ Therefore, the Climate Bailout Plan could also include a provision that only companies that agree to waive potential lawsuits under the ECT or other free trade agreements may participate.

14 [Reform des Energiecharta-Vertrages gescheitert](#), Sonnenseiten, 24.05.2022.

Financing energy transition measures via a Climate Bailout

Since a full energy transition does not only include the expansion of wind and solar energy, but also many accompanying measures that need to be financed, a Climate Bailout could include further support for a faster phase-out of fossil energies.

In energy transition finance, a distinction must be made between those investments with which a return can in principle be achieved (or costs saved, as in the case of thermal insulation) and those that do not generate a direct monetary return and whose “returns” have an indirect and long-term effect because climate impact costs are prevented.

Measures that can generate a direct return and are fundamentally profitable can be conventionally financed through loans with very long terms and low interest rates. This puts them within the normal funding range of banks such as KfW or EIB, but also within the range of conventional private investors. However, if repayment-free subsidies are necessary to bring the measures to profitability, these could be financed through a Climate Bailout.

5. Applying the Climate Bailout – an example

This final chapter deals with a concrete application that could be carried out within the framework of a Climate Bailout. German RWE's lignite extraction will be used to show how fossil assets threatened with stranding would be processed according to the plan outlined above. It should be noted that there can be no “Lex RWE”. This means that RWE must offer its lignite for sale on an equal footing with other European fossil fuel companies and then, in competition with them, submit an offer that describes how much renewable energy and storage infrastructure (in GW and TWh) it can build per revenue generated.

Ending lignite mining

Since the ECB is a European institution, there is a need for a Europe-wide application of the Climate Bailout Plan. A regulation specifically geared to German lignite is not envisaged and only serves to illustrate the operation with a concrete example.

How RWE can keep lignite in the ground while building up renewable energies

In the German “coal compromise”, a phase-out date of 2038 (or 2035 at the earliest) is envisioned for ending lignite mining. But this cannot be reconciled with the goals agreed in the Paris Climate Agreement - a much faster phase-out of lignite is needed.

An earlier phase-out date means that RWE will have to leave a considerably larger part of its lignite in the ground than previously planned. This applies in particular to the further expansion of open

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cast lignite mining projects. The lignite that can now no longer be used for energy purposes in addition to the coal compromise therefore belongs to the category of stranded assets described above, which could be sold by RWE to development banks authorised to do so as part of the Climate Bailout Plan.

RWE would first have to determine the CO₂ content of its additional lignite now remaining in the ground and calculate the amount it would receive when selling it to the corresponding development bank. In order to then win the bidding competition with other European companies that also want to sell their fossil assets that are in danger of stranding, RWE must now make an effort to build up the highest possible number of new RE (in GW and TWh) with the expected revenues.

Reversing the incentives

In order for storage infrastructure to be developed as a new market segment of the energy transition, a number of regulatory adaptations are still needed in Germany.¹⁵ It seems more realistic that this would actually happen under a Climate Bailout Plan, because RWE and other fossil fuel companies then have a great incentive to influence the legislator to implement these necessary regulations promptly and to open up new investment opportunities. In this way, a brake on the energy transition could become a motor of the energy transition.

¹⁵ For example the taxation of electricity for a storage business should not happen before it has even started storing any energy, but rather at the end of the process. This could be achieved by defining the acquisition of electricity of a business-internal operation.



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