Berenschot

Impact of a green interest rate on grid tariffs

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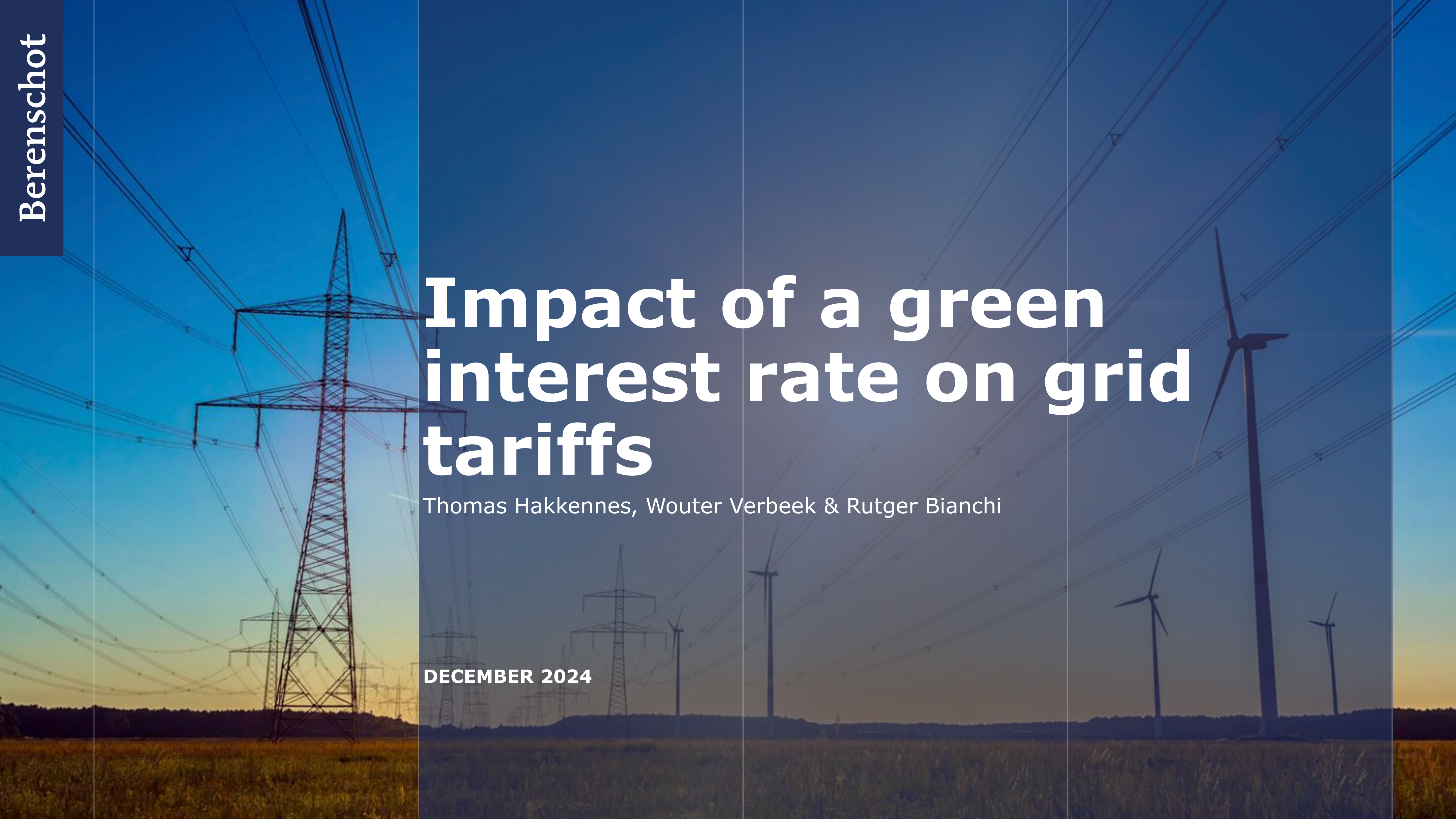


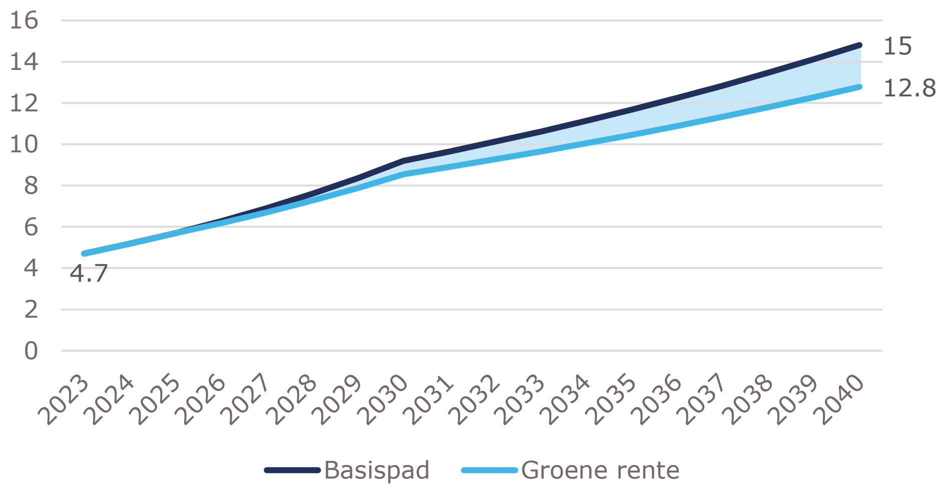
Een groene rente bespaart de samenleving tot en met 2040 alleen al in netbeheerkosten 15 miljard euro

De invoering van een groene rente kan de samenleving tot en met 2040 ongeveer 15 miljard euro besparen aan netbeheerkosten. Dit rapport onderzoekt de impact van een groene rente op de financieringskosten voor netverzwaringsprojecten, en hoe dit de nettarieven voor consumenten en bedrijven kan beïnvloeden.

De afgelopen jaren zijn de rentes aanzienlijk gestegen. Deze stijgende rentes vormen een belemmering voor investeringen in de energietransitie, omdat hogere financieringskosten de totale projectkosten verhogen. Dit kan de voortgang van de energietransitie vertragen en de kosten voor consumenten en bedrijven verhogen.
Om deze uitdagingen aan te pakken, beveelt de NVDE aan om een duaal rentesysteem te overwegen waarbij voor investeringen in de energietransitie een lagere rente wordt gehanteerd. De invoering van een groene rente zou de financieringskosten voor netverzwaringsprojecten verlagen, waardoor de kapitaalkosten die in de nettarieven worden verwerkt, worden verminderd.

Zonder de invoering van een groene rente is de verwachting nu dat de kosten van netbeheer bijna verdrievoudigen tot bijna 15 miljard euro per jaar in 2040. Het invoeren van een groene rente zou de kosten voor netbeheerders verlagen naar 12,8 miljard euro per jaar. Dit zou de samenleving ongeveer 15 miljard euro aan netkosten besparen voor de gehele periode tot en met 2040.

Netbeheerkosten (in miljarden euro's)



Noot
De introductie van een groene rente zal niet alleen de netbeheerkosten verlagen, maar ook de totale kosten van duurzame energie-projecten verminderen, gezien de verminderde financieringslast in alle fasen van projectontwikkeling. Hierdoor wordt een kostenefficiëntere uitvoering van dergelijke projecten mogelijk. Het effect van stijgende rentetarieven is eerder beschreven in het rapport '*Impact of rising interest rates on sustainable projects*', gepubliceerd door Berenschot in 2023.

Deze kostenreductie zou ook invloed hebben op de tarieven die worden vastgesteld door de ACM. De nettarieven voor consumenten, MKB en industrie zouden minder sterk stijgen, wat over 10 jaar zou resulteren in een tarief dat 10% lager ligt dan nu geprojecteerd wordt. In de jaren na 2040 zal het effect van een groene rente naar verwachting nog groter worden, aangezien het verschil tussen de netbeheerkosten in het basispad en het groene-rentepad in de loop der tijd verder zal groeien.

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Reading guide

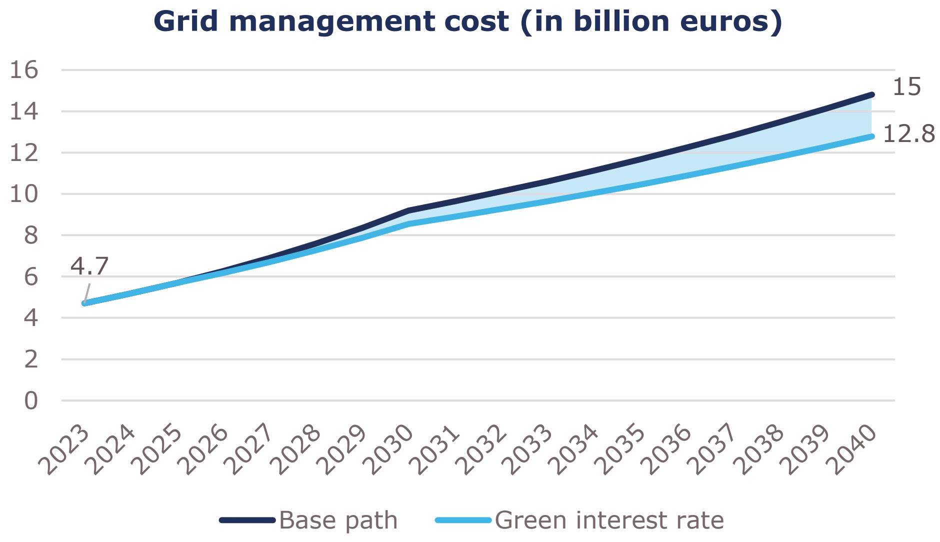
This report starts with the conclusion to our research, explaining what the impact of a green interest rate would be on the grid management costs and tariffs. Subsequently, the results are presented for four cases on which the introduction of a green interest rate might have an impact. Furthermore, the effect of current grid tariffs on the competitive position of Dutch companies and the expected development of grid tariffs are discussed.

Then, some background information on the research is presented. The concept of a green interest rate is explained, as well as the relationship between interest rate and grid tariffs. Finally, the methodology for the research and assumptions made in the calculations are listed.

A green interest rate could save society EUR 15 billion in grid management costs up to and including 2040

The introduction of a green interest rate could save society EUR 15 billion in grid management costs up to and including 2040. In this report, we estimate the impact of the introduction of a green interest rate on grid investments and how this might affect the grid tariffs that consumers and companies pay.

To give insight into the financeability of the energy transition for grid operators the association of Dutch grid operators periodically publishes a report titled 'The financial impact of the energy transition for grid operators' (FIEG). Based on the outlook for grid management costs up to 2030 in that report and an additional outlook for the period 2030-2040 in the report 'Energierekening van de toekomst', published by PwC, we estimated the base path for the development of grid management costs in the coming years. Looking at this base path, grid management costs are expected to almost triple towards 2040, coming out at almost EUR 15 billion per year. Based on the FIEG report from 2023, the yearly increase in grid management costs is expected to be around 10% up to and including 2030.



Note
The introduction of a green interest rate will not only reduce grid management costs but also lower the overall costs of renewable energy projects, as the financing burden across all stages of project development will be reduced, enabling more cost-effective implementation. The effect of rising interest rates has been previously detailed in the report *'Impact of rising interest rates on sustainable projects'*, published by Berenschot in 2023.

The introduction of a green interest rate would limit this increase substantially, by lowering the cost of grid investments. Reducing borrowing costs for grid investments would enable grid operators to finance necessary upgrades and expansions more affordably, reducing the capital expenditures that feed into grid tariffs. Based on estimates from Netbeheer Nederland about the effect of a lower interest rate on grid tariffs, we estimate that the annual increase in grid management costs up to and including 2030 would be lowered from 10% to 8.5% and the yearly costs would come out at EUR 12.8 billion in 2040. In total, a green interest rate would save society around EUR 15 billion in grid management costs over the period up to and including 2040. Lower financing costs decrease the Weighted Average Cost of Capital (WACC), directly affecting the tariffs calculated under cost-of-service methodologies, thereby stabilizing grid tariffs for consumers. In the years following 2040, the effect of a green interest rate is expected to become even more significant, as the gap between grid management costs in the base path and grid management costs in the green interest path will continue to widen over time.

CONCLUSION

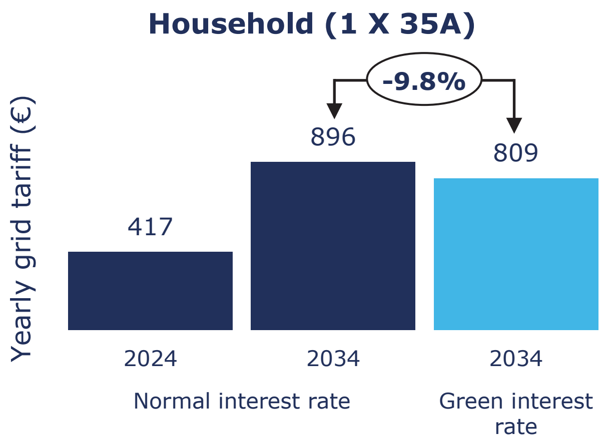
Introduction of a green interest rate will reduce household and SME grid tariffs by almost 10%

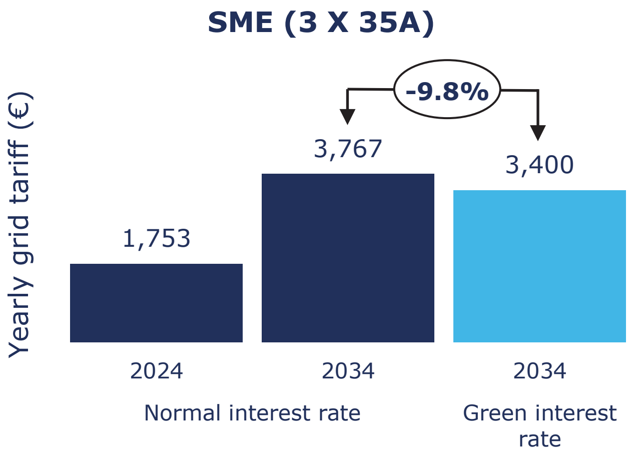
The introduction of a green interest rate would also affect the yearly grid tariffs paid to grid operators by households, SMEs and industry, reducing these by 9.8%. The current grid tariff for an average household is around EUR 417 per year. According to the FIEG report, the average grid tariff would rise to around EUR 896 per year in the coming 10 years, almost doubling the current tariffs. In terms of the share of total expenditure that households spend on electricity, this would rise from 1.2% to 2.3%.

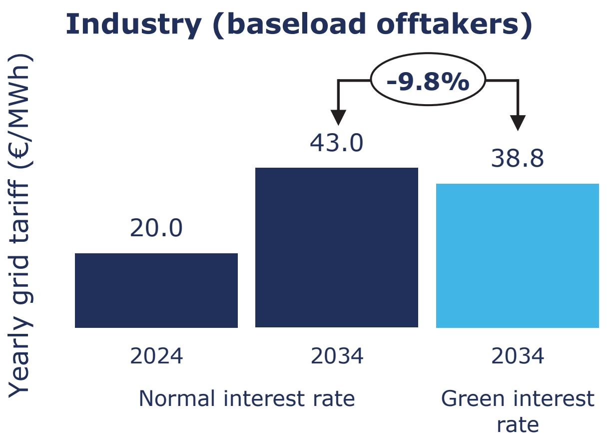
With the introduction of a green interest rate, this increase would be significantly lower. Assuming an interest rate that is 2 percentage points lower for sustainable investments, the yearly increase would drop by around 1.5 percentage points. Therefore, after 10 years, the grid tariffs for households would be EUR 809, saving the average household around EUR 85 per year compared to the normal interest rate.

For small and medium-sized enterprises (SMEs) there would be a similar effect. Assuming a 3x35A connection the grid tariff with a normal interest rate would be EUR 3,767 in 10 years, while with a green interest rate it would be EUR 3,400. When we look at the difference in tariff over this 10-year period, the introduction of a green interest rate would therefore save an SME with this connection around EUR 1,823 in a 10-year period.

Based on the current tariff per MWh as mentioned in the grid fee outlook for the Netherlands by Aurora research, we estimate that grid tariffs for industry would rise to EUR 38.8 per MWh instead of EUR 43 per MWh in the coming 10 years. This would save the baseload offtaker that is assumed in the Aurora report almost EUR 17 million in those 10 years, based on a 100MW asset connected to the high voltage grid with 8,000 full load hours.







Berenschot

Results

A lower grid tariff due to a green interest rate would save over EUR 27 million in total costs for an electrolyser

Case

Electrolysers are crucial for the energy transition as they enable the production of green hydrogen from renewable electricity sources like wind and solar power. Hydrogen can be used in various applications, including industry, transportation, and electricity storage, helping to decarbonize sectors that are difficult to electrify directly. Additionally, electrolysers help balance the grid by storing excess renewable energy in the form of hydrogen, ensuring a more stable and flexible energy supply. Their scalability and potential for integration into existing energy infrastructure make them a key technology in in the energy transition.

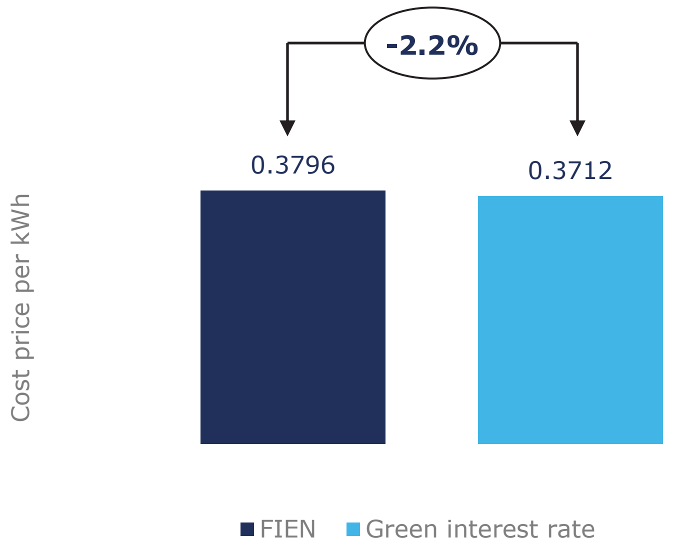
Assumptions

For this example, we assumed an electrolyser with a capacity of 100 MW that is connected to the high voltage grid of TenneT. Further, we assume 3,200 full load hours, using the hours with the lowest wholesale electricity price.

Grid tariffs

Currently, the average grid tariff for an electrolyser is 174 €/kW/year. Based on estimates from the FIEG report, this tariff is expected to increase to 452 €/kW/year in the 15-year lifespan of the electrolyser.

For the implementation of a green interest rate, we assume a rate that is 2 percentage points lower than the current one, starting in 2025. Using the FIEG report, we can deduce that this would lower the yearly increase in grid tariffs by over 1.5 percentage points, topping out at 396 €/kW/year at the end of the lifespan of the electrolyser. Similar to the tariffs of households ands SMEs, this is a difference of 9.8%.



Cost reduction

Using these parameters, a green interest rate that is 2 percentage points lower than the standard rate would result in a decrease in production costs that would **save over EUR 27 million in total costs** over the 15-year life span of the electrolyser. The cost price per kWh would drop more than 2% from 0.3796 €/kWh to 0.3712 €/kWh.

Given that the unprofitable margin of the business case for this electrolyser was initially higher than EUR 27 million, the cost reduction due to the introduction of a green interest rate would directly translate to saved subsidies, decreasing the subsidy amount by 2.7%.

A lower grid tariff due to a green interest rate would lead to 6% less subsidy required for an e-boiler

Case

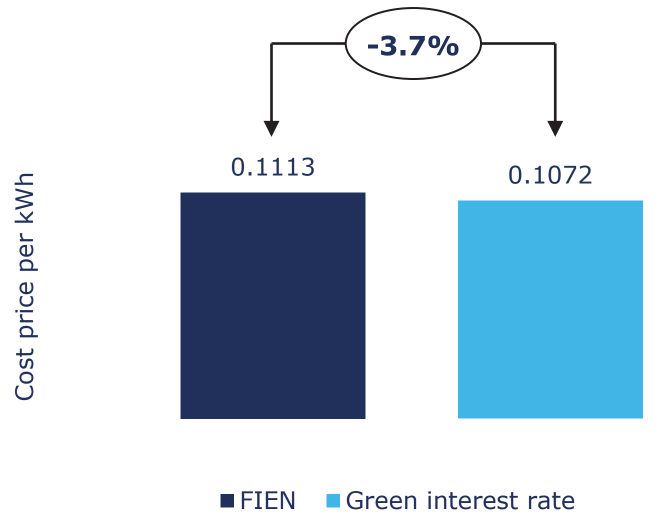
Electric boilers are increasingly used by horticulturalists to provide sustainable heating for greenhouses, replacing traditional fossil-fuel-based heating systems. These e-boilers use electricity to generate heat. This helps horticulturalists reduce their carbon footprint and energy costs. E-boilers also allow for better integration with renewable energy grids, as they can operate flexibly to take advantage of low-cost, surplus electricity during times of high renewable generation, further supporting a more sustainable and efficient energy system.

Assumptions

For this case, we assume a large-scale electric boiler that is used for a greenhouse. The boiler has a consumption capacity of 20 MW and an efficiency of 99% for heat supply at 10 to 20 bar (approx. 180 to 210 °C). The installation consists of the electric boiler including control panel, the necessary electricity infrastructure (cables, transformers) inside and outside the fence and the connection to the heating network (pipework). The boiler is used 3,300 hours per year as flexible capacity. A main connection on intermediate voltage (TS connection) has been taken into account.

Grid tariffs

Currently, the average grid tariff for an e-boiler is 117 €/kW/year. Based on estimates from the FIEG report, this tariff is expected to increase to 305 €/kW/year in the 15-year lifespan of the e-boiler. For the implementation of a green interest rate, we assume a rate that is 2 percentage points lower than the current one, starting in 2025. Using the FIEG report, we can deduce that this would lower the yearly increase in grid tariffs by over 1.5 percentage points, topping out at 267 €/kW/year at the end of the lifespan of the e-boiler. Similar to the tariffs of households ands SMEs, this is a difference of 9.8%.



Cost reduction

Using these parameters, a green interest rate that is 2 percentage points lower than the standard rate would result in a decrease in production costs that would save over EUR 4 million in total costs over the 15-year life span of the e-boiler. The cost price per kWh would drop almost 4%, from 0.1113 €/kWh to 0.1072 €/kWh. Given that the unprofitable margin of the business case for this e-boiler was initially higher than EUR 4 million, the cost reduction due to the introduction of a green interest rate would directly translate to saved subsidies, **decreasing the subsidy amount by 6.3%.**

RESULTS

The effect of a lower grid tariff on the business case for an industrial heatpump is relatively limited

Case

Industrial heat pumps can produce high-temperature heat required in various industrial processes by extracting waste heat or using low-grade heat sources. They can be applied well in industries that need substantial heating or cooling, such as food processing, chemical production, or paper manufacturing. They are especially valuable in scenarios where waste heat can be recovered and reused, reducing the need for fossil-fuel-based heating and lowering overall energy consumption and emissions.

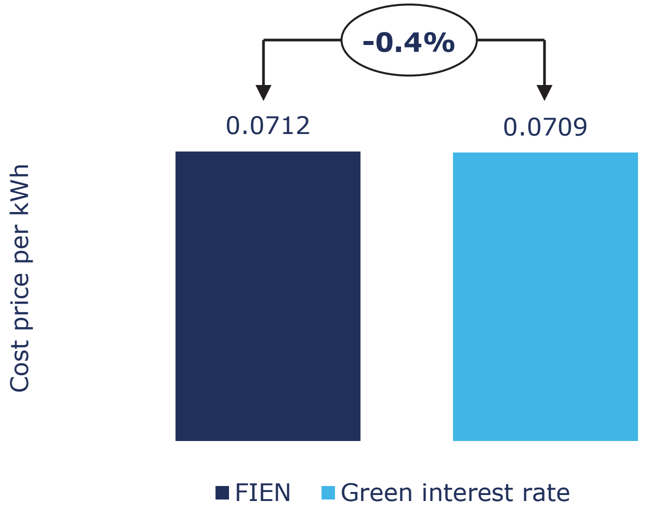
Assumptions

In this scenario we assume an industrial heatpump that is based on the example from the "Onrendabele Top-model". We assume an MVR installation that is connected to an existing evaporation process with a heat requirement of 10 MW_{th}. The outgoing water vapour is upgraded to 120 °C and fed back into the process. We assume that the process itself or other processes in the factory do not need to be adjusted for this, or only to a limited extent. The compressors have an electrical capacity of 714 kW and the project leads to full electrification. The reference installation has a heat saving coefficient of 14. We assume 3.000 operating hours.

Grid tariffs

Currently, the grid tariff for a heatpump is estimated to be 10 €/kW/year. Based on estimations from the FIEG report, this tariff is expected to increase to 22 €/kW/year in the 12-year lifespan of the heatpump.

For the implementation of a green interest rate, we assume a rate that is 2 percentage points lower than the current one, starting in 2025. Using the FIEG report, we can deduce that this would lower the yearly increase in grid tariffs by over 1.5 percentage points, topping out at 19.50 €/kW/year at the end of the lifespan of the heatpump. Similar to the tariffs of households ands SMEs, this is a difference of 9.8%.



Cost reduction

Using these parameters, a green interest rate that is 2 percentage points lower than the standard rate would result in a decrease in production costs that would save EUR 108,000 in total costs per heat pump over the 12-year life span. The cost price per kWh would drop by around 1% from 0.0712 €/kWh to 0.0709 €/kWh.

Given that the unprofitable margin of the business case for this heatpump was initially higher than EUR 108,000, the cost reduction due to the introduction of a green interest rate would directly translate to saved subsidies, decreasing the subsidy amount by 0.9%.

RESULTS

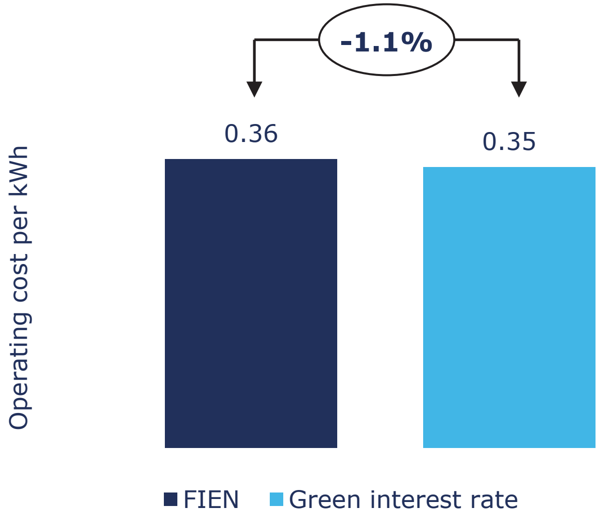
A lower grid tariff due to a green interest rate would save an EV-driver over EUR 20 per year on charging costs

Case

Public charging stations are essential for the energy transition as they support the widespread adoption of electric vehicles. The Netherlands already has widespread public charging stations and the number is rising.

Assumptions

In this scenario, we assume a public chaging station with two charge points, based on the example in the business case template by the Dutch Knowledge Platform for Charging Infrastructure. The yearly sales are assumed to be 10,000 kWh and the lifespan of the charging station is set to 10 years.



Grid tariffs

Currently, a grid tariff of EUR 417 per year needs to be payed to operate a single charging station with two connections. Assuming the yearly increase based on the FIEG report and outlook by PwC, this would increase to EUR 1,021 in 10 years. When implementing a green interest rate, the yearly increase would be lowered and the tariff would increase to EUR 929 in 10 years.

Cost reduction

When we look at the operating costs for the charging station in this example, the introduction of a green interest rate would save almost EUR 400 in 10 years of operating the station. This would mean a decrease in operating costs per kWh of 1 cent, assuming yearly sales of 10,000 kWh. Assuming that operators pass on this increase to consumers, this would entail a **yearly cost reduction of EUR 21 for the average electrical car in the Netherlands** with a yearly consumption of 2,100 kWh.

A green interest rate can improve competitive position of Dutch companies

Current tariffs

The current grid tariffs significantly impact the competitive position of Dutch companies relative to both European and global peers. Dutch companies pay notably higher grid fees compared to their European counterparts, including Germany, Belgium, and France. Grid fees for baseload bulk users in the Netherlands are up to 12 times higher than in these neighbouring countries, largely due to the absence of discounts or volumetric reductions that other countries apply to large users. This high-cost burden decreases Dutch companies' competitiveness within Europe, as it limits their ability to price products competitively. For example, the abolition of volume-based discounts (*Volumekorting*) in the Netherlands contrasts with the 81% to 90% discounts available in France and Germany, which allow companies in those countries to benefit from much lower operating costs. Moreover, increased investments in offshore grid infrastructure are further pushing up grid fees higher for Dutch companies. The projected increase of up to 113% in grid fees by 2037 could widen the cost disparity even more if comparable investments aren't reflected in neighbouring countries.

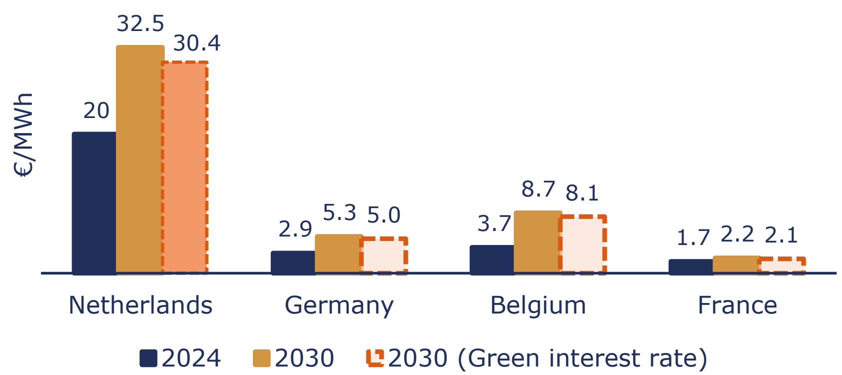
Other countries

Compared to companies outside Europe, especially in regions like the United States, Dutch companies also face elevated grid costs. In the US, for instance, lower wholesale electricity prices and the absence of energy taxes further reduce costs for large industrial users. This disparity reduces Dutch companies' competitiveness in global markets where energy costs are a critical component of production expenses.

Future increase

If grid tariffs were to rise further, Dutch companies would likely face even greater risks of carbon leakage—where industries relocate to countries with less stringent cost burdens. This is particularly concerning for energy-intensive sectors, where electricity and grid costs comprise a substantial portion of overall expenses. A prime example is Nyrstar, which operates a zinc smelting facility in the Netherlands. The company has repeatedly voiced its concerns about the unfavourable competitive position it has compared to factories in other countries. It even had to temporarily suspend operations when support measures for energy-intensive industries were halted early this year. The increase in grid fees, if unaddressed, could drive Dutch companies to consider moving operations out of the Netherlands, impacting local employment and economic contributions. The introduction of a European green interest rate would strengthen the competitive position of European companies compared to other parts of the world. Within Europe, it could decrease the absolute difference in grid fees between the Netherlands and European countries. If the investments that are required for the energy transition are lower in other countries, a green interest rate could also reduce the relative difference between the Netherlands and other countries.

Yearly grid tariffs for baseload offtakers, excluding taxes[1]



[1]Source: Aurora Energy Research Ltd., Grid fee outlook for the Netherlands 2045 (August 2024)

Background and methodology

Explanation on concept of green interest rate

Concept

A green interest rate is a proposed monetary tool designed to support the financing of renewable energy projects and sustainable investments by offering lower interest rates for green lending. The concept emerged as a response to the traditional monetary policy, which, through high interest rates, tends to slow down green investments, which are typically more capital-intensive than fossil fuel projects. This dynamic can hinder the European Union's efforts to decarbonize and transition away from fossil fuels, contributing to what has been termed "fossilflation"—inflation driven by rising fossil fuel prices.

Green TLTROs

A green interest rate could be implemented through Green Targeted Longer-Term Refinancing Operations (Green TLTROs), where banks receive funding from the European Central Bank (ECB) at reduced rates, conditional on the volume of green loans they issue. Banks would need to meet a set percentage of Taxonomy-aligned lending, with green assets defined under the EU Taxonomy for sustainable activities. This includes financing for renewable energy, energy-efficient infrastructure, green building renovations, and electric mobility projects. Banks would report their "Green Asset Ratio" (GAR), representing the proportion of their loan portfolio aligned with these green criteria. Once eligibility is confirmed, the ECB would calculate borrowing allowances for each bank based on the GAR from a previous period. Essentially, if a bank achieved a certain GAR threshold last year, it would qualify for a Green TLTRO borrowing cap linked to that ratio. This allows the ECB to adjust borrowing limits to maintain balance in monetary policy and cap the programme size if necessary.

Encouraging green lending and supporting EU climate goals

Interest rate differentiation is central to the Green TLTRO structure. Banks that meet baseline green lending thresholds would qualify for an initial discounted rate. Banks that exceed GAR targets could receive an additional "bonus rate" reduction, further lowering their cost of borrowing. This differential, or "green spread," might range from 100 to 200 basis points, making green borrowing significantly cheaper for eligible banks. Once banks borrow funds at the discounted green rate, they would use this financing to provide loans at favourable rates to clients pursuing green projects. For instance, loans for activities like installing a heat pump would be offered at lower rates than standard loans, directly benefiting clients engaged in sustainable practices.

This mechanism encourages banks to increase their lending to environmentally sustainable projects, thus making financing for renewable energy cheaper and more accessible. The goal is to align monetary policy with the EU's strategic objectives, such as the European Green Deal and the Fit for 55 initiative, which aim to reduce greenhouse gas emissions and increase the share of renewable energy.

The introduction of a green interest rate holds potential to accelerate the energy transition in Europe. It can help mitigate the effects of high capital costs on renewable energy projects and contribute to long-term price stability by reducing the economy's reliance on volatile fossil fuel markets.

What is the relationship between grid tariffs and interest rates?

Setting tariffs using cost-of-service methodology

The Dutch Authority for Consumers and Markets (ACM) uses a cost-of-service methodology to set tariffs for grid operators, which means the tariffs aim to cover the actual costs incurred by grid operators while providing a fair return. These costs include capital expenditures (CAPEX), operational expenditures (OPEX), and ancillary service costs associated with grid maintenance, upgrades, and expansion. The ACM's goal is to prevent monopolistic pricing, given that grid operators hold regional monopolies on electricity transmission.

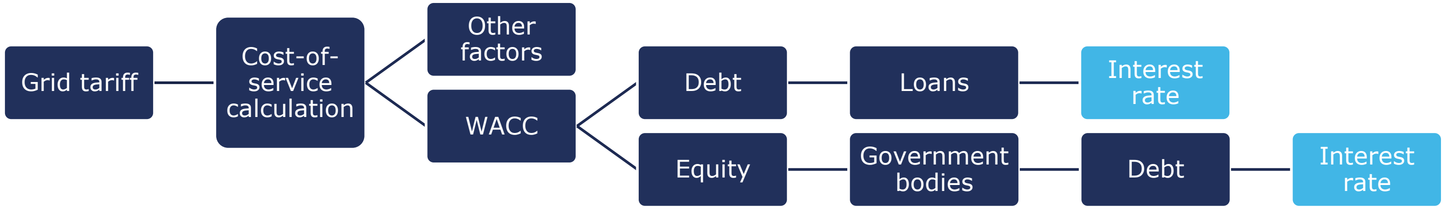
Influence of interest rates and WACC on tariff calculations

Interest rates significantly impact the costs that the ACM allows grid operators to recover through tariffs. The ACM calculates WACC as one of the critical components to set the tariffs. The WACC is a ratio that expresses the costs that are incurred for the capital with which a company or a project is financed. The WACC is calculated by 'weighing' the costs of debt and equity by the share of each asset type in the total financing mix. Also, to maintain financial stability during long-term investments, the ACM partially adjusts tariffs based on expected inflation, allowing grid operators to recover some costs upfront and making room for future investment needs. The ACM also accounts for large capital projects (e.g., offshore grid expansions) to support energy transition goals. When such investments lead to higher costs, they're spread across tariffs to lessen the immediate financial impact on consumers while ensuring adequate long-term investment returns.

Debt ratios for Dutch grid operators

Due to their capital-intensive nature and regulated revenue models, Dutch grid operators typically maintain relatively high debt ratios compared to many companies in other sectors. For example, TenneT, the main transmission operator, has around 45% equity gearing, meaning that debt constitutes 55% of its capital structure. Regional operators like Alliander, Enexis, and Stedin are also heavily leveraged but are backed by frameworks allowing capital contributions from the Dutch state to bolster equity where needed. The Dutch state is also largely financed with debt in the form of government bonds and therefore also affected by the interest rate used.

This state backing is a response to increasing investment needs tied to the energy transition, especially in renewable energy and grid expansion to support electrification targets. Nonetheless, Dutch grid operators rely on loans for a large portion of their capital expenditures, which means interest rates will have a major effect on the aforementioned method for calculating the grid tariffs.



Methodology – Development of grid management costs

To calculate the yearly rise in grid tariffs we used the outlook for grid management costs up to 2030 in the report 'The financial impact of the energy transition for grid operators. Updated forecast 2023' (FIEG). In this report, the total management costs for the electrical grid in the Netherlands are forecast up to 2030. Additionally, we used the report 'Energierekening van de toekomst', published by PwC, to obtain a forecast for the grid management costs in 2040. This gave us estimates for the total costs in 2025, 2030 and 2040. After correcting the datapoints from these reports for the current price level, we interpolated the grid management costs for years in between. This resulted in a detailed estimate per year for the development of grid management costs with a normal interest rate, coming out at a 10.1% yearly increase up to and including 2030 and a 4.87% yearly increase from 2030 to 2040.

To calculate the effect that a green interest rate might have on grid tariffs and the eventual costs of a unit, we used estimates by Netbeheer Nederland which state that a 2 percentage points lower interest rate will amount to a yearly increase in grid tariffs that is about 16% lower than the base path. Using this methodology, the yearly increase in grid management costs up to and including 2030 would drop to 8.5% and the increase from 2030 to 2040 would drop to 4.1%. We then applied these yearly increases to the data points from the aforementioned reports, thus calculating the difference in grid management costs after the introduction of a green interest rate. In doing so, we accounted for a one-year delay before the introduction of a green interest rate would have an effect on the grid management costs, effectively applying the different increase rates from 2026 onwards.

Methodology - Cases

Case 1 to 3

For the first three (electrolyser, e-boiler and heat pump) we used the "onrendabele top-model" (OT model) developed by the Netherlands Environmental Assessment Agency (PBL). This is a model that changes yearly depending on new insights and input from market consultations. The OT model has several input variables from which crucial components (and ultimately the subsidy per unit) can be calculated. To account for the rise in grid tariffs, we split the fixed operational costs that the model uses into grid tariffs and other operational costs.

The grid tariffs that are currently used by PBL are an average that already accounts for expected growth during the lifespan of the unit. Since for our purposes we needed to be able to apply different amounts of growth per year to the tariffs, we extrapolated the starting tariff by applying the yearly increase rates that we calculated based on the FIEG and PwC reports. In doing so, we ensured that the average tariff still matched up with the tariff used by PBL, ensuring that our base scenario matches the standard case in the OT model.

To calculate the effect that a green interest rate might have on grid tariffs and the eventual costs of a specific unit, we applied the growth rates as described on the previous page on the initial starting tariff per unit.

Case 4

To calculate the effect on the operating costs of a public charging stations for electric vehicles, we used a business case template by the Dutch Knowledge Platform for Charging Infrastructure. In this template, a business case for a charging station with a lifespan of 10 years is calculated. We adjusted the grid tariffs in the template in line with our calculated increase rates as described in the previous slide. We then calculated an alternative tariff for the variant with the green interest rate.

Berekening basisbedragen: Eindadvies SDE++ 2024

Waterstofproductie via elektrolyse, netgekoppeld

BASISBEDRAG en SUBSIDIE-INTENSITEIT	Waarde	Eenheid	Toelichting
Basisbedrag	0,4348	Euro/kWh	Het basisbedrag is een maat voor de productiekosten. Deze waarde kan berekend worden als alleen deze worksheet geopend is.
Subsidie-intensiteit	1478	Euro/t CO2	De subsidie-intensiteit is de maat die in de rangschikking gebruikt wordt. Om deze waarde te berekenen dient ook de worksheet 'Correcties' geopend te zijn
Productie-eenheid	kWh		De SDE++ kent twee rekeneenheden waarover subsidie kan worden uitgekeerd: kWh voor energiecategorieën en t CO2 voor CCS- en CCU-categorieën.
Vermogenseenheid	kW		
Domein	Moleculen		Het corresponderende domein bij deze categorie geeft aan binnen welk 'hekje' de subsidiecategorie valt.
CORRECTIEMETHODES	**Waarde**	**Typering**	**Toelichting**
Berekeningswijze correctiebedrag methode-ID	30	*Waterstof*	(0,29 + 49 x TTF[HHV])/39.32
Berekeningswijze ETS-correctie-ID	11	*Waterstof 100% ETS-correctie*	ETS_max_waterstof
ETS-voordeel bij merendeel van projecten	Geen warmte	*Ja of Nee*	Alleen van belang voor warmteprojecten. Deze parameter werkt door op de langetermijnprijs en subsidie-intensiteit.
Berekeningswijze correctiebedrag methode-ID netlevering			Enkel relevant voor zon-pv.
Berekeningswijze correctiebedrag methode-ID niet-netlevering			Enkel relevant voor zon-pv.
Netlevering deel			Enkel relevant voor zon-pv. Aandeel van de productie dat aan het net wordt geleverd.
Niet-netlevering deel			Enkel relevant voor zon-pv. Aandeel eigen gebruik.
SYSTEEMGROOTTE	**Waarde**	**Eenheid**	**Toelichting**
Inputvermogen	100000	kW	
Seasonal Performance Factor (SPF)			Hier wordt de seizoensgemiddelde COP, of *Seasonal performance factor*, mee bedoeld voor het hele systeem.
Gaat het om een installatie voor hernieuwbaar gas?			Alleen 'Ja' invullen als de installatie gas van aardgaskwaliteit produceert.
Methaangehalte hernieuwbaar gas voor gaszuivering			Het percentage methaan in het biogas, dat nog niet tot aardgaskwaliteit is opgewaardeerd.
Vermogen hernieuwbaargasproductie (voor zuivering)	-	Nm3/uur	
Outputvermogen (thermisch of hernieuwbaar gas)	67500	kW	Dit veld alleen invullen bij productie van warmte (al dan niet in WKK-variant) of hernieuwbaar gas van aardgaskwaleit
Outputvermogen (hernieuwbaar gas)	-	Nm3/uur	
Outputvermogen (elektrisch of overig)		kW	Dit veld invullen als de installatie elektriciteit produceert (al dan niet in WKK-variant), of iets anders dan warmte of gas van aardgaskwaliteit produceert.
Vollasturen levering (thermisch of hernieuwbaar gas)	3200	uur/jaar	Bij een installatie voor gecombineerde opwekking, wordt de bedrijfstijd genomen als maximum van de vollasturen warmte en vollasturen elektriciteit.
Vollasturen levering (elektrisch of overig)		uur/jaar	Bij een installatie voor gecombineerde opwekking, wordt de bedrijfstijd genomen als maximum van de vollasturen warmte en vollasturen elektriciteit.
ENERGETISCH RENDEMENT	**Waarde**	**Eenheid**	**Toelichting**
Max. elektrisch rendement	n.v.t.		
Elektrisch rendement	n.v.t.		
Thermisch rendement of rendement gasproductie	68%		
Elektriciteitsderving bij warmtelevering		elektriciteit : warmte	Enkel invullen als de installatie een WKK-installatie is waarbij warmtelevering ten koste gaat van de elektriciteitsproductie.
KOSTEN	**Waarde**	**Eenheid**	**Toelichting**
Investeringskosten input gebaseerd	2200	Euro/kW	De investeringskosten 'input gebaseerd' worden opgeteld bij de investeringskosten 'output gebaseerd'. Pas op voor onbedoelde dubbeltelling.

Appendix

Appendix A: Bibliography

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