

EQUITY RESEARCH: PANNERGY

Buy

15 December 2017

Company name		
Recommendation		BUY
12m Target price	HUF	1024
Estimated return	%	82
Key market data		
Market cap	(HUF bn)	11,8
Free float	%	57
Shares outstanding		17,7
Average daily trading volume	HUF	209,2
Shareholders structure:		
Domestic institution		23,6%
Foreign institution		20,5%
Domestic private		31,2%
Foreign private		0,2%
Employers and management		0,6%
Treasury shares		16,0%
Government ownership		8,0%
Key financial data		
Book value / share	HUF	509
EPS (2016H2-2017H1)	HUF	25
Dividend / share	HUF	0
Dividend yield	%	0
Debt to Equity	%	91,0
Net debt / Equity	%	82,7
Net debt / EBITDA	%	364
ROE (2016H2-2017H1)	%	5,0
ROA (2016H2-2017H1)	%	1,9
P/E	%	22,1
P/BV	%	1,1
EV/EBITDA	%	10,67
Price Performance		
52-w range	HUF	370 - 576
52-w performance	%	26,6
Relative performance vs Bux	%	5,3
Relative performance vs Bumix	%	-96,7
Beta		1,1
Valuation		
Fundamental (FCFF)	Weight	HUF
50%		1210
Relative (EV/EBITDA)		838
Final valuation		1024
Analyst		
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Highlights

We issue a buy recommendation with a price target of 1024 HUF on a 12-month horizon. Pannergy is specialized in selling geothermal heat to district heating and private companies with long-term contracts. The main advantage of the company comes from producing geothermal heat at lower price than generating heat from natural gas. In our assessment Pannergy should be considered as a high-fixed-cost, low-variable-cost dividend stock in the future, with a solid cash flow generation and moderate revenue growth opportunities.

Summary and main price drivers

- Having completed the project in Győr by Q3 2018, production is getting close to optimal levels. The company has bought a concession to drill a new well in Győr. Capacity utilisation will improve further if this proves to be successful – which we consider a baseline scenario, given the success of other wells in Győr.
- With long-term contracts, competitive price and without further investments in the pipeline, future free cash flow is sizeable. EBITDA could get close to HUF 2.5 BN until 2009. Risks looks to be moderate.
- Cutting costs has improved operational efficiency, so the company has become profitable.
- The management seized the opportunity to fix the current debt burden with interest rate swaps.
- The low-yield environment could remain for an extended period, increasing the NPV.

Main risks to our target price

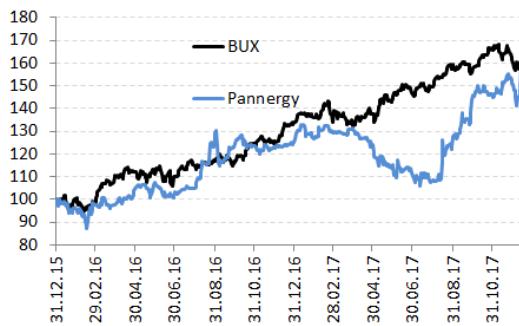
- Higher inflation, interest rate normalisation
- Short or an extreme cold winters could harm production. The new well in Győr could fail (not likely).
- Administered price setting and further sharp drop in natural gas prices could be a drag on revenues from district heating companies.
- Operational costs
- It is not clear, what the management would like to do with the free-cash flow on the middle run.

Company profile

Pannergy Nyrt is the successor of Pannerplast which operated in the plastic industry. Pannerplast was established in 1922. Around 2005, the company's financial performance has worsened significantly which made it necessarily to reorganize the company. The company changed its name to Pannergy in 2007 and the strategy changed significantly. From that time **the company has been focusing mainly on the production of geothermal heat**. It operates the Szentlőrinc, Miskolc and Győr plants; the latter two are **considered to be the main operations**. The company also manages some properties and has an electricity-producing unit in Beregszász/Berehove, Ukraine, but their contributions to the profitability of Pannergy are negligible. Concerning its contracts with the local district heating companies, the price is set administratively yearly, but with for-profit companies, it is based on market conditions. **Generally all projects have high fixed cost, but once it is online, its variable costs are relatively low**. Production is seasonal, with low demand for heat between May and September, but this provides a good opportunity for maintenance.

The **Szentlőrinc Project** started operations in 2010 and in the past couple of years it has operated near optimal production levels. Its main buyers are the Szentlőrinci Nonprofit Kft (92%) and the TT-Geotermia Kft (8%). The contract with the Szentlőrinci Nonprofit Kft. expires in 2025, but we do not see any risk that the cooperation may discontinue. **The primary capacity is around 25,000 GJ/year**. The takeaway from the Szentlőrinc Project was that, because of the fixed costs and the economics of scale in the industry, larger projects are required for the success.

The **Miskolc Project** started in 2009, and has been online from 2013. Until 2016, the unit was in the introductory phase, but it almost operated at full capacity in 2017. The Miskolc Project has long-term contracts with its buyers. The contracts with the local government of Miskolc will expire in 2030, but there are no reasons to believe that it will end then. **The primary capacity may slightly exceed 800,000 GJ/year**. Pumped into the city's district heating system, the 100°C thermal water supplies 27,000 households and over 100 public institutions in Miskolc with environmentally friendly heating. Thus renewable energy sources supply more than 40% of the heating demand of Miskolc and its urban agglomeration.

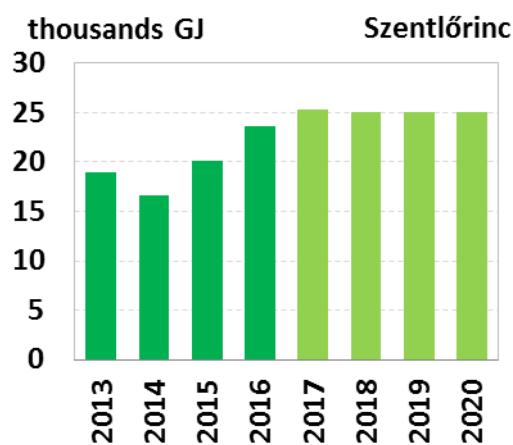


Main focus on geothermal heating.

The business is featured by high fixed cost and low variable costs

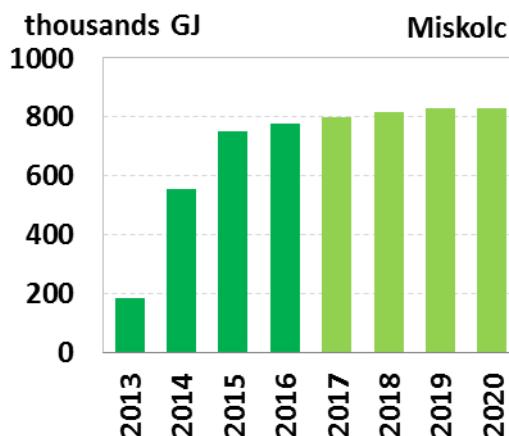


Annual production in Szentlőrinc



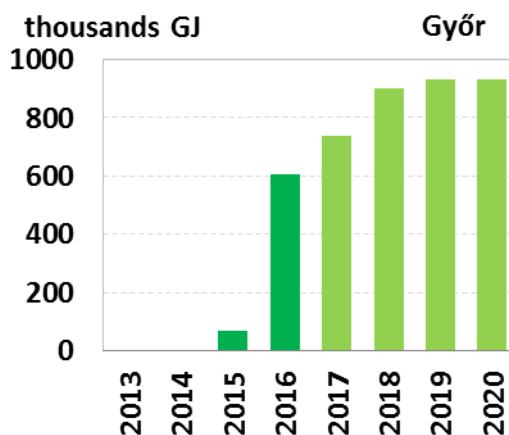
Győr and Miskolc are the main projects with long-term contracts, located nearby the main industrial centres of the regions

Annual production in Miskolc



**Maximum capacity could be above
1,800,0000 GJ/year**

Annual production in Győr

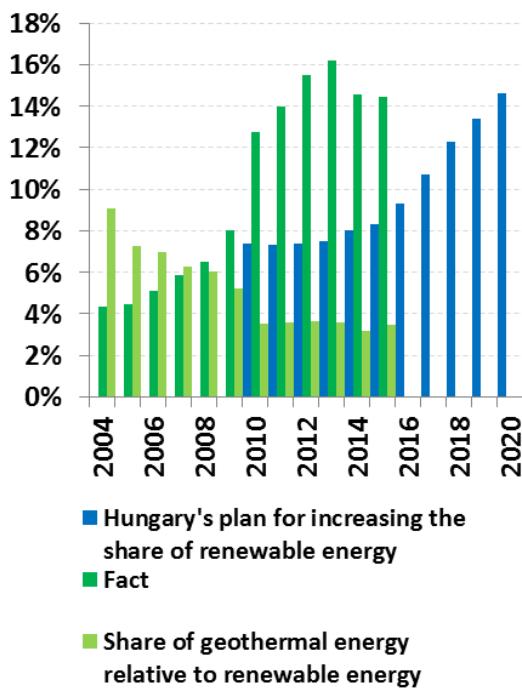


Management's focus on operational efficiency and increasing capacity utilization

The **Győr Project** started in 2013 and became operational in 2015. The Project is still in the run-up phase; its optimal production is expected to be reached next year. The unit sells geothermal heat to the local government of Győr and to Audi Hungária. The contract with the local government of Győr lasts until 2030 and the current one with Audi is effective until 2032 but it could be renewed until 2047. So far we have no knowledge of any risk concerning the continuation of the cooperation after these dates. Moreover, Pannergy Nyrt won a concession to drill below 2,500 meters and set up a new well, which in our opinion could contribute by up to 25% to the **primary capacity** of the Győr projects, therefore lifting it up nearly **1,000,000 GJ/year**. The objective of Pannergy's Győr Geothermal Project is to supply geothermal energy to 24,266 homes and to meet at least 60% of the heating energy demand of the local AUDI plant, by using two producing and to reinjection wells.

Based on past greenfield investments of Pannergy, a new project could cost around HUF 10 billion. Therefore in our opinion, and based of the management commentary section of the annual and semi-annual reports of the company, the management is likely to **focus on improving the operational efficiency of the company and increasing the output by optimizing the production parameters**. The former is proved by the fact that the company was able to significantly reduce its administrative expenses in 2016 and in the first half of 2017; the latter is mentioned in the quarterly production reports as well. Moreover, we do not expect any major announcement concerning a fully new project but **we think the medium-term strategic focus of the management could be to increase revenue by selling secondary heat**.

In Hungary the temperature gets 50-60°C higher with each kilometre beneath the surface and it often exceeds 100°C two kilometres deep.



In Hungary, geothermal energy is easily available and there is an abundance of underground waters.

A short introduction to the geothermal heating industry

Geothermal energy is generated in the earth's core, about 5,000 kilometres below the surface. Temperatures hotter than the sun's surface are continuously produced inside the earth by the slow decay of radioactive particles, a process that happens in all rocks.

Geothermal energy is typically abundant in subduction zones, mid-ocean ridges, and on areas where the crust of the Earth is thinner than the average. Most of the time, the magma flowing towards the surface does not erupt – instead, it heats the liquids that are in the pores and cracks of the rocks. The hot water or steam is brought to surface by drilling wells. Geothermal power plants use this surfacing heat to produce electricity.

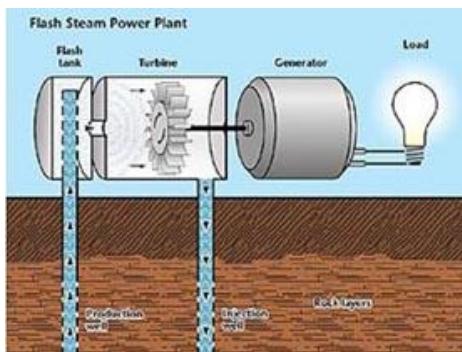
Because the lithosphere and the mantle of the Earth grew thinner when the Pannonian basin was formed, the continental crust in Hungary is fairly thin, and the mantle is quite close (24-28 kilometres) to the surface.

Usually the temperature increases by 30° Celsius with each kilometre from the surface to the magma, but in certain areas it grows even faster. In Hungary the temperature gets higher by 50-60° Celsius with each kilometre, and it often exceeds 100° Celsius in only two kilometres deep. In Hungary, geothermal energy is easily available and there is an abundance of underground waters.

Geothermal energy can be used in a variety of areas, including heating private and public places, hot water supplies, thermal baths, as well as in the industry and agriculture. Moreover, geothermal plants help produce electric energy, using high-temperature steam and water. Finally, the temperature of the water or earth near ground surface can be utilized to heat buildings (or cool them, during summer), using heat pumps.

Geothermal energy is one of the four renewable energy sources, therefore not only the European Union, but Hungary also pays a particular attention to promoting renewable energy sources. Under the EU's Renewable Energy Directive, renewable energy's share should reach 20% of whole energy production by 2020. Hungary committed itself to 14.65% rate by 2020, most of which has been fulfilled.

Flash steam power plant

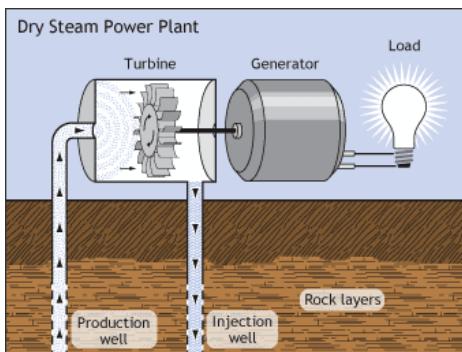


Types of geothermal power plants

Flash steam power plants

In areas where a mixture of water and steam surfaces from wells, generally a system that separates them under high pressure is used. The steam is led into a turbine, which supplies the generator with energy. Hot water is reinjected into the underground water reservoir.

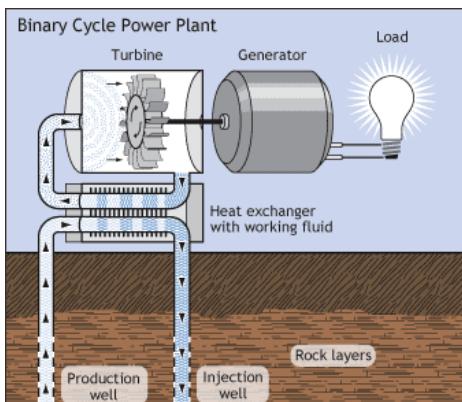
Dry steam power plant



Dry steam power plants

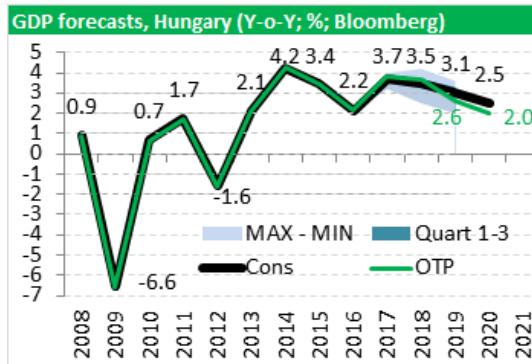
Steam is pumped directly from the water reservoir to the turbine, there is no need to separate steam from water. These wells are not very common.

Dry steam power plant

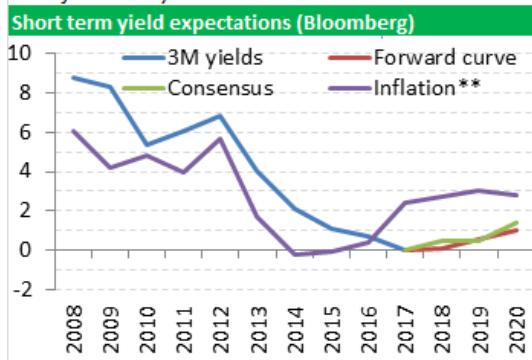


Binary cycle power plants

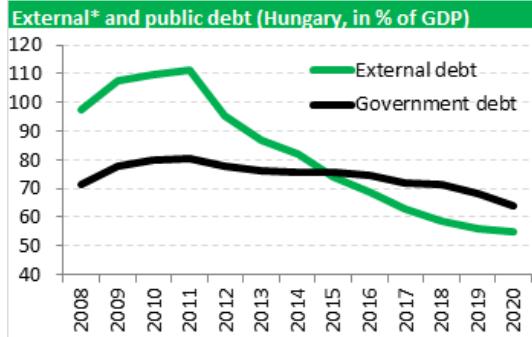
The newest development in geothermal power plant can use liquid of lower temperature (150-120°C) as well. It harnesses the produced hot water to warm low-boiling liquids (e.g. isobutane, pentafluorpropane). Owing to their lower boiling points, these fluids turn into steam. This drives the turbine, which starts the generator. Then the hot water is reinjected into underground water reservoirs – thus the plant has no emission at all.



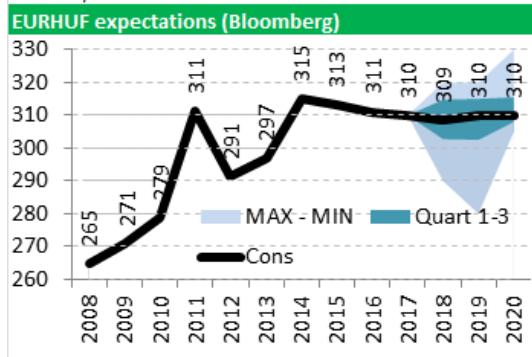
Growth could remain strong till 2019, which is expected to be followed by a slowdown around 2020.



As inflation is expected to remain below the target, monetary policy could remain loose



Decreasing external and fiscal debt ratios could keep the risk premium low.



Analysts expect the EURHUF to remain flat as the NBH could neutralise appreciation pressure.

Sources: CSO, NBH, OTP Bank, Bloomberg

* without intercompany debt

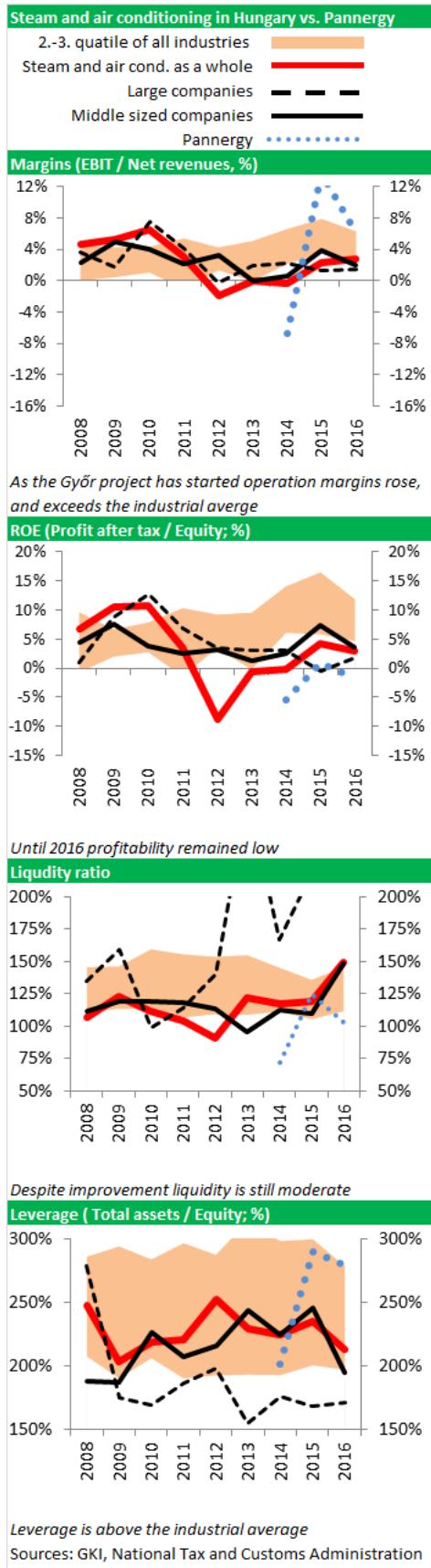
Macroeconomic and interest rate environment

After a temporary slowdown to 2% in 2016, the Hungarian economy gained traction again in 2017, GDP growth accelerated back, to hit 3.9% YoY in Q3, and it may reach 3.8% in 2017 as a whole. As the business cycle has reached maturity stage, growth is broad based, so exports, consumption, public and private investments posted decent growth rates. Economic growth could moderate to 3.4% in 2018, to 2.8% in 2019, and to 2% until 2022, according to analysts' consensus. OTP Research forecasts 3.7% for 2018, 2.6% for 2019 and 2% for 2020 as the growth contribution of real estate and EU related investments is expected to fade.

However, Pannergy's revenues are hardly influenced by GDP growth. But the sustainability of macroeconomic processes and inflation, via the yield environment, could influence the pricing of the company, while the EUR/HUF exchange rate can affect its revenues. The low vulnerability of the Hungarian economy and moderate inflation outlook suggest that the yield environment could remain supportive. Hungary's budget deficit has been below the 3% Maastricht threshold since 2012 and is forecasted to remain there. Public debt to GDP is on a gradually decreasing trajectory. The current account balance posts a sizeable surplus (nearly 5% of GDP), which could gradually decline, but remain in the positive territory in the coming years. External debt has fallen to 65% of GDP (without intercompany loans) by now from its peak of 115% in 2010, which is double the CEE average and it could decrease to 60% by 2018.

Inflation and interest rate environment

Inflation has been lower than the 3% inflation target of the national bank since 2013 and it could remain below the target for an extended period – not only according to the forecast of the Hungarian National Bank, but also to the market consensus and OTP Research's forecast (our below-the-consensus forecasts suggest that inflation could remain below 2% next year and it could be 2% on average in 2019). This could result in maintaining loose monetary policy in the coming years, so the record low levels of yields could be maintained for at least two more years – in line with the forward guidance of the central bank. Moreover in November the MNB introduced a new, unconditional IRS program and a mortgage-bond buying program with which it intends to keep the long-term rates lower for at least 2019. After that, however a cautious monetary tightening is expected, and



the probability of a sharp normalization is moderate.

However, interest rate risks are clearly on the upside. Right now the effects of domestic factors, like strong demand and fast wage growth are counterbalanced by low global energy and food prices and the modest imported inflation. Should global inflation pick up faster than expected, these factors would not be able to mitigate domestic factors any more, which could trigger faster normalization of yields.

Industry overview

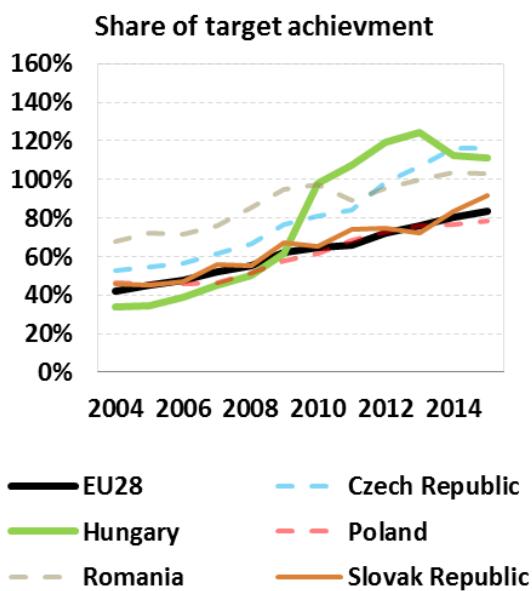
The energy sector – or electricity, gas, steam and air conditioning supply – is a very special sector in any economy. Because of its strategic role in development, strong environmental impact and the possibility of externalities, it is strongly regulated. In developed countries this industry usually has a below-average growth potential. Projects have a really long investment horizon, as the construction itself could take years, and then plants operate for decades. The capacities cannot be changed fast and demand is not price-elastic, so a sudden shift in demand can result in sharp changes in prices and capacity utilisation (in case of a negative shock). Fixed costs and its capital intensity are high, but once the production is online it can operate at relatively low variable costs. Based on these characteristics, predictable operational environment is a must.

The utility sector usually operates with moderate margins, profitability and debt levels. Income ratios are relatively predictable; the sector's dividend pay-out ratio is usually high, compared to other industries.

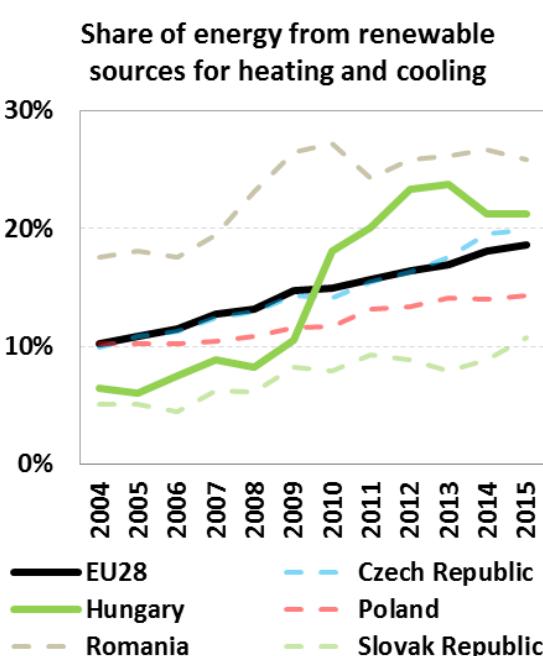
On the other hand, sustainable development and technological change are transforming the industry fast. Green technologies, including geothermal energy, became popular and are spreading fast, which could be an upside for the green energy industry. This is proved by the fact that various EU countries are below their commitment to increase the share of green energy in total energy production by 2020. This suggests that future regulation could be more appreciative towards the green energy industry.

The industry was heavily affected by government policy since 2013-2014. In 2013 January, the price of electricity, gas and heat was decreased by 10%, in November by an additional 11%, and in 2014, the price of heat was decreased by 3.3%. It is worth mentioning, that since 2014, commodity prices decreased significantly, but the administrative prices did not follow. However the administrative price setting considered to be a significant risk to the industry.

Hungary's static geothermal potential is 343,000 PJ, of which less than 0.3% is used these days



The industry is featured by high barriers of entry due to special knowledge and high capital intensity



The Hungarian geothermal industry

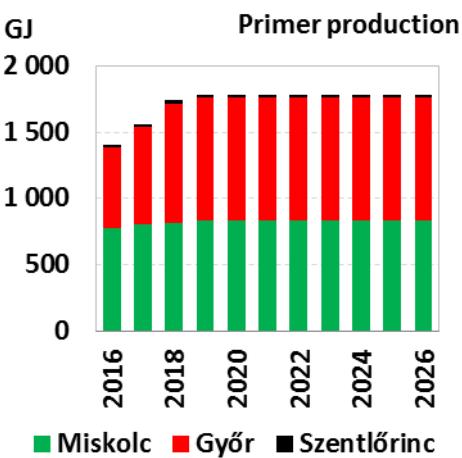
Despite the fact that Hungary has an immense potential in geothermal energy, the industry has only a few participants. According to the Hungarian Geothermal Association, Hungary's static geothermal potential is 343,000 PJ, while today only 1,000 PJ primary consumption is used (less than 0.3%). The EU 2009/28 directive requires member states to increase the use of renewable energy sources. Hungary's target is to raise the share of renewable energies within energy production above 14% by 2020. Although the country is above the target, further investment is needed to maintain, and preferably boost, the use of renewables. Investment activity in the sector is not satisfying, due to high investment costs and the additionally needed infrastructural investment to link the producers to the customers. Nonetheless, the regulation changed favourably in 2014, making it easier to use geothermal heat in agriculture (like in the case of walk-in plastic tunnels). Moreover, other use of geothermal heat in industrial centres (like in Győr and Miskolc) and in their surroundings could be very fruitful in the future. Currently only 25% of natural gas consumption is used to produce energy, the other 75% is used to heat buildings, and in other industrial processes. Harnessing geothermal energy could help Hungary reduce its natural gas dependency, and thus improve energy security. That could make the geothermal industry a strategic one in the future; therefore the potential growth may be high, which could make it an attractive industry.

The industry is featured by high barriers of entry due to special knowledge and high capital intensity, but this positive effect is somewhat extinguished by the fact that prices set administratively. However, the latter effect could be reduced by focusing on raising the share of non-governmental customers. Being located near industrial and agricultural centres creates a very advantageous position for Pannergy to do so.

Pannergy has very few competitors in the geothermal industry in Hungary and they are located in different parts of the country, so the level of competition can be considered negligible. Competition may be moderate only in the search for new well locations, but we think Pannergy currently focuses on its current operations, so in the medium term it is not an issue.

Pannergy's direct competitors are the natural gas powered heating plants, although the company has a sizeable cost advantage even in the current low natural gas price environment, so it would be able to withstand lower natural prices for a considerable period of time.

There are three main operating units, so we use the Sum-of-the-parts valuation



Output increased in 2016 and will do so in 2017



Miskolc – EBITDA margin expected to gradually increase to 42%

Financial analysis of Pannergy – Increasing production, improving operational efficiency

The main profit-producing units are the Miskolc, Győr and Szentlőrinc Projects. The Miskolc project is nearing its full capacity, Győr is in its run-up phase, and Szentlőrinc operated at full capacity in the past couple of years. Because the three projects have different administered prices and somewhat different cost and amortization profiles, we use the Sum-of-the parts valuation method. Furthermore, the company has no recent dividend history but has significant-level of long-term debt, so we use the Free-cash-flow-to-equity valuation method.

Miskolc Project – nearing optimal capacity, focus on production efficiency

In 2016, the overall primary production expanded to almost 780,000 GJ, which translates into 4% growth from 2015. In the first three quarter of this year, Pannergy's improved operational efficiency helped it sell 1.5% more heat than in the same period of 2016. During the summer the company boosted the capacity of the Mályi 1 well from 515 m³/h to 545-560 m³/h, therefore we expect the overall output to be around 800,000 GJ this year. Based on the planned operational efficiency improvement, we forecast 815,000 GJ production for 2018, and 830,000 GJ from there on.

The administered price was lowered from 2,400 HUF/GJ to 2,382 HUF/GJ. Looking ahead, we expect administered prices to rise by 2% annually to compensate for cost-inflation.

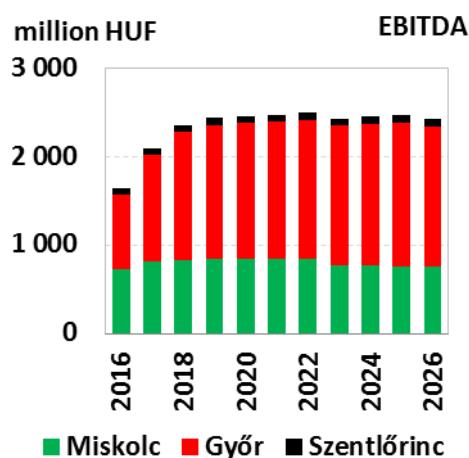
Therefore the revenue of the Miskolc project is likely to grow to HUF 1.9 bn this year, up from last year's HUF 1.82 bn, and, apart from the higher production, by 2% later.

Pannergy's EBITDA margin was 39% in 2016, which is expected to gradually advance to 42%, as the improvement in operational efficiency prevails. The EBITDA is likely to slowly drop to 38% because, in the long-run, we expect the non-variable cost to increase somewhat faster than the revenue.

Depreciation and amortization is expected to be HUF 522 million in 2017, and then to gradually decline to HUF 220 million until 2027.

As the project is fully operational, yearly investment is forecasted to cover the depreciation of the heat-pumps. Working capital is expected to increase a bit as a result of the higher capacity and revenue.

The development of the Győr Project is going on two stages now.



EBITDA margin 52% in 2016



The third well, due to come online in September 2018, could increase production by 20%

Győr Project – run-up in production, the new concession will be online in 2018 Q3

The development of the Győr Project is a two-pronged one. On the one hand, the two drilling wells are operating fine, and production is nearing its maximum capacity. The project started production in Q4 2015 and its output was 604,000 GJ in 2016. Fully-year 2016 output data was lower than expected due to scaling-related additional maintenance, but the issue was dealt with, and in our baseline scenario we do not expect any scaling-related setback with the Győr project.

Based on this year's available data and the estimated capacity of the wells, we expect production to total about 740,000 GJ in 2017. Looking ahead, yearly production is expected to strengthen further, due to higher operational efficiency.

Moreover, if everything goes according to plans, the third well will come online for the winter season of 2018, bolstering the annual production to 900,000 in that year. Then we expect its output to reach 930,000 GJ/year, and remain at that level subsequently, as we assume there could be an improvement in the operational efficiency as well.

Administered prices were lifted from 2,650 Ft/GJ to 2,950 Ft/GJ in September 2017. From 2018 on, we forecast the price to rise 2% annually, as a compensation for inflation.

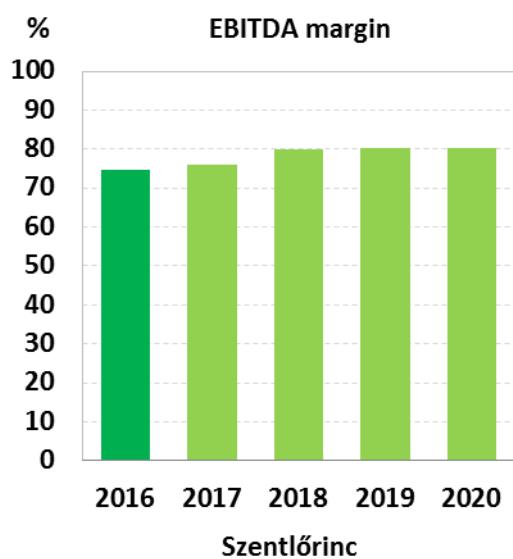
Therefore the revenue for 2017 is expected to be around HUF 2.17 bn, which could go up to as high as HUF 2,655 bn in 2018.

The EBITDA margin was 52% in 2016, but it is likely to climb to 55%, due to the higher administered price. By 2019-2020, it may reach 58% as new capacity grows and operational efficiency improves. Afterwards it is likely to gradually decline to 52% and stay at that level as costs are expected to grow somewhat faster than revenue. It is worth noting that at the time when the Miskolc project reached full operation, administered prices lowered somewhat. This could pose a risk for the Győr project as well.

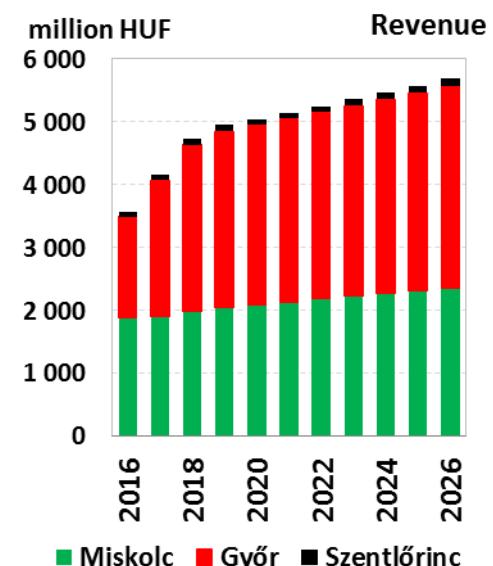
Depreciation and amortization will be HUF 700 million in 2017, and then gradually decline to HUF 470 million until 2027.

Although Pannergy initially planned the cost of the concession around HUF 800 million, we estimate that it could be around HUF 1 bn next year. From then, we forecast no additional investment aside from compensating for depreciation. Working capital need will be positive until 2019, owing to investment and capacity-boosting reasons. We do not expect change in the working capital from there on.

Looking ahead, production is expected to reach 25,000 GJ/year, EBITDA margin at 75%



A sudden rise in production and higher operational efficiency improved EBITDA in 2017



Szentlőrinc – stable, but small operation

The Szentlőrinc project has been operating at full capacity in the past couple of years, so its main operational indicators are stable. Production was 23,600 GJ in 2016 (+17.5%) and we forecast 25,000 GJ annual production throughout the entire forecast horizon. Administered price was stable at 3,654 HUF/GJ in the last couple of years. Looking ahead, we expect it to increase by an annual rate of 2%, starting from 2019. This will bring its revenue to around HUF 90 million until 2018, with a subsequent slow rise.

EBITDA margin was 75% in 2015 and 2016 and because this project is in its mature, stable phase, we expect it to remain at that level – apart from a small increase due to higher cost-inflation than revenue growth.

Depreciation and amortization will be HUF 25 million in 2017, and will remain at that level throughout our forecast horizon. Apart from a small amount (HUF 3 million per year) investment to account for depreciation, we do not forecast any new investment activity concerning the Szentlőrinc Project, therefore there is no further need of additional working capital forecasted.

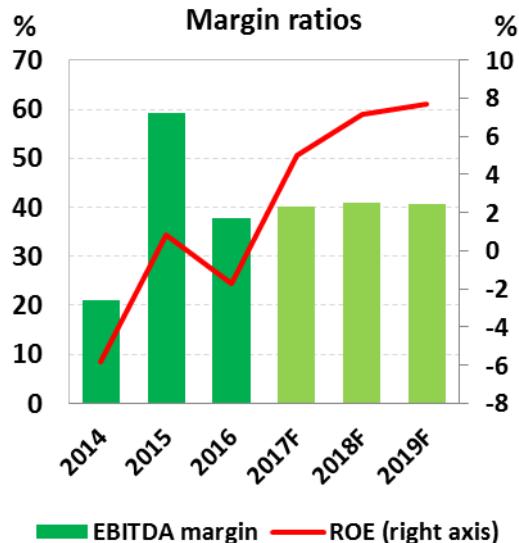
Company analysis – decreasing operational costs, focus could be on secondary heat sales

In 2016 Pannergy's revenue jumped to HUF 4.5 billion from HUF 2.7 bn, mainly due to the run-up of the Győr Project. Overall, we expect the revenue to exceed HUF 5 bn in 2017 due to the further run-up in production, and the increase in administered prices in the case of the Győr Project last year. Pannergy's EBITDA margin was 37.9% in 2016 and we expect it to hit near-40% levels this year. This assumption is based on the fact that the company made several adjustments to its cost structure in order to improve operational efficiency.

As a result, the SGA expenses shrank by 37% in the first half of 2017, the workforce was reduced from 48 to 20 people, and other non-production related costs contracted as well.

Overall, we expect the EBITDA margin to stabilize around 40% over our forecast horizon, but after that – due to cost-inflation – it is expected to slowly fall back to around 35-36%. Pannergy's EBIT margin was above 6% in 2016, but due to the above factors it will hover around 20% in the coming years.

Interest rate expenditures amounted to HUF 415 million, but Pannergy refinanced most of its loans in 2016 and 2017, taking



advantage of the low interest rate environment. It is worth noting that these loans are variable-rate loans but the interest rate risk is covered by IRS, so interest rates will be relatively unaffected by a rise of interest rate in the next couple of years. Moreover, part of the loans is denominated in EUR, but the management took into account the fact that some of its revenue is also denominated in EUR. That way EUR loans can be viewed as the means to cover for FX risks. In 2016, the weighted average interest rate of the EUR loans was 2.5% and for the HUF loans it was around 3%.

In 2017 the Miskolci Geotermia and the Kuala Kft. (Miskolc Project) refinanced its loans and expanded it with credit facilities in worth of EUR 4.5 million and HUF 2.1 billion. Indirectly it will finance the HUF 1 bn worth of new investment in Győr.

In recent years Pannergy has been focusing on rationalizing its portfolio elements and selling its non-core operations. The recent sign of this was the sale of one of its subsidiaries (CSRG Energia Zrt.) for HUF 150 million.

This move underlines Pannergy's strategy, which is to outsource the sale of secondary heat, so that it can solely focus on its own core operations.

Pannergy's share buy-back programme and what happens next

In April of 2016, Pannergy launched the first round of its share buy-back programme, which lasted until April 2017. The total value of the programme was HUF 300 million. The second round started in April of 2017 for a period of one year. The allocated amount for this is HUF 1 bn if the share price is between HUF 1 and 600. So far Pannergy has not bought back any share during the programme, but we expect the company to do so if the conditions are supportive. However, if the price moves closer to our forecast, we do not expect any share buy-back programme in the future. Based on its current price and our price forecast in for the next 12 months, our forecast supposes that there will be no share buy-back under the current conditions.

This poses the question: **what amount of dividend could be expected from Pannergy, and when?**

There are several factors are in play. On the one hand, the company has a large amount of long-term loans, which points toward a conservative dividend policy. However, as the projects are approaching optimal capacity and Pannergy decreased its non-production-related costs, profitability will be in the positive territory in the coming years. If the company does not plan any new major investment, and gradually shifts its focus on the

The second round of share buy-back program is unutilized so far

Dividend could come in 2019 or 2020

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existing operations, then in our opinion dividend payment could come once the new Győr Project is completed, sometime after Q3 2018, possibly in 2019 or 2020. But our baseline does not suppose dividend payment before 2019. It is difficult to estimate the dividend pay-out ratio, but utility companies traditionally have high dividend yields. (Average dividend yield in the sector is around 4%).

Pannergy's valuation

Discounted cash flow method - FCFF approach

To summarize the above, Pannergy's main profit-producing units are the Miskolc, Győr and Szentlőrinc operations. Because Pannergy has three separate business units, the Sum-of-the parts valuation was used. Moreover, it has no recent dividend history but has a high level of debt so the Free-cash-flow-to-the-firm (FCFF) method was chosen.

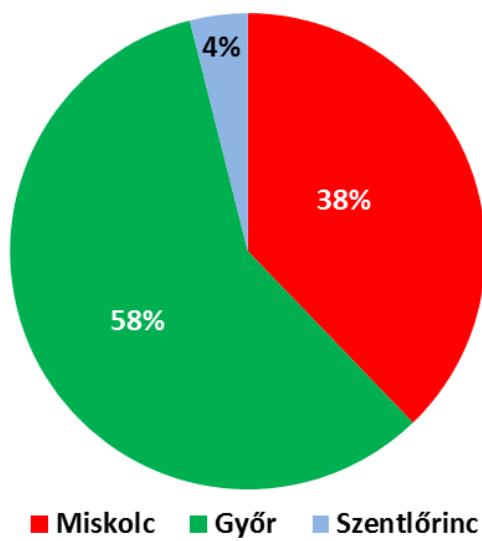
In the baseline scenario administrative and market prices will grow by 2% per year annually from 2019 to compensate for inflation, but costs could rise a little stronger than that (3%). The latter assumption is based on the fact that high nation-wide wage increase will contribute to higher cost in the future, and it will affect every industry through direct and indirect channels. This gives an initially increasing EBITDA in the first few years, which could decrease due to cost-inflation in the last five years.

Amortization was forecasted to be somewhat above HUF 1 billion which is slowly decreasing as the investment goods reach the end of their life cycle. In 2018 there is a HUF 1 bn investment expenditure due to the concession in Győr. Aside from that we suppose 93 million yearly CAPEX to compensate for amortization, although some of the amortization is handled through maintenance. Working capital needs will be positive until primary production reaches its optimal level in the Győr and Miskolc projects, but then it will stay at zero level.

We estimated the WACC (weighted average cost of capital) to be 7.5 until 2027. For the estimation the average rate of 2017, which was approximately 3%. Equity premium was estimated at 5.73% using the average of the historical and the forward-looking estimations. Finally we used a 3% add-on to accounting for illiquidity and small-stock premium. Beta was estimated 1.1%.

Using the CAPM model, it gives 10% as the required rate of return on equity. Interest rate on debt was forecasted at 3.15%, and the share of debt financing was considered 50%. After 2027 we used higher WACC in order to account for the increase in the overall interest rate environment and the uncertainty concerning

The projects' share from valuation



Increasing EBITDA until production reaches optimal levels

WACC is 7.5%, but after 2027 it is 9% due to higher expected interest rate environment

the the cash-flows after the 10 year forecast horizon.

Using the above assumptions, the enterprise value is HUF 26.5 bn, which translates into HUF 19 bn equity value. This is consistent with HUF 1210 share price for the next 12 month. This is currently 82% higher than the closing price of the last trading day (15 December 2017).

Relative valuation

Pannergy is a unique company due to the fact that there is very few companies which solely focuses on geothermal-heating. Therefore we value Pannergy as a member of the renewable industry group.

We use two ratio for the comparison: Enterprise Value/EBITDA, but we show the Enterprise Value/Revenue ratio as well, although it could be misleading as different business units of the companies may have different level of revenues.

EV/EBITDA and EV/Revenue is useful when the firms have different degree of financial leverage which could be the case when the comparative companies are in a different stage of their investment and loan-repayment/amortization cycle. Moreover the indicator is also useful for valuing capital intensive businesses with high level of depreciation and amortization. We identified 8 companies that could be – although in some case only vague – comparable with Pannergy. The average EV/EBITDA is 9.7 and the median is 9.9. We forecasted HUF 2.1 bn. EBITDA for 2017 which gives a value of HUF 20.4 and 20.8 billion respectively. Subtracting the forecasted net debt and other items, the current market capitalization should be between - using the current number of available shares (17.679.017) - gives the share price between HUF 730 and 762, which gives our relative valuation at HUF 746 per share.

Pannergy is viewed as a member of the renewable energy group, with high-capital intensity, long depreciation cycle and low variable costs

Peer average EV/EBITDA is 9.7

Company name	Country	Market capitalization (billion HUF)	Price	EV/EBITDA
US Geothermal	USA	18,2	945	9,9
Ormat Technologies	USA	849,1	16782	11,2
Alterra Power Corp	Canada	97,4	1670	14,4
ARISE	Germany	13,0	388	10,0
FERSA	Spain	21,5	154	8,7
ABO Invest	Germany	22,2	500	7,1
Falck	Denmark	132,2	454	6,7
				Average 9,7
				Median 9,9

Peer average EV/Revenue is 5.3

Company name	Country	Market capitalization (billion HUF)	Price	EV/Rev
US Geothermal	USA	18,2	945	5,2
Ormat Technologies	USA	849,1	16782	5,6
Alterra Power Corp	Canada	97,4	1670	7,1
ARISE	Germany	13,0	388	5,0
FERSA	Spain	21,5	154	5,7
ABO Invest	Germany	22,2	500	5,4
Falck	Denmark	132,2	454	3,4
				Average 5,3
				Median 5,4

Relative valuation indicate a HUF 746 share price, 32.7% above its current price

A potential upside to our forecast

In this analysis we took into account only primary heat sales, but we did not focus on the possibility of the run-up of the secondary heat sales. Both the Miskolc and Győr projects are located near industrial centres, which could provide an excellent opportunity to expand revenues through the sale of secondary heat. The first costumer from the Győr Industrial Park has been online since

October 2017.

Secondary heat sales basically have no additional cost, although the price – due to the lower temperature of the incoming water – is less than the price of primary heat. Because the temperature of the secondary heat could be around approximately half of the primary heat, in this scenario we assume that secondary heat costs half the primary heat price.

We assume that secondary heat sales will start from 2020 – when all projects reached optimal production, and half of the sales will come from Győr, the other half from the Miskolc operation. Based on the above assumptions, every 100,000 GJ/year increase in secondary heat sales could add 15% to our share price valuation. This upside was not taken into account in our forecast, because it is difficult to estimate the run-up of the secondary heat sales and the overall demand for it.

Our valuation is sensitive to the interest rate and the terminal growth forecast

Sensitivity analysis was used to study the effect of the changes of various parameters. Change in beta has low effect on the valuation, however the valuation is sensitive to the change in EBITDA margin, the increase of the risk free rate and the growth rate after the forecast horizon (terminal value growth). This suggest that those factors with could decrease the EBITDA margin could pose a potential risk to our forecast. Moreover as interest rates increase our valuation could be under pressure as well. Significant change in beta is not expected in the future, however as demand for heat is insensitive to the business cycle, beta could decrease later, when Pannergy has stable operations for a considerable amount of time.

Risks associated with the business operations

During the valuation five main sources of risk were identified:

1. **Price risk:** The administered price is set at a level that takes into account the cost of doing business and providing a fair profit. However, the administered price setting has inherent risks related to the administrative authority.

Moreover at the moment Pannergy provides heat at a lower cost than its peers (natural gas). However if natural gas prices fall significantly, then costumers who do not have mandatory purchase agreement with Pannergy could switch to other sources of heat.

2. **Environmental risks:** Extreme weather conditions during the heating season could harm the profit target of the company. If the winter season is too short or too cold – due to global warming or other extreme weather conditions – the costs are higher, as the output from the drilling wells drops.
3. **Operational risks:** Maintenance costs increased significantly at the Győr Project in 2016 due to scaling issues concerning the tubing and pumps, and this has reduced production. Although the problem was dealt with, we identify it as a source of risk in the future as well. This could be a risk to our depreciation forecast as well.
4. **Győr concession project:** Although the geological quality of the area is well researched and known by Pannergy as it has two operating wells nearby, the expected yield on the new well could be a source of risk. Moreover if the completion of the investment is delayed or it is subject to cost overrun, then this could lower our revenue forecast.
5. **Improving energy efficiency risk:** It is not necessarily a Pannergy-specific risk, but in the long term, the building of passive houses and the coming investment – which increases the energy efficiency of houses and flats – could decrease demand for heat.

Appendix

Balance sheet - consolidated (million HUF)	2013	2014	2015	2016	2017F	2018F	2019F
Intangible assets	1 369	1 375	1 130	892	857	822	787
Property, plant and equipment	12 666	15 375	20 648	20 711	19 893	19 712	18 591
Other non-current assets	602	549	723	678	624	624	624
Non-current assets	14 637	17 299	22 502	22 282	21 374	21 158	20 002
Inventories	300	993	312	148	148	148	118
Trade receivables	726	307	1 029	1 671	1 350	1 612	1 838
Cash and cash equivalents	384	357	1 121	736	837	931	1 670
Other current assets	692	762	1 855	422	422	422	183
Current assets	2 102	2 419	4 317	2 978	2 757	3 113	3 809
Total assets	16 739	19 718	26 819	25 260	24 132	24 271	23 811
Total equity	9 777	9 259	9 331	8 889	9 357	10 068	10 897
Long-term loans	2 598	3 887	9 143	8 858	7 930	7 502	6 474
Other-non current liabilities	2 320	3 204	4 885	4 621	4 649	4 395	4 146
Non-current liabilities	4 918	7 091	14 028	13 479	12 579	11 897	10 620
Short-term loans	532	553	785	1 098	1 075	1 080	1 124
Trade payables	794	1 363	1 696	1 170	850	1 086	1 170
Other current liabilities	718	1 452	978	623	270	141	0
Current liabilities	2 044	3 368	3 459	2 891	2 195	2 307	2 294
Total equity and liabilities	16 739	19 718	26 819	25 260	24 132	24 271	23 811

P/L Table consolidated (million HUF)	2014	2015	2016	2017F	2018F	2019F
Revenue	2 290	2 726	4 529	5 069	5 624	5 845
Revenue from other operations	602	540	897	897	897	897
Revenue from geothermal-heat	1 688	2 186	3 632	4 172	4 727	4 948
Other revenue	55	871	101	140	139	133
OPEX	1 808	3 224	4 349	4 368	4 662	4 794
from which: Depreciation	635	1 241	1 435	1 253	1 259	1 249
EBITDA	482	1 614	1 715	2 094	2 360	2 434
EBIT	-153	373	281	841	1 101	1 185
EBT	-434	217	-131	541	831	973
Income Taxes	95	183	28	65	100	117
Non-controlling interest	12	-44	-8	8	12	15
Net income	-541	78	-151	468	719	841
EPS (HUF)	-30	4	-9	26	41	48

Cash flow statement - consolidated (million HUF)	2014	2015	2016	2017F	2018F	2019F
Profit before taxes	-434	217	-131	541	831	973
Cash flow from operations	561	-173	775	1 704	1 815	2 065
Cash flow from investment	-2 248	-4 153	-1 632	-653	-1 297	-342
Cash flow from financing activities	1 661	5 089	473	-951	-423	-984
Change in cash and cash equivalents	-26	763	-384	100	95	739

Key income ratios (%)	2014	2015	2016	2017F	2018F	2019F
EBITDA margin	21,0	59,2	37,9	40,2	40,9	40,7
EBIT margin	-6,7	13,7	6,2	16,1	19,1	19,8
Net profit margin	-23,6	2,9	-3,3	9,0	12,5	14,1
ROE	-5,8	0,8	-1,7	5,0	7,1	7,7
ROA	-2,7	0,3	-0,6	1,9	3,0	3,5

Key balance sheet ratios (%)	2014	2015	2016	2017F	2018F	2019F
Current ratio	71,8	124,7	103,1	125,6	135,0	166,0
Long- term debt / Equity ratio	42,0	98,0	99,7	84,7	74,5	59,4
Total liabilities / total assets	53,0	65,2	64,8	61,2	58,5	54,2
Short-term debt / total debt	12,5	7,9	11,0	11,9	12,6	14,8

Valuation summary (million HUF)	2017 current year	2018F	2019F	2020F	2021F	2022F	2023F	2024F	2025F	2026F	2027F	Terminal year
Revenue from geothermal heat	4 172	4 727	4 948	5 047	5 148	5 251	5 356	5 464	5 573	5 684	5 798	5 914
EBITDA	2 094	2 360	2 434	2 454	2 473	2 492	2 432	2 449	2 466	2 432	2 356	2 403
Depreciation	1 253	1 259	1 249	1 258	1 267	1 276	981	990	999	717	726	726
Working capital sales	90	150	0	0	0	0	0	0	0	0	0	0
Capex	400	1 043	93	93	93	93	93	93	93	93	93	93
FCFF	1 504	1 035	2 199	2 218	2 236	2 253	2 165	2 182	2 197	2 133	2 067	2 109
WACC		7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	9,0
PV(FCFF)		962	1 902	1 783	1 672	1 567	1 400	1 312	1 229	1 109	1 000	12 614

Share price estimation	
Enterprise value	26 549
Net debt (-)	7 493
Equity value	19 056
Number of shares	17 679
Required return on equity	12
Target price for the next 12 M (HUF)	1210
Current price (HUF)	566
Upside /Downnside (%)	114

Sensitivity analysis tables							
	Risk free rate						
	2,50	2,75	3,00	3,25	3,50	4,00	5,00
Beta	0,50	1834	1781	1730	1681	1635	1548
	0,70	1609	1565	1524	1484	1446	1374
	0,90	1424	1388	1354	1320	1288	1227
	1,10	1270	1240	1210	1182	1155	1103
	1,30	1139	1114	1088	1064	1041	996
	1,50	1027	1005	983	962	941	902

Free cash flow growth after the forecasting period (%)							
	1,25	1,50	1,75	2,00	2,25	2,50	2,75
EBITDA margin (pp. Change)	-7,50	1110	1135	1163	1192	1224	1258
	-5,00	1116	1141	1169	1198	1230	1264
	-2,50	1122	1148	1175	1204	1236	1270
	0,00	1128	1154	1181	1210	1242	1276
	2,50	1134	1160	1187	1217	1248	1282
	5,00	1140	1166	1193	1223	1254	1288

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