

PAPER • OPEN ACCESS

Financial liquidity management in energy sector in Poland

To cite this article: S Lorenc and A Kustra 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **214** 012089

View the [article online](#) for updates and enhancements.

Financial liquidity management in energy sector in Poland

S Lorenc^{1,*}, A Kustra¹

¹ AGH University of Science and Technology, Department of Economy and Management in Industry, al. Mickiewicza 30, 30-059 Krakow, Poland

E-mail: slorenc@agh.edu.pl

Abstract. Liquidity comprises one of the most important indicators of an enterprise's financial situation and proper operation. Dynamic liquidity understood as an ability to generate cash flow constitutes an interesting issue in the area of managing finances related with taking managerial decisions in the following areas: operational, investment and financial. The aim of the article is to identify cash flow in a managerial perspective for the purposes of taking decisions with regard to developing liquidity and indicating determinants thereof in the energy sector, in Poland. Formulas of setting cash flows for the owner (FCFE) and for all funding parties (FCFF) have been shown and their calculation has been presented with an example of selected energy enterprises listed on the Stock Exchange in Warsaw.

1. Introduction

Liquidity support comprises grounds for supporting continuity of all economic processes. The issue related with liquidity is up-to-date for each economic entity irrespective of the type of conducted activity. Ensuring enterprise's liquidity in the short and long term undoubtedly comprises one of the most important aims of each company.

Liquidity guarantee is conditioned by indicating factors developing it as well as the direction and impact force thereof. They determine decisions related with releasing and obtaining cash by influencing operational, investment and financial areas.

In the article, the liquidity aspect has been presented with a particular consideration of dynamics thereof related with maximising cash flows. The methodology of assessing cash flows based on a managerial approach supporting the decision process has been presented herein. Basing on the set criteria, a calculation has been conducted on an example of selected energy enterprises. For the purposes of the publication, cash flows identified as flow from assets of a given economic activity were assessed in compliance with the FCFF (Free Cash Flow to Firm) methodology. Simultaneously, this concept presents meeting owner's cash needs FCFE (Free Cash Flow to Equity) as well as funding activity of external entities FCFD (Free Cash Flow to Debt).

2. The enterprise's ability to generate cash flows – dynamic liquidity

Liquidity is a complex economic category conditioning enterprise's operation and survival. Furthermore, the imperative of having liquidity determining the need of keeping it by the enterprise, can be deemed as an organisation's financial security indicator. Meeting the aforementioned imperative constitutes a condition for continuing activity in operational, investment and financial areas. Interest in the issue of liquidity increases the need to perform many liquidity management functions in an effective and rational manner.



Liquidity analysis is based on the information included in traditional financial statements of the units. The aforementioned information determines considering the liquidity in static understanding based on covering short-term liabilities with short-term assets (Sierpińska, Jachna, 2007). Static liquidity analysis is based on the enterprise's balance sheet presenting information on the value of property and financing sources thereof as on the day of drawing it up. The subject literature and economic practice assess static liquidity with three main indicators: current liquidity, accelerated liquidity and cash ratio. Practice indicates that static liquidity measure based on the resources' volume has a limited character and is used by external entities to assess economic activity with regard to its ability to regulate short-term debt. Application of the presented approach for managerial purposes is greatly limited and insufficient from the owner's point of view.

The essence of liquidity in the dynamic understanding comprises presenting the course of financial processes with the use of cash flows and mutual synchronisation thereof in order to preserve cash balance. Identified flows allow determining cash sources in the following areas: operational, investment and financial as well as directions of use thereof with regard to preserving liquidity. By indicating cash sources, dynamic measures determine enterprise's ability to create money. Additionally, measures based on cash flows allow studying mechanisms influencing changes of held cash resources and reflect the unit's financial situation in a more reliable manner. Simultaneously, the aforementioned approach realises the image of an enterprise based on memorial context related with financial results' analysis. An increase in cash from operational activity expresses "solidarity" of the company better than the profit amount itself. As a rule, all significant financial decisions should be based on the cash flow account's results (Brealey, R. and Myers, S.C. (2010)).

Analysis of cash flows and the ability to maximise allows assessing actual cash flow and can contribute to the definition of the liquidity determinant depending on an enterprise as well as its operations' characteristics.

3. Cash flows in managerial understanding

Dynamic liquidity understood as the ability to earn cash is based on cash flows. Full information on flows in a given period is usually obtained from the statement which indicates the enterprise's ability to generate inflows and directions of outflows in three areas of activity: operational, investment and financial. The ability to generate positive cash flows stabilizes the enterprise's liquidity and strengthens its ability to pay.

In strategic understanding, the ability to generate cash flows in ex ante understanding provides grounds for generating the enterprise's economic value. The relation between the enterprise's value and its cash flows is reflected in income methods that enable discounting future benefits measured with flows with the use of a relevant rate reflecting the cost of capitals funding the activity.

Cash flows themselves are influenced by many variables the assessment and cognition of which are necessary for the purposes of proper liquidity management. Three most important liquidity factors are related with operational effectiveness, investment in fixed and current assets and financial effectiveness related with the structure of developing capitals. The said factors analysed with regard to the nature and characteristics of the activity can lead to systemising problems of developing liquidity in given industries, in which enterprises operate.

Knowledge on cash generation determinants can be obtained from formulas and methodologies of stipulating cash flows; they are systematised in the literature in accordance with various criteria. In managerial understanding, two types of flows are most often encountered in practice (Pratt S.P., Niculita A.V(2008)):

- FCFF (*free cash flow to firm*) – cash flows due to all funding parties,
- FCFE (*free cash flow to equity*) – cash flows due to owners.

The model based on flows due to all parties funding the enterprise's activity (FCFF) enables setting a total value for the company (capital + debt) both, for owners and creditors. Whereas, FCFE allows calculating flows for owners from the equity possible to be obtained and being at their disposal after considering expenses, capital expenditure and liabilities.

In order to provide for a more specific analysis of flows and separating particular funding parties, it is possible to divide FCFF into two groups (Damodaran, A. (2006)):

- FCFE (*free cash flow to equity*) – cash flows for owners,
- FCFD (*free cash flow to debt*) – cash flows for banks.

The introduction of a new category allowing stipulating cash flows for creditors (FCFD) enables assessing interests on loans, increased with a payment of capital instalments, which are necessary to be paid by the company. Mutual FCFE, FCFD and FCFF relation as well as relations with particular balance sheet items have been presented in figure no. 1.

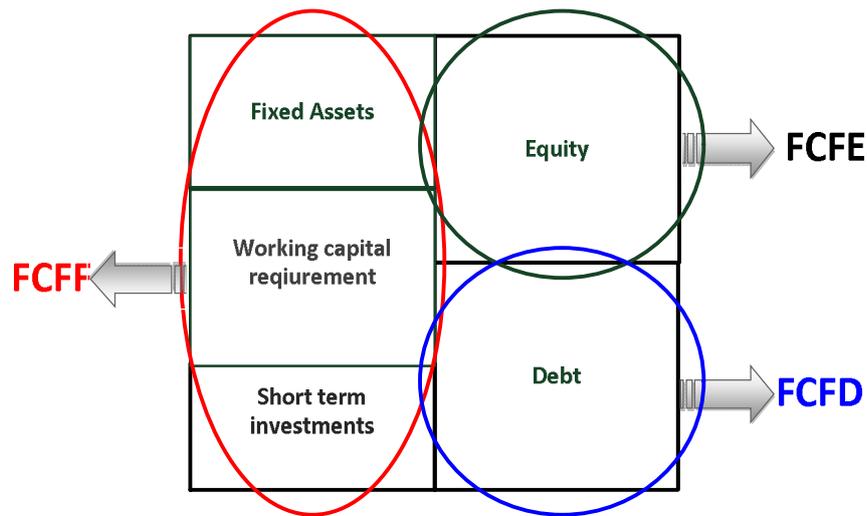


Figure 1. Analysis of a model based on free cash flows.
 Source: Own elaboration on the grounds of (Hawawini, Viallet 2007, p. 98)

Cash flows due to all funding parties, owners and banks are stipulated in accordance with the formulas below (Benninga, S.Z., Sarig, O.H. (1997)):

$$FCFF = EBIT \times (1 - T) + \text{amortisation} - \text{investment expenditure} - \text{addition to working capital requirement} \quad [1]$$

$$FCFE = \text{net profit} + \text{amortisation} - \text{investment expenditure} - \text{addition to working capital requirement} - \text{debt repayment} + \text{new borrowing} \quad [2]$$

$$FCFD = \text{interest rates} \times (1 - T) + \text{return of borrowing} - \text{new borrowing} \quad [3]$$

where: T- effective tax rates

The FCFF methodology is understood as flows from assets and shows a potential to generate cash from operational and investment areas. Operational activity is expressed with operating profitability measured with EBIT after taxation as well as effectiveness of management in the area of developing the demand for net working capital. Whereas, investment activity is expressed with investment in fixed assets determining spending cash and not constituting period's costs. The investment activity results in the level of amortisation treated as unspent costs, yet, reflected in developing accounting profits.

Whereas, FCFE methodology takes into consideration effectiveness measured with net profitability and financial activity related with effectiveness of using foreign capital of interest nature.

4. Calculation of cash flows and factors generating cash for energy enterprises in Poland

Empirical studies were conducted with regard to the financial statements of four largest stock exchange energy companies in Poland listed on the Stock Exchange in Warsaw, included in WIG 30 index¹. The verification covered: Energy Group ENEA S.A., Energy Group ENERGA S.A., PGE Polska Grupa Energetyczna S.A. and TAURON Polska Energia S.A. The scope of activity of particular Groups has been presented in figure no. 2.

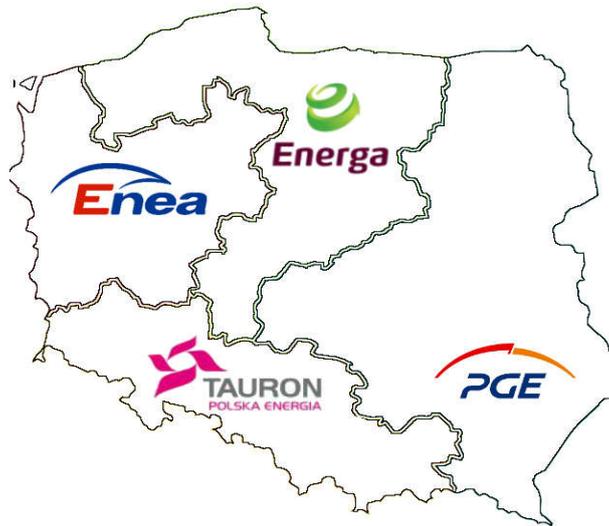


Figure 2. Polish energy map.

Source: <http://dobryprad.pl/dostawcy/prad/pge>

The study conducted on the grounds of cash flows assessed on the grounds of financial statements of entities in the years 2014 - 2016.

Table no. 1 presents data regarding value of free cash flows in studied entities.

¹ WIG30 index has been published since 23 September 2013 on the grounds of the value of assets portfolio of 30 largest and most liquid companies from the WSE's main market. Index base was stipulated as on 28 December 2012 and amounted to 2,582.98 points. WIG30 is a price index, which means that in calculation thereof, only prices of transactions executed therein are considered, and incomes on dividends are not considered. Not more than 7 companies from one stock exchange sector can participate in WIG30 index, whereas, one company's share is limited to 10% in index. Source: gpw.pl

Table 1. Free cash flows in studied companies in the years 2014 – 2016.

	2014	2015	2016
ENEA S.A.			
FCFF	-1,778,632	-3,903,946	-193,908
FCFE	-266,267	317,760	260,750
FCFD	-1,512,365	-4,221,706	-454,658
ENERGA S.A.			
FCFF	487,536	-32,837	-305,351
FCFE	856,978	-110,000	-397,000
FCFD	-369,442	77,163	91,649
PGE Polska Grupa Energetyczna S.A.			
FCFF	134,115	-503,831	-3,719,040
FCFE	1,825,000	-1,674,000	-227,000
FCFD	-1,690,885	1,170,169	-3,492,040
TAURON Polska Energia S.A.			
FCFF	-1,079,829	-19,345	-297,451
FCFE	1,830,265	-957,119	-180,636
FCFD	-2,910,094	937,774	-116,815

Source: Own elaboration on the grounds of companies' financial statements

Analysis of table no. 1 allows noticing that in case of all analysed companies' cash flows both, for owners and for all funding parties, in majority show negative values.

Cash flows' development for all funding parties FCFF in studied enterprises has been presented in figures 3 - 5.

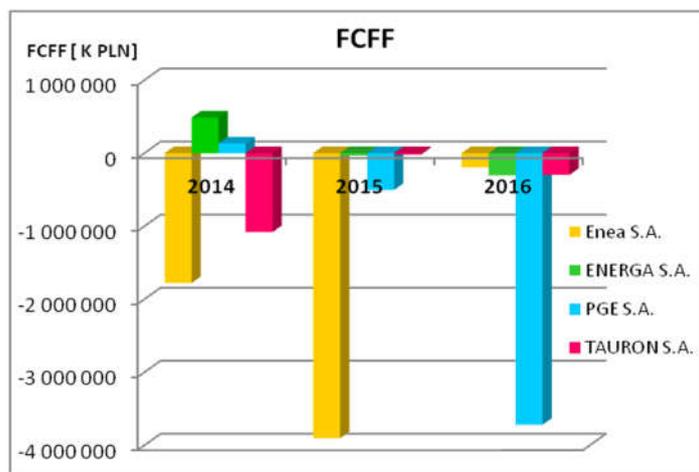


Figure 3. Free cash flows for all funding parties in analysed enterprises
 Source: Own elaboration on the grounds of companies' financial statements

Free cash flows for all parties funding activity reflect cash effectiveness of assets belonging to studied companies. Among analysed companies only the assets of the Energy Group ENERGA S.A. generated cash in a form of positive cash flows in 2014. Nevertheless, cash output of ENERGA S.A. assets

throughout analysed years has been significantly decreasing, noting gradually lower values, which can result from the fact of significant investments both in fixed assets as well as in net working capital.

The biggest negative FCFF flows in analysed period were noted by PGE Polska Grupa Energetyczna S.A., which as the largest energy entity in the market has not been generating positive flows from assets in recent years. On the other hand, a loss of cash from operational and investment activity is compensated by obtaining capitals from the outside, which shows that external entities are willing to fund the activity of the biggest energy producer in the Polish market.

In the case of FCFE analysis (Figure no. 4), positive flows in recent years were noted by ENEA S.A. As has already been underlined, FCFF flows were negative, whereas, external funding obtained by ENEA S.A. Group allowed to generate positive flows for the owner.

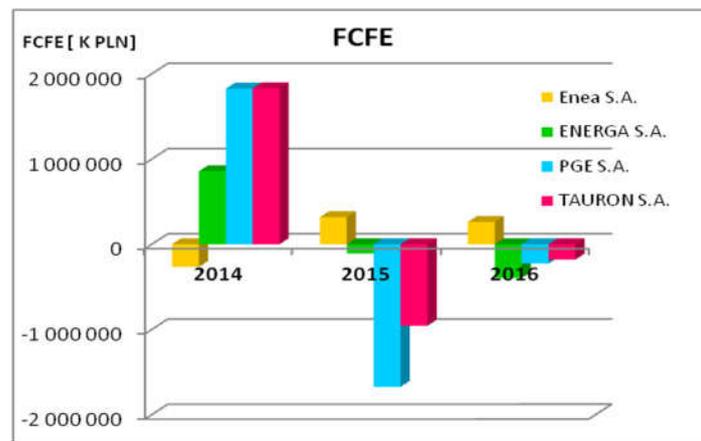


Figure 4. Free cash flows for owners in analysed enterprises.
 Source: Own elaboration on the grounds of companies' financial statements

The biggest external funding of a foreign interest capital's nature was obtained by ENEA S.A. in 2015 (Figure no. 5). Such big funding was necessary for purchasing and overtaking by ENEA S.A. Lublin the mine Bogdanka for an amount of approximately PLN 1.48 billion.

In the recent year, i.e. 2016 the biggest engagement of foreign capital was noted in PGE SA. Funding obtained from the outside was necessary, among others, for tangible investments in the manufacturing area and equity investments in the mining area. Despite obtaining significant inflows in the financial area, PGE S.A. did not reach positive cash flows for the owner FCFE.

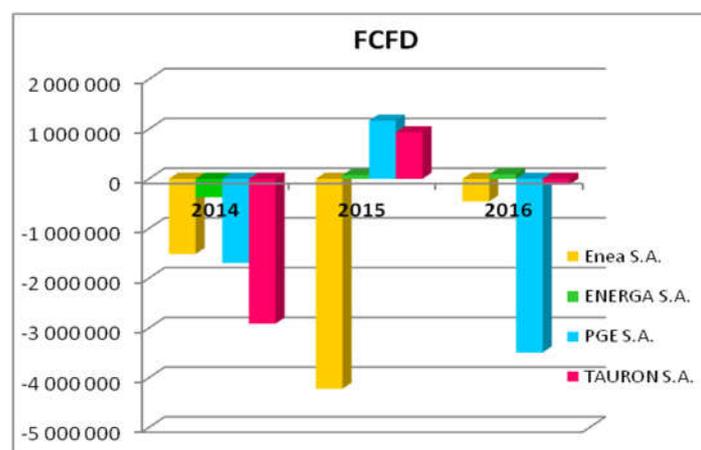


Figure 5. Free cash flows for capital providers in analysed enterprises.
 Source: Own elaboration on the grounds of companies' financial statements

5. Analysis of cash flows in energy enterprises

Analysis of ENEA S.A. Group in the years 2014 - 2016 indicates that only in the case of owners, in the year 2015 and 2016 the company generated positive cash flows. In 2014, negative level of FCFE and FCFD was mainly influenced by an increase in the demand for net working capital and high investment expenditures in a form of CAPEX, which absorbed company's profitability. In 2015 dynamic liquidity's development was influenced by a negative net profit (net loss) and investment expenditures (purchase of LWB Bogdanka). In 2016, the determinant that predominantly decided on the cash flows' value comprised investment expenditures.

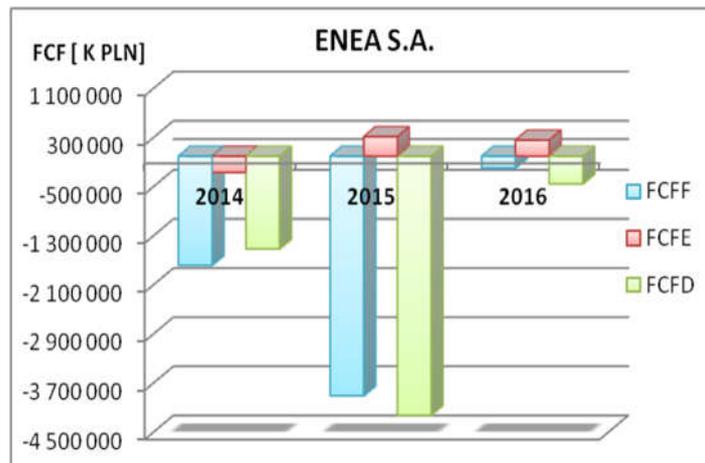


Figure 6. Cash flows' development in ENEA S.A.

Source: Own elaboration on the grounds of ENEA S.A. financial statement

Sources of generated cash for the Energy Group ENEA S.A. were presented in figure no. 7.

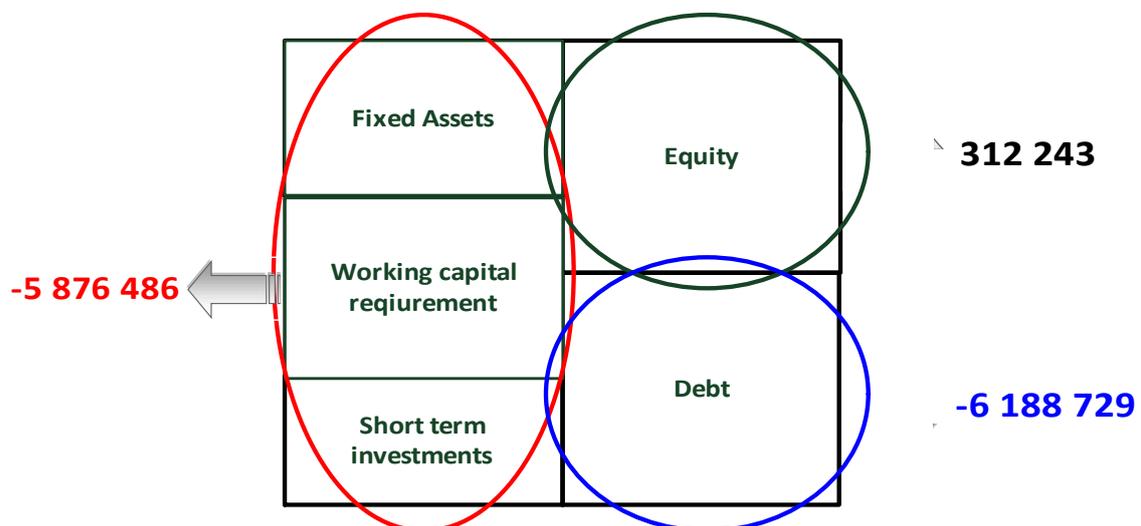


Figure 7. Sources of cash in ENEA S.A.

Source: Own elaboration on the grounds of ENEA S.A. financial statement

In the years 2014 - 2016 the company ENEA S.A. generated for owners a total amount of PLN 312,243 thousand. In the area of foreign capital, the company obtained from the outside an amount of PLN 6,188,729 thousand. Total FCFE flow for all funding parties amounted to PLN 5,876,486 thousand. The aforementioned state of affairs was mainly influenced by investment expenditures that in total amounted to PLN 9,743,764 thousand.

Analysis of ENERGA S.A. shows that positive cash flows were generated by the company in 2014 (FCFE and FCF) (figure. 8).

Negative cash flows FCFE and FCF in 2015 and 2016 were determined by high expenditures incurred on investments (an increase in fixed assets) and by an increase in the demand for net working capital. Investments in fixed assets caused freezing of available resources and a decrease in cash flows. However, while considering the issue of incurred expenditures in the long-term, investments are necessary to maintain current cash flows and generate them in the future for further development of the company.

In the years 2015 and 2016, ENERGA S.A. was paying indebtedness due to external funds which contributed to positive cash flows for FCFD capital providers.

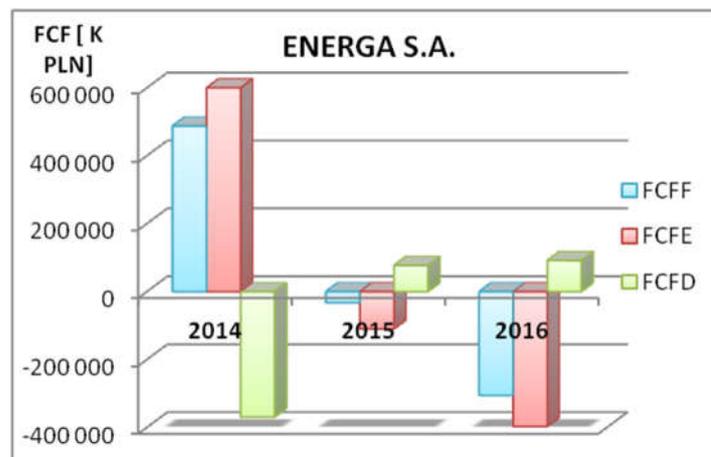


Figure 8. Development of free cash flows for owners, capital providers and all funding parties in ENERGA S.A. Group.

Source: Own elaboration on the grounds of ENERGA S.A. financial statement

Sources of cash in ENERGA S.A. Group for the period between 2014 and 2016 have been presented in figure no. 9.

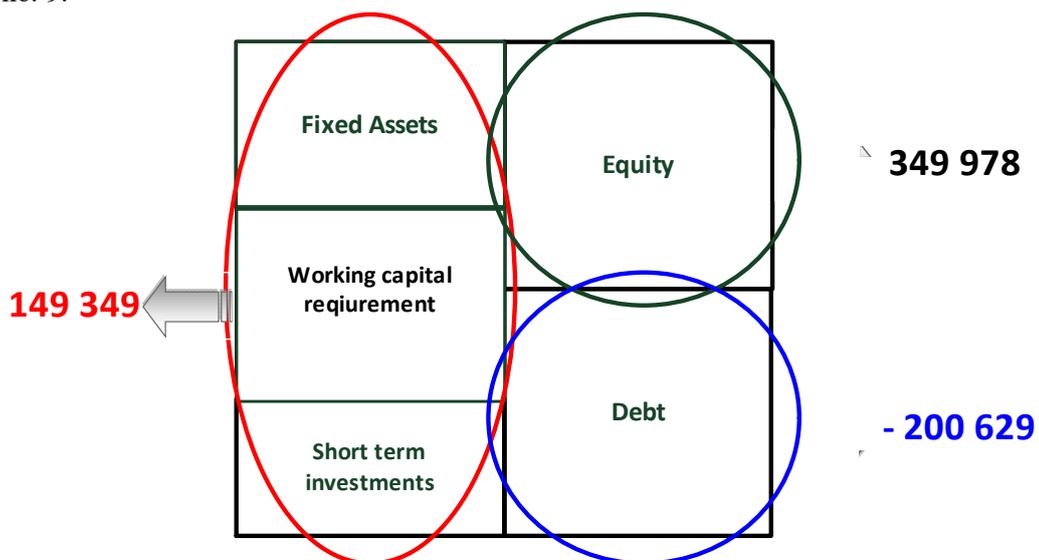


Figure 9. Sources of cash in ENERGA S.A. Group.

Source: Own elaboration on the grounds of ENERGA S.A. Group's financial statement

In the years covered with analysis, the enterprise ENERGA S.A. generated for its owners a total amount of PLN 349,978 thousand. From the area of a foreign capital, external capital providers delivered to the enterprise an amount of PLN 200,629 thousand. Total flow for all funding parties amounted to PLN 149,349 thousand.

PGE Polska Grupa Energetyczna S.A. as the third entity covered with the study in the majority of analysed years noted negative values of cash flows (figure 10). Year 2014 constitutes an exception (positive FCFE). Negative values of FCFE and FCFD in 2015 were affected by: a negative net result, an increase in the demand for net working capital, investment expenditures. In 2016, dynamic liquidity was determined by investment expenditures and an increase in the demand for net working capital.

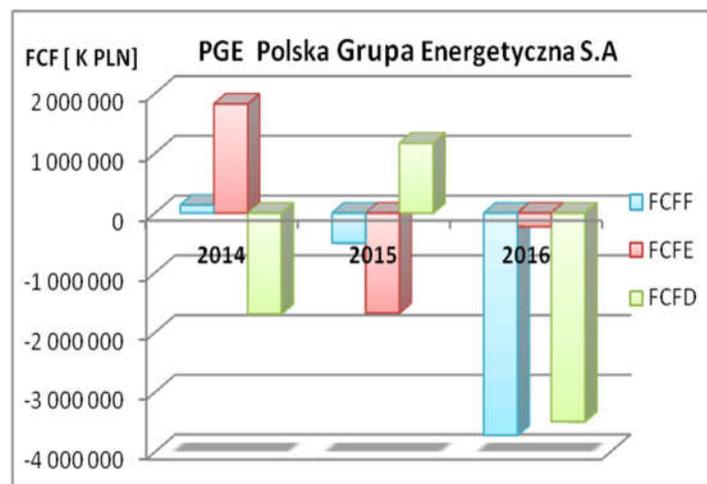


Figure 10. Development of free cash flows for owners, capital providers and all funding parties in PGE Polska Grupa Energetyczna S.A.

Source: Own elaboration on the grounds of PGE Polska Grupa Energetyczna S.A. financial statement

Areas of generating cash and values of cash flows in PGE S.A. have been presented in figure no. 11.

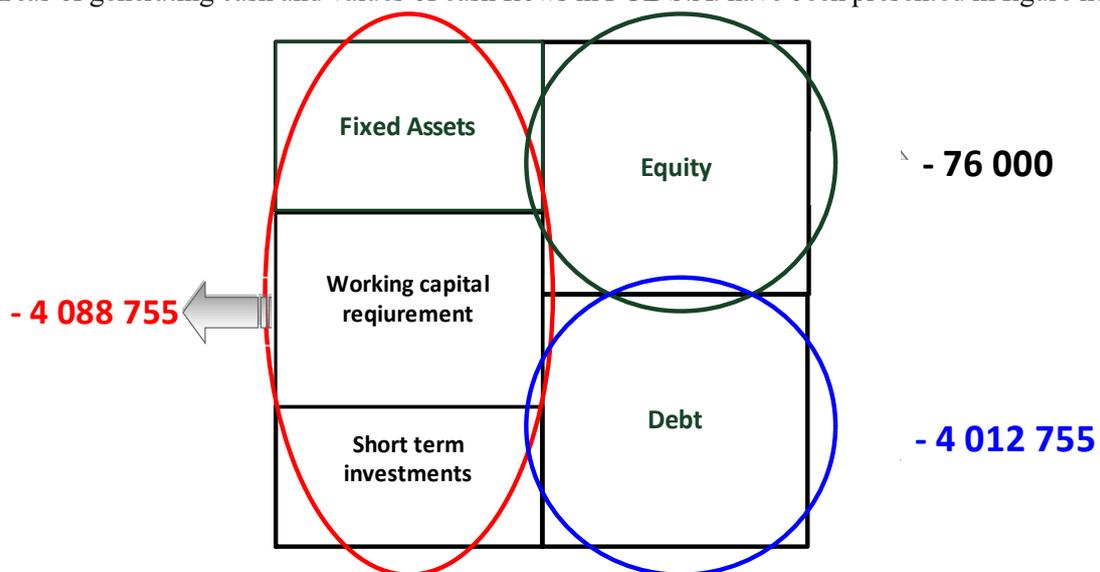


Figure 11. Sources of cash in PGE Polska Grupa Energetyczna S.A.

Source: Own elaboration on the grounds of PGE Polska Grupa Energetyczna S.A. financial statement

In the years 2014 - 2016 PGE Polska Grupa Energetyczna S.A. generated for its owners negative FCFE flows – PLN 76,000 thousand, which indicates a loss of cash in the analysed period.

It results mainly from CAPEX value (PLN – 14,802,000 thousand) and an increase in the demand for net working capital (PLN – 2,689,000 thousand).

In the years 2014 - 2016 external capital providers delivered cash to the enterprise in the amount of PLN 4,012,755 thousand. Total flow for all funding parties also indicated a negative balance and amounted to PLN 4,088,755 thousand.

Analysis of TAURON Polska Energia S.A. in the years 2014 - 2016 shows that the company generated positive cash flows in 2014 for owners (FCFE). In the remaining years negative cash flows are observed. In 2015, negative FCFE were caused by a negative net profit, investment expenditures in fixed assets, i.e. CAPEX and foreign capital repayments. In 2016, FCFE determined only negative investment expenditures. FCFD analysis allows stating that the main reasons that decided on the development of flows for all funding parties were the following: in 2014 – investment expenditures and an increase in the demand for net working capital, in 2015 – a negative operational profit and investment expenditures, and in 2016 - value of investment expenditures.

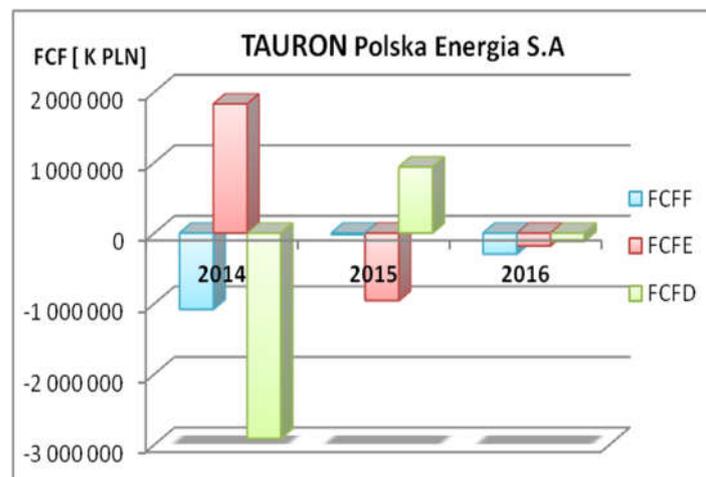


Figure 12. Development of free cash flows for owners, capital providers and all funding parties in TAURON Polska Energia S.A.

Source: Own elaboration on the grounds of TAURON Polska Energia S.A. financial statement

Areas of generating cash and values of cash flows in TAURON Polska Energia S.A. have been presented in figure no. 13.

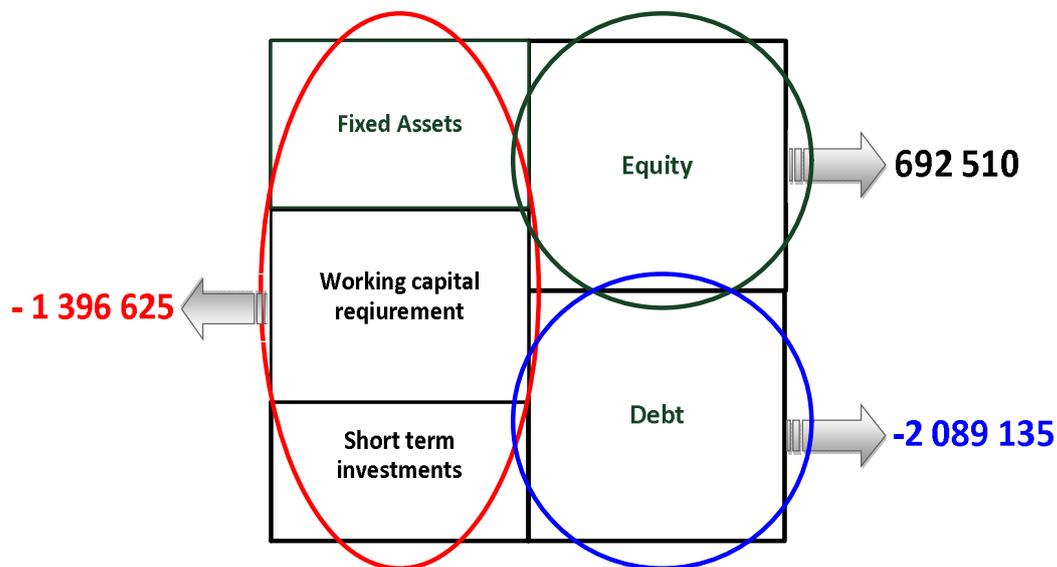


Figure 13. Sources of cash in TAURON Polska Energia S.A.

Source: Own elaboration on the grounds of TAURON Polska Energia S.A. financial statement

In the years 2014 – 2016, TAURON Polska Energia S.A generated for the equity owners an amount of PLN 692,510 thousand. In the case of capital providers the analysis indicates external funding in the amount of PLN 2,089,135 thousand. Total flow for all funding parties indicated a negative balance and amounted to PLN 1,396,625 thousand. FCFF flow was determined by investment expenditures (PLN – 6,879,648 thousand) and an increase in the demand for net working capital (PLN – 316,180 thousand).

6. Conclusion

A traditional liquidity measure in the current situation is insufficient so as to generate a satisfactory level of information for the purposes of effective finance management. It seems that an evolution is recommended in the direction of a larger than ever use of dynamic methodologies based on cash flows.

Maintaining dynamic liquidity understood as sustaining financial balance between cash flows from assets and cash flows from liabilities, i.e. for equity providers and foreign capital providers, gains particular importance in the case of managing finances of enterprises.

Conducted studies were aimed at stipulating enterprises' ability to generate cash flows from assets and liabilities and the ability to maintain financial balance between them. The analysis used managerial flows based on FCFF, FCFE and FCD methodologies.

Conducted studies on liquidity and factors developing it in the energy industry allowed specifying that main liquidity determinants in dynamic understanding included: operational profitability, CAPEX investment expenditures, demand for net working capital and effectiveness of foreign capital management determining the amount of paid interests and capital instalments.

The analysis of energy enterprises conducted in the years 2014 - 2016 indicated in most cases negative FCFF cash flows, which were determined with investments of tangible and equity investment. Simultaneously, the industry strongly supported maintaining financial balance by obtaining external funding of interest nature. In the majority of companies financial decisions allowed obtaining positive flows for owners, cumulated for the period and measured in accordance with FCFE methodology.

Presented considerations indicated the essence of effective liquidity management and maximisation of cash flows in the enterprise, in various areas of its activity.

References

- [1] Benninga S Z and Sarig O H 1997, *Corporate Finance: a Valuation Approach*, McGraw-Hill, New York, NY.
- [2] Brealey R and Myers, S C 2010, *Principles of Corporate Finance*, 10th ed., McGraw-Hill-Irwin, New York, NY.
- [3] Damodaran, A 2006, *Damodaran on Valuation*, 2nd ed., John Wiley & Sons, Hoboken, NJ.
- [4] Hawawini G, Viallet C 2002, *Finance for Executives. Managing for Value Creation*, South-Western.
- [5] Lorenc S, Kustra A 2016, Value added for stakeholders in mining operations based on cash flow - *Journal of the Polish Mineral Engineering Society*, no. 2.
- [6] Pratt S P, Niculita A V 2000, *Valuing a Business. The Analysis and Appraisal of Closely Held Companies*, McGraw Hill, New York.
- [7] Sierpińska, M, Jachna T 2007, *Metody podejmowania decyzji finansowych*, PWN.
- [8] <http://dobryprad.pl/dostawcy/prad/pge>, access: 10.07.2017
- [9] www.gpw.pl, access: 10.07.2017
- [10] <https://ir.enea.pl/pl/releases/3612>, access: 04.07.2017
- [11] <http://www.ir.energa.pl/pl/releases/3258>, access: 04.07.2017
- [12] <https://www.gkpge.pl/Relacje-inwestorskie/Materialy-do-pobrania>, access: 04.07.2017
- [13] <https://www.tauron.pl/tauron/relacje-inwestorskie/raporty-okresowe>, access: 04.07.2017