

Fair Valuation Of A Renewable Energy Company In Indonesia

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Abstract

Not only governments like Indonesia, but also many companies are eager to participate in the renewable energy sector to achieve their carbon neutral target due to the rise of environmental awareness. Mergers and acquisitions of the renewable company are opted by many companies to enter this new market. However, the buyer and the seller often experience disagreeable transaction value of the company, especially about the value of the renewable company which does not have a long historical track record since renewable business is relatively new. This research aimed to define the fair value of a relatively young company in reaching the transaction of acquisition. DCF valuation method is applied to find the fair value of Alpha Co., a renewable energy company that could represent the new upcoming attractive market in Indonesia, renewable energy market. This study revealed that the fair value of Alpha Co. is USD 12.47 million with 10.74% and 10.76% of WACC in 2021 and after 2021 respectively. In addition, the sensitivity analysis proves the hypothesis about the significant influence made by the assumptions on which the most sensitive component could result in a 66.88% deviation from the original calculated firm value in this study.

Article info

Article history:

Received 27 December 2021

Received in revised form 29 March 2022

Accepted 31 March 2022

Available online 31 March 2022

Keywords: Renewable energy, mergers and acquisitions, disagreeable transaction value, fair firm value, DCF valuation.

How to Cite: Fallery & Tjendrasa K. (2022).. Fair Valuation of a Renewable Energy Company in Indonesia.). Journal Ilmiah Manajemen dan Bisnis, 8 (1), 39-51

INTRODUCTION

The Indonesian Government set the target to achieve 23% renewable energy of the total national primary energy mix by 2025 outlined on the Presidential Decree no. 22/2017. However, renewable energy only contributed 17.78% of the total national primary energy mix by April 2021 (gatrik.esdm.go.id, 2021). In August 2021, Government aimed to prioritize solar PV including rooftop solar PV (RTS) to accelerate the development of renewable development by considering its competitive investment costs, fast implementation, and abundant resource in the country (ruangenergi, 2021).

Not only countries like Indonesia, but also many companies are eager to participate in the renewable energy sector to achieve their carbon neutral target. And mergers and acquisitions (M&A) as part of strategic alliances is opted by those companies to enter new markets (Rothaermel, F. T., 2021). However, in the context of M&A, the buyer and the seller often experience disagreement about the value of the company. This is because renewable energy companies commonly are newly born companies, which do not have a long historical track record (Salamzadeh & Kesim, 2015).

This study intends to offer new insight on how to determine the valuation of a startup company in Indonesia in which the previous study related to the valuation of a startup company has not dedicatedly discussed the renewable company, while this renewable sector would be expectedly attractive from an investor viewpoint in Indonesia.

The objective of this study is to determine the fair value of the renewables company in Indonesia as the agreeable transaction value from the viewpoint of the buyer and the seller. This study discusses the fair value of Alpha Co. (due to confidentiality concerns, the company is called 'Alpha Co.'). a renewable energy company that focuses on RTS development in Indonesia. Finding the fair value of Alpha Co.

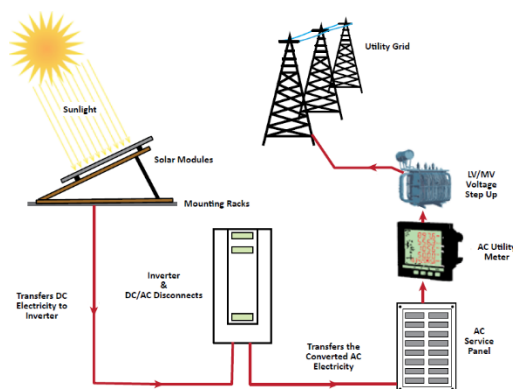
would be insightful, especially for the potential investor or company that wants to participate in the renewable energy sector in Indonesia. This is because not only some investors intended to acquire Alpha Co. but also this company could represent the new upcoming attractive market in Indonesia: renewable energy and RTS.

LITERATUR REVIEW

Rooftop solar PV (RTS)

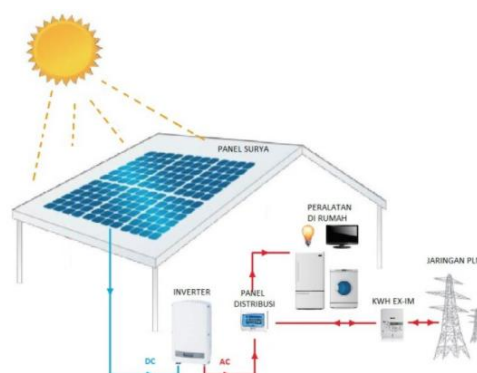
RTS is one of solar PV (photovoltaic) power plant types, which is a power generation system that converts solar energy (sunlight) into electricity carried out either directly, using PV technology, or indirectly, using thermal technology as in the case with concentrated solar power (PwC, 2018:131). The main components of solar PV power plant include solar PV modules, inverters, mounting racks, step-up transformers, and the grid connection interface as depicted on Figure 1 (IFC, 2015).

Figure 1. Overview of Solar PV Power Plant (International Finance Corporation, 2015)



Rooftop solar PV is generally the same as other solar PV power plants, but rooftop solar PV utilizes the roof of a house or the top cover of a commercial building for the location of installing solar panels as depicted on Figure 2 (rantauenergi.com).

Figure 2. Overview of rooftop solar PV system (sunergi.co.id)

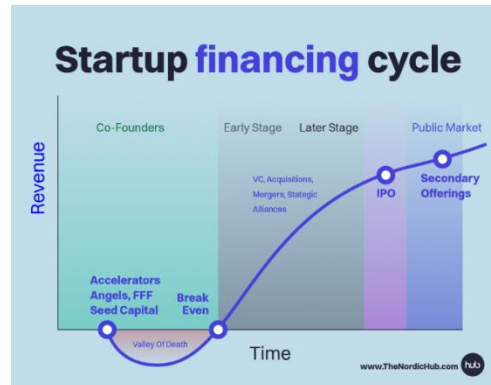


Concept of Start-up Company

Start-up companies are newly born companies which struggle for existence that are mostly formed based on brilliant ideas and grow to succeed, however, a clear picture of these entities remains unavailable (Salazadeh & Kesim, 2015). In comparison to traditional business ventures, start-ups are expected to grow rapidly, at a rate of between 5% and 7% per week in their initial stage (paulgraham.com, 2012).

The start-ups lack adequate capital to move on the next phase of the business, therefore, start-up require funding to grow. A typical start-up goes through several rounds of funding to take just enough money to reach the speed to shift into the next gear (paulgraham.com, 2005). The stages and source of start-up funding are shown on Figure 3.

Figure 3. Startup Financing Cycle (thenordichub.com, 2021)



Discounted Cash Flows Valuation (DCF Valuation)

DCF valuation calculate the present value of expected cash flows on which discount rate is applied to reflect the riskiness of these cash flows. Some steps of DCF valuation are outlined to do the estimation by considering the best to deal with the characteristic of young companies which are (Damodaran, A., 2010): Firstly, to estimate the future cash flows by using ‘top down’ or ‘bottom up’ approaches. ‘Top down’ estimates the revenue that the company can acquire from the total market, while the “bottom up” work within the capacity constraints of the firm to gain revenues. Secondly, to calculate the discount rate on which two key risk parameters for a firm need to be estimated which are the cost of equity and debt. Then, to estimate the value of the cash flow at the present value as well as to adjust the cashflow for the company to survive

Research Hypothesis

The following hypotheses are derived based the formulation of the problem:

1. The researcher will not be able to find the clear trend of FCFF components against the company’s revenue
2. The macroeconomics and nature of the industry are the strong drivers to estimate the value of the firm
3. Different assumptions used in the DCF valuation approach will result in the significant results of firm valuation

Based on the aforementioned hypotheses, the result of valuation through DCF method hypothetically would be heavily depending on the multiple assumptions which would then regard as strong drivers such as cost of equity, EBIT margin (% revenue), capex margin (% Revenue), market share (%), perpetual growth, etc. Therefore, the analyst or the user of DCF valuation should selectively use the assumptions with strong justification to support its valuation result.

METHOD

This study focuses on finding the fair valuation of Alpha Co. And the firms or assets can be valued in one of four ways (Damodaran, A., 2012).

1. Asset-based valuation
2. Discounted cash flow valuation (DCF valuation)
3. Relative valuation
4. Option pricing approaches that use contingent claim valuation

DCF valuation approach is applied in this study as the most common practice adopted by the analysts. The value of the firm is obtained by discounting expected cash flows to the firm, that is,

residual cash flows after meeting all operating expenses, taxes and reinvestment needs, but prior to debt payments—at the weighted average cost of capital (WACC)— that is, the cost of the different components of financing used by the firm, weighted by their market value proportions. However, since the forever cash flows cannot be estimated, therefore, the DCF formula is summing the estimated “growth period” and estimated terminal value (to capture the value at the end of the period. The following formula is the DCF model by incorporating the terminal value.

$$\text{Value of Firm} = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t} + \frac{\text{Terminal Value}}{(1+r)^n}$$

In the context of DCF valuation which also named as ‘intrinsic valuation, four pieces of puzzles to make up the ‘intrinsic valuation’ are outlined as follows (Damodaran, A., 2010).

1) The cash flows from existing assets

The value of the firm is obtained by discounting the expected cash flows to the firm which commonly mentioned as free cash flows to the firm (FCFF). Generally, FCFF is calculated by summing the after-tax income with depreciation, then to deduct them with capital expenditures and the change of working capital (Damodaran, 2012)

2) The expected growth from both new investments and improved efficiency on existing assets

Estimating the future earnings and cash flows on the firm being valued, generally by estimating an expected growth rate in earnings. There are three key numbers in forecasting future cash flows (Damodaran, A., 2011) which are:

1. Revenue growth, which can be obtained by either extrapolating from the recent past or by estimating the total market for a product or service and an expected market share
2. How the margin will evolve over the time whereas this “pathway to profitability” can be rockier for some firms than others, with fixed costs and competition playing significant roles in the estimation
3. Growth requires reinvestment on which this reinvestment reduces the cash flows.

3) The discount rates that emerge from our assessments of risk in both the business and its equity

The suitable discount rate for the free cash flow method is WACC with the equation that the cost of capital is the cost of equity plus the cost of debt as shown below (Fernandez, 2007).

$$WACC = \frac{E}{V} \times Re + \frac{D}{V} \times Rd \times (1 - Tc)$$

Where:

- Re = cost of equity
- Rd = cost of debt
- E = market value of the firm’s equity
- D = market value of the firm’s debt
- V = E + D
- $\frac{E}{V}$ = percentage of financing from equity
- $\frac{D}{V}$ = percentage of financing from debt
- Tc = corporate tax rate

Cost of Equity (Re)

Cost of equity is the return that a company requires for an investment or project, or the return that an individual requires for an equity investment (investopedia.com, 2021). One of the most common formula is Capital Asset Pricing Model (CAPM) as follows.

$$\text{Expected Return} = Rf + \beta (Rm - Rf)$$

Where:

- Rf = risk-free rate
- β = sensitivity (industry risk)
- Rm = expected return of the market
- Rm – Rf = market risk premium

Cost of Debt (Rd)

The first is the risk-free rate, an input to the cost of equity as well. The second component is the default spread. The final input needed to estimate the cost of debt is the tax rate (Damodaran, 2010)

$$\text{After-Tax Cost of Debt} = (\text{Risk-Free Rate} + \text{Default Spread}) (1 - \text{Marginal Tax Rate})$$

Where:

$$\text{Risk-Free Rate} + \text{Default Spread} = \text{Pre-Tax Cost of Debt}$$

4) The assessment of when the firm will become a stable growth firm (allowing us to estimate terminal value).

After calculating the projected free cash flows over the certain forecasting period, then, the next step is to estimate the free cash flow for the period thereafter to infinity. The terminal value is estimated by assuming a constant perpetual growth rate for cash flows beyond the horizon. The terminal date is often referred to as the horizon, generally, it is a horizon whenever the cash flow is assumed can grow at a constant rate perpetually thereafter (Ross et al., 2016:415).

$$TV_t = \frac{CF_{T+1}}{R_{WACC} - g_{CF}} = \frac{CF_T (1 + g_{CF})}{R_{WACC} - g_{CF}}$$

Where:

CF = the net cash flows and is equal to earnings before interest and taxes (EBIT), minus taxes, minus capital spending, minus increases in net working capital plus depreciation

g_{CF} = the growth rate of cash flow beyond T

R_{WACC} = the weighted average cost of capital (WACC)

RESULTS AND DISCUSSION

Revenue Growth Expectation

The revenue is calculated from the market share which possibly could be obtained by Alpha Co. in the future. This study conservatively assumed Alpha Co. could secure a 15% market share in the future noting that the company manage to maintain its market sharing in the range of 15.90-18.38% in the last 3 years.

With regards to the market size, this study refers to Govt target to achieve 70 MW of total installed RTS capacity by 2021, and 3,600 MW installed capacity by 2025. However, the Govt's target is expected will not be 100% delivered in the 2021–2025-time span. But the realization would be most likely to follow the average of previous realization from Year 1-5 based on RUPTL 2011-2019. Then, realization average of year 1-5 is multiplied by Govt's target to forecast the future market size in 2021-2025 as shown on Table 1.

Table 11. Forecasted RTS Market Size (or Total Installed RTS Capacity) in 2021-2025 (MW)

Period	Target	Forecasted by using CAGR			Target	CAGR
	2021	2022	2023	2024	2025	
Target installed capacity	70.00	187.46	502.00	1344.32	3600.00	167.79%
Historical realization	96.53%	70.49%	47.76%	46.60%	50.69%	
Forecasted installed capacity	67.57	132.15	239.77	626.42	1824.83	

The forecasted revenue growth is based on 15% of the forecasted total installed capacity in 2021-2025.

Free Cash Flows Calculation

The decrease of solar PV projects (including RTS) occurs from time to time, the trend is expected to continue by yielding -7.51% annual growth from 2021-2025 (IHS Markit, 2021). Therefore, the forecasted contract value (IDR billion/MW) of Alpha Co. will continue to fall by using -7.51% price decrease as shown on Table 2. This forecasted contract value will be used to calculate the revenue of Alpha Co. by capturing a 15% of market size.

Table 22. Estimated Contract Value of 2021-2025 in Indonesia

Period	Realization			Forecast			
	2019	2020	2021	2022	2023	2024	2025
Growth				-7.51%	-7.51%	-7.51%	-7.51%
Contract Value (billion IDR)	5.59	8.70	13.54				
Project Size (MWp/year)	0.50	1.62	3.76				
Estm Contract Value (billion IDR/MWp)	11.10	5.39	3.60	3.33	3.08	2.85	2.64

To calculate the free cash flows (FCFF), some key features are important to be determined. Those key features are EBIT, depreciation, CAPEX (Capital Expenditures), and the change of NWC between this year and previous year.

1. The revenue of Alpha Co. is calculated by multiplying 15% from the total market size
2. The EBIT, CAPEX, and depreciation are calculated by assuming the EBIT share (% Revenue), CAPEX share (% Revenue), and depreciation share (% Revenue) will be the same for future works. To forecast the EBIT, CAPEX, and depreciation, the growth is based on the last 3-year of EBIT, CAPEX, and depreciation share (against revenue) which are 5.51%, 2.86%, and 0.76% respectively as shown on Table 3.

Table 3. Trend of EBIT, CAPEX, and depreciation in the Last 3-year Average (% Revenue)

Period	2018	% Rev.	2019	% Rev.	2020	% Rev.	Last 3-year (% Rev.)
Operating Revenues	3,792,388,083		6,759,199,569		8,158,459,953		
Profit Before Tax	299,150,717	7.89%	327,158,412	4.84%	310,073,145	3.80%	5.51%
Capital Expenditures	91,320,560	2.41%	84,875,027	1.26%	400,799,255	4.91%	2.86%
Depreciation	28,455,214	0.75%	50,084,142	0.74%	64,235,043	0.79%	0.76%

3. The future Δ NWC is assumed as 0. In the context of NWC, it is assumed that no leverage will be implemented. Therefore, no significant influence would happen to the financial performance that affects the current assets and current liabilities which are the components to calculate NWC. In conclusion, it is assumed that the long-term projection of NWC will be balanced out for the remaining years of the forecasted period and the future change of NWC will remain 0.

4. The Corporate Income Tax (CIT) rates are applied as 22% for the fiscal year 2020/2021, and 20% for the fiscal year onwards (taxsummaries.pwc.com, 2021). While a 25% CIT for 2020 is applied as per Indonesia CIT historical rates (tradingeconomics.com).

From the aforementioned assumptions, FCFF can be calculated as shown on Table 4.

Table 4. Calculation of FCFF in 2021-2025 (in million USD)

Period	Unit	2020	2021	2022	2023	2024	2025
Forecasted Market Size	MWp		67.57	132.15	239.77	626.42	1824.83
Est. Contract Value	mUSD/MWp		0.25	0.23	0.21	0.20	0.18
Total Contract Value in the market	mUSD		16.85	30.48	51.16	123.62	333.10
Estimated market share	%		15.00%	15.00%	15.00%	15.00%	15.00%
Real / Forecasted revenue	mUSD	0.56	2.53	4.57	7.67	18.54	49.97
EBIT Margin (% Revenue)	%	4.59%	5.51%	5.51%	5.51%	5.51%	5.51%
EBIT (a)	mUSD	0.03	0.14	0.25	0.42	1.02	2.75
Tax rate (b)	%	25.00%	22.00%	20.00%	20.00%	20.00%	20.00%
EBIT (1-Tax rate) = (c) = (a) x (1- (b))	mUSD	0.02	0.11	0.20	0.34	0.82	2.20
Depreciation Margin (% Revenue)	%	0.79%	0.76%	0.76%	0.76%	0.76%	0.76%
Add: Depreciation (d)	mUSD	0.00	0.02	0.03	0.06	0.14	0.38
Capex Margin (% Revenue)	%	4.91%	2.86%	2.86%	2.86%	2.86%	2.86%
Less: Capital Expenditure (e)	mUSD	0.03	0.07	0.13	0.22	0.53	1.43
Less: rNWC (f)	Unit	(0.02)	-	-	-	-	-
FCFF = (c) + (d) - (e) - (f)	mUSD	0.02	0.06	0.11	0.18	0.43	1.15

Weighted Average Cost of Capital Calculation

This study opted 6.74% from the average of the last 5-year of 10-year Govt bond rate as the risk-free rate from December 2017 until 2021.

In this case, Alpha Co. expected the return to their investment is conservatively 11%. And this 11% is regarded as the cost of equity.

To calculate the cost of debt, the tax rates to be applied is CIT which are 22% for the fiscal year 2020/2021, and 20% for the fiscal year onwards. And the default spread referred to Indonesia's country credit rating which is 1.68% (pages.stern.nyu.edu, 2021).

The WACC is found as 10.74% and 10.76% for 2021 and after-2021 respectively as shown on Table 5.

Table 5. The Calculation of Cost of Debt and WACC

Item	Value	Component
JISDOR xrate	14,441.00	IDR/USD (As per December 6th, 2021)
Equity (IDR)	5,182,826,385.00	
Debt (IDR)	235,806,039.00	
Equity (USD)	358,896.64	E
Debt (USD)	16,328.93	D
Equity + Debt	375,226	V
Cost of Equity*	11.000%	Re
Risk-free Rate	6.74%	a
Default Spread	1.68%	b
Tax Rate 1 in 2021	22%	Tc1
Tax Rate 2 after 2021	20%	Tc2
Cost of Debt 1	6.56%	(a + b)*(1 - Tc1)
Cost of Debt 2	6.73%	(a + b)*(1 - Tc2)
WACC1 in 2021	10.74%	(E/V*Re)+((D/V)*Rd1*(1-Tc1))
WACC2 after 2021	10.76%	(E/V*Re)+((D/V)*Rd2*(1-Tc1))

*Cost of Equity is based on the Alpha Co. owner's expected return

Terminal Value Calculation

The perpetuity approach is opted on which the company is expected to grow forever with the long-term growth rate.

Though the historical data of power plant installed capacity in Indonesia remained increasing from time to time, it was reported that the electrification ratio in Indonesia has reached 99.4% as per September 2021 (antaranews.com, 2021). This is to say that the development of future power plant will not be as massive as in the past. By assuming 2022 is the starting period when the development will be extremely slow (Govt planned to reach 100% electrification ratio in 2022), the forecasted annual growth rate in 2023-2025 is adopted which then regarded as the long-term growth rate to the perpetual approach terminal value. The forecasted annual growth rate in 2023-2025 is 3.70% (IHS Markit, 2021).

The calculated terminal value is USD 18.11 million, and the NPV of terminal value is USD 10.87 million as shown on Table 6.

Table 6. The Calculation of NPV Terminal Value

Item	Value		Remark
CFT	1.15	mUSD	Forecasted CF of end period
gcf	3.70%	%	Perpetual growth
WACC	10.76%	%	WACC rate
TV _t	18.11	mUSD	= (CFT*(1+gcf))/(WACC-gcf)
n	5	years	End year of forecasted period
NPV TV	10.87	mUSD	= TV/((1+WACC)^n)

Firm Value Calculation

The value of the firm or enterprise value is the total NPV of forecasted FCFF as shown on Table 7, the firm value is USD 12.11 million.

Table 7. The Calculation of Firm Value (NPV of FCFF and Terminal Value) in million USD

Period	Component	Unit	2021	2022	2023	2024	2025
WACC	WACC	%	10.74%	10.76%	10.76%	10.76%	10.76%
FCFF	FCFF	mUSD	0.06	0.11	0.18	0.43	1.15
NPV Terminal Value	Tv	mUSD					10.87
NPV FCFF	FCFF/(1+WACC)^(Year-2020)	mUSD	0.05	0.09	0.13	0.28	0.69
Firm Value		mUSD	12.11				

The equity (total shareholders' equity) of a company reflects its current net worth which commonly gives a view to lenders on how much the business is worth. In other words, the equity of the company should be included as part of the firm value. The equity is the difference between Alpha Co's total assets and its total liabilities (equity can be found in the balance sheet). By adding the equity of Alpha Co., it is found that the value of Alpha Co. is USD 12.47 million (USD 12.11 million + USD 0.36 million).

Sensitivity Analysis

This section gives the insight how true the hypothesis that DCF valuation heavily relies on its assumptions by doing sensitivity analysis. 25% multiple by the value of assumption used to find the high-end and low-end of the firm valuation.

From the sensitivity analysis shown on Table 8, some components or assumptions have a significant influence on the valuation on which the most sensitive component is the cost of equity. 25% change of cost of equity could result in USD 8.34 million deviations to the original calculated firm value or 66.88% higher than the original calculated firm value.

Table 8. The Sensitivity Analysis Result

Items	Sensitivity Scenario		
	Low-end (25% x original)	Original	High-end (25% x original)
Cost of equity	8.25%	11.00%	13.75%
EBIT Margin (% Revenue)	4.13%	5.51%	6.89%
Capex Margin (% Revenue)	2.14%	2.86%	3.57%
Estimated market share (%)	11.25%	15.00%	18.75%
Perpetual growth	2.78%	3.70%	4.63%
Tax post-2021	15.00%	20.00%	25.00%
Depreciation Margin (% Revenue)	0.57%	0.76%	0.95%
Growth of contract value (IDR/MWp)	-5.63%	-7.51%	-9.38%
Equity (USD)	269,172.48	358,896.64	448,620.80
Risk-free Rate	5.05%	6.74%	8.42%
Default Spread	1.26%	1.68%	2.10%
Total Shareholders' Equity (mUSD)	0.269	0.359	0.449
Debt (USD)	12,246.70	16,328.93	20,411.16

Items	Valuation Result			Max.	Max. Deviation (USD million)	% Max. Deviation
	Low	Original	High			
Cost of equity	20.81	12.47	8.69	20.81	8.34	66.88%
EBIT Margin (% Revenue)	6.69	12.47	18.25	18.25	5.78	46.36%
Capex Margin (% Revenue)	16.22	12.47	8.72	16.22	3.75	30.07%
Estimated market share (%)	9.44	12.47	15.50	15.50	3.03	24.28%
Perpetual growth	11.21	12.47	14.11	14.11	1.64	13.16%
Tax post-2021	13.91	12.47	11.03	13.91	1.44	11.54%
Depreciation Margin (% Revenue)	11.47	12.47	13.47	13.47	1.00	7.99%
Growth of contract value (IDR/MWp)	13.46	12.47	11.54	13.46	0.99	7.95%
Equity (USD)	12.62	12.47	12.50	12.62	0.15	1.23%
Risk-free Rate	12.56	12.47	12.38	12.56	0.09	0.75%
Default Spread	12.49	12.47	12.45	12.49	0.02	0.19%
Total Shareholders' Equity (mUSD)	12.38	12.47	12.45	12.45	-0.02	-0.18%
Debt (USD)	12.35	12.47	12.44	12.44	-0.03	-0.23%

Valuation Result Negotiation

Company A (due to confidentiality concerns, the acquirer is called ‘Company A’) aimed to accumulate the assets from the RTS sector in Indonesia. Company A has less than USD 10 million (or USD 9.99 million) of the total budget for acquisition and project development purposes. Company A aimed to finance a 3 MW RTS project which will conservatively require USD 2.55 million of CAPEX. In other words, Company A has a remaining USD 7.45 million to acquire a local RTS company in Indonesia (Alpha Co.) which is assumed as sufficient cost to acquire Alpha Co. by taking minority share with 25-49% portion. On the other hand, Alpha Co. is willing to share its portion in the range of 30-49% to Company A. The business situation is depicted in Figure 4 and Table 9.

Figure 4. AP (Aspiration Point), RP (Resistance Point), ZOPA, and BATNA of Company A and Alpha Co.

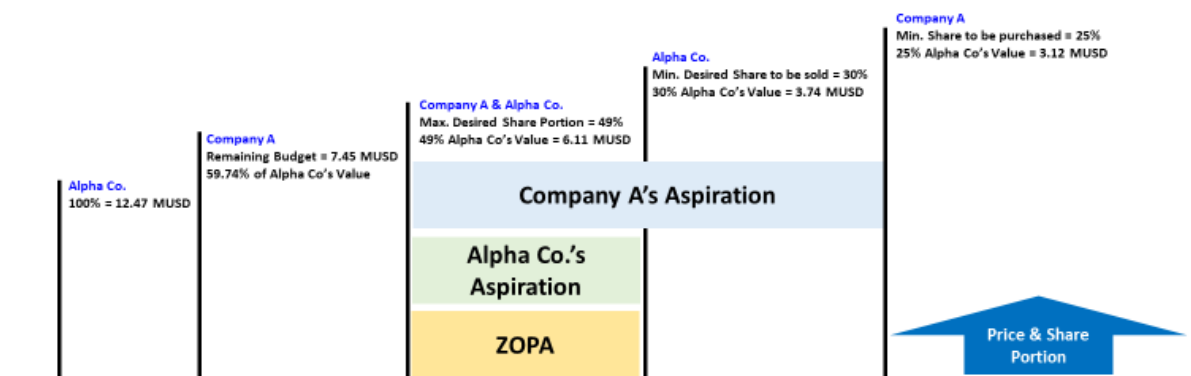


Table 9. Company A's Budget Allocation and Calculated Firm Value based on its Portion

Item	Value	Unit	Remark
Capex	850.00	USD/kW	
Project Size	3.00	MW	
Total Company A Budget	10.00	mUSD	
Total Capex	2.55	mUSD	Budget to finance the project
Remaining Budget	7.45	mUSD	To do the acquisition
Firm Value			
100.00%	12.47	mUSD	Total firm value
49.00%	6.11	mUSD	Alpha Co. Max.
30.00%	3.74	mUSD	Alpha Co. Min.
25.00%	3.12	mUSD	Company A Min.
49.00%	6.11	mUSD	Company A Max.
59.74%	7.45	mUSD	Company A can acquire 59.74% of Alpha Co.

It is found that the negotiation between both companies would successfully meet the ZOPA (Zone of Possible Agreement). This is to say that both companies' expectations could be met as follows.

- Company A. This company can purchase the share portion in the range of their 'sweet spot' or 25-49% because their remaining money (USD 7.54 million) can purchase 59.74% of Alpha Co's shares.
- Alpha Co. This company can sell the share portion at the desired price and the share portion to be sold (49%).

DISCUSSION

DCF valuation is found as the most common practice done by the analysts in doing the firm valuation. From a series of discussions with RTS companies, the author recognized that those companies commonly apply the DCF valuation method. This is to say that applying DCF valuation to value RTS company will become the effective way to negotiate between the buyer and seller who generally apply this valuation method.

As shown in Table 4, cash flows to the firm are the residual cash flows after meeting all operating expenses, taxes, and reinvestment needs, but before debt payments. Then, these cash flows to the firm were discounted at the weighted average cost of capital (WACC) of 10.74% and 10.76% in 2021 and onward respectively, on which this mechanism fulfilled the rule of DCF valuation method as mentioned in the section of literature review.

However, since the forever cash flows cannot be estimated, therefore, the terminal value is estimated terminal value to capture the value at the end of the period). In this study, it is assumed that the long-term growth rate is 3.70% which is considered relevant because the long-term growth rate is generally in the range of 2-4% on which the range is lower than the growth of the global economy (Terminal Value, n.d.).

Typically, inputs to DCF valuation include future cash flow projections (created by management and/or valuers) for a limited period, which typically includes at least five years, a sustainable growth rate where cash flows are expected to in perpetuity beyond the end of the explicit projection period, and the discount rate at which future cash flows are reduced to obtain the present value of the company (Shaked, D'Arezzo, & Plastino, 2010). This study applied 5-year of cash flows projection (2021-2025).

Apart from aforementioned conditions, it is worth noting that this DCF valuation or study have some limitation as follows.

- The future changes of Govt regulations or initiatives are not predicted, unless those which have been officially informed by Govt
- This evaluation does not cover other types of solar PV systems instead of the on-grid rooftop solar PV (connected to the PLN electricity system)
- The market size is based on the Indonesian Govt's target. The author did not conduct a market survey to estimate the market size (primary data)
- Business risk assessment is not covered in this study

CONCLUSION

1. DCF valuation revealed that the firm value of Alpha Co. is USD 12.47 million with 10.74% and 10.76% of WACC in 2021 and after 2021 respectively. The WACCs are different because of the different Corporate Income Tax implementation in 2021 (22%) and after 2021 (20%).
2. The valuation of Alpha Co. can be regarded as the from the viewpoint of the buyer and the seller because the negotiation of valuation between both companies would successfully meet the ZOPA
3. The result of sensitivity analysis proves the hypothesis that DCF valuation heavily relies on its assumptions, while the analysts have the flexibility to choose the assumptions. Consequently, the firm valuation result could be way different from the counterparts.

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