
## YANHAI ALUMINUM: ROI CALCULATIONS

**RC STRATEGY**

**Sections B & C**

**FALL 2025**

1

## Return on Investment – Phase One

Price increase = 4% * $1,811 = $72.44 / T

Cost saving = Current cost – Phase One cost = $1,885.9 - $1,772.8 = $113.10 / T

Therefore, benefit/ ton = increase in revenue/ T + decrease in cost/ T = $72.44 + $113.10 = $185.54/ T

Production volume = 1.2 m T / year

Annual benefit = $185.54 * 1.2 m = $222.65 m / year

Investment = $1.5 b

Return on Investment = (Benefit/Investment) * 100% = ($222.65 m/$1.5 b)*100%
= 14.84%

RC STRATEGY
FALL 2025
2

2

## Return on Investment – Phase Two

Additional cost saving on existing capacity = Phase One cost – Phase Two cost = $1,772.8 - $1,631.0 = $141.80 / T
Existing production capacity = 1.2 m T / year
Annual benefit on existing capacity = $141.80 * 1.2 m = $170.16 m / year

Price at which additional Aluminum is sold = 1.04 * $1,811 = $1,883.44 / T
Cost of producing the additional Aluminum = $1,631.00 / T
Contribution margin per Ton of additional Aluminum = Price – Cost = $1,883.44 - $1,631.00 = $252.44 / T
Additional capacity = 1.1 m T/ year
Annual contribution from additional capacity = $252.44 * 1.1 = $ 277.68 m / year

Annual benefit from Phase Two = Annual benefit on existing capacity + Annual profit from additional capacity
= $170.16 m + $ 277.68 m = $447.84 m/ year
Investment = $5.5 b

Return on Investment = (Benefit/Investment) * 100% = ($4447.84 m / $5.5 b)*100%
= 8.14%

RC STRATEGY
FALL 2025
3

3

## At What Price of Aluminum Would Phase Two Offer a Return on Investment of 15%?

Let the Price of Aluminum be $ P / Ton
Price for "Green" Aluminum = $ 1.04 * P / Ton
Cost of producing the additional Aluminum = $ 1,631.0 / T
Contribution per Ton of additional capacity = $ (1.04*P - 1,631.0) /T
Additional capacity = 1.1 m T/ year
Annual contribution from additional capacity = $ (1.04*P - 1,631.0) * 1.1 m / year

We know that phase two creates additional benefit for existing capacity
Annual benefit on existing capacity = $141.80 * 1.2 m = $170.16 m / year

Annual benefit from Phase Two = Annual benefit on existing capacity + Annual profit from additional capacity
= $ 170.16 m + $ (1.04*P - 1,631.0) * 1.1 m
Investment = $ 5.5 b
For 15% Return on Investment, annual benefit = 15% * $ 5.5 b = $ 825 m / year
Thus, to achieve a 15% Return on Investment, $ 170.16 m + $ (1.04*P - 1,631.0) * 1.1 m = $ 825 m
Solving for P, we get P = $ 2,140.68
(18.20% above the current Price)

RC STRATEGY
FALL 2025
4

4

## Limitations and Extensions

- We made some simplifying assumptions in these calculations:
  - We assumed the project will last till perpetuity.
    Most projects have limited lifetimes.
  - We assumed the investments in phase one and two will immediately produce the revenue benefits and cost savings.
    Most investments take time to yield full benefits.
  - We assumed that the investments are made in one go at the start of the projects.
    Most large investments take time.

- Accounting for all these elements would require that we develop a more sophisticated model that looks at the benefits and costs over time and applies a way to account for the fact that they arise and are incurred at different points of time.
  - Later in your MBA curriculum, we will go through more sophisticated models that take these elements into account.



5