Appendix A – Financial Forecast Spreadsheet Description – involved data assessment

1. ***Introduction*** – the financial forecast spreadsheet stands as an intricate compass guiding the company's strategic trajectory, capturing the interplay of revenues, expenses, assets, and liabilities. This comprehensive document amalgamates the Profit and Loss (P&L) Statement, Cash Flow Forecast, and Balance Sheet, offering stakeholders an exhaustive insight into the Thesaur Silica Sand Quarry project's financial health, operational efficiency, and growth prospects. In enhancing its predictive accuracy and robustness, a Monte Carlo Analysis, serving as a sensitivity analysis, was incorporated to simulate a myriad of scenarios, thereby offering stakeholders an insight into possible risk mitigation strategies and financial resilience. The period under consideration is maximum 35 years starting from 2025. The numbers and expectations encapsulated within this financial forecast are built on management's best estimates and predictions, informed by qualitative and quantitative factors, market research, industry trends, and competitive dynamics. To bolster the robustness of these projections, management has endeavoured to substantiate assumptions and forecasts to a large extent through quotations from reputable vendors, current market prices, historical data trends, and comprehensive financial analysis. ***This diligent validation process is aimed to ensure that the financial forecast remains anchored in empirical evidence, market realities, and prudent judgment, thereby fostering transparency, accountability, and confidence among stakeholders.***

2. ***Assumptions*** – the construction of this robust financial forecast necessitated the formulation and validation of various assumptions that underpin the projections, ensuring that they resonate with the company's strategic objectives, market dynamics, operational realities, and stakeholder expectations. This section explains the main assumptions encompassed within the financial forecast, delineating the types of data utilized, such as consumption patterns, pricing strategies, cost structures, and their respective sources.

   A. Demand Forecasts – Data Type: This encompasses the anticipated market demand, and sales volume projections across diverse product categories; ***Sources***: Consumption patterns are derived from historical sales data, market research reports, customer surveys, and industry benchmarks. Market demand projections are informed by demographic trends, economic indicators, competitive analysis, and market segmentation studies; ***Data Used in Model***: The processing plant will produce 3 types of sand with different qualities: <90% SiO_2 used in construction; >99.5% SiO_2 and >99.9% SiO_2 - these products will be sold in bulk, 1 ton big bags, and 25kg bags. From the by-products two clay products, a TiO_2, a $ZrSiO_4$ product and a Calcium Carbonate will be produced.

   B. Pricing Strategies and Revenue Projections – Data Type: This pertains to the pricing strategies, discount structures, promotional activities, and revenue generation forecasts; ***Sources***: Pricing strategies are formulated based on competitive analysis, cost-plus pricing models, value-based pricing strategies, and customer willingness-to-pay assessments. Revenue projections are anchored in sales forecasts, market trends, contractual agreements, and historical revenue data; ***Data Used in Model*****:** The following FOB prices were used for the model:

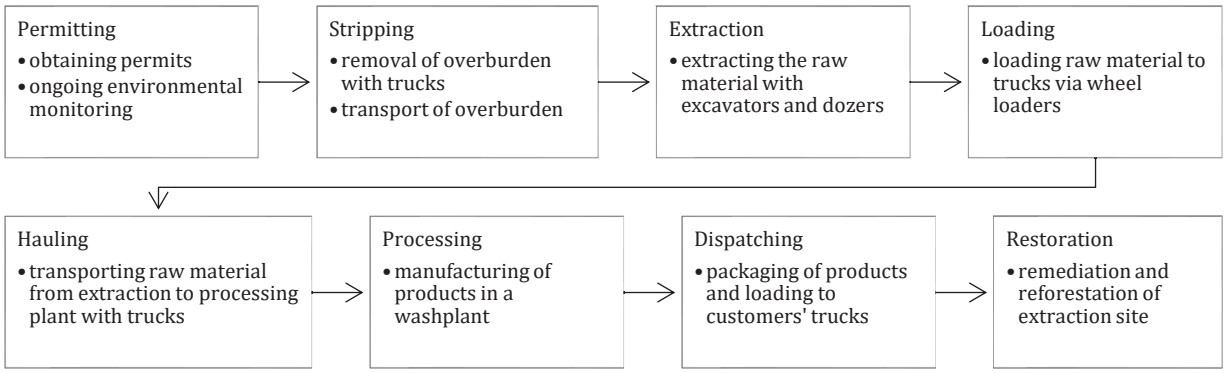
Products	Price FOB	
Construction Sand (<90% bulk)	14.00	EUR/t
Construction Sand (<90% 1t big bag)	20.00	EUR/t
Quartz Sand (>99.5% bulk)	65.00	EUR/t
Quartz Sand (>99.5% 25kg)	125.00	EUR/t
Quartz Sand (>99.5% 1t big bag)	75.00	EUR/t
Quartz Sand (>99.9% 25kg)	330.00	EUR/t
Pottery Clay (25kg)	250.00	EUR/t
ZrSiO4 (25kg)	2500.00	EUR/t
TiO2 (25kg)	2500.00	EUR/t
Calcium Carbonate (25kg)	150.00	EUR/t

   C. Operating Data – Data Type: This includes the anticipated consumption patterns for machines, equipment, and products across the mining and manufacturing process; ***Sources***: Consumption patterns are derived from historical consumption data, supplier's recommendations and data sheets; **Data Used in Model:** The following consumption rates were used for the model:

Item	Rate	Unit
Capacity excavators stripping	40	m3/h
Capacity trucks stripping	64	m3/h
m3 per truck stripping	16	m3
Capacity extraction	40	to/h
Diesel CAT 330 Excavator	20	l/h
Diesel CAT D6N bulldozer	20	l/h
Diesel CAT 966C track loader	20	l/h

Diesel Scania dump trucks	15	l/h
Diesel CAT 950 Loader	15	l/h
Capacity dryers	60	to/h
Heating oil of dryers	250	l/h
Capacity bagging plant (25kg)	1,200	Bags/h
Capacity bagging plant (1t big bag)	50	Bags/h
Support vehicles	10	l/h
Water in Silt	500	g/l
Recovery Filtrate	75%	Cake dryness (% w/w)
Water in Sand	14%	Moisture content
Water in Aggregate	4%	Moisture content
Flocculant consumption	0.003	kg/m3
Electricity processing	1,000	kW

D. Cost Structures and Expense Allocations – Data Type: This encompasses the cost of goods sold (COGS), operating expenses, and other cost structures vital for sustaining business operations. The model is following the life of mine cycle which comprises of the following steps depicted. In every step the cost is calculated based on the operating data shown above as well as the prices shown in the following chapters.



E. Life of Mine Cycle – Sources: Cost structures are derived from supplier quotations, vendor contracts, production cost analyses, labour cost assessments, and overhead expense evaluations; ***Data Used in Model*:** The following rates were used for the model:

Item	Rate	Unit
Rental excavators	135.00	EUR/h wet
Rental trucks stripping	100.00	EUR/h wet
Aggregates levy	0.26	EUR/to extracted
Price electricity	0.20	EUR/kWh
Price diesel	1.50	EUR/l
Price heating oil	0.65	EUR/l
Price water	0.01	EUR/m3
Flocculant	2.16	EUR/kg
Testing and Compliance	0.25	EUR/to
Big bags	3.75	EUR/Bag
Bags	0.13	EUR/Bag

Item	Overhaul Parts	Overhaul Labor	Maintenance Parts	Maintenance Labor	Lube	Tires	Wear parts
CAT 330 Excavator	5.48	5.84	8.22	8.77	6.89	0.00	3.25
CAT D6N bulldozer	5.48	5.84	8.22	8.77	6.89	0.00	3.25
CAT 966C Loader	5.67	5.18	10.53	9.64	10.24	21.52	0.84
Scania dump trucks	3.40	4.45	6.31	8.26	8.29	8.73	0.00
CAT 950 Loader	2.11	2.25	3.90	4.17	3.22	4.58	0.42
Washplant	27.56	9.69	33.68	11.84	19.29	0.00	29.48
Conveyors	2.72	3.23	1.97	2.34	0.66	0.55	0.00
Dryers	27.56	9.69	33.68	11.84	19.29	0.00	29.48
Packaging plant		3.23	0.11	2.34	0.66	0.00	9.83
Land conveyors (n/a)	5.63	6.67	4.08	4.83	2.34	0.00	0.00
Skid steer	0.52	0.47	0.96	0.87	0.80	0.62	0.15

Mechanics	0.58	0.63	1.09	1.16	0.00	1.10	1.09

Item	Rate	Unit
Environmental monitoring	25	kEUR
Legal permits	75	kEUR
Insurance	25	kEUR
Fees, Taxes	25	kEUR
Marketing	250	kEUR
Telecommunication	20	kEUR
Other fixed cost	400	kEUR

Position	Rate		Headcount
CEO	205	kEUR	1
CSO	103	kEUR	1
COO	82	kEUR	1
CLO	82	kEUR	1
CFO	82	kEUR	1
Administrative staff	31	kEUR	3
Shift leaders	62	kEUR	3
Quality control	31	kEUR	2
Salesman	41	kEUR	3
Accounting	62	kEUR	1
Security	21	kEUR	9
IT	41	kEUR	2
Stripping		kEUR	outsourced
Extraction	31	kEUR	6
Loading	31	kEUR	6
Hauling	31	kEUR	15
Processing	41	kEUR	6
Dispatching	41	kEUR	6

The model is using a inflation for prices and costs. All prices and costs used in the model are as per beginning 2024 and inflated by of 4,68 % until the project start and then for the first 5 years of operation, then 3,5 % for the next 4 years and 3 % thereafter.

F. ***Capital Expenditures and Investment Initiatives*** – ***Data Type***: This encompasses capital expenditures, asset acquisitions, investment initiatives, and growth trajectories; ***Sources***: Capital expenditure projections are informed by asset lifecycle analyses, technological advancements, and market expansion strategies; ***Data Used in Model*****:** The rates used in this model are shown in *Table #2* above.

G. ***Working Capital*** – ***Data Type***: This includes the anticipated duration that it takes for a company to convert its working capital into revenue; ***Sources***: historical data, and management's estimate; ***Data Used in Model*****:** The following rates were used for the model

Item	Rate	Unit
Inventory	5	days
Trade receivables	30	days
Trade liabilities	30	days
Other liabilities	30	days

H. ***Financing*** – The model assumes that sufficient capital is provided by the shareholders to finance all needs.

3. ***Profit & Loss (P&L) Statement*** - The P&L Statement serves as the pulse of the company's operational vitality, meticulously capturing the financial dynamics underpinning its revenue generation and expense management. ***Revenue Projections***: This segment provides a granular breakdown of anticipated sales across diverse product categories, incorporating factors such as market demand, pricing strategies, and sales volume forecasts. By delineating revenue streams, businesses can tailor their marketing, production, and distribution strategies to optimize profitability and market penetration; ***Operating Expenses***: This segment delineates the fixed and variable operational expenditures vital for sustaining business activities which are aggregated from the production cost calculation outlined above; ***Net Profit/Loss Calculation***: The conclusive segment of the P&L Statement computes the company's net profitability by deducting total expenses from total revenues. This pivotal metric offers stakeholders a definitive gauge of the company's financial performance, liquidity position, and profitability trajectory, thereby informing investment decisions, strategic planning, and capital allocation initiatives;

4. ***Cash Flow Forecast -*** The Cash Flow Forecast segment illuminates the company's projected liquidity landscape, tracking cash inflows and outflows across operational, investing, and financing activities to ascertain its solvency and

capital allocation dynamics. ***Operating Activities***: This segment captures cash flows emanating from core business operations, encompassing revenues and operating expenses as per the Profit and Loss Statement, and working capital adjustments in line with the assumptions from the above financial tables. The entire raw material is purchased at project start at a necessary rate, accounted for in current assets, and depleted through the operating cash flow. In a similar way the cost of stripping is accrued in current assets and adjusted through the operating cash flow. ***Investing Activities***: The investing activities segment delineates cash flows associated with capital expenditures, and asset acquisitions, encapsulating the company's investment strategy, asset lifecycle management, and capital allocation dynamics. By scrutinizing investing cash flows, businesses can evaluate the ROI of capital investments, optimize asset utilization, and align investment strategies with long-term growth objectives. ***Financing Activities***: This segment portrays cash movements attributable to financing endeavours, encompassing equity issuances, debt repayments, dividend distributions, and capital restructuring initiatives. By analysing financing cash flows, businesses can optimize capital structure, manage debt obligations, and evaluate the cost of capital to foster sustainable growth and shareholder value maximization.

5. ***Balance Sheet –*** The Balance Sheet segment furnishes a holistic snapshot of the company's projected financial position, thoroughly capturing its assets, liabilities, and shareholders' equity to determine its net worth and capital structure. ***Assets***: This segment enumerates the company's tangible and intangible assets, encompassing current assets (cash, accounts receivable, inventory) and long-term assets (property, plant, equipment, intellectual property). ***Shareholders' Equity***: This segment portrays shareholders' equity, reflecting the company's net worth derived from the issuance of shares, retained earnings, and other equity-related transactions. By analysing shareholders' equity, businesses can optimize capital structure, manage dividend policies, and foster stakeholder confidence by aligning equity management strategies with long-term growth objectives. ***Liabilities***: The liabilities section delineates the company's current and long-term obligations, encompassing accounts payable, short-term borrowings, long-term debt, and other contingent liabilities. By scrutinizing liabilities, businesses can manage debt covenants, optimize interest expenses, and mitigate financial risks associated with excessive leverage and liquidity constraints.

6. ***Initial (and additional) Investment Costs*** - were determined taking into consideration, in a conservative manner meaning the maximum costs possible regarding the underlying building costs (*extraction & processing platforms, warehousing, administrative etc.*) and equipment costs (*extraction, processing, handling, bagging, transporting etc.*), the latter based on relevant and actual price offers obtained from the adequate producers of such equipment, for example CDE Global, the provider of the fully equipped processing plant for the sand purification procedures for the adequate purity ratio needed *(>99.5%)* for the different industries we will target with our HPQS products:

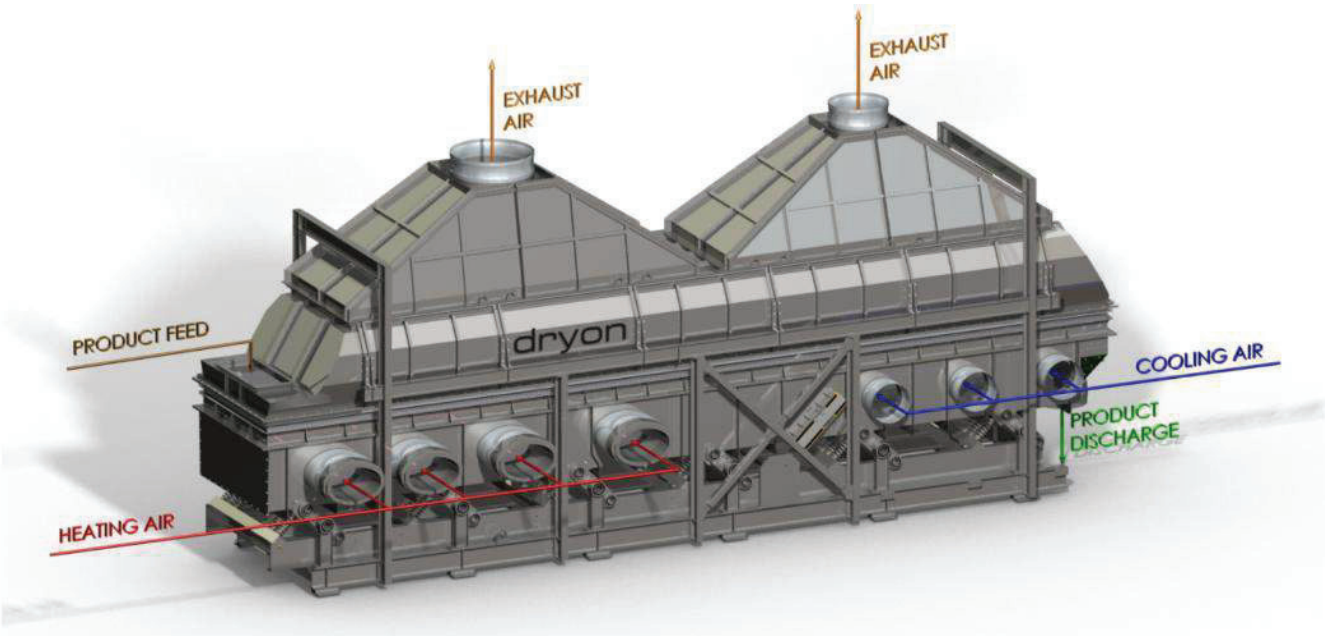
The ***SC 28 Czochralski Crystal Growing System*** is a state-of-the-art piece of equipment meticulously engineered for the industrial production of high-quality silicon monocrystals with diameters ranging from 200 mm to 300 mm (8 to 12 inches). Its design emphasizes flexibility and adaptability to meet diverse production requirements.

Key features include:

- **Customizable Configuration**: The system can be tailored to specific operational needs, offering options for customer-specific adjustments such as swing-out vessel parts to facilitate maintenance and operational efficiency.
- **Advanced Vacuum System Integration**: It supports the connection of a variety of pump and filter solutions, enabling precise control over the vacuum environment, which is critical for maintaining the purity and structural integrity of the growing crystal.
- **Industrial Production Focus**: Designed to handle the rigorous demands of large-scale production, the SC 28 ensures consistent output quality while accommodating the specific requirements of advanced silicon wafer manufacturing.

This robust and versatile system is an essential component for manufacturers aiming to produce silicon monocrystals with exceptional uniformity and purity, crucial for semiconductor applications.

In order to supply a high-end, bagged and palletized product, a high efficiency Fluidized Bed Dryer will be used to dry the processed end-product to a desired moisture content level lower than 0.4%. The material which has to be dried and cooled is fed continuously into the vibration dryer/cooler by the feed opening. A possibility of adjustment of the feed rate was foreseen by the producer for the plant. The wet material will be distributed on a perforated plate and becomes loose because of the air flow and vibration of the dryer/cooler. Additionally the material is transported to the dry product outlet. During this material transport hot air is blown into the trough of the dryer. The air flows through the perforated plate and the material and generates a fluidized bed where an energy efficient drying of the products will take place. The vibration of the machine is avoiding air bubbles and energy losses of the fine grain products. The duration of the product in the dryer/cooler can be controlled by the oscillation frequency which is continuously adjusted by the frequency converter (***Binder+Co Ag*** *(Austria) quotation attached*):



The bagging (big-bags, 25kg and 5kg bags) system will be supplied by ***Statec Binder Gmbh*** *(Austria) – quotation attached*, which combines a wide range of experience in the field of the packaging technology together with newest, state of the art technology. The modular and compact design of the systems allows highest flexibility in the layout of the machines and to customize the system to the space governing and requirements on the installation location.

The bagging & palletizing system will incorporate the following modules:

- ***Big-Bag Filling Station -*** The semi-automatic big bag filling station makes it possible to fill big bags (FIBC - flexible intermediate bulk container) with one, two or four loops and octabins with a filling station of 500 kg to 1500 kg. At 150 big bags per hour, our big bag filling station is one of the fastest in the world. The big bag filling station is also characterized by the extremely sturdy construction and the high level of reliability. There are two versions of the big bag filling station – one with gross weighing and one with net weighing. The difference between the two weighing versions is that with the gross weighing, the product in the bag is weighed during filling, while with net weighing the bag is weighed in a weighing container prior to filling. The advantage of net weighing is that the big bags can be filled at a higher speed. Maximum weighing accuracy is achieved with both versions.

- ***FFS Bag Filling Station*** **-** The fully automatic System-T FFS bagging machine combines high-quality packaging in a tubular PE bag with a high production capacity. This makes it ideal to be used in several fields, including the petrochemical, fertilizer, animal feed and food industries. The machine has workstations for forming, filling and sealing the bags, which means that three bags are always being processed at the same time. The advantage of this is a shorter cycle time for each stage of the process. In addition, even at high production speeds the bags are always formed, filled and sealed at exactly the right moment.

- ***Palletizer*** **–** The high-performance high-level palletizer PRINCIPAL-H stacks up to 2400 bags or boxes per hour. The fast high-level palletizer is equipped with an empty pallet magazine and a full pallet removal station. The system has a pallet magazine with a high capacity in order to ensure a continuous and interruption-free operation. The pallets stacked in the magazine are automatically separated and prepared for palletizing. A bag pressing belt at the start ensures that the bags are “in shape” for stacking. Flexible layer patterns are made possible by a servomotor-operated overhead rotating device, which rotates the bags into the desired position.

All the costs regarding all the phases of the operation (*extraction, transportation, primary depositing, processing operation, warehousing, handling, loading, administrative equipment etc.*) were designed not only to cover every expense to achieve the said annual output and purity ratios presented above, but contain even budget and production capacity reserves at every stage (*for ex.: the environmental restoration budget which is approx. 2 times higher than the legally regulated mandatory amounts; or the permitting estimated cost value of €1M which is more than enough to cover all the due costs involved*).

- ***Revisions site restoration and plant demolition provisions*** – were determined based on the actual regulatory background (*art. 10 of Ordinance 202/2013 – Constitution and calculation of financial provisions for environmental restoration*) according to which companies in extraction industry must provision a ONE TIME restoration amount in the moment of obtaining the permit from National Agency for Mineral Resources (*NAMR*). The calculation of the amount of this provision is made by the solicitor company (by us) and agreed upon by the NAMR and the Environmental Agency. The usual amount to be provisioned is around €1.5k for each hectare of land (*Cuci sand mine*) and around €5k for each hectare of forest (Neaua sand mine), so, in our case of authorizing both of the properties, an amount of (*9 hectares X €1.5k*) + (*18.8 hectares X €5k*) = €107.5k is needed, the rest till the €250k budget being a cash flow reserve we planned with the conservative type of calculation, that could be redistributed to cover other expenses if and when needed.

- ***Capital expenditure in the cash flow generation period*** - the necessary capital expenditures are covered by the various equipment and plant maintenances (*in amount of €1,224,000 in the first year only*) and a sites maintenance (*in amount of €100,000 yearly*) budgets provisioned in the operational costs category for each year for the full period of operation.

- ***Net Working Capital generation –*** by the economic definition of the Net Working Capital (NWC), it is a measure of the company's liquidity and represents its short-term ability to cover its liabilities. It represents the difference between the company's current assets (*cash and cash equivalents, inventories, accounts and notes receivable, prepaid expenses and any other short-term assets*) and its current liabilities (*accounts, wages, taxes, dividends, short-term loans payable, unearned revenues*). Therefore, the company generates it by its activity and maintain it at a sufficient and healthy level afterwards. It is included into the business plan under the Capital Accumulation category from which dividends will be paid out, new investments will be made or anything else based on mutual shareholders agreement, but will always maintain the necessary NWC to operate in a healthy manner. Starting NWC, necessary for the operation beginning (*approx. €500k for the first 2-3 months after finalizing the investment*), is constituted from the surplus remaining from the initial investment amount (*which contains a well covering reserve for this purpose as well*) after which capital accumulation will take place and generate the necessary NWC from the continuous earnings the company will generate.

7. ***Annual Operating Costs*** – were determined taking into consideration the Maximum Operating Costs related to the Maximum Operating Capacity Scenario, which were discounted according to the Maximum Capacity Utilization Ratio based on the Estimated Yearly HPQS output.

   - ***Employees related Costs*** – were determined in a conservative manner, which means that the input salaries level we calculate with is 30% higher than the actual salaries level in the said industry, which serves the scope of loyalization of the employee community and to calculate with the highest costs we could try. The same thought process is valid for the employees working hours as well, calculations being made with a theoretical 3 shifts / 365 days operation which constitutes the Theoretical Maximum Working Hours based Maximum Employees Costs, which will be discounted by the Maximum Capacity Utilization Ratio accordingly, lowering the employee working hour needs according to the Actual Estimated Yearly Output. Net to Gross salaries calculation were made according to the 2023 employees tax rates imposed by the law.

   - ***Equipment related Costs*** – were determined in a conservative manner, which means that the input operating hours and afferent consumptions are maximized according to the Maximum Operating Capacity Scenario which is then discounted by the Maximum Capacity Utilization Ratio accordingly. Proper and sufficient maintenance times and costs were determined for each of the equipment in the portfolio as shown above.

   - ***Royalty fees payable for sand extraction*** - are € 0.50 for each m^3 of material extracted, which translates to approx. €0.26 for each metric ton in equivalence - http://www.namr.ro/resurse-minerale/taxe-redevente/

   - ***Royalty fees for river water consumption*** - is € 10 for 1,000 m^3 of water used from the river for industrial purposes - https://mfinante.gov.ro/apps/legis.html?id=231&pagina=taxe&menu=Impozite

   - ***Warehousing and Distribution Costs*** – were included in the annual Operation Costs. Own warehouses will be used with own personnel and equipment necessary in order to keep such costs at a lowest level possible. Warehouses construction costs were included in the Initial Investment Costs category.

- ***Selling and Marketing Costs*** – were determined at a sufficient level in order to fulfill all the necessary costs related to working with just a handful of international buyers who will buy significant percentages of our yearly productions based on the expertise and exact needs and not based on extensive marketing campaigns for promoting purposes, therefore the process will not take huge costs on our side.

- ***Administrative costs*** – were determined in a sufficient level in order to fulfill all the necessary costs related to the whole operation.

8. ***Annual Operating Revenues*** – were determined based on the Actual Estimated Yearly Output and the actual market prices for the underlying products, in a conservative way.

    - ***Sales Prices*** – were determined at a much lower level than the actual market prices, for conservative calculation purposes only (*actual sales prices examples were presented in the above tables*)

    - ***Actual Estimated Yearly Output*** – was determined for each product family, in close function to the maximum output ratio of the processing plant (*150 tph*), in a gradual ramp-up manner, starting at approx. 64% of the Max. Output (*in the first operational year*) and a gradual growth till approx. 80% (*which is the optimal operational capacity from economic point of view*) for the 3rd to 33rd operational year.

9. ***The Operational Life-Cycle of c.31 years –*** was determined in a conservative manner taking into consideration the initial data regarding the resource estimation based on the 2007 geological report attached to the Business Plan, without taking into consideration the additional extractable resource under the 360 m level and any horizontal expansion possibility. The detailed determination of the deposit presented in the above sections.

    Based on a recent geological assessment done with the occasion of an ongoing technical due diligence, there is a potential 34 meters below the 360m ground level (between 360 – 326) containing an estimated tonnage of approx. 5 million tons of extractable sand. And, in addition, there is the possibility of the slight horizontal expansion, which could further increase the resource, extending therefore our potential operational time till depletion.

10. ***Project Profitability Analysis*** – incorporating performance measures within the financial forecast spreadsheet facilitates a comprehensive evaluation of the company's operational efficiency, asset utilization, investment viability, and value creation potential, it was made properly, based on the valuation of an investment through DCF (Discounted Cash Flow) based NPV (Net Present Value), where the DR (Discount Rate) is represented by the WACC (Weighted Average Cost of Capital) and CAPM (Capital Asset Pricing Model), respecting the core economic principles that imply with the correct calculation of such elements:

    - ***Return On Investment*** – was calculated based on the standard economic definition and formula, according to which it is a performance measure used to evaluate the efficiency or profitability of an investment or compare the efficiency of a number of different investments. ROI directly measures the amount of return on a particular investment, relative to the investment's costs, without reflecting the time value of money.

$$\boldsymbol{ROI = \frac{(Current\ Value\ of\ Investment - Cost\ of\ Investment)}{Cost\ of\ Investment}}$$

    - ***Internal Rate of Return –*** was calculated based on the standard economic definition and formula, according to which the IRR is a metric used in financial analysis to estimate the profitability of potential investments and it states that a project or investment should be pursued if its IRR is greater than the minimum required rate of return or the hurdle rate, which is the return required to break even or Net Present Value. IRR is the discount rate that makes the Net Present Value of all cash flows equal to zero in a Discounted Cash Flow Analysis.

$$\boldsymbol{NPV\ (0) = \sum_{t=1}^{t} \frac{(Net\ Cash\ Flow\ in\ period\ t)}{(1 + IRR)^t} - Total\ Initial\ Investment}$$

    - ***Net Present Value -*** was calculated based on the standard economic definition and formula, according to which the NPV is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used as capital budgeting and investment planning to analyze the profitability of a projected investment or project. It is the result of calculations that find the current value of a future stream of payments, using proper discount rate. In general, projects with positive NPV are worth undertaking, while those with a negative NPV are not.

$$NPV = \sum_{t=0}^{n} \frac{Rt}{(1+dr)^t}$$

where Rt = net cash inflow/outflow during a single period t; dr = discount rate; t = number of time periods

- ***Discount Rate (dr)*** **–** used in calculating the Discounted Cash Flow and Net Present Value of the project was determined based on the Weighted Average Cost of Capital (WACC).

  WACC is the average rate that a business pays to finance its assets and it is calculated by averaging the rate of all of the company's sources of capital (both equity and debt based) weighted by their proportion of each component from the total assets, based on the following formula:

$$\boldsymbol{WACC = [Cost\ of\ Equity\ x\ \%Equity] + [Cost\ of\ Debt\ x\ \%Debt\ x\ (1 - Tax\ Rate)]}$$

  WACC is also used as the discount rate for future cash flows in discounted cash flow analysis, like in our case. In most cases, a lower WACC indicates a healthy business that's able to attract investors at a lower cost and, by contrast, a higher WACC usually coincides with businesses that are seen as riskier and need to compensate investors with higher returns. This is why calculating WACC in a proper way and as exact as possible is a must in valuating an investment.

  Cost of Equity (Ke) component of WACC can be a bit complicated to calculate because share capital does not technically have an explicit value. When the company reimburses bondholders, the amount it pays has a predetermined interest rate. On the other hand, equity has no concrete price that the company must reimburse. As a result companies have to estimate cost of equity, in other words, the rate of return that investors are expecting to gain at a minimum in order to take the risk of investing.

  Companies typically use the CAPM to arrive at the Cost of Equity (Ke). Again, it is not an exact calculation because companies have to lean on historical data, which can never accurately predict future growths. CAPM describes the relationship between systematic risk and expected return for assets. The model is based on the relationship between the asset's beta, the risk-free rate and the equity risk premium, or the expected return on the market minus the risk-free rate and it's made based on the following formula:

$$\boldsymbol{CAPM = rf + \beta\ x\ (rm - rf)}$$

where rf = the risk-free rate; β = the beta (the variability of the asset with respect to the market); rm = market cost of capital (market premium)

  Our project business plan, does not contain any debt financing (neither short, nor long term loans). Therefore, in our case, $\boldsymbol{WACC = Cost\ of\ Equity\ (Ke) = CAPM}$ **,** without the Cost of Debt component.

  Data used in CAPM calculations:

  - ***rf =*** *Risk Free Rate = German 30y Bonds + RO inflation rate – EU inflation rate = 2.46% + 4.60% - 2.80% =* ***4.26%***
  - ***rm =*** *(Capital Market Risk Premium AAA Germany + Country Risk Premium RO) = 5.00% + 3.33% =* ***8.33%***

    (source: Damodaran, Aswath - *https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html)*
  - ***β = 1.14*** *(source:* Damodaran, Aswath - *https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/Betas.html)*

  (*leveraged and unleveraged beta are two different types, with the distinction being related to the inclusion or absence of the impact of debt in the capital structure and therefore, our project missing the debt component of the assets, the unleveraged beta has been used*)

  The accurate formula and calculation to determine the proper and exact Discount Rate for the NPV, respectively the CAPM of the project using the above-mentioned data, is the following:

$$\boldsymbol{dr = CAPM = rf + \beta\ x\ (rm - rf) = 4.26\% + 1.14\ x\ (8.33\% - 4.26\%) = 8.90\%}$$

- ***Return on Sales (ROS)***: ROS quantifies the company's operational efficiency by evaluating the expected net profit margin relative to sales, fostering profitability optimization strategies and benchmarking against industry peers.

- ***Return on Net Assets (RONA)***: RONA assesses the company's asset utilization efficiency by evaluating the net profit generated relative to net assets, optimizing asset allocation strategies and capital expenditures.

11. ***Sensitivity Analysis*** - determines how different values of an independent variable affect a particular dependent variable under a given set of assumptions. In other words, sensitivity analyses study how various sources of uncertainty in a mathematical model contribute to the model's overall uncertainty. This technique is used within specific boundaries that depend on one or more input variables.

    Sensitivity analysis is a financial model that determines how target variables are affected based on changes in other variables known as input variables. It is a way to predict the outcome of a decision given a certain range of variables. By creating a given set of variables, an analyst can determine how changes in one variable affect the outcome.

    Financial models that incorporate sensitivity analysis can provide management a range of feedback that is useful in many different scenarios. The breadth of the usefulness of sensitivity analysis includes but is not limited to:

    - ***Understanding influencing factors -*** This includes what and how different external factors interact with a specific project or undertaking. This allows management to better understand what input variables may impact output variables.
    - ***Reducing uncertainty -*** Complex sensitivity analysis models educate users on different elements impacting a project; this in turn informs members on the project what to be alert for or what to plan in advance for.
    - ***Catching errors -*** The original assumptions for the baseline analysis may have had some uncaught errors. By performing different analytical iterations, management may catch mistakes in the original analysis.
    - ***Simplifying the model -*** Overly complex models may make it hard to analyze the inputs. By performing sensitivity analysis, users can better understand what factors don't actually matter and can be removed from the model due to its lack of materiality.
    - ***Communicating results -*** Upper management may already be defensive or inquisitive about an undertaking. Compiling analysis on different situations helps inform decision-makers of other outcomes they may be interested in knowing about.
    - ***Achieving goals -*** Management may lay long-term strategic plans that must meet specific benchmarks. By performing sensitivity analysis, a company can better understand how a project may change and what conditions must be present for the team to meet its metric targets.

    In case of the sensitivity analysis presented above, different DCF, NPV, IRR and ROI results were analyzed in different hypothetical production output scenarios, reducing therefore the uncertainty of profitability even in very profitable or very challenging times, when production output due to economic market conditions could fluctuate in a previously unforeseen manner and therefore couldn't have been previsioned properly in the business plan.

12. ***Integrating a Monte Carlo Analysis*** within the financial forecast spreadsheet (*A Monte Carlo simulation is used to model the probability of different outcomes in a process that cannot easily be predicted due to the intervention of random variables. It is a technique used to understand the impact of risk and uncertainty. It is a model used to predict the probability of a variety of outcomes when the potential for random variables is present, helps to explain the impact of risk and uncertainty in prediction and forecasting models, requires assigning multiple values to an uncertain variable to achieve multiple results and then averaging the results to obtain an estimate. Monte Carlo simulations can be best understood by thinking about a person throwing dice. A novice gambler who plays craps for the first time will have no clue what the odds are to roll a six in any combination (for example, four and two, three and three, one and five). What are the odds of rolling two threes, also known as a "hard six?" Throwing the dice many times, ideally several million times, would provide a representative distribution of results, which will tell us how likely a roll of six will be a hard six. Ideally, we should run these tests efficiently and quickly, which is exactly what a Monte Carlo simulation offers. Asset prices or portfolios' future values don't depend on rolls of the dice, but sometimes asset prices do resemble a random walk. The problem with looking to history alone is that it represents, in effect, just one roll, or probable outcome, which may or may not be applicable in the future. A Monte Carlo simulation considers a wide range of possibilities and helps us reduce uncertainty. A Monte Carlo simulation is very flexible; it allows us to vary risk assumptions under all parameters and thus model a range of possible outcomes. One can compare multiple future outcomes and customize the model to various assets and portfolios under review.)* amplifies its predictive accuracy and resilience, simulating a myriad of scenarios to evaluate risk exposures and inform mitigation strategies.

    - ***Scenario Modelling*** - Utilizing probabilistic models, the Monte Carlo Analysis simulates a diverse array of economic, market, and operational scenarios, enabling businesses to quantify risks and uncertainties.
    - ***Risk Assessment*** - By evaluating the probability distributions of key financial variables such as revenues, expenses, and cash flows, businesses can identify vulnerabilities and formulate risk mitigation strategies.

- ***Optimization Strategies*** - The Monte Carlo Analysis facilitates the development of optimal resource allocation, contingency planning, and strategic initiatives to enhance financial resilience and stakeholder value.

All financial forecasts must account for variables like inflation rates, cost variation, exchange rates etc. The downside of these variables is that they must be estimated, and the estimate used is key to a forecast's results. A Monte Carlo simulation is a method of testing an outcome over a range of possible variables. It can be something like a stress test for the financial model. It makes it possible to see a spectrum of thousands of possible outcomes, considering not only the many variables involved, but also the range of potential values for each of those variables. However, the projections generated by Monte Carlo analysis regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not a guarantee of future results.

The financial model for the investment project was analysed by modelling a number of parameters and their assumed distribution resulting in over 100,000 iterations, that can be summarised according tot he attached report.

Notes