

A New Approach to Lithium

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The Gold Opportunity

The Technology

- Patented Process
- Environmentally Friendly
- Reduces Operating and CAPEX by 30-50%
- Substantially shorter processing time, 30 min vs Cyanide 48h
- Portability – small mobile plants as well as very large capacity
- Works where cyanide doesn't, regulated environments, refractory ores

Manufacturing data

Cost: \$4-6 of chemicals per metric ton of ore

Yield 85-95% of gold and silver

Scale: 200 MT processed

Capex: Required 40,000 gallons of leaching capacity for 1.5 million tons per year

Opex: \$8-12 per metric ton of gold

Low cost opportunity to recover billions in precious metals from otherwise abandoned mines

Artisanal miners: use mercury and are exploited

Scale-up Projects

350 MT per day plant in Mauritania

3,500 MT per day plant in Ghana

200 MT per day plant in Zimbabwe

1200 MT per day plant in Nevada

The Technology

- Patented Process: a salt, an oxidant and some acid.
- Environmentally Friendly
- Reduces Operating and CAPEX by 80% (\$20m vs \$200m)
- No need for a Sulfuric acid plant or to source pyrite to run it
- No sulfate bi-products, no water waste reduced environmental impact
- Key materials recycled and is a net consumer of carbon dioxide
- Portability – small mobile plants as well as very large capacity
- Can be operated in situations where there are lower amounts of lithium

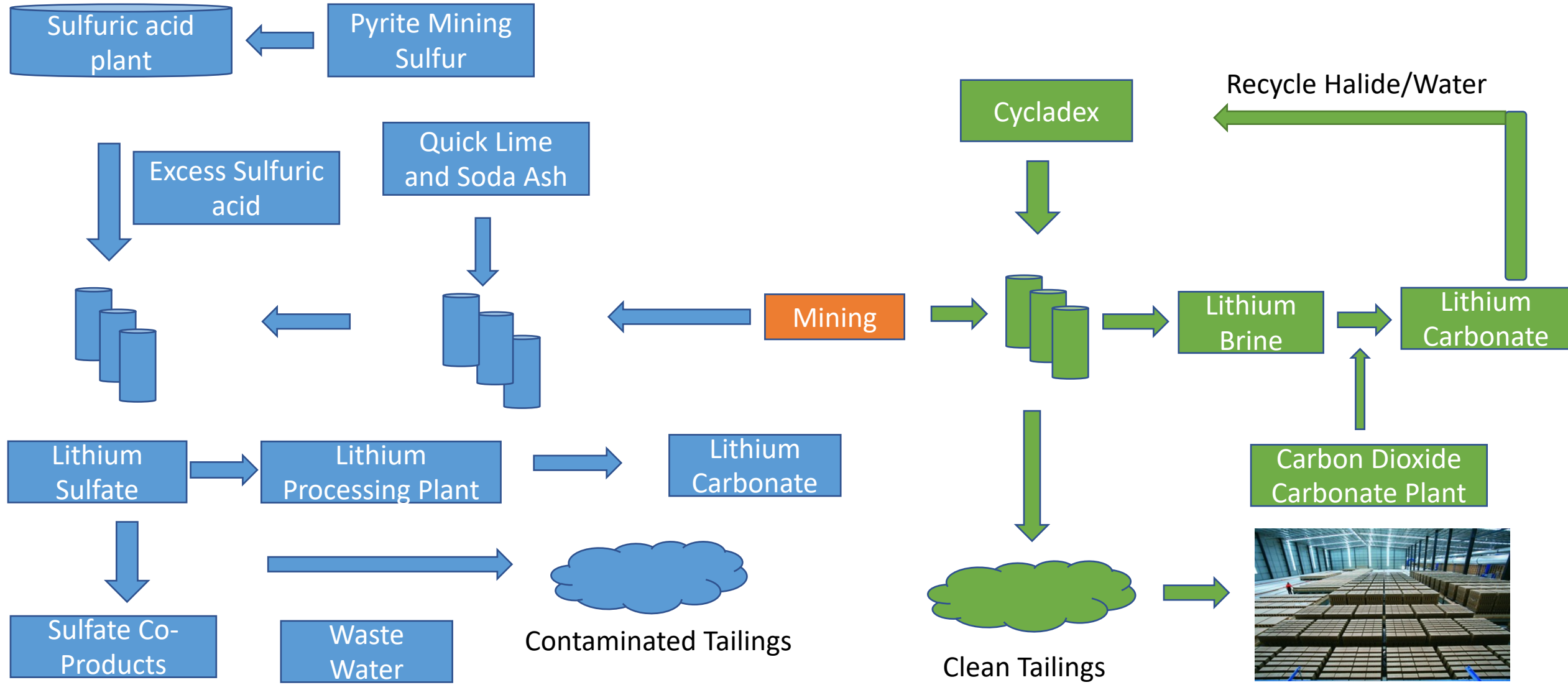
The Market

- Companies delaying investment because of the size required
 - Germany, seeking \$200m for one plant
 - Nevada, would have to build biggest sulfuric acid plant in North America
- Brine extractors now looking at 20-50 ppm of lithium bromide as commercial
- Large mines take years to permit even with government support.
- Tailings are a short-term and cost effective solution

The Upside

- The global lithium market includes multiple providers with mining assets, but there is a lack of refining and processing capacity (particularly outside China); producers facing enormous CAPEX (£150m+) requirements and time delays
- Cost effective and environmentally friendly solution should be highly attractive to multiple stakeholders within the industry, to meet rapidly growing demands (batteries, EV etc.)

Cycladex vs Current market practise



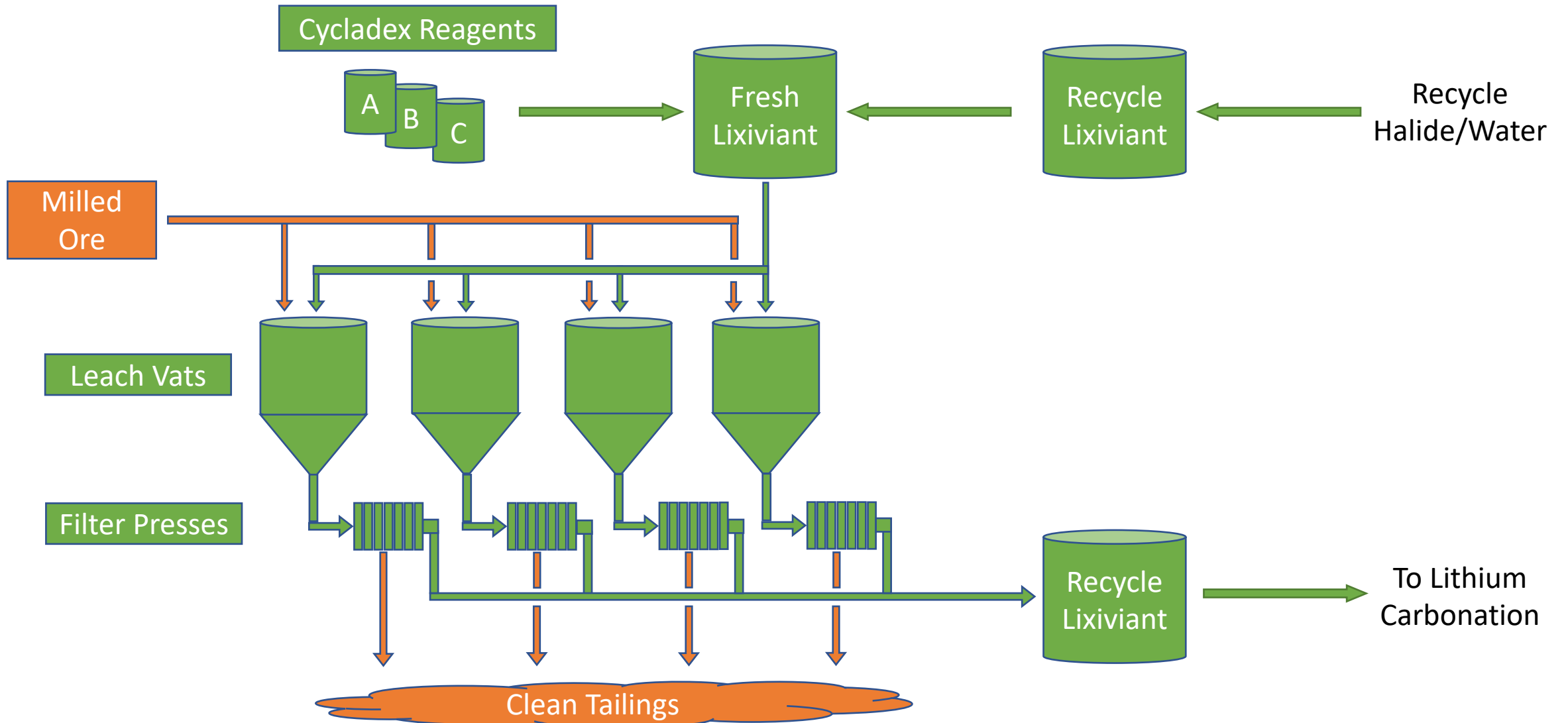
Technology

- Scaled to 40 MT of ore in Arizona giving 120 gm per ton of lithium metal which is equivalent to 1400 ppm of lithium halide
- Ambient temperature and pressure, 30 min extraction.
- On recycle, lithium halide increases proportionally on every recycle because of solubility of lithium halide.

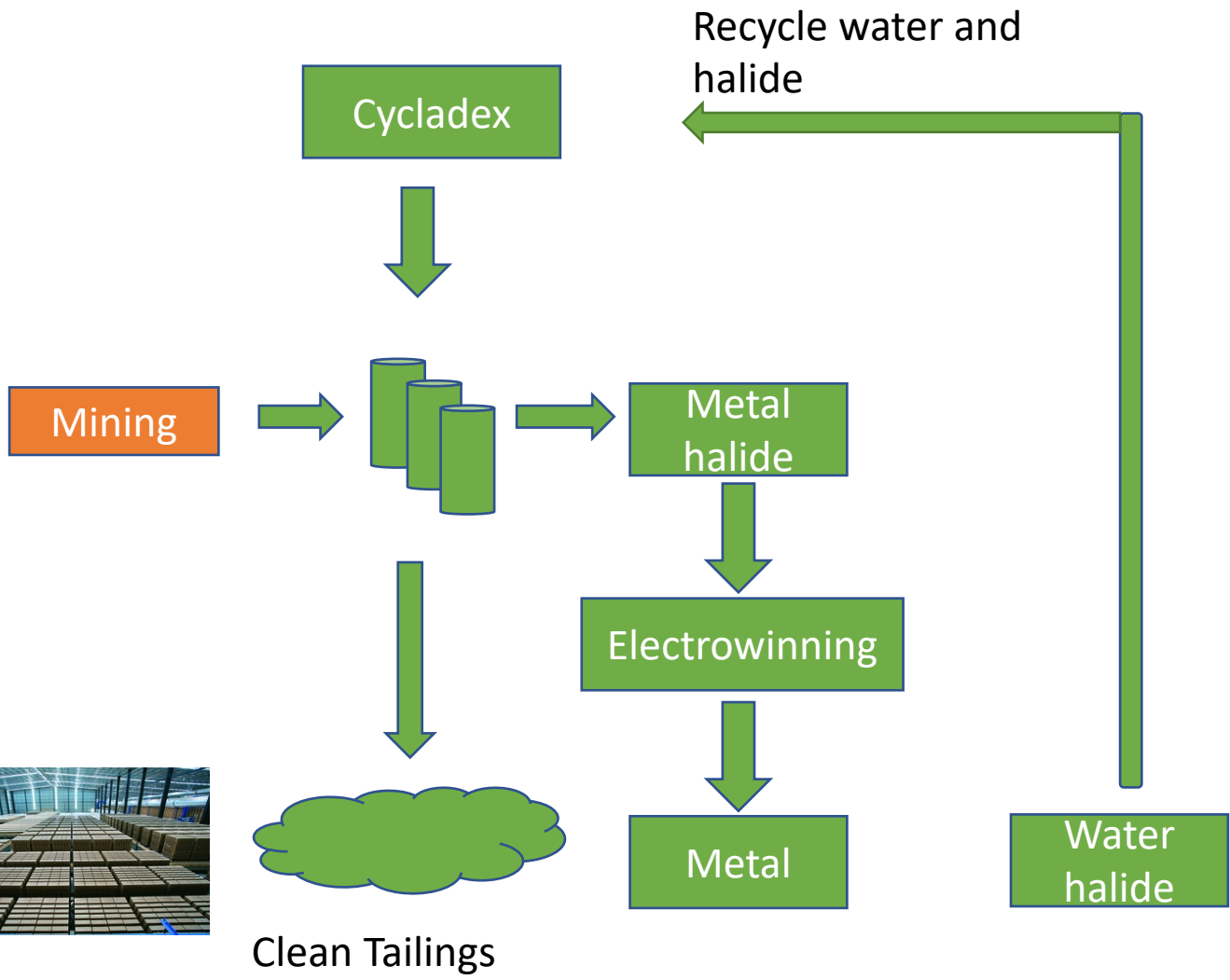
Opportunities to Date

Location	Source	Grade – lithium halide equivalent ppm	Quantity	Value
Nevada	Tailings	500	20 million tons	\$250m
Utah	Existing gold mine	3700	5 million tons +	\$450m+
Arizona	tailings	1200	5 million +	\$120m+

Cycladex Lithium Leach Process (150 t/h)



Cycladex Copper or Nickel process



Compound	Solubility in water grams per litre
Nickel Sulfate	290
Nickel Chloride	675
Nickel Bromide	1130
Copper Sulfate	220
Copper Chloride	706
Copper Bromide	557