Technology Innovation in ICL

HUJI & Yissum, conference: “Energy and Cleantech Innovation”
- From Academy to Industry, May 2015

By: Eyal Ginzberg, ICL SVP, CTO
CTO Vision

The Engine for ICL Growth
Our Unique Business Model

Unique Portfolio of Mineral Assets

- Dead Sea
- U.K./Spain Mines
- Negev Desert
- Global Opportunities

Dead Sea:
- Potash
- Bromine
- Magnesium

U.K./Spain Mines:
- Potash
- Polyhalite

Negev Desert:
- Phosphate

Global Opportunities:
- Potash
- Phosphate

Fully Integrated and Diversified Value Chain

Mining

Chemistry

Formulation

Leading Positions in Concentrated Global Markets with Strong Fundamentals

Agriculture

Performance Products

Industrial Products

Engineered Materials

Processed Food
Integrated Value Chains Provide Significant Synergies and Logistics Advantages

Source

- The Negev Desert (in Israel)
- The Dead Sea (in Israel)
- Potash Mines in the UK & Spain

Raw Materials

- Elemental Phosphorus
- Phosphate Rock
- Carnallite
- End Brine
- Magnesium Chloride Solution
- Polysulphate
- Sylvanite
- PCL3
- POCl3

Major Intermediate & Finished Products

- Phosphate Salts
- Food Grade Phosphoric Acid
- Special Grade Acid
- Phosphate Fertilizers
- Food Additives
- Wildfire Extinguishers
- Food Hygiene
- Alumina & Magnesia Based
- Phosphate Fertilizers
- Compound Fertilizers
- Specialty Fertilizers
- Pure Magnesium
- Magnesium Alloys
- Bromine Compounds
- Chlorine based Biocides
- OPFRs & Others

Product Sold

- DSM
- Performance Products
- Industrial Products
- Fertilizers
ICL Strategy fields:

- Food
- Agro
- Engineered Materials
Innovation Channels in ICL

- **Budget**: ~100M$ / 2015

**Innovation Activity**
- Internal BUs R&D
- “Clusters” (Cross Segment Team)
- Ext. Strategic research collaborations (YTH, CFPN)
- External Projects (Academy, Customers, others)
- Icl-Innovation (Tech Incubator)
- CTO

**We Create value**
ICL Innovation: Responses by stage – total 640

- Rejected: 494
- In evaluation: 110
  - Transferred to BU: 23
    - Specialty Fertilizers, 6
    - Photovoltaic, 2
    - Energy storage, 2
    - Waste water, 1
    - Flame retardants, 1
- Projects: 12
## Unmet needs as Feb. 2015

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<td>Fused salt heat transfer fluid</td>
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External Collaborations
ICLSF focus areas

Controlled Release Fertilizers

Soluble fertilizer

Liquid fertilizer

Nutrient Efficiency
Engineered Materials: Main Strategic Actions

Bromine
Grow the pie – continue to drive market growth & expansion

- **Innovation:**
  - New products and applications
  - Substitutes
  - Position ICL as a leader in flame retardants across technologies
  - Open innovation

- **Advocacy**
  - Collaborate with global regulators to improve green legislation and fire safety standards mainly in emerging markets

Phosphates & other ingredients for industrial applications
Defend leadership

- Leverage innovative technical phosphate application portfolio and leadership in top applications
- Secure access to competitive P4 & improve cost position in phosphates

Strengthening activity also in the Fields:
- Asphalt, P&C, Cleaners for O&G,
Energy Storage story

Total Annual Electricity Consumption = 20,000,000 GWh

Energy Storage = 1,270 GWh (.0064%)

Oil storage = 46 days
Electricity Storage = 33 minutes
A 2000X differential

Total Annual Crude Oil Production = 4,748,067,825 m³

Oil Storage = 600,000,000 m³ (12.6%)

http://www.eia.gov/forecasts/ieo/electricity.cfm,
http://www.investorideas.com/Research/PDFs/Top_10_Global_Oil_and_Chemicals.pdf
Food: Expand from Phosphate Ingredients to Growth in Texture and Stability Integrated Solutions

Our strengths
- Strong technology platform & know-how provides preferred solutions for customers
- Offer distinctive texture and stability solutions

Strategic actions
- Expand applications development and commercial footprint in emerging markets
- Enhance technology platform for texture and stability solutions
- Assess M&A options to expand ingredients portfolio in a targeted manner
Food Specialties

Market segments and main product components

- Meat, poultry and seafood
- Dairy
- Bakery and Cereals
- Beverage

Main product components
- Fibers
- Modified starches
- Proteins
- Hydrocolloids
- Phosphates

Strategic Focus

- Texture
  - Mouthfeel, Succulence, Tenderness
  - Develops and retains shape and texture

Secondary Advantages

- Appearance
- Nutrition
- Shelf life
- Flavor
**Texture & Stability - Example**

New cooked meat stabilizer

Dairy & Processed Cheese Industry

Made with sodium phosphate and BEKAPLUS Q3B. Smooth and creamy texture.

Made without functional ingredients. No emulsification.

Good handling of the brine.

Not acceptable.
Global Food Technology Center – Germany
“Clusters” (Cross Segment Teams)

- Nutrients recycle (from waste to product)
- Energy Storage
- From field to Plate
- Paint & Coating
- Materials to 3D printers
- Materials for construction

Collaborating with ICL Segments R&D Units
Thank You!

& Contact us!
All statements in this communication, other than those relating to historical facts, are “forward-looking statements” within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements and projections are not guarantees of future performance and are subject to a number of assumptions, risks, projections and uncertainties, many of which are beyond our control, which could cause actual results to differ materially from such statements or projections. Important factors that could cause actual results to differ materially from our expectations include, among others: loss or impairment of business licenses or mining permits or concessions; natural disasters; failure to raise the water level in evaporation Pond 5 in the Dead Sea; accidents or disruptions at our seaport shipping facilities or regulatory restrictions affecting our ability to export our products overseas; labor disputes, slowdowns and strikes involving our employees; currency rate fluctuations; rising interest rates; general market, political or economic conditions in the countries in which we operate; pension and health insurance liabilities; price increases or shortages with respect to our principal raw materials; volatility of supply and demand and the impact of competition; changes to laws or regulations (including environmental protection and safety and tax laws or regulations), or the application or interpretation of such laws or regulations; government examinations or investigations; the difference between actual reserves and our reserve estimates; failure to integrate or realize expected benefits from acquisitions and joint ventures; volatility or crises in the financial markets; cyclicality of our businesses; changes in demand for our fertilizer products due to a decline in agricultural product prices, lack of available credit, weather conditions, government policies or other factors beyond our control; decreases in demand for bromine-based products and other industrial products; litigation, arbitration and regulatory proceedings; and war or acts of terror. More detailed information about factors that may affect our performance may be found in “Risk Factors” in our registration statement on Form F-1 filed with the U.S. Securities and Exchange Commission on September 22, 2014. Forward-looking statements and projections represent our views and are given only as of the date of this communication and we disclaim any obligation to update or revise them, whether as a result of new information, future events or otherwise, except as required by law.

This presentation includes certain non-GAAP financial measures as defined by SEC rules. We have provided a reconciliation of those measures to the most directly comparable IFRS measures, which is available in the Appendix.