

Energy, Security and Global Geopolitics

**Herzliya Conference
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Sass Somekh
Musea Ventures

Energy, Security and Global Geopolitics

Chair: Dr. Sass Somekh
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Energy Management and Policy Program, University of Haifa

Dr. David Wurmser
Director, Delphi Global Analysis; Former Senior Advisor on National Security Affairs to the US Vice President

Mr. Yossie Hollander
Chairman, The Institute for Israeli Economic Planning

Oil Prices Have Gone Up and Come Down



Do we really need to worry about alternative energy?

Underlying oil and global warming issues are unchanged

It is a golden opportunity to focus on alternative energy

World Energy Needs Forecasted to Double in 50 years

Shanghai 1984



World Energy Needs Forecasted to Double in 50 years

New Shanghai



World Energy Needs Forecasted to Double in 50 years

Shenzhen 1984

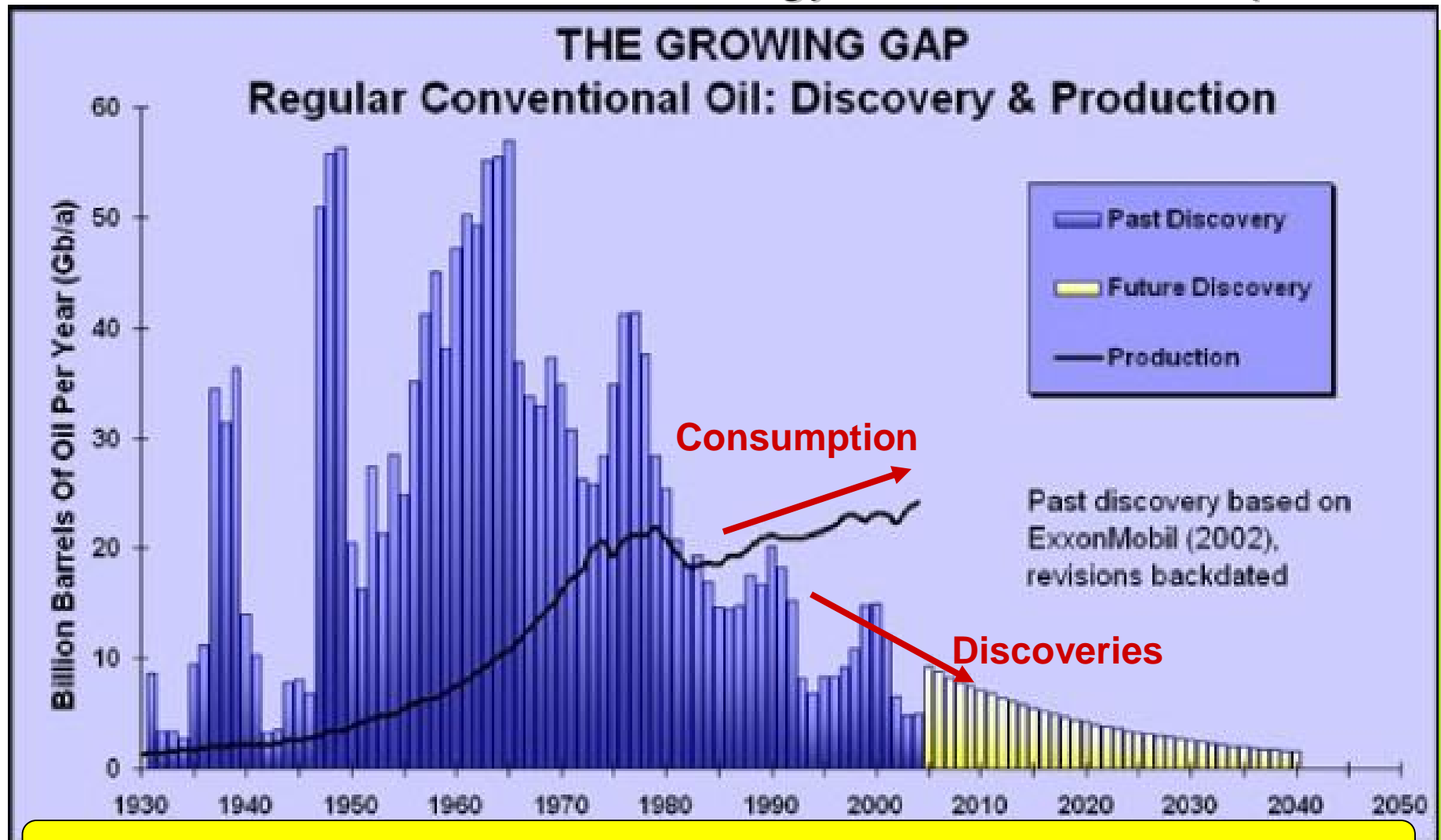


World Energy Needs Forecasted to Double in 50 years

New Shenzhen



Oil Provides 40% of World's Energy – 100% of Transportation



Known world oil reserves will last only 40-70 years

The strategic importance of oil will continue to increase

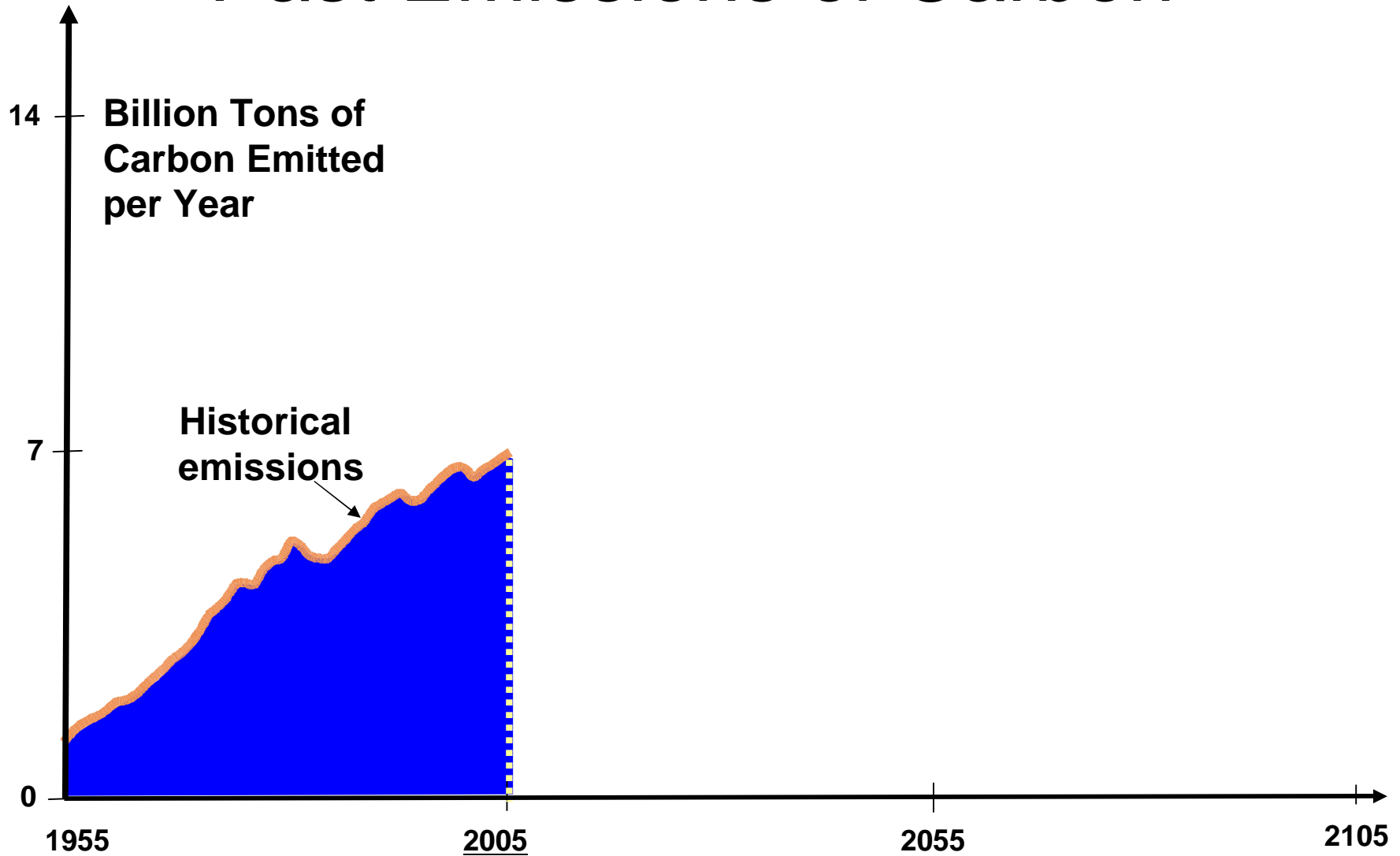
So Why Not Use Nuclear Power?

- Nuclear is a necessary but not a sufficient solution
 - Doubling world energy (+13TW) requires 13,000 new nuclear reactors
 - This means a new reactor almost every day for the next 50 years!
 - It takes 10 years to build a nuclear reactor
 - Only 60 new reactors will be completed in the next 10 years

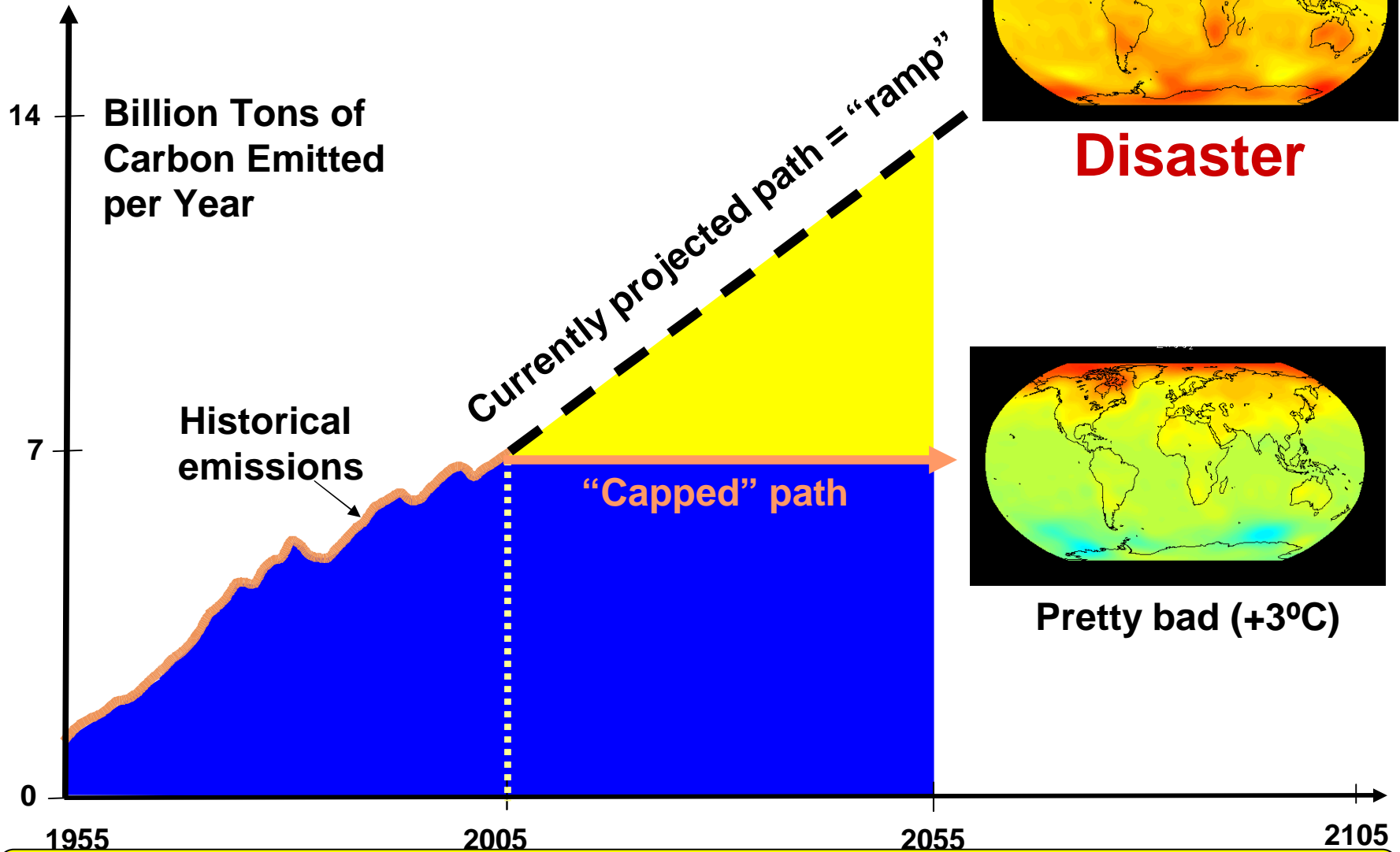
So why not use “Coal to Liquid” (CTL)?

- CTL substantially increase Carbon emissions

Past Emissions of Carbon



Emission Scenarios

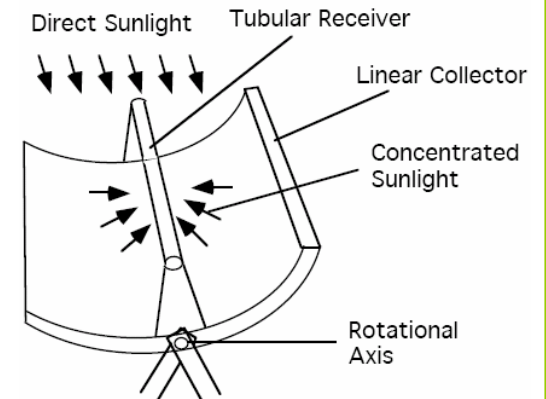


The world needs alternative energy technologies

What can and should Israel do?

- Israel has demonstrated an ability to be a world leader
 - Solar thermal and geo-thermal energy
 - Started with domestic R&D in the 50's
 - High-Tech
 - Started with domestic production of US equipment in the 60's

Israel's Luz Designed and Built the World's Largest Solar Power Plant in 1990



Israel has a core capability in “Solar Thermal”

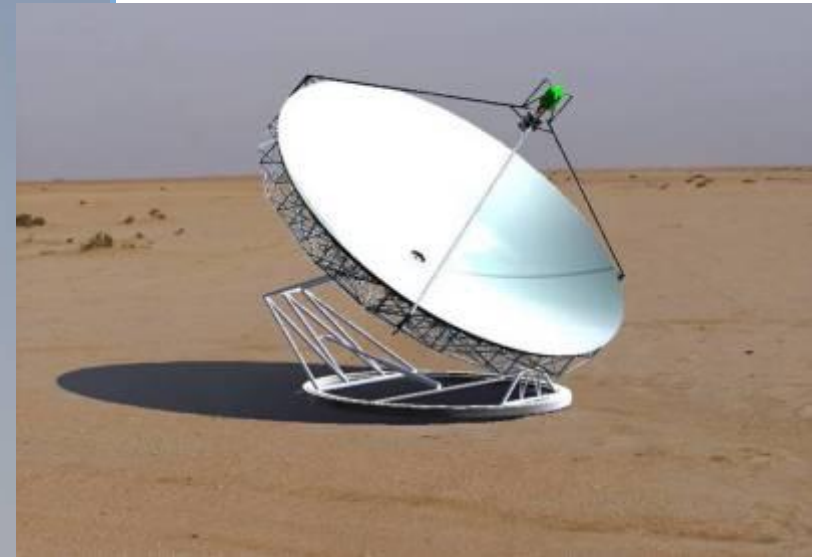
Three Generations of Solar Thermal in Israel

Bright Source (Luz II) - 550°C

Luz, Solel - 400°C



HelioFocus - 850°C



Israel is a world leader in “Solar Thermal”

Ormat – An Iconic Israeli Alternative Energy Company

Geothermal energy



Founded in Israel in 1965
Vertically integrated
300M\$/year

Ormat is the “Nokia” of Geothermal energy!

How did Israel Become a World Leader in Solar and Geo-Thermal

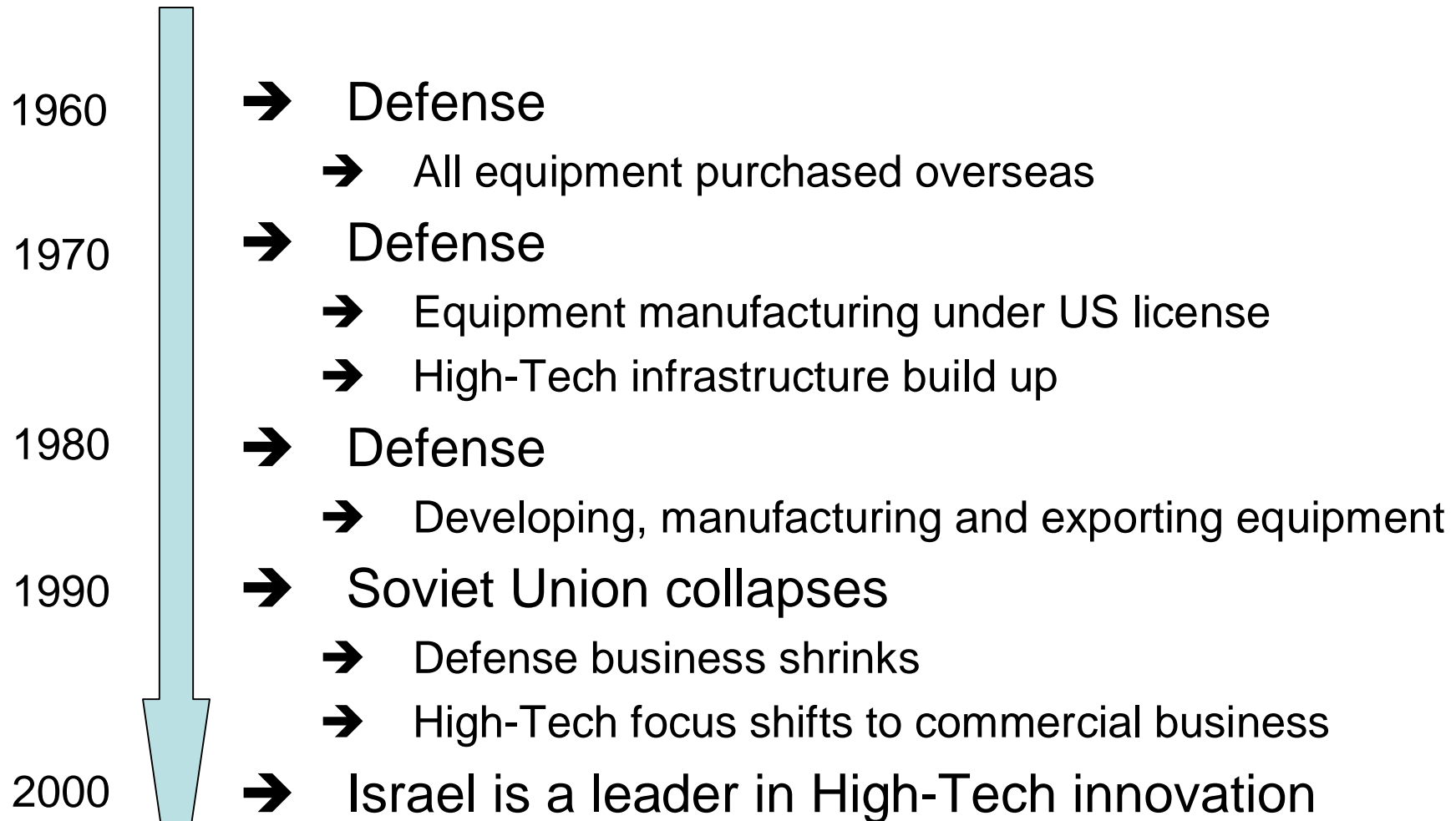
In 1948
Prime Minister Ben Gurion
set up the
“Research Council of Israel”
to promote R&D
to help a new country
with no natural resources.



Harry Tabor (left) demonstrates his selective-black collector to Israeli Prime Minister David Ben-Gurion prior to its shipment to the first solar congress in Arizona in 1955. Ben-Gurion actively encouraged solar R&D in Israel.

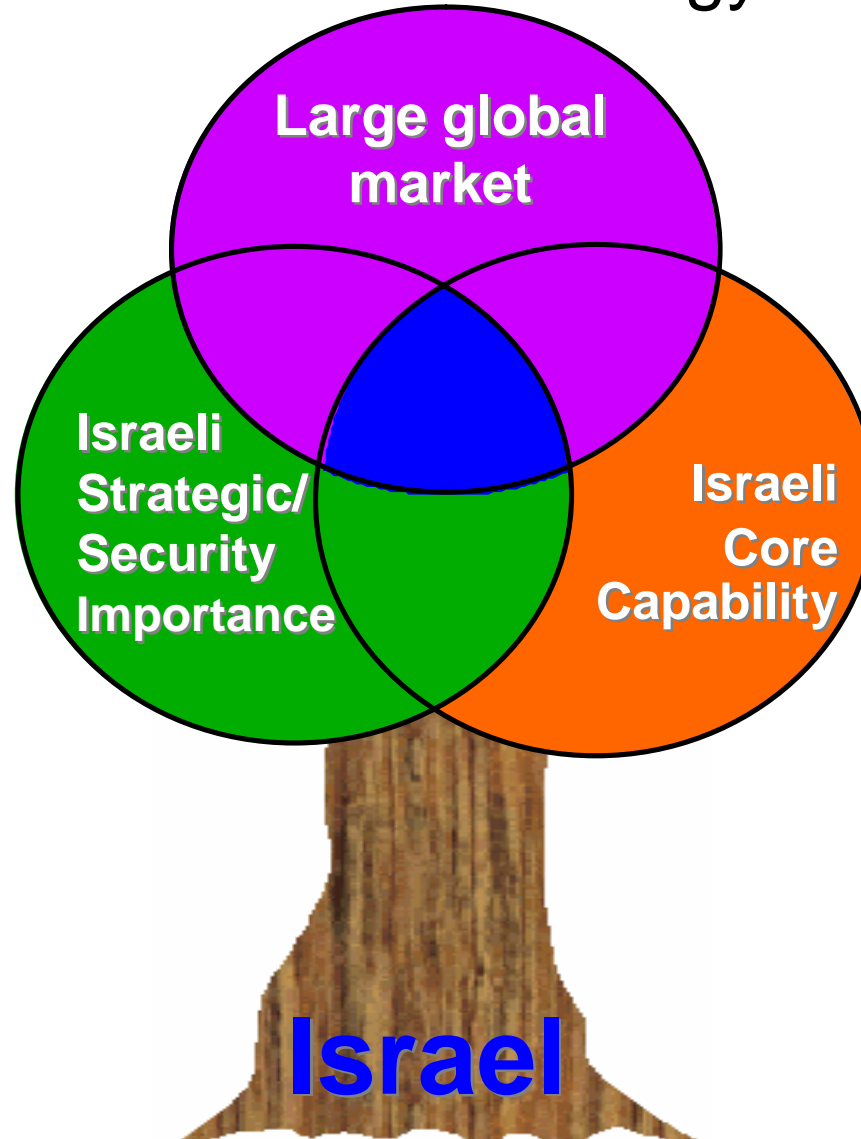
We need similar vision, leadership and action today!

How did Israel Become a World Leader in High-Tech innovation



Manufacturing of imported technology can accelerate development

Israel's Alternative Energy Focus



Success criteria:

Alternative energy business larger than High-Tech in 10 years

Current Initiatives in Israel

Electric Cars: Better Place

Better Place will provide the batteries and install and operate an infrastructure of charging and battery swap stations



Renault-Nissan is manufacturing electric cars for production use starting 2011

Israeli government has reduced the 80% car tax to 10% for electric cars

- Israel**
January 08
- Denmark
 - Australia
 - Hawaii
 - Ontario
 - San Francisco
 - More to come

Current Solar Initiatives

Israel's Chief Scientist "MAGNET" R&D concept*



* www.magnet.org.il

"Solar Energy Solutions" Magnet Launched Dec 08

Also

**Solar energy generation tariffs implemented,
Ashelim Solar power plants announced**

Electric cars/solar energy is a compelling vision

but

There are a Billion liquid fuel cars on the road

so

Bio-fuel technology is critical as well

Bio-fuels compete for land and water with food



Mexico

“Tortilla riots” due to high corn price

Israel's agriculture and algae technologies can help fuel and food

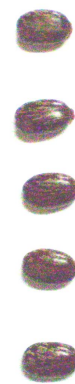
High Yield Castor oil for Bio-Diesel production



← **Advanced High-Yield
Castor for Bio-diesel**

Regular

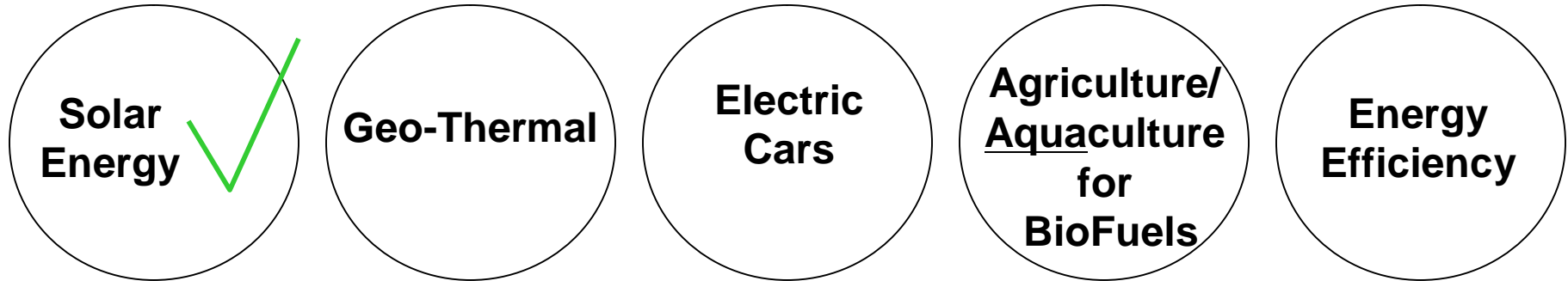
**Genetically
Multiplied**



kaiima
SUSTAINABILITY MULTIPLIED

Proposed Alternative Energy Effort

Start with five **MAGNETs** of excellence - for example:



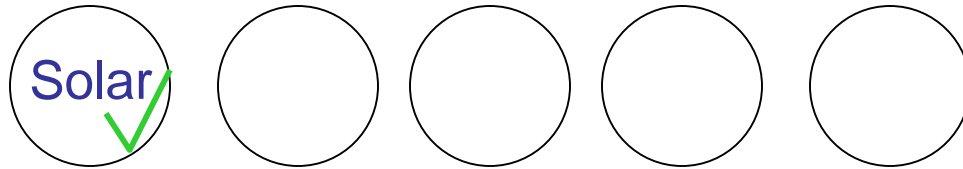
AND

License critical technology and launch major manufacturing effort –
For example: Electric cars components

Proposed Alternative Energy development Process

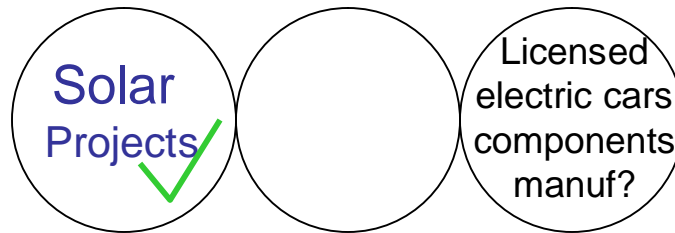
2009

Five MAGNETs of excellence



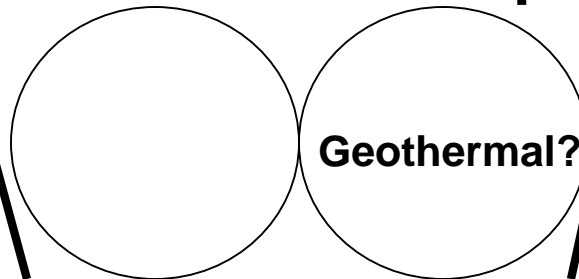
Government role

Organize and support R&D.
US collaboration through
BIRD and BSF Energy



Support manufacturing and pilot projects. Form strategic alliances with US/other countries

World leadership

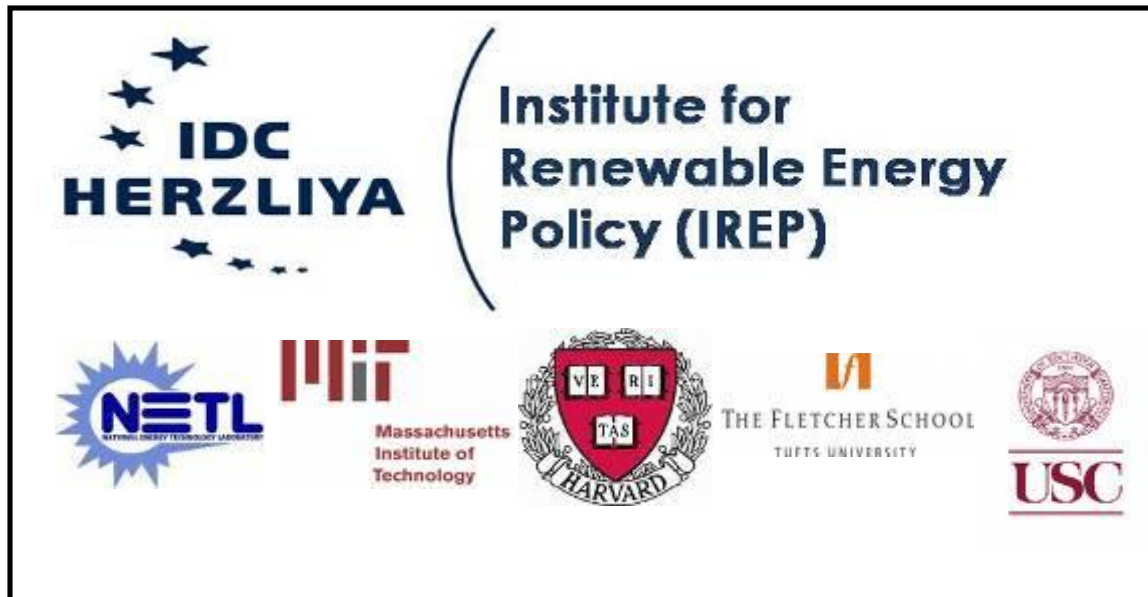


Support a complete industry foodchain:
Tax incentives, loan guaranties,
national and global projects,
expansion to adjacent fields

2019

Proposed Alternative Energy development Process

The technology selection process should be guided by independent technology and business expertise in Israel



Summary for Israel:

Alternative energy should be a national priority

- National Plan
 - Organization and drive to become AND remain best in the world in few areas
 - Committed budget
- Government to work with the private sector
 - Support the private sector in innovating alternative-energy technologies
 - Accelerate development through manufacturing of imported technology
 - Create incentives for companies to become AND remain world leaders

**For its national security and economy,
Israel can and should
become and remain,
a world leader in alternative energy**