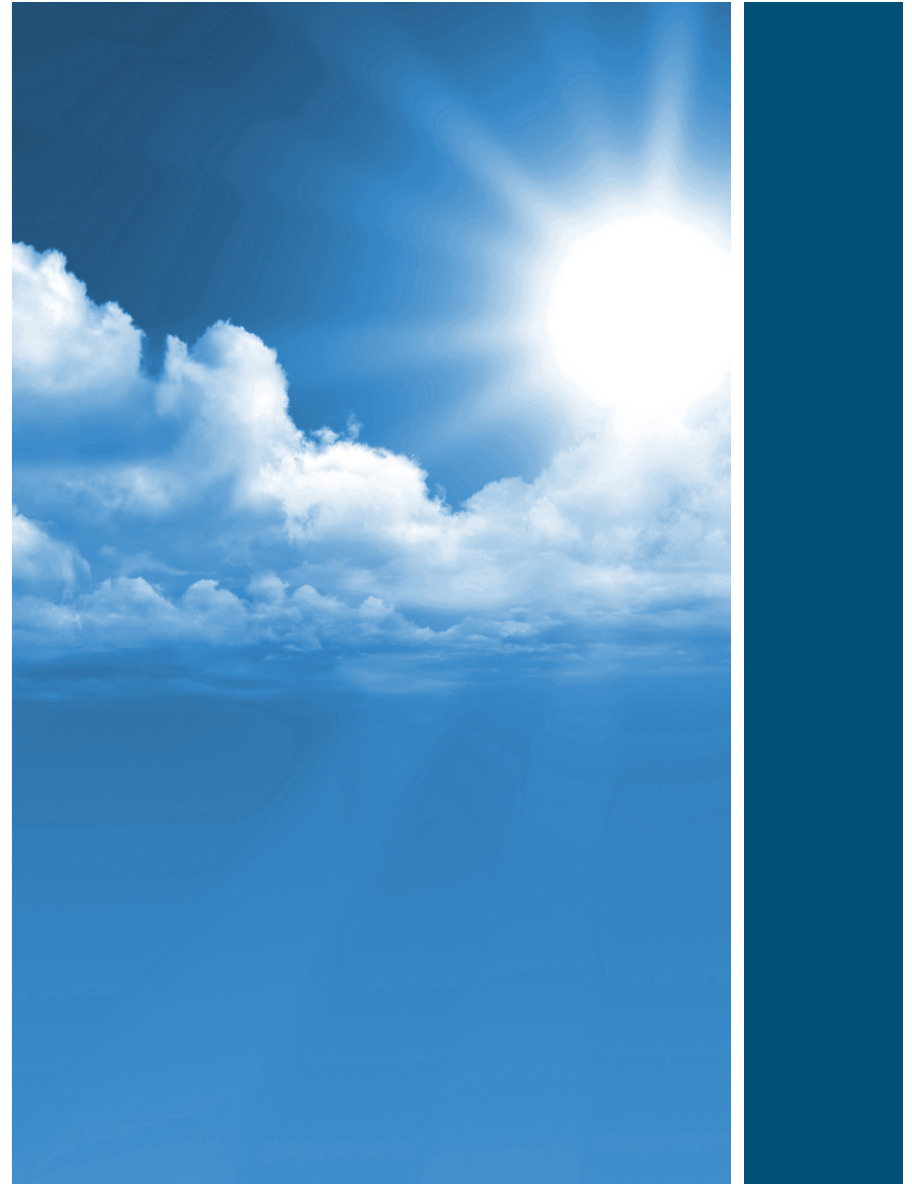


Building an Innovation and Entrepreneurship Driven Economy: How Policies Can Foster Risk Capital Investment in Renewable Energy

Webinar

May 4, 2011



CLEAN ENERGY
SOLUTIONS CENTER
AN INITIATIVE OF THE CLEAN ENERGY MINISTERIAL

Solutions Center & Webinars

The Solutions Center is designed to assist Clean Energy Ministerial countries and partners with the design and adoption of clean energy policies and deployment programs. It serves as a virtual clearinghouse of clean energy policy information and tools and leverages assistance available through other Clean Energy Ministerial initiatives. It also offers peer-to-peer learning, remote expert assistance, and online training.

Webinars are facilitated learning sessions to discuss and learn about experiences and best practices in priority areas from our global colleagues.

Doug Arent

JISEA



- Executive Director
- The Joint Institute for Strategic Energy Analysis conducts leading-edge interdisciplinary research and provides objective and credible data, tools, and analysis to guide global energy investment and policy decisions. The Joint Institute for Strategic Energy Analysis is operated by the Alliance for Sustainable Energy, LLC, on behalf of the U.S. Department of Energy's National Renewable Energy Laboratory, the University of Colorado-Boulder, the Colorado School of Mines, the Colorado State University, the Massachusetts Institute of Technology, and Stanford University.



Policy Approaches To Mobilize Capital for Clean Energy Innovation

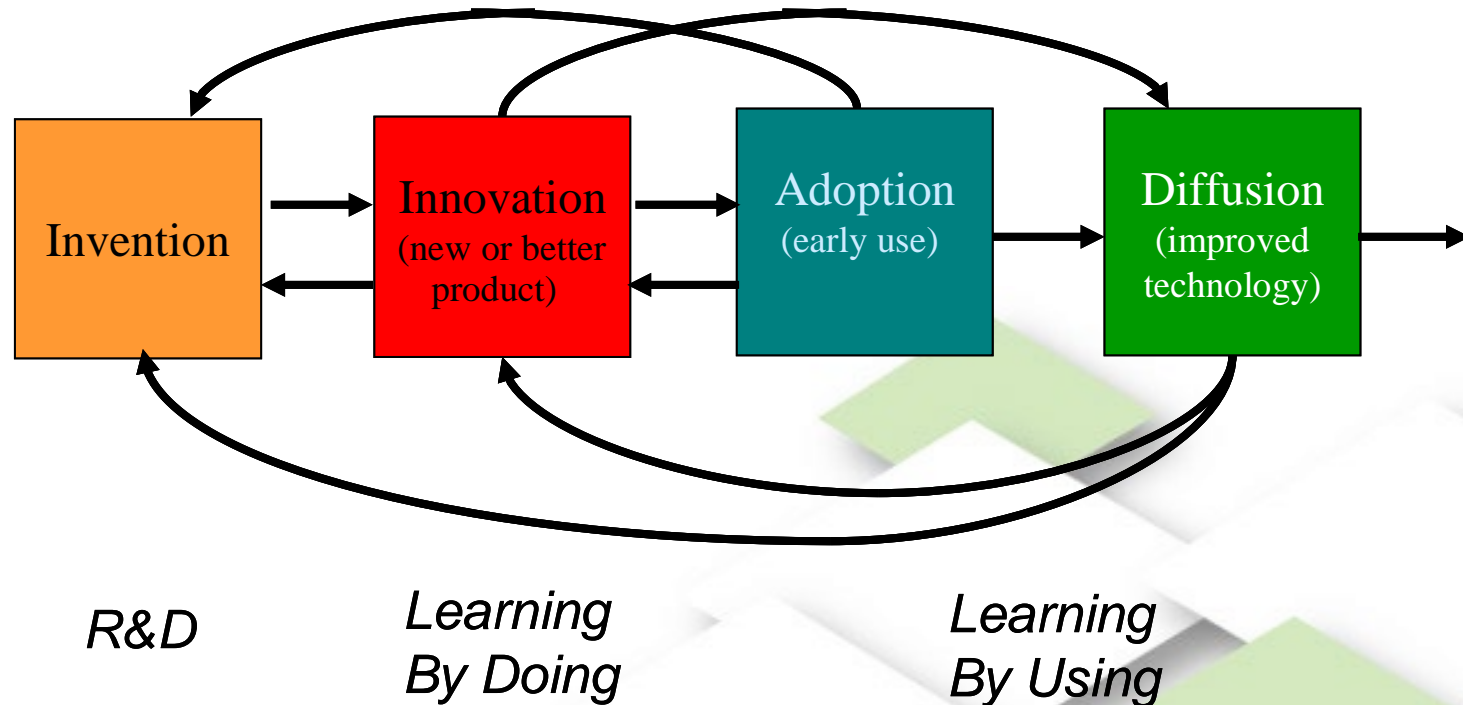
Douglas J. Arent,
Executive Director
CESC/CEM Briefing
May 2011



Financial Value Chain



Innovation & Policy Portfolios



Example Policies

Direct Government Funding of Research and Development (R&D)

- R&D contracts with private firms
- R&D grants and contracts with universities
- Intramural R&D conducted at gov't laboratories
- R&D contracts with consortia (2 or more of the actors above)

Direct or Indirect Support for Commercialization and Production; Indirect Support for Development

- Patent protection
- R&D tax credits
- Production subsidies or tax credits to firms bringing new technologies to market
- Tax credits or rebates for new technology buyers
- Government procurement
- Demonstration projects

Support for Learning and Diffusion of Knowledge and Technology

- Education and training
- Codification and transfer of knowledge
- Technical standard-setting (non-regulatory)
- Technology and/or industrial extension services
- Publicity and consumer information

Source: Alic, Mowery and Rubin, 2003, NAS America's Climate Choices, 2010

Robert dos Reis Alvarez

ABDI



- International Affairs Manager
- The Brazilian Agency for Industrial Development (ABDI) is the Brazilian Government Agency in charge of promoting the implementation of the Country Industrial Policy (that is, Brazil's Innovation and Development Strategy). ABDI bridges and works together with different Government agencies and the private sector in Brazil.



Energy, clean technology, business and innovation in Brazil

Roberto dos Reis Alvarez, *Ph.D.*

International Affairs Manager

ABDI - Brazilian Industrial Development Agency

Brasília, Brasil

May 5th, 2011

- Brazil
- Innovation in Brazil
- Energy
- The VC/PE industry
- Final remarks



Facts and figures

- Borders with 10 countries
- 50% of South America's surface
More than 8 million sq. Km
- 50% of the South American Population
184 million inhabitants
- 55% of South American GDP
US\$ 1.9 billion
8th world's largest economy

*

VENEZUELA:

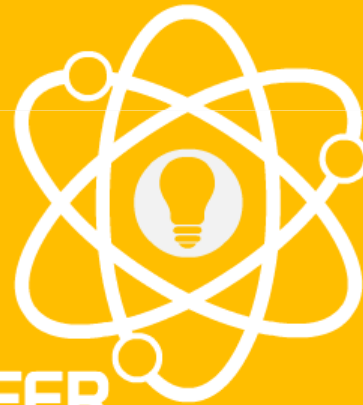
full MERCOSUR member,
in process of adhesion



121,000 NEW GRADUATES
A YEAR IN
SCIENCE & TECHNOLOGY AREA

source: MCT

161



TECH TRANSFER

OFFICES **IMPLEMENTED**

source: ANPROTEC

SO FAR...



400

TECHNICAL INCUBATORS

INVOLVING

6,000

INNOVATIVE
BUSINESSES

source: ANPROTEC

Desafios da política de desenvolvimento científico e tecnológico



STIMULATING INNOVATION in four years...

 **4** Rounds
of grants



825
Projects



\$800 Million
were committed
by FINEP

Energy Investment next 10 years

38
US\$ billion
Offer Liquid
Biofuels

125
US\$ billion
Electricity
Supply

391
US\$ billion
Oil and
Natural Gas

Source: EPE

SMART SOLUTIONS FOR GLOBAL PROBLEMS
Ethanol as a fuel



Industry Overview as of December 2009

Investors

- US\$ 36.1 bn Committed Capital
- Main LPs: Pensions 22%, Parent Orgs. 18%, Endowments 10%, GP Orgs 9%, Family Offices 9%

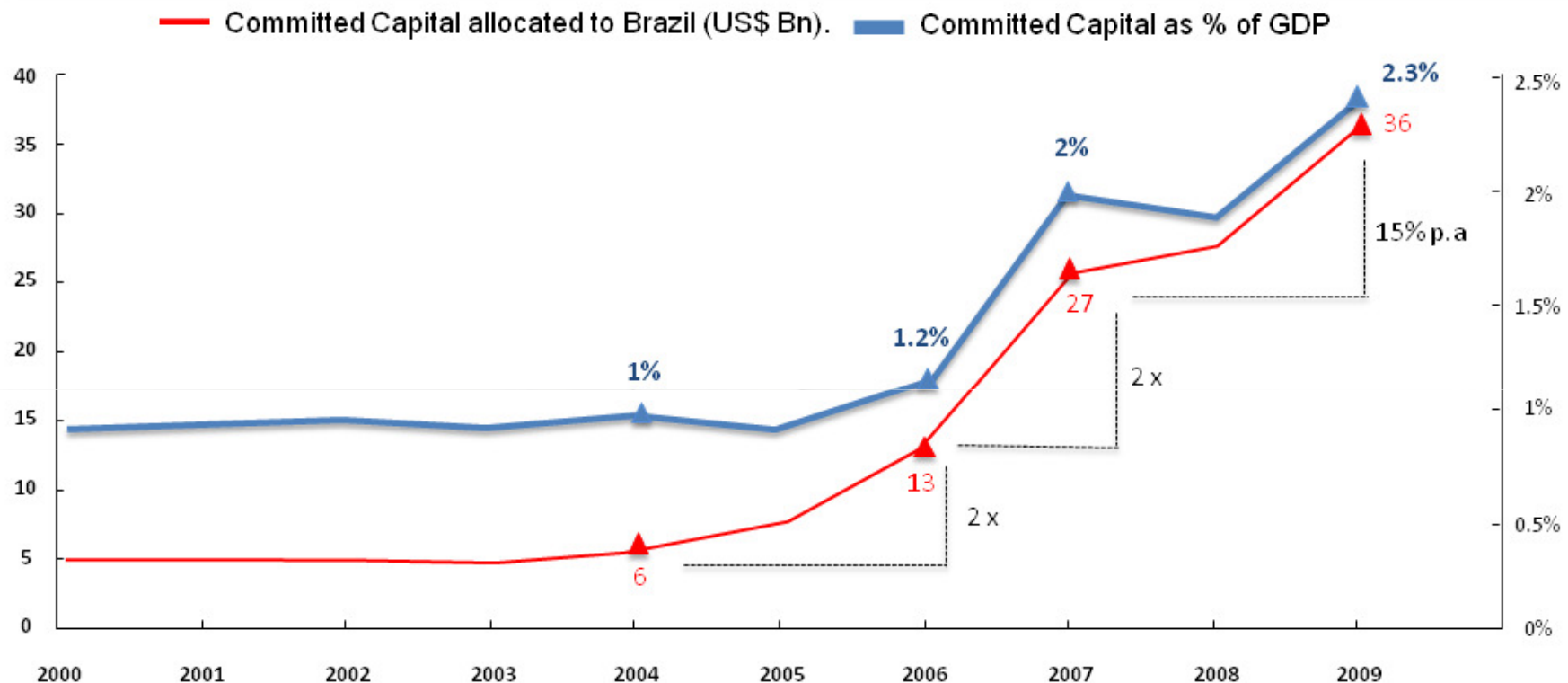
General Partners

- 144 PE&VC Firms
- 258 Investment Vehicles
- Est. 1,593 Professionals & Staff

Portfolio Companies

- 502 portfolio cos., Dec 09
- 2005-2009 Period:
 - 414 new investments
 - 103 total exits
 - 39 IPOs

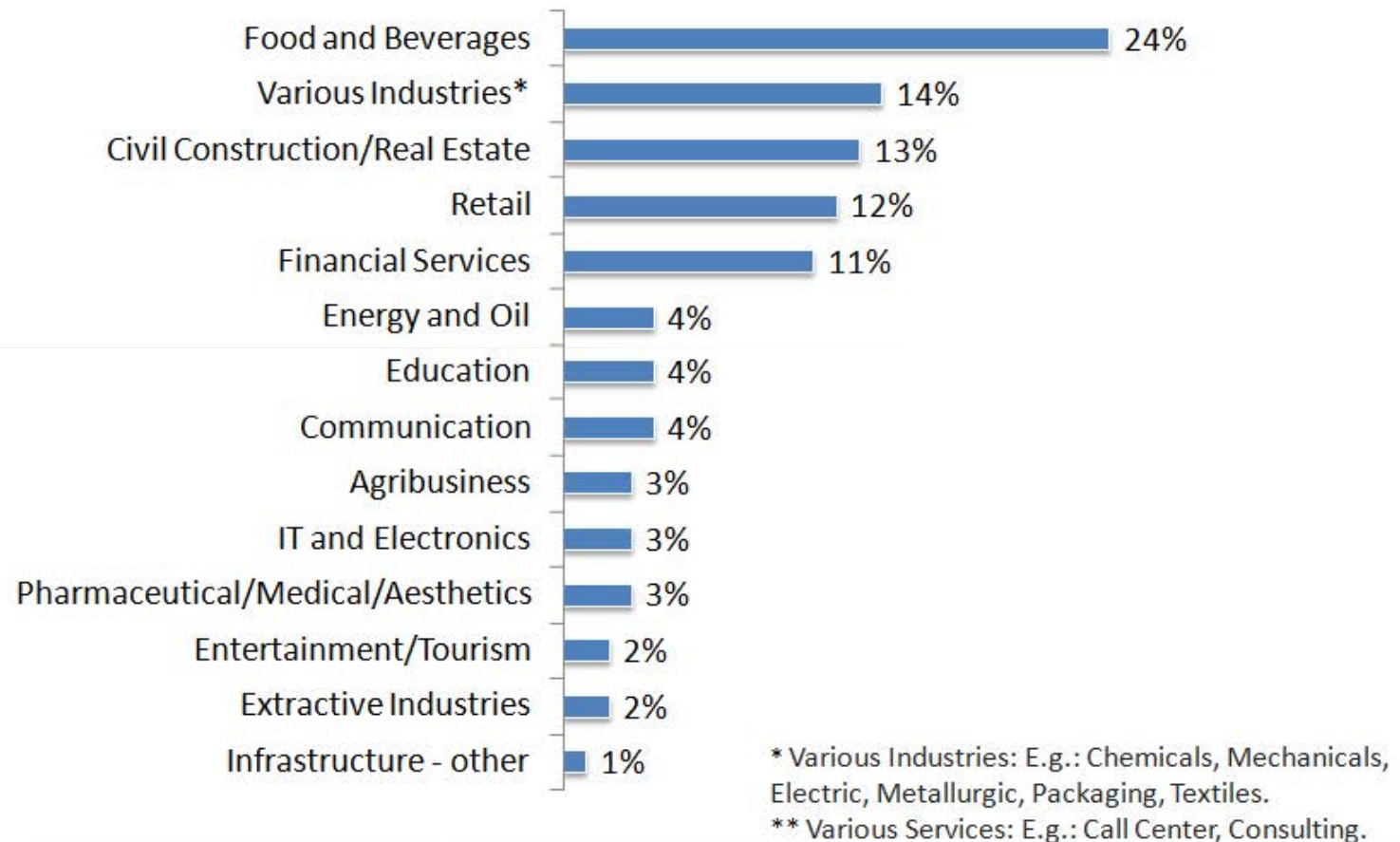
Expansion of the Asset Class



The evolution of committed capital is impressive, increasing more than 6 times since 2004 and 2 fold as percentage of GDP.

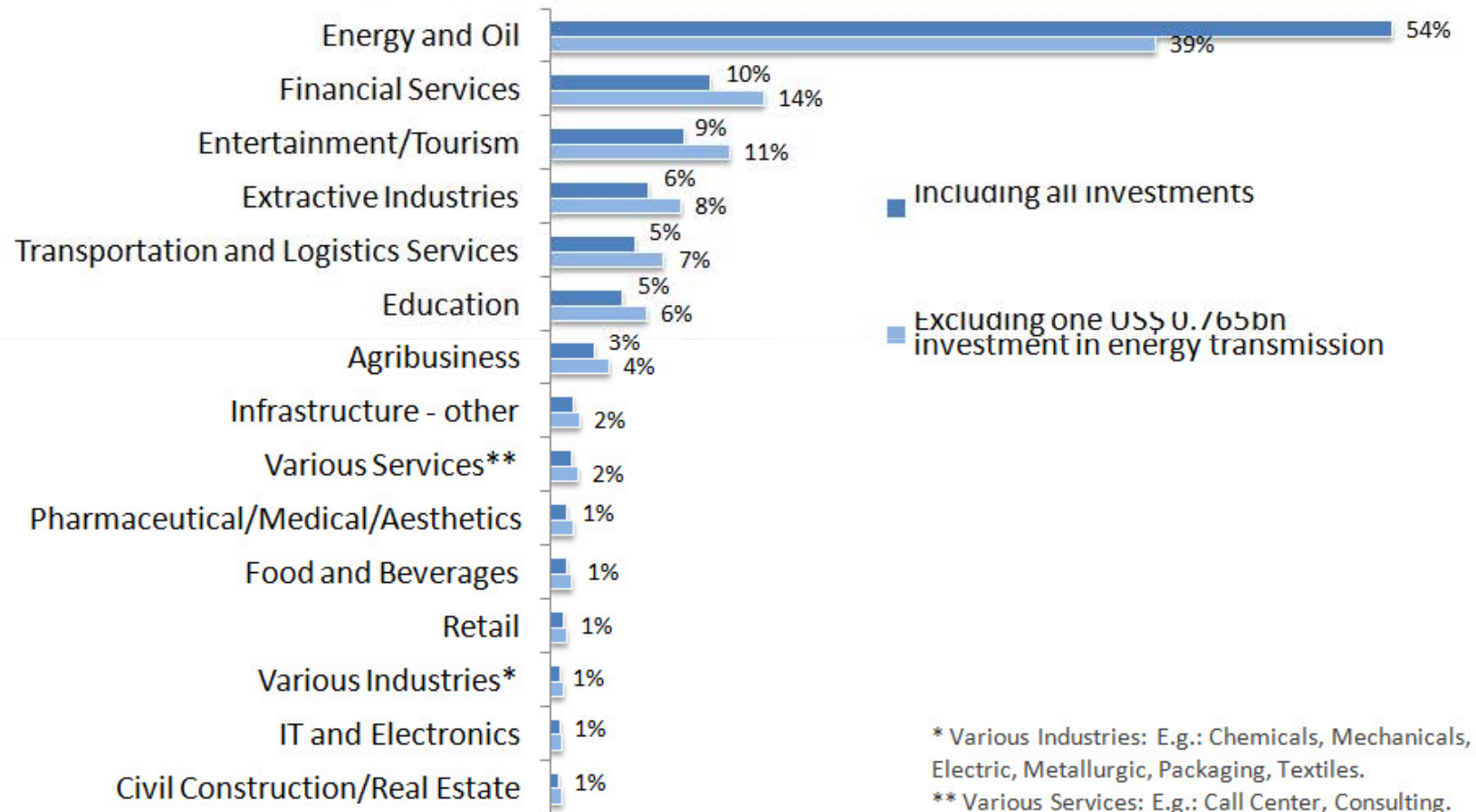
Investments by Sectors of Economic Activity in US\$ MM

2005-2008 (Includes New and Follow-on Investments)



Investments by Sectors of Economic Activity in US\$ MM

2009 (Includes New and Follow-on Investments)



Sample 2005-2008: 394 investments by 144 PE/VC Organisations.
 Sample 2009: 95 investments by 45 PE&VC Organisations

INOVAR

fundos



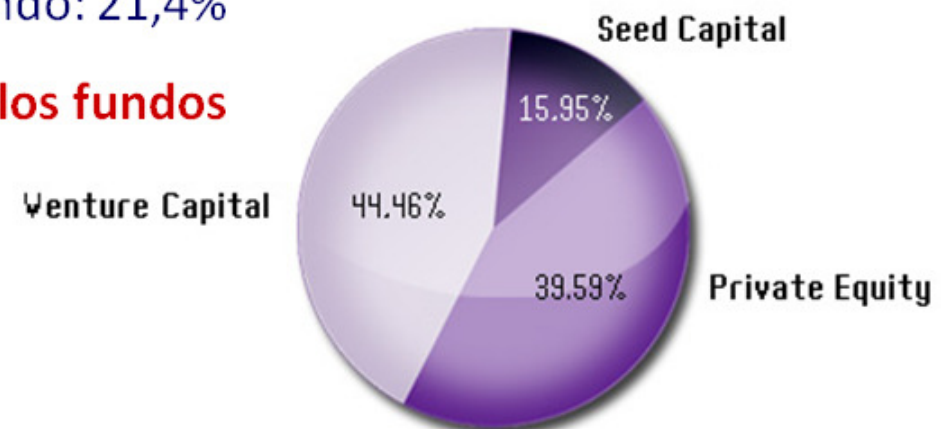
- 6 Fundos de Capital Semente
- 14 Fundos de Venture Capital
- 4 Fundos de Private Equity

Volume Total dos Fundos: ~ R\$ 3 bilhões

Comprometimento Total FINEP: ~ R\$ 300 milhões

Participação Média por Fundo: 21,4%

70 empresas investidas pelos fundos



Inovação em todo lugar

Aqui tem
FINEP

Final remarks

- The challenge: knowledge → economic value
- A global leader in renewables
- Energy investments are going up... and up...
- Public & private initiatives (& partnerships)
- Growing VC/PE mkt
- Public support (Finep, BNDES etc.) to new funds

Thank you!

Roberto dos Reis Alvarez, *Ph.D.*

roberto.alvarez@abdi.com.br

+55 (61) 3962-8700

Skype: roberto.dos.reis.alvarez

Twitter: <http://twitter.com/robertoalvarez>

LinkedIn: <http://br.linkedin.com/in/robertodosreisalvarez>

www.abdi.com.br

Melinda Richter

PreScience International



- Founder & CEO
- Prescience International is a firm dedicated to the commercialization and global adoption of science. With industry expertise in the future of technology markets, Prescience International creates, manages and develops centers of excellence in the form of research parks, research centers/incubators, research foundations, research institutes, and emerging companies.





A New Model of Commercializing Innovation

Melinda Richter
Founder & CEO Prescience, Intl.

About PRESCIENCE

Accelerating the Commercialization of
Science & Technology

Centers of Innovation that give early stage companies that “Big Company Advantage”

Educational Commercialization Programs for entrepreneurs and executives

Deals between early stage innovation and funders / big companies

Quick Economic ROI
Company formation/
funding, job growth, tax
\$

Self-Sustaining
Incubators
little to no ongoing
support

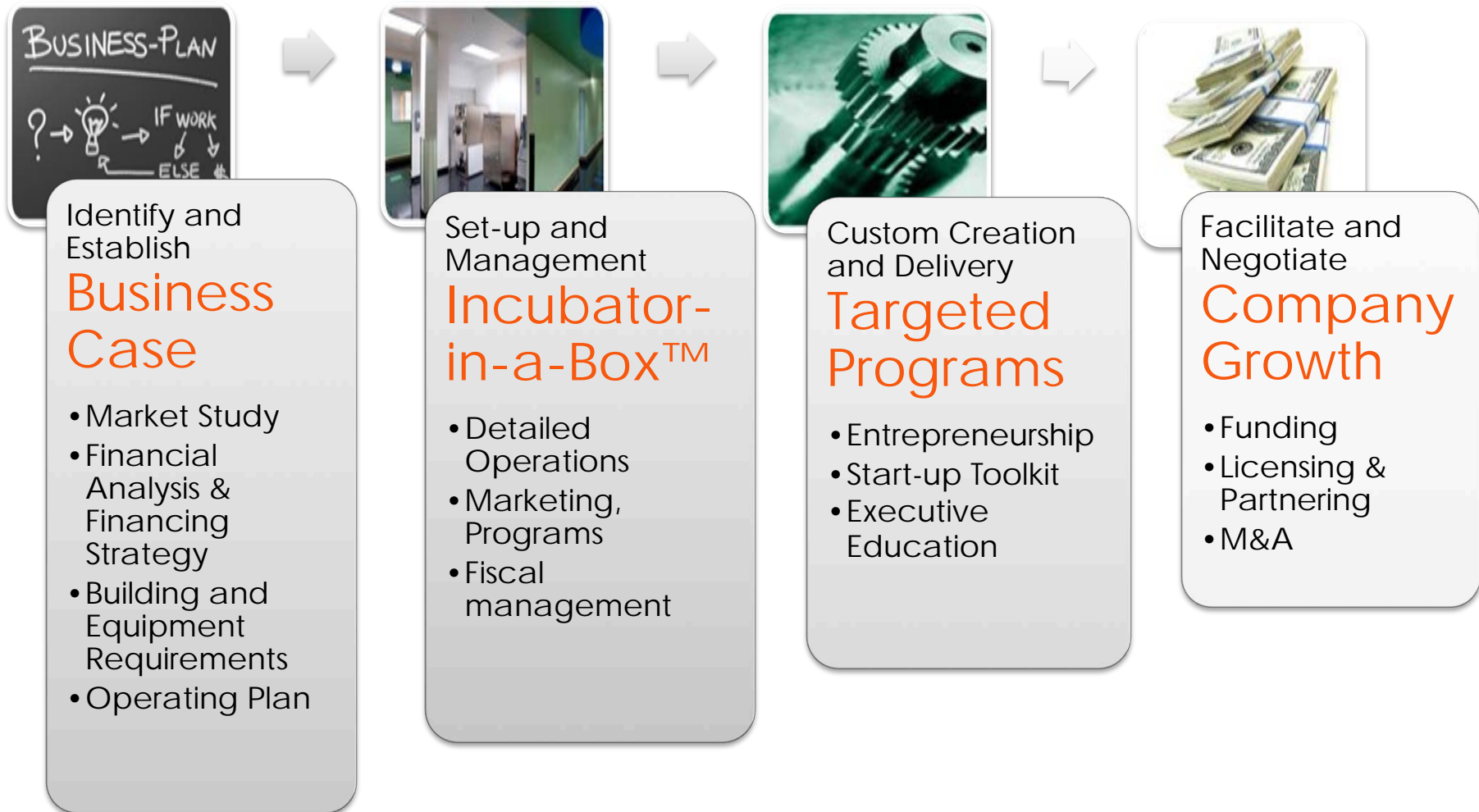
Impact on the
Environment
and Healthcare
making a difference

Leveraging a Network Creating a Powerhouse of Innovation



Incubator-in-a-Box™ Model

Sourcing & Commercializing Innovation Anywhere



BioCenter: Big Company Facilities

Plug & Play Infrastructure to Decrease Investment



Equipped and operated shared facilities



- Common Equipment Rooms
- Service Alcove
- Cold Room
- CORE ChemLab
- CORE BioLab
- 3 Tissue Culture Rooms
- Conference/Meeting Rooms
- Library/Kitchen/Break Room
- Reception
- Business Center
 - mail room, photocopier, fax machine, postage machine, document shredding service, moving equipment, tools, etc
- Shipping & Receiving Area

Turn-key & expandable wet lab units

Fume hoods, benches, RO/DI water, gas, vacuum, emergency showers/eye wash stations, hazmat storage cabinets, 110V, 220V & emergency power

Environmental Business Cluster

First and largest cleantech incubator in the US

Coaching

- Practice Leaders/Coaches
- Pitch Practice Sessions
- On-site Service Provider Office Hours

Networks

- Funding Sources
- Policy Makers/Regulatory Agencies/Government
- Innovation Partners

Education

Bootcamp/The Academy

- Funding (Stimulus/Grant, Angel, Venture, Project)
- Business Priorities
- Regulatory/Policy Education

Infrastructure

- Furnished Offices & Common Areas
- Business & Ops team
- Community of entrepreneurs

Selected Strategic Growth Partners

Getting the Decision Makers to the Table Fast

Funding Partners – Government Agencies – Investors – Corporate Players



Contact Details

Melinda Richter

CEO, Prescience International

C 415.297.1883

W www.prescienceintl.com

E melinda@prescienceintl.com

In Q1 2011...

Clean Technology Investments Top \$1.0 Billion

Q4 saw a 26 % increase in dollars to \$1.0 billion.

of deals completed Q1 increased 11% to 69 deals compared with 62 deals in the Q4.

The increase was driven by several large rounds, including 5 of the top 10 deals.

The quarter marks the 4th time in history that Clean Technology investing exceeded \$1 billion.

Global Clean Technology Summary

Venture Investment Rises in 1Q 2011

\$2.57 billion across 159 companies.

By dollars invested was up by 52% compared to the Q4 2010 (\$1.69 billion) and was also 13% higher than Q1 2010 (\$2.28 billion).

Conversely, the # of deals was 159, a total which is likely to be the lowest quarterly count since mid 2009, though this tally may rise once all investors have completed reporting deals.

Of these deals, 65% (104) were follow-on rounds, accounting for 93% (\$2.39 billion) of all money invested during the quarter.

Global Investment

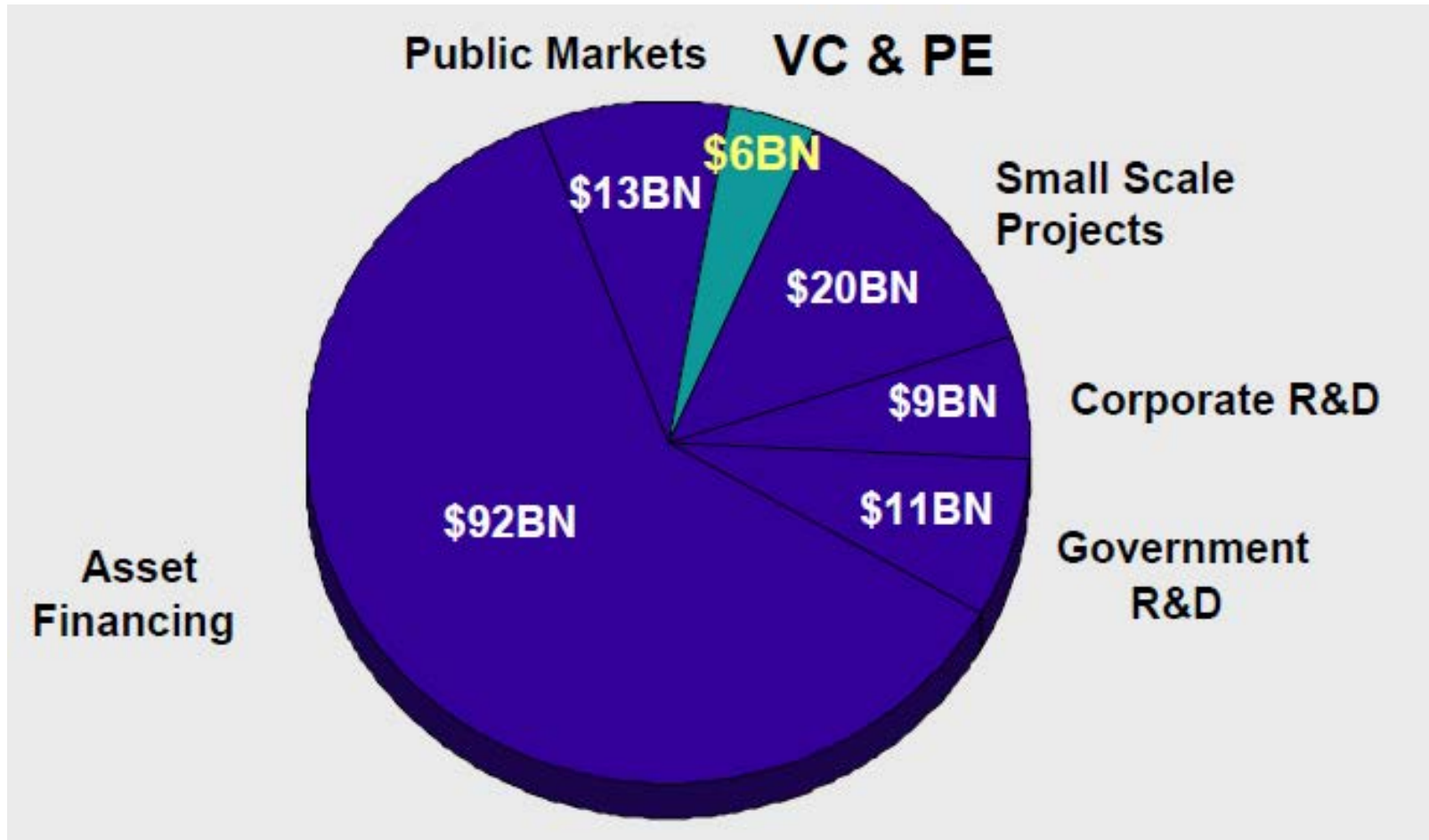
North America accounted for 85 percent of the total, while Europe and Israel accounted for 6 percent, Asia for 7 percent, and the Rest of the World 2 percent.

North American companies raised \$2.19 billion, up 115% from 4Q10 and up 43% from the same period a year ago. The total of 101 disclosed rounds compared to 103 in the previous quarter.

The largest deals were for: BrightSource Energy (\$201 million), a California-based developer of utility-scale solar thermal power plants; Plastic Logic (\$200 million), a California-based developer of plastic semiconductors; and Fisker Automotive (\$150 million), a California-based plug-in hybrid vehicle developer.

California led the way with \$1.5 billion investment (68% share), followed by Ontario (\$144 million, 7%) and Massachusetts (\$119 million, 5%).

Other Financing Options



Source: "Green Investing 2010: Policy Mechanisms to Bridge the Financing Gap," *World Economic Forum*

Many Areas for Funding

Department of Energy



Advanced Research Projects Agency - Energy



Office of Science



Office of Electricity Delivery & Energy Reliability



21 National Laboratories



Plus Many Other Federal Agencies



Defense Advanced Research Projects Agency



National Science Foundation



Small Business Administration



General Services Administration



Homeland Security



Agriculture



Navy



Army



Marine Corps



Air Force



EPA



Transportation



Interior

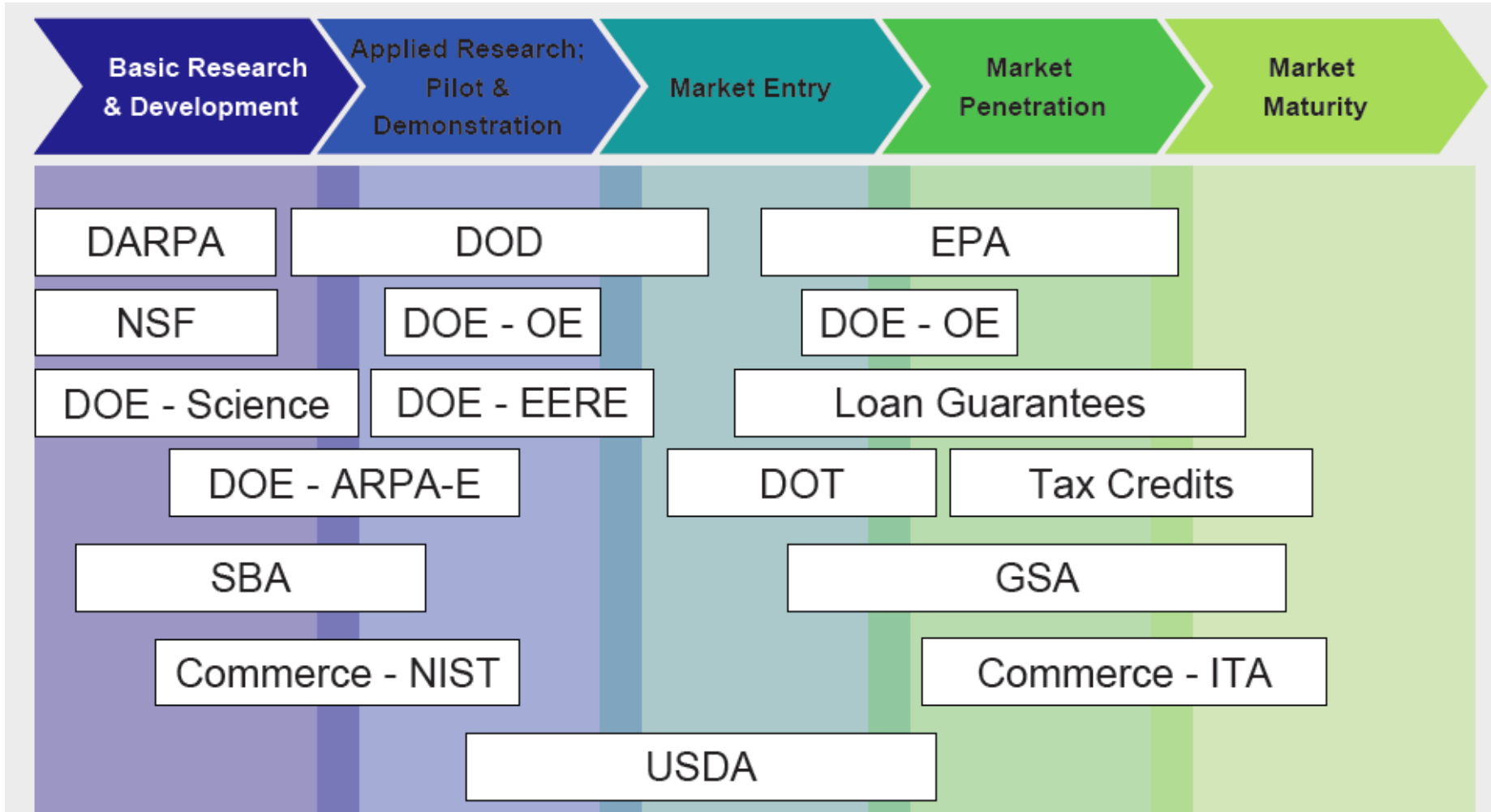


Commerce



Treasury

Different Stages of Funding



Inderpreet Wadhwa

Azure Power



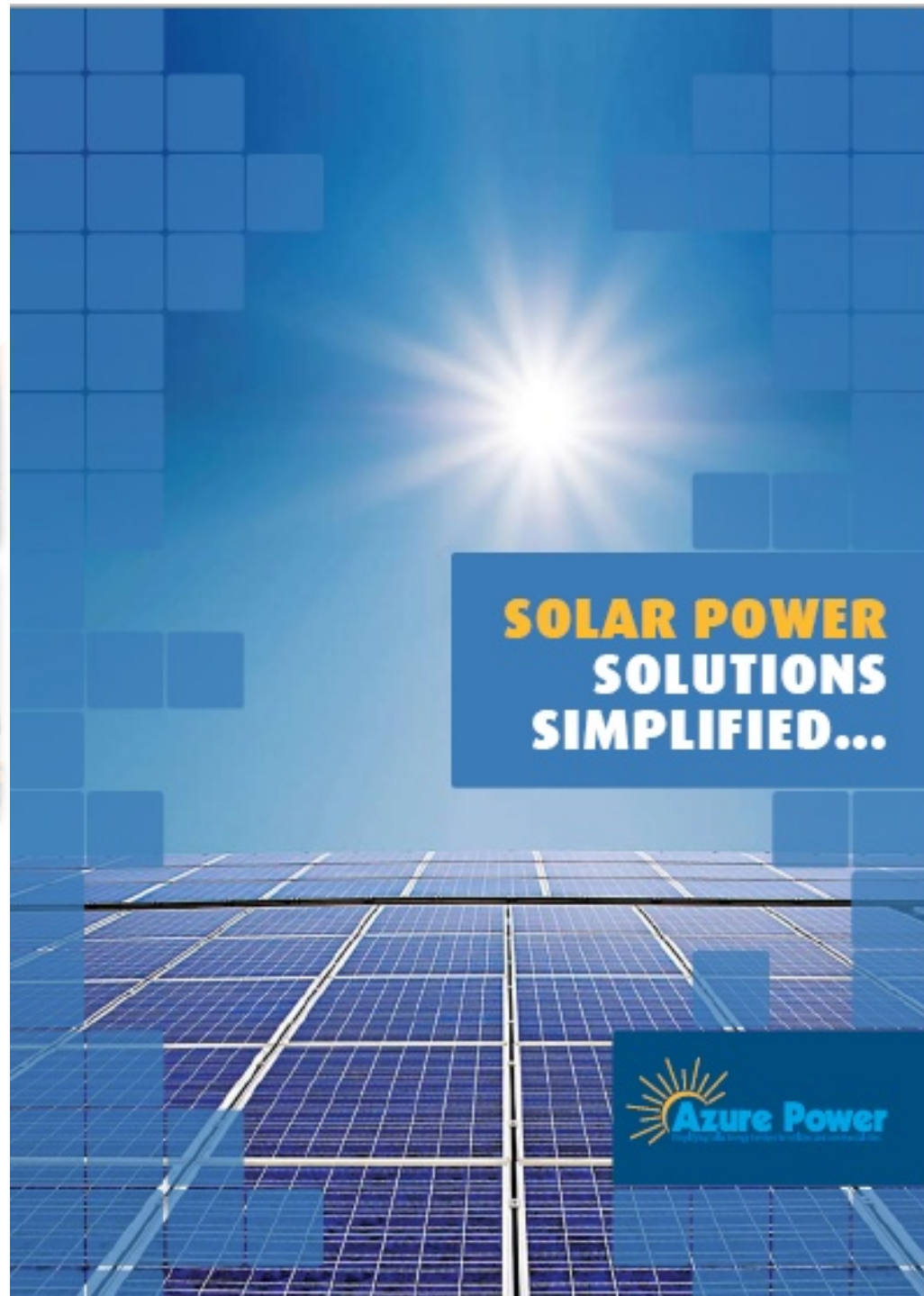
- CEO
- Azure Power is an independent solar power producer and the first private sector company to implement a megawatt scale grid connected solar photo-voltaic power plant in India.



Webinar for Clean Energy Ministerial



Inderpreet S Wadhwa, CEO
Azure Power



Azure Power Introduction.



Azure Power, India's first independent solar service provider offers clean and affordable solar energy to its customers with minimum upfront cost and ongoing operational expenses.

- **Projects**

- **Punjab (2MW):** India's first commercial grid connected MW scale solar power plant in Awan.
- **Gujarat (10MW):** One of the largest solar plant under construction in India.
- **Rajasthan (5MW):** Azure Power has been allotted 5 MW under the prestigious National Solar Mission which is under development in Rajasthan.



- **Services**

- Azure Power creates innovative solutions to deliver solar energy to its utility, government, and commercial customers.
- Azure Power's Solar As a Service model, manages the entire project process for its customers, reduces costs of generating electricity, and provides long term predictable pricing.



- **Alliances**



New Market Expansion: Policy Mechanisms



- **Finance**

- 100% FDI allowed in Clean Energy Company. No special approvals required to invest in clean energy sector.
- Direct loans to SMEs by US govt agencies and export finance.
- Repatriation of Profits

- **Renewable Energy Policy**

- Single window clearances
- Feed in tariff regulation
- Common infrastructure access through Special Economic Zones & Parks
- Indirect tax concessions for technology imports
- 10 Year Tax holiday

- **Energy Collaboration Forums**

- Platform for sharing best practices
- Technology collaboration
- Market Access

New Market Expansion: Challenges



- **Permitting**

- Land Acquisition is complicated; government, community and private
- Pollution , Forests, Industries, Renewable Energy, Ministry of Power, Railways, Revenue, Transmission, Land Use
- Most permitting is done manually and is time consuming (several months)

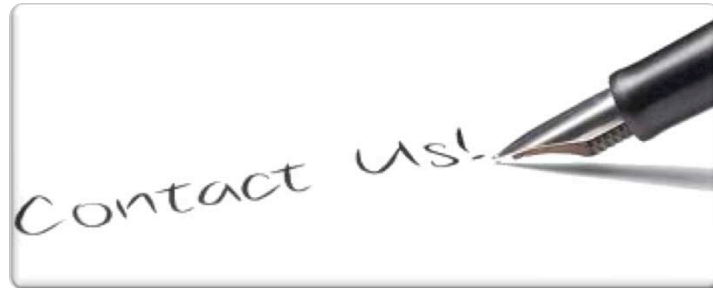
- **Finance**

- Project finance options limited in the local market for size of current projects
- Most banks look for strong balance sheets for power projects finance
- PPAs offer limited payment security, MOUs generally not bankable

- **Construction**

- Ports in Mumbai and Delhi are congested. Materials logistics processes should ensure proper lead time to mitigate these risks
- For imports, concessions provided ; Tax Regime understanding key for foreign players (Direct & Indirect)
- Strong design & engineering talent available, but requires rigorous training/re-tooling

The future is bright..



Mr Inderpreet S Wadhwa

CEO

Azure Power

inderpreet@azurepower.com

+16502456464

+919999300090

Ethan Zindler

Bloomberg New Energy Finance



- Head of Policy Analysis
- Bloomberg New Energy Finance is the world's leading independent provider of news, data, research and analysis to decision-makers in renewable energy, carbon markets, energy smart technologies, carbon capture and storage, and nuclear power. The firm has staff of more than 130, based in London, Washington D.C., New York, Beijing, New Delhi, Hyderabad, Cape Town, São Paulo, Singapore and Sydney.

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NEW ENERGY FINANCE

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Building an Innovation and Entrepreneurship Driven Economy: How Policies Can Foster Risk Capital Investment in Renewable Energy

Expert panels—including government, industry, and financial experts from countries across several continents—will explore how countries have used policies to build a clean energy economy by stimulating venture capital investments in new renewable energy companies. Panelists will briefly discuss policy experiences and approaches from their own countries, including business competitions and coaching, state-owned venture funds, tax incentives, and loan guarantees, as well as perspectives on best practices across the globe. The webinars will conclude with ample time for the panel to respond to audience questions. The webinar will be on May 4th at two times to accommodate panelists and audiences from different time zones.

- www.cleanenergysolutions.org
- Available resources:
- Recorded version of this webinar including slides
- Frequent webinars
- Ask an Expert & Peer Forum
- Other feedback/suggestions: webinars@cleanenergysolutions.org

