



CAREC Energy Sector Update

Energy Investment Forum and High Technology Roadmap



Sohail Hasnie
CAREC NFP Meeting
Dushanbe, Tajikistan
21-22 September 2017





“Leapfrogging is essential for a clean energy future”

Lessons for a country:

- Technologies **exists**; make it **real** and **desirable**
- **Renewable Energy** is a brand
- **Think big**

Key messages from EIF

- Region **needs huge investment**
- Multilateral development banks **have major roles**
- Policy/tariff reforms to reflect full **cost of fossil fuels** will support renewables
- Policy **predictability and stability** for private investment
- Plenty of **lessons for the region from the leaders** in green and renewable energies.



cleo kawawaki @cleokwwk · Jul 18

Scary. Millions spent for unnecessary infrastructure. #EIFAstana



CAREC 2018 Energy Investment Forum

2016

Islamabad, Pakistan

185 attendees



2017

Astana, Kazakhstan

300 attendees

2018

Tbilisi, Georgia

xxx?



Turkmenistan-Afghanistan-Pakistan (TAP)

Construction of 500-kV transmission infrastructure from Turkmenistan into Afghanistan and to Pakistan

Countries agreed to sign a joint ministerial statement for project preparatory work
(19 May 2017)



- ✓ Countries confirmed agreement to be signed in 2017

High Technology Roadmap



Solar Power

Technology Goals



Battery Storage



Energy Efficiency



Electric Vehicles

High Technology Roadmap

Technology Goals



Electric Vehicles

Charging Infrastructure

Electric Bikes

Electric Tri-cycles

Electric Fleet Car

Electric Bus

Electric Boats

Drones in Development



Solar Power

Off Grid Solar

Floating Solar

Solar Hot Water

Solar Roadway

Solar Irrigation

Solar Air-conditioning

Industry Development

High Technology Roadmap

Technology Goals



Battery Storage

On Grid Battery

Training on Battery

Battery Manufacturing

Home Battery Storage



Energy Efficiency

Public Lighting

Efficient Buildings

Lighting Efficiency

Industrial Efficiency

ESCO

Energy Efficiency Financing

Other Issues

Carbon Capture Storage

Geothermal Heating

Diversification of Energy

Smart Regulation

Stranded Assets

Technology Partnerships may include



CAREC Activities 2017

(targets)

- **Off-grid solar**
 - **1000** units of electricity-on-a-stick (Afghanistan)
 - **100** units of **electricity-in-a-box** to **5** pilot countries
 - **Off-Grid Solar project concept** for Afghanistan, Tajikistan and Pakistan

- **South-south knowledge transfer:**
Toktogul (Kyrgyz Republic)



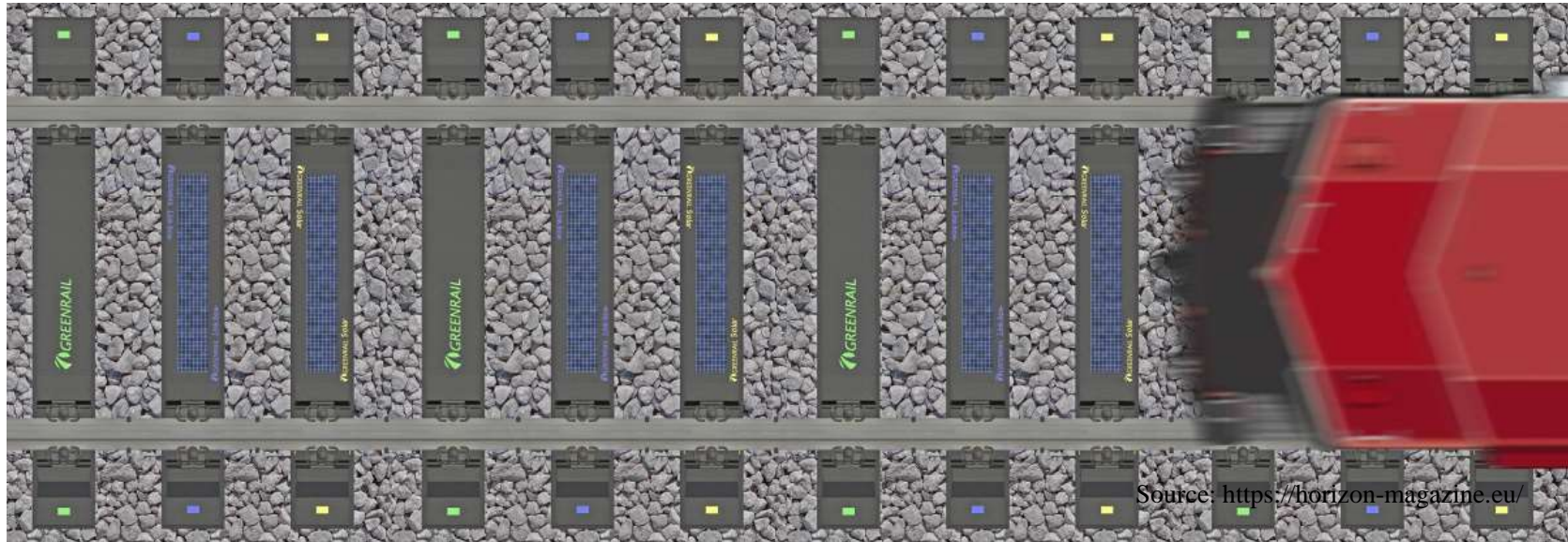
Nurek dam (Tajikistan)



- **High Technology Workshop in Beijing**
(in partnership with the CAREC Institute)



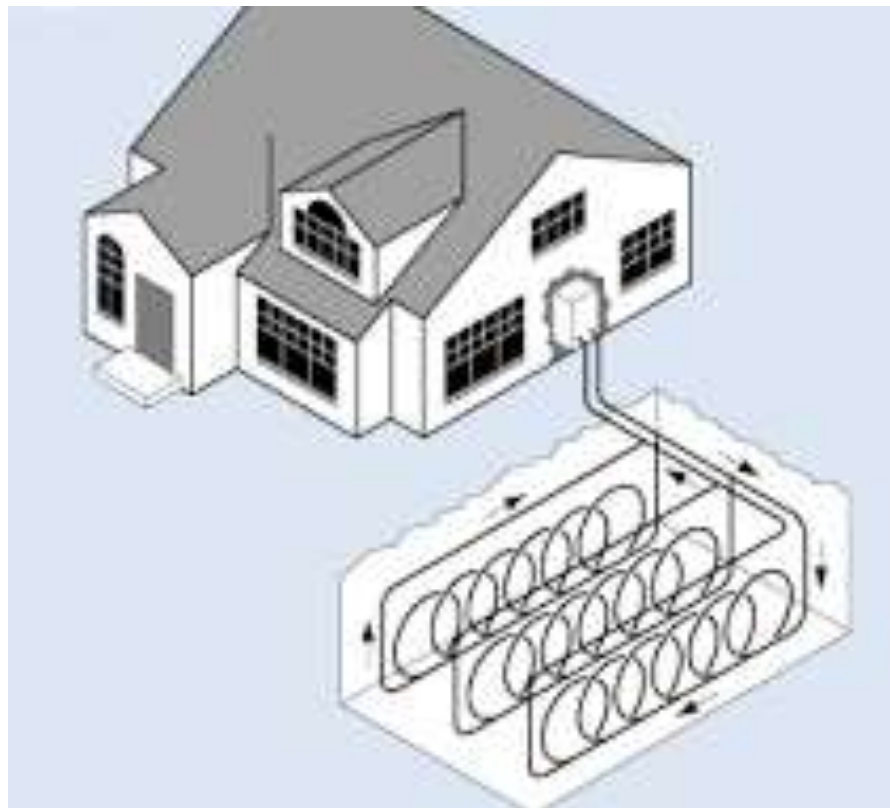
Turning CAREC's technology aspirations into reality



Source: <https://horizon-magazine.eu/>

High Technology Roadmap

Geothermal Heat Pumps



Will it work in Central Asia?

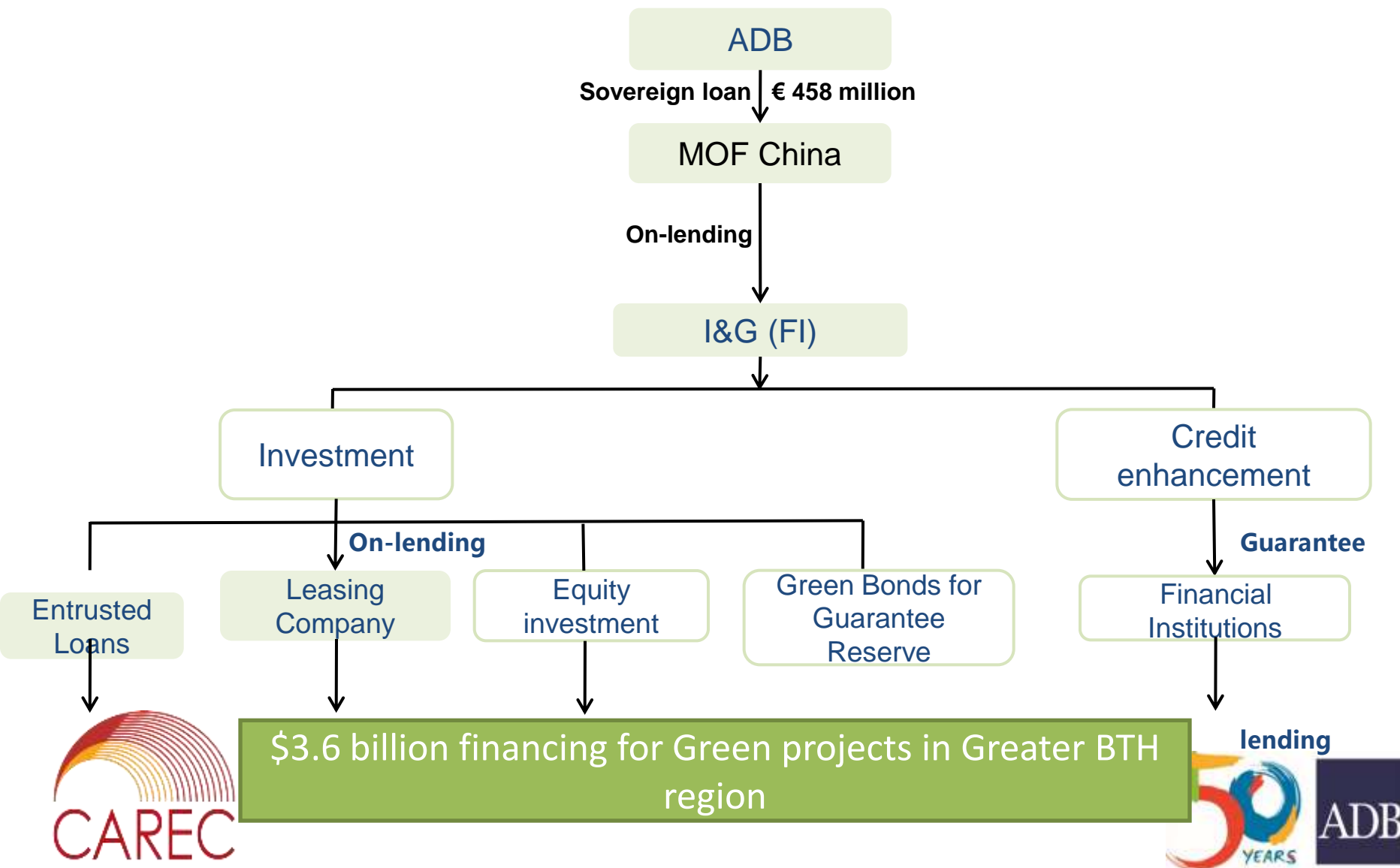
Turning Roadmap into Actions

Examples from PRC

Ashok Bhargava
Director (Energy)
East Asia Department



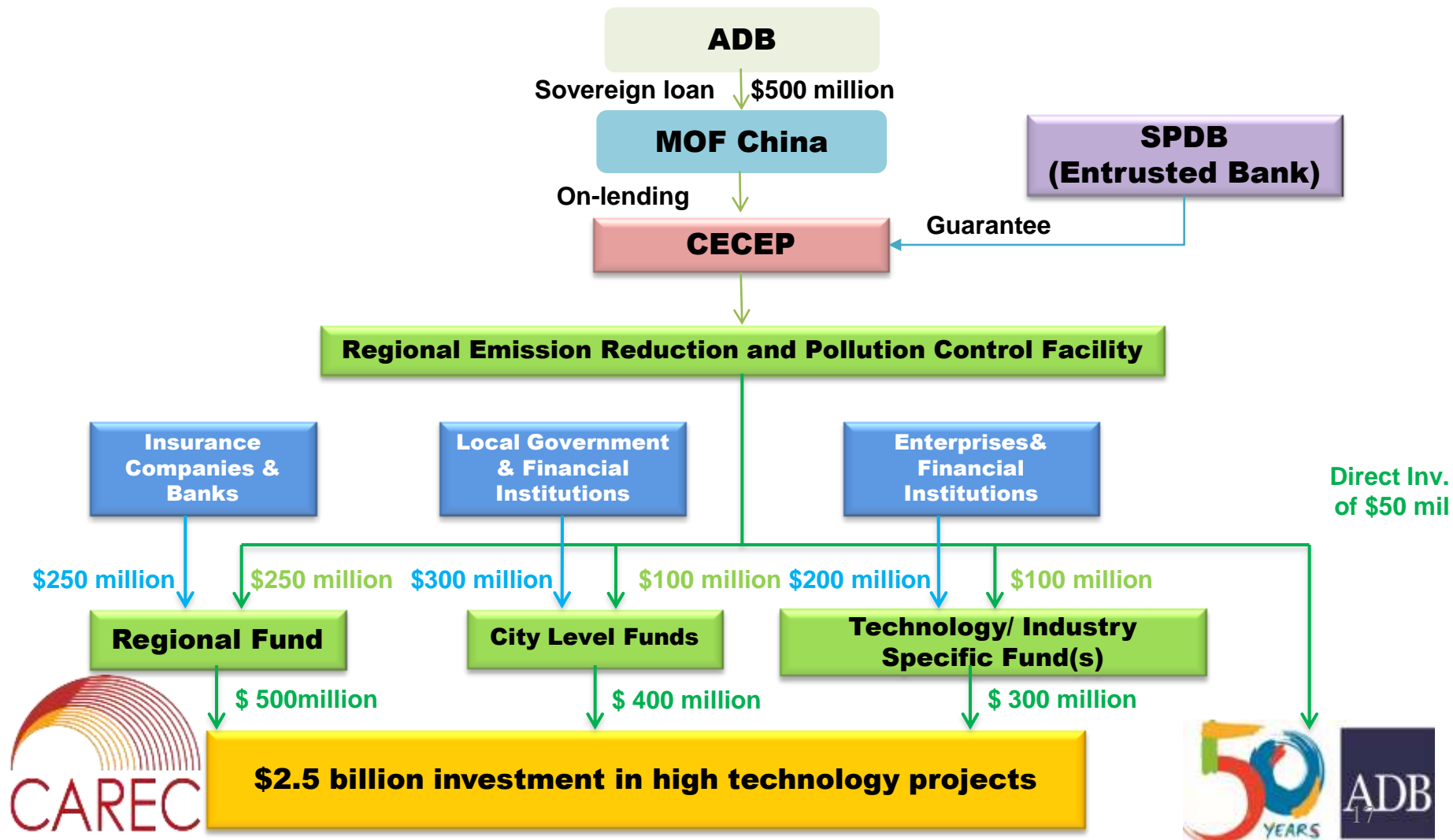
Green Financing Platform



SAMPLE SUBPROJECTS

- Agriculture waste to electricity generation
- Waste heat capture for heating of 1.5 million sq m floor area
- DeSOx and DeNOx installation in industries
- Line of credit for leasing of electric buses and efficient equipment
- Guarantee for ESCO for energy efficiency in SMEs
- Distributed renewable energy (roof top solar PV) and wind power
- Equity investment in intelligent e-bike start up

Fund of Funds Structure for High Technology in BTH Region



Sample high technology Subprojects

1

Biogas + Organic fertilizer from agriculture waste

2

Innovative energy storage to support surplus wind power utilization for hydrogen fuel cell transport infrastructure

3

Intelligent low-emissions industrial park development (solar roof top +wind+ geothermal + smart μ grid)

4

Conversion of Coke oven byproduct gas to LNG + Uber system for trucks

5

Super ESCO for Iron & Steel Company for energy efficiency and process transformation

6

Deep well geothermal heating for new urban areas in a city

