Session 4: Low-carbon Energy Access for Rural Revitalization

ADB's experience in Rural Vitalization and Renewable Energy Development

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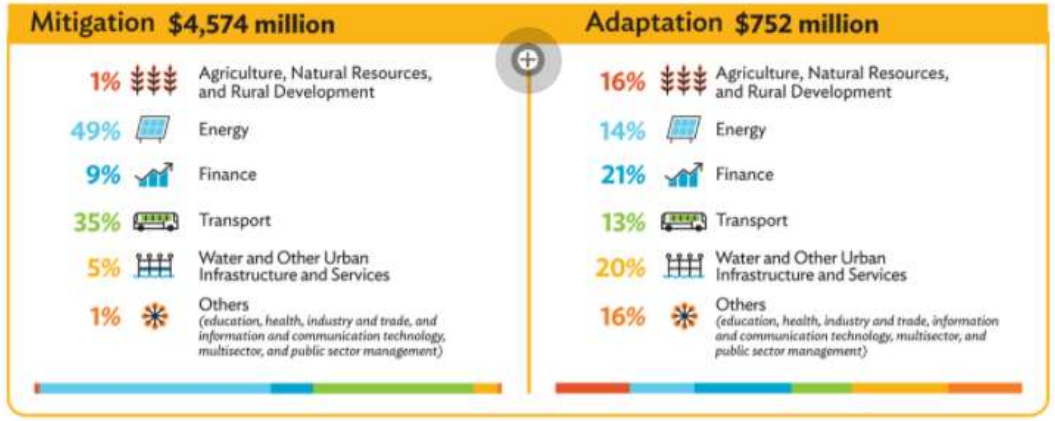
Agenda

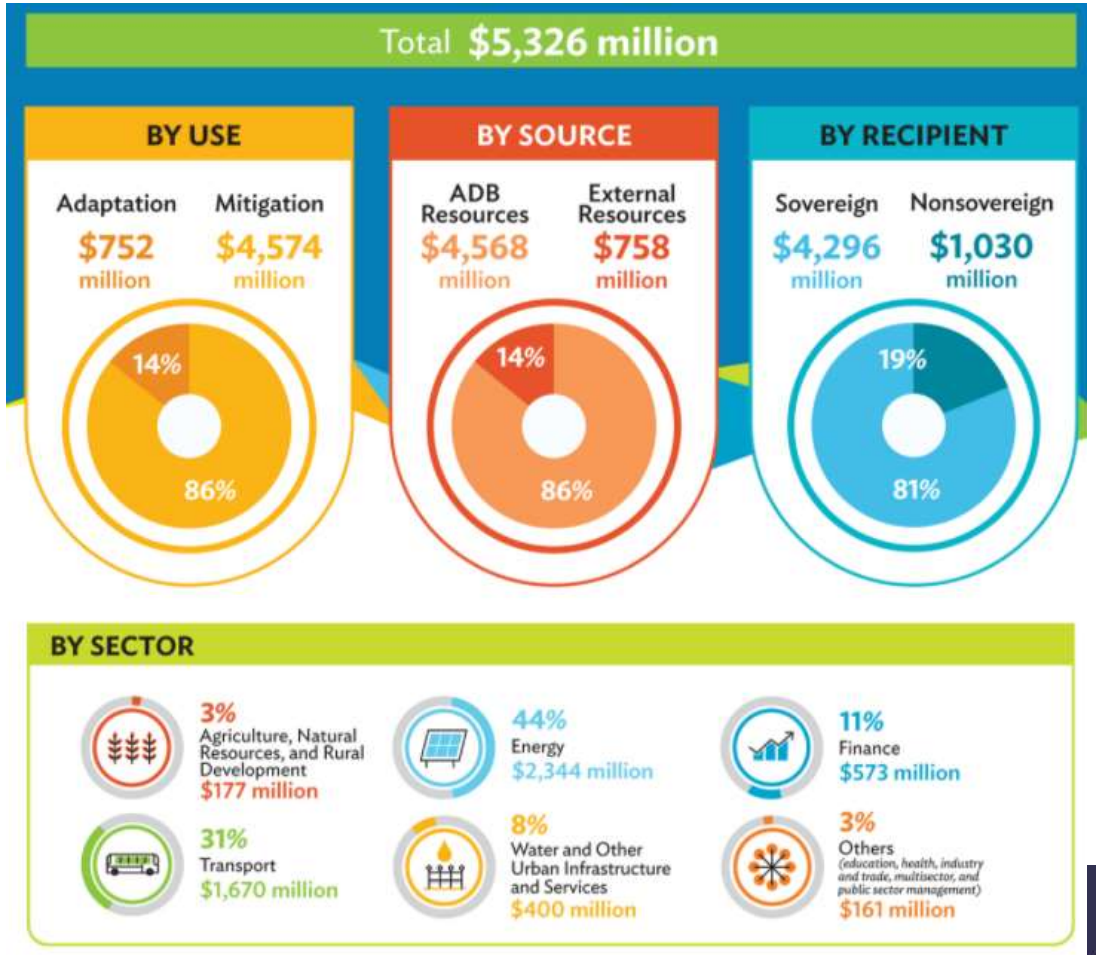
- **ADB's climate finance**
- **Case study from the ongoing projects**
- **Lessons learned from international practices**

ADB’s Climate Finance

Climate finance in 2020

- Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability is an operational priority in ADB's Strategy 2030.
- We invest in
  - building resilient and empowered communities,
  - cleaner technology,
  - smart infrastructure, and
  - alignment with the Paris Agreement under the United Nations.





Major ADB-financed low carbon rural energy projects in PRC

Project title	Type	Period/ Cost
1. TA6661-PRC: Customized Low-Carbon Development Models in Rural and Small and Medium-Sized Towns	TA	Dec 2020 – Present $988k
2. TA 9577-PRC: Advanced Renewable Energy Technology Demonstration	TA	Aug 2018 – Present $700k
3. TA9403: Study of Clean Energy Supply for the Rural Areas in the Greater Beijing–Tianjin–Hebei Region	TA	Oct 2017 - Present $400k
4. TA 9186-PRC: Qingdao Rural Waste-to-Energy Project	TA	Sep 2016 - Dec 2019 $500k
5. TA 8920-PRC: Accelerating Investment in Distributed Energy in Rural Qingdao	TA	Jul 2015 – Dec 2017 $350k
6. Integrated Renewable Biomass Energy Development Sector Project (formerly Rural Energy and Ecosystem Rehabilitation (Phase II))	Loan/ Grant	Apr 2010 – Jan 2020 $66 million (total $136 million)
7. MFF-Gansu Heihe Rural Hydropower Development Investment Program - Project 2: Dagushan Hydropower Project	Loan	Jan 2008 – Mar 2012 $28 million (total: $61 million)

Case study-1:*TA6661-PRC: Customized Low-Carbon Development Models in Rural and Small- and Medium-Sized Towns*

Technical Assistance Overview

Aspects	Arrangement	
Title	TA6661-PRC: Customized Low-Carbon Development Models in Rural and Small- and Medium-Sized Towns	
Period	Dec 2020 – Dec 2022 (Ongoing)	
Executing agency	National Energy Administration (NEA)	
Implementing agency	Department of International Cooperation, NEA	
Budget	$988,000 - Technical Assistance Special Fund: $238,000 - Climate Change Fund: $750,000	
Impact	(i) Renewable energy interventions in rural areas increased; and (ii) The low-carbon modernized energy supply in SMTs increased.	
Outcome	Policy landscape for investing in low carbon energy supply infrastructure in rural areas and SMTs improved	
Scope	1. Research on rural vitalization with renewable energy installation project	2. Energy modernization with low-carbon energy in Small- and Medium-sized townships
Deliverables	1. Optimal models with policies and guidelines for rural vitalization via low-carbon energy infrastructure in rural areas	2. Optimal models and needed policies for low-carbon energy supply infrastructure in small- and medium-sized towns

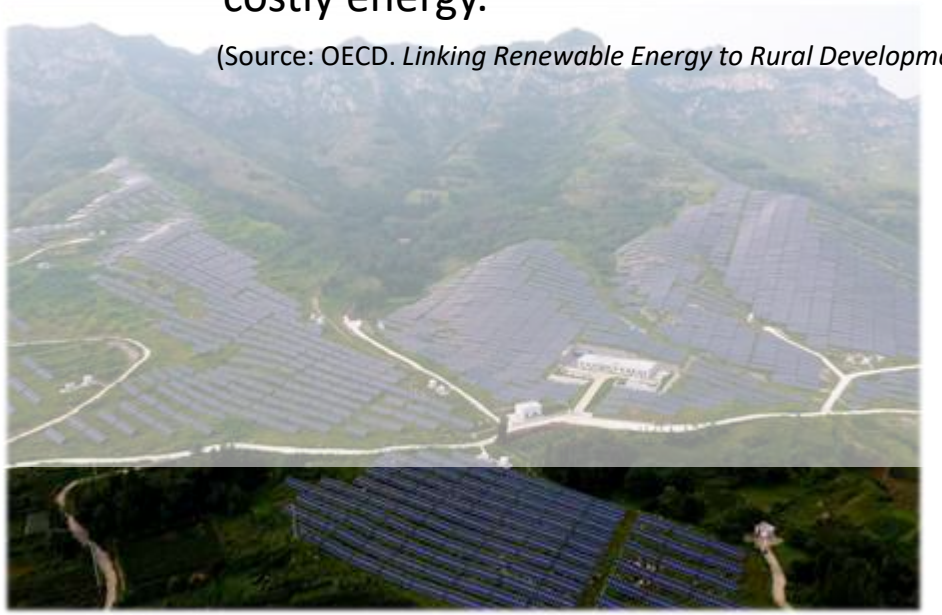
Background – Clean energy and rural vitalization in PRC

1. Case of a rural village in Shandong Province
   - Leasing farmland to solar power projects.
   - Bring income for villagers as well as improve the living environment. Per capita annual household income increased by 76% from2016 to 2019.
   - The collective income of the village can be spent on local infrastructure development.
   - Further innovation: Grow the honeysuckles below the PV panels, achieving even greater economic output.
   - *"Clean energy is becoming a green engine for the rural vitalization."*

   (Source: Xinhuanet, dated 09 June 2020)

2. Reference: OECD (2010)
   - Renewable energy offers rural areas:
     - New revenue sources, e.g., extra income for landowners.
     - Employment and business opportunities.
     - Innovation in practices & policies in rural areas. The sector is still at learning stage.
     - Affordable energy. No need to import costly energy.

   (Source: OECD. *Linking Renewable Energy to Rural Development*)



TA Objective

- **Issues.** Ongoing rural vitalization with PV plant installation projects could further improve cost/benefit performance.[1] Less performance could result in possibly because projects stick to a single approach or are not customized for local condition.
- **Solutions.** Propose optimal installation models which are customized for local condition of selected rural area profiles. The study pays more attention to non-technical aspects, e.g., commercial terms, policy and regulation environment.

“十三五”第一批光伏扶贫项目计划汇总表

序号	省份	县（个）	建档立卡贫困村（个）	帮扶户数（户）	电站数量（个）	建设规模（千瓦）
1	山西	35	4478	163117	2859	1029461.04
2	青海	39	1627	68086	97	471600
3	宁夏	4	310	23598	306	99670
4	吉林	4	182	8523	120	53257
5	海南	1	5	189	5	1146
6	黑龙江	18	998	62305	724	349320.26
7	陕西	15	898	43836	468	244579.92
8	甘肃	29	1432	74240	767	428462
9	安徽	14	708	45172	662	253686.5
10	内蒙古	17	925	77134	755	367633
11	四川	16	423	3540	17	16996
12	河北	23	2006	90843	1412	615506.132
13	新疆	15	432	33335	378	197924
14	云南	6	132	16833	119	56996
	全国合计	236	14556	710751	8689	4186237.852

[1]: Government of PRC. 2017. “Notice on the Release of the First Batch of Photovoltaic Poverty Alleviation Projects of the 13th Five-Year Plan”; and Government of PRC. 2018. “Measures for the Management of Photovoltaic Poverty Alleviation Power Stations”.

TA Progress update

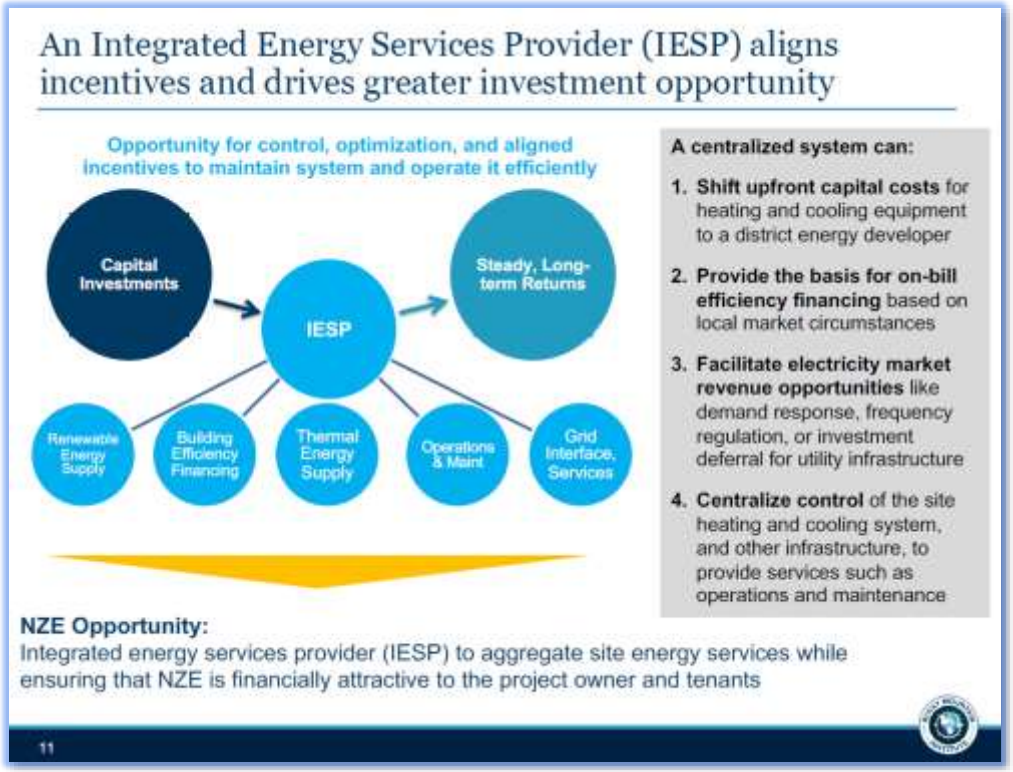
- International and national consultants (EED) have been mobilized since July 2021.
- Selected 2 representative villages in:
  - Gansu province (North PRC)
  - Yunnan province (South PRC)
- Survey ongoing.
- Interim workshop planned in March 2022.

(source: IEA. "Qingling-Huaihe line")

Lessons from International Experience

(1) Asian Clean Energy Forum

- ADB has organized the forum every June over past 15 years. 3,400 participation from over the world during the 4-day virtual forum in 2020.
- Sample of Innovative business models
  - ❖District-scale zero energy projects.
  - ❖Risk mitigation: Sharing upfront investment cost b/w district energy developer and the integrated energy service provider.



(Source: ACEF 2020, Rocky Mountain Institute presentation)

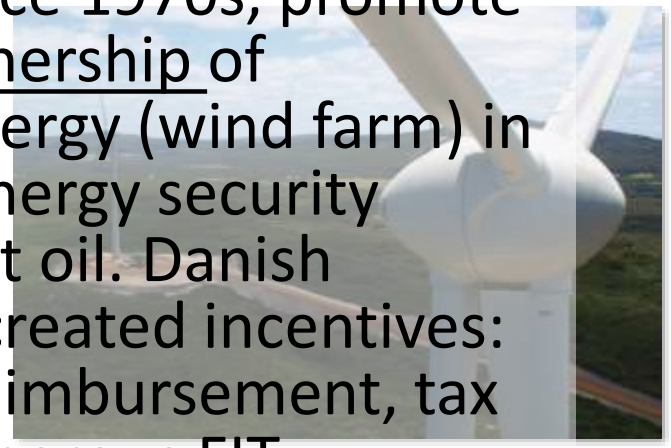
(2) Other International Experience

a) US. Electrification in rural areas has changed the lifestyle and economic activities (urbanization from agriculture village).

- Energy transition to renewable energy in rural areas could also change the lifestyle and economic activities?

(Source: Econ Focus, 2020)

b) Denmark. Since 1970s, promote collective ownership of renewable energy (wind farm) in rural areas. Energy security against import oil. Danish government created incentives: investment reimbursement, tax reduction, generous FIT.



- Challenge: Energy market liberalization in 2000s drives economic efficiency, replacing small-scale wind farms by large-scale farms.

(Source: Denmark Community Windfarm ltd.)

(2) Other International Experience

c) **Japan.** Because most RE business in rural areas are run by non-local enterprises, the profit flows out from the local community.

- To retain the profit, local communities need to run the business by themselves or partner with enterprises outside of the communities.
- Challenge after FIT ends.

(Source: Enagia)

d) **Australia.** Agrisolar concept. Co-exist of agriculture production & solar energy. Benefits from solar arrays include weather protection, improved soil moisture, protection from predators for sheep.

- Minimize the impact of loss of agriculture production due to RE deployment

(Source: Clean Energy Council)

Thank you.