JOINT STUDY “GOBITEC AND ASIAN SUPER GRID FOR RENEWABLE ENERGIES IN NORTHEAST ASIA”

Zafar Samadov  Senior Expert  
Energy Charter Secretariat

Tokyo, 28 January 2014

International Symposium on Roadmap to Asia Super Grid
Joint regional study Gobitec and Asian Super Grid for renewable energies in Northeast Asia

Energy Charter Secretariat

Korean Energy Economics Institute

Energy Systems Institute of the Russian Federation

Ministry of Energy of Mongolia

Japan Renewable Energy Foundation

Fraunhofer ISI and Fraunhofer ISE
Outline

- **Introduction & key messages** – regional study Gobitec and Asian Super Grid

- **Legal framework** – Energy Charter Treaty

- **Actions, Objectives & Recommendations** – Next steps to promote Gobitec and Asian Super Grid initiatives
Scope of the regional study Gobitec and Asian Super Grid (ASG)

- Economic
- Social
- Environmental

LEGAL FRAMEWORK

TECHNOLOGIES AND COST IMPLICATIONS
- Renewable energies
- Conventional technologies
- Interconnection

BENEFITS
- Economic
- Social
- Environmental

RECOMMENDATIONS
Gobitec potential versus electricity demand in NEA

Generation Mix of 2030 and importing RE from Gobitec

Electricity demand of NEA (BAU scenario).
Electricity exports of Gobitec and transmission via ASG

- Import: maximum 10% of electricity demand
- 100 GW RE capacity
- Hydro
- Wind
- Solar-PV
- Solar-CSP
## Gobitec and ASG - SWOT Analysis

<table>
<thead>
<tr>
<th><strong>Strengths</strong></th>
<th><strong>Weaknesses</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Huge theoretical potential in the desert Gobi but also in South Korea and Japan</td>
<td>- Huge capital costs</td>
</tr>
<tr>
<td>- <strong>Reduction of emissions</strong></td>
<td>- Difficult geopolitical constellation</td>
</tr>
<tr>
<td>- Provide energy in an integrated system</td>
<td>- Technical issues on High Voltage Direct Current transmission and solar energy system (CSP/cooling system)</td>
</tr>
<tr>
<td>- Increase renewable energy rates</td>
<td>- Land availability especially for transmission transmission lines and partly for the plant plant deployment</td>
</tr>
<tr>
<td>- Increase energy security and safety due to a to a larger energy system</td>
<td>- No legal framework existent</td>
</tr>
<tr>
<td>- Facilitate energy and political cooperation cooperation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Opportunities</strong></th>
<th><strong>Threats</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Activate further policy cooperation</td>
<td>- High capital risks</td>
</tr>
<tr>
<td>- Larger economic and political integration</td>
<td>- Necessity of political cooperation and rivalry rivalry between the countries (already several several failed initiatives)</td>
</tr>
<tr>
<td>- Attract foreign and private investors toward toward Northeast Asia</td>
<td>- Induce water shortage through some RE technologies (solar thermal)</td>
</tr>
<tr>
<td>- Economic benefits through local manufacturing</td>
<td>- Threaten the lifestyle of nomadic tribes in in Mongolia</td>
</tr>
<tr>
<td>- Reduce air pollution</td>
<td></td>
</tr>
<tr>
<td>- Ameliorate the effects of Asian Dust</td>
<td></td>
</tr>
<tr>
<td><strong>Cut down CO₂ emissions (187 Gt CO₂ )</strong></td>
<td></td>
</tr>
<tr>
<td>- Stepwise build-up securing local demand first first</td>
<td></td>
</tr>
<tr>
<td>- Participation of the local population</td>
<td></td>
</tr>
</tbody>
</table>
Legal Framework – Energy Charter Treaty

Energy Security
Open and Efficient Energy Markets

Dispute Resolution

Investment Promotion & Protection
Trade and Transit
Energy Efficiency
Freedom of Transit

Non-Discrimination among Participants
National Sovereignty over Natural Resources

Note: The text of the Energy Charter Treaty can be downloaded at http://www.encharter.org/publications
<table>
<thead>
<tr>
<th>Legal Framework – Potential of the Energy Charter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Legal Certainty and Transparency</strong></td>
</tr>
<tr>
<td>A supra-national legal framework of binding character enhances transparent procedures and legal certainty</td>
</tr>
<tr>
<td><strong>Foreign Investment Protection</strong></td>
</tr>
<tr>
<td>Energy Charter Treaty provides security for investments</td>
</tr>
<tr>
<td><strong>Transmission</strong></td>
</tr>
<tr>
<td>Common rules must coordinate interconnected systems</td>
</tr>
<tr>
<td><strong>Cross border power trade</strong></td>
</tr>
<tr>
<td>Cross border trade is a must in an integrated power system</td>
</tr>
</tbody>
</table>

A common regulatory framework, Energy Charter Treaty (ECT), covering key areas including investment protection, trade, transit, dispute resolution, environmental aspects can significantly encourage the development of Gobitec and Asian Super Grid initiatives.

The ECT can be seen as a political guarantee and a legal insurance for the development of large scale infrastructure.
Actions to support Gobitec and ASG

- Establishing a Supranational Communication Platform
  - Using existent structures (ECNEA) or create a new platform to ensure a timely governmental dialogue

- Foster Cooperation between ECNEA potential stakeholders and international organizations
  - Raising awareness about the potential of Gobitec/ASG in international forums (E5CAP / EC / ADB) and development of a transparent development strategy

- Legal Certainty
  - Expansion of the Energy Charter Treaty to all countries of Northeast Asia

- Promotion of IPPs
  - Developing a robust tender structure with harmonized targets
  - Guarantee offtake
    - Obligation of a specific RE share, state guarantees

- Enact a regulated permitting procedure by strong institutions
  - Considering different investor types depending on the investment phase

- Coordinating and Information

- Power Sector Structure
  - Independent regulators

- Investment regulation
  - Inclusion of RE/ASG targets in the political process / Regulation of electricity trade (EC)

- Regional Cooperation

- Ressources
  - Land access
    - Land access regulations / Calculation of available land and reducing land use conflicts
  - Wind and solar data
    - Free access
  - Labour market
    - Setting local content requirements

- Grid Access
  - Regulated grid access procedure
    - Guarantee and priority grid access
  - IPP grid connection
    - Private grid connection development

- Finance / Fiscal
  - Financing
    - Access to risk mitigation tools / international guarantees / pass through clauses
  - Fiscal regulation
    - Double tax agreements / establishment of unified RE development districts with unified taxation
  - ASG Development Fund
    - Allowance of start-up projects as references and commitment
Recommendations – Main Objectives

- **Legal framework**
  (Expansion of the Energy Charter Treaty to regulate investment, trade, transit, dispute settlement, environmental aspects)

- **International Cooperation**
  (partnership of Energy Charter, IRENA, ADB and other stakeholders)

- **National/bilateral cooperation**
  (preparation of national RE projects/targets following a unified Gobitec vision)

- **Development and Harmonization of Economic development strategies**
  (local manufacturing, economic development, joint economic strategies/districts)

- **Convergence targets**
  (Convergence targets to built-up Gobitec out of many projects)

- **Transmission network**
  (Deployment targets, intergovernmental agreements, power exchange and market mechanisms)

Source (see also): Dii (2013): Getting started and new foundings
Short Term Recommendations Short(/Mid) Term – Time perspective 2020

**Power Sector**

- **Legal Certainty**
  - Legal text development and implementation

- **Promotion of IPPs**
  - Developing a robust tender structure with harmonized targets

- **Guarantee offtake**
  - Obligation of a specific RE share, state guarantees

**Permit Structure**

- **Enact a regulated permitting procedure by strong institutions**
- **Tender transferability**
  - Considering different investor types depending on the investment phase

**Coordination and Information**
Recommendations Short/(Mid) Term – Time perspective 2020

- Short Term

**Grid Access**
- Regulated grid access procedure
  - Guarantee and priority grid access
- IPP grid connection
  - Private grid connection development

**Regulation**
- Independent regulators
- Investment regulation
  - Inclusion of RE/ASG targets in the political process / Regulation of electricity trade
Recommendations Short(/Mid) Term – Time perspective 2020

- Short Term

**Resources**

- Land access
  Land access regulations / Calculation of available land and reducing land use conflicts

- Wind and solar data
  Free access

- Labour market
  Setting local content requirements

**Finance / Fiscal**

- Financing
  Access to risk mitigation tools / international guarantees / pass through clauses

- Fiscal regulation
  Double tax agreements / establishment of unified RE development districts with unified taxation

- ASG Development Fund
  Allowance of start-up projects as references and commitment
Thank you very much for your attention

Energy Charter Secretariat

Boulevard de la Woluwe, 56 • B-1200 Brussels, Belgium
Tel.: +32 2 775 98 00 • Fax: +32 2 775 98 01 • info@encharter.org
www.encharter.org