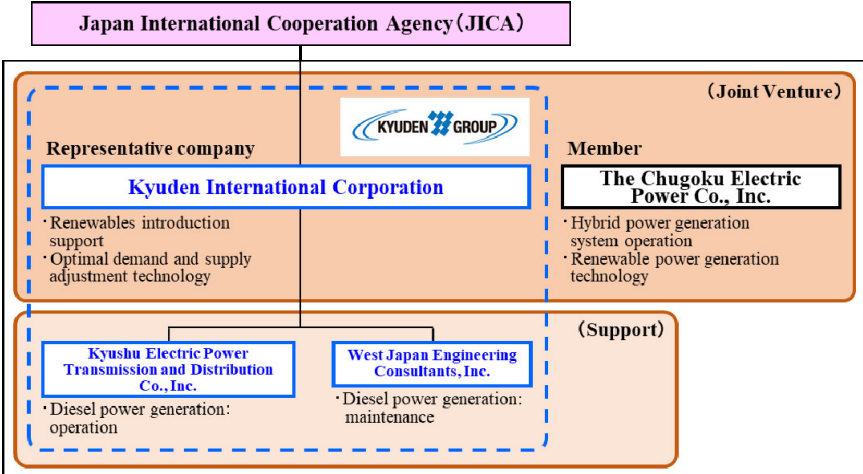

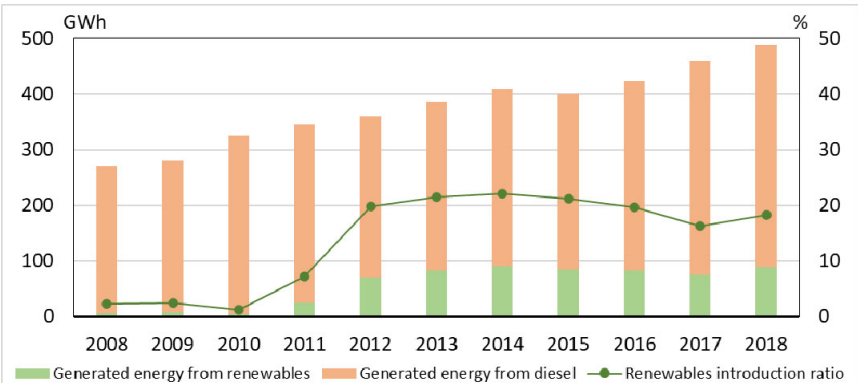


## Reference

### Outline of the Project

Project name (Technical cooperation project)	Project for Introduction of Hybrid Power Generation System for the Republic of Cabo Verde																																																
Target country	Republic of Cabo Verde (Capital: Praia)																																																
Related government departments and institutions	Ministry of Industry, Commerce and Energy (MICE) Empresa de Electricidade e Água (Electra)																																																
Commission period	March 2021 – March 2023 (2 years)																																																
Main tasks	<p><b>Improvement of diesel power generation operation and maintenance (O&amp;M)</b></p> <ul style="list-style-type: none"> <li>Review of O&amp;M standards, improvement of maintenance planning</li> </ul> <p><b>Proposal for hybrid power generation system operation</b></p> <ul style="list-style-type: none"> <li>Establishment of optimal operation manual, implementation of optimal operation</li> </ul> <p><b>Support for introduction of renewables</b></p> <ul style="list-style-type: none"> <li>Proposal for measures to promote introduction of renewable energy</li> </ul> <p><b>Training in Japan (using Kyuden Group and Chugoku Electric Power Group facilities)</b></p> <ul style="list-style-type: none"> <li>Training in diesel power generation maintenance, on-site training in renewables (wind power, photovoltaic) and storage battery systems</li> </ul>																																																
Implementation system and main assignments	 <p><b>Japan International Cooperation Agency (JICA)</b></p> <p><b>(Joint Venture)</b></p> <p><b>Representative company</b> Kyuden International Corporation</p> <ul style="list-style-type: none"> <li>Renewables introduction support</li> <li>Optimal demand and supply adjustment technology</li> </ul> <p><b>Member</b> The Chugoku Electric Power Co., Inc.</p> <ul style="list-style-type: none"> <li>Hybrid power generation system operation</li> <li>Renewable power generation technology</li> </ul> <p><b>(Support)</b></p> <p>Kyushu Electric Power Transmission and Distribution Co., Inc. Diesel power generation: operation</p> <p>West Japan Engineering Consultants, Inc. Diesel power generation: maintenance</p> <p>*Kyuden Group : Mainly application of knowledge regarding diesel power generation O&amp;M and introduction of renewables on remote islands. *The Chugoku Electric Power Co., Inc : Mainly application of knowledge regarding Oki hybrid project and renewable power generation technology.</p>																																																
Outline of Republic of Cabo Verde	<p>Population: 544,000 (2018, World Bank data) Area: 4,033km<sup>2</sup> (comparable to Japan's Shiga Prefecture) Language: Portuguese (official language) Main industries: Agriculture, fishing GDP: 1.977 billion USD (2018, World Bank data) Economic growth: 5.1% (2018, WB data) Total installed capacity: 223MW including renewables - of 32.4MW (2015, JICA) Generated energy: 489GWh (2018, U.S. Energy Information Administration)</p>  <p>Source: Ministry of Foreign Affairs website</p>  <p>Source: U.S. Energy Information Administration</p> <table border="1"> <caption>Generated Energy and Renewables Introduction Ratio (2008-2018)</caption> <thead> <tr> <th>Year</th> <th>Generated energy from renewables (GWh)</th> <th>Generated energy from diesel (GWh)</th> <th>Renewables introduction ratio (%)</th> </tr> </thead> <tbody> <tr><td>2008</td><td>~20</td><td>~260</td><td>~7</td></tr> <tr><td>2009</td><td>~20</td><td>~270</td><td>~7</td></tr> <tr><td>2010</td><td>~20</td><td>~300</td><td>~7</td></tr> <tr><td>2011</td><td>~30</td><td>~320</td><td>~9</td></tr> <tr><td>2012</td><td>~60</td><td>~300</td><td>~20</td></tr> <tr><td>2013</td><td>~80</td><td>~300</td><td>~27</td></tr> <tr><td>2014</td><td>~90</td><td>~310</td><td>~29</td></tr> <tr><td>2015</td><td>~90</td><td>~300</td><td>~30</td></tr> <tr><td>2016</td><td>~80</td><td>~330</td><td>~24</td></tr> <tr><td>2017</td><td>~70</td><td>~360</td><td>~19</td></tr> <tr><td>2018</td><td>~90</td><td>~390</td><td>~23</td></tr> </tbody> </table>	Year	Generated energy from renewables (GWh)	Generated energy from diesel (GWh)	Renewables introduction ratio (%)	2008	~20	~260	~7	2009	~20	~270	~7	2010	~20	~300	~7	2011	~30	~320	~9	2012	~60	~300	~20	2013	~80	~300	~27	2014	~90	~310	~29	2015	~90	~300	~30	2016	~80	~330	~24	2017	~70	~360	~19	2018	~90	~390	~23
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