

Delegation from Cuba on the occasion of the «Intersolar Europe 2018» trade fair in Munich, Germany

17 - 23 June 2018



Solar PV plant in Cuba (Image: Radio Taíno)

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

On behalf of



Federal Ministry for the
Environment, Nature Conservation
and Nuclear Safety

of the Federal Republic of Germany

5 - 6 representatives from Cuba come to Munich to learn more about renewable energies in Germany and Europe

Targets of the information trip

1. Information on latest developments in the following fields:

- Solar PV and solar thermal energy
- Battery storage systems (esp. small scale storage)
- Hybrid renewable energy plants
- Smart microgrid concepts (off-grid and on-grid)
- Grid and system integration of solar PV



2. Establishing of contacts to relevant authorities, suppliers and specialized companies in Germany and Europe.



Participants and involved institutions

Participants from Cuba

5 – 6 representatives from...

“Grupo de la Industria Electrónica, la Automática y las Comunicaciones”
(Group of the Electronics, Automation and Communications Industry)



Involved institutions from Germany

- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
- Bundesverband Solarwirtschaft (BSW-Solar)
- Büro F (Consultancy and support)



The planned meetings cover a broad range of topics that are of high relevance for the Cuban solar and storage market

Planned itinerary

Monday, 18 June 2018: Introductory workshop in Munich and technical visit in Adelsdorf

- Overview on solar energy and storage policies and markets in Germany and other countries
- Visit of a local solar PV installer

Tuesday, 19 June 2018: Memmingen & Wildpoldsried

- Visit of renewable offgrid solutions supplier
- Visit of the “Energy Village” of Wildpoldsried (together with an innovative grid integration company)

Wednesday, 20 June to Friday, 23 June

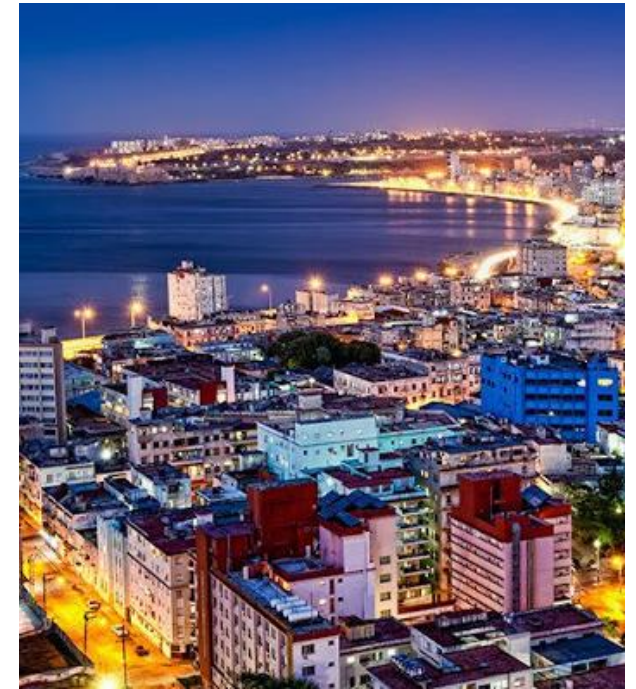
- Visit of the international trade fairs “Intersolar Europe 2018” and “ees 2018”
- Conference events and bilateral meetings with exhibitors



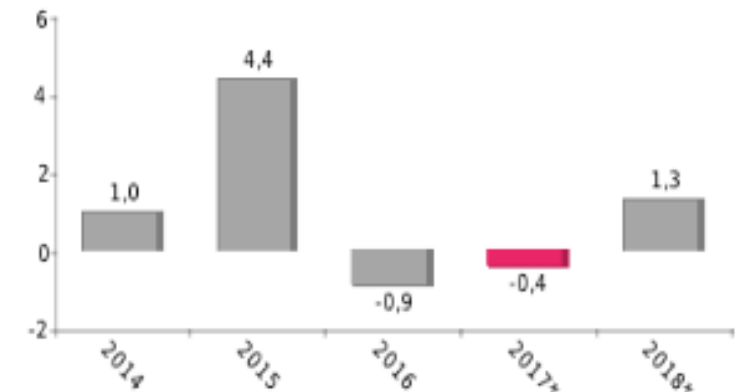
Economic growth and more security for international investors in Cuba

General economic indicators

- Real GDP growth of 4.4% in 2015, GDP losses in 2016 and 2017 due to hurricanes but recovery in 2018 with forecasted real GDP of 1.3%
- Investment promotion and security:
 - In March 2014, Law No. 118 on foreign investment was adopted, which allows expropriation only in a few exceptional cases and then only with reasonable compensation according to the market value.
 - Since 2011 the Guidelines "Lineamiento de la Política Económica y Social de Partido y la Revolución" recognize and promote foreign investments.
 - Since 1996 the German-Cuban Bilateral Investment Treaty offers German investors additional protection.
 - Rating agency Moody's classifies Cuba as stable: Caa2 (on 08.11.2017)



City of Havana, Cuba



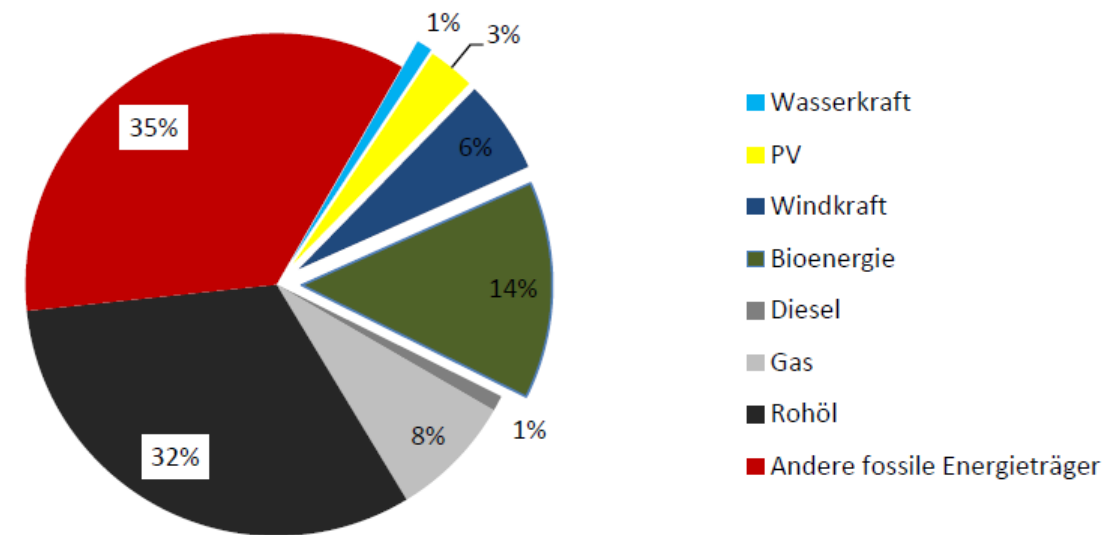
Real GDP growth in Cuba, 2014 - 2018
Data: GTAI 2018

Cubas RE objective: 24 % renewable electricity until 2030

Energy goals of Cuban government

- In 2006, Fidel Castro proclaimed the “Energy Revolution” (mainly to increase energy efficiency)
- In 2011 the Congresses decided to further expand renewable energies. The Government seeks decentralization of power generation to make Cuba less vulnerable to power plant blackouts and hurricane damages. Therefore, in addition to oil and diesel generators, more renewable energies are to be used – especially in rural areas.
- In June 2014, the government adopted a **renewable energy strategy until 2030**. According to this the electricity mix shall contain 24% renewable energies. More detailed of...

14% biomass
6% wind energy
3% solar PV
1% hydropower



...but today it is just the beginning

Fossil fuels are still very dominant

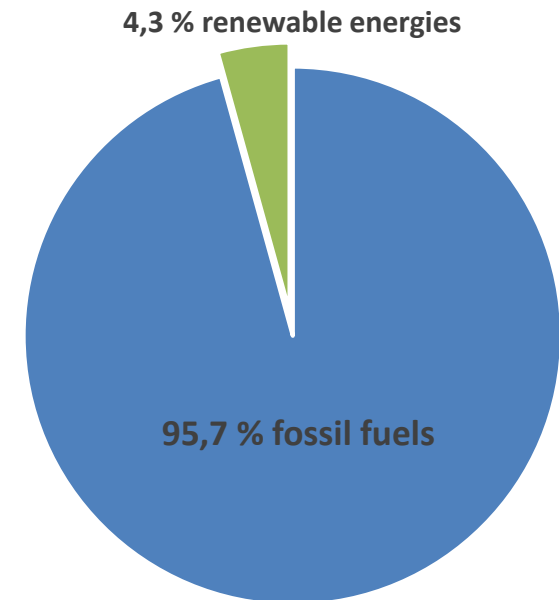
Share of RE in electricity production in 2015 = 4,3 %

Share of fossil fuels in electricity production in 2015 = 95,7 %

(Data from Deutsch-Regionale Industrie- und Handelskammer für Zentralamerika und die Karibik 2017)



Electricity mix in Cuba, 2015



Global Horizontal Irradiation between 1.700 - 2.200 kWh/m²*a

Big potentials for solar energy

- Cooling and air conditioning in the food industry (*there are several examples of solar PV plant on slaughterhouses and other administrative buildings of the food industry*)
 - increasing energy consumption of tourism
 - 1,7 Mio. Tourist in 2001, 3 Mio. in 2014
 - Air conditioning and water heating are the biggest energy consumers in Cuban hotels
 - Many hotels are in rural areas and have an offgrid energy supply (e.g. with diesel)
- => Solar PV and solar thermal collectors can reduce energy costs significantly



Solar PV plants with 65 MW in operation (32 MW since 2017)

Some of the latest examples of new solar PV plants in Cuba

- 5.5 MW PV plant located in the municipality of Chambas
- 9 MW PV plant in the municipality of Abreus
- 4.5 MW solar plant in the province of Ciego de Ávila
- The island of Youth, in Cuba, is electrified entirely with renewables, mainly with three solar PV utilities of 5 MW each and small solar PV installations that electrify isolated communities.



Satellite image of the Isle of Youth, in Cuba
Foto: Planet Observer, Flickr.com

Some of the latest developments in the Cuban solar PV market

- The Cuban government introduced Net Metering for solar PV at the end of March 2018.
- In March 2018 Cuba and Italy sign memorandum to carry out photovoltaic projects.
- The EU supports renewable energy in Cuba with 21.6 million dollars. (News from January 2018)

GIZ, DEG and sequa implement the “develoPPP program” that aims at paving German companies the way into new markets

Financial support for market entry

- In the scope of the develoPPP.de program of the German federal government, the market entry of German companies is supported by funds up to 200,000 EUR for marketing and dissemination projects.
- develoPPP.de was set up by the German Federal Ministry for Economic Cooperation and Development (BMZ) to foster the involvement of the private sector at the point where business opportunities and development policy initiatives intersect.

develoPPP.de



Triangular Cooperation Project

Triangular Cooperation between Mexico, Cuba and Germany implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Objectives:

- Promoting the exchange of experience and the transfer of knowledge between experts from the three countries.
- Creating alliances for development on a global level. Promoting common experiences of bilateral development cooperation.
- Increasing the effectiveness of development policy measures.
- Strengthening of institutional capacities for the implementation of actions of the renewable energy and energy efficiency policy in Cuba.



Büro F is the renewable energy technology bridge between Europe and Latin America



Partners & Customers



- Büro F is a consulting company specializing in renewable energies and distributed power markets.
- We prepare market reports on technologies and business models in the power sector.
- Based on our broad contact network in Europe and Latin America, we put renewable energy innovators in touch with potential customers and relevant stakeholders.
- Büro F was founded by Stephan Franz in 2014 and is part of the consulting network Marienstr. 25 in Berlin.

Please get back to us, if you have any further questions.

¡Muchas Gracias!



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