



Ministério
do Turismo, Investimentos
e Desenvolvimento Empresarial



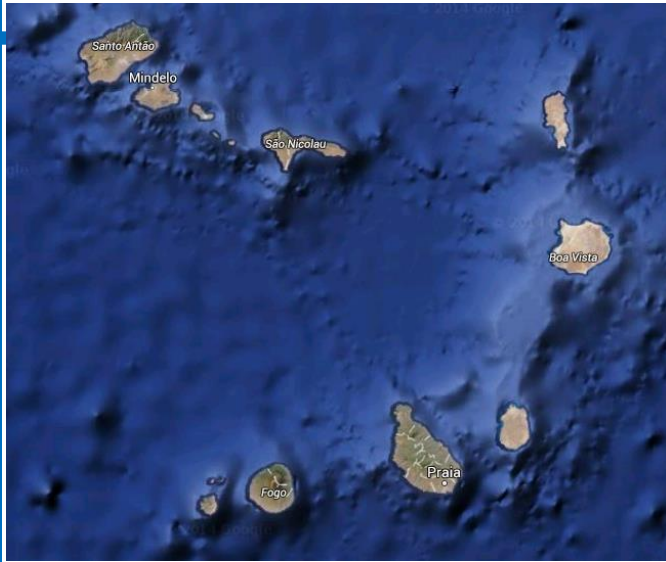
CABO VERDE Energy Future: Needs for Innovation and Strategic Partnerships

Munich 21 July 2015

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DG Energy Cabo Verde

CABO VERDE OVERVIEW



Area: 4,033 km²

Population: ~ 500 000

GDP per capita: ~ 3,800 US\$

10 islands, 9 inhabited – 9 Energy Systems

Production: ~400 GWh, **25% from Renewables**

Installed Capacity: ~150 MW of which **35 MW**

Renewables (~23%)

Access to Electricity: ~95%

Access to Modern Energy for Cooking: ~65%

Life Expectancy: 76 years

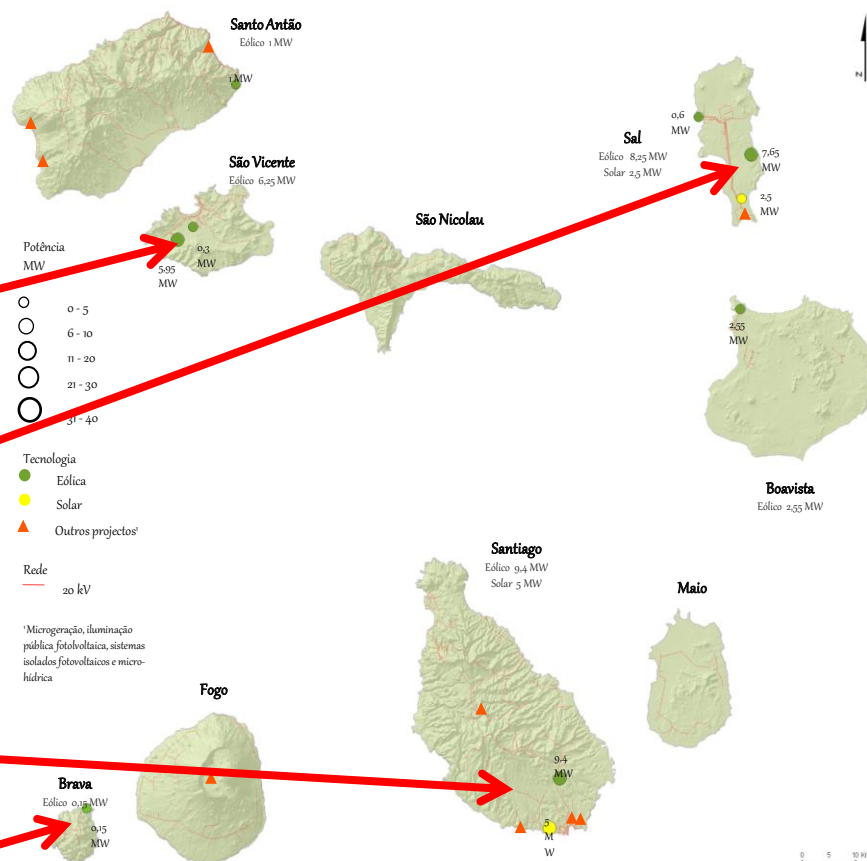
Literacy Rate: 87% for adults, 99% for young

Active Population with Medium/Higher Education: ~ 15%

Poverty Rate: ~20%

Energy Systems in Cabo Verde: Power Sector

Installed Capacity (MW)	Population	2010	2013
Santo Antão	43.915	6,0	6,0
São Vicente	76.107	19,4	19,4
São Nicolau	12.817	2,2	3,2
Sal	25.765	16,9	20,4
Boavista	9.162	4,5	17,0
Maio	6.952	1,4	1,0
Santiago	273.919	46,9	69,7
Fogo	37.051	3,8	3,2
Brava	5.995	1,1	0,9



THE NUMBER: > 30 Cents per kWh + Taxes

Cabo Verde and Renewables

Windmills for Water Pumping



In 1970: More than 100 in the Dry Islands of São Vicente

Wind on the Salt mine in Sal islands



Cabo Verde and Renewables

1975: Independence

1977: Division of Renewable Energy created in the Rural Development Ministry

1989: Experimental Wind Park 10x10 kW in Sao Vicente

1994: First Modern and Commercial Wind Park

2x300 kW in Sal islands

3x300 kW in Sao Vicente and

3x300 kW in Santiago.

Avg. wind turbine capacity factor %

27

56

31

2011: Cabeolica Wind Park (25,5 MW)

9x850 kW in Sal islands

7x850 kW in Sao Vicente

11x850 kW in Santiago

3x850 kW in Boavista



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Cabo Verde and Renewables

Since 2012

**2,5 MW Solar Park in Sal Islands
(10 MW Load Peak)**

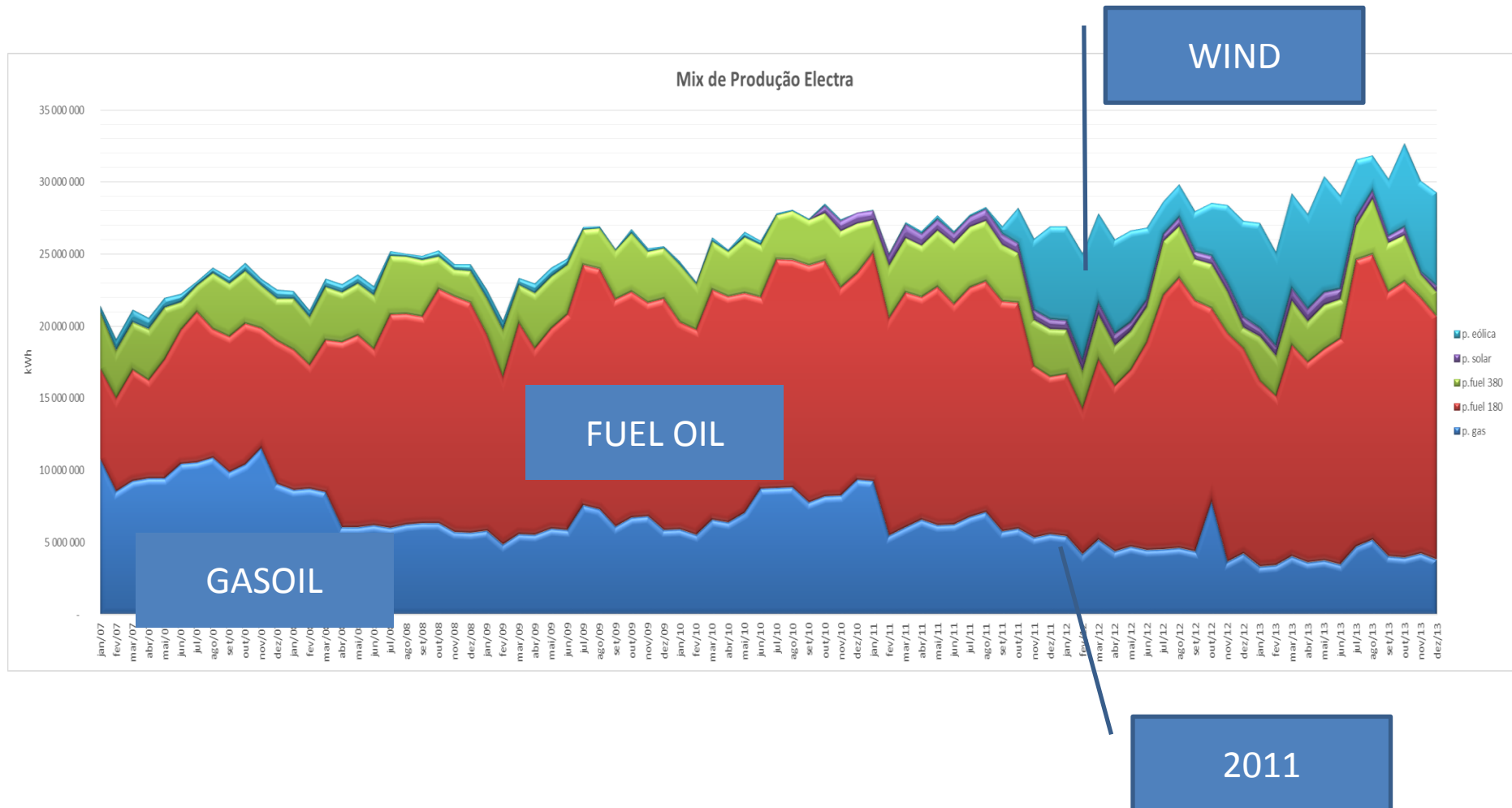


**5 MW Solar Park in Santiago Islands
(30 MW Load Peak)**



Cabo Verde and Renewables

ELECTRA Energy MIX



Cabo Verde and Renewables



2,5 MW Solar Park



7,6 MW Wind Park



11 MW Diesel Park



RE Penetration > 30%

➤ **Half of the Potential wind production is wasted**



STORAGE

Cabo Verde National Energy Targets

ENERGY ACCESS

1. To achieve **100% Electricity Access** by 2017 (from more than 90%)!
Grid Extension
Renewable micro-grids
Individuals Energy Systems (Solar Homes Systems)
2. To achieve **100% Access to Sustainable Cooking Services**
Eradicate Use of Three Stones + Universalization of Improved Stoves
Promotion of Butane Gas

ENERGY EFFICIENCY

1. *Efficient Electricity **Distribution Grid**: distribution losses reduced to 8%*
More than 30% of Distributed Electricity (15% technical+15% Commercial)
2. ***Petroleum Products** (excepts Butane): 10% reduction/Baseline*
3. ***Final Electricity Consumption**: 15% reduction/Baseline*
*Promoting **Energy Efficient Building***
*Energy **Standards and Labelling** for Appliance and Equipment's*
*Promoting Energy Efficient **Intensive Consumers** (like Hotels)*

RENEWABLE ENERGY

1. **100% Electricity from Renewables in 2020!**
2. New buildings: **Mandatory use Solar Water Heaters** (link to Energy Efficient Building)



The Energy Future: The Road Towards 100% Electricity from Renewables

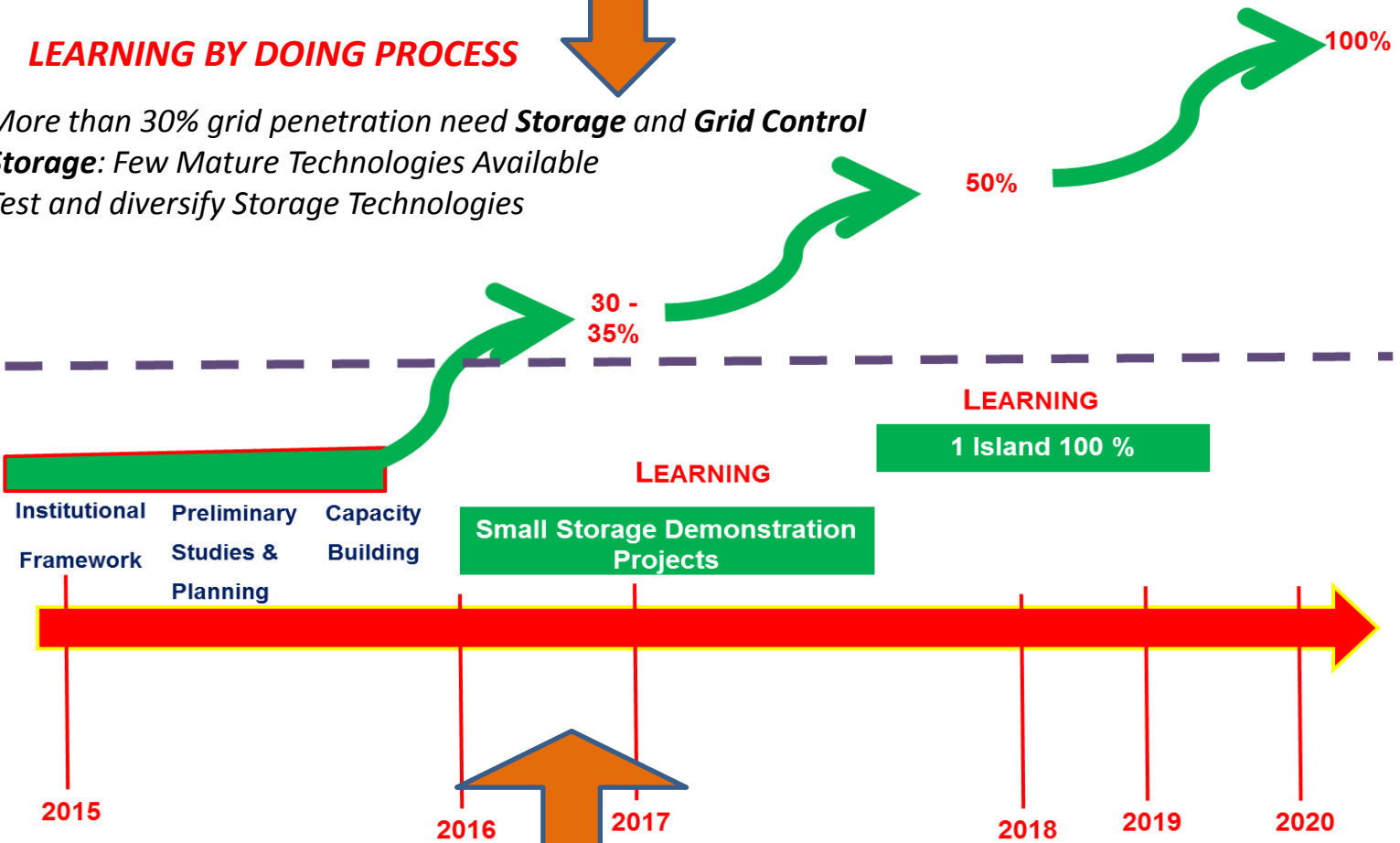
MARKET PULL

LEARNING BY DOING PROCESS

More than 30% grid penetration need **Storage** and **Grid Control**
Storage: Few Mature Technologies Available
Test and diversify Storage Technologies

Private Leadership

Policy Interventions



Cabo Verde Energy Efficiency Strategy

The Renewable Energy Strategies call for an huge effort in Energy Efficiency:

*Reduce **Grid Losses**;*

*Improve **grid Management***

*Improve **Public Lighting** Efficiency.*

Energy Efficiency Strategy based on Three Axes:

1. Promoting Energy Efficiency in **Buildings**

2. Promoting Energy Efficiency in **Appliance and Equipment's**

3. Promoting Energy Efficiency for **Intensive Consumers**

✓ Create a **National Certification System** for Buildings, Appliances and Equipment's;

✓ **Certification of Technicians and Installers**;

✓ Discourage **High Energy Consumption Appliances and Equipment's**

✓ Mandatory **Solar Thermal Water Heating** in new Buildings and Hotel;

Promoting ESCO: private leadership

The Energy Future: Creating a Dynamic and Innovative Market

Legal and Institutional Framework: Complete and Transparent; Clear Responsibilities, Duties and Rights;

With Support From GIZ

Supporting Institutions and Agents : Promote and Strengthen the Necessary **Institutions**;

Promoting Independent Power Producer and ESCO: private leadership

Competitive Market for **Independent Power Production**

Competitive Market for **Micro-Grids**

Competitive Market for **Microgeneration**

Competitive Market for **Energy Efficiency**

Competitive **Storage** Market;

**Build Trust in
MARKET**



Create Confidence in the Energy Market

- Simplified Procedures for **Licensing (one stop shop)**;
- Public and competitive **Auction** based on least cost offer;
- Standard **Power Purchase Agreement**;
- Creation of a **National Certification System** for Buildings, Appliances and Equipment's;
- **Certification** of Technicians and Installers;

The Energy Future: Vision

WE ALL ARE PRODUCERS



NOTHING IS LOST, EVERYTHING IS STORED

Buildings are Consumers and Producers

Grid Transport but also Store Energy



Challenges

STORAGE TECHNOLOGIES

- Batteries
- Synthetic Fuels
- Biodiesel
- Flywheels

Diversification

FINANCING

HUMAN RESOURCES

TECHNICAL & KNOWLEDGE TRANSFER

The Energy Future: Renewable Energy Cluster

Supporting Framework

- Centre for Training and Certification
- Energy Agency
- Clean Energy Business Incubator
- Renewable Energy and Energy Efficiency Technological Park
- Advanced Studies and Research & Development

RENEWABLE ENERGY CLUSTER

Private leadership

CABO VERDE:

Show Room

Export Services



Competitive Advantages

1.- Educated Population

15% Active Population with Medium/Higher Education

2.- Democracy and Political Stability

➤ 4 Prime Minister in 40 years

3.- Special Partnership wit European Union

EU Market entry facilitate

4.- AGOA: African Growth and Opportunity Act

Offers incentives and benefits for African countries to export to USA.

5.- Part of the West Africa Common Market ECOWAS

6.- Infrastructures

4 International Airport

2 International Port

Very good telecommunication infrastructure



Competitive Advantages



INTERNATIONAL BUSINESS CENTRE IN SÃO VICENTE ISLANDS

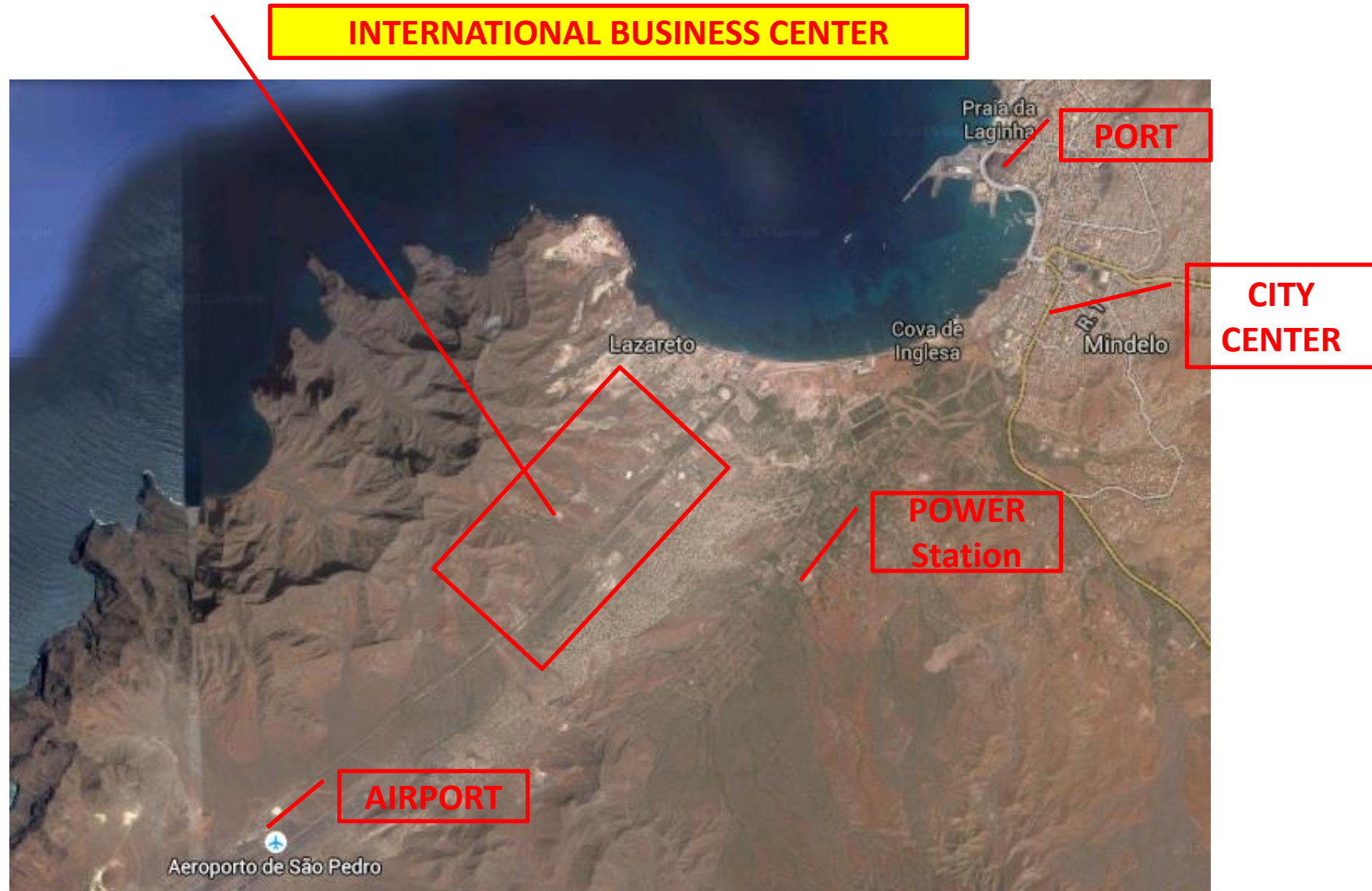
Tax Benefits (Corporate Tax)

- 5.0% applicable to entities that create 5 (five) jobs;
- 3.5% applicable to entities that create 20 (twenty) jobs;
- 2.5% applicable to entities that create 50 (fifty) jobs.

Customs Duties Exemption

VAT Exemption

Competitive Advantages



Competitive Advantages

DAILY REGULAR FLY TO EUROPE

WEST AFRICA, BRAZIL AND EUROPE WITHIN 4 HOUR FLY



Weakness

BUREAUCRACY AND MULTIPLE AGENTS – (GOV CREATE CABO VERDE INVESTMENT –
WWW.CVINVEST.CV - AS THE ONE STOP SHOP)

SMALL MARKET

TIME FOR DECISIONS – (WITHIN THE CABO VERDE INVESTMENT ONE STOP SHOP
INVESTMENT DECISION SHOULD BE MADE IN LESS THAN 70 DAYS)

CULTURAL



OBRIGADO!!

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