

Executive Summary

Guarani Techno Park – Ita Enramada

PTG

Asuncion, Paraguay, June 2017

Index

- I- Current Understanding
- II- PTG Proposal
- III- Technical Proposal
- IV- Commercial Proposal



I- Current Understanding

Background

- Extraordinary recent advances in R&D and Innovation around the world, due to Technological research and investment. Advances are a driven force in the evolution towards a modern society, reflected in a Technological Park.
- Latin America needs to develop and support industries & services based on high technology & innovation; particularly Paraguay.
- This project is intended to implement and develop a multidisciplinary platform: a Science & Techno Park, “PTG”: “Parque Tecnológico Guarani”, in the Ita Enramada area, Asuncion City, Paraguay.

Background

- Mercosur region has a GDP of \$ 4 billion, representing 82% of total GDP in South America
- It covers a territory of approx. 15 million sq. km.
- 295 million inhabitants (nearly 70% of South American population)
- Official languages are Spanish, Portuguese and Guarani.

Information on Mercosur countries in the year 2011

Country	Population (millions)	GDP (nominal) (US\$ millions)	GDP (nominal) per capita	GDP (PPP) (USD millions)	GDP (PPP) per capita
Argentina	40,90	447,64	10.945	716.419	17.516
Brazil	194,93	2.492,91	12.789	2.294.203	11.769
Paraguay	6,53	21,24	3.252	35.346	5.413
Uruguay	3,37	46,87	13.914	50.908	15.113
Venezuela	29,77	315,84	10.61	374.111	12.568
Total	275,50	3.324,50	12.067	3.471.027	12.599

<http://www.mercosur.int/>

[World Economic Outlook Database, IMF.](#)

Paraguay 117th / 138

Global Competitiveness Index
2016-2017 edition

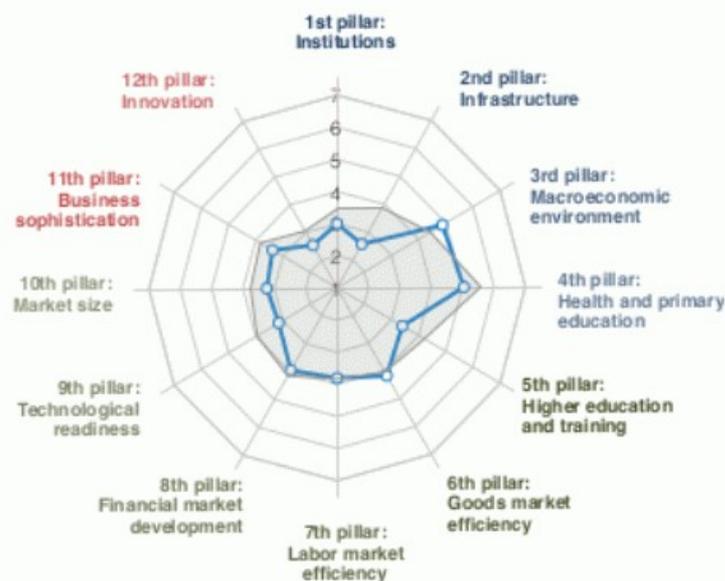
Key Indicators, 2015

Source: International Monetary Fund; World Economic Outlook Database (April 2016)

Population (millions)	7.0	GDP per capita (US\$)	4009.6
GDP (US\$ billions)	28.1	GDP (PPP) % world GDP	0.05

Performance overview

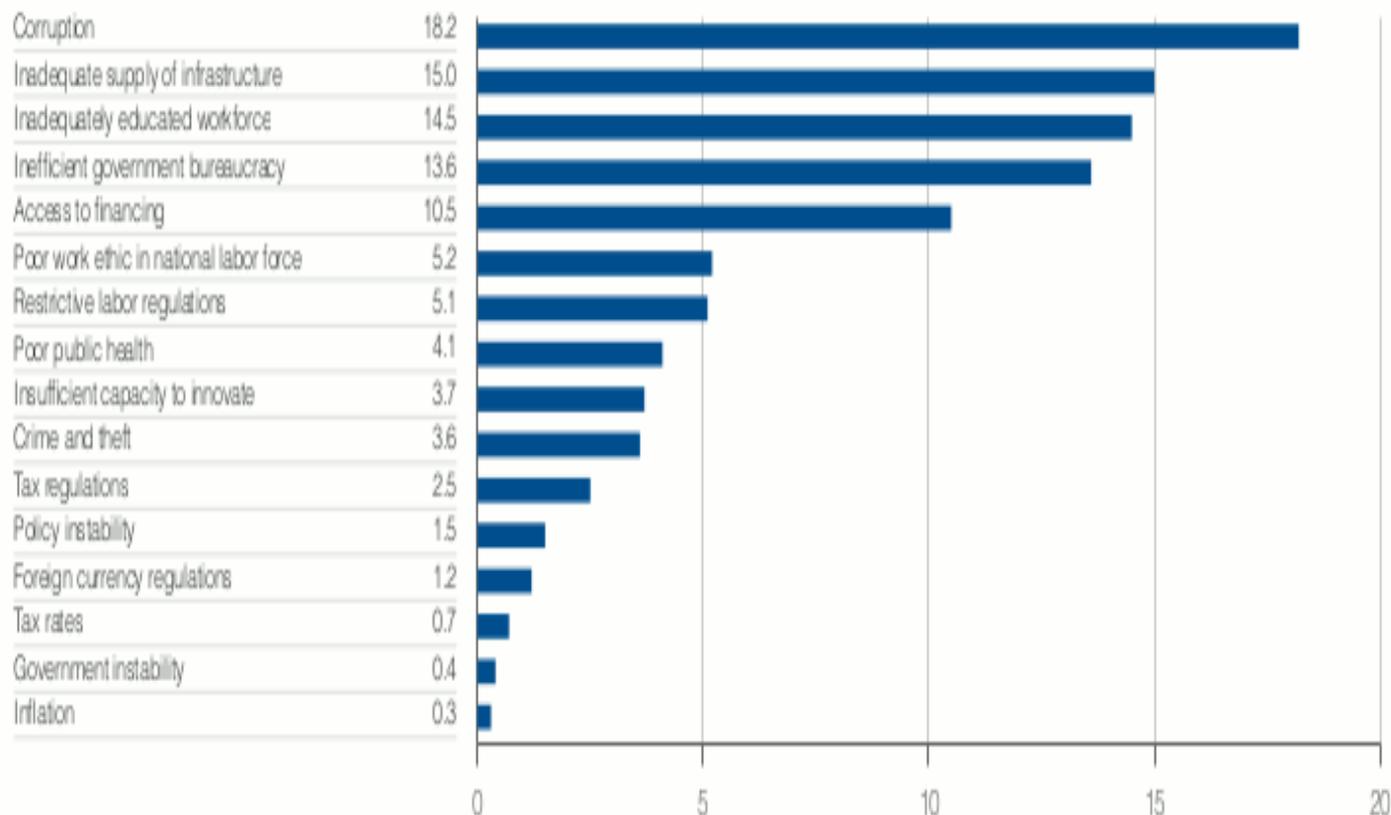
	Rank / 138	Score (1-7)	Trend	Distance from best	Edition	2012-13	2013-14	2014-15	2015-16	2016-17
Global Competitiveness Index	117	3.7			Rank	116 / 144	119 / 148	120 / 144	118 / 140	117 / 138
Subindex A: Basic requirements	111	3.9			Score	3.7	3.6	3.6	3.6	3.7
1st pillar: Institutions	131	3.0								
2nd pillar: Infrastructure	122	2.6								
3rd pillar: Macroeconomic environment	60	4.9								
4th pillar: Health and primary education	106	5.0								
Subindex B: Efficiency enhancers	105	3.6								
5th pillar: Higher education and training	107	3.4								
6th pillar: Goods market efficiency	91	4.2								
7th pillar: Labor market efficiency	107	3.8								
8th pillar: Financial market development	72	4.0								
9th pillar: Technological readiness	104	3.2								
10th pillar: Market size	90	3.2								
Subindex C: Innovation and sophistication factors	126	3.0								
11th pillar: Business sophistication	117	3.4								
12th pillar: Innovation	132	2.5								



■ Paraguay ■ Latin America and the Caribbean

Most problematic factors for doing business

Source: World Economic Forum, Executive Opinion Survey 2016



Note: From the list of factors, respondents to the World Economic Forum's Executive Opinion Survey were asked to select the five most problematic factors for doing business in their country and to rank them between 1 (most problematic) and 5. The score corresponds to the responses weighted according to their rankings.

Location

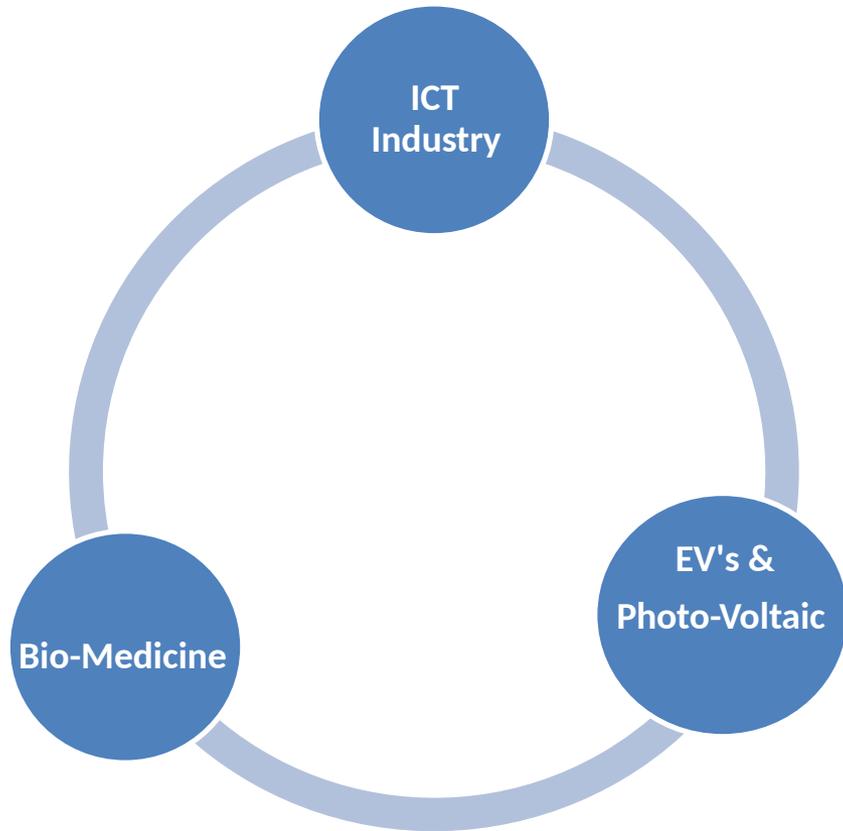


- The project will be located in Paraguay, in the capital city, Asunción: Ita Enramada area.
- There is a 15 Acre property on the Paraguay river, in the Ita Enramada area. There used to be a 5-star hotel and a building suited for conferences; there is also a protected forest area right next to it, known as the “Cerro Lambare”, with direct access either from the river or by a main avenue.

II- PTG Proposal

“PTG” Project Structure

PTG will have 3 main action areas of research & development:



1. **ICT Industry:**
a platform focused in specialized ICT R&D areas: Robotics & Vision systems, Nano-technology, and Software Engineering.
2. **Bio-Medicine:**
a state of the art infrastructure and services platform for R&D in bio-medicine implementations.
3. **E.V.'s & Photovoltaic:**
a facility for research, implementation, and innovation in Electric Vehicles & Photovoltaic industries & Business.

ICT Innovation, Research & Development



- The implementation and development of a Robotics & Vision systems R&D facility with high tech services.
- The installation of a high-tech NanoTechnology lab for Innovation and research.
- The development of a Software Engineering research and development lab & facility.

Bio-Medicine R&D Lab

- This component is about the implementation of a new building & lab for bio-medicine R&D; a state of the art facility for innovation & research programs.
- The Lab will focus on new bio-med technologies: Genomics, DNA, RNA, tele-med, graphics, etc. and develop R&D and innovation in those areas.



Electric Vehicles & Photovoltaic industry



- Building with special labs & based capacity for innovation & research in E.V.'s & P.V. Techs
- Main areas will be:
 - E.V. R&D
 - P.V R&D
 - Applied research E.V.
 - Special ad-hoc development
In Public Electric Transport E.V.'s,
Benchmarking, Electric Buses

Market segments

- **ICT technologies & Robotics - NanoTech**

- ICT related and software:
 - Software Engineering development & services
 - All other robotic system approaches
- Most of the target customers on these segments: almost all the science & technology institutions in Paraguay

- **Bio-Medicine**

- Genomics, advanced graphics DNA & RNA new testings, and applied aspects are being considered as most strategic in the region.
- The demands of new opportunities for research and development in these technology-related knowledge areas are a relevant need.

III- Technical Proposal

PTG Project Milestones: main steps

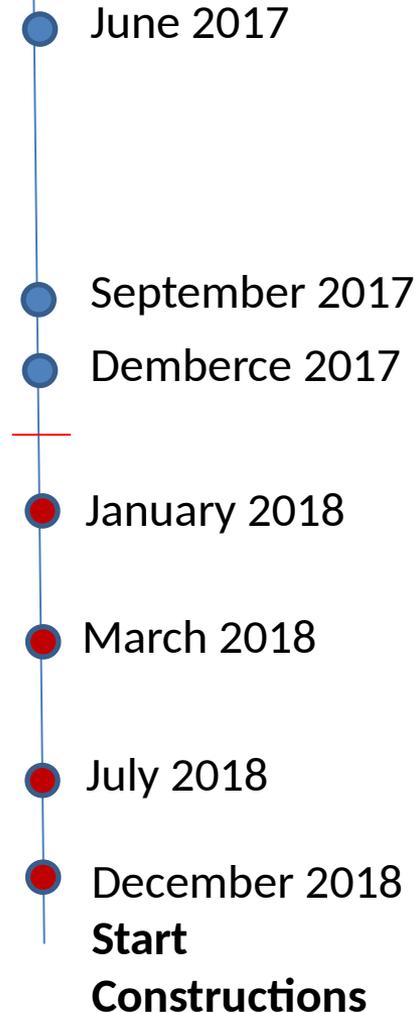
Done (Completed)

- Preliminary visit to the area
- Pre- Draft Studies
- Preliminary report to CISOF, Municipality, American University & CONACYT

To be done

- Signing NDA and MOU with Korean Company
- Financing closing (sources): guarantees?
- Final Design & EPC Contract

Timeline



Paraguay: Technical Capacity

Division	Capacity
ICT-related	R&D in Robotics, Electric Vehicles & Soft. Eng.
Bio-Medicine	R&D in Bio-Medicine (Along with “PRONII” - CONACYT)
E.V.'s & P.V.	All E.V.'s & Photovoltaic related R&D

Further capacity in the future for:

- Electric Vehicle Factory; Photovoltaic Energy mass production
- Sensors
- Biochips
- Smart City Technologies
- Graphene, Carbon Fiber & Graphite Development
- Diagnostic Algorithms
- Data Center & Fiber Optics Development

Asuncion: Innovation options: Start Ups

- Pre-Construction period:
 - “Spin-Off” Incubator programs are already on-going, so that R&D&I “start up” new companies can develop; Support from CONACYT & SENATICS, along with CISOFT, American University, (& others) is already agreed.
- Research areas:

Specific research areas (E.V.'s, Embedded software, robotics, Software engineering, micro-chip & silicon technologies, materials engineering, Graphene, Graphite & Carbon Fiber R&D, P.V. techs) to be established as “Spin Off” companies integrated into incubators, before actual construction of PTG begins

IV- Commercial Proposal

PTG Group Proposal

- **Project Overview**

- Project title: “Parque Tecnológico Guarani - **PTG**”
- Engineering Procurement & Construction:
 - From kick-off to end, approximately 24 months: all structures (TBD)
- Project Structure (numbers are **approximate** approach):

Item	Amount (thousand)	Description
Loan amount	80.000	Up to 100% (TBD)
Number of payments	10	Per Annum, with 3 years grace
Annual interest rate	3,00% -6,00%	(TBD)
Annual amortization	15.000	Thousand US\$ - Per Year
Total paid capital + interests	150.000	Thousand US\$
Interests	50.000	Thousand US\$
Down payment	15.000	Thousand US\$ -or Up to 15% (TBD)

- Structured financing with Korean ECA (Export Credit Agencies)
- Arranging Korean EPC contractor

Work scope

- **Role of Paraguay**

- Business Plan Development
- Feasibility study
 - Down Payment (15% - TBD)
 - Regional Network capacities
 - Local commercial integration
 - Governmental Support negotiation

Supervision

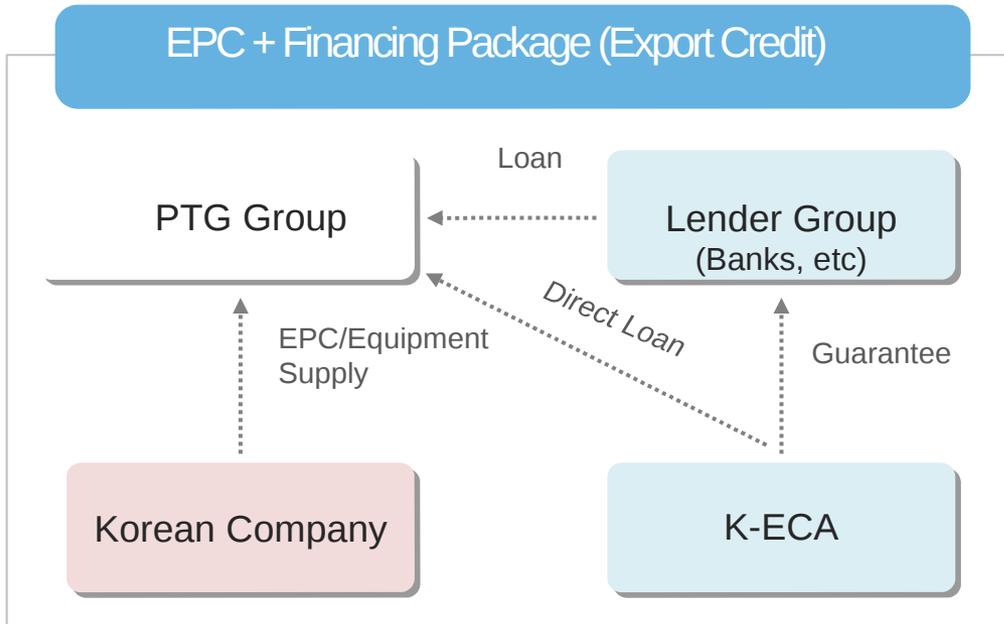
- All operations

- **Role of Korean Company**

- Financing Arrangement
- Technology Development
- EPC contractor
- Project structure organizing
- Project Development and Supervision
- EPC- Turn-Key

O&M

ECA Structure for PTG – Paraguay (TBD)



Conditions	Remarks
Tenor (Years)	3 + 10
Financing Cost	LIBOR + All-in 3~6%
Loan Amount	Up to 85% of EPC Contract Amount

- For Reference only;
- * Sovereign guarantee needed issued by MoF- Hacienda (in case of Gvnt. participation)
- * OECD country risk classification for Paraguay : 5
- * Financing Cost includes LIBOR, repayment interest margin, commitment fee, upfront fee, agency fee and so on.

Summary: PTG financing Terms & Conditions

(for reference only)

- **Conditions**

- Tenor (years): 10 + 3 (Grace Period)
- Financing costs: 3 to 6% (TBD)
- Loan amount: 80 million US\$;
up to 85 % of EPC contract amount (TBD)
- OECD Paraguay risk classification: 5
- Financing costs: includes repayment capital plus interests:
Libor + all In (commitment fee, agency fee, insurance fee, etc.)

PTG Organizational Chart:

