

## **Pre-Feasibility Report on**

### **The IIC (Innovation & Innovator Cell) development under Public Private Partnership**

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**Background:** The IIC (Innovation & Innovator Cell) of Khulna University of Engineering & Technology (KUET) is the first institutional backbone in Bangladesh for developing technology transfer and innovation management of national Science, Technology and Innovation (STI) and Intellectual Property (IP) development and its commercialization, industrialization and internationalization. Khulna University of Engineering & Technology (KUET) is one of the reputed Public University in Bangladesh that has intensive collaboration with Centre for Policy Research, Bangladesh (The Exchange Partner of UN in Bangladesh) being both institutions, the Strategic Partners' of the IIC (Innovation & Innovator Cell).

The purpose to establish the IIC at the reputable academic institution is to engage and utilize the "Collective Mark" (Trade Secrets of the Innovations or IPs) of "Centre for Policy Research, Bangladesh". This engagement is in favor of the Science, Technology and Innovation (STI) and Intellectual Property (IP) development and its commercialization and industrialization at national and international scale. The liabilities of the partners regarding their main duties are herein enclosed:

#### **Khulna University of Engineering and Technology:**

- A. Head of implementing agency: The IIC (Innovation and Innovator Cell) development under Public Private Partnership (PPP)
- B. Coordinator of different local or national and international program, technology transfer, research and innovation development and its commercialization.

#### **Center for Policy Research, Bangladesh:**

- A. Support to different local or national and international program, technology transfer, research and innovation development and its commercialization, industrialization and internationalization.

The IIC for "Universities and Industries" has the mission to develop national inventions, innovations and its commercialization and industrialization under the framework of its aforementioned partners. The commercialization of the developments will be through the exploitation of the "Collective Mark" and agreement strategies facing the commercialization of the developments managed under the IIC framework will be executed by means of '**Licensing and Joint Venture Agreement**'.

The IIC at Khulna University of Engineering & Technology (KUET) has a management team same that have been performing duties under Self-Financing by **Centre for Policy Research, Bangladesh** and **Khulna University of Engineering & Technology**. After intensive collaboration, the management team decided to take over the following decisions, which clarify the need to make the “Pre-Feasibility report or document that will endorse and support the aims and aspirations of the IIC (Innovation & Innovator Cell), “Khulna University of Engineering & Technology” within the overall development of the IIC in Bangladesh:

- A. Some important components of the IIC, KUET such as human resources & administration, technology development and innovation management will be developed under the development budget of ‘**Khulna University of Engineering & Technology**’
- B. Some important components of the IIC (Innovation & Innovator Cell) such as technology transfer, business cooperation, business development, policy and Intellectual Property (IP) management will be developed under Public Private Partnership

The important components to be developed by the IIC are catalogued as an urgent subject matter; the IIC, KUET needs additional supports, assistance and finance to enclose the duties of its ongoing development mission. This report will assist the PPP Authority to understand regarding “The IIC development under Public Private Partnership” as well as the commercial and marketing benefits, viability and feasibility since it is a new project initiative in Bangladesh.

This report will also help the Government of Bangladesh to meet the demand of the global R&D industries which will contribute to SDG (Sustainable Development Goals), particularly in the field of STI (Science, Technology and Innovation) and IP (Intellectual Property) creation or development and its commercialization, industrialization and industrialization at large scale economic development for growth and sustainability.

**Call of Hon'ble Prime Minister of Bangladesh:** *Government of Bangladesh has recently challenged our educational institutions to invest on new ideas that generate new sources of funds for these institutions.*

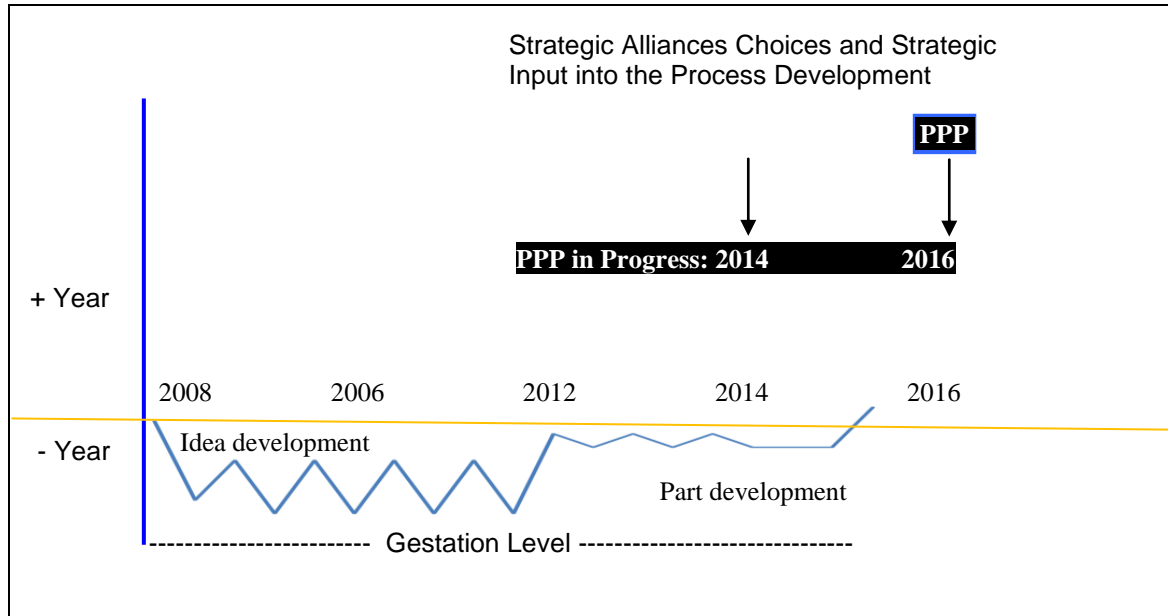
**Objectives:** The broad object is to develop national inventions and innovations and to exploit commercially of those national inventions and innovations at national and international market where the IIC (Innovation & Innovator Cell) as key player for national or international technology management, R&D business, innovation management and technology transfer.

**Purpose:** The purpose of the Pre-Feasibility report is to emphasize the commercial viability, the business and market opportunities at national and international scale to support the feasibility and to evaluate the scope of the IIC (Innovation & Innovator Cell) development under Public Private Partnership due to the novelty of the proposed PPP project in Bangladesh that will also reduce the uncertainty of the decision makers, investors. The report will also help to understand the technological environment in Bangladesh. The integration of Financial Model for “**The IIC development under Public Private Partnership**” to the PPP Authority, investors, partners, international collaborators and collaboration organizations.

**Methodology Used:**

**Phase-I: Framework development of the IIC (Innovation & Innovator Cell) :**

Investment in Research & Framework (R&F) development of the IIC in the following Stages:



**Phase-II:** Establishment of the IIC (Innovation & Innovator Cell) at Khulna University of Engineering & Technology (KUET)

The purposes of this establishment of the IIC at Khulna University of Engineering & Technology (Established on March 31, 2016) are to engage and utilize in the “Trade Secrets of the IIC (Innovation and Innovator Cell)” and “Know-how” (hereinafter, the “Collective Mark” of Centre for Policy Research, Bangladesh) for development of STI (Science, Technology and Innovation) and IP (Intellectual Property) and its commercialization and industrialization at national level and international markets and hereby incorporated exhibits:

Exhibit	Contents	
A	Establishment of the IIC (Innovation and Innovator Cell) at Khulna University of Engineering & Technology (KUET)	
B	Role and Responsibilities of the Partners of the IIC:	
	Name of the Partner(s)	Role and Responsibilities
	Khulna University of Engineering & Technology	01. Head of Implementing Agency: The IIC (Innovation & Innovator Cell) development under Public Private Partnership (PPP) 02. Coordinator of different National or Local and International Program, Technology Transfer, Research and Innovation Development and its Commercialization.
	Centre for Policy Research, Bangladesh	01. Support to Technology Licensing, STI and IP Policy, IP Industrialization and Internationalization.
C	Agreement Types	License and Joint Venture Agreement

**Phase-III:** Involvement of Members of the IIC, KUET and Experts Members in 8 (Eight) Selective Sectors:

Total Members: 8 (Eight), Total Expert Members: 16 (Sixteen)

**Phase-IV:** Building Design, Construction Management, Development of infrastructure (Virtual and IT), Generation of Electricity, Security System, Setup Connectivity, Plat (Buy or Rental) and Others.

The IIC, KUET (Headquarters):

Construction, Generation of Electricity, Setup Connectivity, Security System and other Logistics:

Dhaka or Branch Office:

Plat (Buy or Rental), Setup Connectivity, Security System and other Logistics:

**Phase-V:** Recruitment of the dedicated staffs (Fulltime/Contractual) and other strategic input supports to the IIC (Innovation & Innovator Cell) development under PPP in Bangladesh:

	Ratio
National: International	85:15

**Phase-VI:** Capacity building for recruitment of the dedicated staffs.

**Financial Analysis and Model:** The following assumptions have been made to conduct relevant financial analysis:

- The economic life of the IIC development under Public Private Partnership (PPP) has been preliminarily considered to be 12 years.
- The production will work around 240 days in a year.
- There will be 10-12% increase in salary and wages per year, and two months' salary will be given as bonus every year.
- The IIC will go into commercial production after two years from the date of starting of the development under Public Private Partnership (PPP) and hiring the dedicated staffs and other physical and virtual infrastructure supports to the IIC (Innovation & Innovator Cell).

**Finance to be utilized:**

Equity Ratio	Public	Private
<b>50:50</b>	50% of Total Investment	50% of Total Investment
	<p><b>I. Building Design, Construction, Supervision, Development of Infrastructure (Virtual and IT), Generation of Electricity, Plat (Buy), Travel, Transport, Gas, Electricity, Connectivity, Recruitment of the Dedicated Staffs, Capacity Building, Technology Transfer, Business Cooperation, Business Development, Protection of IP rights at National and International Markets.</b></p> <p><b>II. Intellectual Property (IP) or Trade Secrets of the IIC. For Example: Development and Creation of Intellectual Property, Acquisition of IP rights and its Commercialization, Industrialization and Internationalization through the Economic Model, Business Model and Operational Mechanism of the 'Collective Mark' of 'Centre for Policy Research, Bangladesh'</b></p>	
	Total Cost: <b>USD 12.0 Million</b> (In word USD: Twelve Million Only)	

**Production (Quantity):**

Patents/ Products/ Process/ Innovations	Years (100%) in Number (Quantity)					
	Year-03	Year-04	Year-05	Year-06	Year-07	Year-08
License Agreement	05	10	12	16	18	20
Joint Venture Agreement	1	1	2	2	3	4
Start-Up Development	0	1	2	2	3	4
<b>Total Quantity:</b>	<b>06</b>	<b>12</b>	<b>16</b>	<b>20</b>	<b>24</b>	<b>28</b>

<b>Total Investment :</b>	<b>USD 12.0 M (In word USD: Twelve Million Only)</b>
<b>Public: (USD: 6.0 M)</b>	Land, Infrastructure (Physical, Virtual and IT), Policy Support to the “Collective Mark” or IP (Intellectual Property) or Trade Secrets (Economic Model, Business Model and Operational Mechanism) of “Centre for Policy Research, Bangladesh” and Finance.
<b>Private: (USD: 6.0 M)</b>	Finance, Expertise and Operational Supports

In Million USD

	Year-01	Year-02	Year-03	Year-04	Year-05	Year-06	Year-07	Year-08	Year-09	Year-10	Year-11	Year-12
<b>Fixed Costs:</b>												
<b>Phase-IV</b>												
Land	0.1											
Construction and Supervision	1.5											
Fiat (Buy)	0.6											
Furniture, Office Equipment and Security System		0.5					0.5					
Infrastructure (IT)	0.05	0.1			0.2			0.2			0.2	
Electricity and Generator	0.5						0.5					
Intellectual Property (IP)	4.8											
Infrastructure (Virtual)			0.1		0.1		0.1		0.1	0.1	0.1	0.1
<b>Operations:</b>												
<b>Phase-V</b>												
<b>Phase-VI</b>												
Experts	0.15	0.15							1.3	1.4	1.5	1.8
Salary	0.25	0.35	0.75	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
Capacity Building	0.25	0.25	0.35	0.5	0.5	0.5	0.5	0.5				
Acquisition of IP Rights			0.35	0.5	1	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Business Development									0.8	0.8	0.8	0.8
Technology Transfer			0.35	0.5	1.25	1.85	2.5	2.75	4	4	4	4
Travels and Tours	0.15	0.15	0.25	0.35	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Utility and Others			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Maintenances:</b> (Costs of the Fixed Assets)				0.1		0.1		0.1	0.1	0.1	0.1	0.1
<b>Interest Rate : 10%</b>												
<b>Total Cost:</b>	<b>8.35</b>	<b>1.5</b>	<b>2.25</b>	<b>3.15</b>	<b>4.85</b>	<b>5.85</b>	<b>7.6</b>	<b>7.15</b>	<b>10</b>	<b>10.2</b>	<b>10.6</b>	<b>10.8</b>
PV of Cost	7.60	1.24	1.69	2.15	3.01	3.30	3.90	3.34	4.24	3.93	3.36	3.44
<b>Revenue:</b>	<b>0</b>	<b>0</b>	<b>0.5</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>12</b>	<b>20</b>	<b>32</b>	<b>52</b>	<b>84</b>	<b>140</b>
PV of Benefit	0	0	0.38	1.70	2.79	3.67	6.16	8.40	13.57	20.05	29.44	44.60
NVP	-7.59	-1.24	-1.31	-0.44	-0.22	0.37	2.26	5.06	9.33	16.12	26.06	41.16

**Note:** Factor Considering the Cost of Intellectual Property (IP): Novelty, Non-Obvious, Utility, Time, Cost into Research & Framework (R&F) development and other Strategic Input to the IP (or The IIC).

<b>Internal Rate of Return</b>	The IRR =28% (without Valuation of IP)
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<b>Break-Even Point:</b>	By building international collaboration, cooperation and financial connection through related Licensing Parties, Joint Venture and Start-Up development.
<b>Revenue:</b>	License Agreement or Startup development through the development of Products or Patents or Process or Innovations:

**Note: Life Cycle:** IT (Hardware and Software): 03 Years, IT (Network) Connectivity and Security System: 05 Years, Furniture: 05 Years

Here, **Maintenances** refers to the maintenances costs of the Fixed Assets including depreciation of the Fixed Assets.

<b>VALUATION:</b>		
Year-01 Investment of the IP:	Intellectual Property (Trade Secrets of the IIC) : 40% of the total investment including the establishment costs of the IIC (Innovation & Innovator Cell) at Khulna University of Engineering & Technology	<b>\$ 4.8 M</b>
Year-08	Total Number of Intellectual Property(s): 145 + Net Profit at the Year End 08 Including Value of the Brand	<b>\$ 400 M</b>
Year-10	Total Number of Intellectual Property(s): 215 + Net Profit at the Year End 10 Including Value of the Brand	<b>\$ 600 M</b>
Year-12	Total Number of Intellectual Property(s): 245 + Net Profit + Fixed Assets Valuation with Value of the Brand	<b>\$ 1.2 B</b>
Value of IP(s) :	Value of the developed Products, Process, Patents, or Innovations depend on types or conditions of the investments in Product, Process, Patents or Technology Development and other Strategic Factors.	
<b>Safety (Margin):</b>	<b>100%</b>	

**Economic Factors:** Total Number of Job creations (Fulltime):

		Year-01	Year-02	Year-03	Year-04
The IIC, KUET (HQ):	National Level	32	50	140	260
	International Level	2	2	4	4
Dhaka Office	National Level	6	6	6	6
	International Level	2	4	10	10
<b>Total:</b>		<b>42</b>	<b>62</b>	<b>160</b>	<b>280</b>

In order to address such critical issues, such as the initial views of thinker to turn away from investment, ethical questions at any stage of product, process or technology development and contemporary educational inputs and its overall effects may change the expected outcome of the IIC, KUET

#### Why Public Private Partnership (PPP) Need:

#### CLARIFICATION:

**Macro-Economic Point of View:** The IIC (Innovation & Innovator Cell) development under Public Private Partnership (PPP)

The IIC, KUET offers creation of STI & IP and its commercialization, industrialization and internationalization. It is difficult to manage the **Innovation Eco-System of Bangladesh** without an **Innovative Industrial Environment (IIE)** for government alone when it is big question for commercialization. Public investment always seeks quality of services by formulating guidelines, rules, policy, procedures and strategy to serve the nation for citizen at the same time, private investors are usually interested for making profits through mixing their creativity, expertise, time, finance, energy and resources also.

The IIC, KUET realizes that 'Academic Venture Capital', 'Private Finances and Expertizes can play as an instrument for creation of IP and its commercialization, industrialization and internationalization. In this particular case, the equation of the both interests may balance through development of the IIC (Innovation & Innovator Cell) under Public Private Partnership.



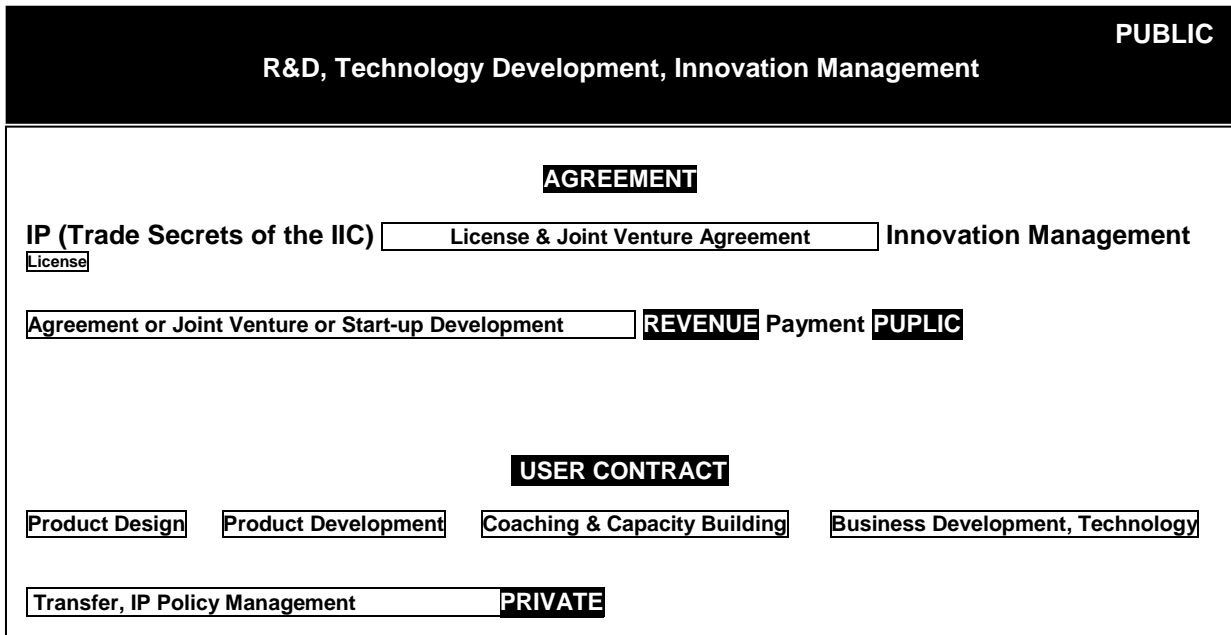
**Delivery Role of the IIC (Innovation & Innovator Cell):**

Deliver the Service into Public Policy, Process development

<b>Delivery Role (Sharing):</b>		
Research & Development	Public	Private
Product Design	Public	Private
Finance	Public	Private
Protection of IP	Public	
Capacity Buildings		Private
Innovation Management	Public	
Business Development		Private
Profit Sharing	Public	Private
Technology Transfer		Private

*Protection of Intellectual Property: The Industrial Property Assets such generated by the IIC or by the Partners of the IIC contemplate the registration and granted applications of the Patents, Utility Models, Industrial Designs, Trademarks and other IP Figures that may be considered under Department of Patents, Designs and Trademarks (DPDP), Bangladesh*

Setting the PPP Structure of the IIC (Innovation & Innovator Cell):



The End: