

International PPP Centre of Excellence

People First PPPs for the United Nations Sustainable Development Goals



THE GLOBAL GOALS
For Sustainable Development

Project:	INTEGRATED WASTE WATER TREATMENT TO BIO ENERGY AND ORGANIC FERTILIZER
Project Organization	ANGLO EURO DEVELOPERS (S) LTD

Public Organization: PPP DIRECTORATE MINISTRY OF FINANCE HOST COUNTRY
Private Organization: Anglo Euro Developers (S) Ltd
Capital Providers: Private Investors with support from Multilateral Development Agencies & Commercial Banks

SALIENT FEATURES OF PROJECT:

A patented solution for waste water & bio-energy production accepting:

- ◆ *All types of biological waste*
- ◆ *All types of livestock & poultry manure*
- ◆ *All kinds of sewage and industrial waste water*
- ◆ *Purify waste water into at least 60 - 90% of clarified water and 10 - 40% fertilizer*
- ◆ *Process from 2,000 - 20,000 m³ of waste water per day (easily scalable)*
- ◆ *Generate electrical power output of approx. 8 - 20kW (60,000 - 170,000 kWh per year)*
- ◆ *Provide heat output of up to 80,000 kWh per year*
- ◆ *Improve biogas quality by capturing CO₂ that can be sold to local gas networks (example CNG)*



Our projects have a direct impact on most of the SDGs.
Job Creation (No 8)
Poverty Eradication (1)
Improving Quality of Life (2,3,4)
Clean Energy, Climate Action (6,7,9,13 & 15)
and PPP impacts on SDG 16 & 17





- ◆ **For Low and middle Income Countries – Waste to Bio Energy projects have widespread direct impacts on UN SDGs from Poverty Eradication (1), Clean Water and Sanitation (6), Affordable and Clean Energy (7), Job Creation (8) Industry Innovation, (9) Sustainable Communities (11), Responsible Consumption & Production (12) and Climate Action (13).**
- ◆ **Under PPP frame-work, foreign investment policies and regulations must be in place including provision of Government Guarantees for PPP projects. This is necessary to attract foreign investments for much needed infrastructure projects.**



BACKGROUND AND STRATEGY SUPPORTING THE PROJECT

Where

Proven technology with 10 plants in China utilizing our technology. Other markets include Indonesia, Myanmar (post sanction economy), and Central Europe. Countries in One Belt One Road have shown interest and initiative under PPP structure.

Why

1. Low income countries will benefit most in adopting sustainable policies and projects with direct impact and contribution to SDGs.
2. In such economies, Private Sectors are still developing, with a few local prominent companies. From risk mitigation viewpoint PPP is a viable approach for international investors. Localized counter party risks are issues to be addressed for proposed projects to be bankable.

What

1. In addition to job creation, Biogas Energy and Renewable Solutions, provides transfer of technology in clean energy generation promoting Climate Action. Low income countries needs to promote a growing middle income population to foster internal economic growth.
2. Economic and legal structures, institutional governance and regulations, industrial and financial innovations have to be in place to attract foreign investments.

Who

Ministry of Finance, Ministry of Law and Government Planning Agencies, along with Provincial / State Governments have to be involved to provide the support for legal, investments and project appraisal and selection framework. In most Emerging Markets and Developing Economies, the Public sector is in urgent need for capacity building and Private partners like ourselves can play a much needed role in promoting PPP awareness and project implementation. PPP Courses are available such as CP3P- Certified Professional PPP course which is an innovation of the World Bank Group (WBG), Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), the Inter-American Development Bank (IDB), the Islamic Development Bank (IsDB), and the Multilateral Investment Fund (MIF).

When

Waste Water Treatment Plants currently running well utilizing our Waste to Energy technology. For low and middle income countries Review of regulation under Public Debt Management Law must be in place before Government can issue Guarantees for PPP Projects.



A) FOR ESSENTIAL SERVICES AND TO PROMOTE EQUITY.

A1. INTEGRATED WASTE WATER TREATMENT & BIOGAS ENERGY PLANT

Patented German technology 2013, Waste Water Treatment built capacity ranges from 8,000 to 100,000 m³ designed to comply with German industrial WW standards and regulations. Well over 10 plants in full commercial operation in China since 2006

**Integrated Solution: Waste Water Treatment + Biogas Energy Production Enhanced energy efficiency,
Increased biogas yield and energy production (+30 to 50% or more) Greatly reduced WW discharge (from 10% to 40%)**

Fertilizer sales: Adds new and potentially significant revenue stream

Potential benefits from carbon offsets. Zero Carbon emissions (CO₂)

Direct Impact on SDGs 9 Industry, Innovation, Infrastructure, SDG 7 Affordable Clean Energy, SDG 6 Clean Water Sanitation, SDG 12 Responsible Consumption and Production.



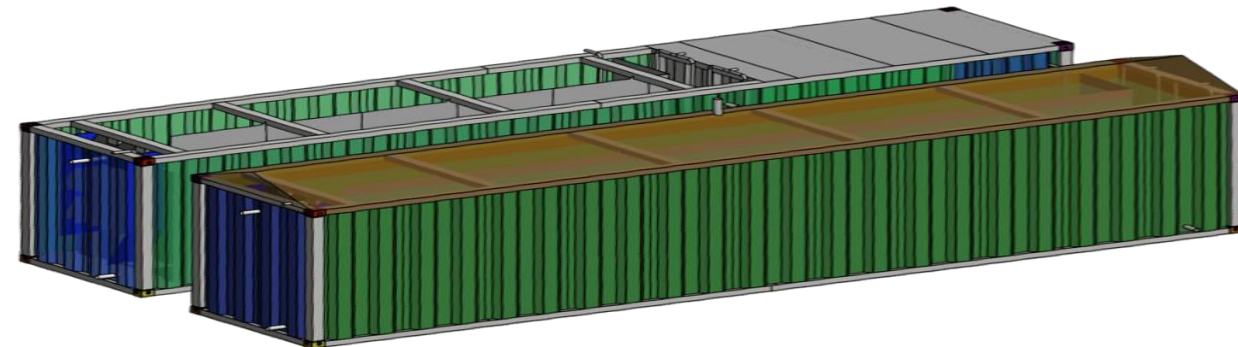
B) PROJECT RESILIENT INFRASTRUCTURE AND ENVIRONMENTAL SUSTAINABILITY

INTEGRATED WASTE WATER TREATMENT & BIOGAS ENERGY PLANT

- Can be modular or large-scale configuration. Modular units use 40 ft. Containers
- Tailored design for large-scale units (e.g., 200,000 m³ per day)
- Containers incorporate durable stainless steel fabrication
- Movable/portable
- Suitable for remote/off-grid locations
- Modular design significantly reduces construction cost
- Minimum lifespan of 20 years for each installation (using stainless steel fabrication)
- Containerized design means plant can be located closer to sources of waste, resulting in reduced transportation and storage costs.
- Innovative & robust technology significantly reduces operation and maintenance (O&M) cost

ENVIRONMENT IMPACT

- Zero Carbon Emissions (CO₂)
- Production of biologically valuable Fertilizer
- Sale or owner-use of the generated Electrical Energy & Heat

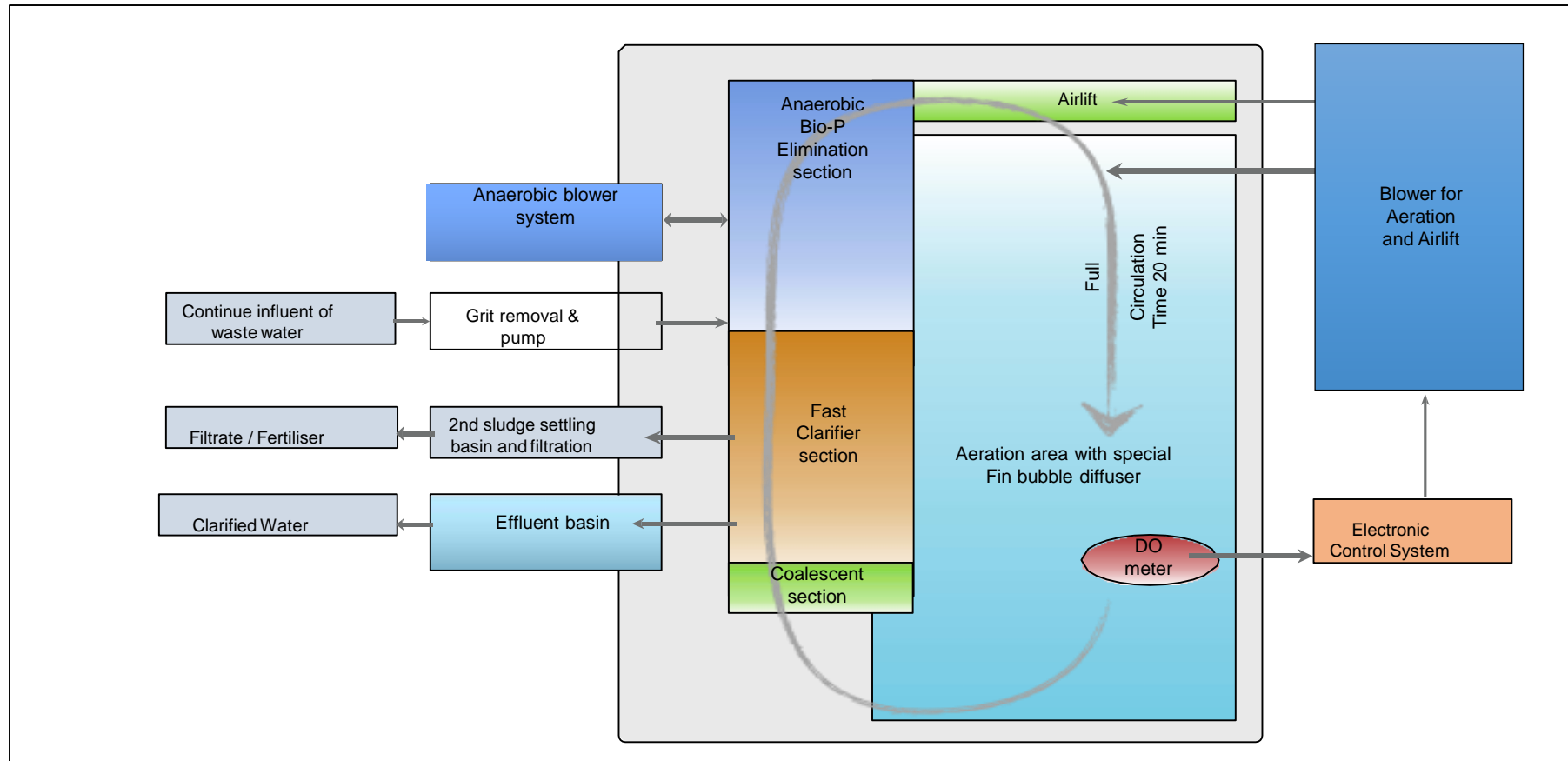




INTEGRATED WASTE WATER TREATMENT & BIOGAS ENERGY SOLUTION

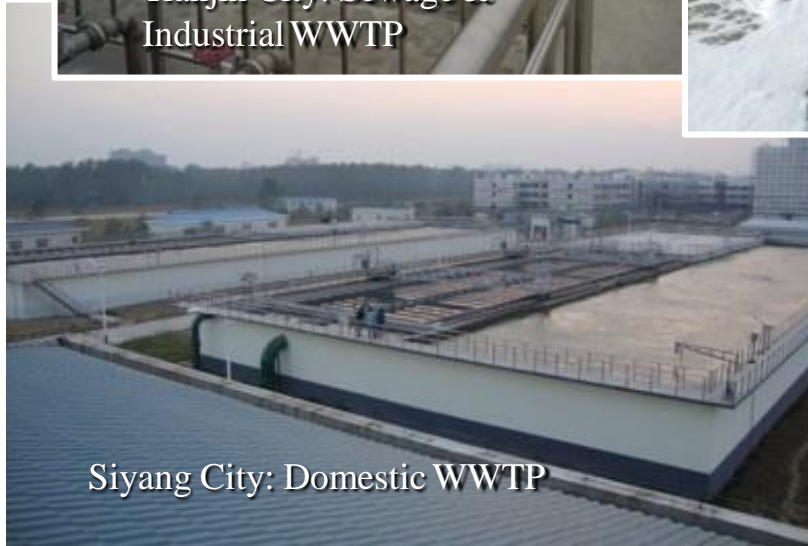
Flow Diagram: *Waste Water Treatment Plant*

Illustrating single ('all-in-one') basin water treatment & anaerobic bio-Phosphorous removal technology





Plants in China currently using the Company's single basin waste water treatment technology





C) BIOGAS ENERGY PLANT ECONOMIC AND FINANCIAL EFFECTIVENESS

DEBT 70% Project Funding from Multilateral Development & Commercial Banks	Mezzanine	EQUITY 30% Equity by Private Investors
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Based on Waste Water Affluent of 3,500 m³ per day.

Payback Period 3.5 years	IRR 24% pa	RoE 14% pa
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Note: Including return from Biogas Energy sales (150,000 kW/day) and Organic Fertiliser sales (200 MT/day).

Guarantees shall be provided by Government for approved PPP Projects.

Availability Payments shall be from Government through Multilateral Development Bank loans and Credit and Commercial Bank syndicated loans.

Contingent Liabilities are covered by underwriting of Risk mainly construction risks.

Project Contribution to local economy is the Sales of Biogas Energy as clean energy to local authorities and Organic Fertilizer sales, which is locally produced. This benefits local farmers and contributes to local economy and at the same time Biomass Projects impact directly on SDG 7 Clean Energy, SDG 9 Industry and Innovation and SDG 12 Responsible Production.



D) BE REPLICABLE AND SCALABLE

- Modular design facilitates scalability and replicable in other locations or country.**
- Units can be combined to make an integrated waste/waste water treatment & power plant**
- Decentralized design of modular plants reduces demand on electrical networks**
- Excess power can be sold to private clients or the grid**
- Energy self-sufficient (can be operated fully off-grid)**
- Potentially significant revenue from surplus energy (electricity or gas) sales**

HUMAN CAPITAL DEVELOPMENT

- Anglo Euro Developers Specialist Team shall train local workers and employees at site including operations and maintenance. This includes Public operations and management teams.**
- There shall be transfer of skills and know-how to local workers in order to upgrade their vocational skills.**
- Project/Asset Development and Management**
Training shall be given at different phases of the Project, pre-construction training and safety induction, on-site training on construction and assembly, ISO standards, work to order, and post construction training.
- Operations & Maintenance Training and Skill Upgrading.**

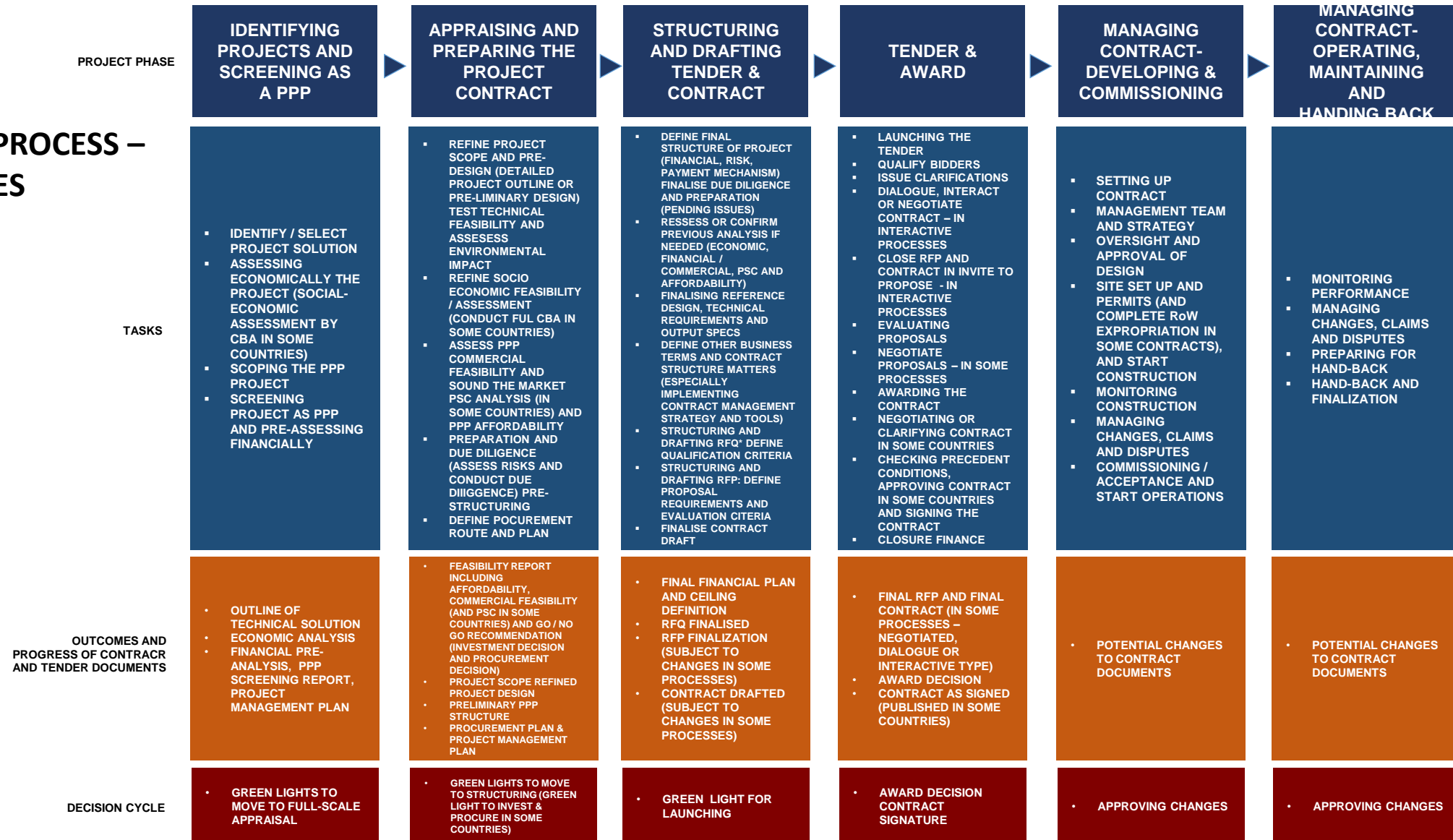
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E) THE PPP PROCESS – MAIN STAGES





F) ENGAGE ALL STAKEHOLDERS

PPP GOVERNANCE MODEL AND PROCESS BETWEEN GOVERNMENT, STAKEHOLDERS AND LENDERS.

