

ASIA CLEAN ENERGY FORUM 2021

ACCELERATING THE LOW-CARBON TRANSITION IN ASIA AND THE PACIFIC

Manila | 14-18 June 2021



Session 1.2: Showcasing Low-Carbon Transition Technologies

The logo for EcoNexus, featuring the word 'eco' in red and 'nexus' in green with a small green leaf icon.

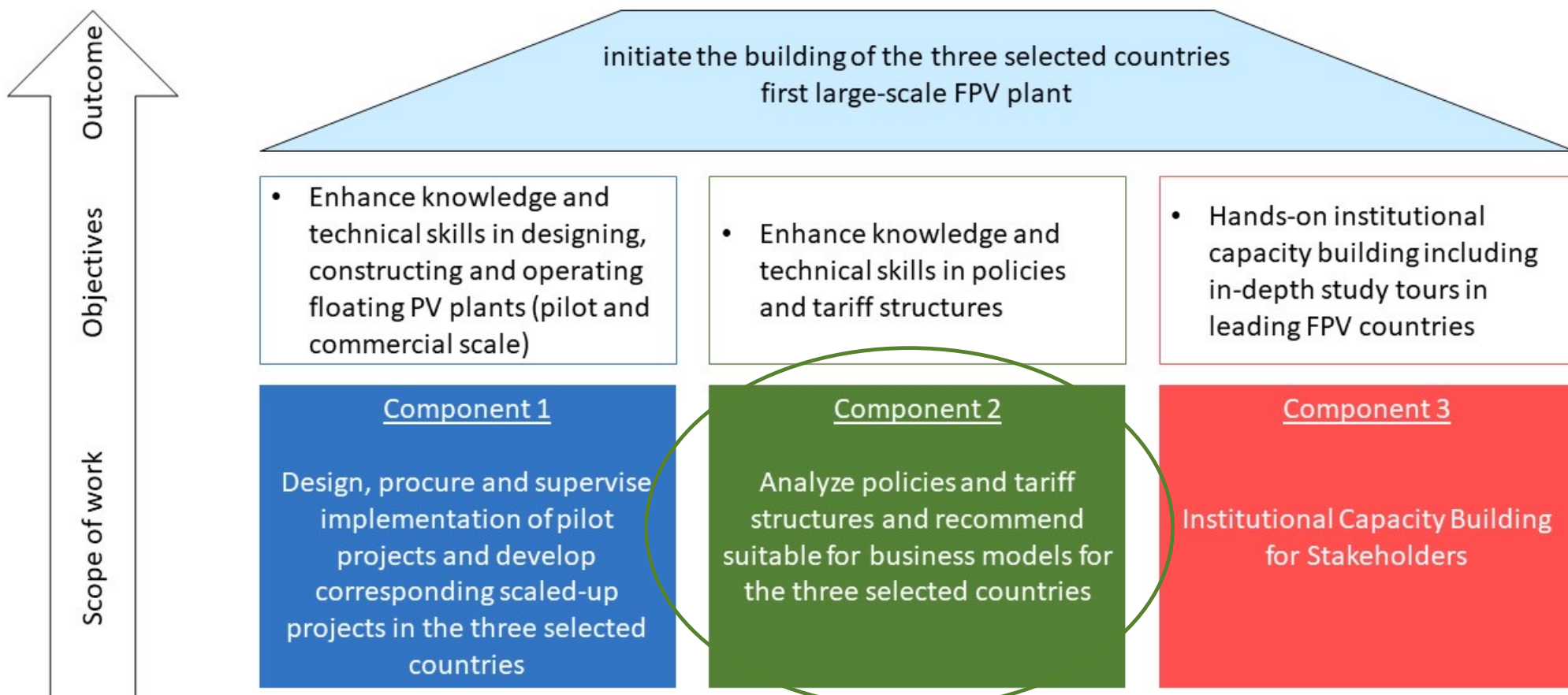
The logo for OCA Global, featuring the letters 'OCA' in blue with a red checkmark and the word 'GLOBAL' in blue below it.

The logo for STA, featuring the letters 'STA' in black with a yellow and green curved line above it.

Business Models for Floating PV in Azerbaijan

June, 2021

TA-9564-REG- Floating Solar Energy Development



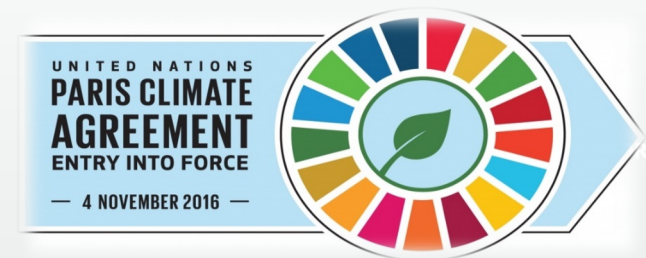
Implementation Strategy:

- Determination of the supporting mechanisms;
- Preparation on the realization of auctions on the renewable energy zones;
- Development of the tariff methodology;
- Determination of financial sources;
- Development of the regulatory and legal framework;
- Cooperation with the partners (potential investors);

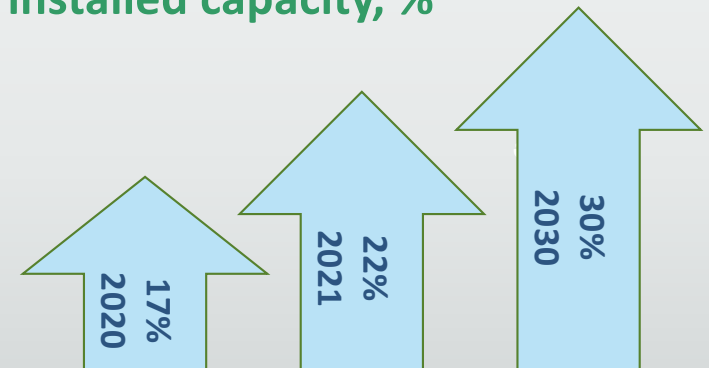
Planned capacity addition with RE projects

2020-2022	2023-2025	2026-2030
440 MW	460 MW	600 MW

Reduction of greenhouse gas emissions – 35% by 2030



Renewable Energy share in total installed capacity, %



Source: Ministry of Energy of Azerbaijan

AUCTIONS

- **The auctions rules** (*the project is underway*)
- **RFQ** (*the draft project is ready*)
- **RFP** (*the project is underway*)

The winner of the auction is the entity which submitted the lowest price offer

BILATERAL AGREEMENT

Bilateral agreement shall be carried out in the following cases:

- during the implementation of pilot projects;
- if deemed necessary in terms of the interests and strategic importance of the state;
- if it is not possible to determine the investor at the auctions or if the auction did not take place.

- Protection of the investment (existing in the legislation)
- Tax rebates within seven years (investment promotion mechanisms)
 - 50% reduction of income tax for individual entrepreneurs;
 - 50% reduction of profit tax for legal persons;
 - no VAT and no customs duties on imports of machinery, technological equipment and installations;
 - no property tax;
 - no land tax.
- Guaranteed off-take (Take or pay)
- Guaranteed connection
- Priority in dispatching
- Possibility of indexation of payments to foreign currency
- Long-term land lease

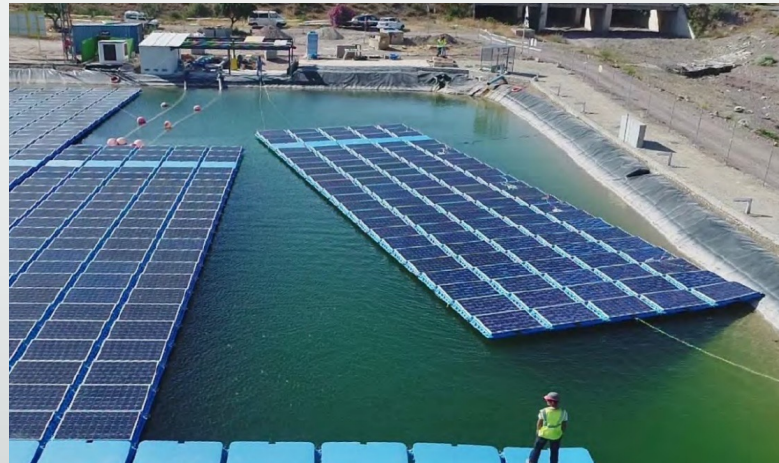




Huainan, China Photo courtesy of: Sungrow



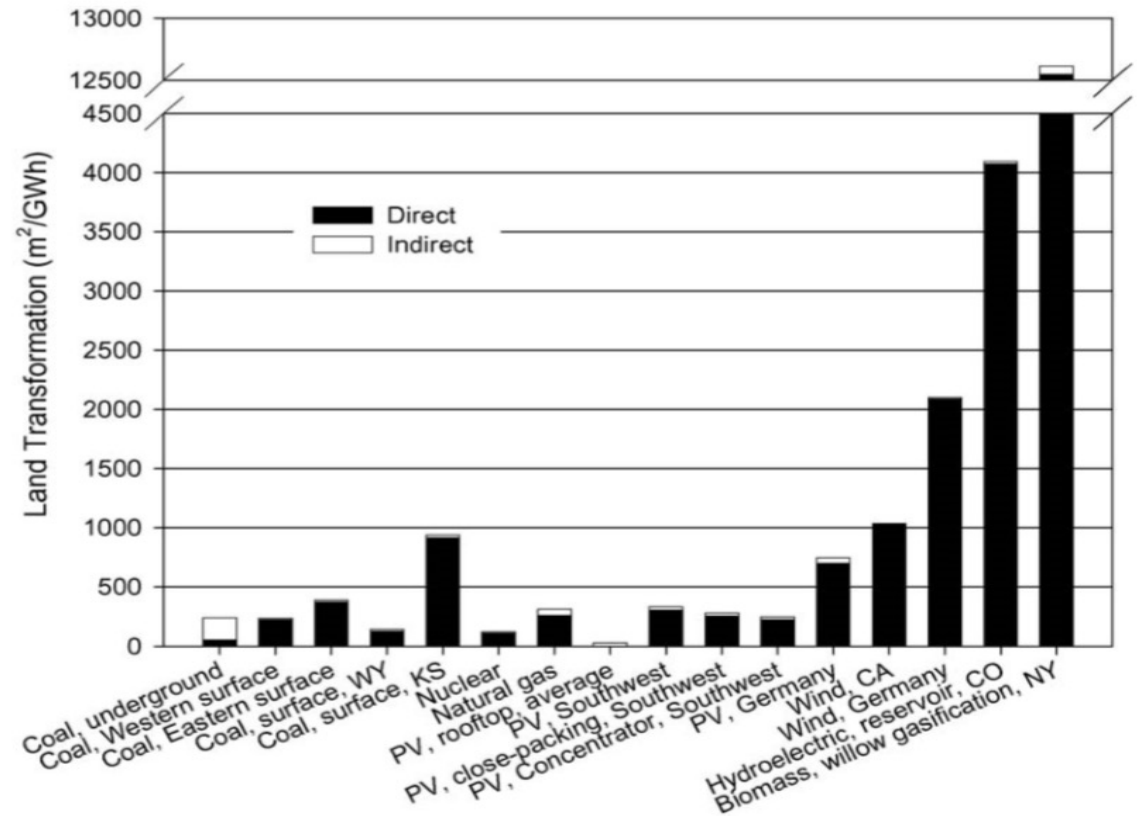
Yamakura Dam Photo courtesy of: Ciel & Terre



Murcia, Photo courtesy of: Isigenere

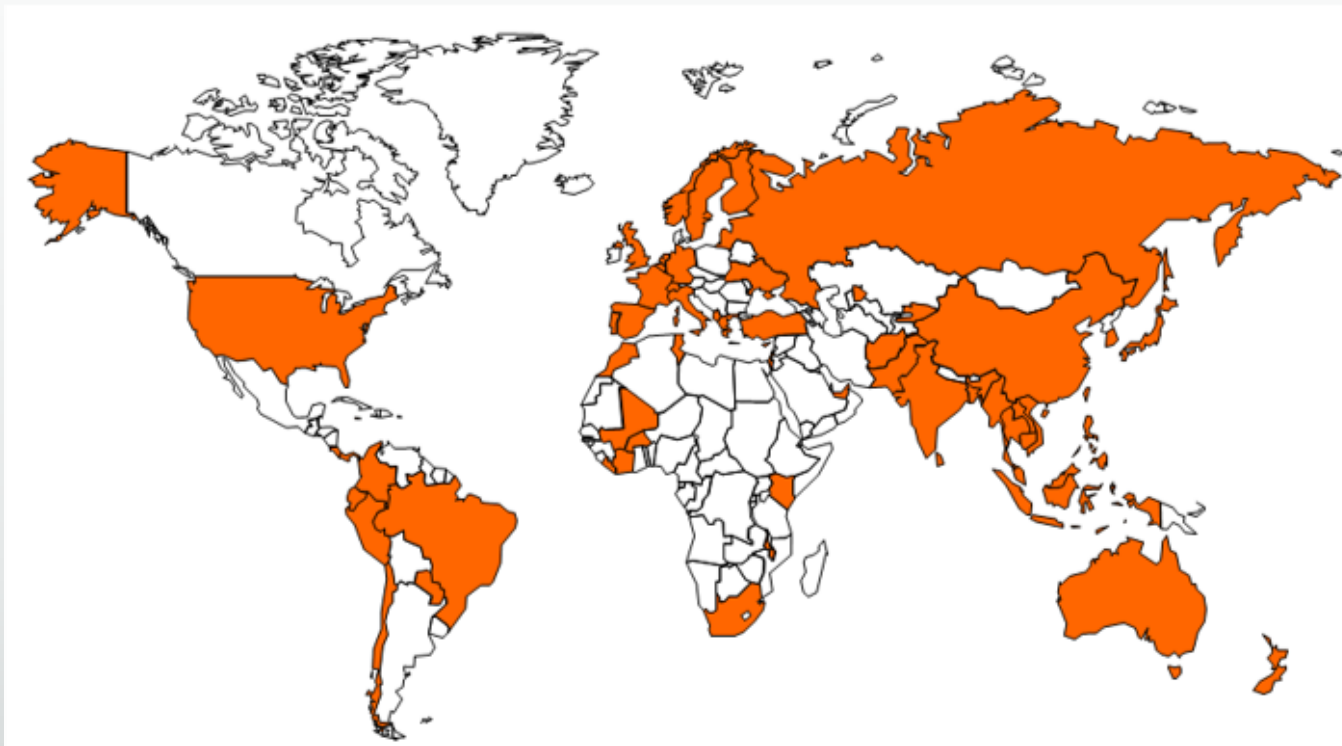
Why floating PV?

- Cost of water surface is lower than land
- Land has alternative uses
- Reducing evaporation rates
- Reducing water maintenance
- Lower visual impact
- Higher energy yield. Site specific
- It can be used with and without water



Source: doi:10.1016/j.rser.2008.09.017

Countries with current FPV installations

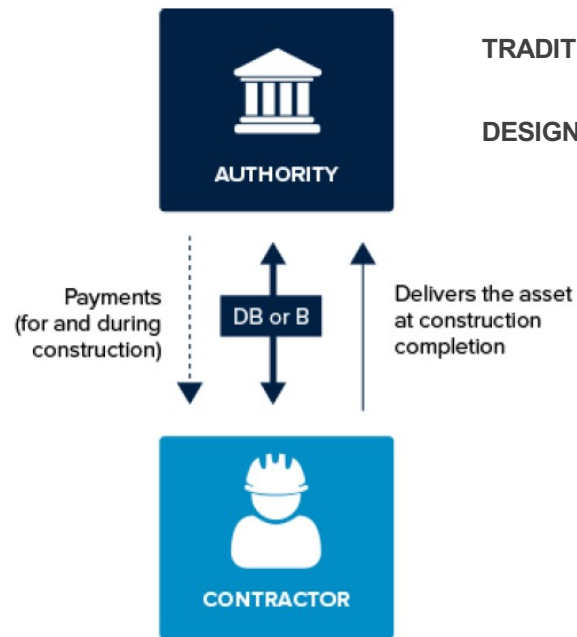


Source: <https://www.pv-magazine.com/2020/09/22/floating-solar-pv-gains-global-momentum/>

Typical FPV Project (50MW-100MW)

- Investment: USD 50- USD 100
- Water área cover: 60-120 ha
- Useful life: 25 years
- Energy yield: 75 GWh/year- 150 GW/year
- It can provide a competitive energy on the range of USD 25/MWh to USD 50/MWh

FIGURE 1.2: Basic Scheme of a Design-Build or Build-Contract

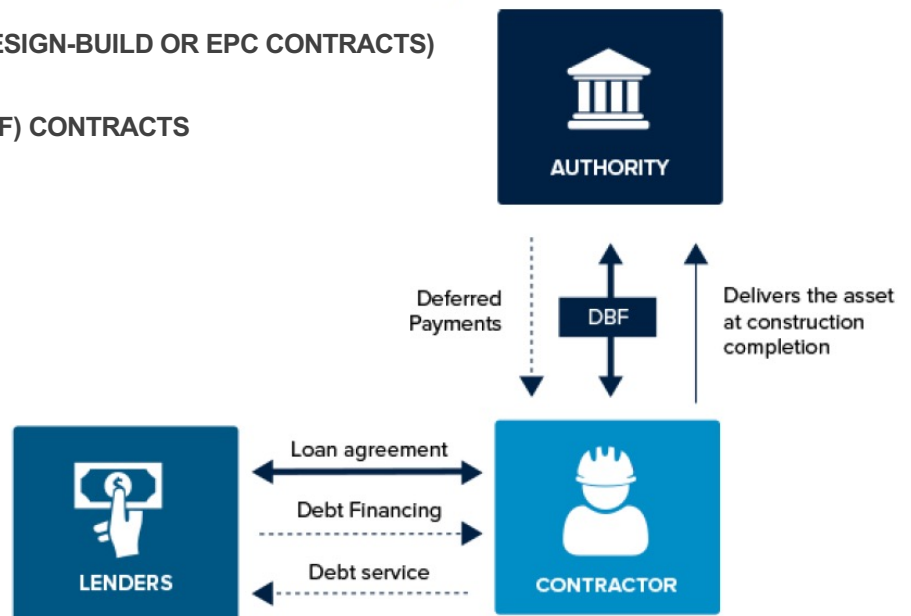


Works are financed by the public sector. Payments for the works are received by the contractor as work progresses (funded by the budget) and the asset is received by the Authority at construction completion.

← Service related flows ←→ Contract relationship ←---- Cash related flows

Note: B= Build; DB= Design-Build.

FIGURE 1.3: Basic Scheme of a Design, Build and Finance (DBF) Structure



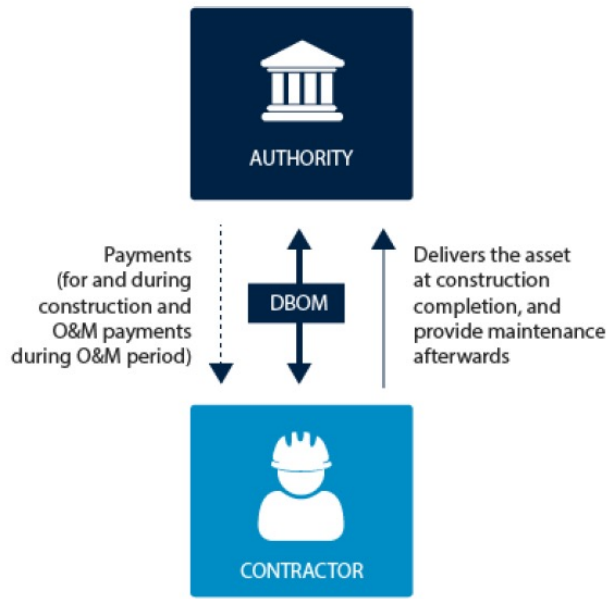
Works are financed by the contractor (usually by a bank) against the future payments granted under the contract by the public party, usually under a fixed calendar of payments. Public party takes over the infrastructure at construction completion (as in a B or a DB).

← Service related flows ←→ Contract relationship ←---- Cash related flows

Note: B= Build; DB= Design-Build.

Source: PPP Certification Guide, WB

FIGURE 1.4: Basic Scheme of a Design, Build, Operate and Maintain (DBOM) Structure



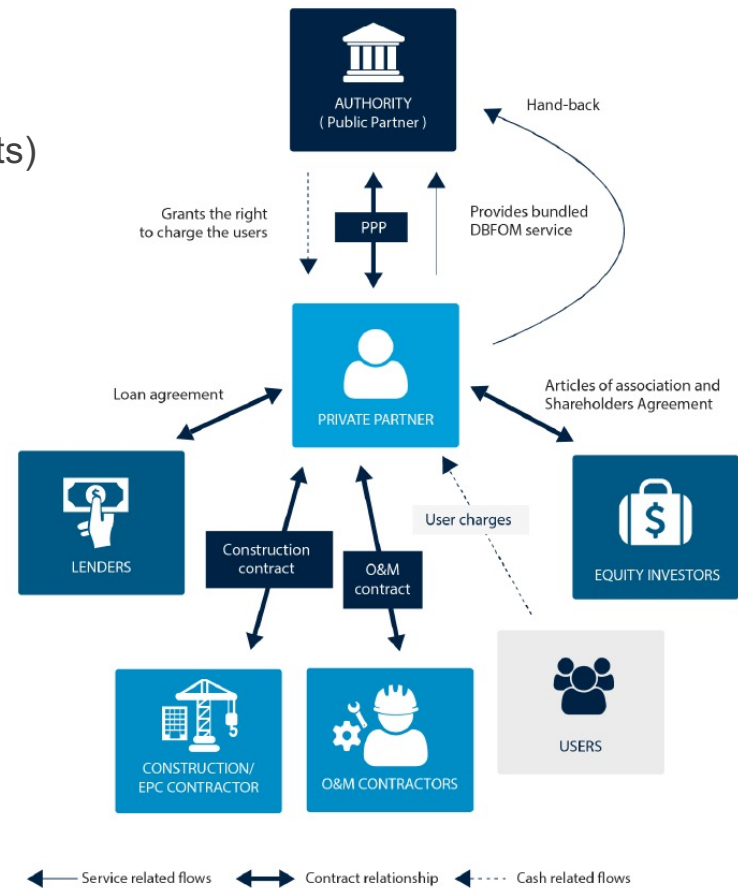
PPP contracts
(BOT or DBFOM contracts)

Works are financed by the public sector. Payments for the works are received by the contractor as work progresses (funded by the budget) and the asset. There after the contractor (considered here as a private partner) provides maintenance (or operate and maintenance and is paid an O&M price for it). Works may be received by the Authority at construction completion or at the end of the contract depending on the jurisdiction and project.

← Service related flows ↔ Contract relationship ←····· Cash related flows

Note: O&M= operations and maintenance.

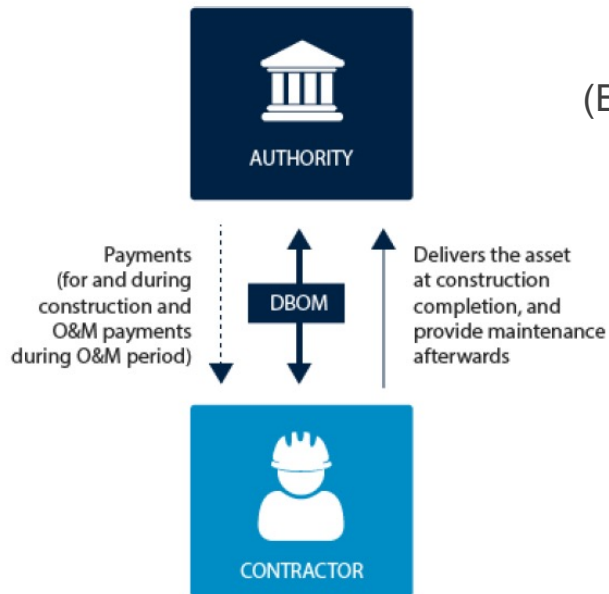
FIGURE 1.5: Basic Scheme of a DBFOM Contract Structure (user-pays)



Note: DBFOM= Design, Build, Finance, Operate and Maintain; EPC= Engineering, Procurement and Construction; O&M= operation and maintenance; PPP= public-private partnership.

FIGURE 1.4: Basic Scheme of a Design, Build, Operate and Maintain (DBOM) Structure

PPP contracts
(BOT or DBFOM contracts)

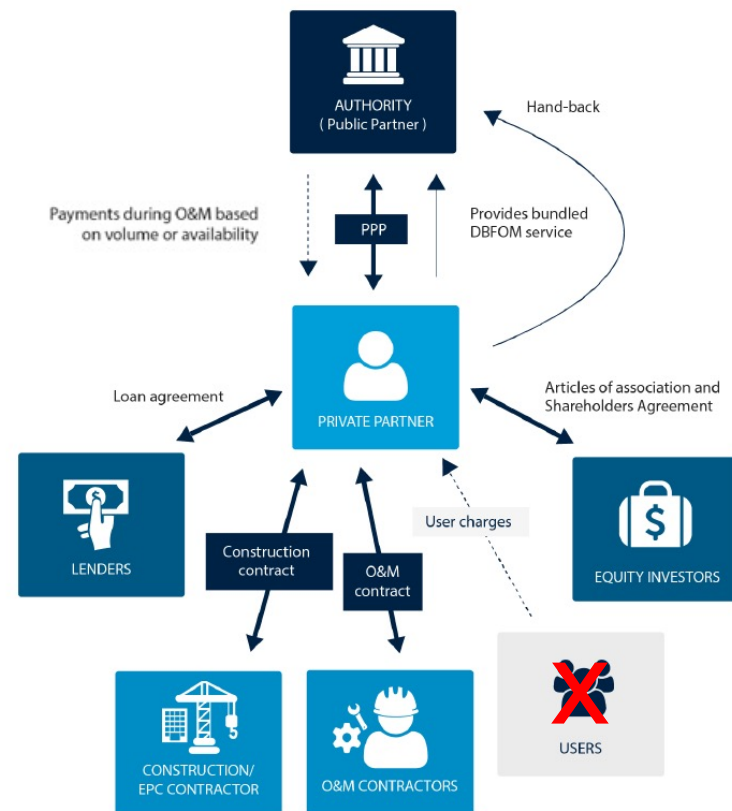


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← Service related flows ↔ Contract relationship ←····· Cash related flows

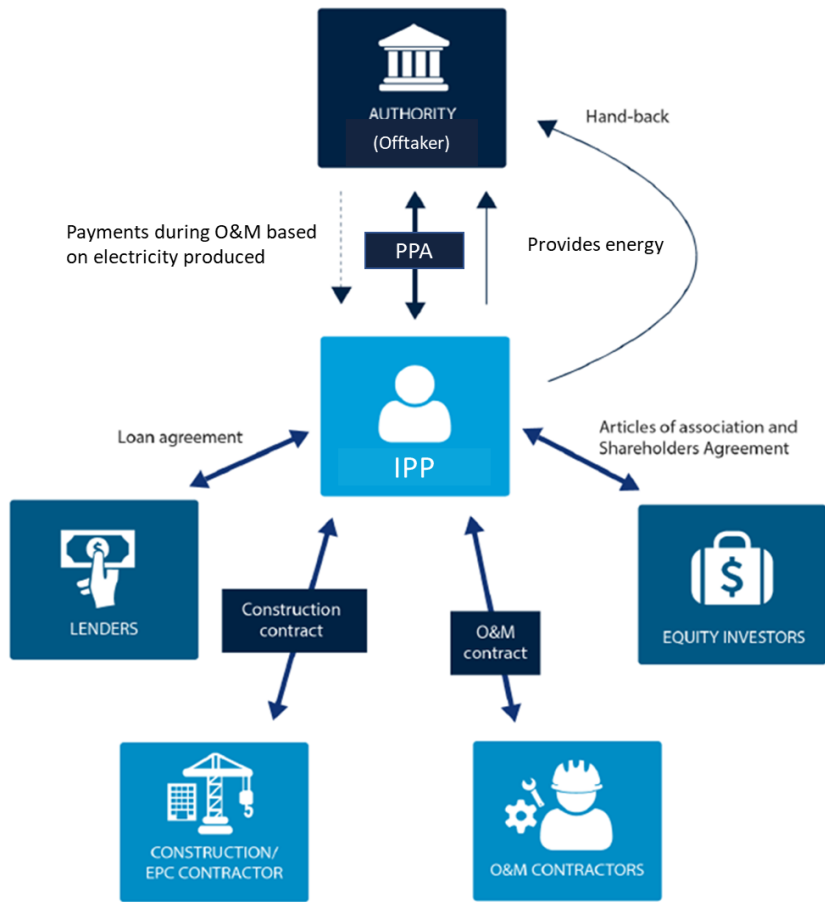
Note: O&M= operations and maintenance.

FIGURE 1.6: Basic Scheme of a DBFOM Structure (government-pays)



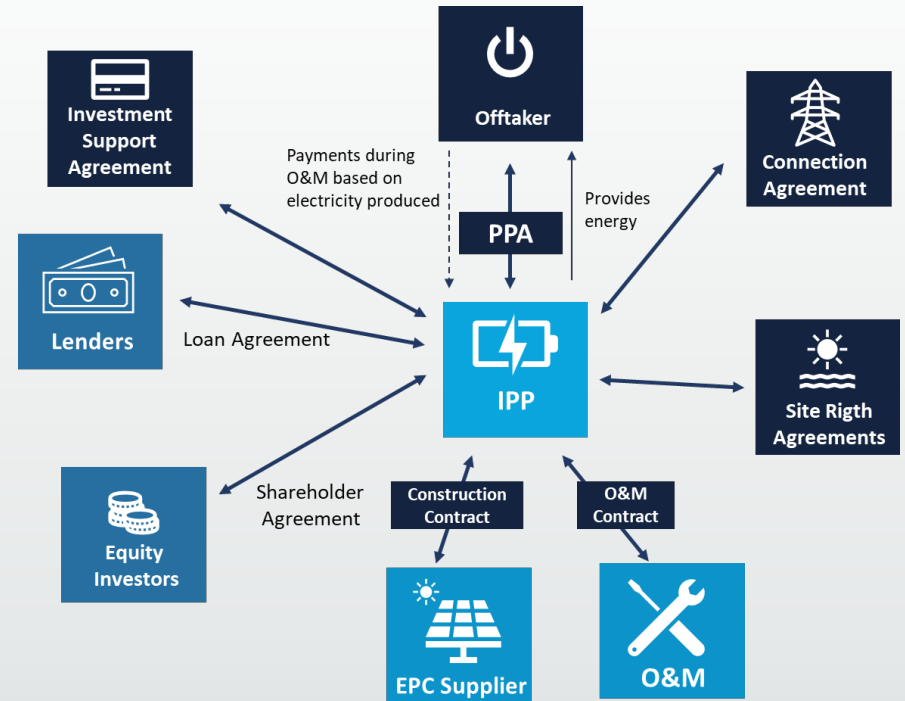
← Service related flows ↔ Contract relationship ←····· Cash related flows

Note: DBFOM= Design, Build, Finance, Operate and Maintain; EPC= Engineering, Procurement and Construction; O&M= operation and maintenance; PPP= public-private partnership.



← Service related flows ←→ Contract relationship ←---- Cash related flows

Azerishiq OJSC, Baku electrical grid operator

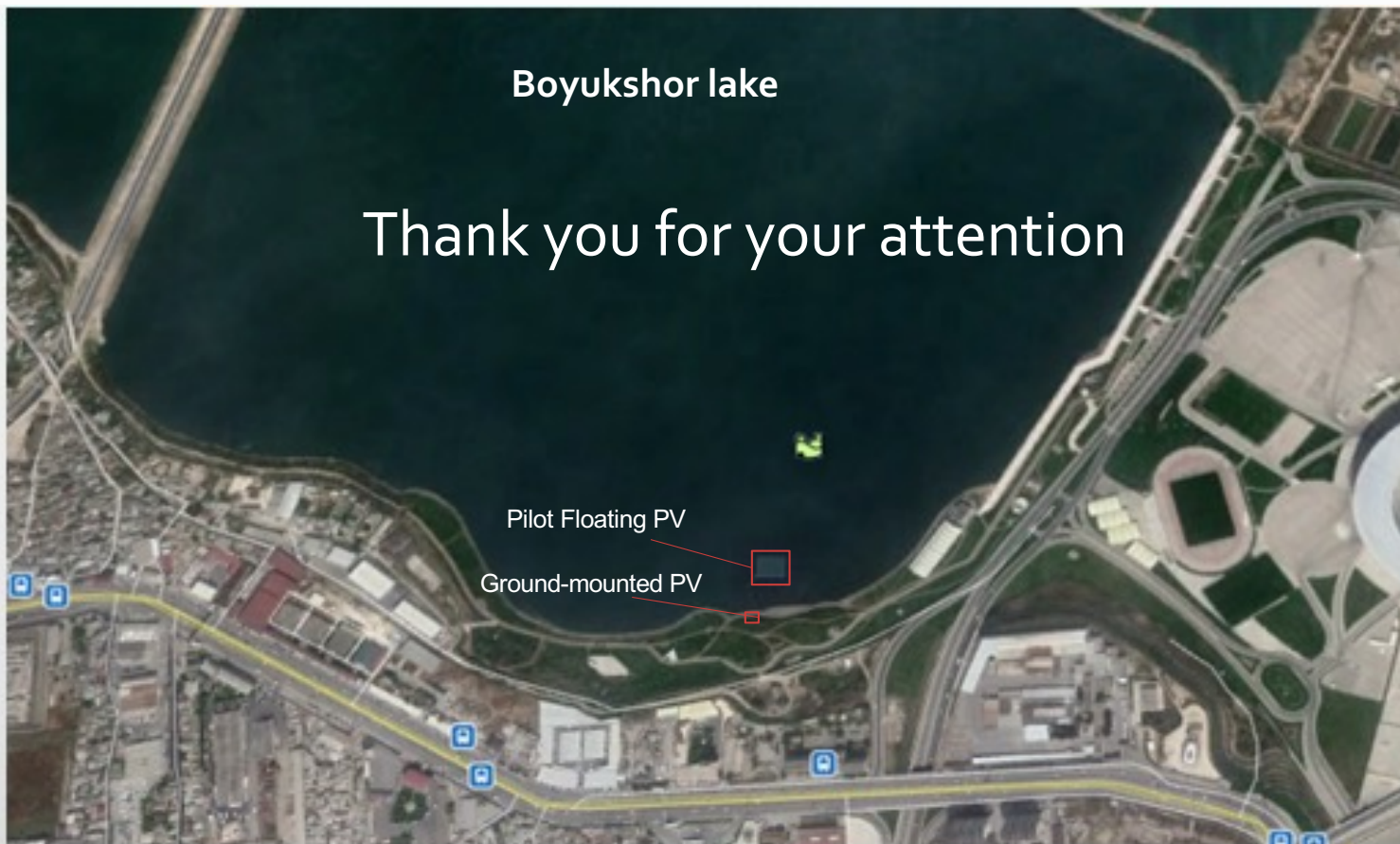


Risks

- **Currency risk**
- **Off-taker creditworthiness**
- **Curtailment risk**
- **Poor technical specifications and permits**
- **Funding risk**
- **Legal change risk**
- **Political risk**

Process

- **Pre-bidding market sounding**
- **Procurement framework:**
 - Ceiling tariff,
 - Competitive bidding capacity limits,
 - Tariff indexation,
 - Qualification criteria and
 - Tender documents.
- **Clear bidding mechanisms**
- **Contractual arrangements and supporting mechanisms**



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