



# Renewable Generation Procurement Guidelines for Jamaica

Workshop #3

**Detailed design**

September 2022



**PSR**

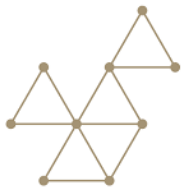
**MRC**





# Renewable Generation Procurement Guidelines for Jamaica

Detailed design



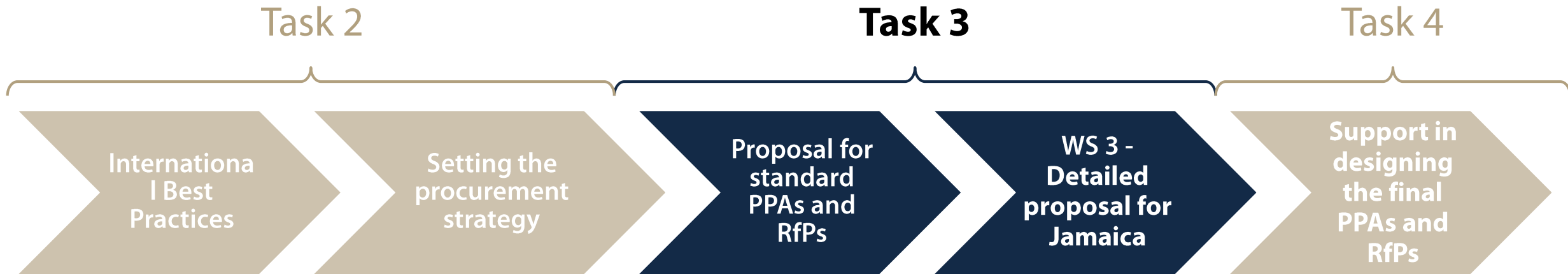
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## Task 3 objectives & focus

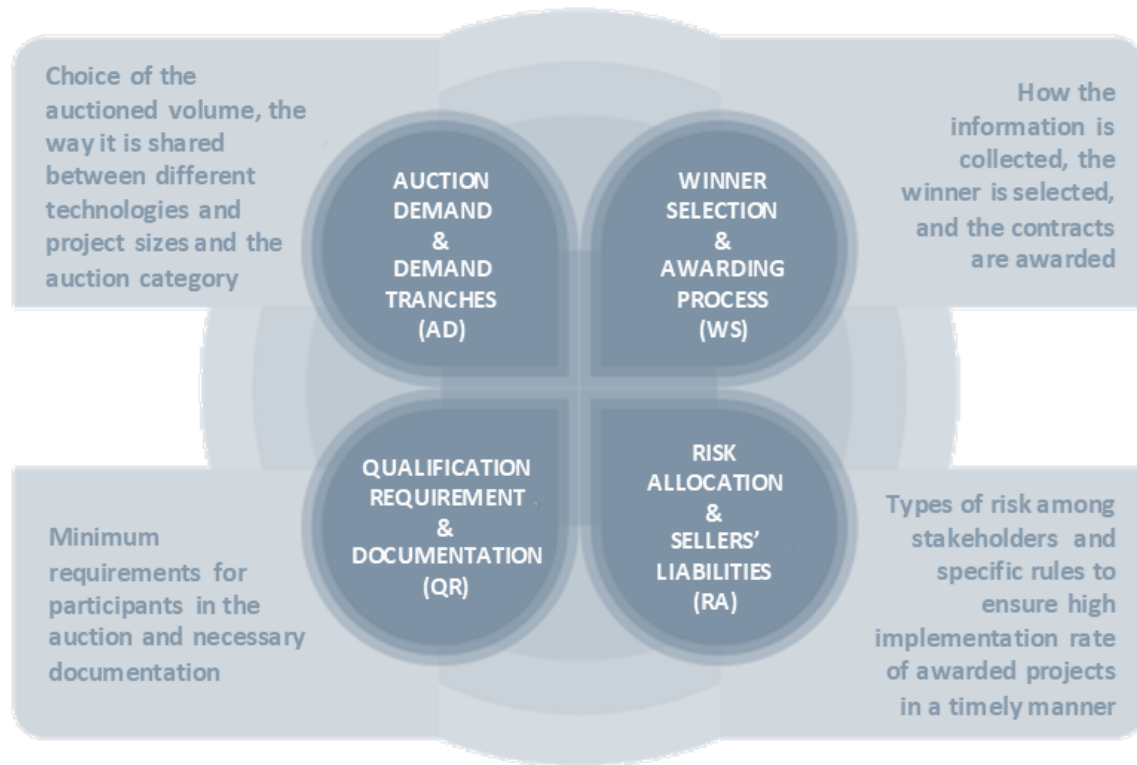
► Core flow of activities:



► Output: draft of best practice contract template and RfP documents.

- i. Legal framework guidelines and instruments
- ii. Generation tariff calculation
- iii. Expression of Interest, Request for Proposal and Power Purchase Agreement
- iv. Guidelines for the procurement of power

# Methodology and general structure



**Auction timeline and qualification**

**Products and Demand**

**Risk allocation**

**Winner selection**

IRENA, 2019

# How are RE auctions in Jamaica today?

## Jamaica RE auctions' current design is technology neutral

- ▶ In technology neutral auctions, a standardized product is delivered, such as energy.
- ▶ Different technologies compete against each other, which enables the deployment of the least-cost technologies.

## Jamaican auctions traditionally offer two products: energy and firm capacity

- ▶ The firm capacity product is basically an availability mechanism tailored to 100% dispatchable thermal power plants – not suitable for renewables
- ▶ This has led for the demand for firm capacity in RE auction to be repeatedly not met

# Products and their features

## Jamaica currently implements 2 products with different features

- ▶ The energy product is usually not enough to meet the system needs, so that it is important to have a product that provides reliability to the system: firmness product.



# Definition of firmness

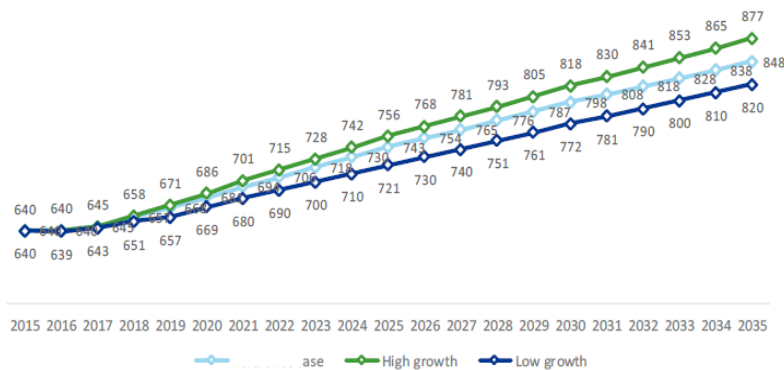
## What type of firmness does Jamaica need?

- ▶ The firmness product should be aligned with the needs of the system, providing some kind of reliability at the most critical hours of each day/year

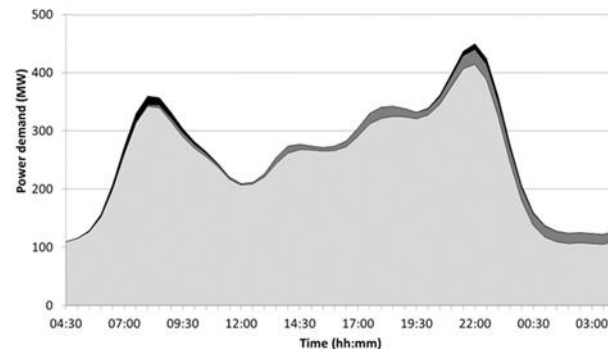
## How can a renewable technology provide firmness?

- ▶ Some technologies are able to control their own generation and, therefore, ensure that energy will be delivered at a specific times of the day. But there is no renewable technology that is **totally** flexible at all hours throughout the year (as a conventional technology is)

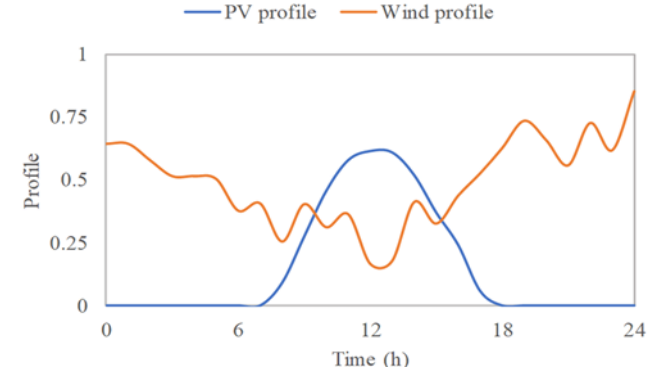
### Evolution of peak demand



### Hourly demand profile



### Renewables generation profile



# Goal of the study

## How to design a RE auction that is technology neutral, and procures both energy and firmness?

- ▶ The main goal of the Consultants was to find a design that would combine those 2 characteristics, and therefore we need a firmness product that renewable technologies are able to offer.

### Currently:

Two separate products, each with different rules. Seller must choose one **or** the other.



**Energy only**



**Firm capacity +  
Associated energy**

### Proposed:

Each bidder must make an offer for energy **and** firm capacity.



**Energy product**

**Quantity:** expected GWh per year  
**Price:** \$/MWh  
**Indexation:** % indexed to CPI



**Firmness product**

**Quantity:** MW + hours/day  
**Price:** \$/kW.month  
**Indexation:** % indexed to CPI



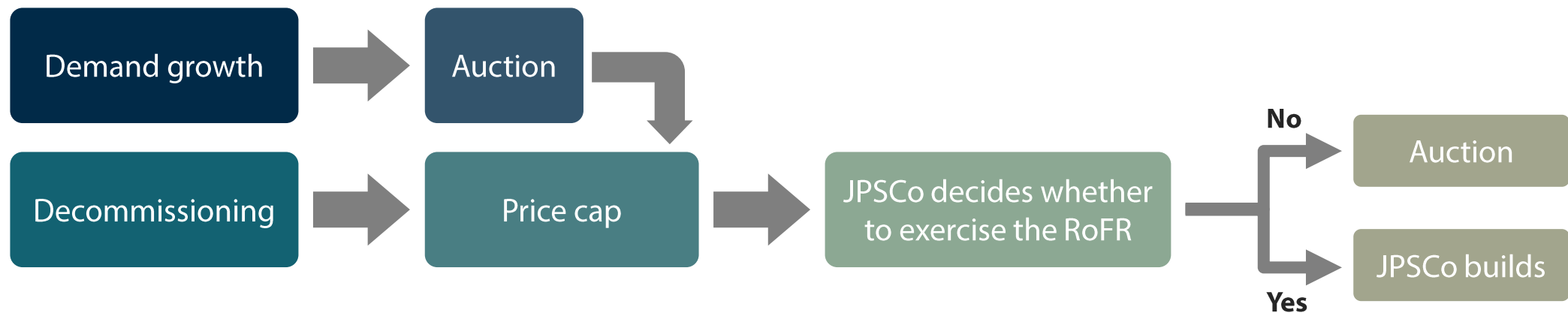
## How is the auction demand defined?

### The Integrated Resource Plan remains the main driver for auction demand

- ▶ The definition of the auction demand remains linked to the expansion planning. However, it is necessary to differentiate the total amount into a demand for energy and another for firmness.

### How does the Right of First Refusal (RoFR) impact?

- ▶ The amount to be replaced **must be separated into the two products** (energy and firmness).
- ▶ JPS's RoFR is **conditional** to cost competitiveness, which is driven by the auction result.
- ▶ The non fulfilled capacity of the RoFR is added to the demand of the next auction.



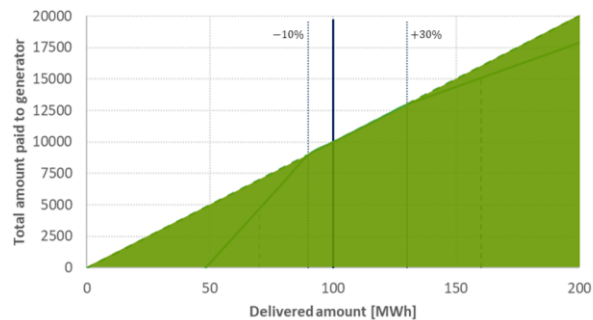
# Risk allocation

## Who is responsible for the risks?

- ▶ Developers might be subject to risk, but they should not be subject to uncertainties
- ▶ The risk allocated should be clearly communicated, transparent, fully quantifiable, and enforced

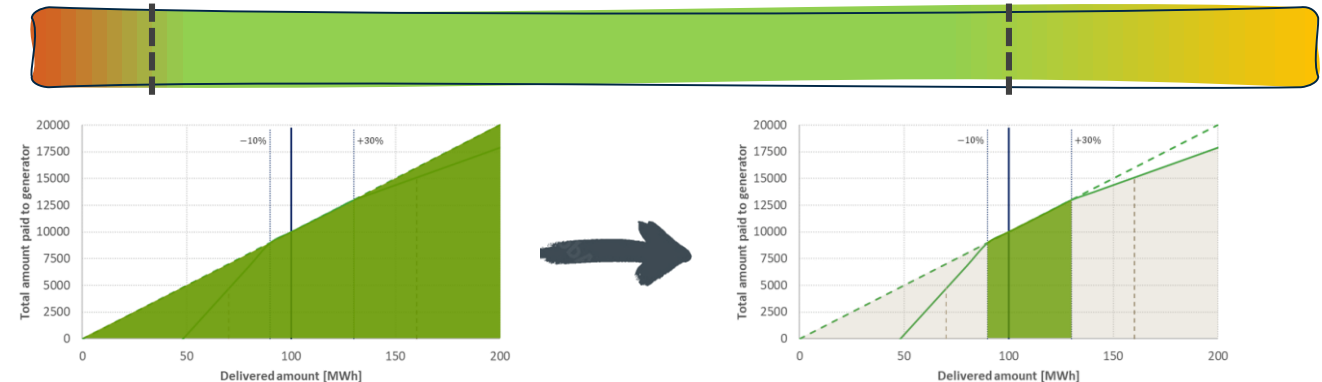
### Remuneration

Typically, remuneration is proportional to the generation



### Penalization for substantial deviations

Penalization ← 90% → 130% → Lower price



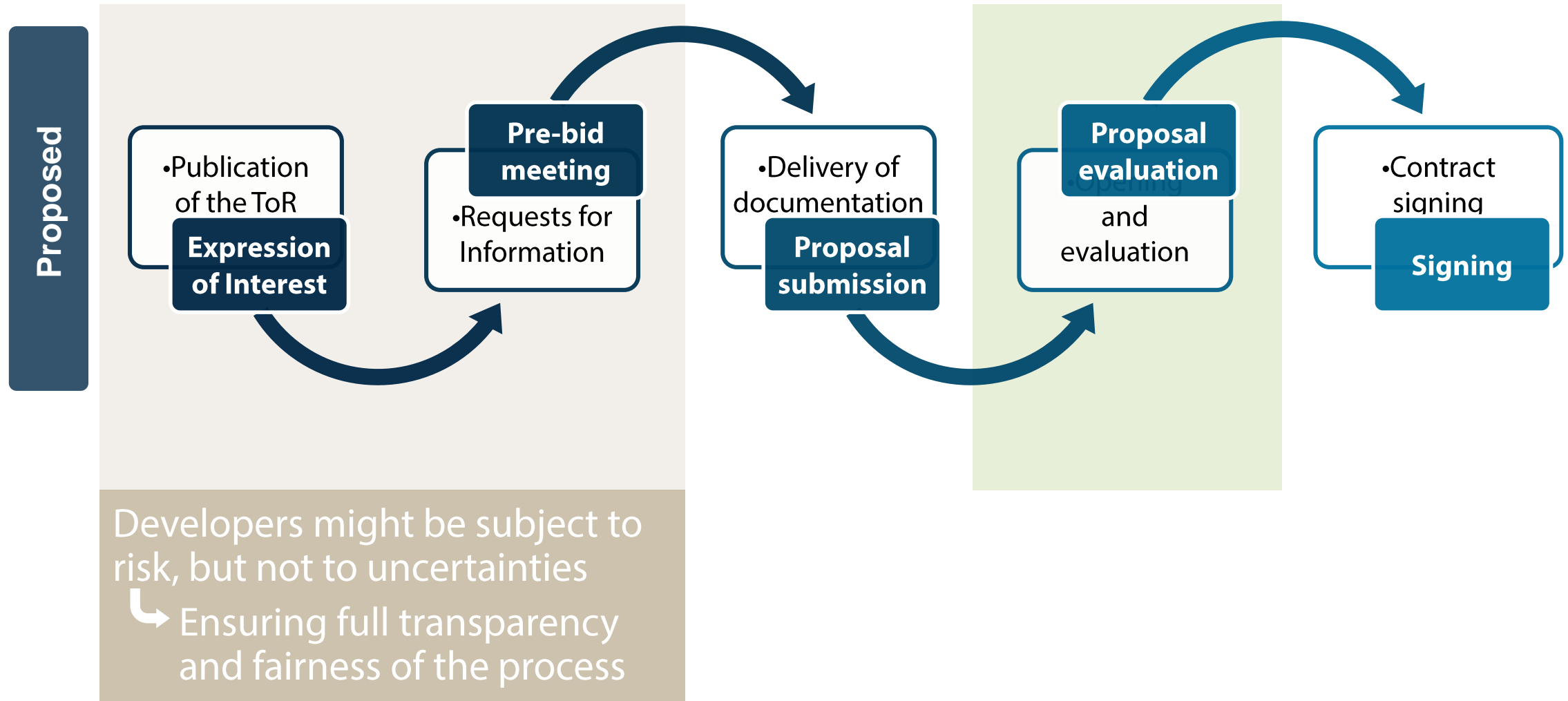
### Curtailment

Limited protection for curtailment risk:

No risk to generator ← Limit → Seller risk



# General auction timeline



# Winner selection

## Reception of bids

- The auctioneer receives the bids and calculates the net present value (NPV) for each

## Bids grouping

- The auctioneer selects the best “bid groups” and calculates the unmet demand for each group

## Evaluation of groups

- The auctioneer calculates the total cost of each group

## Winner selection

# Winner selection - Example

## How to choose the “cheapest offer” with multiple products?

### Auction demand

- 1,100 MWh of energy at a max price of 100 \$/MWh
- 50 MWh/d of firm capacity at a max price of 10 \$/kW.mo

### Bids

- **Bid E:** 400 MWh at 50 \$/MWh (energy only)
- **Bid L:** 30 MWh/d at 6 \$/kW.mo + 540 MWh at 80 \$/MWh
- **Bid S:** 30 MWh/d at 6 \$/kW.mo + 360 MWh at 90 \$/MWh

### Option 1: Generators E and L

### Option 2: Generators L and S

### Option 3: Generators E, L and S

OBS: For simplicity, all firm capacity offers and firm capacity demand are assumed to be defined at 1 h/day

# Winner selection - Example

Each “group” of bids is assessed individually...

## Auction demand

- 1,100 MWh of energy at a max price of 100 \$/MWh
- 50 MWh/d of firm capacity at a max price of 10 \$/kW.mo

## Bids

- **Bid E:** 400 MWh at 50 \$/MWh (energy only)
- **Bid L:** 30 MWh/d at 6 \$/kW.mo + 540 MWh at 80 \$/MWh
- **Bid S:** 30 MWh/d at 6 \$/kW.mo + 360 MWh at 90 \$/MWh

## Option 2: Generators L and S

**Bid L =**

**Bid S =**

**Missing energy =**

**Missing capacity =**

# Winner selection - Example

...And the winners are those that belong to the least-cost "group"

## Auction demand

- 1,100 MWh of energy at a max price of 100 \$/MWh
- 50 MWh/d of firm capacity at a max price of 10 \$/kW.mo

## Bids

- **Bid E:** 400 MWh at 50 \$/MWh (energy only)
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- **Bid S:** 30 MWh/d at 6 \$/kW.mo + 360 MWh at 90 \$/MWh

## Option 1: Generators E and L

**269,200**

## Option 2: Generators L and S

**275,600**

## Option 3: Generators E, L and S

**275,600**

# Winner selection

## Reception of bids

•The auctioneer receives the bids and calculates the net present value (NPV) for each

## Bids grouping

•The auctioneer selects the best “bid groups” and calculates the unmet demand for each group

## Evaluation of groups

•The auctioneer calculates the total cost of each group

## Winner selection

•The bids included in the group with the lowest total cost are elected the winners



# What else was included in the proposed conceptual design?

- Revision of the auction timeline
- Simplification of the qualification process
- Detailed design of the firmness product
- Delivery incentives and penalizations
- Contract renewal general terms
- Analysis of auction platform

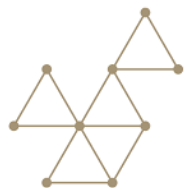


- The conceptual design has been extensively discussed with Jamaican authorities and validated
- The current and following phases will define key elements and attributes within this basic framework



# Renewable Generation Procurement Guidelines for Jamaica

Roadmap and maximum price



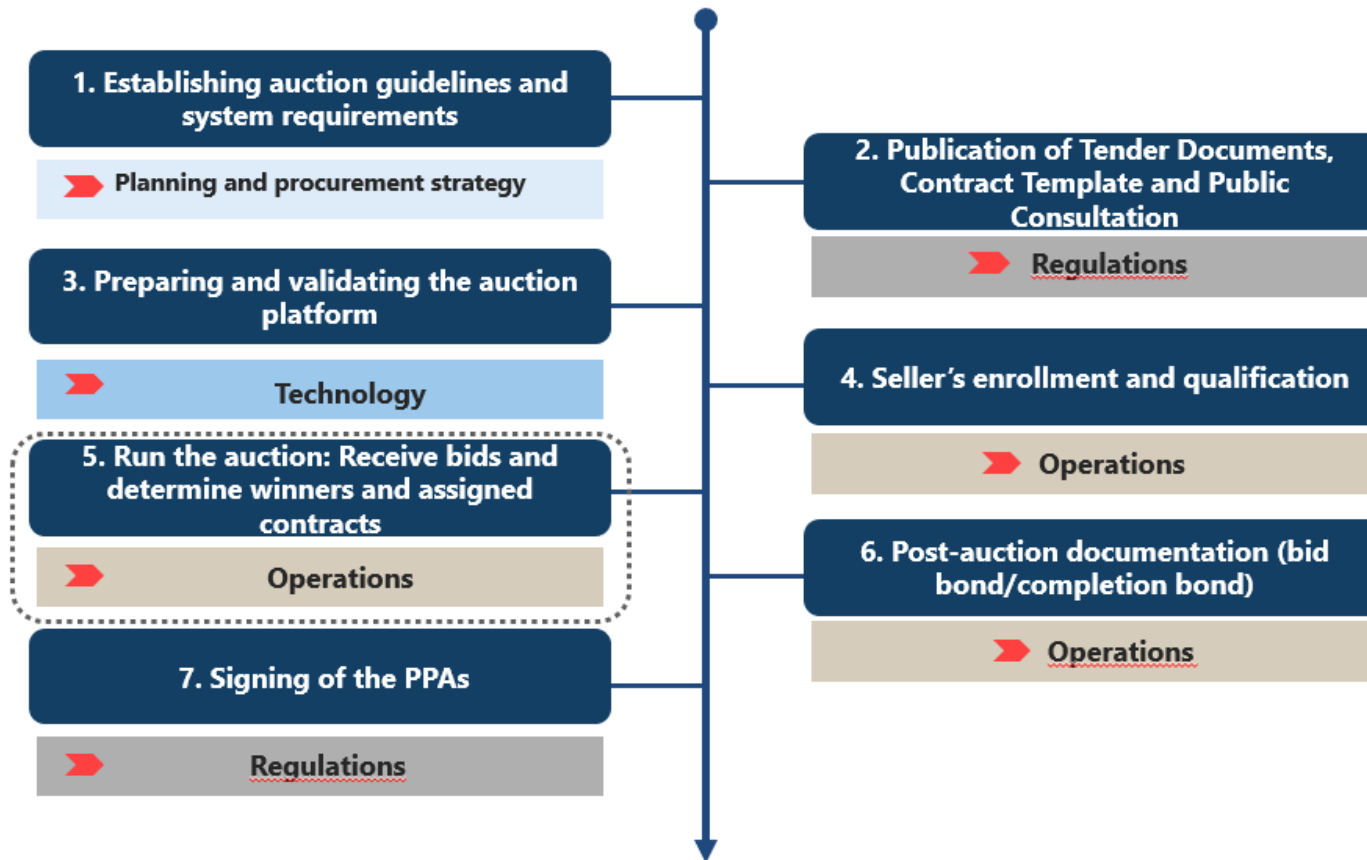
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# Stages of the auctions and responsibilities

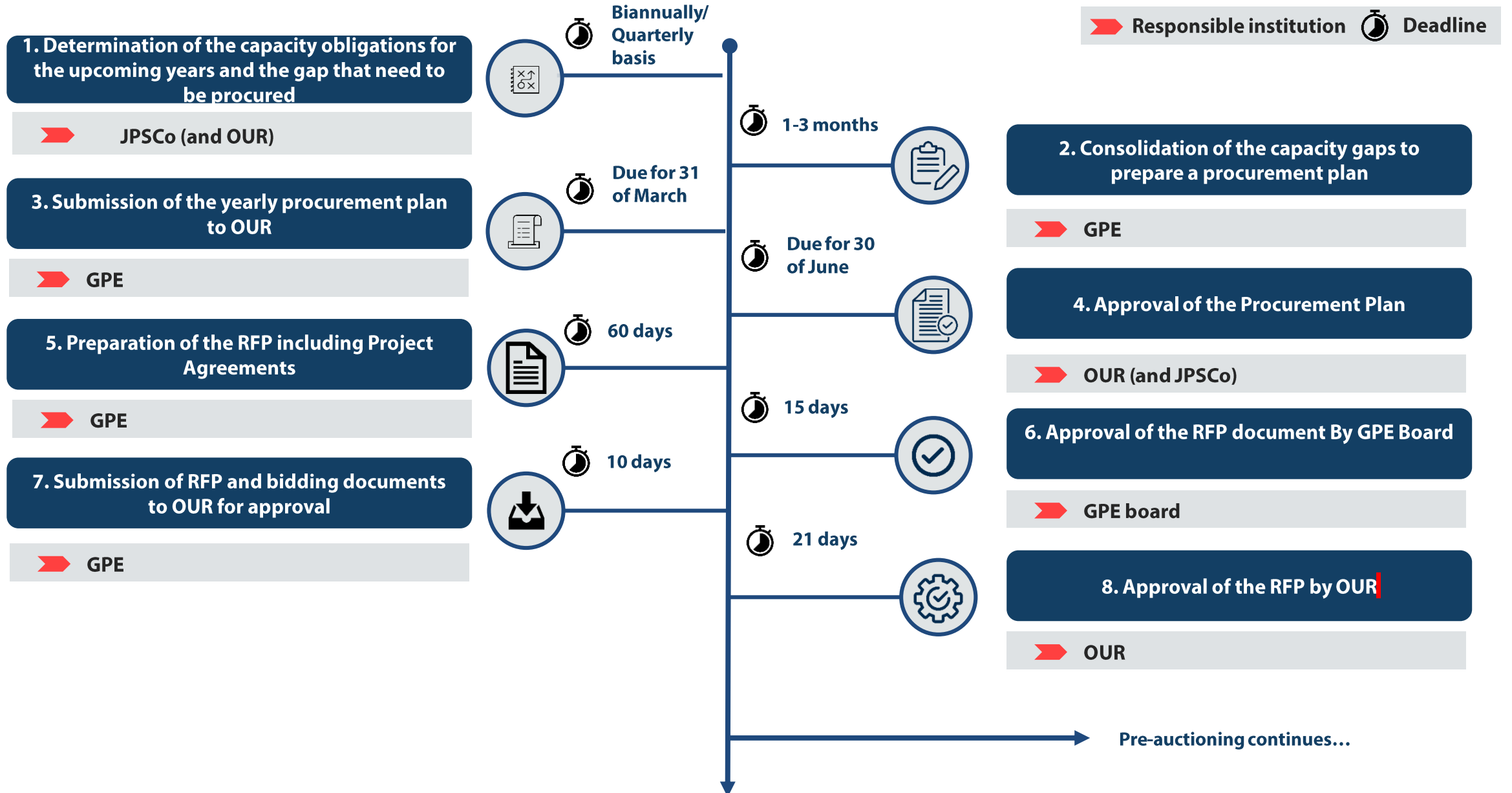
Overview of the auction structure inspired by the steps involved in the reviewed international experiences



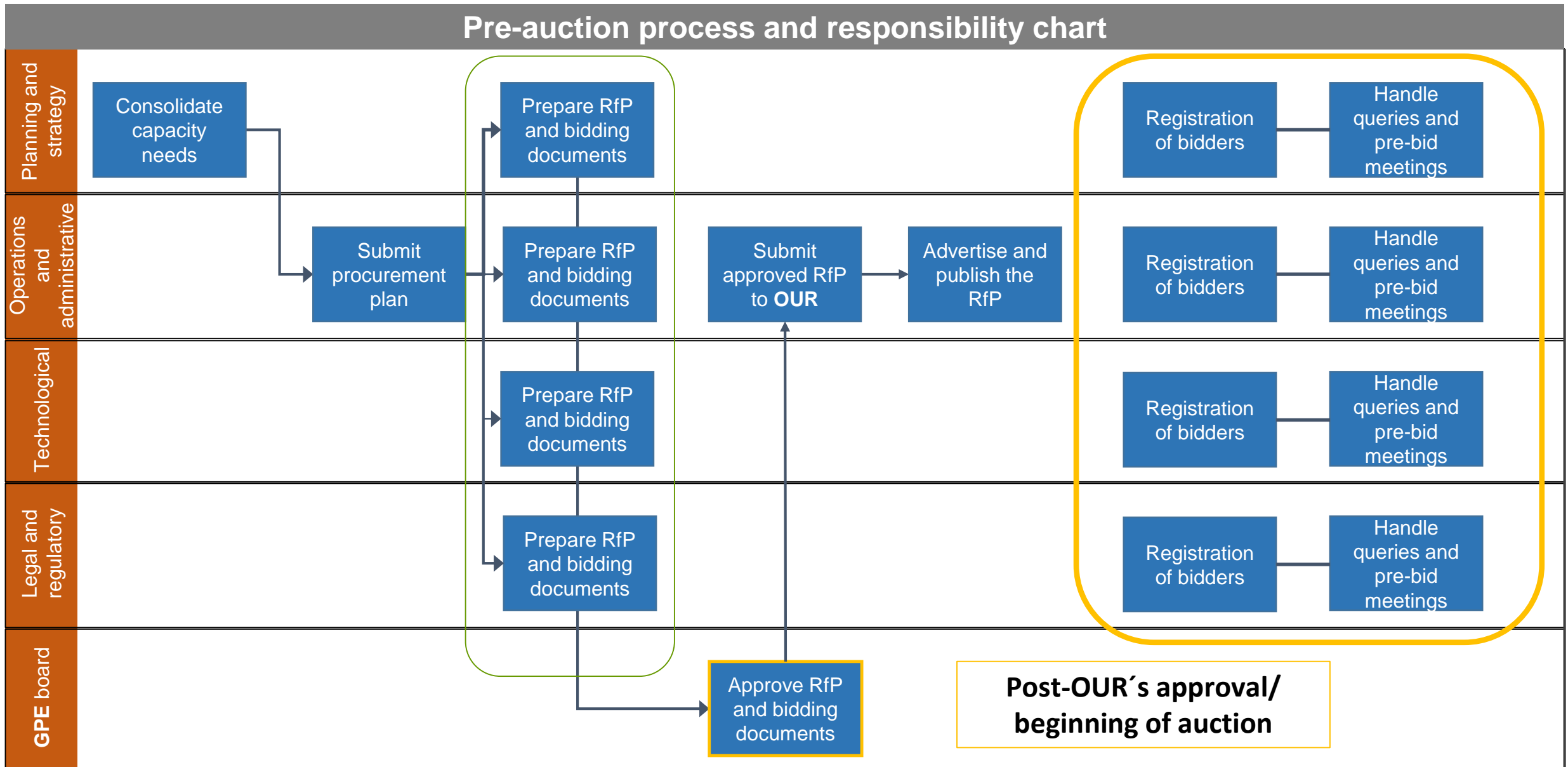
Stages Description
1. GPE Strategy team interacting with parties responsible for the decision-making (Ministry, system planner, regulator, etc.) in order to consolidate an "auction guidelines" document.
2. GPE Regulations team should work on consolidating a more thorough tender documentation, along with a contract template that shows to potential bidders the exact contract they would be signing upon winning the auction.
3. Ensure that the platform is available, working as intended, and capable of handling enough traffic to accommodate the various bidders participating. Making sure that the auction platform is well understood by all players.
4. Qualification step where the documentation submitted by the bidders is analyzed (and some bidders may be rejected, implying they cannot participate in the auction due to incomplete or incorrect information)
5. Relatively easy task, as many of the individual steps can be automated. Nonetheless, it is important to have an auctioneer overseeing the process and ready to jump in in case some unexpected behaviour is noticed.
6. Bid bond must be given back to bidders that didn't win the auction, and for those that did win this bid bond ought to be substituted by a "completion bond". Plus, submission of additional registration documentation.
7. (i) official notice of the auction finalization and awarding of contracts, (ii) signing of the PPAs involving the sellers and the buyers, and (iii) issuing to seller's official documents stating that they have won the auction and authorizing them to move forward with the construction process

# Key processes carried out in preparation for an auction

## Before the auction

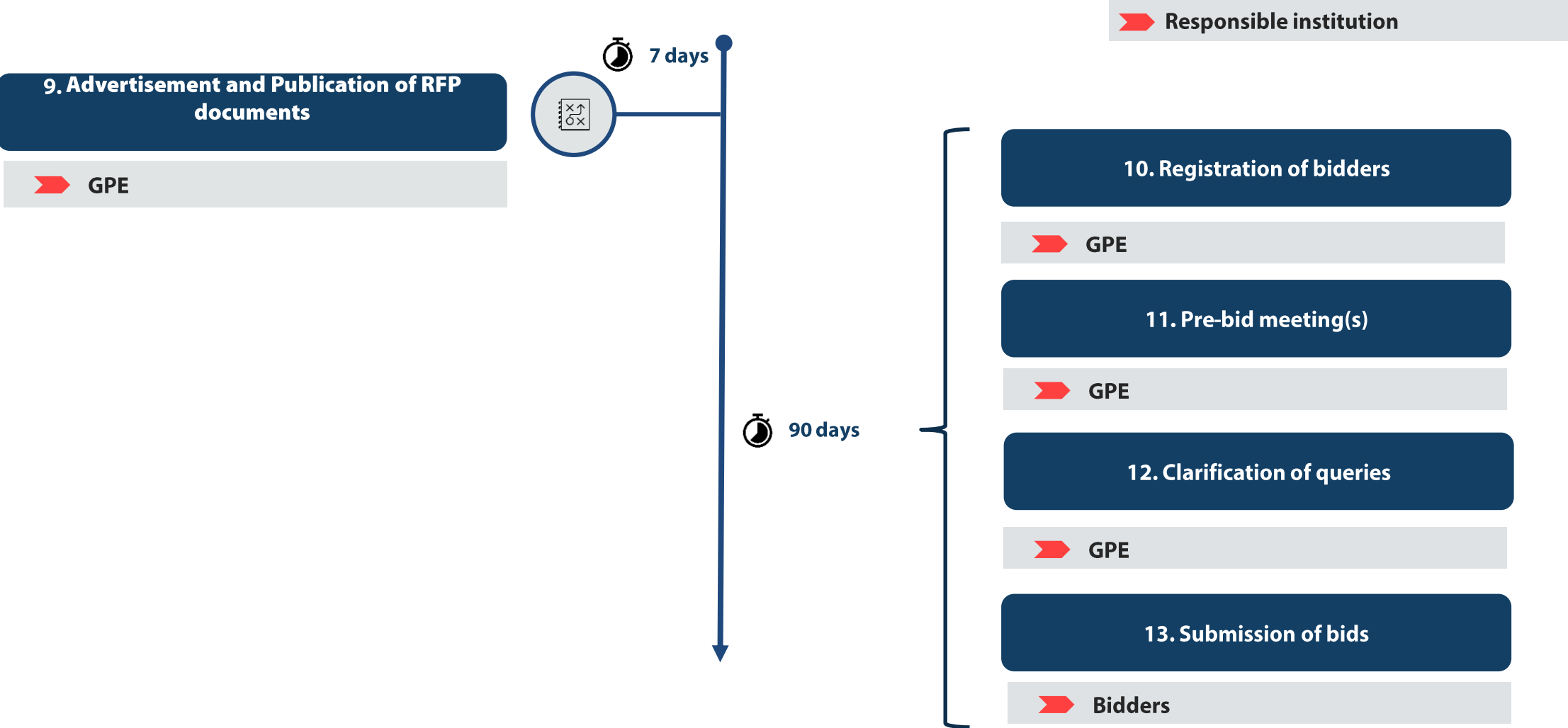


# GPE Responsibility Chart



# Key processes carried out in preparation for an auction

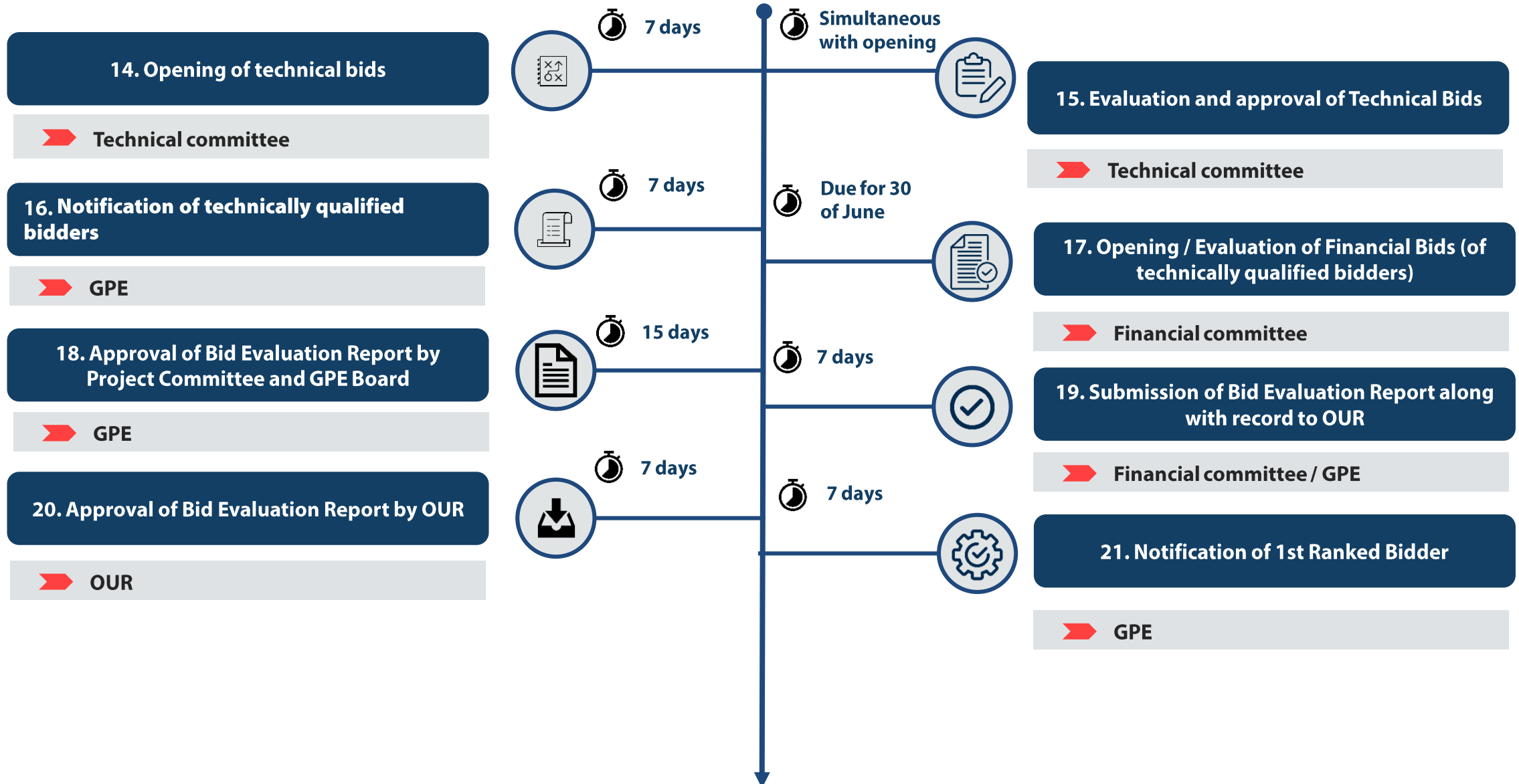
## Before the auction



# Key processes carried out in preparation for an auction

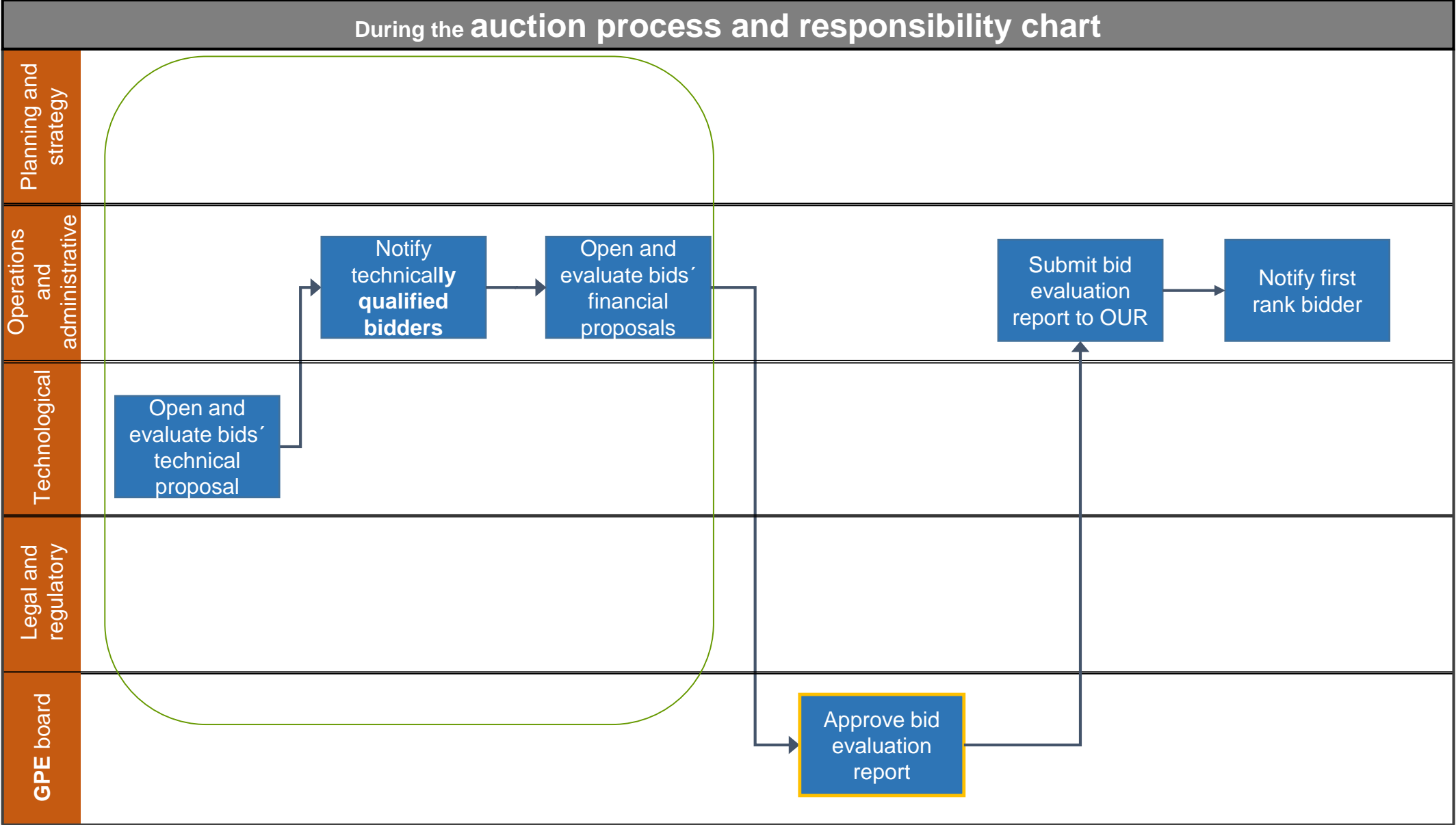
## During the auction

➤ Responsible institution ⌚ Deadline



# GPE Responsibility Chart

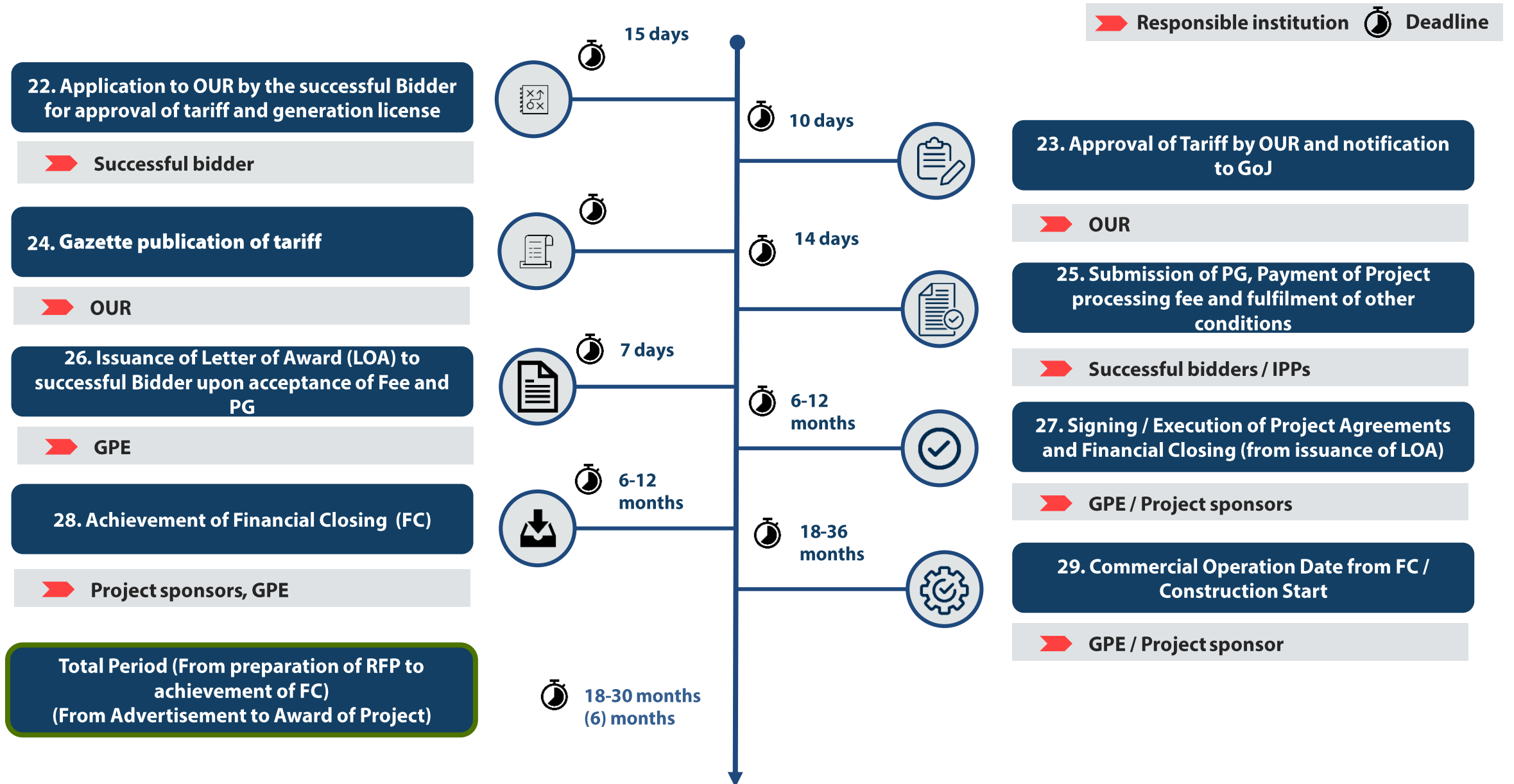
During the **auction process and responsibility chart**



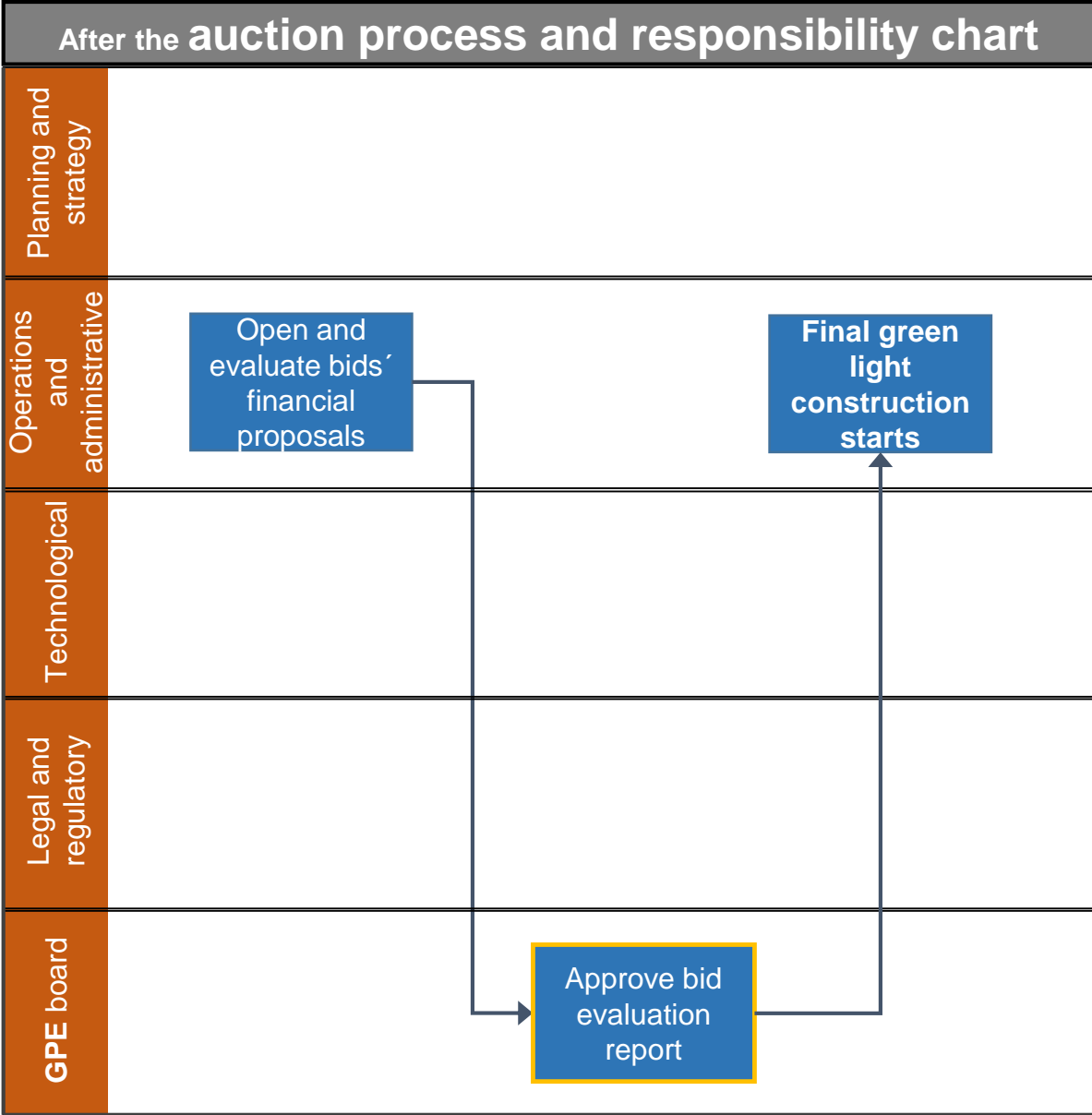


# Key processes carried out in preparation for an auction

## After the auction



# GPE Responsibility Chart



# Determination of capacity obligations

Before the auction step

**1. Determination of the capacity obligations for the upcoming years and the gap that need to be procured**



 JPSCo (and OUR)

- ▶ The JPSCo should determine the capacity need of the country for the upcoming year.
- ▶ The amount declared by JPSCo, as well as the total demand, are confidential, even during the auction.
- ▶ For these volumes, it is however important to define the interconnection points and the maximum capacity at interconnection point (MW) and by region/area, which are made available for the Auction. It is recommended to reserve some capacity at interconnection points for future auction rounds

- ▶ **The IRP suggests pathways to reach the target for renewable source development and the GHG emission reduction established for Jamaica. Following these pathways, the open call for tender could accept proposals for product quantities considering the generation mix is foreseen to be at 34% by 2030 and 50% by 2037.**



Technology	MW 2030	MW 2050
PV Solar	210	510
Wind	280	590
Mini hydro	42	58
<b>Total</b>	<b>532</b>	<b>1,157</b>
<b>% / total installed capacity</b>	<b>34%</b>	<b>50%</b>

# Maximum prices

## Solar PV technology costs.

- ▶ This table details the maximum prices on which the bidder must apply the discount factor for the indicated technology.



Technology	Maximum Prices (USD/MWh)
Solar PV	73.8

## Assumptions – Solar Photovoltaic

### ▶ *General assumptions for solar PV projects*

Input	Value	Unit	Source
Location	All Locations	-	No location indicated (neutral).
Power capacity	20,000	kW	Arbitrary value
Capacity Factor	25%	%	Average value for Jamaica.

### ▶ *Cost assumptions for solar PV projects*

Input	Value	Unit	Source
Unit Cost – Solar Panels (CAPEX)	900	\$/ kW	International Energy Agency database – Project specific for Caribbean area.
Variable OPEX	10	\$/ MWh	According to the figures reported by feasibility studies in Jamaica and the IEA
Other initial costs	1 + 1	%	Bid bond and completion bond 1% + 1% of the investment cost as in TASK 2 Report

# Maximum prices

## Wind technology costs.

- ▶ This table details the maximum prices on which the bidder must apply the discount factor for the indicated technology.



Technology	Maximum Prices (USD/MWh)
Wind	97.9

### Assumptions – Wind

- ▶ **General assumptions for wind projects**

Input	Value	Unit	Source
Location	All Locations	-	Wind farms will be built where there are better conditions. It will therefore be considered the optimal case for the project.
Power capacity	20,000	kW	Arbitrary value
Capacity Factor	34.4%	%	Average value for Jamaica.

- ▶ **Cost assumptions for wind projects**

Input	Value	Unit	Source
Unit Cost (CAPEX)	1,900	\$/ kW	International Energy Agency database – Project specific for Caribbean area.
Variable OPEX	10	\$/ MWh	According to the figures reported by feasibility studies in Jamaica.
Other initial costs	1 + 1	%	Bid bond and completion bond 1% + 1% of the investment cost as in TASK 2 Report

# Maximum prices

## Small Hydro technology costs.

- ▶ This table details the maximum prices on which the bidder must apply the discount factor for the indicated technology.



Technology	Maximum Prices (USD/MWh)
Small hydro	152.6

## Assumptions – Small Hydro

### ▶ **General assumptions for small hydro projects**

Input	Value	Unit	Source
Location	All locations	-	The mini-hydro plant could be built where the better conditions are recorded.
Power capacity	6,000	kW	Arbitrary value
Efficiency	60%	%	Mini-hydro capacity factors can range from 20 – 95%. We will use an approximate average value based on the hydro power projects developed in Jamaica from 2008 onwards.

### ▶ **Cost assumptions for small hydro projects**

Input	Value	Unit	Source
Unit Cost	6,000	\$/ kW	According to the values described in the next slide
OPEX	3%	% of Capex	According to the values described in the next slide
Other initial costs	1 + 1	%	Bid bond and completion bond 1% + 1% of the investment cost as in TASK 2 Report

# Mini-hydro costs details

- ▶ Small hydropower projects do not have the same economies of scale and can have O&M costs of between 1% and 6% but may be higher.
- ▶ Adding additional capacity to existing hydroelectric systems or existing dams that do not have a hydroelectric power plant can be significantly cheaper and can cost only USD 500/kW.

	CAPEX (USD/kW)	O&M (%/year installed capacity)	Load Factor (%)	Levelized Cost of Electricity LCOE (2010 USD/kWh)
Large Hydropower	1,050-7,650	2-2,5	25 to 90	0.02-0.19
Small Hydropower	1,300-8,000	1-4	20 to 95	0.02-0.27
Plant Update	500-1,000	1-6		0.01-0.05

CAPEX and OPEX mini-hydroelectric projects

# Financial assumptions and other assumptions 1/2

- ▶ For some technical assumptions, the following values were assumed:
  - Connection costs equal to zero. It is assumed that this cost is already included in the CAPEX of each project or it can be added as additional cost.
  - Cost of use of the network equal to zero according to the laws and regulations in place in the country or it can be added as defined by the OUR.
  - Network balance cost, other variable costs, and other fixed costs equal to zero.
  - Guarantees deposit as reported in the section above. We refer to bid bond and completion bond.
  - Generation climbing rate equal to zero for all technologies except solar photovoltaic which is -0.5%. We will assume an average capacity factor value for all projects that will represent the average generation expectation of each project.
  
- ▶ Other factors to be forecasted in relation to economic expectation are:
  - Inflation: values for Jamaica and the United States according to the Website of the International Monetary Fund (excluding 2021).
  - Percentage of operation and maintenance costs in foreign currency (US\$) equal to 100%. As reported in Task 2 Report, in terms of remuneration, the price should be established as a purely variable component (USD/MWh). Note that, even though payments are expected to be made in Jamaican dollars, it makes sense to nominate the bid price in US dollars and to define an indexation to the exchange rate in the auctioned contract in order to mitigate sellers' exposure to foreign exchange rates.
  - Increased operating and maintenance costs (O&M) equal to zero. We will assume that this figure will follow the trend of inflation. No extra cost will be considered.



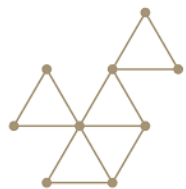
# Financial assumptions and other assumptions 2/2

- ▶ For the debt structure, capital and taxes, the following assumptions were assumed:
  - Debt x Equity ratio (*gearing*) equal to 70% according to the experience of consultants in previous projects.
  - Interest rate on loans varies greatly according to the risks of the project and the source of funding. For this simulation, we use the value of 10% according to the consultant's experience in previous projects and a feasibility study on wind project in Jamaica. We have also included the possibility to include concessional financing but, so far, it is not considered.
  - Duration of the loan may vary according to the strategy of the developer and the funder, so we use an average value of 15 years.
  - Grace period may also vary, usually this period is one year.
  - VAT 15% (Jamaica VAT)
  - Import fee of 9% (according to WB)
  - Income Tax: 30%
  - Depreciation: 20 years for photovoltaic solar, wind and mini hydro (the latter could consider a longer timeline).



# Renewable Generation Procurement Guidelines for Jamaica

Auction Documentation: EoI, RFP, PPAs

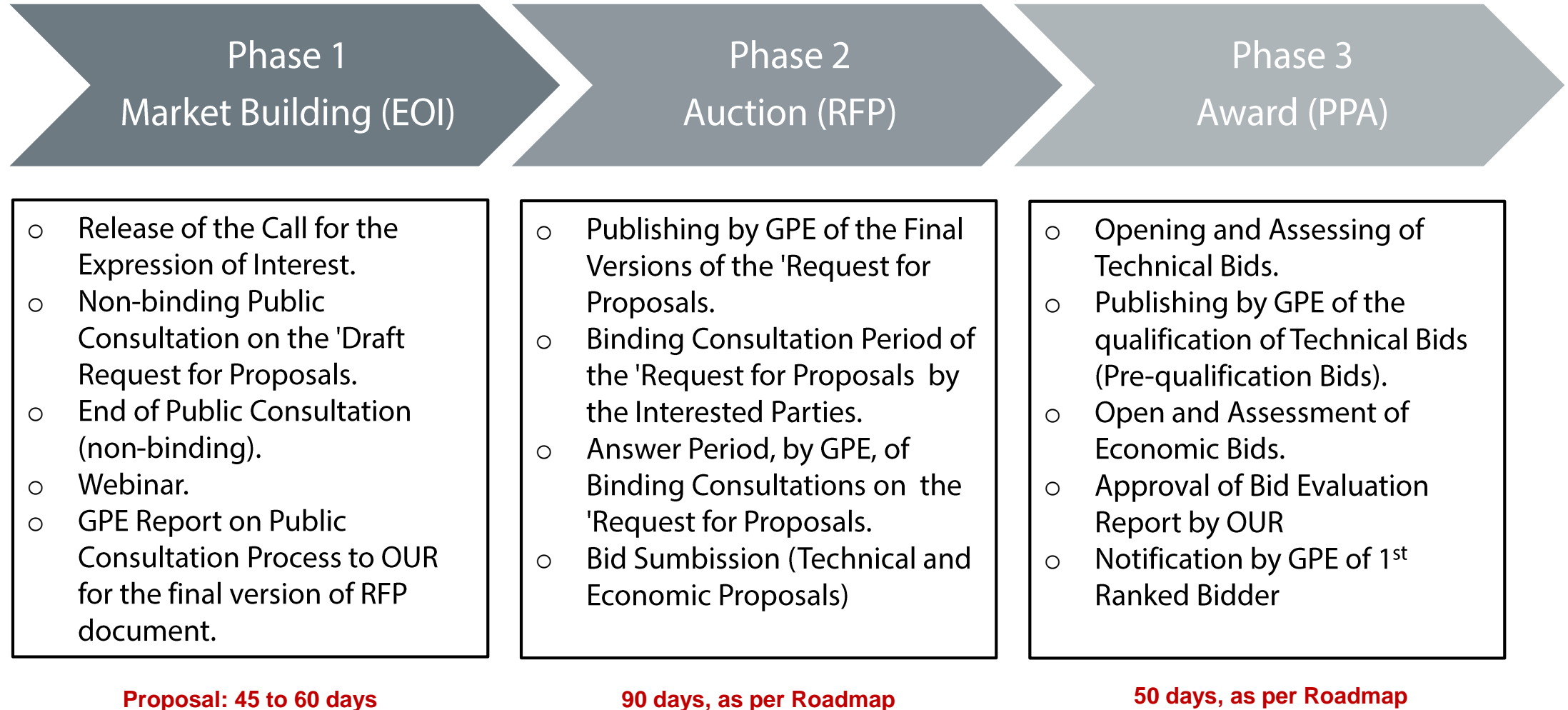


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# Auction Schedule: Summary



## Phase 1: Market Building

- Provides the bid organizers **information on the market readiness**
- **Prepares the bidders** for the auction
  - Clear **timetable** for the auction process
  - Tender **documents available** in advance for **review, questions and comments**
  - **Pre-bidding webinars** to prospective bidders and financial institutions
- Allows to make the necessary **adjustments** to the Bid package so that when it is launched, it becomes a **final non negotiable** set of documents.
- Increases **transparency** and **fairness** in the auction process

## Step 1: Expression of Interest (EOI)

- **Available to all** Project developers and investors free of charge
- **Open access** through <http://www.gpe.gov.jm> or in person in GPE HQ.
- Includes **draft versions** of the Request for Proposal (RFP) and Power Purchase Agreements for Energy and Firmness (PPAs) to expose the main terms of the Call
- Provides for a **consultation period** (or Q&A period)

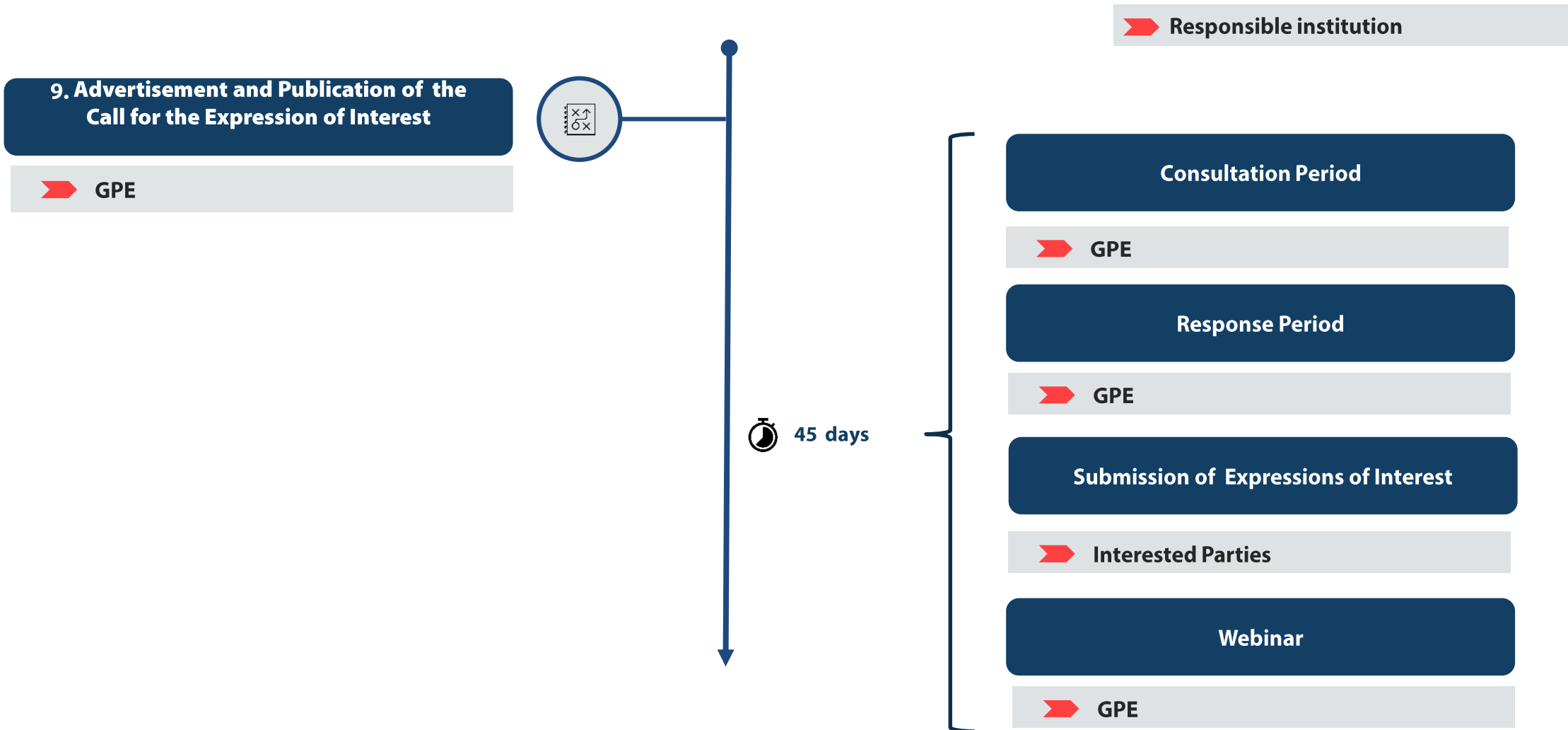
## Step 2: Webinar

- **Share the results** and **main conclusions** from the EOI phase
- **Open access** and by invitation to prospective project developers, investors but also to financial institutions.
  - Their feedback is key to **assess the bankability** of the Auction process
- Methodology: it is suggested to split **webinars** into two rooms after the introductory session to address different interests:
  - Room 1: **Project developers**
  - Room 2: **Financial institutions**



# Phase 1: Proposed Roadmap for Market Building

## Before the Auction



➤ **Adequacy of timeline to be discussed with Stakeholders during or after the Workshop**

## Phase 2: Auction

- Key Documents
  - Request for Proposal (**RFP**)
  - Power Purchase Agreement (**PPA**) for Energy and Firmness Products
- RFP provides
  - The **technical, economic and legal requirements** that will govern the Project development and operation throughout its life
  - A framework where **risks are accounted** for
  - Conditions to **secure bankability** of the Projects
  - Key annex: non-negotiable PPAs



## Auction Process Handling|Communication Mechanism

- Utilize the host of GPE's website (<http://www.gpe.gov.jm>) or a platform to handle the Auction.
- The website would be used to:
  - **Register** as Interested Party in the RFP,
  - Access the **Tender documentation** in fillable and downloadable format to submit the proposals.
  - Download Form for **Queries and/or clarifications to the RFP and/or PPAs** (Form in Annex 6 of RFP), which then shall be sent to GPE via email.
  - Post **Clarifying Circular Letter/s**, which will be incorporated as a binding part of the RFP and/or PPA.

# Structure of the Request for Proposal (RFP)

The **main body** establishes:

- The **guidelines** of the Auction and how it will be carried out.
- The **Auction Demand** for each **Product**.
- The **Maximum Prices** by **Product**.
- Bid participants - **authorized and not authorized** individuals or legal entities.
- The **Proposal** and **Project Guarantees**, and the permitted financial instruments.
- Submission of Bids: **Technical Proposal** and **Economic Proposal** of the Project.
- The **rejection** of Technical and/or Economic Offers.
- The technical and economic Proposal **evaluation mechanisms**.
- The process for the Proposal **selection and award**.
- The process in case of **absence** of Bidders.
- The process for the **subscription of the PPA** – Precedent conditions met for its signature.
- **Confidentiality** and handling of Auction information.
- **Payment priority. Dispatch Priority. Treatment for curtailment**

# Structure of the Request for Proposal (RFP)

## Annexes:

- ANNEX 1: Open Call for Tender Schedule
- ANNEX 2: Project Technical Proposal Form
- ANNEX 3: Regions | Interconnection Points | Maximum Capacity at Interconnection Point | Location Specific parameters: Soft and Hard Constraints
- ANNEX 4: Project Economic Proposal Form
- ANNEX 5: Renewable Power Purchase Agreement (PPA)
- ANNEX 6: Consultations and/or Clarifications Form
- ANNEX 7: Bid Proposal Structure Presentation

# Auction Demand and Maximum Prices

## Auction Demand by Product, as defined in the IRP

and to be contracted by GPE



PRODUCT	DEMAND
Energy Product	XX (GWh/year)
Firmness Product	XX MW * X h/d = X MW * h/d

PRODUCT	MAXIMUM PRICE
Energy Product	XX US\$ (MWh)
Firmness Product	XX US\$ / Kw.month (h/d)



## Maximum Price by Product, as defined in the IRP

- Bidder will apply a competitive discount to the Max Price in its Economic Proposal
- Bidder shall define the percentage of the Offered Price which will be indexed by the US CPI
- Price paid in Jamaican Dollars, as updated at the applicable US\$ exchange rate

# Bid Participants



**Jamaican or foreign individuals, as well as legal entities** incorporated under the laws of Jamaica or abroad



**Foreign companies**, whether it is a new company or a subsidiary of a foreign company, must be registered or incorporated under the Laws of the Jamaica before the signing the PPA.



Interested Party (IP) **unable to participate:**

- IP unable to enter into contracts according to Jamaican legislation
- IP who are disqualified by judicial conviction in Jamaica or abroad
- Public law persons acting as such

# Types of guarantees









## Guarantee of Proposal or Bid Bond:



## Guarantee Project or Performance Bond:

- ✓ Fundamental tool to secure the performance of ALL obligations of Bidders
- ✓ Adds seriousness to the participation in the Auction throughout the process.
- ✓ Constituted to the equivalent of 10 US\$ / kW of the offered capacity.
- ✓ Non-Compliance with the constitution of the Bonds will cause rejection of the Bid.
- ✓ The financial instruments of the guarantees are provided in Section 10 of the RFP document.

# Technical Proposal (Envelope A)

 Legal Requirements 	<ul style="list-style-type: none"><li>▪ Organization chart of the Economic Group of which it is part;</li><li>▪ Constitutive act or legal statutory,</li><li>▪ Commitment to form a consortium, where appropriate, by public or private instrument;</li><li>▪ Foreign firm, must have legal representation in Jamaica,</li><li>▪ Certificate of Non-Debtor - Tax Enforcement Code</li></ul>
 Economic and Financial Requirements 	<ul style="list-style-type: none"><li>▪ Financial statements of the last fiscal year,</li><li>▪ Proof of experience (X% of the capacity of the Power Plant)</li><li>▪ Bid Bond equivalent to 10 US\$/kW of the offered capacity</li></ul>
 Technical Specifications of the Project 	<ul style="list-style-type: none"><li>▪ Technical data sheet of the Project</li><li>▪ Schedule and budget of the Power Plant to be constructed</li><li>▪ Descriptive Memory of the Project</li><li>▪ Availability of Site for the Power Plant</li><li>▪ Access to the Transport Capacity</li><li>▪ Energy Production Report, performed by an independent qualified entity</li><li>▪ Environmental Authorizations</li><li>▪ Others (sworn statement of prior experience and sources of financing, technology, licenses)</li></ul>

# Economic Proposal (Envelope B)

To be presented in accordance with the Form provided in Annex 4:

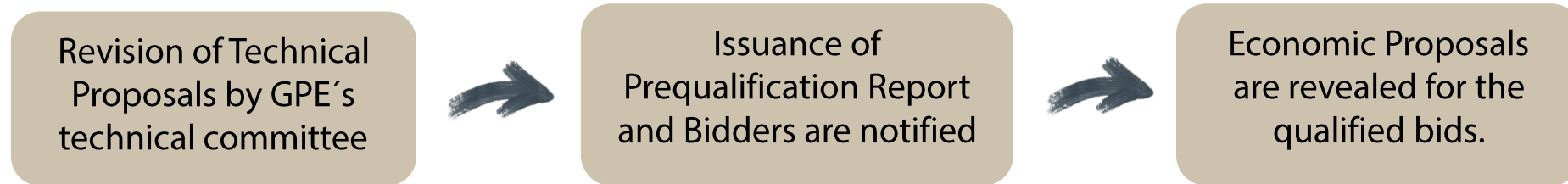
1. **Offered Amount of Energy** (MWh) and **Minimum Energy** in case of Partial Award
2. **Guaranteed Energy** (committed energy volume) and **Minimum Guaranteed Energy**
3. **Adjusted Price**, calculated as follows:

$$\begin{array}{l} \text{Energy Offered Price} \\ \text{(US\$/MWh/year)} \end{array} + \left( \begin{array}{l} \text{Hard Restrictions (+)} \\ \text{(Factor "X")} \\ \text{or} \\ \text{Soft Restrictions (-)} \\ \text{(Factor "Y")} \end{array} \right) = \begin{array}{l} \text{Adjusted Energy Offered Price} \\ \text{(US\$/MWh/year)} \end{array}$$
  
$$\begin{array}{l} \text{Firmness Offered Price} \\ \text{(US\$/ MW * h/d)} \end{array} + \left( \begin{array}{l} \text{Hard Restrictions (+)} \\ \text{(Factor "X")} \\ \text{or} \\ \text{Soft Restrictions (-)} \\ \text{(Factor "Y")} \end{array} \right) = \begin{array}{l} \text{Adjusted Firmness Offered Price} \\ \text{(US\$/ MW * h/d)} \end{array}$$

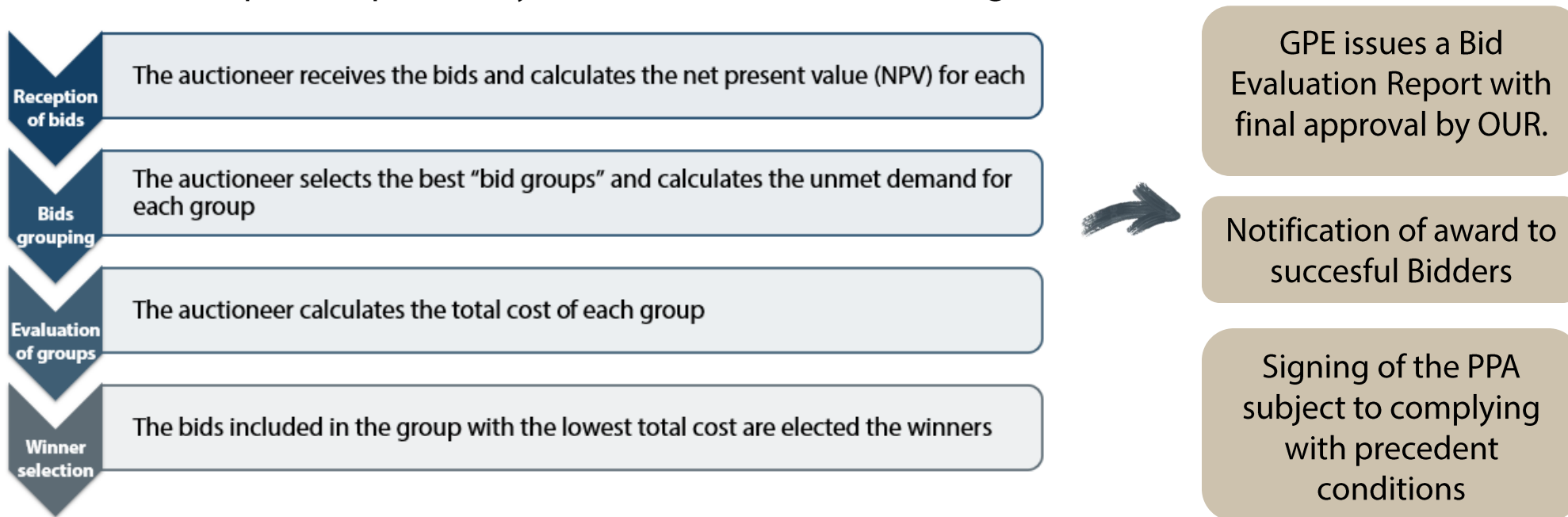
- Offered Price shall be the Maximum Price per Product with the competitive discount applied.
- Bidder shall indicate the % of the Offered Price to be indexed to the US CPI



## Phase 3: Award



The Award Mechanism is based on the combination of offers that yield **the lowest Total Cost to the System** of each bid, as explained previously in the Auction Detailed Design:



# PPA for Energy – Key Clauses

## ENERGY PRODUCT

### **Subject-Matter:**

The Supply and Purchase of electric power .

### **Effectiveness:**

20 years Contract.

### **Payment of the Supplied Energy:**

Offered Price + Factor X or Y (Awarded Price).

### **Annex A:**

- Technical information of the plant
- Construction milestones
- Power & committed energy and price

### **Penalties:**

- delay reaching the COD (art 13.2 a.).
- deficiency energy supply (art. 13.2 b.)
- late payment (art. 24)

### **Currency Payment:**

Jamaican dollars & percentage in US dollars (adj. US IPC).

### **Applicable Law:**

Ruled and interpreted under the laws and regulations of Jamaica

### **Reason for Termination (art.20):**

- By mutual agreement (20.1)
- By the Buyer (with OUR's consent) (20.2)
- By the Seller (20.3)
- By Force Majeure Event (20.4)

### **Dispute Settlement (art.26):**

Through International Arbitration (UNCITRAL Rules)

### **- Contractual Terms Review Clause (art 16)**

**- Lender's rights (art 29)**

### **Force Majeure Event (art. 15):**

Extension contract period option.

**Performance Bond:** Equivalent to 10 US\$/kW of the offered capacity

# PPA for Firmness – Key Clauses

## FIRMNESS PRODUCT

### Subject-Matter:

The Supply and Purchase of electric power and the provision of firm capacity.

### Effectiveness:

20 years Contract.

### Payment of the Supplied Energy:

Offered Price + Factor X or Y (Awarded Price).

### Annex A:

- Technical information of the plant
- Construction milestones
- Power & committed energy and price.

### Penalties:

#### Seller:

- delay reaching the COD (art 13.2 a.).
- deficiency energy supply (art 13.b.)
- not meet firm capacity (9.2.d)
- late payment. (art. 24)

### Currency Payment:

Jamaican dollars & percentage in US dollars (adj. US IPC).

### Applicable Law:

Ruled and interpreted under the laws and regulations of Jamaica

### Reason for Termination (art.20):

- By mutual agreement (20.1)
- By the Buyer (with OUR's consent) (20.2)
- By the Seller (20.3)
- By Force Majeure Event (20.4)

**Dispute Settlement** (art.26):  
Through International Arbitration (UNCITRAL Rules)

- **Contractual Terms Review Clause** (art 16)  
- **Lender's rights** (art 29)

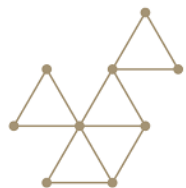
**Force Majeure Event** (art 15):  
Extension contract period option

**Performance Bond:** Equivalent to 10 US\$/kW of the offered capacity



# Renewable Generation Procurement Guidelines for Jamaica

## Next Steps



**PSR**

**MRC**



## Next steps



- ▶ **Task 4 objective:** Based on the “best practices” documents produced in Task 3, the consultants will seek feedback from various entities (including the MSET, GPE, and the IADB) in order to produce a set of final draft contracts and requests for proposals.
- ▶ **Task 5 objective:** The Consultants will provide a Technical Report on the analysis of the end-to-end process and consolidate the main findings.

**Thank you!**

**Q&A**



**PSR**

**MRC**



# Assumptions used to calculate maximum prices.

## Technology costs.

### ► Renewables

Year	PV CAPEX (USD/kW)	Wind CAPEX (USD/kW)
<b>2022</b>	<b>900</b>	<b>2,000</b>
<b>2023</b>	<b>856</b>	<b>1,910</b>
<b>2024</b>	<b>821</b>	<b>1,824</b>
<b>2025</b>	<b>784</b>	<b>1,742</b>
<b>2026</b>	<b>749</b>	<b>1,664</b>
<b>2027</b>	<b>715</b>	<b>1,589</b>
<b>2028</b>	<b>683</b>	<b>1,517</b>
<b>2029</b>	<b>652</b>	<b>1,449.</b>
<b>2030</b>	<b>623</b>	<b>1,449</b>
<b>2031</b>	<b>595</b>	<b>1,449</b>
<b>2032</b>	<b>568</b>	<b>1,449</b>