KINGDOM OF MOROCCO

REQUEST FOR PROPOSAL

TECHNICAL ADVISORY SERVICES FOR

THE STUDY "Power To Hydrogen in Morocco: Energy storage and other potential applications"

N°17/2020/Masen

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DEFINITIONS

The terms beginning with a capital letter in this request for proposals shall have the following meaning:

“**Applicant(s)**” or "Bidder(s)" means individually each of the candidates which apply to technical advisory services for the study” Power To Hydrogen in Morocco: Energy storage and other potential applications”.

"**CAPEX**" means the capital expenditures.

"**Consortium**" means any group of companies or consortium acting as a Bidder.

"**Contract**" means the standard terms and conditions attached to these ToR to be signed between the Technical Advisor and Masen.

"**EPC**" means the engineering, procurement and construction.

"**Evaluation Committee**" means the advisory committee in charge of the supervision of the overall process of the Study and composed of representatives of relevant ministries and public entities.

“**Electrolyser** “means Electrolyser system/equipment

“**Electrolyser Technologies**” refers to the different technologies of electrolyze such us alkaline, PEM,

“Declaration of Undertaking (“DoU”)” Statement of integrity, eligibility and social and environmental responsibility in the format attached in the Form 4.4.

“**Hydrogen Derived Product**” means the products derived from the Hydrogen such as ammonia, methanol, methane…

“**Hydrogen**” means the grey or green hydrogen.

"**International Financial institution (s)**"or "**IFI(s)**" means

(a) Those financial institutions established in more than one country and subject to international law, such as the European Union represented by the European Commission, the African Development Bank, the European Investment Bank and the World Bank Group; and

(b) Those financial institutions which undertake all types of activities, whether or not for profit, receiving governmental financial support or not, for the purpose of promoting development, through the granting capital or other credit facilities, such as the Agence Française de Développement and KfW Bankengruppe;

which, in either case, could provide financing for the Study and the Project.

"**LCOE**" means the levelized cost of electricity

“**LCOH**” means the Levelized cost of Hydrogen.

“**LCOO**” means the Levelized cost of Oxygen.

"**Masen"** a limited liability company, recorded in the Register of Companies of Rabat under number 79835, with its registered office at Complexe Zénith Rabat, n° 50 Rocade Sud, Rabat-Casablanca,

Immeubles A, B, C et D Souissi, Rabat, represented by Mr. Mustapha Bakkoury, in his capacity as President.

"**NOOR Midelt Solar Power Complex**" or "**NOOR Midelt**" shall mean the solar power complex to be developed by Masen in the Midelt region, including the solar power plants, the onsite and offsite infrastructures and any other facilities to be developed in and for the Midelt solar power complex.

NOOR Ouarzazate Solar Power Complex" or "**NOOR Ouarzazate**" shall mean the solar power developed by Masen in the Ouarzazate region, including the three CSP (Noor I, Noor II and Noor III) and one PV plant (Noor IV), the onsite and offsite infrastructures and any other facilities developed in and for the Ouarzazate solar power complex.

"**O&M**" means the operation and maintenance.

"**ONEE**" means the "*Office National de l'Electricité et de l'Eau Potable"*, a public establishment, with its registered address at Station de Traitement, avenue Mohammed Belhassan El Ouazzani, BP 10002, Rabat Chellah, Rabat, Morocco.

"**OPEX**" means the operational expenditures.

"**Partners**" means the entities that are involved in the development of the Project like ONEE, IFIs, etc.

"**Project**" means the first green hydrogen that Masen is contemplating to develop in Morocco.

"**Technical Advisor**" or "**TA**" means the advisor providing technical advisory services for the Study.

"**Terms of Reference**" or "**ToR**" means these terms of reference related to technical advisory services for the Study.

"**Study**" means the study of "Power To Hydrogen in Morocco: Energy storage and other potential applications" object of this RfP, and as detailed in section 2.3.

BACKGROUND

1.1. The Renewable Energy Strategy

The Kingdom of Morocco has set an ambitious objective aiming to source 52% of its installed capacity from renewable energy by 2030. Within this framework, Morocco ("**Morocco**") launched a solar energy strategy the "**Noor**" Solar Plan with the aim of developing solar energy capacity of at least 2,000 MW by 2020 using various solar technologies and a Wind Plan aiming to develop a wind energy capacity of at least 2,000 MW by 2020 also.

The RE strategy will allow Morocco to:

- Promote the use of renewable energies which are abundant in Morocco;
- Increase the part of renewable energy in the country's energy mix, contributing to Morocco's objective of a more secure energy supply and reduced dependency on fossil fuels (c. 97% of energy is imported; oil and coal represents 89% of the primary energy demand);
- Meet Morocco's fast-growing electricity demand without compromising energy security and environmental sustainability;
- Displace carbon intensive electricity and reduce greenhouse gas emissions;
- Promote the development of a new green industry in Morocco by creating local jobs and encouraging training in the renewable energy field;
- Support the worldwide development of a clean technology and help decrease the technology costs, promoting the transfer of technology, knowledge and skills to Morocco.

1.2. Moroccan Agency for Sustainable Energy (Masen)

Masen is the group responsible for managing renewable energy in Morocco.

Masen, alongside the national Utility ONEE (Office for Electricity and Potable Water), leads development programs of integrated projects aimed at creating an additional 3,000 MW of clean electricity generation capacity by 2020 and a further 6,000 MW by 2030. The goal is to secure 52% of the country's energy mix from renewable sources by 2030.

As a central player committed to making optimal use of renewable resources, Masen transforms natural power into power for progress. The integrated model Masen has devised aims to establish self-sustaining and financially viable ecosystems.

In addition to generating electricity through major projects and raising the funds required to do so, Masen seeks to act as a catalyst for the development of a competitive economic network that employs existing skills efficiently and helps create new ones. At the same time, the development of applied research and the promotion of technological innovation are encouraged.

The local development strategy Masen has developed – a clear reflection of its integrated approach – helps the regions that host its projects to achieve territorial equity and sustainable growth.

Finally, its constant concern for protecting the environment and reducing greenhouse gas emissions underpins Masen's entire approach.

Masen has created two fully-owned subsidiaries:

- Masen Capital to hold a stake as deemed appropriate in the project companies in charge of the development of the projects implemented in the frame of the Solar Plan; and
- Masen Services to provide ancillary services to such project companies on the sites of implementation of the related projects.

1.3. Noor Solar Plan Projects

Masen has identified and pre-selected several sites for the development of the Noor Solar Plan amongst others Ouarzazate, Midelt, Laayoune and Boujdour.

The first power plants complex "Noor Ouarzazate", which is completed, consists of three CSP plants and one PV power plant. All of them are under operation. Noor Ouarzazate I, a 160 MW CSP parabolic trough power plant with 3 hours storage (2015). Noor Ouarzazate II, 200 MW CSP parabolic trough power plant with 8 hours storage, and Noor Ouarzazate III (2018), a 150 MW CSP molten salt tower power plant with 8 hours storage and finally Noor Ouarzazate IV(2018), a 71.5 MW_P PV plant (2018).

Two additional plants "Noor Laayoune I", located nearby Laayoune with an installed capacity of 84.5 MW_p and "Noor Boujdour I" located nearby Boujdour with an installed capacity of 19.5 MW_p. Noor Laayoune I, Noor Boujdour I and Noor Ouarzazate IV are developed under the first phase of Noor PV Program and are also under operation since Q4 2018 .

Moreover, Masen is developing the Noor Midelt solar complex located nearby Midelt. The first phase of Noor Midelt consists of two hybrid plants combining PV and CSP technologies. The first plant of this phase "Noor Midelt I" of 800 MW with a 5hours storage capacity, consists on a hybrid PV/CSP where the PV is used not only to generate during the daytime but also to boost CSP production during the sunset hours. The adjudication of NOOR Midelt I was announced in 2019. The second plant "Noor Midelt II" is under development.

1.4. Wind farm Projects

As part of its Renewable Energy strategy and with more than 1000MW under operation, Morocco is continuing to develop more and more Wind farms throughout the county.

Morocco has launched a very ambitious integrated wind program of 850MW consisting of 5 wind farms and of which the construction and/or development is ongoing:

- Midelt wind Farm: located near to Midelt city with a capacity of 150 MW is under construction since Q4 2018 and its first section is already under energization. The commissioning of the whole capacity is expected by 2020;
- Boujdour Wind farm with a capacity of 300 MW : The construction contract was signed by November 2019, the construction will start by 2021 and the commissioning is expected by 2022;
- Jbel Lahdid located near to Essaouira city with a capacity of 200 MW expected to be commissioned by 2020;
- Tiskrad Wind farm : located near to Tarfaya city with a capacity of 100 MW expected to be commissioned by 2022;

- Tanger II 70 MW expected to commissioned by 2022;

Moreover, Taza Wind Farm (150 MW) is also under construction. The first phase of the project consisting of 88MW was launched in Q4 2019 and the commissioning is expect by the end of 2021.

In addition, Masen has also launched Koudia Al baida Repowering Project. Koudia al Baida wind farm, located near to Tangier city and with an initial capacity of 50MW, is under operation since 2000. The repowering project will allow to enhance its capacity from 120MW.

2. TERMS OF REFERENCE

2.1. Context

Capitalizing on its high expertise in the Renewable Energy sector, Masen is conducting different studies and analyses aiming to evaluate the use of Renewable Energies in different sectors beyond the electricity production notably the hydrogen production.

Moreover and considering the important part of the energy in the hydrogen production process and tacking into account the important assets of Morocco in terms of renewable energy potential (PV and wind), infrastructures, proximity to international consumers and the existence of a potential local market, Masen contemplate to develop a first green hydrogen production project in Morocco the "**Project**".

In this framework, Masen intends to appoint a qualified international technical advisor ("Technical Advisor" or "TA") to conduct "Power to Hydrogen in Morocco: Energy storage and other potential applications, the "Study".

The Study aims to provide an overview on the hydrogen market with a focus on the local market and analyze the green hydrogen technologies in order to provide recommendations to be considered for both the Moroccan Green Hydrogen Road Map as well as the development of the Project by Masen.

2.2. Missions

The Terms of Reference of this Study cover following three missions:

- **Mission A:** Hydrogen usages analysis: energy storage and other applications
- **Mission B:** Hydrogen technology analysis
- **Mission C:** Technical assistance to perform specific assignments as needed and as defined by Masen relating to the Study or the Project.

2.3. Scope of work

2.3.1. Mission A: Hydrogen usages analysis: Energy storage and other applications

The Technical Advisor will be required to conduct for Masen various commercial analyses related to the green hydrogen as well as others hydrogen types and their derived products. In addition to the international market assessment, the Study shall cover the Moroccan Market providing more detail and analysis.

Mission A is split into four (4) sections:

Mission A
Section I
Markets trend, status and share by applications

Section II
Hydrogen main usages
Section III
Zoom on Moroccan Context
Section IV
Recommendations and Final Report

2.3.1.1. Section I: Markets trend, status and share by applications

The market analysis shall be performed as described below:

1. The TA shall present the segmentation and the structure of the international hydrogen market by analyzing (i) the hydrogen market value chain from production to distribution and (ii) detailing the different final applications of the hydrogen and its main derived products (Ammonia, methanol, methane…). The analysis shall include a list of the major players operating in the market notably the main consumers and producers (country, industrial activity, capacity of production/consumption…).

2. The TA shall provide a detailed market analysis presenting among others the current and the future annual demand of the hydrogen and its main hydrogen derived product.

   The hydrogen demand shall be analyzed taking into account:

   - the different applications in different sectors (Industry, transportation, energy …),
   - the different countries (producers and consumers)
   - the different sources (natural gas, oil, coal, biomass, electrolysis…) and the different hydrogen production technologies.

   Based on the above, the TA shall define the main current sectors/applications of the hydrogen and those that are expected to become interesting in the upcoming years (short/medium term, and long term).

   The analysis shall provide also a benchmark of the existing polices developed to boost the hydrogen demand with a focus on the green hydrogen.

3. The TA shall provide a price trend analysis (historical, forecast) of the hydrogen and its main derived products. The analysis shall provide also a precise idea on the different cost components and their impacts on the final value of the product (Hydrogen or the hydrogen derived products).

   The TA shall also provide a detailed analysis of the cost drivers of the green hydrogen and other hydrogen types such as blue and turquoise, as well as other derived products and their future evolutions.

4. The TA shall provide a list of relevant projects of Hydrogen production detailing the main characteristics of each project that includes at least:

   - Status (under development, under construction, commissioned, under operation, …)
   - Main stakeholders (final consumers, transportation, storage, producer, EPC…) and development scheme
   - Location
   - Capacity (MW, tones/year…)
   - Type : green or grey Hydrogen
   - Final product: Hydrogen or Hydrogen derived products
   - Technology and sources of supply (if electrolyze is used, specify the technology, the electricity sources (Grid, PV, Wind…)
   - Lessons learned

5. Focus on Green hydrogen Market :

   The market analysis shall focus on the green hydrogen market by analysing the current green hydrogen demand /production and providing an overview of the electrolyser and its main components market (manufacturers, capacity, developers, plants, costs …) and the perspectives of this sector.

   The analysis shall cover at least:

   a. The current green hydrogen demand/production analysis and the different projects that are developed and are under development.

   b. An overview of the aggregate and annual installed capacities of electrolyser system (MW and Tons of Hydrogen production /year) in the world per technology and region specifying if it is feed by RE or not. This analysis shall cover even the electrolyser installations where the main objective is not the hydrogen production.

   c. A market overview of electrolyser system components including the relevant developments reached for the main components of each technology,

   d. A list of the main manufacturers of electrolyser indicating for each one at least

      (i) the manufacturer capacities : aggregate manufactured capacities as well as the annual manufacturing capacities

      (ii) factories: list of the manufacturer factories indicating the location, annual and aggregate manufacturing capacities for each factory, and manufacturing starting date.

      (iii) References: list of main installed plants using the produced Electrolyser specifying the capacities of such plant, date of construction

2.3.1.2. Section II: Hydrogen main usages

The Technical Advisor shall analyze the main usages of the hydrogen and its derived product whether they are conventional or new opportunities. The hydrogen main usages technical analysis shall cover the following three tasks:

- Task 1: Focus on hydrogen use in power systems:
- Task 2: Presentation of the current usages of hydrogen and its derived product
- Task 3: Identification of new opportunities for hydrogen in different sectors

2.3.1.2.1. Task 1: Focus on hydrogen use in power systems:

The objective of this task is to provide a detailed analysis on how the hydrogen could be used in the power systems and what are the different roles and ancillary services that the hydrogen could provide (storage of energy, peak shaving ...)

The TA shall provide under this task the following:

1. The current demand of the hydrogen for the power systems and illustrate with data from different projects worldwide.
2. A detailed analysis of the current role of the hydrogen in the power systems with a detailed technical description of the process specifying the hydrogen needs in term of quantity, losses, efficiency, advantages and weaknesses….
3. Description of how hydrogen use in the power systems could be changed in the next years presenting the main drivers and constraints that could lead to such situation (cost, environment, technology challenges, storage and transport challenges…).
4. For each role of hydrogen in power systems, the TA shall identify the other solutions that could be considered as a potential alternative and provide a comparison between their use and the hydrogen at least in term of cost, advantages and weakness…
5. What are the different configurations and the required conditions to favor the integration of the green hydrogen in power systems and then to increase its competiveness.

2.3.1.2.2. Taks 2: Presentation of current Usages Of Hydrogen And Its Derived Product

The TA shall analyze and detail how the hydrogen is currently used in different economic sectors including at least the flowing:

- Power To Power
- Power To Gas
- Power To Industry
- Power To Liquid (Ptl)
- Power To Mobility

For each sector, the TA shall list the different applications and usages of the hydrogen by detailing for each one the following:

1. Trend of hydrogen demand in each specific application by presenting the main drivers justifying the future demand.

2. The current role of hydrogen in the application with a detailed technical description of the process specifying the hydrogen needs in term of quantity, quality maturity of the application, energy consumption of the process, losses, efficiency, advantages and weaknesses ….

3. The necessity of the hydrogen as an element in the process and the possibility of substitution by other elements, as the case may be, specifying and describing the substituting elements as well (maturity, cost, efficiency…).

4. The cost of hydrogen used in this specific application and its impact on the cost of the final products and the margins. Also a comparison to substitute goods and services, including shadow prices and their opportunity cost.

5. The different conventional sources of hydrogen supply for this application (including the low-carbon options) and how green hydrogen (electrolysis with RE) could be an alternative. The TA shall present the advantages and the weaknesses of the current conventional sources of hydrogen supply and what are the required conditions to favor the replacement by a green hydrogen and then to increase its competiveness. The TA shall detail also the possible constraints that could limit the replacement of this conventional source of hydrogen supply by the green hydrogen.

6. The TA shall estimate the extra-cost range that the hydrogen market players could accept to pay for the Green Hydrogen. This analysis shall consider among others the compensation of the greenhouse gases emissions.

2.3.1.2.3. Task 3: Identification of new opportunities for hydrogen in different sectors

Based on the different implemented polices affecting the hydrogen demand and the R&D progress, the TA shall review the different new potential uses of the hydrogen in the different sectors. The new potential uses could be either a new application recently developed or a new niche/market that is under development or has a considerable potential for growth. This task shall be performed as follow:

1. The TA shall list all new potential uses of the hydrogen in different sectors with a technical description of each one that explain how the hydrogen will be used in the process.

   The technical description shall include also information about hydrogen needs, energy consumption of the process, losses, efficiency, advantages and weaknesses, constraints that could limit the use of the green hydrogen…

2. For each new potential use, the TA shall present the others alternatives/options and how their evolution could be a constraint for the hydrogen use in this sector. This analysis shall allow to identify the main/potential competing technologies/options.

3. For each new potential use, the TA shall evaluate the hydrogen use competiveness by identifying:

   - The cost allowing to have a competitive hydrogen compared to other substitutes,
   - The direct and indirect factors that impact the use of hydrogen in the sector and their cost/potential cost reduction.

- The main conditions required to ensure a sustainable use of hydrogen in such application and to enhance its attractiveness against other alternatives (implementing new supporting policies and regulations, reducing process complexity, developing adequate storage/supply technologies, managing environmental impact and safety issues…).

This estimation shall be further detailed based on the hydrogen market players' feedback. For that, the TA shall prepare a questionnaire to be submitted for different market players. The questionnaire and the list of the players to be contacted shall be reviewed and approved by Masen before.

2.3.1.3. Section III: Zoom on Moroccan context

The Moroccan hydrogen market study aims at providing an updated overview of the current situation of the hydrogen national market, the export opportunities for Moroccan green hydrogen as well as the global potential of the green hydrogen production in the country.

The study shall address the following topics:

1. *The national hydrogen demand:*

The national hydrogen demand shall be analyzed for different sectors (production of electricity, refining industry, chemical industry, food industry, iron production ….) to identify the main current hydrogen consumers in Morocco. The analysis shall detail, per sector, the annual consumption, its trend of evolution and the prices. The TA shall also analyze in this part the national demand of hydrogen derived products and all indirect uses of hydrogen in the different sectors.

2. *The Hydrogen uses per sector in Morocco :*

For each sector, the study shall list all hydrogen uses and identify the Hydrogen derived products consumed in Morocco. For each use, the TA shall present the main consumers indicating:

- The final consumed product: hydrogen or hydrogen derived product
- Capacities,
- Consumption of hydrogen or hydrogen or hydrogen derived product
- The site of Hydrogen production (in situ or transported from another site)
- Main sites of consumption (location)…

The study shall analyze also their hydrogen/hydrogen derived product supply chain and the adopted mechanisms (contracts details…) to ensure the hydrogen/hydrogen derived product supply.

3. *The potential future use of hydrogen in different sectors (power, gaz, mobility, industrial application…) in Morocco*

The study shall describe how the hydrogen could be used in different sectors (new uses in other than the existing uses or uses with new potential), and identify what are the main drivers/constraints (technical, logistic, economic, strategic …) that could enhance/limit this new use and consumption. For example, for the power production and the industrial application the transport and storage possibilities and issues shall be analyzed, for the mobility the infrastructure requirements shall be presented.

For each potential use, a tentative future demand estimation shall be elaborated based on specific scenarios. For example, for the mobility, the TA shall analyze the hydrogen need for one typical Moroccan city (using a hydrogen non-individual transportation, or for individual cars…). These scenarios with their hypothesis shall be submitted to Masen for review and approval.

The study shall also analyze the implications of the new use of hydrogen in each specific sector in terms of cost, environmental, development of infrastructures…

As a conclusion, the TA shall provide an estimation of the future market of hydrogen and its derived products in Morocco for 10, 20 and 30 years horizon (2030 -2040 -2050) based on:

- its analysis of the historical trend of the Moroccan hydrogen market,
- Its estimation of the future demand of the existing uses and the new ones,
- the different national policies and regulations in terms of energy, industry and renewable energy, and also
- its analysis of the existing international studies on the global future of hydrogen from the relevant entities (IEA, IRENA, …)

4. The green hydrogen export opportunities

Based on the international Market analysis, the study shall identify the export opportunities for the Moroccan green hydrogen or derived products. For each opportunity, the study shall provide its characteristics (target volume, main players…) and the market strategy to be adopted (to export hydrogen or to export its derived product).

The study shall assess also how Morocco could enhance it hydrogen export potential, especially level of production, cost infrastructure to be developed etc…..

5. Hydrogen Transport and Storage in Morocco

The study shall list all Moroccan companies that ensure the hydrogen transport and storage in Morocco or they have the potential and the perquisites to do it. For each company, the Study shall identify the capacity, the main customers, the used technology….

The study shall describe also how currently the transport and the storage of the hydrogen is performed in Morocco from the main ports to the final users as the case may be.

The results of this section "Zoom on Moroccan context" shall be supported by field survey data. For that, the TA shall conduct a face to face interview with different Moroccan players (consumers, potential producers, transporters…) in order to have the most accurate data. The TA shall submit in advance the questionnaire to be addressed and the list of the different players to contact for Masen approval.

6. Potential regions to develop the green Hydrogen/derived products in Morocco

Based on the previous analysis, the TA shall identify the objectives of the Moroccan Green Hydrogen (produce hydrogen for local market, export opportunities, provide others derived products, provide ancillary services to the power system).

For each objective (final product/final usage), the TA shall list the Moroccan regions that present a high potential for the development of Green Hydrogen considering among others:

- Final products/ final usages
- Proximity to raw materials (water, CO_2…)
- The proximity to the needed infrastructures (roads, ports…)
- The proximity to customers

Such analysis shall be duly justified and highlight the assets of each region where the green hydrogen activity could be developed.

2.3.1.4. Section IV: Recommendations and Final report

The TA shall prepare a draft Final Report that includes all analysis and findings performed under sections 1 to 3 above and its recommendations. The TA shall provide the draft Final Report to Masen for review and discussion.

The TA shall submit a Final Report after addressing the comments of Masen and its Partners, as the case may be. The Final Report shall be a substantive and comprehensive report of work performed to carry out all the tasks set forth in these Mission A and shall include, among other an executive summary, all deliverables, results of specific survey and recommendations. Each task of the Terms of Reference shall form a separate chapter of the Final Report.

Based on the conclusions of the previous analysis, the TA shall make recommendations on the different elements that should be considered in the elaboration of the "Moroccan Green Hydrogen Road Map" including but not limited to:

1. The TA shall first identify the "Target Market" by recommending the main national and international hydrogen usages to be addressed in short term and long term by Moroccan green hydrogen Project.

2. Based on that, as well as the renewable potential and the existing infrastructures in Morocco, the TA shall identify the quantity of the green hydrogen that could be produced locally in short term detailing the recommended plant size, regions, final products and usages, logistic strategy and the implementation planning with a priority order taking into account the different constraints (consumers, logistics, existing contracts, …)

3. Depending on the recommended final product and/or usages, the TA shall recommend also the technical configuration for production either to produce the final product directly or through the hydrogen based on the market practices.

4. Based on the international market, the TA shall recommend the policies, regulations and infrastructures needed to promote the green hydrogen production in Morocco and what is the potential quantity that could be locally produced for the long term.

Deliverable Mission A:

The TA shall provide the following deliverables describing the performed work as detailed above:

D1.1: Markets trend, status and share report including :

- The structure of the international hydrogen
- Detailed market/demand analysis
- Price trend analysis
- Focus on Green hydrogen Market

D1.2: Hydrogen main usages report including :

- Current hydrogen usages in different sectors and their technical description
- New potential hydrogen usages and theirs alternatives

D1.3: Moroccan hydrogen Context report including :

- State of art of hydrogen in Morocco as well as new opportunities
- List of Moroccan regions with high potential for green hydrogen development

D1.4: Recommendations and final report

D 1.5: ***Presentation in Power Point version*** and ***synthesis in Word version*** of the final version of the Report.

D 1.6 : Results of surveys report

2.3.2. Mission B: Hydrogen technology analysis

The Technical Advisor (TA) shall provide, under this mission, a comprehensive analysis of Hydrogen production technologies in general (for grey, green, blue and other Hydrogen) as well as storage and transport technologies. The TA shall also, under this mission, provide a focus on Electrolyser technologies as well as hydrogen economic analysis and elaborate finally recommendations.

This Mission is divided into four (4) sections as follow:

Mission B
Section I
Overview of Hydrogen production technologies
Section II
Overview of Hydrogen Storage and transport Technologies

Section III
Focus on Electrolyser Technologies
Section IV
Recommendations and final report

2.3.2.1. Section I: Review of Hydrogen production technologies

This section aims at providing an overview of hydrogen production technologies taking into account its historical development and the main specifics characteristics and processes, followed by the R&D perspectives.

Under this section, the TA is requested at least to:

1. Provide a clear definition of hydrogen (molecule, states, main characteristics) including a comparative analysis with other energy elements comparable to hydrogen (natural gas, methane, diesel, ….).

2. Carry out a comprehensive comparative analysis between the different existing Hydrogen colors worldwide (green, blue, brown, grey,..) by highlighting the main differences including but not limited to CO_2 emissions, source of used energy CO_2 capture ….,

3. Conduct a comprehensive assessment of the Hydrogen production technologies, including historical review of each technology, working principal, main equipment, state of development and performance. Such study shall include a comparative analysis by providing at least (Hydrogen quality, used energy, gas emissions, range of CAPEX and OPEX costs, state subsidies, projection of development and maturity of the associated production processes).

4. Describe and analyse in detail the entire process scheme for the main hydrogen production technologies including at least (steam reforming, Partial oxidation, auto thermal reforming gasification, Biomass, Electrolysis,…) from receiving the raw material (Natural gas, oil, coal, water, biomass,….)to the final output of the process.

5. Provide for each process, a ratio's range of raw material (quantity)/ tH2 (water, natural gas, biomass, coal,….), and the main technical characteristics as well as the process needs (energy, water, Oxygen, …) should be provided for all technologies described in this section.

6. Describe and analyse in detail the entire process scheme for the main hydrogen derived product production technologies including at least (Ammonia, methanol, methane, products for food industry, iron, oil refining…) from receiving the raw material, to the final output of the process. . If the hydrogen production step is integrated in the process, the TA shall describe this phase and analyse any possible alternative (other processes, direct production of the derived product instead of having two processes, …)

7. Provide for each derived product process, a ratio's range of the needed Hydrogen quantify/ to produce a unit (t, Nm3,….) of Derived product (ammoniac, methanol, methane,….), and the main

technical characteristics as well as the process needs (energy, water, Oxygen, Nitrogen, carbon, …) should be provided for all derived products technologies described in this section.

8. Define/ specify and classify for each hydrogen production process, the secondary products, whether they are valuable or non-valuable such as (oxygen, purge gas, CO, coal, ….). For each secondary product, the TA shall explain and highlight the current and projected practices of managing secondary products (sales, reuses, treatments etc.). The TA shall highlight if there is any hazardous material all over the different processes described in this section (inputs, outputs, emissions …) and the related mitigations that could be adopted.

9. Specify mechanism /industrial process which allow to switch from one type of hydrogen to another (CO2 capture as an example) in order to decrease gas emissions/environmental impacts, costs and improve performance.

10. The TA shall conduct a detailed analysis of the latest advances and commercial availability of different hydrogen production technologies as well as the R&D perspectives, the state of development (TRL).

The TA shall summarize and highlight in a comparison table, the main hydrogen production technologies by specifying their key characteristics, state of development, pros and cons, challenges and limitations.

The TA shall provide in the end of this task a draft of the final report including all the specific points as described above and completed by the outcome of the exchange between the TA and Masen. The submitted report shall be updated by the TA until the document is declared satisfactory by Masen.

2.3.2.2. Section II: Review of Hydrogen storage and Transport technologies

This section is a consistent continuity of the previous section, which aims to complete the overview of the whole hydrogen value chain from production to final destination phases through appropriate storage and transportation means. The TA is requested to highlight the main Hydrogen storage and transport technologies by specifying their working principal, main advantages, disadvantages and limitations.

This section shall cover each of the following tasks:

- ***Task 1:*** Hydrogen Storage Technologies overview
- ***Task 2:*** Hydrogen Transport Technologies overview

2.3.2.2.1. Task 1: Hydrogen Storage Technologies overview

Hydrogen storage technologies overview aims at providing a state of art of hydrogen storage technologies as well as the working principal, storage technology selection criteria, economic aspect as well as the R&D perspectives.

The TA is requested at least to:

1. List, define and illustrate the current hydrogen storage technologies (physical, chemical and hybrid solutions if any), by (i) specifying the commercial maturity, (ii) classifying them by final use and (iii) by providing their main characteristics including but not limited to (working principal, main equipment, main manufacturer, main operational conditions,…), selection criteria for caves, occupation land area ratio for each technology.

2. Define and analyse the main hydrogen storage technology selection criteria including but not limited to (conversion and reconversion efficiency, lifetime, losses, required storage conditions (pressure, temperature, ventilation,…), capacity, density, recommended storage period, maintenance complexity ….).

3. Describe and analyse the critical operations and maintenance aspects of each hydrogen storage technology (frequency, duration, main components, complexity…), Information in terms of health and safety measures shall be included in such analysis.

4. Conduct a comprehensive analysis of the project economics related to Hydrogen storage technologies including but not limited to the CAPEX, OPEX, and CAPEX breakdown. Such analysis shall highlight the main parameters impacting the hydrogen storage technology cost (technology selection, capacity, storage period, …).

5. Conduct a detailed analysis of the latest advances and commercial availability of different storage technologies as well as the R&D perspectives, the state of development (TRL).

Finally the TA shall carry out a summarized comparative table of hydrogen storage technologies by highlighting their working principal, key parameters (density, capacity, storage period, …) pros and cons challenges and limitations.

The TA shall provide in the end of this task a draft of the final report including all the specific points as described above and completed by the outcome of the exchange between the TA and Masen. The submitted report shall be updated by the TA until the document is declared satisfactory by Masen.

2.3.2.2.2. Task 2: Hydrogen Transport Technologies overview

Hydrogen transport technologies overview aims at providing a state of art of hydrogen transport technologies as well as the working principal, technology selection criteria, economic aspect as well as the R&D perspectives.
The TA is requested at least to:

1. List, highlight and illustrate the current hydrogen transport options/solutions by specifying whether the transport option requires a prior hydrogen storage (Bath transport) or not (continuous transport). The TA shall also classify the hydrogen transport technologies by destination (domestic uses or export), by final use (based on the results obtained in Mission A) and provide for each transport technology the main characteristics including but not limited to (working principal, main equipment, main manufacturer, main operational conditions,…).

2. For each transport category (continuous / Bath, Domestic /Export) the TA is requested to provide the key parameters allowing to select the recommended transport technology including but not limited to efficiency drop taking into account the distance to be covered, the impact of the atmospheric conditions, the final use and the state of hydrogen (liquid, gaseous, other if any)

capacity, losses, maturity, degradation, lifetime, cost…) and any relevant information or criteria deemed important/necessary in the selection Hydrogen transport technology.

3. For each Hydrogen 'continuous transport' option such as pipeline (gaseous or liquid hydrogen for example) , the TA shall specify the key ratio to estimate the pipeline required dimensions/geometry taking into account the hydrogen state (gaseous, liquid), flow, material used, and any relevant information or criteria deemed important/necessary in the design Hydrogen transport technology.

4. For each Hydrogen 'Bath transport' option, the TA shall specify the state of the transported hydrogen (liquid, gaseous, chemical compounds, metal hybrids…) , and the key ratio to estimate the required transport dimensions/geometry, density/material used, and any relevant information or criteria deemed important/necessary in the design transport technology.

5. Conduct a comprehensive analysis of the project economics related to Hydrogen transport technologies including but not limited to the CAPEX, OPEX, CAPEX breakdown, the cost of opportunity for local use of hydrogen as good and/or service substitute.Such analysis shall highlight the main parameters impacting the hydrogen transport technology cost (technology, domestic use/export, covered distance, capacity, …).Conduct a detailed analysis of the latest advances and commercial availability of different transport technologies as well as the R&D perspectives the state of development (TRL) and their suitability to the hydrogen storage technology perspectives.

Finally the TA shall carry out a summarized comparative table of hydrogen transport technologies by highlighting their working principal, key parameters (density, capacity, storage period,…) pros and cons challenges and limitations.

The TA shall provide in the end of this task a draft of the final report including all the specific points as described above and completed by the outcome of the exchange between the TA and Masen. The submitted report shall be updated by the TA until the document is declared satisfactory by Masen.

2.3.2.3. Section III Focus on Electrolyser

This Section is a focus on the electrolyser, the main equipment used in the green hydrogen production process. The section aims at providing in a first step a detailed analysis of the electrolyser technologies, as well as a green hydrogen economic analysis.
The focus on electrolyser section shall cover each of the following tasks:

- **Task 1**: Focus on Electrolyser Technology
- **Task 2**: Green hydrogen Economic analysis

2.3.2.3.1. Task 1: Focus on Electrolyser Technologies

This Task aims at providing a focus and a clear analysis of the electrolyser technologies including but not limited to the working principle, main component, configuration, Interfaces, main parameters impacting the electrolyser performance and the degradation as well as pros & cons and limitations.

Under this task, the TA is requested to:

1. Provide a historical overview of the use of electrolyser in different industrial sectors, specify the evolution of electrolyser use, as well as the development in large scale.

2. List all electrolyser technologies (both mature and at R&D stage)and compare between them by highlighting at least:

    - Main characteristics (electrolysis sub technologies, used materials, foot print, life time, efficiency degradation ….),
    - Operation parameters (cell temperature, typical pressure, current density,….),
    - Flexibility (load flexibility in terms of % of nominal load, cold and warm start up time), flexibility with renewable energy intermittence…
    - Efficiency (nominal stack and system efficiency) as well as Losses,
    - Specific energy consumption(kwh/Nm3, for both stack and the whole system),
    - Available capacity (Max nominal available capacity per MW, H2 production per stack Nm3/h), Availability of the system and the maintenance requirement
    - and any relevant information or criteria deemed important/necessary in the Electrolyser technology.

      These comparison shall be supported by different manufacturers' datasheets and documents form the main elecotrolyser manufacturers

3. Provide for each Electrolyser technology, the process scheme, flow diagram, heat balance as well as the mass balance.

4. Conduct, for each Electrolyser system, a detailed and clear analysis of the core of the whole system where electrochemical reactions take place the "Electrolyser stacks". Such analysis shall highlight the main Electrolyser stack design and configuration/ parameters from the cell to the Elctrolyser stack assembly, including but not limited to the cell configuration (monopolare/ bipolar, active and passive area), Electrolysis/membrane if any (material, thickness, area, ..), plates (material, thickness).Such analysis shall also include the major steps of the Electrolyser stack manufacturing process and manufacturers data-sheet for illustration. The difference between the electrolyser sub-technologies (alkaline, PEM …) shall be analyzed and described in detail at this step.

5. Provide and explain the different possible configurations of the electrolyser units (parallel /serial), as well as the maximum feasible capacity of a green hydrogen production plant including but not limited to the worldwide track records, technology constraints,….

6. Provide detailed analysis of "balance of plant" (BOP) including several subsystems that provide secondary functions in the electrolyser system. The major subsystems in the BOP and key parts in each system shall include at least :

    - Power supply (AC/DC rectifier, DC voltage transducer, and DC current transducer),

- Deionized water (if any) circulation system (oxygen separator tank, circulation pump, piping, valves and instrumentation, and controls),
- Hydrogen processing (dryer bed, hydrogen separator, tubing, and valves and instrumentation),
- Cooling (plate heat exchanger if any, cooling pump, valves and instrumentation, and dry cooler),
- Miscellaneous: compressed air valve, ventilation and safety requirements (combustible gas detector and exhaust ventilation).

Such analysis shall also include the different existing types for each key component in addition to the main criteria used to select each type of component.

7. For each electrolyser technology, the TA shall provide a detailed analysis of the minimum required electricity quality (intermittency, and minimum load).

8. Analyze how the electrolyser behaves with regard to the intermittency of renewable energy and highlight the impact of this intermittency on the degradation of the system and also the necessary measures to be taken into consideration in the design configuration in order to address this issue. Such analysis shall provide (i) the exhaustive list of all data and information required for the feeding electricity design (ii), the relating constraints and any phenomena that may occur while coupling or decoupling the Electrolyser to the renewable energy source. Such study shall include a comprehensive comparative analysis of the autonomous and grid connected system.

9. Provide a detailed analysis of the required water quality and explain in detail how the water quality/classification impact the whole system (sludge generation for example) in terms of equipment degradation, performance as well as the impact on the quality/purity of the produced hydrogen….

10. Define/ specify different possibilities to value the generated oxygen. The TA shall also explain and highlight the current and projected practices worldwide of managing the generated oxygen (plant internal use, external use, …), taking into account the required oxygen purity by sector (medical, waste treatment, etc) and their impact on the whole green hydrogen project.

11. Provide a benchmark of various Electrolyser simulation models and software available in the market. The TA shall recommend a suitable software for Masen.

12. For a fixed hydrogen production quantity and for each electrolyser technology, the TA shall carry out a typical site layout/configuration which shall highlight at least the main equipment, indoor and out-door common facilities, secondary equipment and areas/equipment dedicated to on-site storage, and secondary product recovery if any.

Finally the TA shall carry out a summarized comparative table of Electrolyser technologies by highlighting their working principal, pros and cons challenges and limitations. The TA shall provide in the end of this task a draft of the final report including all the specific points as described above and completed by the outcome of the exchange between the TA and Masen. The submitted report shall be updated by the TA until the document is declared satisfactory by Masen

2.3.2.3.2. Task 2: Economic analysis

This task aims at providing an overview of the green hydrogen as well as other hydrogen types (grey, blue, turquoise, etc.) and their derivatives,economic analysis including different development scheme, perspectives of this sector as well as cost-benefit analysis of the development of a large-scale hydrogen/and oxygen production facility via electrolysis powered by wind energy and solar energy.The TA is requested at least to:

1. Describe and analyze the different development schemes used in the green hydrogen projects worldwide (EPC, BOOT, ...).

2. Conduct a comprehensive analysis of green hydrogen production project economics in general and a focus on the Electrolyser system including but not limited to the CAPEX, OPEX, CAPEX breakdown , as well as the LCOH, LCOO and cost of water. Such analysis shall define and explain the LCOH and also shall highlight the main parameters impacting the final green hydrogen cost including but not limited to :

    - Electricity cost: LCOE, Capacity factor,
    - Water: Quality, cost in general and also in specific projects, regions and site conditions (desalination for example),
    - The adopted storage and transport technologies,
    - End usage,
    - and any relevant parameters deem important in the hydrogen cost aspects.

3. Based on point 3, section III of Mission A, the TA shall provide a LCOH estimation of the pre-defined scenarios.

4. Analyze the economics of derived products production from green hydrogen project (ammonia, methanol, …) including but not limited to the CAPEX, OPEX, final cost of the final product, … All the provided costs shall be detailed (breakdown of the costs)

5. Conduct sensitivity analyses of the final cost of the green hydrogen and derived products depending on the key impacting parameters (cost of electricity, capacity factor, water cost, equipment cost, location, transport and storage costs, connected or not to the grid ….)

6. Provide cost-benefit analysis by comparing the green hydrogen cost versus the different benefits of the project (reduce gas emissions, creation of jobs, renewable energy…).

As part of this section, the TA shall provide a comparison between green and grey hydrogen production in terms of economic aspects, including but not limited to the CAPEX/OPEX and Capex breakdown and LCOH.

The TA shall provide in the end of this task a draft of the final report including all the specific points as described above and completed by the outcome of the exchange between the TA and Masen. The submitted report shall be updated by the TA until the document is declared satisfactory by Masen.

2.3.2.4. Section IV: Recommendations and final report

The TA shall prepare a draft final Hydrogen production technologies report (“Final hydrogen technology production Study Report” or “Final Report”) that includes all analyses and findings

performed under all the sections above and addresses all comments of Masen and its Partners as the case may be. The TA shall provide the draft Final Report to Masen for review, discussion and approval.

The Final Report shall be a substantive and comprehensive report of work performed to carry out all sections of Mission B together with an executive summary. Each section of the Mission B form a separate chapter of the Final Report.

The Final Report shall also include TA recommendation on Green hydrogen technologies covering the following:

1. Hydrogen production technology: the recommended electrolyser technology taking into account the technical and economic aspects as well as the recommended maximum large scale plant size/capacity.

2. Depending on the final product (hydrogen, ammonia, methanol…), the TA shall recommend also the technical configuration for production either to produce the final product directly or through the hydrogen based on the green hydrogen technology analysis and their economic aspects.

3. Hydrogen storage and transport technology: depending on the green hydrogen final usage, the TA shall recommend the most adequate storage and transport technology to develop in Morocco. The TA shall also specify the needed infrastructure to develop such sector.

4. Hydrogen derived products production technology: the recommended electrolyser technology taking into account the technical and economic aspects as well as the recommended maximum large scale plant size/capacity.

Deliverables of Mission B:

The TA shall provide the following deliverables describing the performed work as detailed above :

D 2.1: Overview of Hydrogen production technologies report including :

- Overview and comparison between Hydrogen production technologies
- Detailed analysis of each hydrogen production technologies
- List of main input and output of each process
- Management practices of secondary output
- Overview of Hydrogen technology R&D and perspectives

D 2.2: Hydrogen Storage and transport technologies overview report including :

- State of art of hydrogen storage and transport technologies
- Overview and comparison between Hydrogen storage and transport technologies
- Storage and transport Technology selection criteria
- Overview of cost
- Overview of Hydrogen Storage and transport R&D and perspectives

D 2.3: Electrolyser market report including :

- Review of the electrolyser technologies

- List and detailed description of main electrolyser component
- Focus on elctrolyser stack technology
- Interface of the elctrolyser with the renewable energy /grid
- Electricity and Water quality
- Benchmark and recommendation on the simulation tools/software.
- Typical site layout for each solution (electrolyser/Hydrogen storage)

D 2.4: Economic analysis report including :

- Overview of main green hydrogen development scheme
- Green hydrogen Economic aspects including detailed breakdown of Capex and Opex
- Cost-benefit matrix
- Economic comparison of green and grey hydrogen

D2.5: Final report including recommendation

D 2.6: Presentation in Power Point version and **synthesis in Word version** of the final version of the Report.

2.3.3. Mission C: Technical assistance to perform specific assignments

The Technical Advisor shall provide technical assistance to Masen on technical aspects which are outside scope of work of Mission A and B. The Technical Advisor will dedicate a team of experienced and highly qualified individuals to work on specific assignments to be defined with Masen.

A key objective of Masen is to ensure that it receives efficient, cost effective and responsive advice from the Technical Advisor. In accepting an assignment, the Technical Advisor specifically represents and guarantees Masen to devote the requisite level of appropriately skilled and experienced professionals and other resources to ensure that the assignment is accomplished on time and within budget.

Following a request by Masen to perform any task and prior to initiating any work, the Technical Adviser shall provide Masen with (i) confirmation of the instruction and the work to be performed and (ii) the number of hours required (using an effective and efficient use of time) to perform such work (**Estimated Hours**).

The Technical Advisor shall not initiate any work until:

(a) kfW has provided his non objection on the scope of work of this mission and has confirmed that the Estimated Hours proposed by the Technical Advisor to be performed for such work are acceptable.

(b) Masen has confirmed that the Estimated Hours proposed by the Technical Advisor to be performed for such work are acceptable; or

(c) The parties have otherwise mutually agreed to fee arrangements for such work.

If, at any time, the Technical Advisor believes that the number of hours required to perform a particular piece of work which was instructed is higher than the agreed estimated hours for such work, it shall promptly seek Masen's consent prior to incurring such additional time.

2.4. Process

1. The TA shall travel to Morocco, within a maximum period of three (3) weeks after the Contract award, in order to meet Masen team and discuss the relevant points of the scope of work during a kick-off meeting,

   The TA shall ensure that relevant technical experts are available to participate in these activities, as in all others activities described in the scope of work.

   Based on the documents and data review, the TA shall prepare a detailed project work plan to be discussed during the kick-off meeting.

   Following discussions with Masen and its Partners, as the case may be, the TA shall update the detailed project work plan during the kick-off meeting. The amended project work plan will become the basic project management tool and will contain specific deadlines and the overall implementation of the Project.

   The whole activities identified in these ToR shall be carried out by the TA and its relevant experts.

2. The TA will be responsible for drafting minutes of all meetings organized with Masen and/or its Partners (including conference calls) during each section of the Contract as defined in the scope of work.

3. The TA shall be responsible of conducting interviews with market players to get their inputs.

4. Deliverables:

   - Documents, Drawings… shall be provided in editable and PDF format.

   Masen reserves the right to mandate the Technical Advisor to complete one or several deliverables, as needed, and based on the quality of the initial tasks performed under the Contract.

5. The Technical Advisor shall ensure that qualified technical experts are available during all phases of the Contract.

2.5. Indicative time table for the Project

The table below provides the candidates with an indicative deliverables calendar for the Project.

Deliverables	Date
Mission A: Power To Hydrogen in Morocco: Energy storage and other potential applications	
D1.1: Markets trend, status and share Report	T0 + 3 weeks
D1.2: Hydrogen main usages Report	T0 + 4 weeks
D1.3: Moroccan hydrogen Context Report	T0 + 6 weeks
D1.4: Recommendations and Final Report	T0 + 8 weeks
D1.5: Presentation in Power Point	T0 + 8 weeks
D 1.6 : Results of surveys report	T0 + 8 weeks
Mission B: Hydrogen technology analysis	
D 2.1: Overview of Hydrogen production technologies Report	T0 + 3 weeks
D2.2: Hydrogen Storage and transport technologies overview Report	T0 + 3 weeks
D2.3: Focus on Electrolyser Report	T0 + 5 weeks
D2.4: Economic analysis Report	T0 + 5 weeks
D2.5: Final report including recommendation	T0 + 8 weeks
D2.6: Presentation in Power Point version and synthesis in Word version of the final version of the Report	T0 + 8 weeks

T0: Service Order

Bidders are made aware that these missions imply working on a very urgent basis with very short deadlines and often a lack of visibility with respect to the timetable due to various constraints inherent to the nature of this Project. Therefore the team devoted to this Project shall be flexible, fully dedicated, and significantly available and in a sufficient number in order to deal with the various matters according to Masen's instructions, including work during typical holidays such as Christmas and August.

A detailed timetable shall be provided by the Technical Advisor in compliance with the deadlines detailed in the scope of work.

The TA shall amend the deliverables, as deemed necessary, depending on the last agreed conclusions of the previous sections/missions.

3. Standard terms and conditions

Masen will enter into a service agreement with the Technical Advisor according to the model attached to this tender which corresponds to the standard terms and conditions of Masen (the "**Contract**").

Bidders are strongly encouraged to accept these terms without any modification. Any modification relating to the Contract (major deviation, omission and/or reserve) provided within the Technical Offer will not be accepted and will lead to the disqualification of the Bidder.

Bidders are made aware that (i) all deliverables of the Technical Advisor will be fully owned by Masen which will be entitled to use them freely and without restrictions; and that (ii) Masen (including its representatives, employees, subsidiaries and/or shareholders) does not accept to bear any uncapped liability towards the Technical Advisor.

4. Instructions to Bidders

4.1. Introduction

Bidders shall submit a technical proposal (**Technical Proposal**) and a financial proposal (**Financial Proposal**) as detailed below.

4.2. Procedure and timing

The tender and corresponding procedures are subject to KfW's Guidelines for Procurement (https://www.kfw-entwicklungsbank.de/PDF/Download-Center/PDF-Dokumente-Richtlinien/Vergaberichtlinien-2019-Englisch-Internet_2.pdf).

To respond to this tender, the Bidder may apply individually or as part of a Consortium.

Bidders will obtain this tender in electronic format through the e-tendering solution of Masen detailed below.

Technical Proposals shall include the Bidder's evidence of qualification and shall be delivered to MASEN no later than **October 01st 2020 before 04:00 pm** Moroccan time using e-tendering solution (see MASEN_Guide_Entreprise_Vf.pdf) using the following website https://masen.local-trust.com/ .

Financial Proposals shall be delivered to MASEN no later than **October 01st before 04:00 Pm** Moroccan time using e-tendering solution (see MASEN_Guide_Entreprise_Vf.pdf) using the following website https://masen.local-trust.com/ and shall be opened by MASEN on **November 03rd, 2020** at the earliest. In case several Financial Proposals were submitted by a Bidder, MASEN will only account for the last one delivered to MASEN, provided that such Proposal is submitted no later than **October 01st, 2020 before 04:00 pm** Moroccan time.

In case several offers are delivered by one Bidder using e-tendering solution, only the last one delivered will be opened by Masen.

In case of a problem at the time of submission of offers, the Bidder may call the following number: 00 33 1 76 64 74 02 or refer to the company guide.

Bidders may seek clarification from Masen on this tender via the e-tendering solution.

Should Masen deem necessary to amend this tender as a result of a clarification, it shall do so following the procedure described below.

At any time, before the submission of proposals and with no liability whatsoever, Masen may amend the tender by issuing an addendum by electronic means. The addendum shall be sent electronically to all bidders and shall be binding to them and considered an integral part of the original tender.

Bidders shall acknowledge receipt of all amendments. Not receiving the acknowledgement does not void the amendment introduced by Masen to this tender. To give Bidders reasonable time to take any such amendment into account in their proposals Masen may, at its discretion, if the amendment is substantial, extend the deadline for the submission of proposals.

All queries from Bidders to which Masen has responded will be posted on the e-tendering solution on an unattributed basis. All such queries must be received at least fourteen (14) calendar days before the deadline for submission and must be replied no later than ten (10) calendar days prior to the submission deadline.

Bidders should familiarize themselves with applicable Moroccan laws and regulations and take them into consideration whilst preparing their proposals.

Bidders shall bear all costs associated with the preparation and submission of their proposals and Contract negotiation. Masen shall, under no circumstances, reimburse any bidder for any costs associated with the development of their proposals. Masen is not bound to accept any proposal, and reserves the right to cancel the selection process at any time prior to Contract award, without incurring any liability towards the Bidders or any third party whatsoever.

4.3. Indicative timetable of the tender

The table below provides the Bidders with an indicative timetable for the selection of the Technical Advisor.

August 18th, 2020	Launch of the tender
September 18th , 2020	Deadline for request of clarification
October 01st, 2020, 04:00 pm	Deadline for technical and financial proposals submission
October 02nd, 2020	Opening of Technical Proposals
November 02nd , 2020	Evaluation of the technical proposal
October 23rd, 2020	Complement document, if any
October 23rd, 2020	Negotiation of technical, Contractual and legal pending items with Bidders, if any
November 02nd , 2020	Notification of the results of the tender to the Bidders
October 01st, 2020, 04:00 pm	Deadline for Financial proposals submission
November 03rd, 2020	Opening of the Financial Proposals and related evaluation
December 08th , 2020	Signature of the services agreement
Start from December 14th, 2020	Kick-off meeting

4.4. General Evaluation Principales

Proposals in relation to Missions A and B will be evaluated. For these Missions:

- Masen will review, analyze and evaluate the Technical Proposals in accordance with clause 5.2 below. Masen shall evaluate and negotiate all comments and mark-up related to the scope of work prior to opening the Financial Proposals. The Financial Proposal evaluation will be performed separately once the technical evaluation is concluded in accordance with clause 5.4 below.
- The candidates having reached the highest Bidders score will then be invited for contract signing in accordance with clause 5.5 below.

5. Content of the Proposals

5.1. Content of the Technical Proposal

Bidders are required to submit a Technical Proposal ("TP"). The TP shall contain non compressed and non-protected files that are printable and reproducible in one of these formats:

(a) Microsoft Word 2010 (for written documents and specifically for Forms 2.1, 2.2 and 2.3);

(b) Microsoft Excel 2010 (specifically for tables);

(c) JPEG format for the totality of the photos and images.

In addition, the TP shall also be supplied in non-protected printable and reproducible PDF format. The TP shall be organized into the following clearly demarcated sections for the purpose of evaluation:

A. Evidence of qualification file including the following documents:

   i. Bidder Credentials as per Form 2.3 in Appendix 2.

   ii. Confirmation of no conflict of interest and no inability to work with IFIs.

   iii. Confirmation of the Bidder financial capacity (taking into account the annual turn-over and the profitability of at least the last Three years). The financial capacity shall be demonstrated with evidences including audited income statements and/or balance sheets of at least the last three years and taking into account that the annual turn-over should be equal or higher than 650 000 Euro. Profitability may be demonstrated through a positive cash-flow (in average) and (indirectly) the availability of a credit line.

B. Technical file including the following documents:

   i. Comments on the Scope of Work.

   ii. Comments on the Standard Terms and Conditions.

   iii. Approach, methodology, work plan, and organization staff for performing the assignment (as per the Form 2.1). The proposed methodology and work plan should not exceed 20 pages.

   iv. Proposed professional staff CVs (as per the Form 2.2)

C. Administrative file including the following documents in accordance with Appendix 4:

   i. Duly signed statement of intent;

   ii. Duly signed power of attorney in favor of the Bidders' representative(s) authorized to legally bind the Bidder with third parties;

iii. If acting as a consortium, a declaration of joint and several liability based on the model agreement (form 4.3)

iv. A signed and initialed copy (on all pages) of the standard terms and conditions ("Contract"). **The Contract must not include any price information;**

v. Duly signed declaration of undertaking (Form 4.4)

The compliance with the annexed Forms is mandatory.

The Full Technical Proposal shall not include any financial information. A Full Technical Proposal containing financial information shall be declared non-responsive.

5.2. Evaluation Criteria for the Technical Proposal

Area of evaluation	Evaluation Criteria	Maximum Score
Bidder Experience	Experience in conduction similar studies: The evaluation will be based on the last 5 years' experience and credentials of the Bidder relevant to the Study including previous experience in delivering similar market analysis and technology assessment relating to Hydrogen and in particular Green Hydrogen.	**35**
	Experience in working on similar countries/regions: The evaluation will consider also experience and credentials of the Bidder in Morocco and North Africa.	**20**
Bidder's Capabilities	Evaluation of the Bidders based on the quality of the expertise to which he has access through his staff capabilities and / or external expertise.	**25**
	Quantitative assessment of the Bidder Human Resources Capacity. The evaluation will consider the : - Availability and commitment of key senior professionals (project directors/managers) to the assignment.	**15**

	- Capacity to increase the proposed team in case of heavy workload. - Location of the various members of the proposed staff.	
Clarity and relevance of the documents	The evolution will consider if the submitted documents are concise and related to the Project.	**5**
Conflict of Interest	Evaluation of the Bidders based on whether the Bidder is conflicted.	**Pass or Fail**
Ineligibility to work with IFIs	Evaluation of the Bidders based on whether the bidder is not eligible to work with certain IFI's.	**Pass or Fail**
Financial capacity of Bidders	Evaluation of the Bidders financial capacity.	**Pass or Fail**
Declaration of undertaking	A duly signed declaration of undertaking according to Form 4.4	**Pass or Fail**
Total Qualification Score ("QSC")		**100**

<table>
<tr><th>Area of evaluation</th><th>Evaluation Criteria</th><th>Maximum Score</th></tr>
<tr><td>Professional qualifications and experience of the team</td><td>The evaluation will be based on the assigned staff's skills and experience including:
Experience in assessing and analyzing the market trend based on previous experience and knowledge of hydrogen Market.
Experience in handling technical issues relevant to the Study based on previous experience and knowledge of hydrogen technologies and RE technologies.
Number of years of experience.
Level of seniority in the proposed staff and compatibility with previous positions held on similar projects.
Capacity to work/draft/communicate in English language (French language is an advantage).
The scoring resulting from the above evaluation will be assigned as follow:<table><tr><td>Project manager expertise</td><td>30</td></tr><tr><td>Other Key staff to be employed on the Study</td><td>30</td></tr><tr><td>Personnel in the home office who will monitor and control the team, and provide back-up services</td><td>5</td></tr></table></td><td>60</td></tr>
<tr><td>Concept & methodology</td><td>a) Approach and methodology:
Evaluation of the Bidders understanding of the Study based on the following:
The proposed methodology and approach for Study deliverables and its consistency with Masen's objectives.</td><td>10
+
Pass/Fail</td></tr>
</table>

	- The proposed deliverables and their alignment with the Study objectives and with the requirements set out in the RFP. - Whether the Bidder has a sufficient understanding of the potential implementation risks and has developed adequate plans to address and mitigate those risks. - Demonstrated understanding of the various stakeholders involved in the Study (including the IFIs) and their potential requirements.	
	b) Work plan: Evaluation of the proposed work plan for the Study execution including: - Whether the work plan clearly outlines the main activities of the assignment, their content and duration, phasing and interrelations and milestones. - Whether the proposed work plan is consistent with the approach and methodology and whether the proposed work plan is consistent with the timetable provided by Masen.	**5**
	c) Organization and Staffing : Evaluation of the proposed organization and staffing including: - The proposed team and management structure, and whether it is in-line with the Study requirements - Adequacy of resources being allocated to project execution (in terms of staffing levels positions and proposed staff deployment plan).	**5**
Extent of mark-up	Evaluation of the Bidders based on the following: - No changes to the Contract	**10** **+** **Pass/Fail**

	- A mark-up refers to changes made to RFP document.	
Clarity and completeness of the Proposal	The evaluation will consider the : - Clarity and completeness of the Proposal and - Responsiveness during the clarification phase.	**5**
Total Technical Score ("TSC")		**100**

The evaluation committee shall evaluate the Technical Proposals on the basis of their responsiveness to the Terms of Reference, applying the evaluation criteria specified in the tables above. Each responsive proposal will be given a qualification score ("**QSC**") and technical score ("**TSC**"). A proposal shall be rejected at this stage if it does not substantially comply with the tender, and particularly with the Terms of Reference or if it fails to achieve the minimum qualification score and technical score mentioned hereafter.

Bidders that obtain a qualification score ("QSC") of 70 or more will be pre-qualified without prejudice to the exclusion criteria referred to hereafter ("Pre-qualified Bidders").

Bidders who have passed the QSC and obtain a technical score ("TSC") of 75 or more will be qualified without prejudice to the exclusion criteria referred to hereafter ("Qualified Bidders"). The maximum number of Bidders passing the TSC is limited to 5 of the Bidders who have reached the highest TSC."

During the overall evaluation period Masen reserves the right to request from the Bidders to provide, within a reasonable time, additional information/documents in order to clarify their proposals and/or complete them. A Bidder who fails to comply with such request within the reasonable period of time specified in Masen's request may have its bid rejected.
Masen reserves the right to disqualify any bidder for any of the following reasons:

- Substantial changes (major deviation, omission or reserve) to the proposed standard terms and conditions.
- Exposure of the bidder to any conflict of interest in relation to the Project and/or its stakeholders.
- Ineligibility to work with IFIs.
- Completeness of the responses. However, Masen reserves the right to waive any minor deviations, omissions and/or reserves.

Masen will open the Financial Proposals of the Qualified Bidders only.

5.3. Content of the Financial Proposal

Bidders are required to submit a Financial Proposal which shall be prepared using the following forms:

A. Financial Proposal submission form (Form 3.1)

B. Financial Proposal Breakdown and millstones payment (Form 3.2).

C. Commitment agreement (Form 3.3).

D. If acting as a Consortium, Consortium commitment agreement (Form 3.4).

The Financial Proposal shall contain non-compressed and non-protected files that are printable and reproducible in one of these formats:

(a) Microsoft Word 2010 (for written documents and specifically for Forms 3.1, 3.2 and 3.3 (or 3.4 if acting as Consortium));
(b) Microsoft Excel (specifically for tables);
(c) JPEG format for the totality of the photos and images.

In addition, the Financial Proposal shall also be supplied in a non-protected printable and reproducible PDF format.

All activities and items described in the Terms of Reference and Technical Proposal must be priced separately; activities and items described in the Technical Proposal but not priced, shall be assumed to be included in the prices of other activities or items.

Financial Proposal shall be expressed in US Dollars ("**USD**") or in Euros ("**EUR**") and shall show separate values for prices excluding all taxes/ duties and including all taxes / duties.). The Financial evaluation will be made on the basis of prices excluding all taxes / duties.

There shall be no variations as result of exchange rate fluctuation.

Bidders should evaluate the applicability of taxes to their remuneration and should bid accordingly. Masen will not provide any tax exemptions but may provide certificates for the payment of the withholding taxes.

Masen will use the following exchange rates to convert the financial proposals in USD and/or EUR in MAD for the purposes of comparing the Financial Proposals submitted:

- USD/MAD exchange rate calculated as the arithmetic average of "bid and ask" rates as published by Bank Al Maghrib (www.bkam.ma) at close of business (Moroccan time) the day prior to the deadline for submission of the Financial Proposals;

- Euro/MAD exchange rate calculated as the arithmetic average of "bid and ask" rates as published by Bank Al Maghrib (www.bkam.ma) at close of business (Moroccan time) the day prior to the deadline for submission of the Financial Proposals

Financial proposals shall be binding upon the Bidders subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal. Financial Proposals in relation to Missions A and B shall be **fixed** for the entire period of the advisory services.

Financial Proposal for Mission C shall be expressed on the basis of man-day rates in USD or in EUR excluding VAT but including withholding taxes and any other applicable taxes (broken down by category of personnel and including the detail of any applicable escalation mechanism).

The Financial Proposal will be examined prior to the signing of the Contract in order to ascertain that the items are correctly extended at the rates quoted. Should any arithmetical error be found, it will be corrected and the Financial Proposal will be amended accordingly. The bidder will be informed of any arithmetical adjustment made should Masen wish to further consider his Proposal and he will be required to certify his acceptance of such adjustment.

The Financial Proposal shall not include any mark-up. A Financial Proposal containing mark-up shall be declared non-responsive.

5.4. Evaluation of the Financial Proposal

For each mission, Bidders that receive a technical score ("TSC") of 75 points or higher will be qualified. Masen will open the Financial Proposals of the qualified bidders.

Masen reserves the right to consider any clarification received after the opening of the Financial Proposal. Notwithstanding the latter, no further markup of the Contract will be accepted after opening of the Financial Proposal by Masen.

For each mission, Financial Proposals shall be assigned a financial score ("**FSC**") of maximum 100. The FSC will be calculated as follows:

FSC = 100 x (FSC min/F f)

Where:

FSC min = Lowest total financial proposal in relation to Missions A and B in MAD (converted in accordance with clause 5.3 above);

Ff = Total financial proposal by the bidder under consideration in MAD (converted in accordance with clause 5.3 above); and

5.5. Scoring of the Proposals

The overall score of the Missions A, B shall be calculated as follows:

BIDDER SCORE= 80% * **TSC** + 20% * **FSC**

(Technical Proposal will have 80% weight, while Financial Proposal will have a weight of 20%)

6. General provisions

6.1. Proposal validity

The Technical Advisor proposal must remain valid three (3) months after the submission date. During this period, the Technical Advisor shall maintain the availability of professional staff nominated in the proposal. Masen will do its best to complete negotiations within this period.

6.2. Exclusivity / Conflict of Interest

The Bidders have an obligation to disclose any situation of actual or potential conflict that impacts their capacity to serve the Masen's best interest, or that may be reasonably perceived as having this effect. Failure to disclose said situations may lead to the disqualification of the Bidders or the termination of the technical Contract.

Conflict of interest shall include any situation in which the Bidders, including the Technical Advisor, is given a mission, defends or holds an interest that affects, seems to reasonably affect or is likely to affect the objectivity with which it must provide its services to Masen.

Exclusivity/Conflict of interest shall be governed by the related clause of the standard terms and conditions reflected in the technical Contract upon its signature.

6.3. Confidentiality

The Bidders shall treat this tender, its content and all related documents, as private and confidential (save to the extent strictly necessary to allow them to submit their proposals to this tender and in such a case, information shall be provided only to the persons directly concerned and subject to them agreeing to treat them as confidential prior to such disclosure) and shall not publish or disclose them without the prior written consent of Masen.

All documents prepared by the Technical Advisor for the assignment or supplied to them by Masen shall remain confidential until signature of the technical Contract unless Masen accepts to waive their confidentiality.

Confidentiality shall be governed by the related clause of the standard terms and conditions reflected in the technical Contract upon its signature.

6.4. Ownership of materials

Bidders hereby irrevocably waive all moral rights which they have or will have in any existing or future records, reports, documents, papers, presentations, minutes of meetings, correspondence and all other materials in whatever form, including but not limited to hard copy and electronic form, prepared by the bidders in response to this tender, all of which are being deemed as "Work for Hire" and shall therefore be the sole property of Masen.
Ownership of materials shall be governed by NDA, the related clause of the standard terms and conditions reflected in the technical Contract upon its signature.

6.5. Language

The ruling language of this agreement is the English language. All reports, minutes, correspondence, etc. shall be in the English language.

MASEN will communicate with the candidates and to the selected Technical Advisor in English.

7. Appendices

Appendix 1: Standard Terms and Conditions

Please refer to the attached document (Service contract).

Appendix 2: **Technical Proposal forms**

Form 2.1: Approach, Methodology and work plan, for performing the Assignment

Provide a description of the approach, methodology and work plan, for performing the assignment. You are encouraged to present your proposal divided into the following three chapters:

a) Approach and Methodology

In this chapter you should explain your understanding of the objectives of the assignment, methodology for carrying out the activities and obtaining the expected output, and the degree of detail of such output. You should highlight the problems being addressed and their importance, and explain the approach you would adopt to address them. You should also explain the methodologies you propose to adopt and highlight the compatibility of those methodologies with the proposed approach. Additionally, you should detail the deliverables that will be provided and explain how they will meet the Study objectives and the requirements set out in this ToR.

This chapter shall include also a list of the software and tools to be used during this Study indicating their usefulness.

b) Work Plan

In this chapter you should propose the main activities of the assignment, their content and duration, phasing and interrelations, milestones (including interim approvals by Masen, Masen's Partners and IFIs), and delivery dates of the reports. The proposed work plan should be consistent with the approach and methodology, showing understanding of the terms of reference and ability to translate them into a feasible working plan.

The proposed work plan shall indicate also the main important scheduled visits to Morocco and detailed the surveys process. It is therefore essential that the Technical Advisor plans all activities to meet the deadlines provided in section 2.5.

The Technical Advisor should provide dates for key milestones and should demonstrate that the proposed Study timeline is compliant with the provided deadlines in Section 2.5.

Mission A:

N°	Activity[1]	Months[2]												
		1	2	3	4	5	6	7	8	9	10	11	12	n
1	Agreement signature and project kick-off													
2														
3														
4														
5														
n														

c) Organization and Staffing

In this chapter you should propose the structure and composition of your team. You should list the main disciplines of the assignment, the key expert responsible, and proposed technical and support staff. You should also detail the staffing levels, the staffing deployment plan as well as the organization chart.

The TA shall clarify the communication protocol between the members of the consortium and highlight clearly the allocation of responsibilities throughout the consortium (if applicable).

[1] Indicate all main activities of the assignment, including delivery of reports (e.g.: inception, interim, and final reports), and other benchmarks such as Client approvals. For phased assignments indicate activities, delivery of reports, and benchmarks separately for each phase.

[2] Duration of activities shall be indicated in the form of a bar chart

Form 2.2: Curriculum Vitae for proposed professional staff

CVs should be submitted in the following basic format and contain the listed information as a minimum.

The CV should clearly demonstrate the experience of the expert detailing the tasks undertaken under each projects (experience in Hydrogen will be valuable).

The CV of the project manager shall demonstrate his 10 years of experience having been involved as project manager, for at least three years, in the development of renewable energy plants (an expertise on green hydrogen would valuable).

The CV should clearly indicate the status of the expert vis a vis the company (i.e. Permanent staff, freelance, subcontractor…)

1. PROPOSED POSITION in the Study	*(Note only 1 candidate shall be nominated for each position.)*
2. NAME OF STAFF	*(Insert the full name.)*
3. DATE OF BIRTH:	
4. NATIONALITY	
5. YEARS OF PROFESSIONAL EXPERIENCE:	
6. YEARS EMPLOYED BY COMPANY:	
7. EDUCATION	*(Indicate college/university and other specialized education of staff member, giving names of names of institutions, degrees obtained, and graduation dates.)*
8. MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:	
9. OTHER TRAINING	*(Indicate significant training since degrees.)*
10. COUNTRIES OF WORK EXPERIENCE	*(List countries where staff has worked in the past ten years.)*
11. LANGUAGES	*(For each language indicate proficiency as good, fair, or poor in speaking, reading and writing.)*
12. EMPLOYMENT RECORD	*(Starting with present position, list in reverse order every employment held by staff member since graduation, providing dates of employment, name of employing organization, positions held.)*
13. DETAILED TASKS ASSIGNED UNDER THIS STUDY	*(List all tasks to be performed under this assignment.)*
14. WORK UNDERTAKEN THAT BEST ILLUSTRATES CAPACITY TO HANDLE THE TASKS ASSIGNED:	*Among the assignments, in which the staff has been involved, provide the following information for those assignments that best illustrate staff capability to handle the tasks listed under 2.3* - *Project name:* - *Name of the client*

	- *Project description and size:* - *Approximate transaction value:* - *Specific role:*

15. CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience. I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.

_____ Date: [*Day/Month/Year]*

[Signature of staff member or authorized representative of the staff]

Full name of authorized representative:

Form 2.3: Firm's credentials

Using the following format, provide between two (2) to five (5) references with experience relevant to the technical requirements of this RFP. The experience must be within the last five (5) years.

In particular, firm's credentials should include credentials as:

- hydrogen or its derived products Market analysis
- Hydrogen technology Analysis
- Elaboration of road map guidelines
- Assessment of the potential of green hydrogen production in a specific country/ region.
- Technical and Economic assessment of green hydrogen.
- Assessment of Green hydrogen project development
  Feasibility study of energy projects notably renewable

1. Name of Assignment or Study	
2. Name of client(s) / Address :	
3. Country / Location within country:	
4. Study details :	
5. Study budget (in USD)	
6. Study status (achieved, ongoing…):	
7. Narrative description of the study:	
8. Scope performed	
9. Date / Duration of assignment (in months):	
10. Name of senior professional staff of your firm involved and functions performed (most significant profiles only such as Director/Coordinator, team Leader):	

Masen RESERVES THE RIGHT TO CONTACT THE INDIVIDUALS FOR A REFERENCE AS PART OF THE EVALUATION PROCESS.

Appendix 3: Financial Proposal
Form 3.1: Financial Proposal submission Form

[*Location, Date*]

To: *M. Bakkoury, President of Masen*

Dear Sirs:

We, the undersigned, offer to provide technical advisory services for [*Title of consulting services*] in accordance with your Request for Proposal dated [*Date*] and our Technical Proposal. Our attached Financial Proposal is as follows:

[Indicate currency (either USD or EUR) and insert amount(s) in words and figures]

Missions A and B

	Currency	**Amount excluding any taxes in figures and in Words.**	**Amount** exclusive of VAT but inclusive of withholding taxes and any other applicable taxes in Morocco **in figures and in Words**.	**Amount including all taxes in figures and in Words.**
Mission A : Hydrogen usages analysis: Energy storage and other applications				
Mission B : Hydrogen technologies analysis				

Mission C:

Position	Currency	**Amount excluding any taxes. (per Man day)* in figures and in Words**	**Amount** exclusive of VAT but inclusive of withholding taxes and any other applicable taxes in Morocco **in figures and in Words**. **(per Man day)***	**Amount including all taxes in figures and in Words. (Per Man day)***
Junior consultant				
Senior consultant				

(*) Unit price

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal.

We understand you are not bound to accept any Proposal you receive and that you have the right to mandate us to complete one or several phases, as needed, and based on the quality of the initial tasks performed under the Contract.

Yours sincerely,

_____

[*Authorized signature(s)*]
Name and Title of Signatory
Name of Firm
Address
Stamp

Form 3.2: Financial Proposal Breakdown and payment millstones

Note: Payments shall be made upon approved Deliverables presented to Masen. No Down Payment will be accepted. Please provide your quotes for the below-mentioned Deliverables.

Financial Proposal Breakdown:

Delivrables		Currency	**Amount in figures and in Words excluding any taxes.**	**Amount in figures and in Words** exclusive of VAT but inclusive of withholding taxes and any other applicable taxes in Morocco.	**Amount in figures and in Words including all taxes.**
Mission A	D1.1: Markets trend, status and share Report				
	D1.2: Hydrogen main usages Report				
	D1.3: Moroccan hydrogen Context Report				
	D1.4: Recommendations and Final report & D1.5: Presentation in Power Point				
	D 1.6 : Results of surveys report				
	Total of Section A				
Mission B	D 2.1: Overview of Hydrogen production technologies Report				
	D2.2: Hydrogen Storage and transport technologies overview Report				
	D2.3: Focus on Electrolyser Report				

	D2.4: Economic analysis Report				
	D2.5: Final report including recommendation & D2.6: Presentation in Power Point version and synthesis in Word version of the final version of the Report				
	Total of Mission B				
TOTAL					

The total cost corresponds to the lump sum value of the Contract

Milestones of Payments:

	Milestones and payment conditions	Currency	**Amount in figures and in Words excluding any taxes.**	**Amount in figures and in Words** exclusive of VAT but inclusive of withholding taxes and any other applicable taxes in Morocco.	**Amount in figures and in Words including all taxes.**
Millstone 1	Final Report of the Mission A (upon reception and approval of the final report of Mission A by Masen)		*Total of Mission A*	*Total of Mission A*	
Millstone 2	Final Report of the Mission B (upon reception and approval of the final report of Mission B by Masen)		*Total of Mission B*	*Total of Mission B*	

Form 3.3:COMMITMENT AGREEMENT

Purpose of the Contract: TECHNICAL ADVISORY SERVICES FOR THE STUDY "POWER TO HYDROGEN IN MOROCCO: ENERGY STORAGE AND OTHER POTENTIAL APPLICATIONS"

I, the undersigned: ..... (name, surname and position)

Acting for and on behalf of: ..... (company name and legal form)

Company share capital: ....

Company registered office: ....

Home Address:

Professional or Trade registers .... (place)

N°..... ....(1)

By virtue of the powers vested in me:

After having reviewed and considered the call for bids relating to the TECHNICAL ADVISORY SERVICES FOR THE STUDY "POWER TO HYDROGEN IN MOROCCO: ENERGY STORAGE AND OTHER POTENTIAL APPLICATIONS".

After having, in my own capacity assessed the nature, scope and degree of difficulty of the tasks and subsequently taking responsibility, hereby:

1) Submit a signed price schedule, detailed estimate and breakdown, set out in accordance with the sample documents contained in the tender package.

2) Undertake to perform such work or service in accordance with the specifications for the financial compensation set out below:

- Amount excluding VAT: ..... (spelled out and in numerical form)

- Amount of the VAT (rate 20%): ..... (spelled out and in numerical form)

- Amount including VAT: ..... (spelled out and in numerical form)

Masen shall be discharged from monies due by crediting the account held with ..... (treasury, bank or post office) (1) opened in my name (or on behalf of the Company) ....in..... (place), account number .....

Signed

In .....

On .....

(Signature and company seal)

Form 3.4: CONSORTIUM COMMITMENT AGREEMENT

Purpose of the Contract: TECHNICAL ADVISORY SERVICES FOR THE STUDY "POWER TO HYDROGEN IN MOROCCO: ENERGY STORAGE AND OTHER POTENTIAL APPLICATIONS"

We, the undersigned: ..... (name, surname and position)

-……

-……

shall be jointly and severally liable and shall act for and on behalf of the following:

Company 1

Company name and legal form: .....

Company share capital : ....

Company registered office: ....

Home Address:

Professional or Trade registers .... (place)

N°. ……(1)

Company 2

Company name and legal form: .....

Company share capital : ....

Company registered office: ....

Home Address:

Professional or Trade registers .... (place)

N°. ……

By virtue of the powers vested in us:

After having reviewed and considered the call for bids relating to TECHNICAL ADVISORY SERVICES of the study "POWER TO HYDROGEN IN MOROCCO: ENERGY STORAGE AND OTHER POTENTIAL APPLICATIONS"

After having, in my own capacity assessed the nature, scope and degree of difficulty of the tasks and subsequently taking responsibility, hereby:

1) Submit a signed price schedule, detailed estimate and breakdown, set out in accordance with the sample documents contained in the tender package.

2) Undertake to perform such work or service in accordance with the specifications against the financial compensation set out below:

- Amount excluding VAT: ..... (spelled out and in numerical form)

- Amount of the VAT (rate 20%): ..... (spelled out and in numerical form)

- Amount including VAT: ..... (spelled out and in numerical form)

3) Designate ……. (name, surname, position) as the consortium leader and agent.

Masen shall be discharged from monies due by crediting the account held with .... (treasury, bank or post office) (1) opened in my name (or on behalf of the Company) .... (place), account number ....

Signed

In .....

On ……..

(Signature and company seal) (signature and company seal)

Appendix 4 : Administrative files
Form 4.1: STATEMENT OF INTENT

Purpose of the Contract: TECHNICAL ADVISORY SERVICES FOR THE STUDY "POWER TO HYDROGEN IN MOROCCO: ENERGY STORAGE AND OTHER POTENTIAL APPLICATIONS"

I, the undersigned: ..... (Name, surname and position)

Acting for and on behalf of: ..... (company name and legal form)

Company share capital : ....

Company registered office: ....

Home Address:

Professional or Trade registers .... (place)

N°. ……

Hereby declare as follows:

1 – I shall subscribe a comprehensive professional indemnity insurance cover, within the limits set in the specifications;

2 - I have legal, technical and financial capacity as required;

3 – I am up-to-date on my tax payments to the relevant tax authorities;

4 – I am up-to-date on the payment of my social security contributions to the relevant authority, if applicable;

5 – I am not under receivership or in compulsory liquidation proceedings;

6 – I warrant that the Contract shall under no circumstances be subcontracted in its entirety. Furthermore, I undertake to guarantee that subcontractors, if called upon, shall meet the above requirements.

I hereby certify the accuracy of the information contained in this statement of intent.

I acknowledge that in the event the above statements are inaccurate, the Contract may be automatically terminated.

Signed

in .....

on .....

(Signature and seal)

N.B.: All consortium members must submit an individual statement of intent.

Form 4.2: POWER OF ATTORNEY

I, the undersigned, ……..acting as ……(position/title) of ……..... (company name and legal form) ……. with a share capital of ……, having its registered office at ……., and professional trade register …….. n° ……..

By virtue of the powers vested in me by: (resolution of the Board of Directors, etc…….., of which copy is attached)

Appoint Mr. …….. (name and position/title) as attorney-in-fact in the name of and on behalf of the Company……(company name)

To sign and present the tender offer relating to the call for bids with respect to TECHNICAL ADVISORY SERVICES FOR THE STUDY "POWER TO HYDROGEN IN MOROCCO: ENERGY STORAGE AND OTHER POTENTIAL APPLICATIONS"

This authority is valid for …….. from ……..(date).

Signed

In ……

On ……

The Principal	**Attorney-in-Fact**
Signature and company seal	Signature and company seal
Affix: "Signed as agreed"	Affix: "Signed as agreed"

N.B.: Signatures must be authenticated by the legal representative or director of each company

Form 4.3: CONSORTIUM STATEMENT OF INTENT

We, the undersigned, Mr. ..... (name, surname and position)

-……

-……

acting jointly and severally and having the legal capacity required to act for and on behalf of:

Company 1

Company name and legal form: .....

Company share capital : ....

Company registered office: ....

Home Address:

Professional or Trade registers .... (place)

N°. ……(1)

Company 2

Company name and legal form: .....

Company share capital : ....

Company registered office: ....

Home Address:

Professional or Trade registers .... (place)

N°. ……(1)

By virtue of the powers vested in us, and in affirmation of our commitment to act jointly and severally with respect to the TECHNICAL ADVISORY SERVICES FOR THE STUDY "POWER TO HYDROGEN IN MOROCCO: ENERGY STORAGE AND OTHER POTENTIAL APPLICATIONS", hereinafter referred to by the "Contracting Authority", hereby:

1 - Acknowledge that by virtue of our joint and several commitments, each company as represented undertakes to perform the Contract and comply with the terms and conditions of the Contract as well as ensure the proper execution of our respective share of the tasks or services, even in the event of default by an associate group member.

2 - Request that payments by the Contracting Authority related to the performance of the Contract be made through the Group's bank account.

Account No. .....

Bank name and branch .....

And further acknowledge that all payments received on this account shall be considered by us as discharging Masen from its obligation to pay.

3 - Appoint as the consortium's representative vis-à-vis Masen, the Company ….. ……represented by Mr..... .... acting as ... .

Signed

In ……

On ……

The Principal	**Attorney-in-Fact**
Signature and company seal	Signature and company seal
Affix: "Signed as agreed"	Affix: "Signed as agreed"

N.B.: Signatures must be authenticated by the legal representative or director of each company.

Form 4.4: Declaration of undertaking

Reference name of the Application/Offer/Contract: ("TECHNICAL ADVISORY SERVICES FOR THE STUDY "POWER TO HYDROGEN IN MOROCCO: ENERGY STORAGE AND OTHER POTENTIAL APPLICATIONS")[3]

To: MASEN

1. We recognise and accept that KfW only finances projects of MASEN subject to its own conditions which are set out in the Funding Agreement it has entered into with Masen. As a matter of consequence, no legal relationship exists between KfW and our company, our Joint Venture or our Subcontractors under the Contract. Masen retains exclusive responsibility for the preparation and implementation of the Tender Process and the performance of the Contract.

2. We hereby certify that neither we nor any of our board members or legal representatives nor any other member of our Joint Venture including Subcontractors under the Contract are in any of the following situations:

   2.1) being bankrupt, wound up or ceasing our activities, having our activities administered by courts, having entered into receivership, reorganisation or being in any analogous situation;

   2.2) convicted by a final judgement or a final administrative decision or subject to financial sanctions by the United Nations, the European Union or Germany for involvement in a criminal organisation, money laundering, terrorist-related offences, child labour or trafficking in human beings; this criterion of exclusion is also applicable to legal Persons, whose majority of shares are held or factually controlled by natural or legal Persons which themselves are subject to such convictions or sanctions;

   2.3) having been convicted by a final court decision or a final administrative decision by a court, the European Union, national authorities in the Partner Country or in Germany for Sanctionable Practice in connection with a Tender Process or the performance of a Contract or for an irregularity affecting the EU's financial interests *(in the event of such a conviction, the Applicant or Bidder shall attach to this Declaration of Undertaking supporting information showing that this conviction is not relevant in the context of this Contract and that adequate compliance measures have been taken in reaction)*;

   2.4) having been subject, within the past five years to a contract termination fully settled against us for significant or persistent failure to comply with our contractual obligations during such Contract performance, unless this termination was challenged and dispute resolution is still pending or has not confirmed a full settlement against us;

   2.5) not having fulfilled applicable fiscal obligations regarding payments of taxes either in the country where we are constituted or Morocco;

   2.6) being subject to an exclusion decision of the World Bank or any other multilateral development bank and being listed on the website http://www.worldbank.org/debarr or respectively on the relevant list of any other multilateral development bank *(in the event of such exclusion, the Applicant or Bidder shall attach to this Declaration of Undertaking supporting information showing that this exclusion is not relevant in the context of this Contract and that adequate compliance measures have been taken in reaction)*; or

   2.7) being guilty of misrepresentation in supplying the information required as condition to participation in this Tender Procedure.

3. We hereby certify that neither we, nor any of the members of our Joint Venture or any of our Subcontractors under the Contract are in any of the following situations of conflict of interest:

[3] Capitalised terms used, but not otherwise defined in this Declaration of Undertaking have the meaning given to such term in KfW's "*Guidelines for the Procurement of Consulting Services, Works, Goods, Plant and Non-Consulting Services in Financial Cooperation with Partner Countries"*.

3.1) being an affiliate controlled by Masen or a shareholder controlling the Masen, unless the stemming conflict of interest has been brought to the attention of KfW and resolved to its satisfaction;

3.2) having a business or family relationship with a Masen's staff involved in the Tender Process or the supervision of the resulting Contract, unless the stemming conflict of interest has been brought to the attention of KfW and resolved to its satisfaction;

3.3) being controlled by or controlling another Applicant or Bidder, or being under common control with another Applicant or Bidder, or receiving from or granting subsidies directly or indirectly to another Applicant or Bidder, having the same legal representative as another Applicant or Bidder, maintaining direct or indirect contacts with another Applicant or Bidder which allows us to have or give access to information contained in the respective Applications or Offers, influencing them or influencing decisions of Masen;

3.4) being engaged in a Consulting Services activity, which, by its nature, may be in conflict with the assignments that we would carry out for Masen;

3.5) in the case of procurement of Works, Plant or Goods:

i. having prepared or having been associated with a Person who prepared specifications, drawings, calculations and other documentation to be used in the Tender Process of this Contract;

ii. having been recruited (or being proposed to be recruited) ourselves or any of our affiliates, to carry out works supervision or inspection for this Contract;

4. If we are a state-owned entity, and compete in a Tender Process, we certify that we have legal and financial autonomy and that we operate under commercial laws and regulations.

5. We undertake to bring to the attention of the Masen, which will inform KfW, any change in situation with regard to points 2 to 4 here above.

6. In the context of the Tender Process and performance of the corresponding Contract:

6.1) neither we nor any of the members of our Joint Venture nor any of our Subcontractors under the Contract have engaged or will engage in any Sanctionable Practice during the Tender Process and in the case of being awarded a Contract will engage in any Sanctionable Practice during the performance of the Contract;

6.2) neither we nor any of the members of our Joint Venture or any of our Subcontractors under the Contract shall acquire or supply any equipment nor operate in any sectors under an embargo of the United Nations, the European Union or Germany; and

6.3) we commit ourselves to complying with and ensuring that our Subcontractors and major suppliers under the Contract comply with international environmental and labour standards, consistent with laws and regulations applicable in the country of implementation of the Contract and the fundamental conventions of the International Labour Organisation[4] (ILO) and international environmental treaties. Moreover, we shall implement environmental and social risks mitigation measures when specified in the relevant environmental and social management plans or other similar documents provided by Masen and, in any case, implement measures to prevent sexual exploitation and abuse and gender based violence.

7. In the case of being awarded a Contract, we, as well as all members of our Joint Venture partners and

[4] In case ILO conventions have not been fully ratified or implemented in the Employer's country the Applicant/Bidder/Contractor shall, to the satisfaction of the Employer and KfW, propose and implement appropriate measures in the spirit of the said ILO conventions with respect to a) workers grievances on working conditions and terms of employment, b) child labour, c) forced labour, d) worker's organisations and e) non-discrimination.

Subcontractors under the Contract will, (i) upon request, provide information relating to the Tender Process and the performance of the Contract and (ii) permit Masen and KfW or an auditor appointed by either of them, and in the case of financing by the European Union also to European institutions having competence under European Union law, to inspect the respective accounts, records and documents, to permit on the spot checks and to ensure access to sites and the respective project.

8. In the case of being awarded a Contract, we, as well as all our Joint Venture partners and Subcontractors under the Contract undertake to preserve above mentioned records and documents in accordance with applicable law, but in any case for at least six years from the date of fulfillment or termination of the Contract. Our financial transactions and financial statements shall be subject to auditing procedures in accordance with applicable law. Furthermore, we accept that our data (including personal data) generated in connection with the preparation and implementation of the Tender Process and the performance of the Contract are stored and processed according to the applicable law by Masen and KfW.

Name: _____ In the capacity of: _____

Duly empowered to sign in the name and on behalf of[5]: _____

Signature: Dated:

[5] In the case of a JV, insert the name of the JV. The person who will sign the application, bid or proposal on behalf of the Bidder shall attach a power of attorney from the Bidder.