



**USAID**  
FROM THE AMERICAN PEOPLE



**Development of Standard Design with Latest Greening Technology  
on Conducting Required CFD and Scale Model Testing in the  
Model Testing Tank and Towing Basin**

**FOR**

**Private Sector Engagement  
Cross-Border Infrastructure and Connectivity (CBIC)  
Upgrading and Greening of Inland Vessel Fleet**

**ON**

**NW-1, NW-2, NW-16 and IBP (Indo-Bangladesh Protocol) ROUTES  
REQUEST FOR BID**

**RFP No. 1, Dated: 23 August 2022**

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# Table of Contents

<b>Section 1. Introduction to RFP</b> .....	<b>4</b>
<b>A. USAID engagement in South and Southeast Asia</b> .....	<b>4</b>
<b>B. Upgrading and Greening of the Inland Vessel Fleet</b> .....	<b>4</b>
<b>C. Studies on Green Inland Vessels</b> .....	<b>5</b>
<b>Section 2. Main Provisions of RFP to Bidders</b> .....	<b>10</b>
<b>A. Vessel Design Requirements for Green Modern Inland Vessels</b> .....	<b>10</b>
<b>B. Procurement Procedures and Contracting</b> .....	<b>19</b>
ANNEX 1: Format for Short CV .....	<b>21</b>
ANNEX 2: Inland Vessel Design Reference Projects .....	22
ANNEX 3: Template for Financial Proposal.....	23
ANNEX 4: Terms and Conditions of Contract .....	24
<b>FAR CLAUSES</b> .....	<b>24</b>
<b>USAID CLAUSES</b> .....	<b>52</b>
ANNEX 5: Workshop Presentations (Kolkata, 22 July 2022) .....	86

## Acronyms

Abbreviation	Meaning
<b>AIS</b>	Automatic Identification System
<b>BBIN</b>	Bangladesh-Bhutan-India-Nepal Subregion
<b>BIWTA</b>	Bangladesh Inland Water Transport Authority
<b>CBIC</b>	Cross-Border Infrastructure and Connectivity
<b>GPS</b>	Global Positioning System
<b>IBPR</b>	India-Bangladesh Protocol routes
<b>IFI</b>	International Financial Institutions
<b>IRC</b>	Indian Roads Congress
<b>IPR</b>	Intellectual Property Rights
<b>IWAI</b>	Inland Waterways Authority of India
<b>IWT</b>	Inland Waterway Transit
<b>KPI</b>	Key Performance Indicator
<b>LNG</b>	Liquefied Natural Gas
<b>PSE</b>	Private Sector Engagement
<b>RFP</b>	Request for proposals
<b>RIS</b>	Research and Information System for Developing Countries
<b>SCA</b>	Department of State/South Central Asia
<b>USAID</b>	United States Agency for International Development
<b>WBG</b>	World Bank Group

## Section I. Introduction to RFP

### A. USAID engagement in South and Southeast Asia

The United States is committed to improving its economic relationship with South and Southeast Asia and ensuring that the benefits are broadly shared. This shared prosperity is founded on sustainable, inclusive growth, which cannot happen without increased trade, investment, and integration throughout the region. The stakes for regional economic integration within and between South Asia and East Asia are high and its prospects are bright, but significant challenges remain. The South Asia Region is host to increasing foreign investment in both natural resources and productive capacity. Much of this investment, however, is largely focused on securing natural resources and low-cost assembly of foreign inputs. Such investments do not provide a foundation for inclusive growth or local value addition, do not contribute to regional growth and connectivity, and often lack the level of international standards and transparency required to make that growth sustainable.

In collaboration with the U.S. Agency for International Development (USAID) Asia Bureau and the USAID/Indo-Pacific Office, and in consultation with the U.S. Department of State/South Central Asia (SCA) Office, technical experts, and partner institutions, PSE Support identified several high-impact activities that will improve cross-border infrastructure and connectivity across South Asia through an initial landscape mapping of ongoing initiatives and planned infrastructure projects to identify and prioritize cross-border infrastructure connectivity activities. As a result, the Inland Waterway Sector was considered as a sector that can facilitate enhanced interregional trade in the Bangladesh-Bhutan-India-Nepal (BBIN) Sub-Region and to provide a boost to import and export cargo to and from the sub-region, under the condition of reliable infrastructure, year-round navigation, and a modern fit-for-future inland vessel fleet.

### B. Upgrading and Greening of the Inland Vessel Fleet

#### Background and Rationale

Transport of goods via inland waterways is seeing renewed attention from policymakers and investors alike. In South Asia, inland waterway transport (IWT) is a major element of improving regional connectivity, especially among BBIN Countries. IWT initiatives, while not a new mode of transport, are a progressive and innovative mechanism by which to strengthen bilateral and transit trade. For Bangladesh, the inland waterways system is a crucial economic and social means of connectivity, as many areas of Bangladesh and India, in particular, are only connected via waterways. India, after decades of neglect, is initiating an impressive redevelopment program on the Ganges River. Myanmar has domestic IWT, with a potential link to North-East India. Nepal and Bhutan have no navigable inland waterways, but can operate their own vessels on the Bangladesh and India waterways as well as connect via land transport.

Ensuring the BBIN Countries have appropriate vessel infrastructure to navigate waterways is essential to promoting a high functioning and sustainable IWT system. Though Bangladesh and Myanmar have large quantities of available inland vessels, the quality of these vessels is relatively low due to their old age, high energy use, high emission levels, and generally small

vessel size. India's fleet is very limited. Because of this fact, the country faces major bottlenecks in realizing new services. Nepal is in the process of establishing its own fleet that may operate on specific waterway routes and to specific inland ports in India. In principle, Bhutan has similar opportunities as India and Bangladesh, but the country is not yet in the stage of developing its own fleet.

The availability of efficient and clean vessels is one of the challenges for all countries in the region. IWT operations are typically private sector activities. There are particular challenges for small and medium-sized operators to access financing sources for new, efficient vessels. The banking sector is often not very eager to finance new clean vessels as they consider it high risk, requiring high levels of collateral and charging high interest rates. A second challenge concerns the age of vessels and engines corresponding to high emission levels. Technical solutions to address high-emission engines are available, but have not yet been developed for the vessel fleet in the region. Government priorities are focused on infrastructure investments, but acknowledge the fact that fleet upgrading is a necessity. The need to "green the fleet" is a prerequisite for further development of the sector and the promotion of IWT as the cleanest mode in the transport system.

### Short Description of the CBIC Activity

The activity will develop a vessel fleet upgrading program focused on developing an efficient, safe, and clean inland vessel fleet, including the financing schemes for implementation. The activity will maintain a technical assistance component (model design and testing of standardized and modular solutions) and the assessment of potential financing models for construction and implementation of the designed inland vessels.

### Expected Overall Impact

As a result of this activity, modern vessels will have fewer waste spills and lower emissions (greenhouse gases and air pollutants). The proposed activity will also contribute to an overall increase in the quality of IWT operations through lower transport cost, better fuel efficiency, and improved safety levels. The activity, which includes the development of new financing models, will enable existing and new vessel owners to upgrade their fleets and expand connectivity, including remote communities.

Improved IWT connectivity will enable access for urban and rural communities to safe and clean transport means. With improved ferry operations and facilities at landing sites and jetties (toilets, lights, waiting areas), the regional waterway system will become safer for all users, including women, youth, and those with disabilities. The local shipping industry will grow, which will create direct and indirect economic impacts.

## C. Studies on Green Inland Vessels

### Introduction

With the objective to launch a design study for inland vessels, a number of preparatory activities were conducted. An international benchmarking study of greening technologies and market readiness of these technologies was prepared. Also, analyses of the current IWT fleets

and future fleet requirements in India and Bangladesh were conducted. Regarding preferred greening approaches and technologies available in the region, an assessment of possible suppliers in India and Bangladesh was prepared. The results of the international benchmarking study and national studies were discussed during a workshop in Kolkata on 22 July 2022. A short summary of the studies is provided below and a slide deck of both studies, as presented at the workshop in Kolkata, is included in Annex 5 of this RFP.

### International Benchmarking Study on Greening Solutions for Inland Vessels

The transport sector as whole has a significant share in the worldwide energy consumption and related emissions-to-air. Currently, examining hinterland transport modes in terms of external costs, IWT is still the cleanest mode, but to continue to be the optimal modal choice, efforts are needed to reduce the carbon footprint and air pollutant emissions.

Transport emits around 23 percent of the energy-related CO<sub>2</sub> that feeds global warming. Without immediate action, its share could reach 40 percent by 2030. Transport emissions have grown faster than those of any other sector over the past 50 years. Demand for transport will continue to grow massively in the coming decades. As a result, CO<sub>2</sub> emissions from transport activity will not fall, but could increase by 60 percent by 2050. Because transport relies on oil for 92 percent of its energy, it is particularly hard to decarbonize. Therefore, within the transport sector, actions may be expected from each transport mode to maintain a license to operate.<sup>1</sup>

Towards 2030 and 2050 (zero emission, climate neutrality) for the IWT sector will be a major challenge. Proven technologies, like after-treatment systems or LNG, are a step forward and contribute to intermediate targets, but the growing ambition to reach zero emission transport in 2050 will require more extensive interventions.

Inland vessels are extremely capital intensive. Many fleet operators can successfully run the day-to-day operations of their vessels; however, the longevity of equipment, and, typically, low revenue margins hamper the uptake of innovative technologies. In Europe, except for a discount on port dues and some financing instruments, there are no significant incentives to be green. Realistically, there is still a lot of ground to cover to offer affordable zero-emission solutions for the entire inland vessel fleet as an alternative to conventional engines running on fossil fuels.

Specifically considering greening of the inland fleet, there is no universal solution for all vessels and operational profiles. Off-the-shelve technologies today and technical solutions under research point towards a combination of technologies and energy sources. The right solution for each vessel will depend on the market segment and operational profile of the inland vessel.

In summary, the following greening technologies are available or have potential to be adopted in the near future for the transition towards a zero-emission IWT sector:

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<sup>1</sup> Source: <https://www.itf-oecd.org/decarbonising-transport>



Use of Alternative Fuels	Air Pollutants Emission Reduction	Energy Consumption Reduction
<ul style="list-style-type: none"> <li>• Hydrogen</li> <li>• GTL / Biofuel</li> <li>• Methanol</li> <li>• Ethanol</li> <li>• LNG/CNG</li> </ul>	<ul style="list-style-type: none"> <li>• After-treatment</li> <li>• New engine concepts / optimization</li> <li>• Alternative technologies</li> </ul>	<ul style="list-style-type: none"> <li>• Energy-efficient ship design</li> <li>• Hybrid/diesel-electric propulsion</li> <li>• Electric propulsion</li> <li>• Energy-efficient navigation</li> </ul>

### Analysis of Inland Fleet in Bangladesh and India

#### Overview of Existing Inland Fleet and Greening Initiatives in Bangladesh

Bangladesh is a riverine country. The total waterway network of Bangladesh has a length of more than 24,000 km, of which 6,000 km remains navigable in rainy season and 3,865 km remains navigable in dry season. The available depth for navigation ranges between 1.5 m to 3.9 m. There are more than 700 rivers (491 in the Draft Dredging Plan of the Bangladesh Inland Water Transport Authority), 29 river ports, and more than 380 landing port/ghats across the country.

Bangladesh is traditionally a shipbuilding nation and has a rich heritage of shipbuilding of many hundred years. Shipbuilding is a way of life in Bangladesh and stretches back over several centuries. Most ships and boats built to date were destined for use on inland or in coastal waters. Since 2006, Bangladesh has shown significant growth in the shipbuilding industry.

Inland water transportation is the major transportation sector of Bangladesh. There are 14,805 registered inland vessels, more than 14,948 registered coastal vessels and more than 700,000 unregistered vessels. The vessels plying in inland routes cause serious marine pollution by disposal of solid waste, ballast, and bilge water directly into the rivers. For reasons of cost-efficiencies, the ship owners often use dirty fuel, second hand engines, as well as refurbished and reconditioned engines. Generally, there is a lack of maintenance and engine overhauling. No after-treatments systems are in place to control engine-/tailpipe-out exhaust emissions.

The Government of Bangladesh is working on imposing laws to reduce pollution of marine vessels and to launch initiatives for greening of the inland vessels. Both foreign and local ships are now procuring eco-friendly low-Sulphur fuels from Chittagong Port, as the government is taking steps to supply low-Sulphur fuel (0.5 percent) as per MARPOL Annex VI. However, other than low-Sulphur fuel, the attention for introduction of greening aspects for inland vessels in Bangladesh is limited.

#### Overview of Existing Inland Fleet and Greening Initiatives in India

Out of 111 National Waterways as part of the National Waterways Bill-2016 for 20,225 km length of waterways, 29 National Waterways are connected to NW-1 & NW-2 (the Ganga

and Brahmaputra River system, the major waterways in the country). The tributaries and branch rivers of this system are relatively small waterways of varying length, which together form a network of 9,430 km. Further, Indo-Bangladesh Protocol (IBP) Routes along with other national waterways like NW-5 (Brahmani & Mahanadi River system along with East coast canal), NW-16 (The Barak River) in lower Assam once integrated with waterways of the Ganga- Brahmaputra-Meghna River system will form an integrated Eastern Waterways Connectivity Transportation Grid (EWACTG).

About 1,500 Indian registered inland vessels operate in the BBIN subregion on NW-1 and NW-97 and NW-2 and NW-16. About 50 percent of the inland vessels use non-marinized engines, 30 percent operate with marinized engines, and 20 percent has marinized engines complying with Class Rules and are individually tested. Most vessels are equipped with a conventional diesel screw propulsion system.

Type of vessels	NW-1 and NW-97				Total	NW-2	NW-16
	West Bengal	Jharkhand	Bihar	UP			
Cargo vessels	70	-	5	-	75	-	
Cross ferry for passenger only	450	20	50	110	630	35	10
Cross ferry for both passengers & cargo	45	10	10	20	85	70	14
River Cruises	14	-	3	5	22	8	
Tourist vessels	20	-	5	55	80	10	
RoRo/RoPax	14	13	15	2	44	4	2
Tugs & Workboats	30	-	11	-	41	11	1
Ancillary vessels including hospital & clinic boats	37	-	5	-	42	25	
Total	680	43	104	192	1019	162	27
<b>GRAND TOTAL</b>	<b>1281<sup>1</sup></b>						

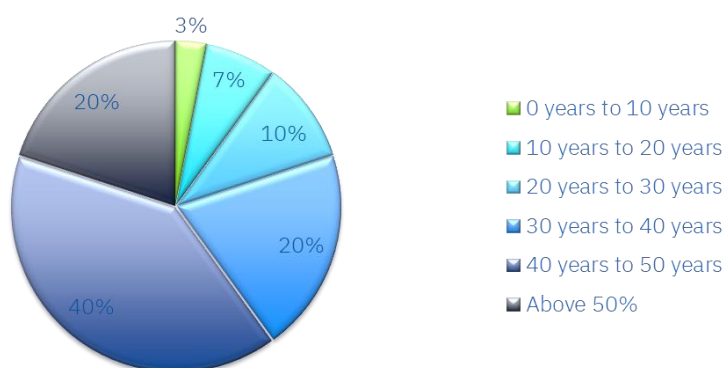
Source: expert analysis

<sup>1</sup>Dumb barges, pontoons, accommodation boats, and dredgers not included. There are and additional 12,000 traditional/country boats, some non-mechanized, with non-marine engines which are being registered under Jeevandinga and Jaldhara schemes with World Bank funding.



The age structure reveals that 60 percent of the fleet is older than 40 years, and only three percent of the fleet has an age below 10 years. In general, the quality of the fleet is poor. To increase the quality of new vessels, the old 1917 Inland Vessel Act has been replaced with a new Inland Vessel Act of 2021. The new act includes stricter technical requirements for inland vessels and also includes provisions for “Prevention and Containment of the Pollution”. The rules are designed to prevent oil spillage, disposal of waste, use high-sulphur fuel, etc.

### Fleet status age wise



Source: expert analysis

Although not very strict, emission standards are included to control the emission of NO<sub>x</sub>. All this is a positive development and a way forward in establishing (regional) harmonized standards for instruction of new inland vessels to the market.

Examining greening initiatives in India, various low- and zero-emission inland vessels are being introduced to the market. Mostly they include Passenger (Pax) vessels or RoPax vessels, traveling a limited distance and therefore enabling the application of battery-electric or solar-power inland vessels. Also, hybrid propulsion systems are being introduced. These vessels are mostly found in back waters of Kerala and Kochi. In addition to inland vessels with electric drivetrains, also retrofits (conversion of existing engines of vessels) are introduced with application of Clean Natural Gas and new vessels with Liquefied Natural Gas. A recent example illustrating the ambition of India in inland shipping, is the proposal of construction of a new Hydrogen-Fuel Cell Electric (DC power) vessel by CSL (Cochin Shipyard Ltd). This vessel is currently under development.

A few years ago, as part of a World Bank funded project on NW-1, 14 standard vessel types were designed and delivered to the market free of cost for their construction and operation<sup>2</sup>. It was initially envisaged to procure at least one each of few standard designs for demonstration to attract more interest from the market to realise large market uptake. However, ultimately it was left to the market to order the inland vessel and organise financing, the latter being especially challenging due to the low interests of commercial banks and inability to have the vessel itself as collateral (which is common in several countries).

<sup>2</sup> The 14 standard inland vessel designs are available on the website of IWAI, please see: <https://www.iwai.nic.in/node/131367>

## Section 2. Main Provisions of RFP to Bidders

### A. Vessel Design Requirements for Green Modern Inland Vessels

#### A.1 Fit-for-Future Vessels

The availability of a quality fleet is a major constraint for further and increased development of inland waterway transport between India and Bangladesh and possibly further to landlocked countries (BBIN). For the future, it is of paramount importance that new vessels that enter the market are future proof, considering the life-cycles of vessels and specifically engines. Future proof in this respect refers to efficiency, safety, and environmental performance. Considering the expected future growth of IWT, it is important to look at vessel requirements in line with vessel greening trends.

Based on the international benchmarking study and analysis of the existing fleet structures in Bangladesh and India, a proposal for the design of three vessel types is requested from interested vessel design companies/consultancy firm or institutes and shipyards engaged in the design and construction of all types of vessels including inland, port, and harbour vessels.

Thus, the main objective of the assignment shall be to develop the design for:

- economic & energy efficiency;
- low operational cost;
- higher dead weight/carrying capacity and number of passengers;
- high safety level;
- low/zero emissions, incorporating international benchmark greening technology and tools.

The three vessel types to be designed are:

1. **RoPax vessel:**
  - a. (Upgrade of) design for river crossing or limited distance in longitudinal direction
  - b. Application of zero-emission ready solution is required & application of zero-emission technology directly is an advantage
2. **Dry cargo vessel / multi-purpose vessel**
  - a. Design for longer distances operating on national waterways and/or IBP routes
  - b. Application of zero-emission ready solution is an advantage
3. **Motor tanker vessels**
  - a. Design for carrying dangerous (chemical) goods or other types of liquid bulk, including port of loading
  - b. Application of zero-emission ready solution is an advantage

The IWAI, as project beneficiary and counterpart on the India side, along with Indian inland waterway transport experts, naval architects and multiple representatives of the Indian shipbuilding industry, were consulted to confirm the relevance for drafting new inland vessel designs for the proposed vessel types. Positive feedback was received from the IWT market on

the vessel types as well as on the request to prepare proposals for the design of zero-emission (ready) inland vessels.

## A.2 Proposal(s) from Each Bidder

Submitted proposals shall, at a minimum, include a design proposal for each vessel type. To prevent only receiving proposals for one or two vessel types, proposals for two or even all three vessel types will have an advantage over other proposals (on targeting one vessel design) in the evaluation.

**Each Bidder may only submit one design per vessel type, with a maximum of three designs in total.**

## A.3 Area of Operation/Service

The area of operation will be mainly from Varanasi on NW-1 to Pandu on NW-2 through IBP routes. The vessels must be capable of safely operating from the port of call of India to port of call of Bangladesh. The vessels may also be designed for coastal cum inland shipping purpose for ship to shore, including transshipment or from the nearby ports for river sea vessels (RSV-I and RSV-II) within the designated area defined by Government of India and Bangladesh. For future operations, the design must be suitable for the Eastern Waterways Grid being developed in the BBIN Region.

## A.4 Technical Requirements

### A.4.1 Classification and Statutory Rules and Regulations

- I. The vessels must be design in compliance to the Inland Vessels and/or RSV Rules of **Indian Register of Shipping, the Indian Classification Society** with appropriate class notation depending the area or zone of operation, coastal/transshipment services, machineries, passenger and cargo operation.
- II. The vessels shall be designed in accordance with the legal and regulatory framework as introduced by the Government of India by means of the **Inland Vessels Act of 2021** (enacted on 8 August 2021). The Inland Vessel Act includes a comprehensive set of rules that must be incorporated into the designs, including:
  - The Inland Vessels (Design and Construction) Rules 2022
  - The Inland Vessels (Survey and Certification) Rules 2022
  - The Inland Vessels (Registration and other technical issues) Rules 2022
  - The Inland Vessels (Manning) Rules, 2022
  - The Inland Vessels (Crew and Passenger Accommodation) Rules 2022
  - The Inland vessels (Safe Navigation, Communication and Signals) Rules 2022
  - The Inland Vessels (Life-Saving Appliances) Rules 2022
  - The Inland Vessels (Fire Fighting Appliances) Rules 2022
  - The Inland Vessels (Prevention and Containment of Pollution) Rules 2022
  - The Inland Vessels (Insurance, Liability and Limit Procedure, Enquiry in to Accidents, Trade Practice, and Wreck and Removal) Rules 2022

#### A.4.2 Additional and Special Requirements

Regarding the aforementioned rules, special consideration shall be given to fit-for-future components, such as:

- Provisions on the vessel for safe navigation during day and night, (i.e.: AIS, Inland ECDIS); provision for installation of the equipment for RIS (River Information Services), LSS (Light & Sound Signal system); Lighting; Radar; VHF;
- Double hull for motor tanker vessels;
- High manoeuvrability application of bow thrusters or other solutions for safe and secure berthing and navigation through sharp bends (especially for longer cargo vessels);
- Installation of oily bilge separators, sewage collection tank and discharge facilities and also sewage treatment plant;
- Provision for the dismantling of the mast for safe passage under the low vertical clearances across the rail and road bridges; as well as
- Adequate and ergonomic accommodation facilities for the crew with aesthetic design.

#### A.4.3 Limitation on Principal Dimension

Due to the restriction on the availability of adequate LAD, air draft under the rail and road bridges as well as other cross structure, bend radius etc., the dimension and main particulars of the vessels are to be fixed according the proposed area of operation. Otherwise, there are no other directions or limitations provided on the length, width, draught, and capacity of the inland vessels. Instead, reference is made to propose a sound business case that is bankable or financed by other means to increase the likelihood that the inland vessel(s) will be build.

#### A.4.4 Business Case Development

In numerous countries worldwide, IWT projects are still formulated according the 'build and they will come' approach, where focus lies on supply driven development of infrastructure, and where limited attention is given to multimodal integration of IWT services. Market development is typically left to shippers/logistics service providers themselves where many are unfamiliar with IWT and there is little to no cargo generation along the waterways (or last mile connectivity).

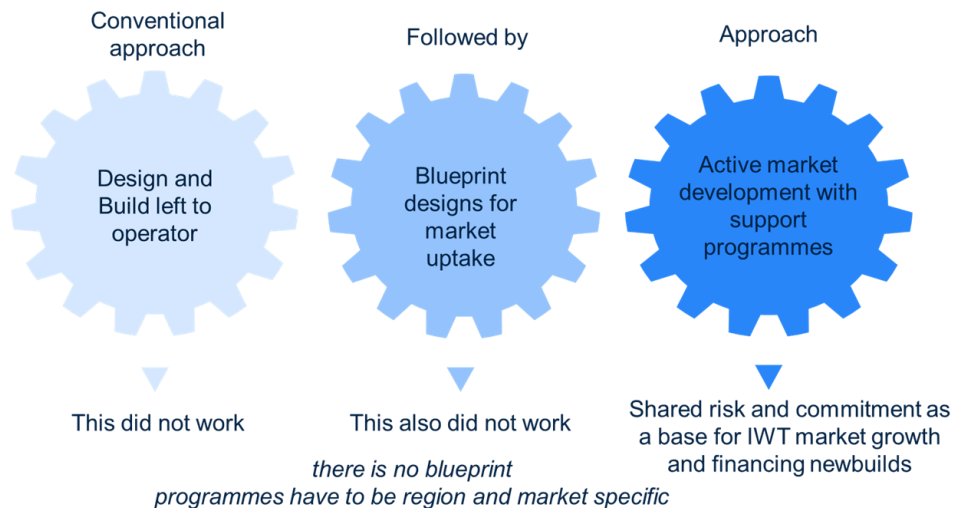
The objective is to have the designed inland vessels built, a follow-up of the design study as introduced in this RFP. Instead of following a supply driven approach for introducing new vessel designs, a market-driven approach is considered as a large advantage in the evaluation of proposals. Interested parties are challenged to develop a business case for the construction of the designed inland vessel(s). International and national experts will be accessible to the Bidder after contracting, to support the business case process upon request.

**An outline of the business case already must be presented as part of the submitted proposal.** Examples that can support a positive business case are:

- RoPax vessel- commitment from a regional governmental body (state IWT Directorate/Society), corporation/undertakings, regional or state Tourism Department/Corporation), Municipalities/Panchayats or reputed private passenger/ferry operators, etc. by means of an endorsement or support letter.

- Cargo vessels- commitment from a cargo owner/shipper (launching customer, quantified base volume) and/or barge operating company (the latter with viable financing plan) by means of an endorsement or support letter.
- Outline of an initial consideration of the (potential) financial model: subsidy needed (yes/no), availability (yes/no), capital raised (yes/no), etc.
- Probable area of operation with the origin-destination, cargo types, capacity, days of operation, etc. on seasonal or regular routes.

#### Introduction of modern, clean, competitive vessels



#### A.4.5 Intellectual Property Rights

The IPR for the design remains with the Bidder(s).

#### A.4.6 Evaluation of Bids

The bids received in the prescribed manner will be evaluated by a Technical Evaluation Committee (TEC) for selection of the successful Bidders and awarding of contract. The same TEC will also monitor the progress made with the vessel designs to ensure timely delivery of the various milestones. This composition of the TEC will be revealed to all winning Bidders after the evaluation of the proposals.

#### A.4.7 Estimated Cost (Available Budget)

The total lump sum budget available for the design of three vessel types is US\$150,000 (one hundred and fifty thousand US Dollars). This is excluding the model testing and CFD analysis, which will be arranged through IIT Kharagpur and for which separate budget is allocated. The available budget per vessel type for developing the design except for the model testing is US\$50,000 (fifty thousand US Dollar).

In case of submitting a proposal for designing multiple vessels, the financial proposal should include a breakdown per vessel type. The Client and TEC have the right to select one (or more) specific designs from bids that included at least two designs for two vessel types in the proposal.

#### **A.4.8 Currencies of Bids and Payment**

The currency for submitting the bids shall be in US Dollars (US\$). Thus, the payment shall also be in US Dollars. Therefore, the Bidders shall provide detailed information of the bank account for facilitating the transfer of the foreign currencies if awarded a contract. All bids shall be inclusive of all local taxes and duties such as GST.

#### **A.4.9 Outline of the Deliverables**

The vessel design study has three milestones for reporting and submission of the deliverables being eligible for the payment, including:

1. Inception report (report or slide deck)
2. Conceptual design and extended business case report
3. Final design report

Payment shall be made in three installments coinciding with the three milestones. The percentage of the total contract value shall be negotiated with the Bidder.

Key information and documents required for each deliverable include the following:

##### **1. Inception Report**

- Brief about the Bidder's experience and expertise
- Approach and methodology to be adopted
- Work plan, deliverable schedules, personnel plan, etc.
- Final scope of work and work methodology of the project
- Requirements of data/information, coordination support from TEC, USAID and other involved government agencies during the course of the engagement
- Identification of key persons from the Client and Bidder so that there is seamless coordination while executing the project and providing feedback at regular intervals to ensure that the goals are aligned at all stages during the project
- Request for sharing all the studies related to the present status on inland vessel fleet, including future projection, greening technology and other relevant information such as the characteristic of the waterways etc. for developing the design.

##### **2. Conceptual Design Report**

- Introduction to design study, including, at a minimum, objectives, scope, and methodology in detail
- Main characteristics of designed vessel(s)
- Typical operational profile or route and preliminary detailed business case
- Technical description of vessel design(s) with the basic design details, including:
  - Principal dimension and main particulars
  - Design calculation details (including, at a minimum, hydrostatic data, trim and stability in different loading condition, freeboard, volume/displacement, and electric load balance)
  - Preliminary powering and propulsion system

- Lines plan, hull form based on hydrodynamic requirement and optimization
- General arrangement plan, including, at a minimum, accommodation, deck layout, engine room
- Basic strength calculation
- Detailed information on incorporation of greening tools and technology
- Outline of build specifications

### **3. Final Design Report with design details, including drawings**

- Assistance and coordination to IIT Kharagpur for CFD analysis followed by model testing and finalization of the design
- Detailed design calculations and drawings with the approval of IRS
- Detailed structural drawings and plans with IRS approval
- Scantling calculation for main frame and profile
- Structural drawings, including, at a minimum, midship and transverse section, profile, decks and bottom plans, watertight/oil tight bulkheads
- Shell expansion
- Deck house/superstructure
- Details of the powering calculation, propulsion system, and machineries
- Safety Equipment Plan i.e., LSA, FFA etc.
- Final outline of information on the greening technology incorporated
- Final detailed business case for vessel construction and operation
- Technical specification
- Annexures

#### **A.4.10 Eligibility of the Bidders**

- I. The reputed ship building and ship repair yards individually or with a joint venture of a ship design consulting firm or individual consultant/Naval Architect; the shippers and operator of both India and Bangladesh shall be eligible for bidding
- II. Each Bidder shall have the experience and expertise in design and construction of the vessels, including inland, coastal, port and harbor crafts of at least seven years and successfully delivered the vessels with satisfactory performance
- III. The consulting design firm/Naval Architect shall have minimum 10 years of experience in the design and construction of inland, coastal, ports and harbor vessels
- IV. The operator shall be in the business of operating the vessels on inland waterways and coastal waterways for minimum three years
- V. Bidders having experience on the design and construction of green vessels or conversion of existing vessels with retrofitting is a plus

#### **A.4.11 Support Services for Ship Model Testing of Design of Inland Vessel**

The final design of the selected Bidders will be subject to CFD modelling for hull optimisation and vessel model testing in a water tank or basin. The Indian Institute of Technology Kharagpur is likely to be contracted directly to conduct the technical support services.



**As a result, IIT Kharagpur is excluded to participate in the bid for the design of one or more vessel types. Also, other Bidders cannot form a joint venture with any expert under contract with IIT Kharagpur. Proposals suggesting cooperation with IIT Kharagpur (on exclusive) will not be considered in the evaluation of bids.**

Although working on an exclusive basis with IIT Kharagpur is not permitted for this RFP, previous experience of working with the Naval Architecture Department of IIT Kharagpur is considered to be an advantage.

#### **A.4.12 Bidding Document**

The bidding documents shall be in two parts. One shall be the Technical Bid and other the Financial Bid. Both shall be submitted in separate documents.

The Technical Bid shall comprise:

- Brief of the Bidder’s organization and the members of the joint venture
- Comments and suggestion if any on the scope of study, ToR, and condition of the contract
- Approach, methodology, and workplan
- Preliminary business case proposal
- Works schedule and planning for the deliverables
- Team of composition, task assignments, and key experts with their CVs
- Power of Attorney to sign the proposal/bid.

The Financial Bid shall comprise:

- Finance bid to include the total cost for developing the design for each type of vessel including all direct costs of transportation, allowances, taxes etc.
- Statement of undertaking

#### **A.4.13 Bidding Validity**

The bid price shall be valid for 60 days from the date of opening.

#### **A.4.14 Bidding Commencement and Completion**

- i. Download of the RFP will start from 11.00 AM IST on 23 August 2022.
- ii. Written submission of clarifying questions (a maximum of 3 questions per bid will be considered in consecutive order), before 05.00 PM IST on 26 August 2022.
- iii. Submission of complete bid on line before 05.00 PM IST on 12 September 2022.

#### **Summary of the time lines on the deliverables and Terms of Payment**

<b>Step</b>	<b>Work Deliverable</b>	<b>Timeline</b>	<b>Payment Scheme/Terms</b>
<b>I</b>	<b>Launch/commencement of down load of RFP from DEVEX site of USAID</b>	23 August 2022, 11:00 AM (IST)	The Bidder is not entitled to receive any compensation for the preparation of a bid.

2	<b>Written submission of clarifying questions (a maximum of three questions per bid will be considered in consecutive order)</b>	26 August 2022, 17:00 PM (IST)	
3	<b>Response to questions</b>	31 August 22:00, 17:00 PM (IST)	All Bidders submitting questions will receive a full suite of answers for all questions received
3	<b>Submission of proposal online</b>	12 September 2022, 17:00 PM (IST)	
4	<b>Evaluation of Bids, informing winning bids and contracting</b>	19 September 2022	
5	<b>Online kick-off meeting with TEC and submission of Inception report</b>	28 – 30 September 2022	<b>1<sup>st</sup> stage payment:</b> Based on submission of inception report (Slide Deck, PPT or PDF)
6	<b>Submission of conceptual design report to TEC</b>	18 November 2022	<b>2<sup>nd</sup> stage payment:</b> Based on draft report (Word or PDF, max. 25 pages without design annexures)
7	<b>Progress and review meeting TEC</b>	23-25 November 2022	
8	<b>Submission of final design report to TEC</b>	16 December 2022	
9	<b>Final review meeting TEC</b>	21-23 December 2022	<b>3<sup>rd</sup> stage payment:</b> Based on final report (Word or PDF, maximum 25 pages without design annexures); payment of final invoice subject to approval of TEC

#### A.4.15 Evaluation Criteria

The evaluation of the bids as received by the deadline of the bid submission will be evaluated by the TEC on a Quality and Cost Based Selection basis as per the following evaluation framework:

Component	Element	Maximum Points	Instructions
<b>PRICE</b>	<b>Cost / Competitiveness</b>	20	Percent of points awarded based on lowest bid ratio

<b>TECHNICAL</b>	<b>No. of designs included in proposal</b>	30	1 design – 10 points 2 designs – 20 points 3 designs – 30 points
	<b>Naval Architect or Marine Engineer with demonstration of at least 5 years' experience in vessel design or building</b>	20	5 years of experience – 10 points 8 years of experience – 15 points 10 years or more experience – 20 points
	<b>Demonstrated experience in building inland vessels according to Class Rules India Registration of Shipping</b>	10	No: 0 points At least 1 vessel – 2 points At least 3 vessels – 5 points At least 5 vessels – 10 points
	<b>Attention for minimum technical provisions in proposal, with a focus on environmental aspects</b>	20	Points for every system included in the proposal Waste water system – 4 points Bilge water system – 4 points Solid waste provisions – 4 points Provisions for shore power – 8 points
	<b>Application of energy conservation and zero emission technology</b>	20	Convention technology hull + engine: 0 points Optimized hull design or zero-emission ready – 5 points Optimized hull design and zero-emission ready – 10 points Application of zero-emission technology – 15 points Optimized hull design and zero-emission technology – 20 points
	<b>ECONOMIC</b>	<b>Demonstration of business case approach</b>	30

			Business case presented cargo owner or regional government (for RoPax)– 20 points (support letter) Business case presented cargo owner or regional government (for RoPax) with financing support– 30 points (support letter)
	<b>Maximum No. of points</b>	<b>150</b>	The technical and economic components shall reach a minimum threshold of 75 points, in order to open the financial proposal.
<b>A Technical + Economic: Price ratio will be applicable for this tender. This is set to 90 : 10.</b>			

#### **A.4.16 Meeting and Discussion for Reviewing and Monitoring the Project with Successful Bidders**

All meetings and discussion shall be virtual. The date and timing shall be confirmed at least three days in advance. Any offline communications, if considered to be essential, shall be initiated well in advance.

#### **A.4.17 Assistance and Coordination to Department of Naval Architecture, IIT Kharagpur for Model Testing and Analysis**

On completion of the basic design(s), the selected Bidder(s) shall provide all the information, design inputs, and data to IIT Kharagpur, thereby extending the required assistance and cooperation for the successful delivery of model testing, CFD analysis, and preparation of the report.

## **B. Procurement Procedures and Contracting**

### **B.1 Instructions to Bidders**

Bidders may submit questions, concerns, or request clarification on any aspect of this solicitation via electronic mail to [vessel-rfp-response@psupport.com](mailto:vessel-rfp-response@psupport.com) and to Mr. Geoffrey Kurgan at [gkurgan@psupport.com](mailto:gkurgan@psupport.com).

The proposal must consist of the following files/volumes (none should be password protected):

<b>Document Title</b>	<b>Format</b>	<b>Page Limitation</b>
Cover Page	PDF	2 pages
Volume I – Technical Approach and Qualifications	PDF	15 pages
Volume II – Price Estimate	Microsoft Excel	None

## **Volume I – Technical Approach**

The Technical Approach volume should include the Bidder's proposed technical approach and methodology for completing the work as described in Section 2, Part A, herein. In addition, the Technical Approach volume should include CVs of relevant staff in the form included in Annex 1. A maximum of three CVs can be included in the Technical Approach. The bidder shall also include up to five reference projects using the format included in Annex 2.

## **Volume II – Price Estimate**

The Price Estimate volume shall detail the Bidder's proposed financial cost estimate. The Bidder must outline all expected labour and non-labour costs (other direct costs) in the attached template. Additional instructions are provided in Annex 3.

Bidders must submit their Technical Approach and Price Estimate volumes to [vessel-rfp-response@psupport.com](mailto:vessel-rfp-response@psupport.com) no later than **17:00 IST on 12 September 2022**. Files must be submitted in the formats listed in the table above. Bidders shall submit both volumes, as separate files, in a single email.

## **B.2 U.S. Government (USG) Regulations and Provisions**

All relevant USG regulations and provisions have been included in Annex 4.

## ANNEX I: Format for Short CV

A maximum of 3 Short CV's may be provided per Bidder to illustrate individual experience of involved (inland) vessel design experts.

**Name:**

**Education:**

**Years of practical experience in vessel design:**

**Description of relevant experience in relation to (inland) vessel designs (max. 300 words):**

## ANNEX 2: Inland Vessel Design Reference Projects

A maximum of 5 reference projects

**Name vessel:**

**Delivery date design:**

**Total value of contract (in US\$):**

**Short description / reference of vessel designs or construction (max. 300 words):**



## ANNEX 3: Template for Financial Proposal

In a separate file, you will find an easy to use Excel spreadsheet to calculate the cost of delivery of the vessel design. This include direct project costs for staff needed to fulfill the design efforts and other direct costs, such as travel if necessary, printing, shipping, communications. It is assumed that overhead costs will be built into individual staff rates. All rates and costs are inclusive of GST and other applicable taxes. No contingency percentage shall be added.

The spreadsheet is set for costs to be entered in Indian Rupees or US Dollars directly. If projecting budgetary needs in Indian Rupees, do not change the exchange rate, which is set to the average rate the day of the launch of this request for proposals.

All interested bidders must submit a separate file for each vessel that they are interested in bidding on, which includes all calculated direct costs for each task and all other direct costs to deliver the project (i.e., if the bidder chooses to submit bids for all three vessels, then there should be three separate spreadsheets included in your proposal that are labeled according to the vessel).

## ANNEX 4: Terms and Conditions of Contract

### US GOVERNMENT PROVISIONS - NONCOMMERCIAL

The following clauses set forth in the Federal Acquisition Regulation (FAR) and agency acquisition regulations, as amended and modified below, are applicable as indicated, to this Subcontract. Without limiting the Subcontract provisions, the FAR clauses are incorporated by reference into this Subcontract with the same force and effect as though set forth in full text. The dates of the FAR clauses incorporated by reference are the same as the corresponding clause in the Prime Contract or higher-tier subcontract, unless otherwise provided by law. The following definitions shall apply to this Subcontract except as otherwise specifically provided.

### FAR CLAUSES

#### A. DEFINITIONS

The following definitions apply unless otherwise specifically stated:

**"Prime Contractor"** - the legal entity issuing this Subcontract

**"Purchasing Representative"** – Prime Contractor's authorized subcontract administrator  
**"Subcontractor"** - the legal entity which contracts with Prime Contractor

**"This Subcontract"** - this contractual instrument, including changes

**"Prime Contract"** - the Prime Contractor's contract with the Government, under which this Subcontract is issued

**"FAR"** - the Federal Acquisition Regulation.

#### B. FAR CLAUSES APPLICABLE TO THIS SUBCONTRACT

The clauses in FAR Subpart 52.2 referenced in subparagraph (1) and those clauses referenced and checked in subparagraphs (2) and (3) below, in effect on the effective date of this Subcontract, are incorporated herein and made a part of this Order. To the extent that an earlier version of any such clause is included in the Prime Contract (or subcontract) under which this Subcontract is issued, the date of the clause as it appears in such Prime Contract or higher-tier subcontract shall be controlling and said version shall be incorporated herein. In all such clauses, unless the context of the clause requires otherwise, the term "Contractor" shall mean Subcontractor, the term "Contract" shall mean this Subcontract, and the terms "Government," "Contracting Officer" and equivalent phrases shall mean Prime Contractor and Prime Contractor's Subcontract Administrator, respectively. It is intended that the referenced clauses shall apply to Subcontractor in such manner as is necessary to reflect the position of Subcontractor as a subcontractor to Prime Contractor, to insure Subcontractor's obligations to Prime Contractor and to the United States Government, and to enable Prime Contractor to meet its obligations under its Prime Contract or higher-tier Subcontract.

The full text of any clause may be accessed electronically at <http://farsite.hill.af.mil/>

**The following mandatory clauses are applicable to Task Orders under this Subcontract:**

<b><i>FAR Reference</i></b>	<b><i>Title of Clause</i></b>
52.202-1	Definitions
52.203-3	Gratuities
52.203-5	Covenant Against Contingent Fees (Only if Subcontract exceeds simplified acquisition threshold)
52.203-6	Restrictions on Subcontractor Sales to the Government (Only if Subcontract exceeds simplified acquisition threshold)
52.203-7	Anti-Kickback Procedures (Except subparagraph (c)(1)) (Only if Subcontract exceeds simplified acquisition threshold)

<b><u>FAR Reference</u></b>	<b><u>Title of Clause</u></b>
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity (Only if Subcontract exceeds simplified acquisition threshold.)
52.203-10	Price or Fee Adjustment for Illegal or Improper Activity (Only if Subcontract exceeds simplified acquisition threshold.)
52.203-12	Limitation on Payments to Influence Certain Federal Transactions (Only if Subcontract exceeds \$150,000)
52.203-13	Contractor Code of Business Ethics and Conduct (Only if Subcontract exceeds \$5,500,000)
52.203-14	Display of Hotline Poster(s) (Only if Subcontract exceeds \$5,500,000, unless performed entirely outside the U.S.)
52.203-16	Preventing Personal Conflicts of Interest (Only if Subcontract exceeds simplified acquisition threshold.) and for Acquisition functions)
52.203-17	Contractor Employee Whistleblower Rights and Requirement to Inform Employees of Whistleblower Rights
52.203-19	Prohibition on Requiring Certain Internal Confidentiality Agreements or Statements
52.204-4	Printed or Copied Double-Sided on Postconsumer Fiber Content Paper (Only if Subcontract exceeds simplified acquisition threshold.)
52.204-7	System for Award Management
52.204-9	Personal Identity Verification of Contractor Personnel
52.204-21	Basic Safeguarding of Covered Contractor Information Systems
52.209-6	Protecting the Government's Interest when Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment (Only if Subcontract exceeds \$30,000)
52.209-10	Prohibition on Contracting with inverted Domestic Corporations
52.211-5	Material Requirements
52.211-15	Defense Priority and Allocation Requirements (Only if Subcontract is issued under a rated order)
52.215-2	Audit and Records–Negotiation (Only if Subcontract exceeds simplified acquisition threshold)

52.215-22	Limitations on Pass Through Changes – Identification of Subcontract Effort (when subcontract or lower tier subcontract is for more than 70% of the total cost of work)
52.216-7	Allowable Cost and Payment (for Cost Reimbursement and Time & Material Subcontracts only)
52.219-8	Utilization of Small Business Concerns (If Subcontract exceeds simplified acquisition threshold, unless performed entirely outside the U.S. and its outlying areas.)
52.222-3	Convict Labor (Only if Subcontract exceeds micro-purchase threshold)
52.222-4	Contract Work Hours and Safety Standards– Overtime Compensation (Only if Subcontract exceeds \$150,000) (Only paragraphs (a) through (d) and Subcontractor agrees to include these provisions in all lower-tier subcontracts)
52.222-21	Prohibition of Segregated Facilities
52.222-26	Equal Opportunity (except (d))
52.222-27	Affirmative Action Compliance Requirements for Construction (only if Subcontract exceeds \$10,000)
52.222-35	Equal Opportunity for Veterans (Only if Subcontract exceeds \$150,000)

<b><u>FAR Reference</u></b>	<b><u>Title of Clause</u></b>
52.222-36	Equal Opportunity for Workers with Disabilities (If Subcontract exceed or expected to exceed \$15,000, unless both the performance of the work and the recruitment of workers will occur outside the United States, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands and Wake Island.)
52.222-37	Employment Reports on Veterans (Only if Subcontract exceeds \$150,000)
52.222-40	Notification of Employee Rights under the National Labor Relations Act (If Subcontract exceeds \$10,000)
52.222-50	Combating Trafficking in Persons (Paragraph (h) only applies if Subcontract exceeds \$500,000 and work is to be performed outside the United States
52.222-54	Employment Eligibility Verification (If Subcontract exceeds simplified acquisition threshold)
52.223-6	Drug Free Workplace (Only if Subcontract exceeds simplified acquisition threshold)
52.223-18	Encouraging Contractor Policies to Ban Text Messaging While Driving (Only if Subcontract exceeds micro-purchase threshold)
52.225-1	Buy American Act - Supplies
52.225-13	Restrictions on Certain Foreign Purchases
52.225-14	Inconsistency Between English Version and Translation of Contract
52.227-1	Authorization and Consent (if Subcontract exceeds simplified acquisition threshold)
52.227-14	Rights in Data - General
52.229-3	Federal, State and Local Taxes (Only if Fixed Price Subcontract performed wholly or partly in the United States or its outlying areas exceeds simplified acquisition threshold)
52.232-7	Payment Under Time-and-Material and Labor-Hour Contracts (except paragraphs (h) and (i))
52.232-40	Providing Accelerated Payments to Small Business Subcontractors (only applies to small business subcontractors)
52.233-3	Protest After Award
52.242-13	Bankruptcy
52.244-6	Subcontracts for Commercial Items

52.245-1	Government Property
52.247-63	Preference for U.S. Flag Air Carriers
52.247-67	Submission of Transportation Documents for Audit (For Cost Reimbursable Subcontracts only)
52.248-1	Value Engineering (Only if Subcontract exceeds \$150,000)

**APPLICABLE ONLY WHEN 2<sup>ND</sup> TIER SUBCONTRACTS ARE ALLOWABLE BY THE PRIME CONTRACT, SUBCONTRACTOR IS A LARGE BUSINESS AND THE SUBCONTRACT VALUE IS EQUAL TO OR EXCEEDS \$700,000:**

<u>FAR Reference</u>	<u>Title of Clause</u>
52.219-9	Small Business Subcontracting Plan
52.219-16	Liquidated Damages - Subcontracting Plan

**APPLICABLE ONLY TO NON-US WORK: The following clauses are applicable to this Subcontract if checked:**

<u>FAR Reference</u>	<u>Title of Clause</u>
52.225-19	Contractor Personnel in a Designated Operation Area or Supporting a Diplomatic or Consular Mission Outside the United States
52.225-26	Contractors Performing Private Security Functions Outside the United States
52.228-3	Worker's Compensation Insurance (Defense Base Act)
52.228-4	Workers Compensation and War-Hazard Insurance Overseas

**APPLICABLE ONLY TO SERVICE CONTRACT LABOR STANDARDS WORK (CHECK AS APPLICABLE):**

<u>FAR Reference</u>	<u>Title of Clause</u>
√ 52.222-41	Service Contract Labor Standards
√ 52.222-43	Fair Labor Standards Act and Service Contract Labor Standards – Price Adjustment (Multiple Year and Option Contracts)
52.222-44	Fair Labor Standards Act and Service Contract Labor Standards – Price Adjustment



	52.222-49	Service Contract Labor Standards – Place of Performance Unknown (except (a))
	52.222-51	Exemption from Application of the Service Contract Labor Standards to Contracts for Maintenance, Calibration or Repair of Certain Equipment – Requirements
	52.222-53	Exemption from Application of the Service Contract Labor Standards to Contracts for Certain Services – Requirements
	52.222-55	Minimum Wages Under Executive Order 13658
	52.222-62	Paid Sick Leave Under Executive Order 13706 (Only if Subcontract is performed, in whole or in part, within the U.S [50 states and the District of Columbia])

**APPLICABLE ONLY FOR CAS COVERED SUBCONTRACTS FOR SUBCONTRACTS \$750,000 AND ABOVE (CHECK AS APPLICABLE):**

<u>FAR Reference</u>	<u>Title of Clause</u>
52.230-2	Cost Accounting Standards
52.230-3	Disclosure and Consistency of Cost Accounting Practices (delete paragraph (b))
52.230-4	Disclosure and Consistency of Cost Accounting Practices – Foreign Concerns
52.230-5	Cost Accounting Standards - Educational Institutions
52.230-6	Administration of Cost Accounting Standards

**OTHER FAR APPLICABLE CLAUSES (CHECK AS APPLICABLE):**

<u>FAR Reference</u>	<u>Title of Clause</u>
√ 52.204-2	Security Requirements
√ 52.204-10	Reporting Executive Compensation and First-Tier Subcontract Awards
√ 52.204-15	Service Contract Reporting Requirements for Indefinite Delivery Contracts (Only for non-classified, non-DoD Subcontracts, subject to FAR 4.1703 thresholds, by Task Order)
52.211-6	Brand Name or Equal

<b><u>FAR Reference</u></b>	<b><u>Title of Clause</u></b>
√ 52.215-2	Audit and Records-Negotiation-Alternate I (Only if Subcontract exceeds simplified acquisition threshold. and is funded under ARRA.
52.215-10	Price Reduction for Defective Cost or Pricing Data (Rights and obligations under this clause shall survive completion of the Work and final payment under this Subcontract) (Only if Subcontract exceeds threshold for cost or pricing data at FAR 15.403-4, unless exemption at FAR 15.403-1 applies.)
52.215-11	Price Reduction for Defective Cost or Pricing Data - Modifications (Rights and obligations under this clause shall survive completion of the Work and final payment under this Subcontract) (Only if Subcontract exceeds threshold for cost or pricing data at FAR 15.403-4, unless exemption at FAR 15.403-1 applies.)
52.215-12	Subcontractor Cost or Pricing Data (Only if Subcontract exceeds threshold for cost or pricing data at FAR 15.403-4, unless exemption at FAR 15.403-1 applies.)
52.215-13	Subcontractor Cost or Pricing Data - Modifications (Only if Subcontract exceeds threshold for cost or pricing data at FAR 15.403-4, unless exemption at FAR 15.403-1 applies.)
52.215-14	Integrity of Unit Prices (excluding subparagraph (b)) (Only if Subcontract for non- commercial items and requiring supplies exceeds simplified acquisition threshold.)
√ 52.215-15	Pension Adjustments and Asset Reversions (Applicable in accordance with FAR 15.408(g))
√ 52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other than Pensions (Applicable in accordance with FAR 15.408(j))
√ 52.215-19	Notification of Ownership Changes (Applicable in accordance with FAR 15.408(k))
√ 52.215-23	Limitations on Pass Through Changes (Non-DoD – Cost-Reimbursement Subcontracts over simplified acquisition threshold; DoD – CPFF and FP Subcontracts if Subcontract exceeds threshold for cost or pricing data at FAR 15.403-4.)
52.215-23 Alt I	Limitations on Pass Through Changes – (Non-DoD – Cost-Reimbursement Subcontracts over simplified acquisition threshold; DoD – CPFF and FP Subcontracts if Subcontract exceeds threshold for cost or pricing data at FAR 15.403-4.)
52.222-1	Notice to the Government of Labor Disputes
52.222-6	Construction Wage Rate Requirements
52.222-9	Apprentices and Trainees

52.222-10	Compliance with Copeland Act Requirements
52.222-11	Subcontracts (Labor Standards)
52.222-13	Compliance with Construction Wage Rate Requirements and Related Regulations
52.222-14	Disputes Concerning Labor Standards
52.222-15	Certification of Eligibility
52.222-16	Approval of Wage Rates (Applicable to Construction Wage Rate Requirements only)
52.222-17	Non-displacement of Qualified Workers

<b><u>FAR Reference</u></b>	<b><u>Title of Clause</u></b>
52.222-20	Contracts for Materials, Supplies, Articles and Equipment Exceeding \$15,000
52.222-29	Notification of Visa Denial
52.223-3	Hazardous Material Identification and Material Safety Data
52.223-4	Recovered Material Certification
52.223-5	Pollution Prevention and Right-to-Know Information
52.223-7	Notice of Radioactive Materials (For hardware/material subcontracts only)
52.223-11	Ozone-Depleting Substances
√ 52.224-1	Privacy Act Notification
√ 52.224-2	Privacy Act
52.224-3	Privacy Training
52.224-3 ALT I	Privacy Training Alternate I
52.225-3	Buy American Act - Free Trade Agreements - Israeli Trade Act -
52.225-5	Trade Agreements
√ 52.225-8	Duty-Free Entry
52.225-9	Buy American Act - Construction Materials
52.225-11	Buy American Act - Construction Materials under Trade Agreements
52.225-21	Required Use of American Iron, Steel and Manufactured Goods – Buy American Act – Construction Materials
52.225-23	Required Use of American Iron, Steel and Manufactured Goods – Buy American Act – Construction Materials under Trade Agreements
52.225-24	Notice of Required Use of American Iron, Steel and Manufactured Goods – Buy American Act – Construction Materials under Trade Agreements
√ 52.227-1	Authorization and Consent
52.227-1 Alt I	Authorization and Consent Alternate I
52.227-2	Notice and Assistance Regarding Patent and Copyright Infringement (Only if Subcontract exceeds simplified acquisition threshold.)
√ 52.227-3	Patent Indemnity

	52.227-3 Alt I	Patent Indemnity, Alternate I
	52.227-9	Refund of Royalties
√	52.227-10	Filing of Patent Applications - Classified Subject Matter
√	52.227-11	Patent Rights - Ownership by the Contractor
√	52.227-13	Patent Rights – Ownership by the Government
	52.227-14 Alt I	Rights in Data –General. Alternate I
	52.227-14 Alt II	Rights in Data –General. Alternate II
	52.227-14 Alt III	Rights in Data –General. Alternate III
	52.227-14 Alt IV	Rights in Data –General. Alternate IV
	52.227-14 Alt V	Rights in Data –General. Alternate V
	52.227-16	Additional Data Requirements
	52.227-17	Rights in Data - Special Works
	52.227-18	Rights in Data - Existing Works
	52.227-19	Commercial Computer Software License
	52.227-22	Major System - Minimum Rights
	52.227-23	Rights to Proposal Data (Technical)
	52.229-4	Federal, State, and Local Taxes (State and Local Adjustments)
	52.234-1	Industrial Resources Developed Under Defense Production Act Title III

<b><u>FAR Reference</u></b>	<b><u>Title of Clause</u></b>
	52.236-13 Accident Prevention
√	52.237-2 Protection of Government Buildings, Equipment, and Vegetation
	52.242-17 Government Delay of Work
√	52.244-5 Competition in Subcontracting
√	52.245.2 Government Property Installation Operation Services
	52.246-2 Inspection of Supplies – Fixed-Price
	52.246-3 Inspection of Supplies – Cost Reimbursement
	52.246-4 Inspection of Services – Fixed-Price
	52.246-5 Inspection of Services – Cost Reimbursement
√	52.246-6 Inspection - Time-and-Material and Labor-Hour
	52.246-7 Inspection of Research and Development - Fixed Price
	52.246-8 Inspection of Research and Development – Cost Reimbursement
	52.246-9 Inspection of Research and Development (Short Form)
	52.246-16 Responsibility for Supplies
	52.247-1 Commercial Bill of Lading Notations
√	52.247-34 F.o.b. Destination
	52.247-55 F.o.b. Point for Delivery of Government-Furnished Property
√	52.247-64 Preference for Privately Owned U.S.-Flag Commercial Vessels
	52.247-64 Alt I Preference for Privately Owned U.S.-Flag Commercial Vessels – Alternate I
	52.247-64 Alt II Preference for Privately Owned U.S.-Flag Commercial Vessels – Alternate II
√	52.248-I Alt I Value Engineering - Alternate I
	52.248-I Alt II Value Engineering - Alternate II
	52.248-I Alt III Value Engineering - Alternate III
√	52.253-1 Computer Generated Forms

**The following FAR clauses are applicable to this Subcontract and are provided in full text:**

In accordance with Executive Order 13672 effective 8 April 2015, the subcontractor shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their

status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, or national origin. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status or disability.

#### **52.222-55 Minimum Wages Under Executive Order 13658 (Dec 2015)**

(a) Definitions. As used in this clause--

“United States” means the 50 states and the District of Columbia. “Worker”—

(1) Means any person engaged in performing work on, or in connection with, a contract covered by Executive Order 13658, and

(i) Whose wages under such contract are governed by the Fair Labor Standards Act (29 U.S.C. chapter 8), the Service Contract Labor Standards statute (41 U.S.C. chapter 67), or the Wage Rate Other than individuals employed in a bona fide executive, administrative, or professional capacity, as those terms are defined in 29 CFR part 541,

(ii) Regardless of the contractual relationship alleged to exist between the individual and the employer.

(2) Includes workers performing on, or in connection with, the contract whose wages are calculated pursuant to special certificates issued under 29 U.S.C. 214(c).

(3) Also includes any person working on, or in connection with, the contract and individually registered in a bonafide apprenticeship or training program registered with the Department of Labor's Employment and Training Administration, Office of Apprenticeship, or with a State Apprenticeship Agency recognized by the Office of Apprenticeship.

(b) Executive Order Minimum Wage rate.

(1) The Contractor shall pay to workers, while performing in the United States, and performing on, or in connection with, this contract, a minimum hourly wage rate of \$10.10 per hour beginning January 1, 2015.

(2) The Contractor shall adjust the minimum wage paid, if necessary, beginning January 1, 2016 and annually thereafter, to meet the Secretary of Labor's annual E.O. minimum wage. The Administrator of the Department of Labor's Wage and Hour Division (the Administrator) will publish annual determinations in the Federal Register no later than 90 days before the effective date of the new

E.O. minimum wage rate. The Administrator will also publish the applicable E.O. minimum wage on [www.wdol.gov](http://www.wdol.gov) (or any successor Web site) and on all wage determinations issued under the Service Contract Labor Standards statute or the Wage Rate Requirements (Construction) statute.

Requirements (Construction) statute (40 U.S.C. chapter 31, subchapter IV),

The applicable published E.O. minimum wage is incorporated by reference into this contract. (3)

(i) The Contractor may request a price adjustment only after the effective date of the new annual

E.O. minimum wage determination. Prices will be adjusted only if labor costs increase as a result of an increase in the annual E.O. minimum wage, and for associated labor

costs and relevant subcontract costs. Associated labor costs shall include increases or decreases that result from changes in social security and unemployment taxes and workers' compensation insurance, but will not otherwise include any amount for general and administrative costs, overhead, or profit.

(ii) Subcontractors may be entitled to adjustments due to the new minimum wage, pursuant to paragraph (b)(2).

Contractors shall consider any subcontractor requests for such price adjustment.

(iii) The Contracting Officer will not adjust the contract price under this clause for any costs other than those identified in paragraph (b)(3)(i) of this clause, and will not provide duplicate price adjustments with any price adjustment under clauses implementing the Service Contract Labor Standards statute or the Wage Rate Requirements (Construction) statute.

(4) The Contractor warrants that the prices in this contract do not include allowance for any contingency to cover increased costs for which adjustment is provided under this clause.

(5) A pay period under this clause may not be longer than semi-monthly, but may be shorter to comply with any applicable law or other requirement under this contract establishing a shorter pay period. Workers shall be paid no later than one pay period following the end of the regular pay period in which such wages were earned or accrued.

(6) The Contractor shall pay, unconditionally to each worker, all wages due free and clear without subsequent rebate or kickback. The Contractor may make deductions that reduce a worker's wages below the E.O. minimum wage rate only if done in accordance with 29 CFR 10.23, Deductions.

(7) The Contractor shall not discharge any part of its minimum wage obligation under this clause by furnishing fringe benefits or, with respect to workers whose wages are governed by the Service Contract Labor Standards statute, the cash equivalent thereof.

(8) Nothing in this clause shall excuse the Contractor from compliance with any applicable Federal or State prevailing wage law or any applicable law or municipal ordinance establishing a minimum wage higher than the E.O. minimum wage. However, wage increases under such other laws or municipal ordinances are not subject to price adjustment under this subpart.

(9) The Contractor shall pay the E.O. minimum wage rate whenever it is higher than any applicable collective bargaining agreement(s) wage rate.

(10) The Contractor shall follow the policies and procedures in 29 CFR 10.24(b) and 10.28 for treatment of workers engaged in an occupation in which they customarily and regularly receive more than \$30 a month in tips.

(c)

(1) This clause applies to workers as defined in paragraph (a). As provided in that definition--

(i) Workers are covered regardless of the contractual relationship alleged to exist between the contractor or subcontractor and the worker;

(ii) Workers with disabilities whose wages are calculated pursuant to special certificates issued under 29 U.S.C. 214(c) are covered; and

(iii) Workers who are registered in a bona fide apprenticeship program or training



program registered with the Department of Labor's Employment and Training Administration, Office of Apprenticeship, or with a State Apprenticeship Agency recognized by the Office of Apprenticeship, are covered.

(2) This clause does not apply to--

(i) Fair Labor Standards Act (FLSA)-covered individuals performing in connection with contracts covered by the E.O., i.e. those individuals who perform duties necessary to the performance of the contract, but who are not directly engaged in performing the specific work called for by the contract, and who spend less than 20 percent of their hours worked in a particular workweek performing in connection with such contracts;

(ii) Individuals exempted from the minimum wage requirements of the FLSA under 29 U.S.C. 213(a) and 214(a) and (b), unless otherwise covered by the Service Contract Labor Standards statute, or the Wage Rate Requirements (Construction) statute. These individuals include but are not limited to--

(A) Learners, apprentices, or messengers whose wages are calculated pursuant to special certificates issued under 29 U.S.C. 214(a).

(B) Students whose wages are calculated pursuant to special certificates issued under 29 U.S.C. 214(b).

(C) Those employed in a bona fide executive, administrative, or professional capacity (29 U.S.C. 213(a)(1) and 29 CFR part 541).

(d) Notice. The Contractor shall notify all workers performing work on, or in connection with, this contract of the applicable E.O. minimum wage rate under this clause. With respect to workers covered by the Service Contract Labor Standards statute or the Wage Rate Requirements (Construction) statute, the Contractor may meet this requirement by posting, in a prominent and accessible place at the worksite, the applicable wage determination under those statutes. With respect to workers whose wages are governed by the FLSA, the Contractor shall post notice, utilizing the poster provided by the Administrator, which can be obtained at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts), in a prominent and accessible place at the worksite. Contractors that customarily post notices to workers electronically may post the notice electronically provided the electronic posting is displayed prominently on any Web site that is maintained by the contractor, whether external or internal, and customarily used for notices to workers about terms and conditions of employment.

(e) Payroll Records.

(1) The Contractor shall make and maintain records, for three years after completion of the work, containing the following information for each worker:

(i) Name, address, and social security number;

(ii) The worker's occupation(s) or classification(s);

(iii) The rate or rates of wages paid;

(iv) The number of daily and weekly hours worked by each worker;

(v) Any deductions made; and

(vi) Total wages paid.

(2) The Contractor shall make records pursuant to paragraph (e)(1) of this clause available for inspection and transcription by authorized representatives of the Administrator. The Contractor shall also make such records available upon request of

the Contracting Officer.

- (3) The Contractor shall make a copy of the contract available, as applicable, for inspection or transcription by authorized representatives of the Administrator.
- (4) Failure to comply with this paragraph (e) shall be a violation of 29 CFR 10.26 and this contract. Upon direction of the Administrator or upon the Contracting Officer's own action, payment shall be withheld until such time as the noncompliance is corrected.
- (5) Nothing in this clause limits or otherwise modifies the Contractor's payroll and recordkeeping obligations, if any, under the Service Contract Labor Standards statute, the Wage Rate Requirements (Construction) statute, the Fair Labor Standards Act, or any other applicable law.
  
- (f) Access. The Contractor shall permit authorized representatives of the Administrator to conduct investigations, including interviewing workers at the worksite during normal working hours.
  
- (g) Withholding. The Contracting Officer, upon his or her own action or upon written request of the Administrator, will withhold funds or cause funds to be withheld, from the Contractor under this or any other Federal contract with the same Contractor, sufficient to pay workers the full amount of wages required by this clause.
  
- (h) Disputes. Department of Labor has set forth in 29 CFR 10.51, Disputes concerning contractor compliance, the procedures for resolving disputes concerning a contractor's compliance with Department of Labor regulations at 29 CFR part 10. Such disputes shall be resolved in accordance with those procedures and not the Disputes clause of this contract. These disputes include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the Department of Labor, or the workers or their representatives.
  
- (i) Antiretaliation. The Contractor shall not discharge or in any other manner discriminate against any worker because such worker has filed any complaint or instituted or caused to be instituted any proceeding under or related to compliance with the E.O. or this clause, or has testified or is about to testify in any such proceeding.
  
- (j) Subcontractor compliance. The Contractor is responsible for subcontractor compliance with the requirements of this clause and may be held liable for unpaid wages due subcontractor workers.
  
- (k) Subcontracts. The Contractor shall include the substance of this clause, including this paragraph in all subcontracts, regardless of dollar value, that are subject to the Service Contract Labor Standards statute or the Wage Rate Requirements (Construction) statute, and are to be performed in whole or in part in the United States.

(End of clause)

**DFAR SUPPLEMENT CLAUSES APPLICABLE TO THIS ORDER**

All references herein to "DFAR Supplement" or "DFAR SUPP" or "DFARS" shall mean the Department of Defense Supplement to the Federal Acquisition Regulation. The clauses in DFAR Supplement Subpart 252.2 referenced in subparagraph (a) and those clauses referenced and checked in subparagraph (b), below, in effect on the date of this Order, are incorporated herein and made a part of this Order. To the extent that an earlier version of any such clause is included in the Prime Contract, or Subcontract under which this Order is issued, the date of the clause as it appears in such Prime Contract or Subcontract shall be controlling, and said version shall be incorporated therein. In all such clauses, unless the context of a clause requires otherwise, the term "Contractor" shall mean Subcontractor, the term "Contract" shall mean this Order, and the terms "Government," "Contracting Officer" and equivalent phrases shall mean Prime Contractor and Prime Contractor's Subcontract Administrator, respectively. It is intended that the referenced clause shall apply to Subcontractor in such manner as is necessary to reflect the position of Subcontractor as a subcontractor to Prime Contractor, to insure Subcontractor's obligations to Prime Contractor and to the United States Government, and to enable Prime Contractor to meet its obligations under its Prime Contract or Subcontract.

The full text of any clause may be accessed electronically at <http://farsite.hill.af.mil/>

**(a) The following mandatory clauses are applicable to this Subcontract:**

<b>DFARS Reference</b>	<b>Title of Clause</b>
252.203-7000	Requirements Relating to Compensation of Former DoD Officials
252.203-7001	Prohibition on Persons Convicted of Fraud or Other Defense Contract-Related Felonies (If Order exceeds simplified acquisition threshold)
252.203-7002	Requirement to Inform Employees of Whistleblower Rights
252.203-7004	Display of Fraud Hotline Posters (if Subcontract exceeds \$5.5 million)
252.204-7009	Limitations on the Use or Disclosure of Third-Party Contractor Reported Cyber Incident Information
252.204-7012	Safeguarding Covered Defense Information and Cyber Incident Reporting
252.204-7014	Limitations on the Use or Disclosure of Information by Litigation Support Contractors
252.204-7015	Notice of Authorized Disclosure of Information for Litigation Support
252.209-7004	Subcontracting with Firms that are Owned or Controlled by the Government of a Country that is a State Sponsor of Terrorism (If Subcontract equals or exceeds \$150,000)
252.211-7003	Item Unique Identification and Valuation
252.215-7000	Pricing Adjustments – If FAR 52-215.11, 12, or 13 is used
252.219-7003	Small Business Subcontracting Plan (DoD Contracts) (If FAR 52-219.9 applies)
252.222-7002	Compliance with Local Labor Laws (Overseas) (for NON-US work only)
252.222-7006	Restrictions on the Use of Mandatory Arbitration Agreements (If Subcontract exceeds \$1M)
252.225-7013	Duty-Free Entry
252.225-7021	Trade Agreements
252.225-7048	Export-Controlled Items
252.226-7001	Utilization of Indian Organizations, Indian Owned Economic Enterprises and Native Hawaiian Small Business Concerns (except for Commercial Items and if Subcontract exceeds \$500,000)
252.227-7013	Rights in Technical Data—Noncommercial Items
252.227-7014	Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation
252.227-7016	Rights in Bid or Proposal Information
252.231-7000	Supplemental Cost Principles

252.244-7000	Subcontracts for Commercial Items
252.245-7004	Reporting, Reutilization and Disposal

**APPLICABLE ONLY TO NON-US WORK:**

<b><i>DFARS Reference</i></b>	<b><i>Title of Clause</i></b>
252.225-7039	Defense Contractors Performing Private Security Functions Outside the United States
252.225-7040	Contractor Personnel Supporting U.S. Armed Forces Deployed Outside the United States
252.225-7041	Correspondence in English
252.225-7043	Antiterrorism/Force Protection for Defense Contractors Outside the United States
252.225-7995	Contractor Personnel Performing in the United States Central Command Area of Responsibility (See DFARS 225.371-5)

<b>DFARS Reference</b>	<b>Title of Clause</b>
252.228-7000	Reimbursement for War-Hazard Losses
252.228-7003	Capture and Detention

The following DFAR Supplement clauses are applicable to this Subcontract if checked:

<b>DFARS Reference</b>	<b>Title of Clause</b>
<input type="checkbox"/>	252.204-7000 Disclosure of Information
<input checked="" type="checkbox"/>	252.204-7003 Control of Government Personnel Work Product
<input checked="" type="checkbox"/>	252.204-7005 Oral Attestation of Security Responsibilities
<input type="checkbox"/>	252.204-7010 Requirements for Contractor to Notify DoD if the Contractor's Activities are subject to reporting under the US International Atomic Energy Agency Additional Protocol (subject to U.S.-IAEA AP)
<input type="checkbox"/>	252.211-7000 Acquisition Streamlining (if Subcontract exceeds \$1.5M)
<input checked="" type="checkbox"/>	252.211-7007 Reporting of Government Furnished Property
<input type="checkbox"/>	252.215-7006 Use of Employees or Individual Subcontractors Who are Members of the Selected Reserve
<input type="checkbox"/>	252.222-7000 Restrictions on Employment of Personnel
<input type="checkbox"/>	252.223-7001 Hazard Warning Labels
<input type="checkbox"/>	252.223-7002 Safety Precautions for Ammunition and Explosives
<input type="checkbox"/>	252.223-7003 Change in Place of Performance - Ammunition and Explosives
<input checked="" type="checkbox"/>	252.223-7004 Drug-Free Work Force (If Subcontract exceeds simplified acquisition threshold)
<input checked="" type="checkbox"/>	252.223-7006 Prohibition On Storage, Treatment And Disposal Of Toxic or Hazardous Materials
<input type="checkbox"/>	252.223-7008 Prohibition of Hexavalent Chromium
<input checked="" type="checkbox"/>	252.225-7001 Buy American and Balance of Payments Program
<input checked="" type="checkbox"/>	252.225-7002 Qualifying Country Sources as Subcontractors
<input type="checkbox"/>	252.225-7005 Identification of Expenditures in the United States
<input type="checkbox"/>	252.225-7007 Prohibition on Acquisition of United States Munitions List Items from Communist Chinese Military Companies
<input type="checkbox"/>	252.225-7008 Restriction on Acquisition of Specialty Metals (If Subcontract exceeds simplified acquisition threshold)

	252.225-7009	Restriction on Acquisition of Certain Articles Containing Specialty Metals (If Subcontract exceeds simplified acquisition threshold)
√	252.225-7012	Preference for Certain Domestic Commodities
	252.225-7015	Restriction on Acquisition of Hand or Measuring Tools
	252.225-7016	Restriction on Acquisition of Ball and Roller Bearings
	252.225-7017	Photovoltaic Devices
	252.225-7025	Restriction on Acquisition of Forgings
√	252.225-7027	Restriction on Contingent Fees for Foreign Military Sales
√	252.225-7028	Exclusionary Policies and Practices of Foreign Governments
	252.225-7030	Restriction on Acquisition of Carbon, Alloy and Armor Steel Plate
	252.225-7031	Secondary Arab Boycott of Israel
	252.225-7033	Waiver of United Kingdom Levies
	252.225-7036	Buy American – Free Trade Agreements – Balance of Payments Program
	252.225-7036 ALT I	Buy American – Free Trade Agreements – Balance of Payments Program— Alternate I
	252.225-7036 ALT II	Buy American – Free Trade Agreements – Balance of Payments Program— Alternate II

	252.225-7038	Restriction on Acquisition of Air Circuit Breakers
	252.225-7044	Balance of Payments Program – Construction Material
	252.225-7045	Balance of Payments Program – Construction Material Under Trade Agreements
	252.225-7047	Exports by Approved Community Members in Performance of the Contract
	252.225-7980	Contractor Personnel Performing in the United States Africa command Area of Responsibility (DEVIATION 2016-O0008)
	252.225-7981	Additional Access to Contractor and Subcontractor Record (Other than USCENTCOM) (DEVIATION 2015-O0016) (Only if Subcontract exceeds \$50,000)
	252.225-7993	Prohibition on Providing Funds to the Enemy (DEVIATION 2015-O0016 (Only if Subcontract exceeds \$50,000)
	252.227-7018	Rights In Noncommercial Technical Data and Computer Software – Small Business Innovation Research (SBIR) Program
√	252.227-7019	Validation of Asserted Restrictions--Computer Software
	252.227-7020	Rights in Special Works
	252.227-7021	Rights in Data - Existing Works
	252.227-7022	Government Rights (Unlimited)
	252.227-7023	Drawings and Other Data to Become Property of Government
	252.227-7024	Notice and Approval of Restricted Designs
	252.227-7025	Limitations on the Use or Disclosure of Government-Furnished Information Marked with Restrictive Legends
	252.227-7026	Deferred Delivery of Technical Data or Computer Software
√	252.227-7027	Deferred Ordering of Technical Data or Computer Software
	252.227-7028	Technical Data or Computer Software Previously Delivered to the Government
	252.227-7032	Rights in Technical Data and Computer Software (Foreign)
	252.227-7033	Rights in Shop Drawings
√	252.227-7037	Validation of Restrictive Markings on Technical Data
	252.227-7038	Patent Rights – Ownership by the Contractor (Large Business) – Less item (k)
√	252.227-7039	Patents – Reporting of Subject Inventions



	252.228-7005	Accident Reporting and Investigation Involving Aircraft, Missiles, and Space Launch Vehicles
	252.228-7006	Compliance with Spanish Laws and Insurance
	252.229-7014	Taxes—Foreign Contracts in Afghanistan
	252.229-7015	Taxes—Foreign Contracts in Afghanistan (North Atlantic Treaty Organization Status of Forces Agreement)
	252.233-7001	Choice of Law (Overseas)
	252.235-7002	Animal Welfare
	252.235-7003	Frequency Authorization
	252.235-7004	Protection of Human Subjects
	252.235-7010	Acknowledgement of Support and Disclaimer
	252.235-7011	Final Scientific or Technical Report
√	252.237-7010	Prohibition of Interrogation of Detainees by Contactor Personnel
	252.237-7019	Training for Contractor Personnel Interacting with Detainees.
√	252.239-7000	Protection Against Compromising Emanations
√	252.239-7010	Cloud Computing Services
	252.239-7016	Telecommunications Security Equipment, Devices, Techniques and Services
	252.245-7001	Tagging, Labeling and Marking of Government Furnished Property
√	252.245-7002	Reporting Loss of Government Property
	252.245-7004	Reporting, Reutilization and Disposal

	252.246-7001	Warranty of Data
	252.246-7001 Alt I	Warranty of Data Alternate I
	252.246-7001 Alt II	Warranty of Data Alternate II
√	252.246-7007	Contactor Counterfeit Electronic Part Detection and Avoidance System
	252.246-7008	Sources of Electronic Parts
	252.247-7023	Transportation of Supplies by Sea
	252.247-7023 Alt I	Transportation of Supplies by Sea Alternate I
	252.247-7023 Alt II	Transportation of Supplies by Sea Alternate II
√	252.247-7024	Notification of Transportation of Supplies by Sea
	252.249-7002	Notification of Anticipated Contract Terminations or Reduction (if order exceeds \$700,000)

The following DFAR Supplement clauses are applicable to this Subcontract and provided in full text:

**252.203-7997 Prohibition on Contracting with Entities that Require Certain Internal Confidentiality Agreements. (DEVIATION 2016-O0003) (OCT 2015)**

- (a) The Contractor shall not require employees or subcontractors seeking to report fraud, waste, or abuse to sign or comply with internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or contactors from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.
- (b) The Contractor shall notify employees that the prohibitions and restrictions of any internal confidentiality agreements covered by this clause are no longer in effect.
- (c) The prohibition in paragraph (a) of this clause does not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.
- (d) (1) Use of funds appropriated (or otherwise made available) by the Continuing Appropriations Act, 2016, (Pub. L. 114-53), or any other FY 2016 appropriations act that extends to FY 2016 funds the same prohibitions as contained in sections 743 of division E, title VII of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub L. 113-235) may be prohibited, if the Government determines that the Contractor is not in compliance with the provisions of this clause.

- (2) The Government may seek any available remedies in the event the Contractor fails to perform in accordance with the terms and conditions of the contract as a result of Government action under this clause.

## **AGENCY ACQUISITION REGULATION CLAUSES**

The following Agency clauses are applicable to this Subcontract and provided in full text.

### **RENT-FREE USE OF GOVERNMENT PROPERTY (SEP 1990)**

The Contractor may use on a rent-free, non-interference basis, as necessary for the performance of this contract, the Government property accountable under the Contract(s) in the task order. The Contractor is responsible for scheduling the use of all property covered by the above referenced contract(s) and the Government shall not be responsible for conflicts, delays, or disruptions to any work performed by the Contractor due to use of any or all of such property under this contract or any other contracts under which use of such property is authorized.

### **TRAVEL COSTS**

- (a) Except as otherwise provided herein, the Contractor shall be reimbursed for its actual travel costs in accordance with FAR 31.205-46. The costs to be reimbursed shall be those costs determined to be allowable, allocable and reasonable by the Procuring Contracting Officer, Administrative Contracting Officer or their duly authorized representative, as advised by DCAA.
- (b) Reimbursable travel costs include only that travel performed from the Contractor's facility to the worksite, in and around the worksite, and from the worksite to the Contractor's facility.
- (c) Relocation costs and travel costs incidental to relocation are allowable to the extent provided in FAR 31.205-35; however, Contracting Officer approval shall be required prior to incurring relocation expenses and travel costs incidental to relocation.
- (d) The Contractor shall not be reimbursed for the following daily local travel costs:
  - (i) travel at U.S. Military Installations where Government transportation is available,
  - (ii) travel performed for personal convenience/errands, including commuting to and from work, and
  - (iii) travel costs incurred in the replacement of personnel when such replacement is accomplished for the Contractor's or employee's convenience.

### **ORGANIZATIONAL CONFLICT OF INTEREST**

***Additional terms and conditions may be invoked at the Task Order Level***

- (a) "Organizational Conflict of Interest" means that because of other activities or

relationships with other persons, a person is unable or potentially unable to render impartial assistance or advice to the Government, or the person's objectivity in performing the contract work is or might be otherwise impaired, or a person has an unfair competitive advantage, "Person" as used herein includes Corporations, Partnerships, Joint Ventures, and other business enterprises.

- (b) The Contractor warrants to the best of its knowledge and belief, and except as otherwise set forth in the contract, the Contractor does not have any organizational conflict of interest(s) as defined in paragraph (a).
- (c) It is recognized that the effort to be performed by the Contractor under this contract may create a potential organizational conflict of interest on the instant contract or on a future acquisition. In order to avoid this potential conflict of interest, and at the same time to avoid prejudicing the best interest of the Government, the right of the Contractor to participate in future procurement of equipment and/or services that are the subject of any work under this contract shall be limited as described below in accordance with the requirements of FAR 9.5.
- (d)
  - (1) The Contractor agrees that it shall not release, disclose, or use in any way that would permit or result in disclosure to any party outside the Government any information provided to the Contractor by the Government during or as a result of performance of this contract. Such information includes, but is not limited to, information submitted to the Government on a confidential basis by other persons. Further, the prohibition against release of Government provided information extends to cover such information whether or not in its original form, e.g., where the information has been included in Contractor generated work or where it is discernible from materials incorporating or based upon such information. This prohibition shall not expire after a given period of time.
  - (2) The Contractor agrees that it shall not release, disclose, or use in any way that would permit or result in disclosure to any party outside the Government any information generated or derived during or as a result of performance of this contract. This prohibition shall expire after a period of three years after completion of performance of this contract.
  - (3) The prohibitions contained in subparagraphs (d)(1) and (d)(2) shall apply with equal force to any affiliate of the Contractor, any subcontractor, consultant, or employee of the Contractor, any joint venture involving the Contractor, any entity into or with which it may merge or affiliate, or any successor or assign of the Contractor. The terms of paragraph (f) of this Special Contract Requirement relating to notification shall apply to any release of information in contravention of this paragraph (d).
- (e) The Contractor further agrees that, during the performance of this contract and for a period of three years after completion of performance of this contract, the Contractor, any affiliate of the Contractor, any subcontractor, consultant, or employee of the Contractor, any joint venture involving the Contractor, any entity into or with which it may subsequently merge or affiliate, or any other successor

or assign of the Contractor, shall not furnish to the United States Government, either as a prime contractor or subcontractor, or as a consultant to a prime contractor or subcontractor, any system, component or services which is the subject of the work to be performed under this contract. This exclusion does not apply to any recompetition for those systems, components or services furnished pursuant to this contract. As provided in FAR 9.505-2, if the Government procures the system, component, or services on the basis of work statements growing out of the effort performed under this contract from a source other than the contractor, subcontractor, affiliate, or assign of either, during the course of performance of this contract or before the three year period following completion of this contract has lapsed, the Contractor may, with the authorization of the cognizant Contracting Officer, participate in a subsequent procurement for the same system, component, or service. In other words, the Contractor may be authorized to compete for procurement(s) for systems, components, or services subsequent to an intervening procurement.

- (f) The Contractor agrees that, if after award, it discovers an actual or potential organizational conflict of interest, it shall make immediate and full disclosure in writing to the Contracting Officer. The notification shall include a description of the actual or potential organizational conflict of interest, a description of the action which the Contractor has taken or proposes to take to avoid, mitigate, or neutralize the conflict, and any other relevant information that would assist the Contracting Officer in making a determination on this matter. Notwithstanding this notification, the Government may terminate the contract for the convenience of the Government if determined to be in the best interest of the Government.
- (g) Notwithstanding paragraph (f) above, if the Contractor was aware, or should have been aware, of an organizational conflict of interest prior to the award of this contract or becomes, or should become, aware of an organizational conflict of interest after award of this contract and does not make an immediate and full disclosure in writing to the Contracting Officer, the Government may terminate this contract for default.
- (h) If the Contractor takes any action prohibited by this requirement or fails to take action required by this requirement, the Government may terminate this contract for default.
- (i) The Contracting Officer's decision as to the existence or nonexistence of an actual or potential organizational conflict of interest shall be final.
- (j) Nothing in this requirement is intended to prohibit or preclude the Contractor from marketing or selling to the United States Government its product lines in existence on the effective date of this contract; nor, shall this requirement preclude the Contractor from participating in any research and development or delivering any design development model or prototype of any such equipment. Additionally, sale of catalog or standard commercial items are exempt from this requirement.

- (k) The Contractor shall promptly notify the Contracting Officer, in writing, if it has been tasked to evaluate or advise the Government concerning its own products or activities or those of a competitor in order to ensure proper safeguards exist to guarantee objectivity and to protect the Government's interest.
- (l) The Contractor shall include this requirement in subcontracts of any tier which involve access to information or situations/conditions covered by the preceding paragraphs, substituting "subcontractor" for "contractor" where appropriate.
- (m) The rights and remedies described herein shall not be exclusive and are in addition to other rights and remedies provided by law or elsewhere included in this contract.

#### **HQ D-I-0001 PACKAGING OF DATA**

Data to be delivered by Integrated Digital Environment (IDE) or other electronic media shall be as specified in the contract.

All unclassified data to be shipped shall be prepared for shipment in accordance with best commercial practice. Classified reports, data, and documentation shall be prepared for shipment in accordance with National Industrial Security Program Operating Manual (NISPOM), DOD 5220.22-M dated 28 February 2006 with Change I dated 28 March 2013.

(End of Text)

#### **SUPPLEMENTAL INSTRUCTIONS REGARDING INVOICING**

For other than firm fixed price subcontractors, subcontractors are also required to provide labor categories, rates, and hours (both straight time and overtime) invoiced; as well as, a cost breakdown of ODCs, materials, and travel invoiced.

(End of Text)

#### **SPECIAL PROVISIONS**

**OTHER DIRECT COSTS** a) Other direct costs necessary for the performance of the work under this contract, such as travel and transportation, materials, lodging, ancillary expenses and other costs USAID determines to be relevant may be authorized. b) The Contracting Officer (CO) determines which other direct costs are allowable, allocable, and fair and reasonable in accordance with the applicable federal cost principles (i.e., FAR 31.2 and AIDAR 731.2 for commercial (for profit) organizations or FAR 31.3 and AIDAR 731.3 for educational institutions, or FAR 31.7 and AIDAR 731.7 for other not-for-profit organizations). For those other direct costs the CO authorizes, Contractors are allowed to recover applicable indirect costs on these costs, if doing so is part of the Contractor's usual accounting procedures, consistent with the applicable cost principles, and are included in the Contractor's Negotiated Indirect Cost Rate Agreement.

OTHER DIRECT COSTS –TRAVEL a) Local travel, commuting costs or the relocation of Contractor personnel from other geographic areas for the purpose of staffing a project are not subject to Prime Contractor reimbursement. The Prime Contractor will not pay charges for travel to and from the Subcontractor's home to a Government or Prime Contractor office or offices or to/from one company or subcontractor's building to another. Travel for technical personnel on approved STTA and LTTA to Missions is reimbursable. b) All international travel shall be in compliance with the provisions of the Federal Travel Regulations (FTR) 301.10.121, Federal Acquisition Regulation Subpart 31.205-46 and USAID Travel Policy. The Federal Travel Regulations and current per diem rates can be accessed at: <http://www.gsa.gov/ptr>. c) No profit or fee will be applied to Travel, in accordance with FAR 16.601.

## **USAID CLAUSES**

Subcontractor must comply with all USAID clauses listed below in sections H.9 through I.5.

## **H.9 HOMELAND SECURITY PRESIDENTIAL DIRECTIVE (HSPD-12) (SEPTEMBER 2006)**

In response to the general threat of unauthorized access to federal facilities and information systems, the President issued Homeland Security Presidential Directive-12 (HSPD-12). HSPD-12 requires all Federal agencies to use a common Personal Identity Verification (PIV) standard when identifying and issuing access rights to users of Federally-controlled facilities and/or Federal Information Systems.

USAID will begin issuing HSPS-12 “smart card” IDs to applicable contracts, using a phased approach. Effective October 27, 2006, USAID will begin issuing new “smart card” IDs to new Subcontractors (and new Subcontractor employees) requiring routine access to USAID controlled facilities and/or access to USAID’s information systems. USAID will begin issuance of the new smart card IDs to existing Subcontractors (and existing Subcontractor employees) on October 27, 2007. (Exceptions would include those situations where an existing Subcontractor (or Subcontractor employee) loses or damages his/her existing ID and would need a replacement ID prior to October 27, 2007. In those situations, the existing Subcontractor (or Subcontractor employee) would need to follow the PIV processes described below, and be issued one of the new smart cards.)

Accordingly, before a Subcontractor (including a PSC or a Subcontractor employee) may obtain a USAID ID (new or replacement) authorizing him/her routine access to USAID facilities, or logical access to USAID’s information systems, the individual must provide two forms of identity source documents in original form and a passport size photo. One identity source document must be a valid Federal or state government-issued picture ID. (Overseas foreign nationals must comply with the requirements of the Regional Security Office.) USAID/W Subcontractors must contact the USAID Security Office to obtain the list of acceptable forms of documentation, and Subcontractors working in overseas Missions must obtain the acceptable documentation list from the Regional Security Officer. Submission of these documents, and related background checks, are mandatory in order for the Subcontractor to receive a building access ID, and before access will be granted to any of USAID’s information systems. All Subcontractors must physically present these two source documents for identity proofing at their USAID/W or Mission Security Briefing.

The Subcontractor or his/her Facility Security Officer must return any issued building access ID and remote authentication token to USAID custody upon termination of the individual’s employment with the Subcontractor or completion of the contract, whichever occurs first.

The Subcontractor must comply with all applicable HSPD-12 and PIV procedures as described above, and any subsequent USAID or government-wide HSPS-12 and PIV procedures/policies, including any subsequent related USAID General Notices, Office of Security Directives and/or Automated Directives System (ADS) policy directives and required procedures. This includes HSPD-12 procedures established in USAID/W and those procedures established by the overseas Regional Security Office.

In the event of inconsistencies between this clause and the later issued Agency or government-wide HSPD-12 guidance, the most recent issued guidance should take



precedence, unless otherwise instructed by the Contracting Officer. The Subcontractor is required to include this clause in any subcontracts that require the Subcontractor or Subcontractor employee to have routine physical access to USAID space or logical access to USAID's information systems.

#### **H.10 INSURANCE AND SERVICES**

Pursuant to AIDAR 752.228-3 Worker's Compensation Insurance (Defense Base Act), USAID's DBA insurance carrier is: Allied World Assurance Company

To obtain DBA insurance, Subcontractors must contact Allied's agent, AON Risk Insurance

Services Inc., the agent for AWAC DBA Insurance. Please refer to AAPD 17-01 for Defense Base Act (DBA) Insurance for 2015-20201.

The Subcontractor is required to procure DBA insurance through USAID's approved Subcontractor, Allied, through AON.

### **H.13 MEDICAL EVACUATION (MEDEVAC) SERVICES (July 2007) 752.228-70**

As prescribed in 728.307-70, for use in all contracts requiring performance overseas:

- (a) Subcontractors must provide MEDEVAC service coverage to all U.S. citizen, U.S. resident alien, and Third Country National employees and their authorized

dependents (hereinafter “individual”) while overseas under a USAID-financed direct contract. USAID will reimburse reasonable, allowable, and allocable costs for MEDEVAC service coverage incurred under the contract. The Contracting Officer will determine the reasonableness, allowability, and allocability of the costs based on the applicable cost principles and in accordance with cost accounting standards.

(b) Exceptions.

i. The Subcontractor is not required to provide MEDEVAC insurance to eligible employees and their dependents with a health program that includes sufficient MEDEVAC coverage as approved by the Contracting Officer.

ii. The Mission Director may make a written determination to waive the requirement for such coverage. The determination must be based on findings that the quality of local medical services or other circumstances obviate the need for such coverage for eligible employees and their dependents located at post.

(c) Subcontractor must insert a clause similar to this clause in all subcontracts that require performance by Subcontractor employees overseas.

## **H.20 PERSONAL IDENTITY VERIFICATION OF SUBCONTRACTOR PERSONNEL (JULY 2007)**

- (a) Before a Subcontractor (or a Subcontractor employee) may obtain a USAID ID (new or replacement) authorizing him/her routine access to USAID facilities, or logical access to USAID’s information systems, the individual must provide two forms of

identity source documents in original form and a passport-size photo. One identity source document must be a valid Federal or state government issued picture ID. (Overseas foreign nationals must comply with the requirements of this Regional Security Office.) USAID/Washington Subcontractor must contact the USAID Security Office to obtain the list of acceptable forms of documentation, and Subcontractors working in overseas Missions must obtain the acceptable documentation list from the Regional Security Officer. Submission of these documents, and related background checks, are mandatory in order for the Subcontractor to receive a building access ID, and before access will be granted to any of USAID's information systems. All Subcontractors must physically present these two source documents for identity proofing at their USAID/Washington or Mission Security Briefing. The Subcontractor or his/her Facilities Security Officer must return any issued building access ID and remote authentication token to USAID custody upon termination of the individual's employment with the Subcontractor or completion of the Contract, whichever occurs first.

- (b) The Subcontractor must comply with all applicable HSPD-12 and PIV procedures, as described above, and any subsequent USAID or government-wide HSPD-12 and PIV procedures/policies, including any subsequent related USAID General Notices, Office of Security Directives and/or Automated Directives System (ADS) policy directives and required procedures. This includes HSPD-12 procedures established in USAID/Washington and those procedures established by the overseas Regional Security Office.
- (c) The Subcontractor is required to include this provision in any subcontracts that require the Subcontractor or Subcontractor employee to have routine physical access to USAID space or logical access to USAID's information systems.

## **H.23 REPORTING OF FOREIGN TAXES (July 2007)**

- (a) Reports. The Subcontractor must annually submit an annual report by April 16 of the next year.
- (b) Contents of Report. The reports must contain:
  - 1) Subcontractor name.
  - 2) Contact name with phone, fax and email.
  - 3) Agreement number(s).

- 4) Amount of foreign taxes assessed by a foreign Government [*list each foreign government separately*] on commodity purchase transactions valued at \$500 or more financed with U.S. foreign assistance funds under this agreement during the prior U.S. fiscal year.
  - 5) Only foreign taxes assessed by the foreign government in the country receiving U.S. assistance is to be reported. Foreign taxes by a third party foreign government are not to be reported. For example, if an assistance program for Lesotho involves the purchase of commodities in South Africa using foreign assistance funds, any taxes imposed by South Africa would not be reported in the report for Lesotho (or South Africa).
  - 6) Any reimbursements received by the Subcontractor during the period in (iv) regardless of when the foreign tax was assessed plus, for the interim report, any reimbursements on the taxes reported in (iv) received by the Subcontractor through October 31 and for the final report, any reimbursements on the taxes reported in (iv) received through March 31.
  - 7) The final report is an updated cumulative report of the interim report.
  - 8) Reports are required even if the Subcontractor/recipient did not pay any taxes during the report period.
  - 9) Cumulative reports may be provided if the Subcontractor/recipient is implementing more than one program in a foreign country.
- (c) Definitions. For purposes of this clause:
- 1) "Agreement" includes USAID direct and country Contracts, grants, cooperative agreements and interagency agreements.
  - 2) "Commodity" means any material, article, supply, goods, or equipment.
  - 3) "Foreign government" includes any foreign governmental entity.
  - 4) "Foreign taxes" means value-added taxes and custom duties assessed by a foreign government on a commodity. It does not include foreign sales taxes.
- (d) Where. Submit the reports to: [vatreportswash@usaid.gov](mailto:vatreportswash@usaid.gov)
- (e) Subagreements. The Subcontractor must include this reporting requirement in all applicable subcontracts, subgrants and other subagreements.
- (f) For further information see <http://2001-2009.state.gov/s/d/rm/c10443.htm>.

## **H.28 VOLUNTARY POPULATION PLANNING ACTIVITIES (JUNE 2008) (AAPD 08-01) AIDAR 752.7101**

- a. Requirements for Voluntary Sterilization Program. None of the funds made available under this contract shall be used to pay for the performance of involuntary sterilization as a method of family planning or to coerce or provide any financial incentive to any individual to practice sterilization.
  
- b. Prohibition on Abortion-Related Activities.
  - (1) No funds made available under this contract will be used to finance, support, or be attributed to the following activities: (i) procurement or distribution of equipment intended to be used for the purpose of inducing abortions as a method of family planning; (ii) special fees or incentives to any person to coerce or motivate them to have abortions; (iii) payments to persons to perform abortions or to solicit persons to undergo abortions; (iv) information, education, training, or communication programs that seek to promote abortion as a method of family planning; and (v) lobbying for or against abortion. The term “motivate”, as it relates to family planning assistance, shall not be construed to prohibit the provision, consistent with local law, of information or counseling about all pregnancy options.
  
  - (2) No funds made available under this contract will be used to pay for any biomedical research which relates, in whole or in part, to methods of, or the performance of, abortions or involuntary sterilizations as a means of family planning. Epidemiologic or descriptive research to assess the incidence, extent or consequences of abortions is not precluded.
  
- c. The Subcontractor shall insert this provision in all subcontracts.

## **H.32 INFORMATION TECHNOLOGY APPROVAL (APRIL 2018 (DEVIATION NO. M/OAA-DEV-FAR-18-2C))**

- (a) Definitions. As used in this contract – “Information Technology” means
- (1) Any services or equipment, or interconnected system(s) or subsystem(s) of equipment, that are used in the automatic acquisition, storage, analysis, evaluation, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the agency; where
  - (2) such services or equipment are ' used by an agency' if used by the agency directly or if used by a Subcontractor under a contract with the agency that requires either use of the services or equipment or requires use of the services or equipment to a significant extent in the performance of a service or the furnishing of a product.
  - (3) The term " information technology" includes computers, ancillary equipment (including imaging peripherals, input, output, and storage devices necessary for security and surveillance), peripheral equipment designed to be controlled by the central processing unit of a computer, software, firmware and similar procedures, services (including provisioned services such as cloud computing and support services that support any point of the lifecycle of the equipment or service), and related resources.
  - (4) The term "information technology" does not include any equipment that is acquired by a Subcontractor incidental to a contract that does not require use of the equipment. (OMB M- 15-14)
- (b) The Federal Information Technology Acquisition Reform Act (FITARA) requires Agency Chief Information Officer (CIO) review and approval of contracts or interagency agreements for information technology or information technology services.
- (c) The approved information technology and/or information technology services are specified in the Schedule of this contract. The Subcontractor must not acquire additional information technology without the prior written approval of the Contracting Officer as specified in this clause.
- (d) Request for Approval Requirements:
- (5) If the Subcontractor determines that any information technology in addition to that information technology specified in the Schedule will be necessary to meet the Government’s requirements or to facilitate activities in the Government’s statement of work, the Subcontractor must request prior written approval from the Contracting Officer.
  - (6) As part of the request, the Subcontractor must provide the Contracting Officer a description and an estimate of the total cost of the information technology equipment, software, or services to be procured under this contract. The Subcontractor must simultaneously notify the Contracting Officer’s Representative (COR) and the Office of the Chief Information Officer at [ITAuthorization@usaid.gov](mailto:ITAuthorization@usaid.gov).

- (e) The Contracting Officer will provide written approval to the Subcontractor expressly specifying the information technology equipment, software, or services approved for purchase by the COR and the Agency CIO. Additional clauses or special contract requirements may be applicable and will be incorporated by the Contracting Officer through a modification to the contract.
- (f) Except as specified in the Contracting Officer's written approval, the Government is not obligated to reimburse the Subcontractor for costs incurred in excess of the information technology equipment, software or services specified in the Schedule.
- (g) The Subcontractor shall insert the substance of this special contract requirement, including this paragraph (g), in all subcontracts.



### **H.33 MEDIA AND INFORMATION HANDLING AND PROTECTION (APRIL 2018)**

- (a) Definitions. As used in this special contract requirement- “Information” means any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual. This also includes but not limited to all records, files, and metadata in electronic or hardcopy format. “Sensitive Information or

Sensitive But Unclassified” (SBU) means information which warrants a degree of protection and administrative control and meets the criteria for exemption from public disclosure set forth under Sections 552 and 552a of Title 5, United States Code: the Freedom of Information Act and the Privacy Act, 12 FAM 540 Sensitive but Unclassified Information (TL;DS61;10-01-199), and 12 FAM 541 Scope (TL;DS-46;05- 26-1995). SBU information includes, but is not limited to: 1) Medical, personnel, financial, investigatory, visa, law enforcement, or other information which, if released, could result in harm or unfair treatment to an individual or group, or could have a negative impact upon foreign policy or relations; and 2) Information offered under conditions of confidentiality, arising in the course of a deliberative process (or a civil discovery process), including attorney-client privilege or work product, and information arising from the advice and counsel of subordinates to policy makers “Media” means physical devices or writing surfaces including but not limited to magnetic tapes, optical disks, magnetic disks, Large Scale Integration (LSI) memory chips, and printouts (but not including display media) onto which information is recorded, stored, or printed within an information system.

- (b) This special contract requirement applies to the Subcontractor and all personnel providing support under this contract (hereafter referred to collectively as “Subcontractor”) and addresses specific USAID requirements in addition to those included in the Federal Acquisition Regulation (FAR), Privacy Act of 1974 (5 U.S.C. 552a - the Act), E-Government Act of 2002 - Section 208 and Title III, Federal Information Security Management Act (FISMA), the Health Insurance Portability and Accountability Act of 1996 (HIPAA, Pub. L. 104-191, 110 Stat. 1936), the Sarbanes-Oxley Act of 2002 (SOX, Pub.L.107-204, 116 Stat 745), National Institute of Standards and Technology (NIST), Federal Information Processing Standards (FIPS) and the 800-Series Special Publications (SP), Office of Management and Budget (OMB) memorandums, and other laws, mandates, or executive orders pertaining to the development and operations of information systems and the protection of sensitive information and data.
- (c) Handling and Protection. The Subcontractor is responsible for the proper handling and protection of Sensitive Information to prevent unauthorized disclosure. The Subcontractor must develop and implement policies or documentation regarding the protection, handling, and destruction of Sensitive Information. The policy or procedure must address at a minimum, the requirements documented in NIST 800-53 Revision 4 or the current revision for Media Protection Controls as well as the following:
- 1) Proper marking, control, storage and handling of Sensitive Information residing on electronic media, including computers and removable media, and on paper documents.

- 2) Proper security, control, and storage of mobile technology, portable data storage devices, and communication devices.
  - 3) Proper use of FIPS 140-2 compliant encryption methods to protect Sensitive Information while at rest and in transit throughout USAID, Subcontractor, and/or Subcontractor networks, and on host and client platforms.
  - 4) Proper use of FIPS 140-2 compliant encryption methods to protect Sensitive Information in email attachments, including policy that passwords must not be communicated in the same email as the attachment.
- (d) Return of all USAID Agency records. Within five (5) business days after the expiration or termination of the contract, the Subcontractor must return all Agency records and media provided by USAID and/or obtained by the Subcontractor while conducting activities in accordance with the contract. Destruction of Sensitive Information: Within twenty (20) business days after USAID has received all Agency records and media, the Subcontractor must execute secure destruction (either by the Subcontractor or third party firm approved in advance by USAID) of all remaining originals and/or copies of information or media provided by USAID and/or obtained by the Subcontractor while conducting activities in accordance with the contract. After the destruction of all information and media, the Subcontractor must provide USAID with written confirmation verifying secure destruction.
- (e) The Subcontractor shall include the substance of this special contract requirement in all subcontracts, including this paragraph (f).
- (f)

## **H.34 PRIVACY AND SECURITY INFORMATION TECHNOLOGY SYSTEMS INCIDENT REPORTING (APRIL 2018)**

(a) Definitions. As used in this special contract requirement

“Information” means any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual.

“Sensitive Information” or “Sensitive But Unclassified” Sensitive But Unclassified (SBU) describes information which warrants a degree of protection and administrative control and meets the criteria for exemption from public disclosure set forth under Sections 552 and 552a of Title 5, United States Code: the Freedom of Information Act and the Privacy Act, 12 FAM 540 Sensitive but Unclassified Information (TL;DS-61;10-01-199), and 12 FAM 541 Scope (TL;DS-46;05-26-1995). SBU information includes, but is not limited to: 1) Medical, personnel, financial, investigatory, visa, law enforcement, or other information which, if released, could result in harm or unfair treatment to an individual or group, or could have a negative impact upon foreign policy or relations; and 2) Information offered under conditions of confidentiality, arising in the course of a deliberative process (or a civil discovery process), including attorney-client privilege or work product, and information arising from the advice and counsel of subordinates to policy makers,

“Personally Identifiable Information (PII)”, means information that can be used to distinguish or trace an individual's identity, such as their name, Social Security Number (SSN), biometric records, etc., alone, or when combined with other personal or identifying information which is linked or linkable to a specific individual, such as date and place of birth, mother's maiden name, etc. The definition of PII is not anchored to any single category of information or technology. Rather, it requires a case-by-case assessment of the specific risk that an individual can be identified. In performing this assessment, it is important to recognize that non-PII can become PII whenever additional information is made publicly available — in any medium and from any source — that, when combined with other available information, could be used to identify an individual. PII examples include name, address, SSN, or other identifying number or code, telephone number, and e-mail address. PII can also consist of a combination of indirect data elements such as gender, race, birth date, geographic indicator (e.g., zip code), and other descriptors used to identify specific individuals. When defining PII for USAID purposes, the term “individual” refers to a citizen of the United States or an alien lawfully admitted for permanent residence.

“National Security Information” means information that has been determined pursuant to Executive Order 13526 or any predecessor order to require protection against unauthorized disclosure and is marked to indicate its classified status when in documentary form. Classified or national security information is specifically authorized to be protected from unauthorized disclosure in the interest of national defense or foreign policy under an Executive Order or Act of Congress.

“Information Security Incident” means an occurrence that (1) actually or imminently jeopardizes, without lawful authority, the integrity, confidentiality, or availability of information or an information system; or (2) constitutes a violation or imminent threat of violation of law, security policies, security procedures, or acceptable use policies.

“Spillage” means a security incident that

results in the transfer of classified or other sensitive or sensitive but unclassified information to an information system that is not accredited,(i.e., authorized) for the applicable security level of the data or information.

“Privacy Incident” means a violation or imminent threat of violation of security policies, acceptable use policies, or standard security practices, involving the breach of Personally Identifiable Information (PII), whether in electronic or paper format.

- (b) This special contract requirement applies to the Subcontractor and all personnel providing support under this contract (hereafter referred to collectively as “Subcontractor”) and addresses specific USAID requirements in addition to those included in the Federal Acquisition Regulation (FAR), Privacy Act of 1974 (5 U.S.C. 552a - the Act), E-Government Act of 2002 - Section 208 and Title III, Federal Information Security Management Act (FISMA), the Health Insurance Portability and Accountability Act of 1996 (HIPAA, Pub. L. 104-191, 110 Stat. 1936), the Sarbanes-Oxley Act of 2002 (SOX, Pub. L. 107-204, 116 Stat 745), National Institute of Standards and Technology (NIST), Federal Information Processing Standards (FIPS) and the 800-Series Special Publications (SP), Office of Management and Budget (OMB) memorandums, and other laws, mandates, or executive orders pertaining to the development and operations of information systems and the protection of sensitive information and data.
- (c) Privacy Act Compliance  
Subcontractors must comply with the Privacy Act of 1974 requirements in the design, development, or operation of any system of records on individuals (as defined in FAR) containing PII developed or operated for USAID or to accomplish a USAID function for a System of Records (SOR).
- (d) IT Security and Privacy Training
  - (1) All Subcontractor personnel must complete USAID-provided mandatory security and privacy training prior to gaining access to USAID information systems and annually thereafter.
  - (2) The USAID Rules of Behavior and all subsequent updates apply to and must be signed by each user prior to gaining access to USAID facilities and information systems, periodically at the request of USAID. USAID will provide access to the rules of behavior and provide notification as required.
  - (3) Security and privacy refresher training must be completed on an annual basis by all Subcontractor and Subcontractor personnel providing support under this contract. USAID will provide notification and instructions on completing this training.
  - (4) Subcontractor employees filling roles identified by USAID as having significant security responsibilities must complete role-based training upon assignment of duties and thereafter at a minimum of every three years.

- (5) Within fifteen (15) calendar days of completing the initial IT security training, the Subcontractor must notify the COR in writing that its employees, in performance of the contract, have completed the training. The COR will inform the Subcontractor of any other training requirements.

(e) Information Security and Privacy Incidents

- (1) Information Security Incident Reporting Requirements: All Information Security Incidents involving USAID data or systems must be reported in accordance with the requirements below, even if it is believed that the incident may be limited, small, or insignificant. USAID will determine the magnitude and resulting actions.

- i. Subcontractor employees must report by e-mail all Information Security Incidents to the USAID Service Desk immediately, but not later than 30 minutes, after becoming aware of the Incident, at: CIOHELPDESK@usaid.gov, regardless of day or time, as well as the Contracting Officer and Contracting Officer's representative and the Subcontractor Facilities Security Officer.

Spillage and Information Security Incidents: Upon written notification by the Government of a spillage or information security incident involving classified information, or the Subcontractor's discovery of a spillage or security incident involving classified information, the Subcontractor must immediately (within 30 minutes) notify CIO-HELPDESK@usaid.gov and the Office of Security at SECinformationsecurity@usaid.gov to correct the spillage or security incident in compliance with agency-specific instructions. The Subcontractor will abide by USAID instructions on correcting such a spill or security incident.

Subcontractor employees are strictly prohibited from including any Sensitive Information in the subject or body of any e-mail concerning information security incident reports. To transmit Sensitive Information, Subcontractor employees must use FIPS 140-2 compliant encryption methods to protect Sensitive Information in attachments to email. Passwords must not be communicated in the same email as the attachment.

- ii. The Subcontractor must provide any supplementary information or reports related to a previously reported incident directly to CIO-HELPDESK@usaid.gov, upon request. Correspondence must include related ticket number(s) as provided by the USAID Service Desk with the subject line "Action Required: Potential Security Incident"

- (2) Privacy Incidents Reporting Requirements: Privacy Incidents may result in the unauthorized use, disclosure, or loss of personally identifiable information (PII), and can result in the loss of the public's trust and confidence in the Agency's ability to safeguard personally identifiable information. PII breaches may impact individuals whose PII is compromised, including potential identity theft resulting in financial loss and/or personal hardship experienced by the individual. Subcontractor employees must report (by e-mail) all Privacy Incidents to the USAID Service Desk immediately,

but not later than 30 minutes, after becoming aware of the incident, at: CIO-HELPDESK@usaid.gov, regardless of day or time, as well as the USAID Contracting Officer or Contracting Officer's representative and the Subcontractor Facilities Security Officer. If known, the report must include information on the format of the PII (oral, paper, or electronic.) The subject line shall read "Action Required: Potential Privacy Incident".

(3) Information Security Incident Response Requirements

- i. All determinations related to Information Security and Privacy Incidents, associated with information Systems or Information maintained by the Subcontractor in support of the activities authorized under this contract, including response activities, notifications to affected individuals and/or Federal agencies, and related services (e.g., credit monitoring) will be made by USAID officials (except reporting criminal activity to law enforcement). The Subcontractor must not conduct any internal information security incident-related review or response activities that could modify or eliminate any existing technical configuration or information or forensic technical evidence existing at the time of the information security incident without approval from the Agency CIO communicated through the CO or COR.
  - ii. The Subcontractor and Subcontractor employees must provide full and immediate access and cooperation for all activities USAID requests to facilitate Incident Response, including providing all requested images, log files, and event information to address and resolve Information Security Incidents.
  - iii. Incident Response activities that USAID requires may include but are not limited to, inspections; investigations; forensic reviews; data analyses and processing.
  - iv. At its discretion, USAID may obtain the assistance of Federal agencies and/or third party firms to aid in Incident Response activities.
  - v. All determinations related to an Information Security Incident associated with Information Systems or Information maintained by the Subcontractor in support of the activities authorized by this contract will be made only by the USAID CIO through the CO or COR.
  - vi. The Subcontractor must report criminal activity to law enforcement organizations upon becoming aware of such activity.
- (f) The Subcontractor shall immediately notify the Contracting Officer in writing whenever it has reason to believe that the terms and conditions of the contract may be affected as a result of the reported incident.
- (g) The Subcontractor is required to include the substance of this provision in all subcontracts. In altering this special contract requirement, require Subcontractors to report (by e-mail) information security and privacy incidents directly to the USAID Service Desk at CIO- HELPDESK@usaid.gov. A copy of the correspondence shall be sent to the prime Subcontractor (or higher tier Subcontractor) and the Contracting Officer referencing the ticket number provided by the CIO-HELPDESK.

## **H.36 SECURITY REQUIREMENTS FOR UNCLASSIFIED INFORMATION TECHNOLOGY RESOURCES (APRIL 2018)**

(a) Definitions. As used in this special contract requirement –

“Audit Review” means the audit and assessment of an information system to evaluate the adequacy of implemented security controls, assure that they are functioning properly, identify vulnerabilities and methods for mitigating them and assist in implementation of new security controls where required. These reviews are conducted periodically but at least annually, and may be performed by USAID Bureau for Management, Office of the Chief Information Officer (M/CIO) or designated independent assessors/auditors, USAID Office of Inspector General (OIG) as well as external governing bodies such as the Government Accountability Office (GAO). “Authorizing Official” means the authorizing official is a senior government official or executive with the authority to formally assume responsibility for operating an information system at an acceptable level of risk to organizational operations and assets, individuals, other organizations, and/or the Nation.

“Information” means any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual.

“Sensitive” Information or Sensitive But Unclassified (SBU) - Sensitive But Unclassified (SBU) describes information which warrants a degree of protection and administrative control and meets the criteria for exemption from public disclosure set forth under Sections 552 and 552a of Title 5, United States Code: the Freedom of Information Act and the Privacy Act, 12 FAM 540 Sensitive but Unclassified Information (TL;DS-61;10-01-199), and 12 FAM 541 Scope (TL;DS- 46;05-26-1995). SBU information includes, but is not limited to: 1) Medical, personnel, financial, investigatory, visa, law enforcement, or other information which, if released, could result in harm or unfair treatment to an individual or group, or could have a negative impact upon foreign policy or relations; and 2) Information offered under conditions of confidentiality, arising in the course of a deliberative process (or a civil discovery process), including attorney-client privilege or work product, and information arising from the advice and counsel of subordinates to policy makers.

“National Security Information” means information that has been determined pursuant to Executive Order 13526 or any predecessor order to require protection against unauthorized disclosure and is marked to indicate its classified status when in documentary form. Classified or national security information is specifically authorized to be protected from unauthorized disclosure in the interest of national defense or foreign policy under an Executive Order or Act of Congress.

“Information Technology Resources” means agency budgetary resources, personnel, equipment, facilities, or services that are primarily used in the management, operation, acquisition, disposition, and transformation, or other activity related to the lifecycle of information technology; acquisitions or interagency agreements that include information technology and the services or equipment provided by such

acquisitions or interagency agreements; but does not include grants to third parties which establish or support information technology not operated directly by the Federal Government. (OMB M-15-14)

- (b) **Applicability:** This special contract requirement applies to the Subcontractor, its Subcontractors, and all personnel providing support under this contract (hereafter referred to collectively as “Subcontractor”) and addresses specific USAID requirements in addition to those included in the Federal Acquisition Regulation (FAR), Privacy Act of 1974 (5 U.S.C. 552a - the Act), E- Government Act of 2002 - Section 208 and Title III, Federal Information Security Management Act (FISMA), the Health Insurance Portability and Accountability Act of 1996 (HIPAA, Pub. L. 104-191, 110 Stat. 1936), the Sarbanes Oxley Act of 2002 (SOX, Pub. L. 107-204, 116 Stat 745), National Institute of Standards and Technology (NIST), Federal Information Processing Standards (FIPS) and the 800-Series Special Publications (SP), Office of Management and Budget (OMB) memorandums, and other laws, mandates, or executive orders pertaining to the development and operations of information systems and the protection of sensitive information and data.
- (c) **Compliance with IT Security and Privacy Policies:** The Subcontractor shall be responsible for implementing information security for all information systems procured, developed, deployed, and/or operated on behalf of the US Government. All Subcontractor personnel performing under this contract and Subcontractor equipment used to process or store USAID data, or to connect to USAID networks, must comply with Agency information security requirements as well as current Federal regulations and guidance found in the Federal Information Security Modernization Act (FISMA), Privacy Act of 1974, E-Government Act of 2002, Section 208, and National Institute of Standards and Technology (NIST), Federal Information Processing Standards (FIPS) and the 800-Series Special Publications (SP), Office of Management and Budget (OMB) memorandums, and other relevant Federal laws and regulations that are applicable to USAID. The Subcontractor must comply with the following:
1. **HSPD-12 Compliance**
    - Procurements for services and products involving facility or system access control must be in accordance with HSPD-12 policy and the Federal Acquisition Regulation.
    - All development for USAID systems must include requirements to enable the use Personal Identity Verification (PIV) credentials, in accordance with NIST FIPS 201, PIV of Federal Employees and Subcontractors, prior to being operational or updated.
  2. **Internet Protocol Version 6 (IPv6) or current version:** This acquisition requires all functionality, capabilities and features to be supported and operational in both a dual- stack IPv4/IPv6 environment and an IPv6 only environment. Furthermore, all management, user interfaces, configuration options, reports and other administrative capabilities that support IPv4 functionality will support comparable IPv6 functionality. The Subcontractor is required to certify that its products have been tested to



meet the requirements for both a dual-stack IPv4/IPv6 and IPv6-only environment. USAID reserves the right to require the Subcontractor's products to be tested within a USAID or third party test facility to show compliance with this requirement.

3. Secure Configurations

- The Subcontractor's applications must meet all functional requirements and operate correctly as intended on systems using the United States Government Configuration Baseline (USGCB) or the current configuration baseline.
- The standard installation, operation, maintenance, updates, and/or patching of software must not alter the configuration settings from the approved USGCB configuration. The information technology, when applicable, must also use the Windows Installer Service for installation to the default "program files" directory and must be able to silently install and uninstall.
- Applications designed for normal end users must run in the standard user context without elevated system administration privileges.
- The Subcontractor must apply due diligence at all times to ensure that the required level of security is always in place to protect USAID systems and information, such as using Defense Information Systems Agency Security Technical Implementation Guides (STIGs), common security configurations available from the National Institute of Standards and Technology's website at <https://nvd.nist.gov/ncp/repository> or USAID established configuration settings.

4. FIPS 140 Encryption Requirements: Cryptographic modules used to protect USAID information must be compliant with the current FIPS 140 version and validated by the Cryptographic Module Validation Program (CMVP). The Subcontractor must provide the validation certificate number to USAID for verification. The Subcontractor is required to follow government-wide (FIPS 140) encryption standards.

5. Security Monitoring, Auditing and Alerting Requirements: All Subcontractor-owned and operated systems that use or store USAID information must meet or exceed standards documented in this contract and in Service Level Agreements and Memorandums of Understanding/Agreements pertaining to security monitoring and alerting. These requirements include but are not limited to: Clauses And Special Contract Requirements For Facilities Access, Security, and Information Technology (IT) (Class Deviations M/OAA-DEV-FAR-18-2c, and M/OAA-DEV-AIDAR-18- 2c) 29

System and Network Visibility and Policy Enforcement at the following levels:

- Edge
- Server / Host

- Workstation / Laptop / Client
- Network
- Application
- Database
- Storage
- User
- Alerting and Monitoring
- System, User, and Data Segmentation

#### 6. Subcontractor System Oversight/Compliance

- The federal government has the authority to conduct site reviews for compliance validation. Full cooperation by the Subcontractor is required for audits and forensic analysis.
- The Subcontractors must afford USAID the level of physical or logical access to the Subcontractor's facilities, installations, technical capabilities, operations, documentation, records, and databases to the extent required to support its security and privacy programs. This includes monitoring, inspection, investigation and audits to safeguard against threats and hazards to the integrity, availability and confidentiality of USAID data or information systems operated on behalf of USAID; and to preserve or retrieve evidence in the case of computer crimes.
- All Subcontractor systems must comply with Information Security Continuous Monitoring (ISCM) and Reporting as defined in a continuous monitoring plan, to include, but not limited to, both automated authenticated and unauthenticated scans of networks, operating systems, applications, and databases. The Subcontractor must provide a continuous monitoring plan in accordance with NIST standards, as well as scan results upon request or at a minimum monthly to the Contracting Officer Representative (COR) and Contracting Officer, in addition to the CIO at [ITAuthorization@usaid.gov](mailto:ITAuthorization@usaid.gov). Alternatively, the Subcontractor may allow USAID information security staff to run scans directly.
- The Subcontractors must comply with systems development and lifecycle management best practices and processes as defined by Bureau for Management, Office of The Chief Information Officer (M/CIO) USAID IT Project Governance standards and processes for approval of IT projects, for the acceptance of IT project deliverables, and for the project's progression through its life cycle.

#### 7. Security Assessment and Authorization (SA&A)

- For all information systems procured, developed, deployed, and/or operated on behalf of the US Government information by the provision of this contract, the Subcontractor must provide a system security assessment and authorization work plan, including project management information, to demonstrate that it complies

or will comply with the FISMA and NIST requirements. The work plan must be approved by the COR, in consultation with the USAID M/CIO Information Assurance Division.

- Prior to deployment of all information systems that transmit, store or process Government information, the Subcontractor must obtain an Authority to Operate (ATO) signed by a USAID Authorizing Official from the contracting officer or COR. The Subcontractor must adhere to current NIST guidance for SA&A activities and continuous monitoring activities thereafter.
- Prior to the SA&A, a Privacy Threshold Analysis (PTA) must be completed using the USAID Privacy Threshold Analysis Template. The completed PTA must be provided to the USAID Privacy Officer or designate to determine if a Privacy Impact Analysis (PIA) is required. If a determination is made that a PIA is required, it must be completed in accordance with the USAID PIA Template, which USAID will provide to the Subcontractor as necessary. All privacy requirements must be completed in coordination with the COR or other designated Government staff.
- Prior to the Agency security assessment, authorization and approval, the Subcontractor must coordinate with the COR and other Government personnel as required to complete the FIPS 199 Security categorization and to document the systems security control baseline.
- All documentation must be prepared, stored, and managed in accordance with standards, templates and guidelines established by USAID M/CIO. The USAID M/CIO or designee must approve all SA&A requirements.
- In information systems owned or operated by a Subcontractor on behalf of an agency, or for information collected or maintained by or on behalf of the agency, an SA&A must be done independent of USAID, to include the selection of a Federal Risk and Authorization Management Program (FEDRAMP) approved independent Third Party Assessor (3PAO). See approved list of Assessors at <https://www.fedramp.gov/>. The Subcontractor must submit a signed SA&A package approved by the 3PAO to USAID at [saacackages@usaid.gov](mailto:saacackages@usaid.gov) at least 60 calendar days prior to obtain the ATO for the IT system.
- USAID retains the right to deny or rescind the ATO for any system if it believes the package or system fails to meet the USAID security requirements. Moreover, USAID may or may not provide general or detailed guidance to the Subcontractor to improve the SA&A package or the overall security posture of the information system and may or may not require re- submission of the package upon completion of the modifications. USAID reserves the right to limit the number of resubmissions at its convenience and may determine a system's compliance to be insufficient at which time

a final determination will be made to authorize or deny operation. USAID is the final authority on the compliance.

- The Subcontractor must submit SA&A packages to the CIO at least sixty (60) days prior to production or the expiration of the current ATO.
  - Once the USAID Chief Information Security Officer or designee determines the risks, the Subcontractor must ensure that all Plan of Action and Milestones resulting from security assessments and continuous monitoring are remediated within a time frame commensurate with the level of risk as follows:
    - High Risk = 30 calendar days;
    - Moderate Risk = 60 calendar days; and
    - Low Risk = 180 calendar days
8. Federal Reporting Requirements: Subcontractors operating information systems on behalf of USAID must comply with FISMA reporting requirements. Monthly, quarterly and annual data collections will be coordinated by USAID. Data collections include but are not limited to, data feeds in a format consistent with Office of Management and Budget (OMB) requirements. The Subcontractor must provide timely responses as requested by USAID and OMB.
- (d) The Subcontractor shall include the substance of this special contract requirement, including this paragraph (d), in all subcontracts, including subcontracts for commercial items.

### **H.37 CLOUD COMPUTING (APRIL 2018)**

- (a) Definitions. As used in this special contract requirement –  
“Cloud computing” means a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks,

servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This includes other commercial terms, such as on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service. It also includes commercial offerings for software-as-a-service, infrastructure-as-a-service, and platform-as-a- service.

"Federal information" means information created, collected, processed, disseminated, or disposed of by or for the Federal Government, in any medium or form. (OMB A-130)

"Information" means any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual (Committee on National Security Systems Instruction (CNSSI) 4009).

"Information Security Incident" means an occurrence that (1) actually or imminently jeopardizes, without lawful authority, the integrity, confidentiality, or availability of information or an information system; or (2) constitutes a violation or imminent threat of violation of law, security policies, security procedures, or acceptable use policies.

"Privacy Incident means a violation or imminent threat of violation of security policies, acceptable use policies, or standard security practices, involving the breach of Personally Identifiable Information (PII), whether in electronic or paper format.  
whether in electronic or paper format.

"Spillage" means a security incident that results in the transfer of classified or other sensitive or sensitive but unclassified information to an information system that is not accredited,(i.e., authorized) for the applicable security level of the data or information.

"Cloud Service Provider" or CSP means a company or organization that offers some component of cloud computing – typically Infrastructure as a Service (IaaS), Software as a Service (SaaS) or Platform as a Service (PaaS) – to other businesses, organizations or individuals.

"Penetration Testing" means security testing in which assessors mimic real-world attacks to identify methods for circumventing the security features of an application, system, or network. (NIST SP 800- 115)

"Third Party Assessment Organizations" means an organization independent of the organization whose IT system is being assessed. They are required to meet the ISO/IEC 17020:1998 standards for independence and managerial competence and meet program requirements for technical FISMA competence through demonstrated expertise in assessing cloud-based solutions.

"Personally Identifiable Information (PII)" means information that can be used to distinguish or trace an individual's identity, such as their name, Social Security Number (SSN), biometric records, etc., alone, or when combined with other personal or

identifying information which is linked or linkable to a specific individual, such as date and place of birth, mother's maiden name, etc. The definition of PII is not anchored to any single category of information or technology. Rather, it requires a case-by-case assessment of the specific risk that an individual can be identified. In performing this assessment, it is important to recognize that non-PII can become PII whenever additional information is made publicly available — in any medium and from any source — that, when combined with other available information, could be used to identify an individual. PII examples include name, address, SSN, or other identifying number or code, telephone number, and e-mail address. PII can also consist of a combination of indirect data elements such as gender, race, birth date, geographic indicator (e.g., zip code), and other descriptors used to identify specific individuals.

When defining PII for USAID purposes, the term “individual” refers to a citizen of the United States or an alien lawfully admitted for permanent residence.

(b) Applicability

This special contract requirement applies to the Subcontractor and all personnel providing support under this contract (hereafter referred to collectively as “Subcontractor”) and addresses specific USAID requirements in addition to those included in the Federal Acquisition Regulation (FAR), Privacy Act of 1974 (5 U.S.C. 552a - the Act), E-Government Act of 2002 - Section 208 and Title III, Federal Information Security Management Act (FISMA), the Health Insurance Portability and Accountability Act of 1996 (HIPAA, Pub. L. 104-191, 110 Stat. 1936), the Sarbanes-Oxley Act of 2002 (SOX, Pub. L. 107-204, 116 Stat. 745), National Institute of Standards and Technology (NIST), Federal Information Processing Standards (FIPS) and the 800-Series Special Publications (SP), Office of Management and Budget (OMB) memorandums, and other laws, mandates, or executive orders pertaining to the development and operations of information systems and the protection of sensitive information and data.

(c) Limitations on access to, use and disclosure of, Federal information.

- (1) The Subcontractor shall not access, use, or disclose Government data unless specifically authorized by the terms of this contract issued hereunder.
  - i. If authorized by the terms of this contract issued hereunder, any access to, or use or disclosure of Federal information shall only be for purposes specified in this contract.
  - ii. The Subcontractor shall ensure that its employees are subject to all such access, use, and disclosure prohibitions and obligations.
  - iii. These access, use, and disclosure prohibitions and obligations shall remain effective beyond the expiration or termination of this contract.
- (2) The Subcontractor shall use related Federal information only to manage the operational environment that supports the Federal information and for no other purpose unless otherwise permitted with the prior written approval of the Contracting Officer.

(d) Records Management and Access to Information

- (1) The Subcontractor shall support a system in accordance with the requirement for Federal agencies to manage their electronic records in accordance with capabilities such as those identified in the provisions of this contract and National Archives and Records Administration (NARA) retention policies.
  - (2) Upon request by the government, the Subcontractor shall deliver to the Contracting Officer all Federal information, including data schemas, metadata, and other associated data artifacts, in the format specified in the schedule or by the Contracting Officer in support of government compliance requirements to include but not limited to Freedom of Information Act, Privacy Act, e-Discovery, eRecords and legal or security investigations.
  - (3) The Subcontractor shall retain and maintain all Federal information in accordance with records retention provisions negotiated by the terms of the contract and in accordance with USAID records retention policies.
  - (4) The Subcontractor shall dispose of Federal information in accordance with the terms of the contract and provide the confirmation of disposition to the Contracting Officer in accordance with contract closeout procedures.
- (e) Notification of third party access to Federal information : The Subcontractor shall notify the Government immediately of any requests from a third party for access to Federal information or, including any warrants, seizures, or subpoenas it receives, including those from another Federal, State, or Local agency, that could result in the disclosure of any Federal information to a third party. The Subcontractor shall cooperate with the Government to take all measures to protect Federal information from any loss or unauthorized disclosure that might reasonably result from the execution of any such request, warrant, seizure, subpoena, or similar legal process.
- (f) Spillage and Information Security Incidents: Upon written notification by the Government of a spillage or information security incident involving classified information, or the Subcontractor's discovery of a spillage or security incident involving classified information, the Subcontractor shall immediately (within 30 minutes) notify CIO-HELPDESK@usaid.gov and the Office of Security at SECinformationsecurity@usaid.gov to correct the spillage or information security incident in compliance with agency-specific instructions. The Subcontractor will also notify the Contracting Officer or Contracting Officer's Representative and the Subcontractor Facilities Security Officer. The Subcontractor will abide by USAID instructions on correcting such a spill or information security incident. For all spills and information security incidents involving unclassified and/or SBU information, the protocols outlined above in section (g) and (h) below shall apply.
- (g) Information Security Incidents
- (1) Security Incident Reporting Requirements: All Information Security Incidents involving USAID data or systems must be reported in accordance with the requirements below, even if it is believed that the information security incident may be limited, small, or insignificant. USAID will determine the magnitude and resulting actions.
    - i. Subcontractor employees must report via e-mail all Information Security

Incidents to the USAID Service Desk immediately, but not later than 30 minutes, after becoming aware of the Incident, at: CIOHELPDESK@usaid.gov, regardless of day or time, as well as the Contracting Officer and Contracting Officer's representative and the Subcontractor Facilities Security Officer. Subcontractor employees are strictly prohibited from including any Sensitive Information in the subject or body of any e-mail concerning information security incident reports. To transmit Sensitive Information, Subcontractor employees must use FIPS 140-2 compliant encryption methods to protect Sensitive Information in attachments to email. Passwords must not be communicated in the same email as the attachment.

- ii. The Subcontractor must provide any supplementary information or reports related to a previously reported information security incident directly to CIO-HELPDESK@usaid.gov, upon request. Correspondence must include related ticket number(s) as provided by the USAID Service Desk with the subject line "Action Required: Potential Security Incident".
- (h) Privacy Incidents Reporting Requirements: Privacy Incidents may result in the unauthorized use, disclosure, or loss of personally identifiable information, and can result in the loss of the public's trust and confidence in the Agency's ability to safeguard personally identifiable information. PII breaches may impact individuals whose PII is compromised, including potential identity theft resulting in financial loss and/or personal hardship experienced by the individual. Subcontractor employees must report by e-mail all Privacy Incidents to the USAID Service Desk immediately (within 30 minutes), after becoming aware of the Incident, at: CIO- HELPDESK@usaid.gov, regardless of day or time, as well as the USAID Contracting Officer or Contracting Officer's representative and the Subcontractor Facilities Security Officer. If known, the report must include information on the format of the PII (oral, paper, or electronic.) The subject line shall read "Action Required: Potential Privacy Incident".
- (i) Information Ownership and Rights: USAID information stored in a cloud environment remains the property of USAID, not the Subcontractor or cloud service provider (CSP). USAID retains ownership of the information and any media type that stores Federal information. The CSP shall only use the Federal information for purposes explicitly stated in the contract. Further, the cloud service provider shall export Federal information in a machine-readable and non-proprietary format that USAID requests at the time of production, unless the parties agree otherwise.
- (j) Security Requirements:
- (1) The Subcontractor shall adopt and maintain administrative, technical, operational, and physical safeguards and controls that meet or exceed requirements contained within the Federal Risk and Authorization Management Program (FedRAMP) Cloud Computing Security Requirements Baseline, current standard for NIST 800-53 (Security and Privacy Controls for Federal Information Systems) and Organizations, including Appendix J, and FedRAMP Continuous Monitoring Requirements for the security level and services being provided, in accordance with the security



categorization or impact level as defined by the government based on the Federal Information Processing Standard (FIPS) Publication 199 (FIPS-199).

- (2) The Subcontractor shall comply with FedRAMP requirements as mandated by Federal laws and policies, including making available any documentation, physical access, and logical access needed to support this requirement. The Level of Effort for the security assessment and authorization (SA&A) is based on the system's complexity and security categorization. The Subcontractor shall create, maintain and update the following documentation using FedRAMP requirements and templates, which are available at <https://www.FedRAMP.gov>.
- (3) The Subcontractor must support SA&A activities to include assessment by an accredited Third Party Assessment Organization (3PAO) initially and whenever there is a significant change to the system's security posture in accordance with the FedRAMP Continuous Monitoring Plan. The Subcontractor must make available to the Contracting Officer, the most current, and any other, Security Assessment Reports for consideration as part of the Subcontractor's overall Systems Security Plan.
- (4) The Government reserves the right to perform penetration testing or request Penetration Testing by an independent source. If the Government exercises this right, the Subcontractor shall allow Government employees (or designated third parties) to conduct Security Assessment activities to include control reviews in accordance with FedRAMP requirements. Review activities include but are not limited to scanning operating systems, web applications, databases, wireless scanning; network device scanning to include routers, switches, and firewall, and IDS/IPS; databases and other applicable systems, including general support structure, that support the processing, transportation, storage, or security of Federal information for vulnerabilities.
- (5) Identified gaps between required FedRAMP Security Control Baselines and Continuous Monitoring controls and the Subcontractor's implementation as documented in the Security Assessment Report must be tracked by the Subcontractor for mitigation in a Plan of Action and Milestones (POA&M) document. Clauses And Special Contract Requirements For Facilities Access, Security, and Information Technology (IT) (Class Deviations M/OAA-DEV-FAR-18- 2c, and M/OAA-DEV-AIDAR-18-2c) 37 Depending on the severity of the gaps, the Government may require them to be remediated before any restricted authorization is issued.
- (6) The Subcontractor is responsible for mitigating all security risks found during SA&A and continuous monitoring activities. All high-risk vulnerabilities must be mitigated within thirty (30) calendar days and all moderate risk vulnerabilities must be mitigated within sixty (60) calendar days from the date vulnerabilities are formally identified. USAID may revoke an ATO for any system if it is determined that the system does not comply with USAID standards or presents an unacceptable risk to the Agency. The Government will determine the risk rating of vulnerabilities.
- (7) The Subcontractor shall provide access to the Federal Government, or their designee acting as their agent, when requested, in order to verify compliance with the requirements and to allow for appropriate risk decisions for an Information Technology security program. The Government reserves the right to conduct onsite

inspections. The Subcontractor must make appropriate personnel available for interviews and provide all necessary documentation during this review and as necessary for continuous monitoring activities.

- (k) Privacy Requirements: Cloud Service Provider (CSP) must understand and adhere to applicable federal Privacy laws, standards, and guidance to protect Personally Identifiable Information (PII) about individuals that will be collected and maintained by the Subcontractor solution. The Subcontractor responsibilities include full cooperation for any request for disclosure, subpoena, or other judicial process seeking access to records subject to the Privacy Act of 1974.
- (l) Data Location: The Subcontractor must disclose the data server locations where the Agency data will be stored as well as the redundant server locations. The Subcontractor must have prior Agency approval to store Agency data in locations outside of the United States.
- (m) Terms of Service (ToS): The Subcontractor must disclose any requirements for terms of service agreements and clearly define such terms prior to contract award. All ToS provisions regarding controlling law, jurisdiction, and indemnification must align with Federal statutes, policies, and regulations.
- (n) Service Level Agreements (SLAs): The Subcontractor must be willing to negotiate service levels with USAID; clearly define how performance is guaranteed (such as response time resolution/mitigation time, availability, etc.); monitor their service levels; provide timely notification of a failure to meet the SLAs; and evidence that problems have been resolved or mitigated. Additionally, at USAID's request, the Subcontractor must submit reports or provide a dashboard where USAID can continuously verify that service levels are being met. Where SLAs fail to be met, USAID may assess monetary penalties or service credit.
- (o) Trusted Internet Connection (TIC): The Subcontractor must route all USAID traffic through the TIC. Clauses And Special Contract Requirements For Facilities Access, Security, and Information Technology (IT)
- (p) Forensics, Freedom of Information Act (FOIA), Electronic Discovery, or additional Information Requests: The Subcontractor must allow USAID access required to retrieve information necessary for FOIA and Electronic Discovery activities, as well as, forensic investigations for both criminal and noncriminal purposes without their interference in these activities. USAID may negotiate roles and responsibilities for conducting these activities in agreements outside of this contract.
  - (1) The Subcontractor must ensure appropriate forensic tools can reach all devices based on an approved timetable.
  - (2) The Subcontractor must not install forensic software or tools without the permission of USAID.
  - (3) The Subcontractor, in coordination with USAID Bureau for Management, Office of The Chief Information Officer (M/CIO)/ Information Assurance Division (IA), must document and preserve data required for these activities in accordance with the terms and conditions of the contract.
  - (4) The Subcontractor, in coordination with USAID M/CIO/IA, must clearly define capabilities, procedures, roles and responsibilities and tools and methodologies for these activities.
- (q) The Subcontractor shall include the substance of this special contract requirement,

including this paragraph (p), in all subcontracts, including subcontracts for commercial items.

### **I.3 RESTRICTIONS AGAINST DISCLOSURE (MAY 2016)**

- (a) The Subcontractor agrees, in the performance of this contract, to keep the information furnished by the Government or acquired/developed by the Subcontractor in performance of the contract and designated by the Contracting Officer or Contracting Officer's Representative, in the strictest confidence. The Subcontractor also agrees not to publish or otherwise divulge such information, in whole or in part, in any manner or form, nor to authorize or permit others to do so, taking such reasonable measures as are necessary to restrict access to such information while in the Subcontractor's possession, to those employees needing such information to perform the work described herein, i.e., on a "need-to-know" basis. The Subcontractor agrees to immediately notify the Contracting Officer in writing in the event that the Subcontractor

determines or has reason to suspect a breach of this requirement has occurred.

- (b) All Subcontractor staff working on any of the described tasks may, at Government request, be required to sign formal non-disclosure and/or conflict of interest agreements to guarantee the protection and integrity of Government information and documents.
- (c) The Subcontractor shall insert the substance of this special contract requirement, including this paragraph (c), in all subcontracts when requiring a restriction on the release of information developed or obtained in connection with performance of the contract.

**I.4 52.204-23 - PROHIBITION ON CONTRACTING FOR HARDWARE, SOFTWARE, AND SERVICES DEVELOPED OR PROVIDED BY KASPERSKY LAB AND OTHER COVERED ENTITIES (JUL 2018)**

(a) Definitions.

As used in this clause—Covered article means any hardware, software, or service that—

- (1) Is developed or provided by a covered entity;
- (2) Includes any hardware, software, or service developed or provided in whole in part by a covered entity; or
- (3) Contains components using any hardware or software developed in whole or in part by a covered entity.

*Covered entity* means—

- (1) Kaspersky Lab;
- (2) Any successor entity to Kaspersky Lab;
- (3) Any entity that controls, is controlled by, or is under common control with Kaspersky Lab; or
- (4) Any entity of which Kaspersky Lab has a majority ownership

(b) Prohibition.

Section 1634 of Division A of the National Defense Authorization Act for Fiscal Year 2018 (Pub. L. 115–

91) prohibits Government use of any covered article. The Subcontractor is prohibited from—

- (1) Providing any covered article that the Government will use on or after October 1, 2018; and
- (2) Using any covered article on or after October 1, 2018, in the development of data or deliverables first produced in the performance of the contract.

92) Reporting requirement.

(1) In the event the Subcontractor identifies a covered article provided to the Government during contract performance, or the Subcontractor is notified of such by a Subcontractor at any tier or any other source, the Subcontractor shall report, in writing, to the Contracting Officer or, in the case of the Department of Defense, to the website <https://dibnet.dod.mil>. For indefinite delivery contracts, the Subcontractor shall report to the Contracting Officer for the indefinite delivery contract and the Contracting Officer(s) for any affected order or, in the case of the Department of Defense, identify both the indefinite delivery contract and any affected orders in the report provided at <https://dibnet.dod.mil>.

(2) The Subcontractor shall report the following information pursuant to paragraph (c)(1) of this clause:

- i. Within 1 business day from the date of such identification or notification: The contract number; the order number(s), if applicable; supplier name; brand; model number (Original Equipment Manufacturer (OEM) number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.
- ii. Within 10 business days of submitting the report pursuant to paragraph (c)(1) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the Subcontractor shall describe the efforts it undertook to prevent use or submission of a covered article, any reasons that led to the use or submission of the covered article, and any additional efforts that will be incorporated to prevent future use or submission of covered articles.

93) Subcontract

The Subcontractor shall insert the substance of this clause, including this paragraph (d) in all subcontract

including subcontracts for the acquisition of commercial items.”

## **52.204-25 Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment (Aug 2020)**

(a) Definitions. As used in this clause—

Backhaul means intermediate links between the core network, or backbone network, and the small subnetworks at the edge of the network (e.g., connecting cell phones/towers to the core telephone network). Backhaul can be wireless (e.g., microwave) or wired (e.g., fiber optic, coaxial cable, Ethernet).

Covered foreign country means The People's Republic of China. Covered telecommunications equipment or services means—

(1) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);

(2) For the purpose of public safety, security of Government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);

(3) Telecommunications or video surveillance services provided by such entities or using such equipment; or

(4) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Critical technology means—

(1) Defense articles or defense services included on the United States Munitions List set forth in the International Traffic in Arms Regulations under subchapter M of chapter I of title 22, Code of Federal Regulations;

(2) Items included on the Commerce Control List set forth in Supplement No. 1 to part 774 of the Export Administration Regulations under subchapter C of chapter VII of title 15, Code of Federal Regulations, and controlled-

(i) Pursuant to multilateral regimes, including for reasons relating to national security, chemical and biological weapons proliferation, nuclear nonproliferation, or missile technology; or

(ii) For reasons relating to regional stability or surreptitious listening;

(3) Specially designed and prepared nuclear equipment, parts and components, materials,

software, and technology covered by part 810 of title 10, Code of Federal Regulations (relating to assistance to foreign atomic energy activities);

(4) Nuclear facilities, equipment, and material covered by part 110 of title 10, Code of Federal Regulations (relating to export and import of nuclear equipment and material);

(5) Select agents and toxins covered by part 331 of title 7, Code of Federal Regulations, part 121 of title 9 of such Code, or part 73 of title 42 of such Code; or

(6) Emerging and foundational technologies controlled pursuant to section 1758 of the Export Control Reform Act of 2018 (50 U.S.C. 4817).

*Interconnection arrangements* means arrangements governing the physical connection of two or more networks to allow the use of another's network to hand off traffic where it is ultimately delivered (e.g., connection of a customer of telephone provider A to a customer of telephone company B) or sharing data and other information resources.

*Reasonable inquiry* means an inquiry designed to uncover any information in the entity's possession about the identity of the producer or provider of covered telecommunications equipment or services used by the entity that excludes the need to include an internal or third-party audit.

*Roaming* means cellular communications services (e.g., voice, video, data) received from a visited network when unable to connect to the facilities of the home network either because signal coverage is too weak or because traffic is too high.

*Substantial or essential component* means any component necessary for the proper function or performance of a piece of equipment, system, or service.

(b) Prohibition. (1) Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2019, from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. The Contractor is prohibited from providing to the Government any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104.

(2) Section 889(a)(1)(B) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2020, from entering into a contract, or extending or renewing a contract, with an entity that uses any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part

of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104. This prohibition applies to the use of covered telecommunications equipment or services, regardless of whether that use is in performance of work under a Federal contract.

(c) Exceptions. This clause does not prohibit contractors from providing—

(1) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(2) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(d) Reporting requirement. (1) In the event the Contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the Contractor is notified of such by a subcontractor at any tier or by any other source, the Contractor shall report the information in paragraph (d)(2) of this clause to the Contracting Officer, unless elsewhere in this contract are established procedures for reporting the information; in the case of the Department of Defense, the Contractor shall report to the website at <https://dibnet.dod.mil>. For indefinite delivery contracts, the Contractor shall report to the Contracting Officer for the indefinite delivery contract and the Contracting Officer(s) for any affected order or, in the case of the Department of Defense, identify both the indefinite delivery contract and any affected orders in the report provided at <https://dibnet.dod.mil>.

(2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause

(i) Within one business day from the date of such identification or notification: the contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

(ii) Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: any further available information about mitigation actions undertaken or recommended. In addition, the Contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

(e) Subcontracts. The Contractor shall insert the substance of this clause, including this paragraph (e) and excluding paragraph (b)(2), in all subcontracts and other contractual instruments, including subcontracts for the acquisition of commercial items.



(End of clause)

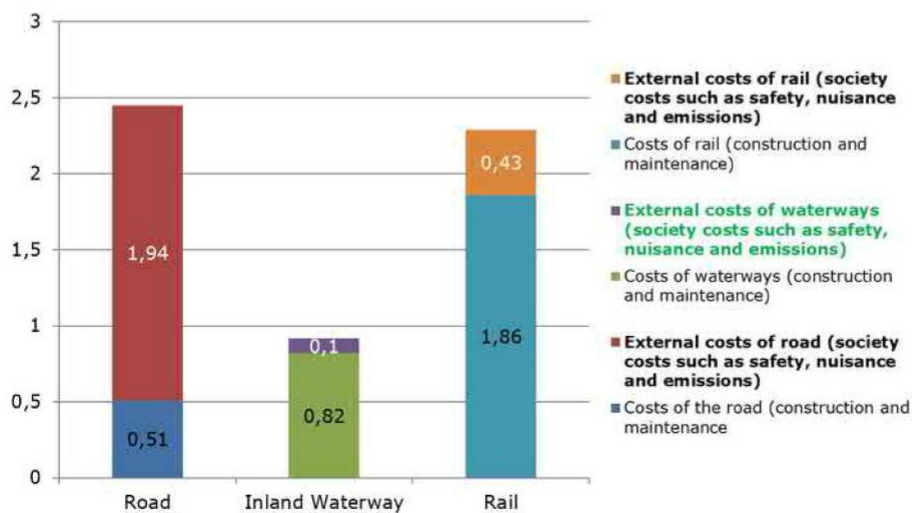
**ANNEX 5: Workshop Presentations (Kolkata, 22 July 2022)**

# Cross-border Infrastructure and Connectivity

## International Benchmark for Greening of the IWT fleet



### The Logic of IWT



Comparison of infrastructural and external costs of rail, road and inland waterways transportation in the EU in euro per 100 ton-kilometer.

Source: Dutch Inland Shipping Information Agency; The Power of Inland Navigation, 2009

## GHG emissions

General cargo, dry – and liquid bulk vessels	GHG Emission factor (in g/tkm)
Motor vessels ≤ 80m	29.5
Motor vessels 85 – 86m	20.7
Motor vessels 87 – 109m	18.4
Motor vessels 110m	18.4
Motor vessels 135m	19.0
Coupled convoys (163 – 185m)	17.0
Pushed convoy – push boat + 2 barges	17.3
Pushed convoy – push boat + 4/5 barges	9.7
Pushed convoy – push boat + 6 barges	7.4

On the basis of real-life data from barge operators for multiple trips or year-round navigation, based on H2020 – PROMINENT and P. Oom / Kon. BLN- Schuttevaer, GHG emission factors have been calculated for representative vessel classes in Europe, see also:

<https://www.smartfreightcentre.org/pdf/GLEC-report-on-GHG-Emission-Factors-for-Inland-Waterways-Transport-SFC2018.pdf>

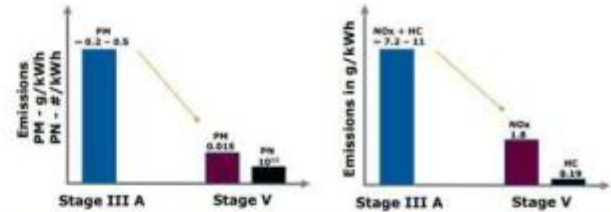
## International challenges for applying green technologies

- No significant incentives to be green, except for port dues but these have only a marginal effect
- No internalization of external costs in IWT
- Stage V is the reference to be implemented on short term to keep the 'license to operate' for IWT
- Introduction of pollution pays principle, creation of business case for ship-owner/operator
- Level playing field essential
- Growing challenge: zero emission transport 2050

## Emission standard

### Emission Standards Europe – Non-Road Mobile Machinery

- Emission limits for new engines installed in inland vessels
- "Stage V" – limits for air pollutant emissions



Category	Net Power kW	Date	CO	HC <sup>a</sup>	NOx	PM	PN
			g/kWh				
IWP/IWA-v/c-1	19 ≤ P < 75	2019	5.00		4.70 <sup>b</sup>	0.30	-
IWP/IWA-v/c-2	75 ≤ P < 130	2019	5.00		5.40 <sup>b</sup>	0.14	-
IWP/IWA-v/c-3	130 ≤ P < 300	2019	3.50	1.00	2.10	0.10	-
IWP/IWA-v/c-4	P ≥ 300	2020	3.50	0.19	1.80	0.015	1 × 10 <sup>12</sup>

<sup>a</sup> A = 6.00 for gas engines  
<sup>b</sup> HC + NOx

Source: <https://dieselnet.com/standards/eu/nonroad.php?vessel>

## Greening strategy

- **Retrofits: greening against additional investment and operational costs, typically subsidized**
- **New vessels: different solutions per market segments / operational profiles, hull optimization**



(EIBIP, source NAIADES II CEG meeting)



## Proven Technology – After-treatment system



Exhaust Gas Recirculation is not used in inland shipping engines



## Proven Technology – Clean Diesel Engines: STAGE V engines | NRE | after-treatment system

### STAGE V: IWA/IWP

### STAGE V: NRE<560kW

**Innovation**

- First commercial freight vessel with clean Euro VI, Stage V truck engine
- After treatment unit with both Diesel Particulate filter and SCR catalyst

**Emission reduction**

- CO: 54%
- PM: 97%
- NO<sub>x</sub>: 90%
- HC: 98%

Euro VI dry cargo vessel, built by Jm

Source: Presentation EICB

8 | Greening of the Fleet

STC NESTRA

USAID  
FROM THE U.S. DEPARTMENT OF STATE

## Proven Technology – LNG

### First engines:

- Dual Fuel: 80% LNG and 20% Diesel
- Dual Fuel/ pilot diesel engine: 98% LNG and 2% Diesel  
(<https://youtu.be/t93K8ECUebM>)

### Now:

- Spark ignition natural gas engine  
(<https://www.youtube.com/watch?v=KnNX6gtDyhg>)
- Gas-electric engine



MTV Skalko  
van Othegem



MTV EcoLine  
van Othegem



E.ON Bunkering container (Kopervik)  
van Othegem



MTV Agatek  
van Othegem



MTV Greenline  
van Othegem



MTV Greenline  
van Othegem



MTV Energy



Series of 40 tankers with LNG-electric drivelines



LNG RoPAX ferries coastal waters

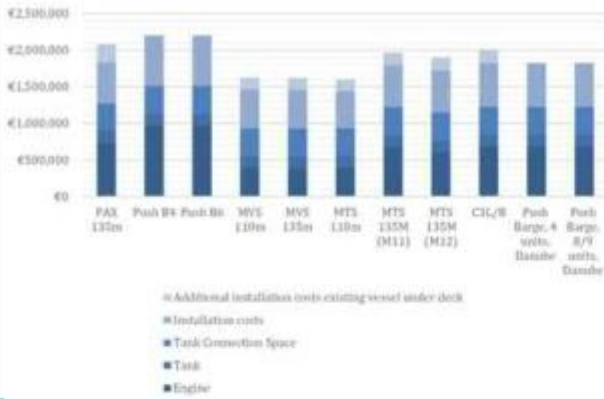
## Proven Technology – LNG China

### Liquefied natural gas engines, vessels, and bunkering facilities



LNG, example dual fuel Stage V, required investment:

**Note: Outcome depends heavily on the level of fuel consumption and especially cost difference Diesel vs. LNG!**



Other (renewable) energy / fuels

Type	Examples
Biofuels	biodiesel: HVO, FAME, bio-LNG, bio-methanol
Electricity	battery-electric – MEC
P2Fuel	H2, E-methanol, E-diesel, E-NH3, E-LNG

Source: TNO

Selection criteria:

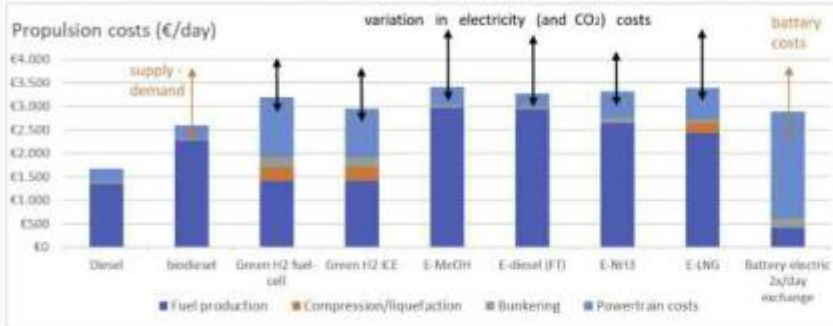
- Economics
- Environmental impact
- Practical application and safety

	Volume factor compared to diesel	Packaging factor ship	Space requirement
(E) diesel	1	1	1.0
Bio-diesel	1.1	1	1.1
E-Methanol	2.3	1	2.3
E-methane	1.6	2	3.2
E-ammonia (cooled)	3.1	1.1	3.4
E-ammonia (10 bar)	3.2	2	6.4
Hydrogen (cryo.)	3.8	2	7.7
Hydrogen 700 bar	6.3	2.5	16
Battery - electric	25	4	100



## Estimated investments – business case?

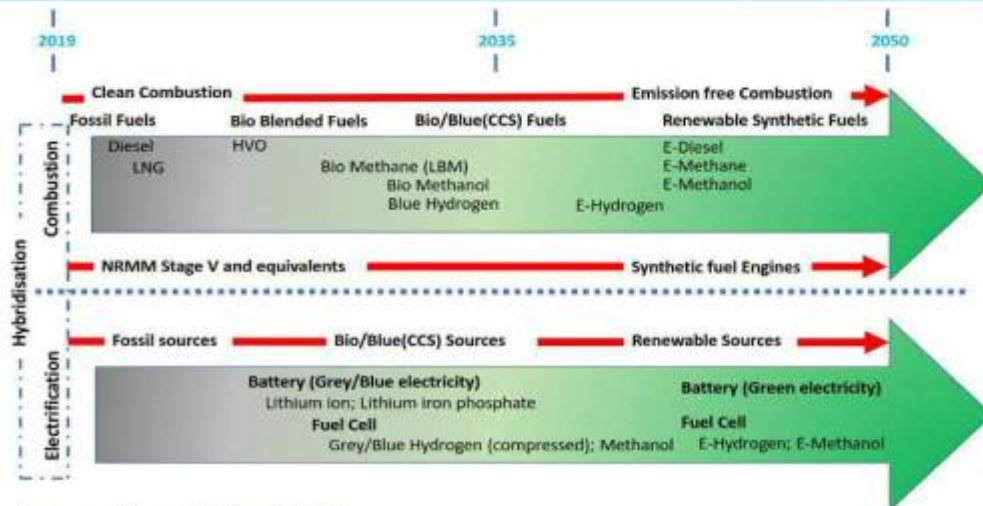
### SIMPLE PROJECTION FUEL COSTS PER DAY (+ INVESTMENT ENGINE + TANK)



Source: TNO

Input: Voltachem P2Fuels project, supported by Smartport, Deltalinq and others

## Greening the fleet - estimated investments



Source: Presentation EICB



## Greening the fleet - India

As per USAID study outline – Design study for 3 inland vessels, suggestions (tbc) - **FEEDBACK WELCOME**

### 1. RoPAX vessel

- (Upgrade existing) design for river crossing
- Zero-emission technology – battery electric (with redundancy clean diesel generator)

### 2. Dry cargo vessel

- Suitable for transporting various cargoes
- Zero-emission ready: clean diesel engines / diesel-electric

### 3. Tanker vessel

- double hull for transporting liquid goods
- Zero-emission ready: clean diesel engines or LNG / Methanol
- High safety standards

Develop business case – shipper / long-term commitment & financing model

## 1. Example RoPAX - IWT Sector Vision: “Fit-for-future ferry system” An example from Amsterdam

Amsterdam – Ferry system: example of integrated low cost services



- Ferry system managed and operated by public owned transport company part of the municipal government of Amsterdam, some lines also operate during the night
- River crossings near city centre are free of charge for PAX, light 2-wheelers (modal shift policy for commuters).
- New PAX vessels are fully electric / zero emission.
- Automated dock system and fast charging system.
- Transport company of municipality also operates other (connecting) public transport services.
- Reliability of services is key! Even if there is not a single pax on board, the ferry departures according schedule.
- Seamless multimodal connectivity (see next page)

Waterbus, ferry at Amsterdam



**Hull form:** catamaran type, aluminium superstructure  
**Dimensions:** L: 33.6 m; B: 9 m  
**Type of propulsion:** 2 electric engines of 340 kw/h each as well as two diesel engines to produce electricity as this is required (redundancy i.e. heavy wind conditions). The batteries are charged during 3 minutes every 20 minutes  
**Capacity:** 400 passengers and 20 cars / 4 trucks.  
**Other:** The railings at the main deck are adjustable in order to cope with more/less passengers and cars, in operation shortly.

## 1. Example RoPAX - Full electric propulsion

### Examples new innovative vessels - E-ferries Amsterdam

1 out of 4 full-electric ferries operating in Amsterdam



5 new full-electric in operation from 2021



## 2. Example - Dry cargo vessel zero-emission ready (Diesel-electric / hybrid)

### Examples new innovative vessels

- Hull built in China, Outfitting in the Netherlands
- Same for 2 XL versions

See also [video](#) →

**Hybrid propulsion**  
(batteries with diesel generators).

**Modular systems**, can easily be converted to fuel cells (hydrogen) or LNG.



Sento Liner - Concordia Damen



<https://sendo-shipping.nl/sendo-liner/>

## 2. Example - Dry cargo vessel zero-emission

### Examples (retrofitting existing) vessels to battery-electric propulsion

**Foreship:** (1) Diesel generator (3) Bow thruster (4) Electric engine

**Stern:** (1) solar panels (2) battery packs (3) electric engine (4) main propeller



<https://cloud.skoon.world/battery/Skoon-box-2-AC-genID=uTqeAgHmXW8Q00nHLqJy?application=Land-based>



19 | Greening of the Fleet

STC NESTRA

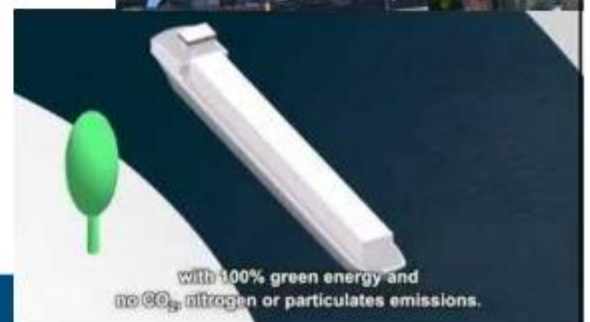
USAID  
FROM THE AMERICAN PEOPLE

## 2. Example - Dry cargo vessel zero-emission

### Examples (retrofitting existing) vessels to battery-electric propulsion

#### ZERO EMISSION SERVICES (ZES):

- Interchangeable containers
- Charged using renewable power
- Future: hydrogen-electric
- Pay-per-use system
- Electric propulsion driveline



20 | Greening of the Fleet

### 3. Example – clean Tanker vessel

#### Tanker vessel

- New RVS-chemical tanker 110 x 14,04 m. > 5.000 ton loading capacity
- Diesel-electric (hybrid)
- 3 x 603 Kwe gensets Mitsubishi S6R - Stage V
- Space on aft ship for renewable / zero emission energy source
- Pilot 1 genset DF (Diesel/Methanol), tank on deck aft ship

Source: Mercurius Shipping



### Greening the fleet – ToR framework design study

- **ToR – quality of design “package” and model testing for 3 vessel types = threshold:**
  1. RoPAX vessel
  2. Dry cargo vessel
  3. Tanker vessel
- **Model testing: via IIT Kharagpur not on exclusive basis! → hull optimization and propeller for energy conservation**
- **Extra points for:**
  - Design proposal for multiple vessels (max. points for 3)
  - Application of greening technology:
    - from zero-emission ready to actual zero-emission
    - DF engine to carbon neutral
  - Develop business case:
    - Commitment from cargo owner/shipper and/or barge operating company
    - Scale: from LOI to guaranteed investment/volume
    - Financial model: subsidy needed (no/yes) and available (no/yes)



## Greening the fleet – Why business case approach?

Unfortunately lots of IWT projects are still set up according to the 'build and they will come' approach:

- Focus on developing infrastructure only – **supply driven**
- Limited (no) attention for multimodality and integration of IWT in multimodal supply chains
- Market development is left to shippers / logistics service providers where many are unfamiliar with IWT
- No cargo generation along the waterways (last mile connectivity)



### Introduction of modern, clean, competitive vessels

Conventional approach



This did not work

Followed by



This also did not work

Approach



Shared risk and commitment as a base for IWT market growth and financing newbuilds

*there is no blueprint programmes have to be region and market specific*

# Upgrading & Greening of IWT Fleets of India

Present status on fleet strength & greening  
activities

Under the sub-Project of

USAID (UNITED STATES AGENCY FOR INTERNATIONAL  
DEVELOPMENT)

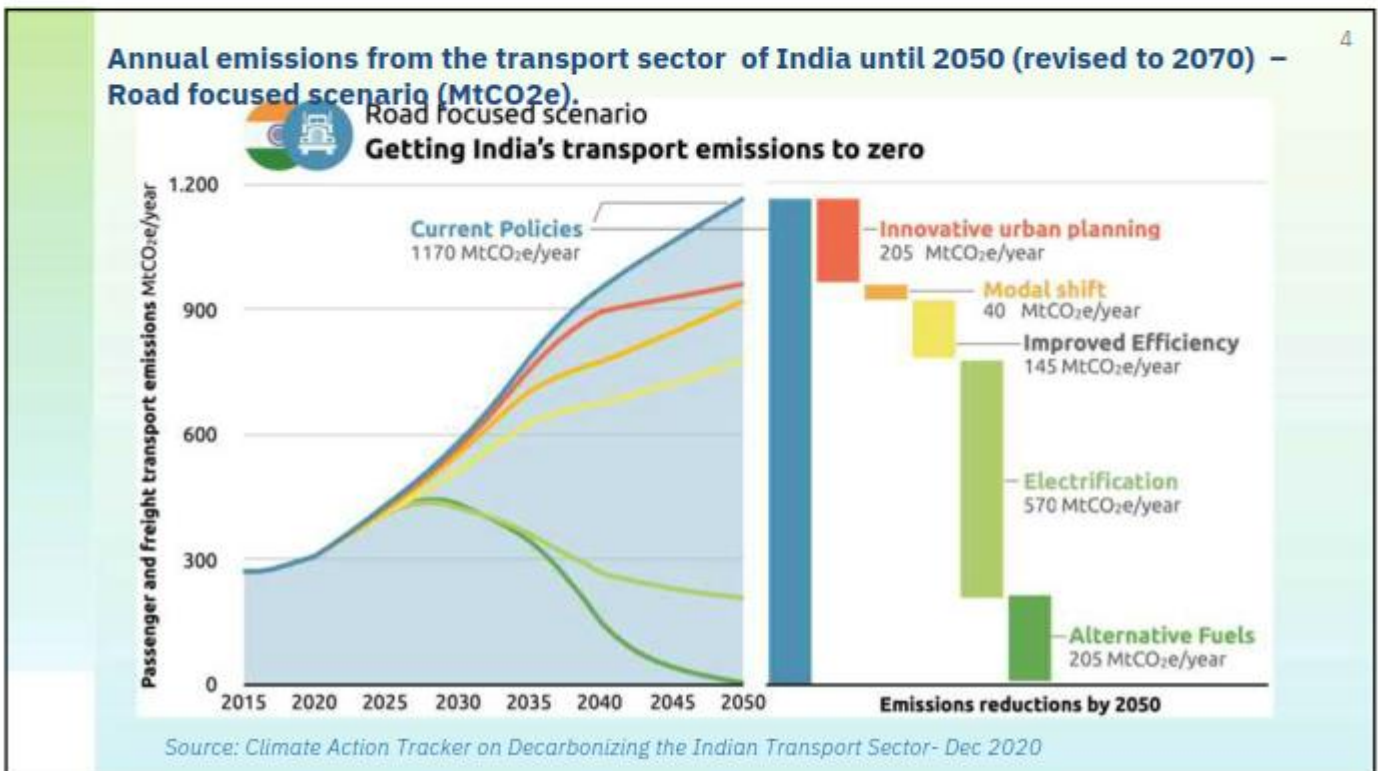
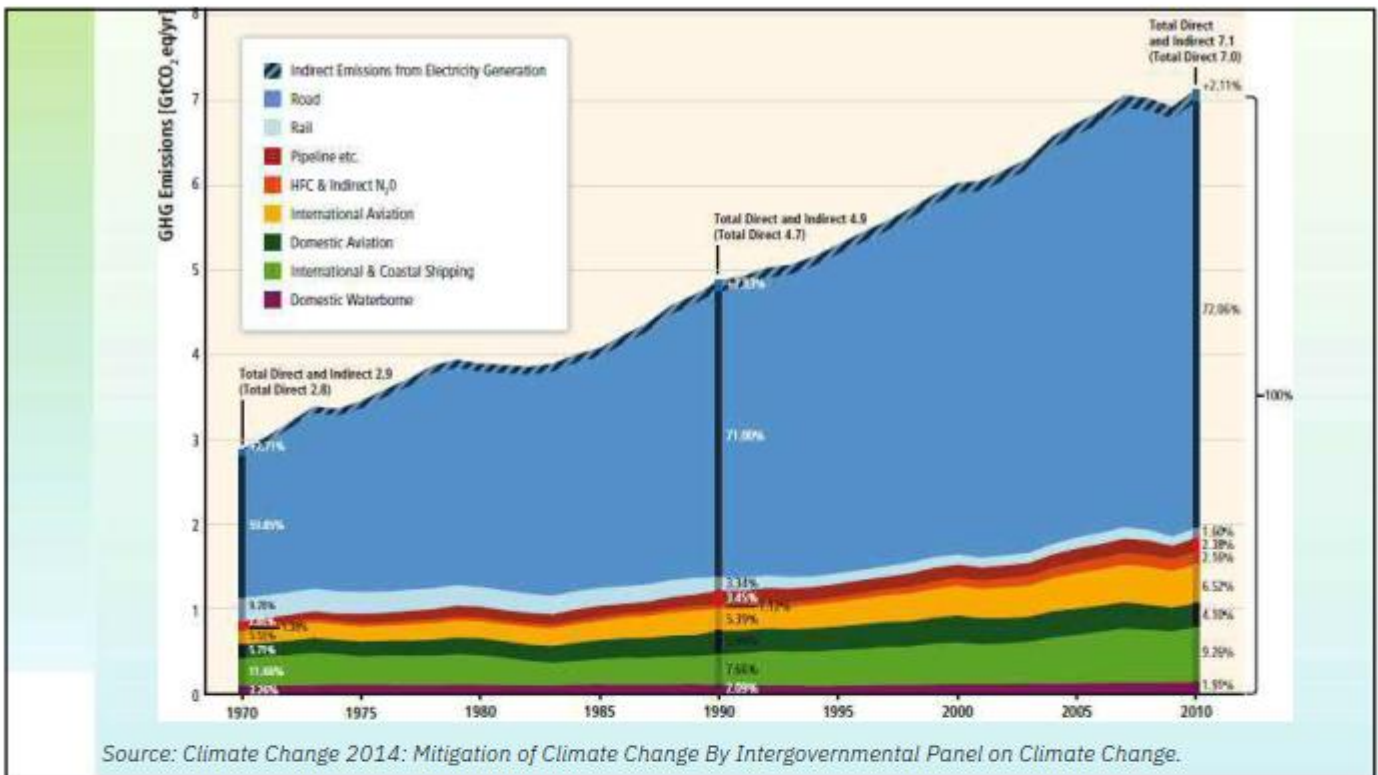
For

CBIC (CROSS BORDER INFRASTRUCTURE  
CONNECTIVITY) PROJECT IN BBIN CORRIDOR

## Objective of the Project

2

- IWT-A mode recognized as environmentally, cheapest and fuel efficient. With use of clean and alternate fuel, electrification of rail, & road with BS-VI engines now changing the scenario.
- High emission of IWT sector is only 1.91% compared to shipping sector (9.26%), road (72%), and Rail (1.67 %) of total emission in Transport sector
- India has set target set for reduction of emission of 30% by 2030, 50% by 2050, and zero level by 2070 with reduction of global warming to 1.5 degrees – According to COP-15 held in Paris during 2015 and COP-26 in Glasgow during 2021
- I. Upgrading existing fleet with retrofitting through conversion kits of clean fuel
- II. Air Pollutant Emission Reduction
  - Alternative fuel & propulsion technology
  - After Treatment
  - New Engine Concepts and Optimization
- III. Energy Consumption Reduction
  - Energy Efficient Navigation
  - Energy Efficient Ship design, Construction and operation
  - Hybrid/Diesel -Electric propulsion OR only electric Propulsion

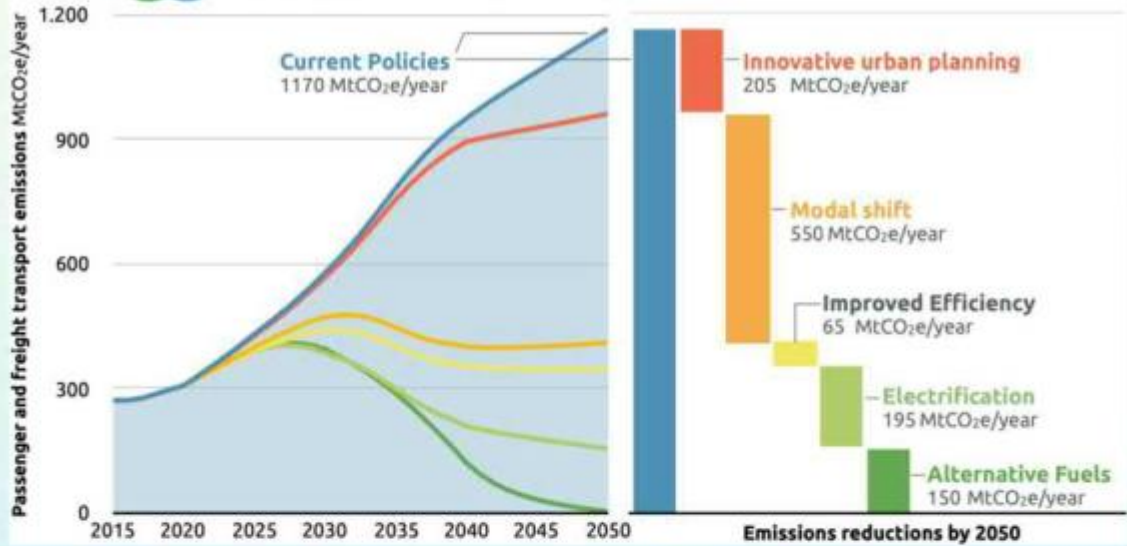




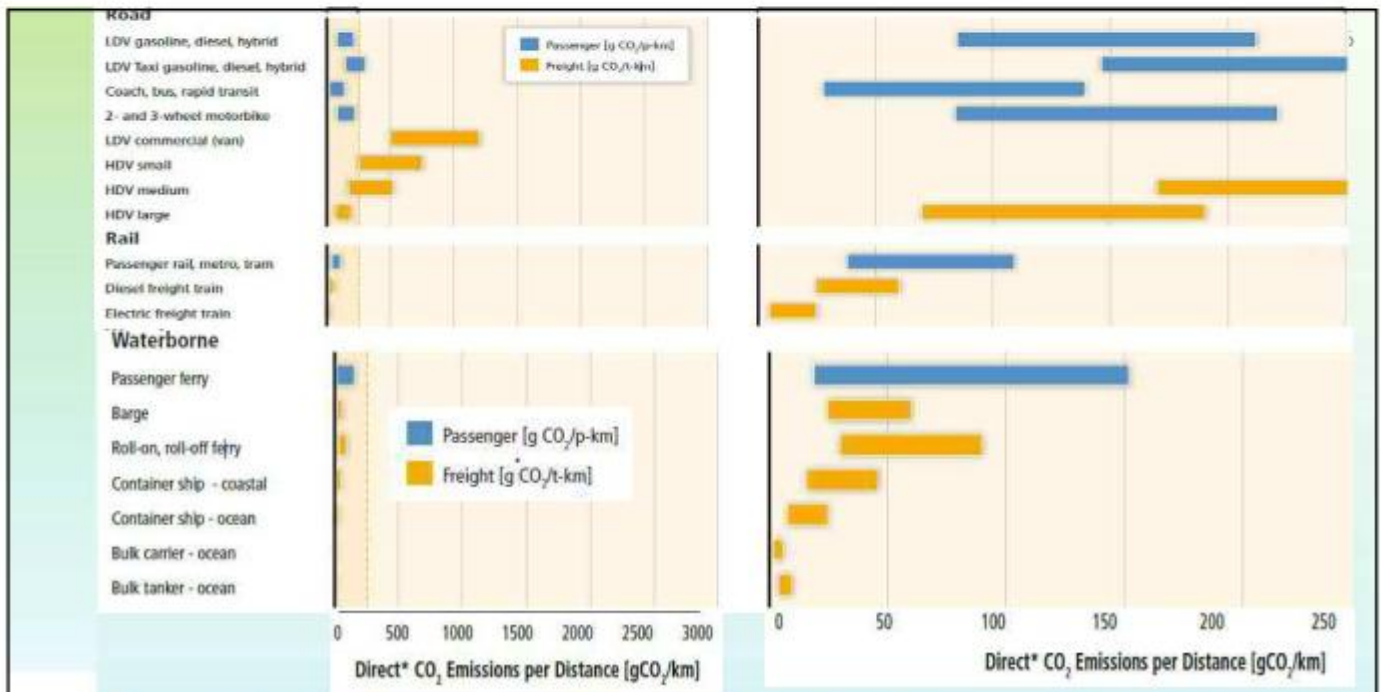
Annual emissions from the transport sector of India until 2050 ( revised to 2070) in India- Rail focused scenario (MtCO<sub>2</sub>e).



Rail focused scenario  
Getting India's transport emissions to zero



Source: Climate Action Tracker on Decarbonizing the Indian Transport Sector- Dec 2020



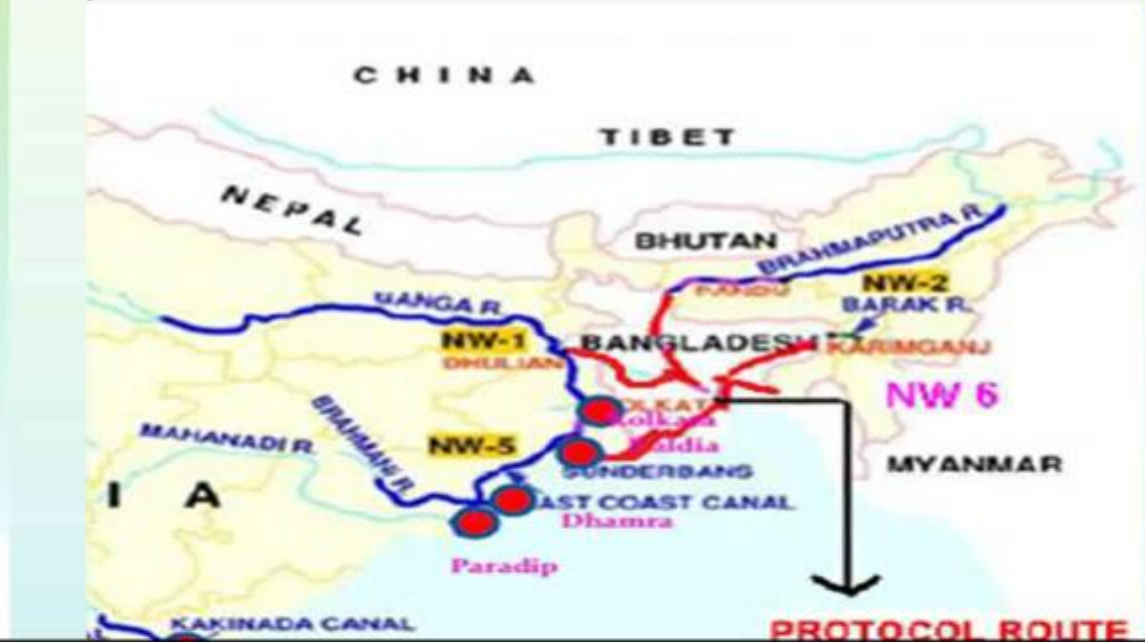
Typical ranges of direct CO<sub>2</sub> emissions per passenger kilometer and per tonne-kilometer for freight, for the main transport modes when fueled by fossil fuels including thermal electricity generation for rail. (Source: ADEME, 2007)



## Project Influence Area & Methodology adopted for study

7

Project Influence Area: NW-1, NW-2, NW-16, Sundarbans and IBP routes



## Existing & registered fleet strength of PIA

8

Type of vessels	NW-1 and NW-97				Total	NW-2	NW-16
	W.Bengal	Jharkhand	Bihar	UP			
						Upper Assam	Upper Assam
Cargo vessels	70	-	5	-	75	-	
Cross ferry for passenger only	450	20	50	110	630	35	10
Cross ferry for both passengers & cargo	45	10	10	20	85	70	14
River Cruises	14	-	3	5	22	8	
Tourist vessels	20	-	5	55	80	10	
Ro-RO/RO-Pax	14	13	15	2	44	4	2
Tugs & Workboats	30	-	11	-	41	11	1
Ancillary vessels including hospital & clinic boats	37	-	5	-	42	25	
Total	680	43	104	192	1019	162	27
GRAND TOTAL	1281						

\*\* Dumb barges, pontoons, accommodation boats & dredgers not included. Besides, there are 12,000 traditional/country boats, some non-mechanized, rest mechanized with non-marine engines which are being registered under Jeevandinga and Jaldhara schemes with World bank funding..

## Characteristic of fleet

9

- ❑ Methodology applied for quick scanning & data collection- Mainly desk studies, websites, publications and research documents and enquiry over phone and email
- ❖ **Old ferry vessels & launches**
  - Obsolete design
  - Non-standard construction
  - Mostly built with wood, occasionally with steel of non-ship building quality
  - Non-marine engines
  - Non-Compliance to statutory and classification regulation
  - Safety standard and appliance in adequate
- ❖ **Modern & recently inducted ferry vessels and cruise vessels**
  - Designed and built complying statutory and class requirement for fleets procured under WB & other aids
  - Safety standards and safety appliances adequate
  - Propulsion system also as per statutory & class requirement, conventional fuel system
- ❖ **Cargo & commercial fleet**
  - Except a few old fleets, others comply with minimum standard on design, construction and safety equipment
  - Registration and annual survey as per I. V. Act of 1917, and corresponding rules & regln by state authorities
  - Propulsion with marine quality engines mainly for fossil fuel
- ❖ **River Sea Vessels and Vessels deployed in IMTC corridor**
  - Designed and built complying statutory and class requirement
  - Registration and annual survey complied strictly through registering authority, MMD of DG Shipping under MS Act
  - Maintenance of class only for higher capacity vessels operating on Zone-I & II, IBP routes
- ❖ **Traditional and country boats in un-organized sector**
  - Obsolete design, construction, don't comply to any standard Rules and regulation

## Technical Parameters

10

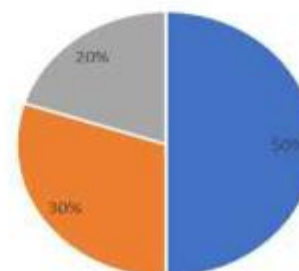
- ❖ **Propulsion Types**
  - Screw Propulsion (single & double)
  - Steerable propulsion
  - OBM
  - Jet propulsion
- ❖ **Propulsion Engines**
  - Non-marine engines (road and non-road without BS-IV & VI complied)
  - Marine engines of type approved by CS (classification society)
  - Marine engines of individual tested & approved by CS

### Types of propulsion systems



- Conventional diesel screw
- Steerable Rudder
- OBM (Outboard Motor)
- Others including jet

### Fleet on types of engines



- Non-Marine engines
- Marine engines of type approval
- Marine engines complying to class and individually tested.

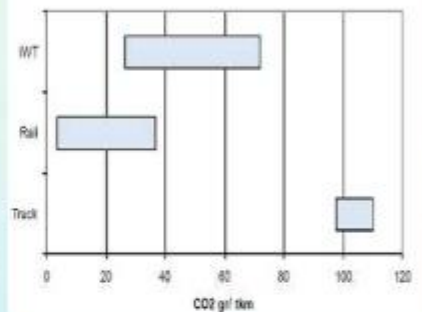
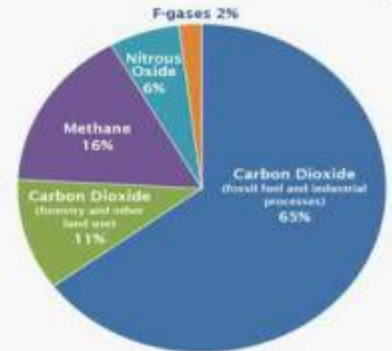
## Fuel and Bunkering facilities

### Fuel : Fossil Fuel (Diesel, & petrol)

- Commonly used HSD with flash point 35 degree Centigrade
- Marine grade HF HSD with 65 degree Celsius used in Kolkata region only
- Higher emission of GHG (Green house gas) i.e. Co2, Nox, Sox, organic compound, particles etc)
- Less energy efficient

### Bunkering facilities

- Facilities installed only on terminals on NW-1 & 2 developed by IWAI
- Facilities being provided for ferry jetties/terminals under WB funding on NW-1 (KMA) & 2
- No facilities for clean fuel (Blended diesel/petrol, bio-fuel (ethane & methane), LNG & LPG )
- Floating jetty developed at Varanasi on river Ganga for CNG for tourist and pax boats retrofitted for CNG fuel.



## Life cycles and age of fleet and propulsion system

- No standard norms and rules/regulation yet formulated
- Hence fleets with age over 55 years still under operation
- Propulsion engines are also overaged having repair, maintenance and overhauling with duplicate and non-standard spare parts etc.

### Fleet status age wise



- 0 years to 10 years
- 10 years to 20 years
- 20 years to 30 years
- 30 years to 40 years
- 40 years to 50 years
- Above 50%



**Comparison of BS-IV & BS-VI compliant engines for road sector on emission standard**

Engine type	Exhaust Gases	BS IV limit	BS VI Limit	Percentage Decrease
<b>Petrol</b>	CO(Mg/Km)	1000	1000	Nil
	HC(Mg/Km)	100	100	Nil
	NOx(Mg/Km)	80	60	25%
	PM	---	4.5	
<b>Diesel</b>	CO(Mg/Km)	500	500	Nil
	HC(Mg/Km)	300	170	43%
	NOx(Mg/Km)	250	80	68%
	PM	25	4.5	82%

**Projection of new fleets**

Short term basis

	Cargo vessels	RO-RO/RO-RO Pax	River Cruises & cross ferry	Utility vessels (Tourists, Tugs /workboats)	Dredging units
Total No	14	8	44	10	4

Long term- Cargo fleet in PIA

	2025-26	2030-31	2040-41	2050-51
Total Projection	270	1012	5703	10,947

Long term- Cargo fleet in PIA

	2025-26	2035-36	2045-46	2055-56
Total No	408	449	538	593

Based on HPC, E & Y, and other reports on cargo & fleet projection



## Legal & Regulatory Framework for Inland Vessels

- ❖ Inland Vessels Act of 2021 ( Enacted on 8<sup>th</sup> August 2021)
- Inland Vessels Rule-2022 (Draft rules notified on 22<sup>nd</sup> Feb 2022)
- The Inland vessels (Design and Construction) Rules 2022
- The Inland vessels (Survey and Certification) Rules 2022
- The Inland vessels (Registration and other technical issues) Rules 2022
- The Inland vessels (Manning) Rules, 2021
- The Inland vessels (Crew and Passenger Accommodation) Rules 2022
- The Inland vessels (Safe Navigation, Communication and Signals) Rules 2022
- The Inland vessels (Life-Saving Appliances) Rules 2022
- The Inland vessels (Fire Fighting Appliances) Rules 2022
- The Inland vessels (Prevention and Containment of Pollution) Rule
- The Inland Vessels (Insurance, Liability & Limit Procedure, Enquiry in to accidents, Trade Practice, and Wreck & removal) Rules 2022

## Provisions for Greening of Waterways and Fleets

The draft Inland Vessels (Prevention and Containment of the Pollution) Rules-2022 notified in March-2022 covers:

- Contamination of water from the spillage of dangerous goods
- Oil spillage due to accidents
- Disposal of sewage generated onboard the vessels
- Disposal of the garbage generated on board the vessels
- Minimum standard of Sulphur content of the fuel
- Control of the emission with minimum NOx from the propulsion engines
- Prevention on the use of antifouling paints
- Protection and preservation of the bio-diversity, aquatic life and environment in the ecological sensitivity area or protected areas

## Emmission standards of propulsion & non-Prpulsion engines

### ❑ Nitrogen Oxide (NO<sub>x</sub>) for diesel engines with installed power 130 KW (173 BHP) & above:

- i. 14.4 g/kWh when n is less than 130 rpm;
- ii.  $44 \cdot n(-0.23)$  g/kWh when n is 130 or more but less than 2,000 rpm;
- iii. 7.7 g/kWh when n is 2,000 rpm or more.

OR Equivalent Bharat Stage standards

### ❑ Sulphur content of fuel ( marine quality diesel, petrol and gas) :

- Must not exceed 0.5% m/m.
- Thus emission standards are not up to International bench mark for IWT sector.
- RSV being designed, constructed and registered under provision of MS Act-1958(Amendment there off is to comply IMO standard)
- Inland fleets deployed in IMTC (Inland Maritime Traffic Corridor) also to be upgraded to IMO standards

## Ferries Acts and Rules

### ❖ Various British regime Acts still under promulgation:

- The Northern India Ferries Act of 1878 (for UP, MP, & Punjab provinces)
- The Bengal Ferries Act of 1858
- Madras Canals and Public Ferries (II of 1890) Act
- Andhra Pradesh Canals and Public Ferries Act, 2 of 1868
- Cochin Public Canal and Public Ferry Act of 1096 (English era 1921)
- Travancore Public Canal and Public Ferry Act of 1096 (English era 1921)
- Maharashtra (Bombay section) Ferries and Inland Vessels Act of 1890 Act
- Gujrat Ferries and Inland Vessels Act, 1868 under Bombay Act No-II of 1868;

### ❖ Few Important Rules

- The Madras Canals and Public Ferries Rules -1917
- The Northern India Ferries (Madhya Pradesh) Rules -1962
- The Bombay Ferries and Inland Vessels Rules -1948
- The Odisha Boat Rules, 2004
- The boat rules of Bihar, 2011

## Present Greening Activities

- Kerala
  - ❖ M/s. Cochin Shipyard Ltd
    - i. Hybrid propulsion (Diesel and electric)
    - ii. Electric propulsion
    - iii. Hydrogen Fuel Cell Electric (DC power) Vessel named FECV
  - ❖ M/s Navgathi construction and Pvt Ltd –Solar powered boats
  - ❖ Kerala development and Innovation Strategic Council (K-DISC) -LPG & LNG
  - ❖ M/s Petro net Ltd, for LNG for fishing vessels
  - ❖ CIFNET- LNG & LPG for fishing vessels
- On NW-1 (river Ganga) at Varanasi the upgradation of tourist and passenger vessels with conversion kits of CNG
- West Bengal Surface Transport Corporation - Recently awarded a contract to GRSE for design & construction of a solar operated electric ferry. Solar based propulsion in Sundarbans Area.
- Goa –Solar powered vessels

## Policies, Fiscal measures on reduction of Emission

### The National Bio-Fuel Policy -2018

- The National Hydrogen Mission- 15<sup>th</sup> August 2021
- The green hydrogen policy- issued on February 17<sup>th</sup> 2022
- National Level Electric Vehicle Policy with series of promotional measures
- The draft Battery swapping Policy-2022 under consideration
- Amendment to Bio-fuel Policy-2022 for advancing ethanol blending target of 20% blending in petrol to ESY 2025-26 from 2030,
- Blending of biofuel with diesel already commenced.
- Policies on alternate & renewable energy exists for solar, wind etc
- No policy and fiscal measures IWT sector

### Recommendation

- BS-VI compliant non-marine engines suitable for operation with GTL, gasoline, biofuel, blended diesel, and petrol with bio-fuel should be allowed for IWT vessels
- Amendment to Inland vessels(Prevention and Containment of Pollution) Rules-2022 towards greening of Fleets
- Policy and fiscal measures IWT sector
- R & D for indigenous marine engines, conversion kits and equipment
- Facilities for bunkering for green fuel on the NWS

# ANNEXURE

## Projection of new fleets

Short term basis

Sl.No	Name of Organizations/Shipper/Operators	Cargo vessels	RO-RO/RO-RO Pax	River Cruises & cross ferry	Utility vessels (Tourists, Tugs /workboats)	Dredging units
1.	IWA	6nos of 1000 tone and 4no 1500 tons	4	-	2	2 CSD with tugs and workboats
1.	WBIDDC, Kolkata			30 cross ferries		
1.	Assam IWT Development Society			6 cross ferries		
1.	IWT operators on NW-1 & NW-2	4				
1.	Cruise, RO-RO and cross ferry		4	4	4	2
1.	Tourist vessels by state tourism department/corporation	-	-	4	4	-
	Total	14	8	44	10	4





### Long term- Cargo fleet in PIA

SL.No	Vessel type & capacity	2025-26	2030-31	2040-41	2050-51
1	Smaller vessels up to 1000 Tone	210	701	4728	9128
2	Standard design vessels of above 1000 Tone	60	311	1075	1819
3	Total Projection	270	1012	5703	10,947



### Long term Projection for ancillary vessels

Sl. No	Type of vessels	2025-26	2035-36	2045-46	2055-56
1	Dredgers	46	51	61	67
2	Ancillary crafts attached to dredging units	88	96	115	127
3	Ancillary crafts for other activities	124	136	163	180
4	River cruises, passenger ferries and tourist vessels	105	116	139	153
5	RO-RO vessels	45	50	60	66
	Total	408	449	538	593



