Systematic Observations Financing Facility

Ethiopia

SOFF Investment Phase Funding Request

23 February 2024

Systematic Observations Financing Facility

Weather and climate data for resilience

SOFF Investment Phase Funding Request

The funding request should be prepared by the SOFF beneficiary country in collaboration with the SOFF implementing entity and supported by the SOFF peer advisor. The funding request reflects and is based on the National Contribution Plan. In case of questions on how to complete this template, please contact the SOFF Secretariat at: soffsecretariat@wmo.int.

The SOFF Investment Funding Request template includes the following sections:

1. **Basic Information**
2. **Programming Criteria**
3. **Readiness and Country Context**
4. **Investment Phase Outputs and Budget**
5. **Investment Phase Implementation Arrangements**
6. **Investment Phase Monitoring, Reporting, and Verification**
7. **Investment Phase Risk Management Framework**

The **GBON Gap Analysis**, the **GBON National Contribution Plan** and **Country Hydromet Diagnostic** are included in **Annex 1, 2, 3**.

1. Basic Information

SOFF Beneficiary Country and Focal Point	*Ethiopia – Ethiopian Meteorology Institute (EMI)* *Mr. Kinfe Hailemariam, Deputy Director General of EMI,* *email: kinfe_hm@yahoo.com, Phone: +251911208024*			
Country classification	☒ LDC	☐ SIDS	☒ FCS	☒ ODA-recipient
SOFF Implementing Entity and Focal Point	*United Nations Development Programme (UNDP)* *Ababu Anage, National Climate Change Specialist,* *email: Ababu.anage@undp.org, Phone: +251911843801*			
SOFF Peer Advisor and Focal Point	Norwegian Meteorological institute (MET Norway) *Teferi Demissie,* *email: teferidd@met.no, phone 004745069493*			
Total Budget (USD)	Total: = 9,908,957.00 **USD** First tranche: 6,457,817.00 **USD (70% of the total budget)** Second tranche: 2,767,636.00 **USD** (30 % of the total budget)			
Delivery timeframe	*Jun 2024-Jun 2027*			
Date of Steering Committee Approval	Planned for 21st March 2024			

SOFF Steering Committee Co-Chairs Signature (signature confirms Steering Committee approval of the funding request)

Partners	**Name and position of Partner**	**Signature, date and stamp**
Beneficiary Country	**Director General Ethiopian Metrological Institute of Ethiopia**	21/2/2024 Fetene Teshome Director General & Permanent Representative Of Ethiopia With WMO Ethiopian Meteorology Institute
Peer Advisor	**Norwegian Meteorological institute (MET Norway)**	Oslo, 27.02.2024 METEOROLOGISK INSTITUTT

Implementing Entity	for **Charu Bist** **Deputy Resident Representative (Program) United Nations Development Program** **Ethiopia**	Gizachew Sesay Oic DRR(P)

2. SOFF Programming Criteria (2 pages)

Alignment with the SOFF Programming Criteria

This section should be based on the SOFF Readiness Phase outputs, i.e. the National GBON Gap Analysis and GBON National Contribution Plan, and the Country Hydromet Diagnostic where available.

Close the most significant data gaps

Ethiopia is a land locked country situated in East Africa with a land size of about 1.112 million square kilometres. Ethiopia is well known for its complex topography and the significant gaps in association with fulfilling the GBON requirements are as follows:

- *Currently EMI operates 17 synoptic manual stations that connect to the GTS. EMI does not have automatic synoptic station that is part of the data transmission to GTS. Among the 17 stations, one station is managed by another organization. The reporting frequency from the synoptic manned stations is at an interval of 3 hours, 24/7. Only two stations report fully (8 times per day and 56 times per week). Some of the stations report only during day light hours (06 LST to 18 LST) and some stations from 06 LST to 21 LST. Most of the night-time observations are missed. On average, EMI-HQ receive 91 reports out of 136 reports in a given day from the 17 stations.*

- *EMI has two upper air stations but not active at present. EMI used to send data to the GTS from one of the stations but currently due to lack of consumables, EMI is not sending upper air data to the GTS. The second upper air station collected data about two years, but have never sent data to the GTS as it was not registered in the GTS upper air stations list. Data collection interrupted from both upper air stations due to limitation of foreign currency for purchasing radiosonde, balloons and the like and partly due to lack of trained human capacity to fix malfunctioning observation hardware's and software's easily.*

- EMI needs to build capacity for instrument calibration and maintenance. For that there is a need for central and mobile calibration and maintenance facilities and associated human capacity building. The climate database system and ICT infrastructure to collect data from stations and to transmit to WIS also needs upgrades and proper configuration.

GBON National Contribution Target

Type of station	Baseline (Results of the GBON National Gap Analysis)				GBON National Contribution Target	
	Target (# of stations)	GBON-compliant stations (#)	Gap		To improve	New
			New	To improve		

<table>
<tr><td></td><td>
<table>
<tr><td>Surface</td><td>29</td><td>0</td><td>13</td><td>16</td><td>16</td><td>13</td></tr>
<tr><td>Upper-air</td><td>5</td><td>0</td><td>3</td><td>2</td><td>2</td><td>3</td></tr>
</table>
</td></tr>
<tr><td>Target easy fixes</td><td>Surface GBON stations
Out of the 17 manual synoptic station, sixteen of them are equipped with additional old Automatic Weather Stations for agro-meteorological services purposes without pressure sensors. All wind sensors are at 2m height, except two stations with wind at both 2m and 10m. Assuming existing rainfall, temperature, relative humidity sensors and solar panel, together with wind sensors at 10m from two stations to be reused with the new satellite modem, existing AWS in synoptic station will have an easy fix for the capability of measuring the five GBON parameters (pressure, wind, relative humidity, temperature and precipitation).
In terms of infrastructure, only eleven stations require 20 m X 20 m fence and the existing fences work for others if some fixes done.
Ten stations do not have 100 m X 100 m fences.
Upper air stations
The existing two upper air stations are not currently functional. To resume data collection at the existing two stations, one station needs generator and solar power system and the second needs only solar power system. Both need consumables such as radiosonde and balloon. The details can be obtained in chapter 4.</td></tr>
<tr><td>Create leverage</td><td>The Ethiopian Meteorology Institute has developed a ten-year (2020-2029) plan. Installation of AWS stations is part of the plan. EMI has planned to install 5 synoptic AWS stations in the years 2022 and 2023, but not implemented due to financial constraints.

EMI studied a station master plan for 10 years and a business process re-engineering (BPR) which is used as a guideline on the establishment, operation, maintenance and calibration of AWS sensors and upper air stations. Based on the 10 year master plan, there are other partners support to install more AWS across different part of the country, which add network expansion and experiences to our technicians. Some examples includes:

• 12-AWS installation is on process with the WB supported Climate Resilient Water, Sanitation and Hygiene (CR-WASH) project. The project sites are located over the low land part of the country and they do not overlap with GBON stations site.</td></tr>
</table>

	• 9-AWS installation is ongoing under Climate Change Low Land Adaptation (CCLA) project • 3-Weather Radar, 4-ligtening detection, 10-Air quality station installations are under process with Ethio-Finland Project • Many Infrastructure and ICT facilities are initiated under the World Bank (WB)-supported Flood Management Project Further, EMI have Electrical Engineers positions in all its 11-Regional Meteorological Service Centres, which will be given additional training under SOFF project, will be engaged in installation of AWS and also be responsible for regular maintenance and calibrations. EMI is constructing a new triplets 9 story building for its head quarter, with a government budget of about 37 million USD, which will be scheduled to be completed by May 2024. This facility with expected Tire-III Data Centre will be a host to SOFF central system with Tire-III Data centre, which will ensure sustained data flow to WIS. The new EMI HQ facility also will host instrument calibration and maintenance facilities, which again leverage AWS operational sustainability.
Maximize delivery capacity	Ethiopian Metrological Institute and UNDP-Ethiopia have worked together in number of projects. For example the four year (2013-2017) project entitled "Strengthening climate information and early warning systems in Africa for climate resilient development and adaptation to climate change – Ethiopia" funded by GEF/LDCF was implemented by EMI, UNDP and other two governmental organizations. UNDP has been working with the Ethiopian Metrological Institute and the Hydrological Water Quality Department of Ministry of Water and Energy the then National Disaster Risk Management Commission to enhance the capacity for the observation and monitoring network to collect reliable and timely data on weather and climate change and variability. The project had the cardinal objective of supporting the National Climate Resilient Green Growth Strategy that will result in strengthening the observational and analytical capacity of the national hydro-met services and its early warning system, and supporting the disaster risk management and development planning agencies in their effort to adapt to climate change. With the support of the project, UNDP facilitated international procurements. Ten hydrological monitoring stations were installed and 50 rehabilitated with telemetry,.; Forty AWS installed (of which 27 were reporting in the recent 6 months), 200 manual stations rehabilitated and five calibration units were procured; One upper air monitoring station installed and operational during

	the period of 2013-2017; Satellite monitoring equipment to receive real time (AMESD) climate and environmental information installed and rehabilitated; Training of at least 20 technical trainers to maintain and repair equipment, computer infrastructure and telecommunications, including cost-effective technologies to interface with existing equipment/software. National coverage of hydromet observational equipment has significantly increased and the project has built capacity to produce 3-day effectively and efficiently, 10-day, seasonal, annual and decadal forecasts models. Standard Operating Procedures (SOPs) have been developed which detail service provision procedures between NMA and HWQD and EMI and the then NDRMC. The UNDP facilitated procurement were efficient in a sense that Investments in hydromet observational equipment and institutional capacity building were cost-effective. Through the LDCF supported multi-country CIRDA programme, Long-Term Agreements (LTAs) with equipment suppliers and services streamlined procurement, reducing costs and delivery lead times. Furthermore UNDP CO is currently working on mainstreaming disaster risk management (DRM) across key development sectors; promoting risk informed development planning; supporting investments in risk reduction; and fostering multi-hazard early warning-early action system. **Supported Development and implementation of EW Systems**: Conducted capacity building training for 60 government staff (20% female) on automated data collection and disaster risk profiling (ADRP) for government staff from national to woreda levels; and provided 50 high quality tablets for automated data collection. Moreover, the development of 5 disaster risk profiles was supported for 5 disaster-prone woredas using automated disaster risk profiling (ADRP) system. UNDP has also supported awareness creation among key actors of the new EW system by organizing awareness creation workshop for 60 government staff (18 female) on the road map for multi-hazard, impact-based early warning and early action system in Ethiopia. Furthermore, UNDP supported to develop a guideline that creates linkage between Automated Disaster Risk Profiling (ADRP) system with multi-hazard, impact-based early warning and early action system (MH-IB-EW-EAS). **Supported Risk reduction investment**: The project has engaged more than 200 vulnerable households (75% women) in disaster resilient livelihoods based on woreda disaster risk profiles and woreda DRR plans. Moreover, the project has promoted community awareness (200 HHs) in disaster-prone areas (30% women) on resilience building in line with Automated Woreda Disaster Risk Profiling (WDRP) and DRR plans. **Supported Policy familiarization and DRM mainstreaming**: Organize awareness creation workshop for 50 government staff (25 female) on DRM

	mainstreaming guidelines and checklists. Moreover, the project supported organization of awareness creation workshop on the new DRM policy for 50 individuals (30% female) from various stakeholders at national and local levels To ensure efficiency in execution, a delegated budget management modality through the UNDP Country Office will be used and both UNDP and Government of Ethiopia Procurement Procedures will be used as required to ensure value for money, quality, and timeliness. UNDP has globally recognized capacity to implement such projects and is uniquely well positioned to support an intervention of this type. This capacity has been acquired over many years of assisting the GoE in relation to strengthening climate information and early warning systems. UNDP has strong collaboration with the GoE and is a trusted partner with good reputation of implementing a wide range of projects. In the process, Standard Operating Procedures (SOP) have been developed those details service provision procedures between EMI and Hydrology and Water Quality Directorate (HWQD) of the Ministry of Water and Energy and Ethiopian Disaster Risk Management Commission (NDRMC). It was submitted to concerned parties; 40 AWS stations were installed. With the installation of Automatic Weather Stations (AWS's) real time data acquisition increased. More data became available to both internal and external data users. As a result, short, medium and long range forecast data inputs increased and led to better forecasting capability. This in turn has lot of effect on decision making based on climate information on the part of the government. Hence, EMI's Early Warning System has improved. It became more reliable and has the capability of saving life and property that can be caused due to extreme weather situations. With the support of UNDP under the project mentioned above, EMI's data base system is upgraded to the latest version available at that time. The new version has features that makes data management easy. As the result of the upgrade, soft copy data management gets to a higher level. More climate products could be generated. Data provisions both in terms of raw, processed, and analysed and the like data becomes easier and fast. Fast data delivery means an increase in meteorological data users. Be it agriculture, insurance, tourism, construction, research or any other sector fast data delivery and more enhanced climate products means saving work time, costs and accomplish work efficiently. For the agriculturalist better yield, better crop management. For the insurance company settling insurance affairs reasonably well. In general, all sectors which need more meteorological data can be served well and their thrust on meteorological service increased.

	In general, we can conclude that hydro-meteorological, observational, forecasting and early warning systems capacity of NMA, HWQD and NDRMC have been improved. In addition, through collaboration between EMI and UNDP, lots of capacity building trainings, refresher course to meteorological technicians and support staff were conducted that enhances the performing capability of the Institute.
Sub-regional gains	EMI has considered 2 stations registered in OSCAR/Surface (Mandera and Moyale) in Kenya on the Ethiopian southern border in selecting SOFF minimum number of station requirement for Ethiopia. At the sub regional level, EMI is in partnership with ICPAC for capacity building workshops for the Greater Horn of Africa (GHACOFs). Under ICPAC data sharing agreement developed among its 11 member countries. In association with this regional cooperation EMI benefits from experience sharing, data management and related capacity building projects. In addition ICPAC is working with member counties to develop a project that looks funding from NORAD available opportunities on the area of data rescue, early warning and service enhancement. Potential cooperation can be done in the sub region with the following neighbouring countries SOFF initiatives (Djibouti (SOFF 3rd batch), Somalia (SOFF 3rd batch), Sudan* (SOFF 3rd batch) and South Sudan (SOFF 1st batch/AU)). Currently EMI is using the Kenya regional hubs for international data sharing. This collaboration is essential, as long as data distribution is done through the hub. Additionally, data sharing in the region between sister organizations and worldwide (GTS and in future WIS2.0) is fundamental collaboration and equals with GBON requirements.

3. Readiness and Country context (1 page)

SOFF Beneficiary Country Capacity Assessment

This section should summarize existing Beneficiary Country capacity to execute the GBON National Contribution Plan.

Ethiopian Meteorology Institute is the sole institution legally mandated for GBON implementation in Ethiopia. It operates over 1500 manned and automated surface stations and two upper air stations, of which about 280 are AWSs. It has eleven regional meteorological service centres in the country. The current annual expenditure for the operations of the observation networks at EMI is $ 1 059 844,76. However due to foreign currency shortage EMI couldn't purchase consumables and spare parts for its two the upper air stations and thus currently are not operational.

As stated above, in Ethiopia, meteorological stations and meteorological data management is the responsibility of the Ethiopian Meteorology Institute. In line with this and considering the land size area of the country EMI has set up 11 Regional Meteorological Services Centers. The centers are responsible for managing manned and automatic stations that come under their area of operation. Data collection, data quality assurance, data computerization and the like activities are done at the region level. Data in soft and hardcopy are sent to the head office. At the head office, all stations data are managed. Trained data experts/meteorologists and technicians of different sorts participate in station establishment, stations management, data management and quality assurance. EMI uses Ethiopian Telecommunication GPRS lines to get data from Automatic stations to the central server at the head office. Automatic weather stations transmit observed real time data at the interval of 15 minutes to the base station at the head office. EMI train technician who can be assigned the job of data collection, data encoding and data quality assurance.

At the head office EMI has a database system called CLIDAT. This is one of the WMO recognized database system. EMI has been using CLIDATA since 2004 though there was a time in between when the system was not operational. Regional Meteorological Services centers do not have a database system they use MS-Excel. There is a plan to upgrade CLIDATA and have new two servers (main and backup servers).

The overall power and duties with regard to stations and data management of EMI are:-

- *Establish and operate a national network of meteorological stations designed to represent Ethiopia's; climatic regions*
- *Collect all meteorological data;*
- *Exchange meteorological data in accordance with international agreements to which Ethiopia is a party;*
- *Establish and operate communication systems, in accordance with the law for the collection and dissemination of meteorological data;*

In summary, at EMI there is institutional, administrative and technical capacity in place to execute SOFF project, there is substantial opportunity for SOFF to support the EMI team to address all the challenges mentioned above.

Investment Phase Alignment with the GBON National Contribution Plan
Please attach the National GBON Gap Analysis and GBON National Contribution Plan as Annex 1.

The investment phase proposal includes all activities and recommendations from the National Contribution Plan. In addition, stakeholders' engagement workshop on the implementation of the SOFF project deliverables at a national and sub-national level, Human resource and institutional capacity buildings are required to ensure the stations safety and effective SOFF implementation, as listed under output 1. These activities aim at more building capacity for more systematic stakeholder engagement, including key government partners, EMI-RMSC's and potential CSO.

4. Investment Phase Outputs and Budget

The GBON National Contribution Plan provides detailed information on the Investment Phase Outputs (please see Annex 1).

Based on the recommendations and technical specifications provided in the National GBON Gap Analysis and GBON National Contribution Plan, and complemented by the Country Hydromet Diagnostic, please provide the required budget amount for the delivery of the Investment Phase Outputs.

Output 1. GBON institutional and human capacity developed	**Main activities**	**Budget (USD)**
1.1 **National consultations** including with CSOs, and other relevant stakeholders conducted	• Inception **workshops** at the national and sub-national level • Stakeholder engagement workshops on implementation • **Consultative workshop** at 11-RMSC's on station security with key stakeholders	150,000.00
1.2 **NMHS institutional capacity** required to operate the GBON network developed	• Establish a full staff PMU and a **project execution team,** including project management and stakeholder management skills to support the execution of the project. • Promote **gender equality** by establishing thresholds for female participation in SOFF related activity	350,000.00
1.3 **NMHS human capacity** required to operate the GBON network developed	• Experience sharing and capacity building **on GBON/SOFF key components for EMI leadership** • Experience sharing and SOP development on **IT infrastructure** for effective GBON and SOFF implementation • Recruitment of observers, ICT and project management staff • Training in cellular and satellite communications and router configuration • Training in weather station maintenance • Training on WIGOS metadata and data quality monitoring system	300,000.00

	• Participation in the regional trainings relevant to GBON	
Output 2. GBON infrastructure in place	**Main activities**	Budget (USD)
2.1 **New land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	• Procure AWS sensors for 13 new stations • Invite bidders to construct 20X20 and 100X100 fences at the selected sites	1,854,035.00
2.2 **Improved land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	• Renew AWS sensors in 16 existing stations • Constructing 20X20 and 100X100 fences at the selected sites as well as inspect • 7 follow up the construction process • Effecting relevant different trainings	1,300,798.00
2.3 **New upper-air** stations and related equipment, ICT systems, data management systems and standard operating practices in place	• Procure three new Upper Air Observing System and installing upper air station • Consumables for day to day data collection	2,252,828.00
2.4 **Improved upper-air** stations, related equipment, ICT systems, data management systems and standard operating practices in place	• Put in place hydrogen generator and solar panel for improving two existing upper air stations • Consumables for day to day data collection	270,120.00
Outcome: Sustained compliance with GBON	**Main activities**	**Budget (USD)**
3.1 **GBON land-based stations' commissioning period completed**, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	• Undertake stations supervision • Maintain malfunctioning instruments and make regular cleaning • Procure calibration facilities and setting up calibration unit • Upgrading EMI database system • Effecting relevant training	939,054.00
3.2 **GBON upper air stations' commissioning period completed**, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	• Purchase consumables like balloons, radiosonde and others that are needed for upper air observation system	1,205,083.00
Total for all Outputs		8,621,918.00

Implementing Entity Fee[1] (GMS) 7%		603,534.00
SOFF peer advisory services		**683,505.00**
Total funding request		9,908,957.00

Budget breakdown by UNDG category (Excluding SOFF peer advisory services)[2]	9,225,452.00
Staff and personnel costs	1,975,550.00
Supplies, Commodities and Materials	3,729,078.00
Equipment, Vehicles, Furniture and Depreciation	156,702.00
Contractual Services Expenses	1,587,904.00
Travel	491,686.00
Transfers and Grants	-
General Operating Costs	1,284,532.00

[1] The implementation fee cannot exceed 7% of the total Investment Phase funding request.

[2] The total budget (excluding the budget for the SOFF peer advisory services) is expected to be disaggregated by UNDG category. It includes direct and indirect costs of the Implementing Entity and beneficiary countries to establish a fully operational observation network, collecting and internationally exchanging data according to GBON requirements. Eligible expenditures are any type of expenditure required to implement the GBON National Contribution Plan, including the requirements of the beneficiary country to manage and administer the day-to-day activities of the Investment Phase. It also includes the budget required for the operation and maintenance of the observing network.

5. Investment Phase Implementation Arrangements

Execution model and implementation arrangement	***UNDP**, being Implementing Entity for the Project will be responsible to lead and coordinate the annual and quarterly planning, implementation, financial management, evaluation, reporting and closure of the activities under the Project, working together with the beneficiary, the Ethiopian Meteorology Institute (EMI). UNDP will monitor and supervise the execution of the Project and ensure the proper management and application of SOFF Grant Proceeds. UNDP will ensure that the Grant Proceeds are utilised in accordance with the terms of the current Funding Request and that procurement is carried out according to relevant UNDP procurement procedure and UN principles: a. Best Value for Money; b. Fairness, integrity, and transparency; c. Effective international competition; d. The interest of the UN.* *The UNDP Country Office and EMI shall prepare a project execution roadmap and plan which set details of the national implementation modality. UNDP and EMI will work together in the execution of the project activities. A project steering committee (SC), composed of EMI, UNDP high level officials and key stakeholders, will be formed at the beginning of the project and have a responsibility of the provision overall guideline of the project execution. Different technical Task Team (TT) shall be formed within EMI HQ and its eleven Regional Meteorological Service Centres (RMSC's) for technical level decision makings and executions of the project activities.* ***EMI** will ensure that all planned activities are executed as scheduled to achieve the project's objectives. EMI's specific roles and responsibilities in project execution will include supporting stakeholder engagement, preparing and submitting annual and quarterly work plans, and requesting fund disbursements. EMI will also be responsible for promptly submitting narrative and financial reports to UNDP. Additionally, EMI will oversee the operation, maintenance, and calibration of land-based and upper-air stations, as well as handle data collection, analysis, and reporting to ensure compliance with GBON standards. In addition to above-described roles and responsibilities, the UNDP and EMI will work closely to deliver all planned procurement activities, using their respective procurement guidelines, as follows :* • *UNDP hiring an international company for supply 29 Automatic Weather Stations and installation of the central base station and one AWS, including onsite and factory level trainings to EMI staffs.* • *UNDP hiring an international company for supply and installation of three upper-air observations radiosonde stations and upgrade of two existing upper air radiosonde stations, including associated onsite and factory level trainings to EMI staffs as well as equipped with essential tools and 1 year's stock of consumables of five upper air stations.* • *UNDP transfer budget to EMI for civil infrastructure (e.g., AWS fencing, upper air generator housing, balloon filing rooms, AWS-civil work, etc). UNDP also transfer budget on annual basis to EMI for activities identified in annual plan that are executed by EMI.* • *EMI is responsible for local purchase of goods, services and consultancies, as agreed in the annual plan and following the government procurement procedure including input material for AWS and upper air installations related civil work materials and contracts.*

	• *UNDP procure hotel services for stakeholder engagement consultative workshop, also pay DSA and other expenses to participants.* Draft specifications and TOR's for goods and services under SOFF investment phase has been prepared by EMI with the support of the peer advisors, as part of the National Contribution Plan. Thus, this could be used as technical specifications for procurement and then be updated before the procurement process be initiated. EMI Technical Task Team will have critical role, in updating those specifications and TOR's, as well as making technical analysis in selection of suppliers based on the agreed spec/TOR and procurement guidelines. **MET Norway,** in collaboration with the IE, UNDP, will provide general technical advisory services to support EMI in the implementation of the National Contribution Plan and agreed activities for the Investment Phase. Met Norway will also contribute and provide recommendations and guidance on reporting, recommendations and content for the interface towards the second stage of the Investment Phase. In addition it will give technical support on AWS, radio sounding tender process, project management, IT, communication and purchasing processes. Met Norway will support exploration of synergies with ongoing complementary activities and facilitate stakeholder engagement in coordination with EMI and other governmental ministries, UN agencies, NGOs, CSOs, private sector as well as academia across the meteorological value chain in Ethiopia. It will also assist EMI in development of Standard Operating Procedures, quality control and quality assurance mechanisms. It will advise and support on sub-regional dialogues and co-ordinations to facilitate best practices for procurement, network maintenance plans and human capacity development. Met Norway will its role in preparation of the final report**.**
Civil society participation and private sector involvement	*Currently there are no private sector operators providing meteorological observations or data services in Ethiopia, thought there are some who operate stations for their own use. According to the SOFF operational manual definition of the basic business models, Ethiopian GBON infrastructure is "Fully public: Fully State/NMHS owned and operated GBON infrastructure". Therefore, the whole implementation of SOFF in Ethiopia is directly owned by EMI, except that key stakeholders, such as local administrators and local NFCS key partners shall have a significant role in securing the AWS installation site as well as ensuring stations security as well as beneficiary of the climate service. Thus, they will be engaged in the whole process of SOFF implementation, among others, via workshops, public sensitization processes.* Private sector involvement in SOFF implementation in Ethiopia would mainly be by participating in the open competitive procurement process to carry some of the civil works. In addition, civil society participation will be explored during implementation in the awareness creation to the general public on the important of climate services in climate change adaptation, so that the public in general give protection to the safety and

	security of the land based GBON stations, as well as make the best use of climate services for the best of their livelihood.
Fiduciary systems	The financial management and procurement within the project will be guided by UN financial regulations, rules and practices, as well as UNDP's Project manual. For activities to be executed by EMI, Ethiopian Government Finance and Procurement guidelines shall fully be applied. There will be an agreement to be signed between EMI and IE on details of their responsibilities. Within this context, funding allocation mechanisms are managed in accordance with UN rules and procedures, including eligibility criteria, proposal evaluation processes, quality assurance and control, project monitoring and supervision. UNDP is audited annually by the UN Board of Auditors. UN financial regulations and rules require the segregation of duties, and safeguards to ensure compliance with UN financial rules and regulations. EMI is also audited annually. EMI submit its annual plan and deliver quarterly and annual reports to the Ministry of Water and Energy, The ministry of Plan and Development, the Ministry of Finance and to the House of People Representatives. Ethiopians procurement directive, finance law, Anti-corruption law, etc shall be applicable in all EMI engagement. **Financial Management** UNDP Financial management in fiduciary arrangements typically encompasses the following: • **Budgeting** - Setting a clear and detailed budget for the project, which outlines the expected expenses and sources of funds. • **Financial Reporting** - Periodic financial reporting to stakeholders, which gives an overview of the funds received, expended, and any discrepancies or issues. • **Audits** - Regular audits, both internal and external, are conducted to ensure compliance with financial standards and to detect any anomalies or misuse of funds. • **Risk Management** - Risk assessments are conducted to identify any financial risks associated with the project, and mitigation measures are put in place. • **Fund Disbursements** - A clear procedure for the disbursement of funds to ensure that money is used for the intended purpose and there is accountability at every level. • **Accounting and Record Keeping** - Proper accounting methods are used, and records of all transactions are kept meticulously. **Procurement -**Procurement procedures are put in place to ensure that goods, works, and services are acquired in a transparent, efficient, and cost-effective manner. The main aspects include:

	• **Planning** - Before starting the procurement process, there's a need for clear planning, which defines what is to be procured, why, and how. • **Sourcing** - Identifying potential suppliers or contractors and evaluating them based on predetermined criteria. • **Tendering** - Inviting bids or proposals from potential suppliers. This can be through open tendering, limited tendering, request for quotations, or direct contracting, Invitation to Bids, Long Term Agreement depending on the nature and value of the procurement. • **Evaluation** - Evaluating bids or proposals based on predefined criteria, which could be the lowest cost, best value for money, or other factors. depending on the solicitation techniques employed for the procurement • • **Contracting** - Once a supplier or contractor is selected, a contract is drawn up which outlines the terms and conditions of the procurement. • **Contract Management** - Monitoring the performance of the supplier or contractor, ensuring they meet their obligations as per the contract. • **Ethics and Fair Play** - Ensuring that the procurement process is free from corruption, favouritism, and any form of unethical behaviour. ***Grievance Redress Mechanism*** *- A system through which aggrieved bidders can raise complaints and get them addressed. As UNDP collaborates with EMI to implement SOFF Investment Phase, both entities shall align their fiduciary procedures. The UNDP will ensure that its EMI comply with the highest standards of financial management and procurement. This will not only build trust among stakeholders but also ensures the success and sustainability of the projects they undertake together.*
Social and environmental safeguards	The project activities are subject to national and international law, as well as UNDP's revised Social and Environmental Standards (SES) came into effect on 1 January 2021. The SES underpin UNDP's commitment to mainstream social and environmental sustainability in all its Programmes and Projects to support sustainable development. The standard is structured around guiding principles, safeguard standards and related operational modalities. The guiding principles of the framework are derived from the 2030 Agenda for Sustainable Development and include the following: Leave No One Behind, Human Rights and Gender Equality and Women's Empowerment, Sustainability and Resilience and Accountability. The SES includes the following:

	• Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management • Standard 2: Climate Change and Disaster Risks • Standard 3: Community Health, Safety and Security • Standard 4: Cultural Heritage • Standard 5: Displacement and Resettlement • Standard 6: Indigenous Peoples • Standard 7: Labour and Working Conditions • Standard 8: Pollution Prevention and Resource Efficiency In order to operationalize the standard, the following social and environmental management system requirements has been set in the process: • Quality Assurance and Risk Management • Screening and Categorization • Assessment and Management • Stakeholder Engagement and Response Mechanism • Access to Information • Monitoring, Reporting and Compliance Recommend pragmatic approaches and measures for environmentally responsible design and evolution of the national networks to achieve GBON requirements, including: a. Development and use of specifications that consider environmental sustainability for procurement of measurement instrument equipment to meet the GBON requirements b. Integration of sustainability considerations for the management of operations of GBON stations, including installation, calibration, and maintenance c. Careful material selection for the development, shipping and day-to-day operations of GBON stations, with a focus on developing and using reusable instruments and sustainable methods of observation (e.g., elimination of single-use plastics). The following environmental considerations will be applied in implementation of the SOFF project: ● Consider the environmental accreditations of vendors and procure high quality equipment that are sustainable throughout their intended lifetime ● Use of renewable energy (solar panels) as power supply for their observation networks ● Reduce the number of field visits and if possible use of hybrid vehicles to reduce emissions and costs. ○ This can be facilitated by having scheduled preventive maintenance and calibration plans with reliable field equipment that reduces costly back and forth maintenance trips that could have otherwise been avoided.

	○ Having scheduled preventive maintenance and calibration plans also lengthened the lifecycle of sensors. ○ Having contact personnel in remote stations with capabilities for simple maintenance check e.g changing of batteries ○ Enhancing capacities for remote system diagnostics and alarms crucial to minimize maintenance trip. This is possible through improved telecommunication capabilities. • EMI is already exploring possibilities for hydrogen gas production for upper air observations which is more environmentally friendly and sustainable. EMI can easily be a regional supplier. Increased and improved capacity of EMI staff (through training) to ensure dependency on local contractors for upper-air sounding
Dispute resolution mechanism	Effective project management recognizes the importance of addressing complaints and resolving conflicts promptly to maintain stakeholder trust, ensure project sustainability, and achieve desired outcomes. The UNDP, like many development organizations, incorporates mechanisms to manage complaints and resolve conflicts in its projects. Here's an overview of the key elements in project implementation complaints management and conflict resolution: **Establishment of a Complaints Management Mechanism (CMM)** • **Accessibility:** There should be a clear and easily accessible channel for stakeholders, including project beneficiaries, to raise complaints or concerns. More information can be obtained from the UNDP Social and Environmental Standards. Concerns can be raised through dedicated email addresses, helplines, physical drop boxes, or online platforms. • **Anonymity and Protection:** The mechanism should allow for anonymous complaints to ensure the protection of the complainant, especially in sensitive contexts. Whistle-blower protections should also be in place. • **Categorization of Complaints:** Once received, complaints should be categorized based on their nature, urgency, and impact to ensure an appropriate and timely response. **Complaints Handling Process** • **Acknowledgment** - Upon receiving a complaint, an acknowledgment of receipt should be sent to the complainant, reassuring them that their concern is being addressed.

	• **Investigation** - A neutral team or individual should investigate the complaint. The depth and method of the investigation would depend on the nature of the complaint. • **Feedback** - After the investigation, feedback should be provided to the complainant, detailing the findings and any actions taken. • **Redress and Remediation** - If the complaint is validated, appropriate remedial actions should be taken, which might include compensation, corrective actions, or other measures. **Conflict Resolution Mechanisms** • **Preventive Measures** - Awareness and training sessions on conflict sensitivity, cultural awareness, and stakeholder engagement can be conducted to reduce the likelihood of conflicts arising. • **Mediation** - Neutral third-party mediators can be involved to facilitate dialogue between conflicting parties and help them reach a consensus. • **Arbitration** - If mediation fails, an independent arbitrator can be appointed to hear the grievances and make a binding decision. • **Stakeholder Dialogues** - Regular dialogues and forums with stakeholders can be organized to address any potential issues before they escalate into major conflicts. **Monitoring and Learning:** • **Regular Review** - The effectiveness of the complaints management and conflict resolution mechanisms should be reviewed periodically. • **Learning** - Lessons learned from addressing complaints and resolving conflicts should be documented and integrated into future project planning and implementation. • **Transparency** - Sharing aggregated data on complaints received, their nature, and the actions taken can enhance transparency and trust among stakeholders. *Incorporating the above elements ensures that project implementation remains on track and that any issues or grievances from stakeholders are addressed in a timely and effective manner. This proactive approach not only helps in mitigating risks but also promotes trust, inclusiveness, and ownership among all stakeholders, essential for the success of any project.*

Additional relevant policies and procedures	*Procedures (POPP) framework. This framework provides comprehensive guidance for project and programme implementation, ensuring effectiveness, transparency, and accountability in all operations. When considering the context of implementing entities, especially when UNDP is working in partnership with EMI, there are several other policies and procedures that the implementing entity might apply based on the UNDP POPP.*

6. Investment Phase Monitoring and Reporting

The implementing entity, with the support of the peer advisor, is expected to monitor the implementation of the Investment Phase following an output-based approach. The Investment Phase outputs as well as respective indicators and targets are presented below. *Please indicate the implementation targets and adjust the table as needed to reflect the implementation timeline. Years can be added.*

Output 1. GBON institutional and human capacity developed	Indicator	Target Y1	Target Y2	Target Y3
1.1 **National consultations** including with CSOs, and other relevant stakeholders conducted				
• Inception **workshops** at the national and sub-national level	# of inception workshops	1		
• Stakeholder engagement workshops on implementation	# of stakeholder workshops	1		
• **Consultative workshop** at 11-RMSC's on station security with key stakeholders	# of sub national workshops	1	1	1
1.2 **NMHS institutional capacity** required to operate the GBON network developed				
• Establish a full staff PMU and a **project execution team,** including project management and stakeholder management skills to support the execution of the project.	# of project staff	5		
• Promote gender equality by establishing thresholds for female participation in SOFF related activity 50 % of all participants in SOFF-related and supported trainings; SOFF consultations, planning workshops; staff for operating and maintaining GBON stations; and decision-making and project management positions where applicable will be women.	% female participants in the workshops		25%	
1.3 **NMHS human capacity** required to operate the GBON network developed				
• Experience sharing and capacity building **on GBON/SOFF key components for EMI leadership** • Experience sharing and SOP development on **IT infrastructure** for effective GBON and SOFF implantation	# of experience sharing's	1	1	
• Recruitment of observers, ICT and project management staff	# of employed staff	3	5	

• Training in cellular and satellite communications and router configuration • Training in weather station maintenance • Participation in the regional trainings	# of trainees	5	5	
Output 2. GBON infrastructure in place	**Indicator**	**Target Y1**	**Target Y2**	**Target Y3**
2.1 **New land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	# stations as per the GBON National Contribution Plan	-	7	6
2.2 **Improved land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	# stations as per the GBON National Contribution Plan	-	8	8
2.3 **New upper-air** stations and related equipment, ICT systems, data management systems and standard operating practices in place	# stations as per the GBON National Contribution Plan	-	2	1
2.4 **Improved upper-air** stations, related equipment, ICT systems, data management systems and standard operating practices in place	# stations as per the GBON National Contribution Plan	-	1	1
Outcome: Sustained compliance with GBON	**Indicator**	**Target Y1**	**Target Y2**	**Target Y3**
3.1 **GBON land-based stations'** commissioning period[3] completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	# stations as per the GBON National Contribution Plan	-	17	12
3.2 **GBON upper air stations'** commissioning period completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	# stations as per the GBON National Contribution Plan	-	2	3

[3] The commissioning period is the last year of the Investment Phase. The beneficiary country, supported by the Implementing Entity, must demonstrate the sustained operation of all the SOFF-supported stations according to the GBON compliance.

The implementing entity is expected to report on progress as described below.

- **Quarterly updates** to the SOFF Secretariat: A simple standardized form providing a progress update against the Investment Phase Outputs' indicators (and Outcome, where applicable[4]) and flagging major issues that are delaying implementation, if any.
- **Annual narrative and financial reports** according to the UNMPTF reporting requirements indicated in the legal agreements. The annual narrative report reports on progress on the delivery of the Investment Phase Outputs, measured by the Investment Phase Indicators. It includes also a review of the Investment Phase risks and an update on environmental and social safeguards, including gender.
- **Final narrative and financial reports** according to the UNMPTF reporting requirements indicated in the legal agreements. The final narrative report confirms the completion of all the activities and report on the number of stations that have completed the commissioning period (outcome). The WMO technical authority verifies GBON compliance of the indicated stations and provides a verification report to the SOFF Secretariat. Upon WMO verification, the Investment Phase can be considered completed. The Final Report should describe the Investment Phase results achieved and lessons learned; and it should also specify the long-term institutional arrangements to secure sustained GBON compliance with SOFF Compliance Phase support.

[4] The quarterly reports should also include, when applicable, progress achieved in terms of new or rehabilitated stations that have become operational and are already sharing the data into the WIS 2.0 system as confirmed through the WIGOS Data Quality Monitoring System (WDQMS) web tool.

7. Investment Phase Risk Management Framework

The Investment Phase Risk Management Framework should be based on the SOFF Risk Management Framework, incorporating relevant programmatic risks and including additional country-specific risks. Please follow the methodology established by the Multi-Partner Trust Fund Office (MPTFO) presented below.

		Impact				
		Insignificant (1)	**Minor (2)**	**Moderate (3)**	**Major (4)**	**Extreme (5)**
Likelihood	**Very Likely (5)**	Medium (5)	High (10)	High (15)	Very High (20)	Very High (25)
	Likely (4)	Medium (4)	Medium (8)	High (12)	High (16)	Very High (20)
	Possible (3)	Low (3)	Medium (6)	High (9)	High (12)	High (15)
	Unlikely (2)	Low (2)	Low (4)	Medium (6)	Medium (8)	High (10)
	Rare (1)	Low (1)	Low (2)	Medium (3)	Medium (4)	High (5)

Please complete the following table.

Risk	Risk level	Likelihood	Impact	Risk Mitigation Measures
Non-compliance with fiduciary and procurement standards in some SOFF activities	*Low*	*Rare*	*Insignificant*	Compliance and risk of mis-procurement can be handled by training the executing entity in the procurement and fiduciary policies and other relevant regulations.
SOFF-funded investments cause environmental or social impacts	Low	Rare	Insignificant	Strictly follow and work in accordance with environmental policies
NMHS staff depart after being trained	High	Possible	Moderate	Train more people

Risk	Risk level	Likelihood	Impact	Risk Mitigation Measures
				Put in place incentive mechanisms for key staff under SOFF to delay departure.
Slow implementation and delays in procurement, installation and capacity building activities	High	Likely	Moderate	Prioritize activities with in EMI in order of importance. SOFF implementation will be given high priority as it is international obligation and commitment. Explore procurement methods , such us Long Term Agreement to exepdite the procurement process .
After the conclusion of the Investment phase, GBON data are not collected or shared or are shared of insufficient quality.	Low	Unlikely	Minor	Recruit well trained staffs and arrange refresher course. Work with donors and producers. Maintain close collaboration with respective RWC
Destruction or theft of SOFF-financed equipment and infrastructure	Medium	Possible	Minor	The mitigation action following vandalism of instruments can be three fold. 1. Create awareness to the society that details

Risk	Risk level	Likelihood	Impact	Risk Mitigation Measures
				the reason why EMI establish stations and the use of the data 2. There may not be permanent staff at the station site that look after the station, in that case, work with other government institutes to attend the station on behalf of EMI. 3. Provision of local community weather and climate services.
Ethiopia cannot make optimal use of data, including accessing or using improved forecasts products from the Global Producing Centers throughout the hydromet value chain	Low	Unlikely	Insignificant	Capacity building activities supported by different programmes, seek the participation of sub regional centers and focus on research and study activities.
Additional specific country risks				
Conflicts, safety, civil unrest and political insecurity	High	Likely	Moderate	Cooperation with the government offices for the support of safeguarding against intrusions and possible destruction of

Risk	Risk level	Likelihood	Impact	Risk Mitigation Measures
				stations and instruments.
Inflated budget	*Very High*	*Very Likely*	*Major*	Allocate contingency budget that considers the yearly inflation rate based on detailed analysis of past situations.
City development (urban expansion) and appearance of possible station obstructions.	High	Likely	Moderate	Create awareness to administrators. Relocating station sites. Regular update and archiving of metadata to know the effect of obstruction.
Staff incompetence and turnover	High	Possible	Moderate	Seek a training budget from other sources that could cover the expenses of training. Train more peoples Put in place incentive mechanisms for key staff under SOFF.

Risk	Risk level	Likelihood	Impact	Risk Mitigation Measures
Securing proper site for establishing new stations	Medium	Possible	Minor	To mitigate such a risk we need to work with heads of regional governments. A letter from the head of regional states could facilitate and make quicker securing land. Our ministry, MoWE, may help EMI to smooth out the land acquiring process.
High turnover of new and advanced technologies	Medium	Possible	Minor	Allocate budget Continuous upgrading training of EMI staff on emerging technologies Undertake targeted capacity building activities. Recruitment of international consultants

Annex I: National Gap Analysis

The National Gap Analysis to be available on SOFF website

Annex 2: National Contribution Plan

The National Contribution Plan to be available on SOFF website

Annex 3: Country Hydromet Diagnosis

The Country Hydromet Diagnosis of Ethiopia is available here

Annex 4: Terms of Reference for the provision of technical advisory services during the SOFF Investment Phase

1. Purpose and scope

These Terms of Reference describe the provision of technical advisory services by Met Norway to Ethiopian Meteorological Institute to contribute to the delivery of the SOFF Investment Phase outputs as described in Section 3.

The Terms of Reference are based on the SOFF Operational Manual, Section 4.4.3 on the Operational Partners and Section 4.5.2 on the Investment Phase; as well as on the SOFF Investment Framework, Section 4.5 on the Peer Advisors and WMO Technical Authority.

2. Roles and responsibilities

Beneficiary country National Meteorological and Hydrological Service

- Is responsible for implementing the activities of the SOFF Investment Phase activities with the support of the Implementing Entity and the peer advisor.
- Submits the SOFF Investment Phase funding request using the standardized template provided by the SOFF Secretariat, including the Terms of References for the peer advisor's technical advisory services during the Investment Phase.
- Is responsible for collaborating with the Implementing Entity to provide all the necessary information, participate in and facilitate the national activities that the Implementing Entity and peer advisor need to conduct in order to deliver the SOFF Investment Phase outputs.
- Confirms the completion of all the Investment Phase activities and provides comments as needed on the final report prepared by the Implementing Entity.

Peer advisor

- Is accountable to the beneficiary country and the Implementing Entity.
- Is contracted via the WMO pass-through mechanism and operates on a cost-recovery basis.
- Provides technical advisory services to support beneficiary countries and Implementing Entities in the design and implementation of the SOFF Investment Phase activities.
- Contributes to the final report of the SOFF Investment Phase.

Implementing Entity

- Prepares the Investment Phase funding request in collaboration with the beneficiary country and the peer advisor, including the Terms of References for the provision of

technical advisory services during the SOFF Investment Phase.

- Manages the Investment Phase activities following the terms specified in the funding request and in collaboration with relevant national partners, including civil society organizations.
- Delivers the Investment phase outputs and is responsible for their quality and timely delivery, in coordination with the country and the peer advisor.
- Provides quarterly updates to the SOFF Secretariat according to a simple standardized form and annual reports according to the United Nations Multi-Partner Trust Fund Office's reporting requirements indicated in the legal agreements.
- Informs the SOFF Secretariat of circumstances that could materially impede the implementation of the Investment phase or any considerable deviation in the conditions of the funding request to achieve its objectives.
- Submits the final report to the SOFF Secretariat including the beneficiary country's comments and the peer advisors' feedback. The final report describes the institutional arrangements to secure sustained operation and maintenance of the investments made.

WMO Technical Authority

- Provides basic on-demand technical assistance to the beneficiary country, Implementing Entity and peer advisor on GBON regulations, including on monitoring and assessing the data-sharing status of the stations using the WDQMS web tool[5]
- Is responsible for the verification of data sharing of the new or rehabilitated surface and upper -air stations as per GBON regulations.
- WMO provides a verification report to the SOFF Secretariat, upon which the Investment Phase can be considered completed.
- Establishes and administers the pass-through mechanism for contracting and funding of the advisory services provided by the peer advisors.
-

SOFF Secretariat

- Facilitates communication, coordination and collaboration between the beneficiary country, the Implementing Entity, the peer advisor and WMO Technical Authority.
- Reviews the SOFF Investment Phase funding request, including the Terms of Reference for

[5] The WDQMS web tool monitors the availability and quality of observational data based on near -real-time information from the four participating global Numerical Weather Prediction centres: the German Weather Service (DWD), the European Centre for Medium range Weather Forecasts (ECMWF), the Japan Meteorological Agency (JMA) and the United States National Centers for Environmental Prediction (NCEP). These are four of the ten World Meteorological Centres, designated by WMO to provide global numerical weather prediction products for all WMO Members.

the provision of technical advisory services and provides feedback as needed. Then transmits the funding request to the SOFF Steering Committee for their decision.

- Compiles quarterly updates and annual reports and monitors implementation based on information received from the Implementing entity, the peer advisor and the beneficiary country. Regularly informs the Steering Committee of progress.
- Coordinates regional implementation approaches to the SOFF Investment Phase.
- Confirms receipt of the final report by the Implementing Entity and completion of the Investment Phase based on WMO verification of data sharing.
- Organizes exchange of knowledge and experiences and captures lessons learned.

3. Peer advisors' activities during the SOFF Investment Phase

The Met Norway, as Peer Advisor to the Ethiopian Meteorological Institute (EMI) have co-developed the GBON National Contribution Plan – Annex 2. The plan outlines the activities necessary for the EMI to achieve GBON compliance. Delivery of this plan will be led by the Implementing Entity, the United Nation Development Programme (UNDP) in collaboration with EMI, with ad-hoc support from the Peer Advisor.

MET Norway: The Peer Advisor for this project is the Norwegian Meteorological Institute. As provided in the National Contribution Plan for Ethiopia, the peer advisor in collaboration with UNDP will:

- Provide general technical advisory services to support EMI in the implementation of the National Contribution Plan and agreed activities for the Investment Phase.
- Contribute and provide recommendations and guidance on reporting. Provide recommendations and content for the interface towards the second stage of the Investment Phase.
- Provide technical support and review of the AWS and support in radio-sounding tender process and calibration facilities.
- Continued support in competence development in line with the Institutional Support and Capacity Building for Weather and Climate Services SAREPTA project between EMI and MET Norway.
- Technical support on management, IT and communication tenders and purchasing processes.
- Support exploration of synergies with ongoing complementary activities and facilitate stakeholder engagement in coordination between EMI and other governmental ministries, UN agencies, NGOs, CSOs, private sector as well as academia across the meteorological value chain in Ethiopia
- Support on development of Standard Operating Procedures and quality control and quality assurance mechanisms.

- Advice and support on sub-regional dialogues and co-ordinations to facilitate best practices for procurement, network maintenance plans and human capacity development (resource optimization).
- Advice for the generation of private public partnerships and engagement.
- Contribution to final reporting