GEF-8 PROJECT IDENTIFICATION FORM (PIF)

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General Project Information

Project Title	
Fortifying Infrastructure for Responsible Extinguishments (FIRE)	
Region	GEF Project ID
Regional	11110
Country(ies)	Type of Project
Regional Africa Egypt Ethiopia Kenya Nigeria South Africa	FSP
GEF Agency(ies):	GEF Agency ID
UNEP	
Executing Partner	Executing Partner Type
International Civil Aviation Organization (ICAO)	Others
GEF Focal Area (s)	Submission Date
Chemicals and Waste	4/11/2023
Project Sector (CCM Only)	
Taxonomy	
Strengthen institutional capacity and decision-making, Influencing models, Convene multi-stakeholder alliances, Transform policy and regulatory environments, Private Sector, Stakeholders, Large corporations, SMEs, Consultation, Type of Engagement, Participation, Partnership, Information Dissemination, Civil Society, Trade Unions and Workers Unions, Beneficiaries, Communications, Public Campaigns, Behavior change, Awareness Raising, Education, Capacity, Knowledge and Research, Capacity Development, Knowledge Exchange, Learning, Adaptive management, Indicators to measure change, Theory of change, Targeted Research, Knowledge Generation	
Type of Trust Fund	Project Duration (Months)
GET	60
GEF Project Grant: (a)	GEF Project Non-Grant: (b)
10,000,000.00	0.00
Agency Fee(s) Grant: (c)	Agency Fee(s) Non-Grant (d)
900,000.00	0.00
Total GEF Financing: (a+b+c+d)	Total Co-financing

10,900,000.00	45,000,000.00
PPG Amount: (e) 300,000.00	PPG Agency Fee(s): (f) 27,000.00
PPG total amount: (e+f) 327,000.00	Total GEF Resources: (a+b+c+d+e+f) 11,227,000.00
Project Tags CBIT: No NGI: No SGP: No Innovation: No	

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. The explanation and justification of the project should be in section B "project description".(max. 250 words, approximately 1/2 page)

The project will endeavour to phase out and removal of the use of fluorinated firefighting foams at airports in Egypt, Ethiopia, Kenya, Nigeria and South Africa. These foams contain per or polyfluorinated alkyl substances (PFAS) that are listed in either Annex A or B of the Stockholm Convention as well as precursors that transform in the environment into listed chemicals. PFAS are colloquially known as 'forever chemicals' due to their extreme resistance to degradation. Human exposure to PFAS is associated with a number of adverse health impacts including endocrine disruption and certain cancers.

Each year vast quantities of fluorinated foams are released at airports during training exercises and to suppress accidental fires. Alternatives to fluorinated foams have existed for several decades and offer commensurate protection and affordability. Major airports that have adopted fluorine free foams (herein F3) include London Heathrow, Dubai and all airports operating withing Australia. Barriers include a lack of knowledge on procurement and application, an inadequate regulatory environment and a lack of reliability on the quality and consistency of the supply chain.

As part of the project, fluorinated foam inventories and phase out plans will be developed for each of the 5 project countries. Implementation of phaseout plans will be supported in at least 10 airports across 5 countries resulting in a total reduction of 4,118 tonnes of PFAS contaminated material which is approx. 1.4% of the core indicator target (9). Additionally, the project directly benefits to 10,000 people (11); and five LMEs with reduced pollution (5.2). . Knowledge generated as part of project will form the basis of guidance documents that will be formally disseminated. This will be one of the first GEF-supported project in this thematic area.

Indicative Project Overview

Project Objective

Uncontrolled releases of PFAS from airports are eliminated.

Project Components

Component 1: Update Regulatory Framework

Component Type	Trust Fund

Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
1,500,000.00	8,000,000.00

Outcome:

Outcome 1: A regulatory environment conducive to the cessation of procurement and use of fluorinated foams

Output:

Output 1.1: Regulatory review conducted of use and import of firefighting foams

Output 1.2: Model regulation developed and adoption supported

Output 1. 3: Regulator training from import to disposal provided, including Convention reporting

Component 2. Phase out fluorinated foams at airports and support transition to alternatives

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
7,000,000.00	30,000,000.00

Outcome:

Outcome 2: All countries participating in the project are actively phasing out fluorinated firefighting foams at airports

Output:

Output 2.1: Inventories and feasibility studies completed at 10 airports in the 5 countries

Output 2.2: Phaseout plans developed for at least 10 airports in the 5 countries

Output 2.3: Phaseout plans implemented for at least 5 airports

Output 2.4: Promotion of consistent and reliable fluorine free foam supply chains

Output 2.5: Support sustainable procurement at airports

Component 3: Knowledge management

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
825,000.00	3,800,000.00

Outcome:

Outcome 3: Improved and disseminated knowledge on the phasing-out fluorinated firefighting foams at airports

Output:

Output 3.1: Knowledge captured to improve project implementation

Output 3.2: Guidance documents developed in coordination with BRS Secretariat and ICAO

Output 3.3: Lessons learned shared

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
200,000.00	1,000,000.00

Outcome:

Outcome 4: The project is responsive to ongoing monitoring and evaluation

Output:

Output 4.1: Midterm Review and Terminal Evaluation

Output 4.2: Annual Steering Committee Meetings

Output 4.3: Quarterly Expenditure and Progress Reports to IA

Component Balances

Project Components	GEF Project Financing ($)	Co-financing ($)
Component 1: Update Regulatory Framework	1,500,000.00	8,000,000.00
Component 2. Phase out fluorinated foams at airports and support transition to alternatives	7,000,000.00	30,000,000.00
Component 3: Knowledge management	825,000.00	3,800,000.00
M&E	200,000.00	1,000,000.00
Subtotal	**9,525,000.00**	**42,800,000.00**
Project Management Cost	475,000.00	2,200,000.00

Total Project Cost ($)	**10,000,000.00**	**45,000,000.00**

Please provide justification

Not applicable

PROJECT OUTLINE

A. PROJECT RATIONALE

Briefly describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

Future Scenarios

The project proposes to phase out the use of fluorinated firefighting foams at airports in the target countries. In the absence of the project, the use of these foams is unlikely to be abated in the medium term. Large uncontrolled releases of PFAS contaminated material have occurred during training and actual accidents at airports for most of their history, resulting in the accumulation of 'forever chemicals' in local environments. These chemicals, which are toxic to humans and the natural environment, are exceedingly difficult and expensive to remediate once released. Airports are among the largest users and emitters of fluorinated chemicals.

Even high-income countries have been slow to transition away from fluorinated foams, despite the existence of alternatives with commensurate cost and effectiveness. Airports in LMICs have not yet shown an indication of progress toward a phaseout, owing to certain barriers described in detail below. This specific project has been designed to address these barriers and to produce replicable models that could be employed in non-project countries, including guidance, model legislation and cost-benefit analyses. The UNEP GEF Chemicals and Waste unit has extensive experience implementing similar projects on other persistent organic pollutants and a close working relationship with the BRS Secretariat, housed at UNEP.

Background

Fluorinated class B foams (i.e. foams containing fluorine) are the most commonly employed extinguishment method for liquid hydrocarbon fires. These include aqueous film forming foams (AFFF), fluoroprotein foams (FP) and film forming fluoroprotein foams (FFFP). These foams are distributed and added to water as a 3–6 % concentrate. When ejected from a nozzle under pressure the water-concentrate mixture expands in volume, spreading out evenly across the hydrocarbon fuel. This action creates a thermal and evaporating layer that cools the fire, removes its supply of oxygen and controls vapours.[1]1

Fluorinated class B foams contain surfactants; substances that reduce the surface tension of water and allow it to form an unbroken barrier over the fuel. In fluorinated foams the surfactants used are part of a group of chemicals known as per and polyfluoroalkyl substances (PFAS). PFAS include thousands of chemicals with wide application – from use as a water repellent in clothing to as a non-stick coating on cookware – that were first developed by the 3M Company in 1949.[2]2 The vast majority of PFAS are extremely persistent in the environment and exposure to many PFAS has been associated with adverse health outcomes in humans.

Several PFAS have been listed in Annexes A and B to the Stockholm Convention, including: perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF) (Annex B); perfluorooctanoic acid (PFOA), its salts, and PFOA-related compounds (Annex A), and perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds (Annex A). PFOA and PFOS are listed with

time-limited (5 years, unless extended) specific exemptions for the use of those chemicals for fire-fighting foam for liquid fuel vapour suppression and liquid fuel fires (Class B fires) in installed systems, including both mobile and fixed systems, in accordance with relevant parts of Annex A and Annex B to the Convention, respectively. For most of the Parties to the Stockholm Convention, the five-year specific exemption will not be available as of 3 December 2025. No new production of those chemicals is allowed for the use in fire-fighting foam.

Note that according to the relevant parts of Annex A and B to the Convention, fire-fighting foams that may contain PFOA or PFOS shall not be exported or imported except for the purpose of environmentally sound disposal. Use of fire-fighting foams that may contain PFOA or PFOS for training purpose is prohibited. Use for testing is also prohibited unless all releases are contained. Furthermore, by the end of 2022, if the Party has the capacity to do so, restrict uses of fire-fighting foam that contains or may contain PFOA or PFOS to sites where all releases can be contained.

PFHxS is listed with no specific exemptions, which means that it is not allowed to produce or use the chemical for any purposes including for fire-fighting foam.

Stockpiles and wastes that contain or may contain PFOS, PFOA or PFHxS must be managed in an environmentally sound manner in accordance with Article 6 of the Stockholm Convention and the technical guidelines developed under the Basel Convention.[3][3]

Fate, Transport and Human Exposure

PFAS are colloquially known as 'forever chemicals;' they are highly stable in the environment and resistant to biodegradation, photo-oxidation, direct photolysis, and hydrolysis.[4][4] They have low volatility, are soluble in water and have limited sorption to particles.[5][5] They therefore present a groundwater contamination risk when released in the environment. PFAS are amenable to global transport and have been found in remote areas of the world.[6][6] For these reasons, PFAS have been described as posing 'one of the most seminal public health challenge[s] for the next decades' by the Director of the US CDC's National Centre for Environmental Health, Patrick Breysse.[7][7]

Epidemiological studies have identified associations (not causality) between very low levels of PFAS exposure and a number of adverse health outcomes in humans, including those that affect women and children such as pregnancy induced hypertension/ preeclampsia and small decreases in birth weight. Other adverse health outcomes associated with very low levels of PFAS exposure include increases in total cholesterol and low-density lipoprotein (LDL) cholesterol, increased risk of thyroid disease, decreased antibody response to vaccines, decreased fertility, and various cancers. Animal studies have identified neurotoxicological effects and skeletal malformations in addition to numerous other adverse outcomes related to exposure.[8][8]

Environmental assessments of PFAS near airports and industrial estates in Australia, China, Europe and the US have consistently shown drinking water levels above concentrations thought to be safe for

humans.[9]9 Studies in other parts of the world are more limited. The United States has carried out extensive population-based measurements of PFAS exposure showing that nearly all Americans have detectible amounts of PFAS in their body with trends indicating decreased exposure as many PFAS have been phased out.[10]10 Worker populations are severely exposed. A 2015 study of Australian fire fighters found that those with more than 10 years' experience (meaning they were occupationally exposed before the phase out there) had serum perfluorooctane sulfonate (PFOS) levels an order of magnitude greater than the general population, while those with < 10 years' experience (meaning no occupational exposure) had serum levels comparable with the general population.[11]11

Alternatives to Fluorinated class B foams

F3 Foams

Fluorine free foams (F3 or 3F) were initially developed also by the 3M Company following their May 2000 withdrawal from the PFOS market. The foams operate under the same principle as fluorinated class B foams however use proprietary hydrocarbon surfactants in place of fluorinated surfactants. There are currently more than a dozen F3 products offered by 8 different companies.[12]12

F3 foams have not been shown to bioaccumulate and are not persistent in the environment. Australia has outpaced the rest of the world in adopting F3 foams with all 27 major airports having converted. Other major hubs that have converted included Dubai, Paris, Copenhagen, Oslo, Stockholm, London Heathrow and Stuttgart, among others. Major chemicals and oil companies that have converted include 3M and ExxonMobil.[13]13 However the vast majority of airports and oil companies continue to use fluorinated foams.

Where F3 foams have been adopted it has almost exclusively been for use in emergency vehicles (i.e. fire trucks). Fixed infrastructure like hangars generally continue to use AFFF, owing to issues related to liability insurance and the significant costs of overhauling these systems. Vehicles by contrast can be individually changed out in a matter of hours, following flushing and calibrations of systems.

Barriers to be addressed

The ongoing use of fluorinated class B foams is the result of momentum from decades of practice. Meaningfully shifting that momentum to more sustainable alternatives will require the enumeration of key barriers to be addressed. The barriers below have been identified as part of the PIF and will be expanded upon during the PPG:

- *Lack of procurement knowledge;*

The most significant barrier is a lack of market penetration by F3 suppliers. Airport procurement officers are unfamiliar with alternatives to fluorinated foams. The majority of class B foam manufacturers and distributors do not offer F3 lines. The minority that does are mostly headquartered in either Australia, Europe or the US. Only one manufacturer (Freedol-SF) has an office in Africa, for instance (in Morocco). There will likely be resistance resulting from the suspicion of a 'regret spend' in the case of substitutions.

There is a need to assess the extent to which procurement officers are aware of F3 product lines and cost comparability and build capacity to make informed procurement decisions.

- *Lack of local technical expertise;*

F3 foams are not a 'drop-in' replacement for AFFF. Adjustments are required both in the mechanics of the system (to account for higher viscosity and other material considerations) and in the application of the foams to achieve comparable effectiveness. Systems converted to F3 will need to have fluorinated residues removed. It is also possible that F3 foams may not be applicable in all cases. The technical expertise required to adequately address these considerations is limited in the target countries thereby discouraging any action.

- *Adulterated supply chains;*

Fluorinated foam products suffer from extensive product adulteration. This primarily relates to the illicit addition of long-chain PFAS in products labelled short-chain for the purpose of improving effectiveness. There is an obvious risk that a procurement shift to F3 foams would encourage the adulteration or mislabelling of these products. Because many fluorinated surfactants are proprietary, more complex analytical methods such as the total oxidizable precursor (TOP) assay are required to assess whether concentrates contain PFAS. Mechanisms to protect against the procurement and application of fluorinated foams will need to be developed and instituted.

- *Unclear regulatory environment;*

None of the countries covered by the project have fire codes that directly address the use of PFAS in firefighting foams. As such they both offer no incentive to airports to transition away from fluorinated foams and provide no assurance against possible 'regret spending,' i.e. installing a system that may not ultimately be regulatory compliant. There is a need to make these codes consistent with the state of the science and the relevant provisions of the Stockholm Convention.

- *Existing stocks.*

Airports have already made significant capital outlays to purchase fluorinated foam stocks. Disposing of these stocks is not a recommended approach and appropriate facilities for doing so on the continent are limited. This presents a challenge in transitioning to F3 foams in the short term. Plans need to take into account a medium-term transition that fully utilizes existing stocks in line with the requirements of the Stockholm Convention (e.g. notification of continued use; implementation of best available techniques and best environment practices [BAT/BEP]) while ensuring adequate systems are in place to sustainably transition to F3 foams for the long term.

<u>Extent of contamination</u>

Few studies have been carried out in the target countries on the extent of class B fluorinated foam usage and attributable PFAS contamination. Those that have been conducted have consistently identified elevated concentrations of various PFAS in the environment and humans. The Second Regional Monitoring Report (2015) of the Global Monitoring Plan analysed for PFOS in air, breast milk and water in 11 different African countries. Samples from all 11 had detectable levels of PFOS in breast milk, with samples from Nigeria, Cote d'Ivoire and Togo presenting the highest levels (all three were above > 0.025

ng/L). PFOS water concentrations were assessed in only 5 of the 11 countries. Each of the 5 had detectible concentrations with Nigeria presenting the highest levels (1,390 pg/L). As context the recent USEPA recently revised its recommended level of lifetime exposure to 0.02 pg/L (equivalent to 0.02 ppt or 0.0002 ng/L).[14][14] PFOS air samples were only collected in Nairobi and Bamako, with both sites reporting elevated levels.[15][15]

The Third Regional report (2021) provided substantially more PFOS air monitoring data, reporting on 32 sites across 12 African countries. Twelve sites in 8 countries (of 32 sites total) reported detectable levels of PFOS in air. Mean concentrations of PFOS in ambient air for the period 2017–2019 ranged from 30.15–163,929.37 pg/m3, including values of 3,008.64 pg/m^3 in Cairo and 444.44 pg/m^3 in Abuja. The report also provides data for the first time on PFOA, PFOS and PFHxS. Detectable levels of PFOA (16.90 pg/m^3), and PFHxS (2.96 pg/m^3) were found in ambient air in Kenya. Data on other countries was not available.

Elevated levels of PFOA and PFOS in breastmilk were found in all 14 countries surveyed including levels of 9,114 pg/L in Ethiopia, 10,416 pg/L in Nigeria, and 3,100 pg/L in Kenya. All PFHxS concentrations were below the limit of detection. PFOS in water concentration were reported for various dates in between 2013–2019 and ranged from 35.00-1,919 pg/L. PFHxS in water results were reported for 20 sites in 10 countries, with all finding elevated concentrations.[16][16]

A relatively small number of peer-reviewed research has been published in the subject area. Hanssen, et al (2010) found elevated PFAS levels in the serum and cord blood of South African women.[17][17] Groffen, et al. (2018) evaluated concentrations of 15 different PFAS in various aquatic biota and water also in South Africa, finding extensive low-level contamination of multiple PFAS with PFOS presenting the most elevated levels.[18][18] Studies, including 2019 report by the NGO IPEN, report PFAS in food and household dust in Egypt.[19][19]

The Stockholm Convention

All project countries are Parties to the Stockholm Convention and are accordingly obligated to comply with its provisions. Of the nearly 5,000 PFAS that exist, a limited number of subgroups are currently listed by the Stockholm Convention. Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF) have been listed in Annex B to the Convention since 2009 and amended in 2019. Annex B provides a list of acceptable purposes and time-limited specific exemptions – either because no technically feasible alternative exists or because such an alternative would need to be phased in. According to the 2019 amendment, only acceptable purpose available is for insect baits with sulfluramid (CAS No. 4151-50-2) as an active ingredient for control of leaf-cutting ants, and two specific exemptions available are for metal plating (hard-metal plating) only in closed-loop systems and for fire-fighting foam for liquid fuel vapour suppression and liquid fuel fires (Class B fires) in installed systems, including both mobile and fixed systems, in accordance with paragraph 10 of part III of Annex B.

Perfluorooctanoic acid (PFOA), its salts, and PFOA-related compounds were listed in Annex A to the Convention in 2019, as were perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds in 2022. Chemicals listed in Annex A are intended to be eliminated from production and use.

Of the chemicals listed in the Convention, PFOS and PFHxS have both been widely used in firefighting foams. PFOA has never been deliberately added to these foams though occurs as an impurity.[20]20 There is a time-limited specific exemption for the use but not production of PFOS for firefighting foams.

The POPs Review Committee is currently reviewing long-chain perfluorocarboxylic acids (LC-PFCAs), their salts and related compounds proposed for listing in Annexes A, B and/or C to the Stockholm Convention.

Key Stakeholders

Airport Authorities and Operators – The management of airports is typically conducted either directly by a government agency or by a private sector actor operating on concession to the government. In the countries covered by the project, the larger international airports tend to be in the latter category while smaller regional airports tend to be in the former. These authorities will be the organizations most directly responsible for meeting regulatory requirements and making budgetary decisions. Thus, their active participation in the PPG phase and project is critical. In cases where airport operators are engaged in one or more airport or country they may be engaged in sharing lessons learned. This is the case with Swissport for instance, which operates airports in both South Africa and Kenya.

Basel and Stockholm Convention Regional Centres – Work should be coordinated with the Regional Centres as well to improve execution of the project and share lessons learnt.

Basel, Rotterdam, Stockholm Convention Secretariat – Work should be coordinated with the BRS Secretariat to assure compliance, coordinated in guidance development, improve execution of the project and share lessons learnt.

Expert agencies from other countries- Agencies such as Australian Defence Department and Australian Ministry of Environment having experience in phasing out of PFAS from airports/defence systems will share their experience and knowledge during the implementation of project.

Firefighters – Firefighters will manage all physical aspects of the phaseout, including the removal of fluorinated foams, the cleaning of equipment and the installation and calibration of any new equipment. Firefighters will need to be convinced of the commensurate protection offered by F3 foams and their direct benefits to worker health. They will also require extensive training in application to ensure safety.

Foam Producers – Foam producers will need to provide adequate and consistent supply of F3 foams to project countries. Chemical and physical proprieties of different foams and their influence on fire suppression systems should be shared with vendors and firefighters.

ICAO – The International Civil Aviation Organization develops and maintains minimum standards for foams at use on all countries covered by the project.

NGOs – The NGO IPEN, for instance, has authored several reports on the use of PFAS in firefighting foams and on the extent of PFAS contamination.

Other UN agencies – Lessons learnt should be shared with other UN agencies that have engaged in similar work or that plan to engage in similar work.

Regulatory authorities – Regulatory agencies include Ministries of Transport who directly oversee airports as well as Ministries of Environment who are those most directly responsible for meeting Convention obligations and monitoring runoff and other emissions from airports.

Research Institutes and Laboratories – for verification that threshold levels have been achieved after cleaning.

UNEP Sustainable Public Procurement – Unit with extensive experience in procurement. Should be engaged during PPG to assisting in designing relevant activities.

Waste Managers – To be engaged for the destruction of AFFF concentrates in a manner consistent with Stockholm Convention

Vendors – F3 foams are not yet widely available on the marketplace. The project will foment the development of a market through meeting both the needs of airports and vendors – ensuring adequate demand and supply.

Regulatory Context

PFAS regulation is nascent in most countries. Of the thousands of PFAS, only PFOS and PFOA have attracted broad regulatory attention. There are efforts in the European Union, some US states, and other high-income countries to better control or restrict other PFAS, such as PFHxS and some PFCAs, including for use in firefighting foams. However, in the countries covered the project no specific legal mechanism has been identified that addresses fluorinated foams, including with regard to public procurement of firefighting foams, despite all being signatories to the Stockholm Convention.

All countries covered by the project are members of the International Civil Aviation Organization (ICAO) established at the Chicago Conference in 1944. The ICAO Airport Services Manual (Doc9137) provides the specifications for chemical agents used in fire suppression, including fluorine free foams. With few exceptions countries do not typically develop individual specification for these agents, rathe their regulations simply refer to the ICAO standards. In Nigeria for example, subsection 12.6.16.6 **'**Extinguishing Agents and Aircraft Fire-Fighting Vehicles' of Part 12 (Aerodrome Regulations) of the Nigerian Civil Aviation Regulations notes that 'extinguishing agents and […] equipment […] meet the requirements detailed in […] the Aerodrome Standards Manual.' The manual in turn summarizes some of those requirements but refers users to the ICAO Airport Services Manual (Doc9137) for detailed guidance.

[1] Ronald S Sheinson and others, 'The Future of Aqueous Film Forming Foam (AFFF): Performance Parameters and Requirements'.

[2] Alexander G Paul, Kevin C Jones and Andrew J Sweetman, 'A First Global Production, Emission, and Environmental Inventory for Perfluorooctane Sulfonate' (2009) 43 Environmental Science and Technology 386.

[3] http://www.basel.int/Portals/4/download.aspx?d=UNEP-CHW-WAST-GUID-ESM-PFOS-2018.English.pdf.

[4] Sarah Gibbens, 'What Is PFAS, the Dangerous "Forever Chemical" Found in Drinking Water?' [2019] *National Geographic* <https://www.nationalgeographic.com/science/2020/01/pfas-contamination-safe-drinking-water-study/> accessed 29 November 2020.

[5] Paul, Jones and Sweetman (n 3).

[6] ATSDR, 'Toxicological Profile for Per- and Polyfluoroalkyl Substances: Draft for Public Comment' 852.

[7] The Guardian, 'Toxic Firefighting Chemicals "the Most Seminal Public Health Challenge" | Toxic Firefighting Chemicals | The Guardian' <https://www.theguardian.com/australia-news/2017/oct/18/toxic-firefighting-chemicals-the-most-seminal-public-health-challenge> accessed 29 November 2020.

[8] ATSDR (n 7).

[9] Xindi C Hu and others, 'Detection of Poly-and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants' <https://pubs.acs.org/sharingguidelines> accessed 29 November 2020; Marko Filipovic and others, 'Historical Usage of Aqueous Film Forming Foam: A Case Study of the Widespread Distribution of Perfluoroalkyl Acids from a Military Airport to Groundwater, Lakes, Soils and Fish'

(2015) 129 Chemosphere 39; Zhaoyang Liu and others, 'Pollution Pathways and Release Estimation of Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) in Central and Eastern China' (2017) 580 Science of the Total Environment 1247.

[10] ATSDR (n 7).

[11] Anna Rotander and others, 'Elevated Levels of PFOS and PFHxS in Firefighters Exposed to Aqueous Film Forming Foam (AFFF)' (2015) 82 Environment International 28.

[12] M Allcorn and others, 'FLUORINE-FREE FIREFIGHTING FOAMS (3F) VIABLE ALTERNATIVES TO FLUORINATED AQUEOUS FILM-FORMING FOAMS (AFFF) Independent Expert Panel Convened by IPEN Stockholm Convention POPRC-14 Rome' (2018) <www.ipen.org> accessed 29 November 2020; UNEP, 'Technical Paper on the Identification and Assessment of Alternatives to the Use of Perfluorooctane Sulfonic Acid, Its Salts, Perfluorooctane Sulfonyl Fluoride and Their Related Chemicals in Open Applications' <http://chm.pops.int/Implementation/PFOS/Guidance/tabid/5225/Default.aspx> accessed 15 March 2023.

[13] Allcorn and others (n 13).

[14] Cheryl Hogue, 'EPA Sets Health Advisory Levels for 6 PFAS' (2022) 100 Chemical & Engineering News 13 <https://pubs.acs.org/doi/full/10.1021/cen-10022-polcon2> accessed 17 October 2022.

[15] UNEP, 'Global Monitoring Plan: Second Regional Monitoring Report, Africa' <http://chm.pops.int/portals/0/download.aspx?d=UNEP-POPS-GMP-RMR-AFRICA-2015.English.pdf>.

[16] Stockholm Convention, 'Third Regional Monitoring Report: Africa Region' (2021) <http://chm.pops.int/implementation/globalmonitoringplan/monitoringreports/tabid/525/default.aspx>.

[17] Linda Hanssen and others, 'Perfluorinated Compounds in Maternal Serum and Cord Blood from Selected Areas of South Africa: Results of a Pilot Study' (2010) 12 Journal of Environmental Monitoring 1355 <https://pubs.rsc.org/en/content/articlehtml/2010/em/b924420d> accessed 1 April 2021.

[18] Thimo Groffen and others, 'Distribution of Perfluorinated Compounds (PFASs) in the Aquatic Environment of the Industrially Polluted Vaal River, South Africa' (2018) 627 Science of the Total Environment 1334.

[19] IPEN, 'Egypt PFAS Situation Report EcoVision Society for Environment and Sustainable Development'.

[20] Eurofeu, 'Firefighting Foam Is Needed to Fight Flammable Liquid Fires in High Risk Applications', *UN Stockholm Convention POPRC14* (2018).

B. PROJECT DESCRIPTION

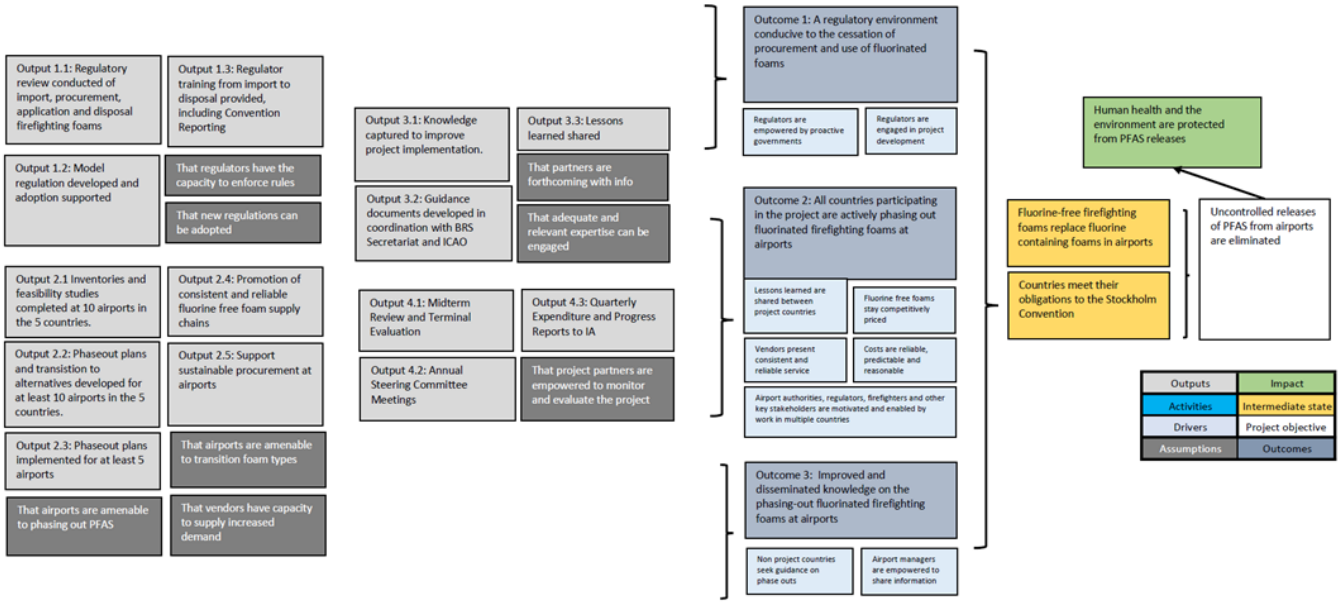
Project description

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the PIF guidance document. (Approximately 3-5 pages) see guidance here

Theory of Change

The overall objective of the project eliminate uncontrolled releases of PFAS from airports in Egypt, Ethiopia, Kenya, Nigeria, and South Africa. These five countries are among the most heavily air trafficked on the continent and are all Parties to the Stockholm Convention. The elimination of uncontrolled PFAS releases will be achieved by phasing out the use and subsequent release of fluorinated Class B firefighting foams at airports in the target countries and supporting in transitioning to alternatives. These foams remain in wide usage owing to the following barriers identified in the baseline: Lack of procurement knowledge; Lack of local technical expertise; Adulterated supply chains; Unclear regulatory environment; and Existing stocks.

The project will address each of the barriers is designed around four mutually reinforcing Components and associated Outputs. These relative roles of these in the context of the project are set out below in the Theory of Change.



Alternative Scenario

This section provides a brief narrative explanation of the individual Components and Outputs. Each output is followed by an indicative list of activities which will be refined during the PPG. The barriers and project description are based on consultation with technical experts, firefighters and country governments. Experiences from phaseout efforts in the Artic, Australia, the UK and Trinidad and Tobago have formed the basis of the approach. During the PPG a Gender Analysis and Gender Action Plan will be developed in a manner consistent with the GEF Policy on Gender Equality.

Component 1. Update regulatory framework

Existing regulatory frameworks may not adequately incentivize the use of fluorine free foams or ensure the reliability of the supply chain. There is a need to review and modify relevant regulations and support their implementation. As part of this Component, regulations governing the import, procurement, application and disposal of firefighting foams will be reviewed to assess their compliance with the Convention. Where necessary, modifications will be developed and proposed in accordance with BAT and BEP. Their adoption by relevant authorities supported. Implementation of the revised regulation will be supported through a series of training workshops for men and women designed to familiarise regulators with key PFAS concepts, including adequate monitoring of the firefighting foam supply chain to identify adulteration. Adoption of new regulations within the timeframe of the project may not be achievable. As such this Component will layout the mechanism for adoption after the project's conclusion. Enforcement of the proposed regulations will be supported through trainings of airport authorities, customs agents, firefighters, regulators and waste managers. Training will also assist the countries with Stockholm Convention reporting obligations.

Output 1.1: Regulatory review conducted of import, procurement, application and disposal of firefighting foams

- Collate relevant regulations from project countries and countries where phaseouts have already been carried out;
- Carry out comparative evaluation of regulations;

- Consult stakeholders, including interviews with regulators in project countries and countries where phaseouts have already been carried out;
- Draft summary report covering results of the regulatory review.

Output 1.2: Model regulation developed and adoption supported

- Draft model regulation based on the results of the regulatory review;
- Consult stakeholders for feedback on the model regulation and adapt accordingly;
- Facilitate/support adoption of model regulation through meetings with key stakeholders.

Output 1.3: Regulator training from import to disposal provided, including Convention reporting

- Develop training materials for in person and online workshops to cover relevant aspects from import to disposal;
- Consult stakeholders for feedback training materials and adapt accordingly;
- Carry out training workshops in-person and online over the course of the project.

Component 2. Phase out fluorinated foams at airports and support transition to alternatives

This component will include an inventory of firefighting practices at each airport and a detailed baseline of Aqueous Film Forming Foam (AFFF) stockpiles and their application. The feasibility of introducing F3 will be assessed, including its ability to function within local regulatory and operational contexts, and mid-term phaseout plans of AFFF will be developed at all 10 airports. The initial list of 10 airports will be winnowed down to 5 where technical support will be provided to support the phaseout. Finally, support will be provided to promote the supply and procurement of F3 foams. Criteria for the selection of airports will be developed during the PPG with input from country governments.

Phaseout plans will be bespoke in nature and based on the findings of feasibility studies. In some cases, AFFF foams and residual wastes will be collected and destroyed in an environmentally sound manner consistent with the Stockholm and Basel Conventions. Elsewhere, AFFF concentrates will be resold to airports within the same country without midterm phaseout plans in lieu of their importing additional AFFF concentrates. Information generated by the project will be shared with these receiving airports to facilitate their own phaseouts. Finally certain AFFF systems – such as fixed infrastructure in hangars – may remain in place for the medium term following the Stockholm Convention provisions.

The particulars of application differ between AFFF and F3. For instance, F3 tends to be more viscous, having a jelly like texture, particularly before it is mixed with water. Training will therefore be robust and account for these differences to ensure the safety of firefighters, flight crews and passengers. Necessary system modifications will be identified jointly with firefighters, who will act as a key project stakeholder.

Many Class B foam vendors do not sell fluorine free foams. Those that do may inadvertently distribute adulterated products containing fluorinated additives. Procurement officers therefore require training to identify reliable fluorine free foam suppliers. Vendors need to be connected with F3 producers as well as with airports making a long-term commitment to procurement. Procurement decisions need to be informed to prevent ‘regret spends.’ Outputs 2.4 and 2.5 will therefore support vendors, F3 producers and procurement officers in the transition to F3 foams. Market surveys will be conducted, as will bespoke cost-benefit analyses. Regional trade shows will be organized or supported to facilitate the growth of this

nascent market. Trainings will be held to assist both male and female procurement officers and vendors better understand F3 foams and their application. Gender mainstreaming will be ensured through implementation of the Gender Action Plan.

Output 2.1: Inventories and feasibility studies completed at 10 airports in the 5 countries.

- Develop inventory protocol in consultation with experts;
- Visit airports and carry out inventories including quantification of AFFF stocks and cataloguing existing practices from procurement to disposal, among other factors;
- Based on the results of the inventories, assess the feasibility of transitioning to 3F foams at each airport.

Output 2.2: Phaseout plans and transition to alternatives developed for at least 10 airports the 5 countries.

- Collate and review best practices and lessons learned from airports that have already carried out phaseouts;
- Based on the results of the inventory and best practices review, develop bespoke phaseout plans for the 10 airports jointly with airport authorities;

Output 2.3: Phaseout plans implemented for at least 5 airports

- Work with procurement officers to identify and procure appropriate 3F foams;
- Train firefighters in the safe application of 3F;
- Transition target airport to 3F including drainage and cleaning equipment, assessment and mitigation of residual PFAS, and ensuring adequate function of new system;
- Move stocks of AFFF concentrates off site either for destruction or resale to airports without midterm phaseout plans;
- Complete other measures identified as part of phase out plans.

Output 2.4: Promotion of consistent and reliable fluorine free foam supply chains

- Conduct surveys to assess the availability of F3 on the regional market;
- Support regional trade shows to facilitate market growth of F3;
- Support vendors to identify reliable fluorine free manufacturers;
- Jointly with regulators, conduct spot checks to ensure adulterant free supply chains.

Output 2.5: Support provided for sustainable procurement at airports

- Conduct analysis of costs and benefits associated with transitioning to 3F at airports;
- Train procurement officers in the operational distinctions between 3F and AFFF to ensure appropriate concentrates are procured;
- Facilitate relationships between procurement officers and trusted 3F vendors.

Component 3: Knowledge management

The Knowledge Management Approach for the project will be closely linked to the monitoring and evaluation function and coordinated by the EA. Knowledge management is an important function because this project will be one of the first major efforts in this thematic area. Thus, lessons learned during implementation will be documented and inform future project phases. In doing so, Knowledge Management will contribute to the overall impact and sustainability of project. It is therefore essential that adequate budget be allocated to sharing the gained knowledge and the lessons learned with other relevant stakeholders.

These will be propagated at international academic and trade group conferences. Target constituencies include airport owners and operators, firefighters and the chemical industry among others. The outcomes will provide the required information to the Stockholm Convention Secretariat to assess the need of continued use of PFAS in fire-fighting foams. To ensure adequate processes to capture and distribute key information, a Knowledge Management expert will be engaged by the EA.

Output 3.1: Knowledge captured to improve project implementation.

- Generate communications and knowledge management plan entailing targeted outreach to stakeholders;
- Aggregate lessons learned from previous efforts in a manner amenable to use in the current project;
- Develop processes to capture, assess and document information, lessons learned, best practices and expertise generated during implementation;
- Assess adherence to Gender Action Plan and report findings to PMU.

Output 3.2: Guidance documents developed in coordination with the BRS Secretariat and ICAO

- Assess needs of stakeholders with regard to available guidance and develop list of documents to be developed. Potential documents may include: BAT/BEP on firefighting foams at airports, guidance for procurement officers, instructions for assessment of residual PFAS in foams and equipment, ICAO handbook on phaseouts and a cost benefit analysis;
- Document lessons learned during the development and implementation of phaseouts;
- Amend guidance documents as necessary for use in non-project countries;
- Share guidance documents with stakeholders and adapt based on feedback.

Output 3.3: Lessons learned shared

- Share lessons learned and guidance development through UNEP and ICAO networks;
- Develop project webpage on appropriate platform such as ICAO website for sharing of guidance documents and lessons learned;
- Hold technical workshop in year 4 for non-project countries;
- Promote guidance documents and lessons learned at international academic and trade group conferences.

Component 4: Monitoring and Evaluation

Output 4.1: Midterm Review and Terminal Evaluation

- Following guidance set out by the UNEP Evaluation Office.

Output 4.2: Annual Steering Committee Meetings

- Carried out using a participatory approach whereby parties that may benefit or be affected by the project will be consulted.

Output 4.3: Quarterly Expenditure and Progress Reports to IA

- Ongoing communication between UNEP and the Executing Agency following UNEP reporting templates.

Global Environmental Benefits

Several fluorinated chemicals used in AFFF are covered by the Stockholm Convention. These include: perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF) in Annex B; perfluorooctanoic acid (PFOA), its salts, and PFOA-related compounds; and perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds. In addition, the POPs Review Committee is currently reviewing Long-chain perfluorocarboxylic acids (LC-PFCAs), their salts and related compounds proposed for listing in Annexes A, B and/or C to the Stockholm Convention.

Foams are deliberately released into the environment during training and in the case of actual accidents. Estimated global demand for fluorinated Class B foams in 2019 was 13,606 metric tonnes. There was no indication of how these quantities were distributed regionally. PFAS will typically only comprise a fraction (conservatively ~2 %) of concentrates. Thus the 13,606 metric tonnes of demand may only contain ~272 tonnes of PFAS. Importantly, foams are sold as a concentrate and later combined with water under pressure at 3–6 % of the total therefore resulting in vastly more PFAS containing substance; for every 13,606 tonnes of concentrate used, perhaps 453,000 tonnes of contaminated material are ultimately released.

The project will eliminate the release of PFAS and PFAS contaminated material into the environment from fire trucks at targeted airports.

Coordination and Cooperation with Ongoing Initiatives and Project.

Does the GEF Agency expect to play an execution role on this project?

If so, please describe that role here. Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing

Associated Baseline Projects

Applications of Industry-urban Symbiosis and Green Chemistry for Low Emission and Persistent Organic Pollutants (POPs)-Free Industrial Development in Thailand – Executing agency: UNIDO, Project ID: 9219, GEF 6. The project involves work related to fluorinated foams and inventories at airports.

Strengthening national capacity to manage industrial POPs within the framework of national and international guidelines on chemical substances and hazardous waste management – Executing Agency: UNDP, Project ID: 10202, GEF 7. The project involves the phaseout of fluorinated foams at airports in Colombia.

Mediterranean Sea Programme (MedProgramme): Enhancing Environmental Security – UNEP, Project ID: 9607, GEF 6 – The project involves the phaseout of fluorinated foams at airports in the Mediterranean region.

AFFF (Aqueous Film Forming Foam) and Other PFAS Containing Foam Phaseout in the Artic – Artic Council; Finnish Environment Institute (SYKE) and U.S. Environmental Protection Agency. The project involves three phases, including inventory, pilots phaseouts and guidelines development.

-

Core Indicators

Indicator 5 Area of marine habitat under improved practices to benefit biodiversity (excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 5.1 Fisheries under third-party certification incorporating biodiversity considerations

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Type/name of the third-party certification

Indicator 5.2 Large Marine Ecosystems with reduced pollution and hypoxia

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
5	0	0	0

LME at PIF	LME at CEO Endorsement	LME at MTR	LME at TE
Guinea Current Benguela Current Agulhas Current Somali coastal current Mediterranean Sea			

Indicator 5.3 Marine OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)

Indicator 9 Chemicals of global concern and their waste reduced

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
50.00	0.00	0.00	0.00

Indicator 9.1 Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (POPs type)

POPs type	Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride	50.00			

Indicator 9.2 Quantity of mercury reduced (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.3 Hydrochloroflurocarbons (HCFC) Reduced/Phased out (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.4 Number of countries with legislation and policy implemented to control chemicals and waste (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
5			

Indicator 9.5 Number of low-chemical/non-chemical systems implemented, particularly in food production, manufacturing and cities (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.6 POPs/Mercury containing materials and products directly avoided

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
4,068.00			

Indicator 9.7 Highly Hazardous Pesticides eliminated

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.8 Avoided residual plastic waste

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	5,000			
Male	5,000			

Total	**10,000**	**0**	0	**0**

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

Annual global use was assumed to be equivalent with the annual demand (13,606 tonnes). Further it was conservatively assumed that civilian airports account for 75 % of this demand. National concentrate use at airports was assumed to be proportionate with airport passenger volume. Civilian airport demand (10,304 tonnes concentrate; 75 % of 13,606 tonnes) was multiplied by the percentage of air passenger traffic in each country to determine its annual use in tonnes. For example, South Africa which comprises ~0.6 % of air passenger travel in the world was assumed to use an equivalent amount of foam concentrate, or 59 tonnes (~0.6 % of 10,204).

The proposed project will result in the removal of fluorinated Class B foam by 10 % in year 2, 25 % in year 3, 40 % in year 4, and 60 % in year 5. In total emissions of 4,068 tonnes of PFAS contaminated material would be removed ().

In addition, at least 50 tonnes of PFAS containing AFFF concentrate will be destroyed in an environmentally sound manner as part of the project.

At least 10,000 people (50 % female) will directly benefit from reduced use of PFAS containing AFFF, representing a conservative estimate of staff in regular contact with ambient environments at airports (11).

Five LMEs (Guinea Current, Benguela Current, Agulhas Current, Somali Coastal Current, Mediterranean Sea) will have reduced pollution as a result of the project (5.2).

Risks to Project Preparation and Implementation

Summarize risks that might affect the project preparation and implementation phases and what are the mitigation strategies the project preparation process will undertake to address these (e.g. what alternatives may be considered during project preparation- such as in terms of consultations, role and choice of counterparts, delivery mechanisms, locations in country, flexible design elements, etc.). Identify any of the risks listed below that would call in question the viability of the project during its implementation. Please describe any possible mitigation measures needed. (The risks associated with project design and Theory of Change should be described in the “Project description” section above). The risk rating should reflect the overall risk to project outcomes considering the country setting and ambition of the project. The rating scale is: High, Substantial, Moderate, Low.

Risk Categories	Rating	Comments
Climate	Low	Increased weather volatility could impact airport operations, including having an adverse impact on profits. This could in turn affect airports’ interest in financing a conversion. The risk is low and will be mitigated by incentivizing transition through regulatory changes and financing incremental costs. Increased sea level rise could affect wastewater

		management infrastructure, particularly at airports in coastal environments. This is a moderate risk rating. Wastewater management plans will therefore contemplate the effects of climate change.
Environment and Social	Low	F3 foams have a smaller ecological impact than AFFF. Both F3 and AFF have comparable effects on COD and BOD. Phase out plans will need to assess current water runoff management and recommend adjustments as required.
Political and Governance	Low	Changes in leadership could affect the prioritization of the project. All countries are signatories to the Stockholm Convention and commitments will be sought during the PPG prior to implementation.
Macro-economic	Low	Supply chain issues and market forces make the costs of 3F foams less competitive. Larger price fluctuations are likely to resolve within the timeframe of the project and phaseouts can be planned accordingly. Increased production and demand in response to SC phaseouts will likely result in decreased prices across the supply chain.
Strategies and Policies	Low	Regulations are not adopted during the lifetime of the project, thus limiting the incentive of airports to transition. All countries are signatories to the Convention and commitments will be sought during the PPG prior to implementation.
Technical design of project or program	Moderate	The project does not adequately assess the barriers to phasing out AFFF. Experts will be engaged during the PPG to carry out assessments on site and work closely with local teams to ensure barriers are appropriately identified.

Institutional capacity for implementation and sustainability	Low	Airports are unable to meet the technical and logistical challenges posed by transitioning to F3 foams. The process of converting airports is somewhat less technically complicated than day-to-day operations at airports. Proper international technical expertise will ensure the correct procedures are adopted.
Fiduciary: Financial Management and Procurement	Low	Executing agencies are unable to meet UNEP fiduciary requirements for large procurements or are unable to meet reporting standards. Large procurements are not currently foreseen as part of this project. The proposed Executing Agency is an autonomous UN entity and is liable to follow the UN rules to rule out any issue with the procurement related standards. In any case, the EA will be requested to submit the procurement plans annually to the IA for the review and approval.
Stakeholder Engagement	Low	Stakeholders are not adequately engaged in project design and implementation resulting incorrect assumptions and poor coordination. There are a limited number of key stakeholders in the project and their involvement will be critical at every stage. Extensive consultation will take place during the PPG.
Other		
Financial Risks for NGI projects		
Overall Risk Rating	Moderate	Airports fail to adopt F3 foams in the timeframe of the project. The project is innovative and without much precedent. To mitigate the risk of not meeting the primary objective of the project, substantial onsite coordination will be carried out during the PPG including visits to airports, engagement of F3 suppliers,

		engagement of firefighting teams, and engagement of regulators.

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Describe how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how. (max. 500 words, approximately 1 page)

The proposed project is fully aligned with the GEF-8 Chemicals and Waste Focal Area Objectives 1–3. Objective 1 of the Focal Area relates to the creation of enabling conditions to transition countries toward greener chemistry. This is primarily envisaged through regulatory modifications that would follow a review of the existing regulatory framework. Component 1 of the proposed project thus includes such a review process as well as support for the adoption of new regulation. The absence of regulatory incentives to use F3 foams at airports was identified during the baseline as a major barrier. The project further envisages wider dissemination through the development of model regulations and legislation that could be adopted by countries not immediately targeted by the project.

The second Objective of the Focal Area relates to the prevention of a buildup of harmful chemicals in waste and the environment. This is envisaged to be addressed through changes in the manufacturing process, in turn encouraged by changes in market forces. Component 2 utilizes exactly this approach in the cultivation and support of a nascent market for F3 foams in the target countries. Specifically, the project will encourage airports in the target countries to safely adopt F3 foams through training of fire fighters, procurement officers and ancillary staff and ensure adequate and consistent supply through coordination with vendors and manufacturers. The Component also includes support for trade shows to facilitate coordination between airports and actors along the supply chain.

Objective 3 of the Focal Area relates to the Elimination of hazardous chemicals and waste. As part of the project it is envisaged that at least 50 tonnes of AFFF concentrate will be disposed on using environmentally sound management technologies

The project will directly contribute to Target 7 (b) of the Kunming-Montreal Global Biodiversity Framework by reducing the emissions of highly hazardous chemicals.

Each of the countries covered by the project have ratified the Stockholm Convention. The entry into force date is listed in the table below.

Country	Entry into force
Egypt	17/05/2004
Ethiopia	17/05/2004
Kenya	23/12/2004
Nigeria	22/08/2004
South Africa	17/05/2004

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment:

We confirm that gender dimensions relevant to the project have been addressed as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

Stakeholder Engagement

We confirm that key stakeholders were consulted during PIF development as required per GEF policy, their relevant roles to project outcomes and plan to develop a Stakeholder Engagement Plan before CEO endorsement has been clearly articulated in the Project Description (Section B).

Yes

Were the following stakeholders consulted during project identification phase:

Indigenous Peoples and Local Communities:

Civil Society Organizations: No

Private Sector: Yes

Provide a brief summary and list of names and dates of consultations

Name	Organization	Date of consultation
Kei Ohno Woodall	Science and Technical Assistance Branch, Secretariat of the BRS Conventions	21-Oct-22
Agustin Harte	Science and Technical Assistance Branch, Secretariat of the BRS Conventions	9-Feb-2023
Ian Ross	PFAS Global Practice Leader - CDM Smith	Multiple consultations; most recently 21 October 2022
Kimberley De Miguel Wardle	Project Manager - Toxic Chemicals Project Manager - Toxic Chemicals MedWaves (UNEP/Mediterranean Action Plan)	26-Oct-22
Eike Peltzer	AFFF to fluorine-free foam: Independent consulting and project management for the transition	26/27 October 2022
Niall Ramsden	Director at ENRg Consultants Ltd, Fire Hazard Management Specialists	28-Oct-22
Graeme Day	Fire Service Regulation & Oversight Manager, Heathrow Airport	28-Oct-22
Garbis Avakian and Nicola Powell	Government of Australia	31-Oct-22
John Trew	Falck Fire Fighting Services	04-Nov-22
Dr. Samia Galal Saad	Prof. of Environmental Health High Institute of Public Health, Alexandria University; Consultant to the Waste Management Authority (Egypt)	17-Jan-23
Dr. Shaimaa El-Sayed Mohammed Ali	Director, Final Disposal Department/ Stockholm Convention Focal Point Waste Management Regulatory Agency (WMRA) Ministry of Environment (MOE) (Egypt)	17-Jan-23
Ms. Shahkira Parker and Ms. Salome Margaret Molefe	Department of Forestry, Fisheries and the Environment, South Africa	15-Feb-23
Mr. Cyrus Mageria	Ministry of Environment and Forestry, Kenya	15-Feb-23
Mr. Girma Gamechu	Environment, Forest and Climate Change Commission, Ethiopia	15-Feb-23
Dr. Jane Hupe, Ms. Deniz Kaymak	Department of Environment, International Civil Aviation Organization, Montreal	17-Feb-23
Laura Camastra	Technical Cooperation Bureau, International Civil Aviation Organization, Montreal	13-Mar-23

(Please upload to the portal documents tab any stakeholder engagement plan or assessments that have been done during the PIF development phase.)

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in the section B project description?

Yes

Environmental and Social Safeguard (ESS) Risks

We confirm that we have provided indicative information regarding Environmental and Social risks associated with the proposed project or program and any measures to address such risks and impacts (this information should be presented in Annex D).

Yes

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate			

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described in the Project Description (Section B)

Yes

ANNEX A: FINANCING TABLES

GEF Financing Table

Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	GEF Project Grant($)	Agency Fee($)	Total GEF Financing ($)
UNEP	GET	Africa	Chemicals and Waste	POPs	Grant	10,000,000.00	900,000.00	10,900,000.00
Total GEF Resources ($)						**10,000,000.00**	**900,000.00**	**10,900,000.00**

Project Preparation Grant (PPG)

Is Project Preparation Grant requested?

true

PPG Amount ($)

300000

PPG Agency Fee ($)

27000

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	PPG($)	Agency Fee($)	Total PPG Funding($)
UNEP	GET	Africa	Chemicals and Waste	POPs	Grant	300,000.00	27,000.00	327,000.00
Total PPG Amount ($)						**300,000.00**	**27,000.00**	**327,000.00**

Please provide justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total($)
Total GEF Resources					**0.00**

Indicative Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing($)	Co-financing($)
CW-1	GET	10,000,000.00	45000000
Total Project Cost		**10,000,000.00**	**45,000,000.00**

Indicative Co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Government of Egypt	In-kind	Recurrent expenditures	5000000
Recipient Country Government	Government of Ethiopia	In-kind	Recurrent expenditures	5000000
Recipient Country Government	Government of Kenya	In-kind	Recurrent expenditures	3000000
Recipient Country Government	Government of Nigeria	In-kind	Recurrent expenditures	5025000
Recipient Country Government	Government of South Africa	In-kind	Recurrent expenditures	5250000

Private Sector	Egyptian Holding Company for Airports and Air Navigation	Other	Recurrent expenditures	5000000
Private Sector	Ethiopian Airports Enterprise	Other	Recurrent expenditures	5000000
Private Sector	Airports Company of South Africa Limited (ACSA)	Other	Recurrent expenditures	5000000
GEF Agency	UNEP	In-kind	Recurrent expenditures	500000
Others	ICAO	In-kind	Recurrent expenditures	1000000
Others	BRS Secretariat	In-kind	Recurrent expenditures	225000
Private Sector	F3 Manufacturers	In-kind	Recurrent expenditures	5000000
Total Co-financing				**45,000,000.00**

Describe how any "Investment Mobilized" was identified

Not Applicable

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Name	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	Victoria Luque Panadero	4/11/2023	Jitendra Sharma	+41229172188	JITENDRA.SHARMA@UN.ORG

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Name	Position	Ministry	Date (MM/DD/YYYY)
Ms. Shakira Parker	GEF OFP	Department of Forestry, Fisheries and the Environment, South Africa	3/22/2023
Mr. Stanley Jonah	GEF OFP	Federal Ministry of Environment, Nigeria	3/28/2023
Mr. Mensur Dessie Nuri	GEF OFP	Ministry of Planning and Development, Ethiopia	5/11/2023

Mr Ephantus Kimotho	GEF OFP	Ministry of Environment, Climate Change and Forestry, Kenya	4/17/2023
Eng. Ali Abo Sena	GEF OFP	Egyptian Environmental Affairs Agency	4/11/2023

ANNEX C: PROJECT LOCATION

Please provide geo-referenced information and map where the project interventions will take place

Country	Administrative Capital	Latitude and Longitude of Administrative Capital
Egypt	Cairo	30.0444° N, 31.2357° E
Ethiopia	Addis Ababa	8.9806° N, 38.7578° E
Kenya	Nairobi	1.2921° S, 36.8219° E
Nigeria	Abuja	9.0765° N, 7.3986° E
South Africa	Pretoria	25.7479° S, 28.2293° E

ANNEX D: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

(PIF level) Attach agency safeguard screen form including rating of risk types and overall risk rating.

Title

FIRE - Annex d - SRIF Signed_clean

ANNEX E: RIO MARKERS

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
No Contribution 0	Significant Objective 1	Significant Objective 1	No Contribution 0

ANNEX F: TAXONOMY WORKSHEET

Level 1	Level 2	Level 3	Level 4
Influencing Models	Transform policy and regulatory environments Strengthen institutional capacity and decision-making Convene multi-stakeholder alliances Demonstrate innovative approaches		
Stakeholders	Private Sector Beneficiaries Civil Society Type of Engagement Communication	Large corporations SMEs Trade Unions and Workers Unions Information Dissemination Partnership Consultation Participation Awareness Raising Education Public Campaigns Behaviour Change	
Capacity, Knowledge, and Research	Capacity Development	Knowledge Management	

	Knowledge Generation and Exchange Targeted Research Learning Innovation Knowledge and Learning Stakeholder Engagement Plan	Capacity Development Learning Theory of Change Adaptive Management Indicators to Measure Change Knowledge Management Capacity Development	
Gender Equality	Gender Mainstreaming Gender results areas	Beneficiaries Sex-disaggregated indicators Participation and leadership Capacity Development Awareness raising Knowledge generation	
Focal Area/Theme	International Waters Chemicals and Waste	Coastal Sound Management of Chemicals and Waste Disposal Waste Management Best Available Technology/Best Environmental Practices	Hazardous Waste Management