



ANNUAL PROGRESS REPORT JANUARY-DECEMBER 2012

Kuwait Integrated Environmental Management System (KIEMS)



Implementing Partner	Kuwait Environmental Public Authority (KEPA)
Responsible Parties	United Nations Development Programme, Kuwait Oil Company (KOC)
Project Title	Kuwait Integrated Environmental Management System (KIEMS)
Project Duration	January 2010 – December 2014
Project Budget (USD)	2,000,000
Reporting Period	January-December 2012
Funds Available (USD)	2,060,000
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ACRONYMS

ACMP	Air Compliance Management Program
AQMSs	Air Quality Management Stations
CPAP	Country Programme Action Plan
DAQFU	Department of Air Quality and Follow Up
GIS	Geographic Information System
HSE	Health, Safety and Environment
KEPA	Kuwait Environment Public Authority
KIEMS	Kuwait Integrated Environmental Management System
KOC	Kuwait Oil Company
KPC	Kuwait Petroleum Corporation
NMHCs	Non Methane Hydrocarbons
OESP	Office of Environmental Strategic Planning

1. Executive summary

This annual progress report reviews progress from January to December 2012. It presents a description of the achievements, challenges, and progress towards the accomplishment of project objectives. The report presents the annual work plan for 2013 as well as recommendations to mitigate risks and issues. This is done to ensure that overall objectives of the project are met on time and within budget. The KIEMS project team was stationed at KEPA's offices and worked alongside members of the Office of Strategic Planning for the duration of the year. The major deliverables of the year included the publication of the amended air quality management Article 76 (Kuwait Air Quality Standards) and Article 79 (Stationary Air Pollution Sources) of Decision 210/2001 in Kuwait Gazette.

Certain sub-activities are still in progress such as implementing a GIS based reporting/ modeling system due to the fact that KOC started the "Air Compliance Management Project" in mid-2011. This led to further delays in implementing KEPA inventory teams and their associated tasks. Preliminary work was accomplished to identify industrial sectors and necessary emission modeling methods. Work to be executed in 2012 will focus on the development of the reporting and modeling system and will therefore achieve project objectives punctually.

Key developments

1. **Publication of Amended Articles 76 and 79 of Decision 210/2001 in Kuwait Gazette on 1st of April 2012** - The draft Language of the Articles was prepared after extensive compliance analysis and SWOT analysis of the existing air related regulations performed during the year 2011. The amended Articles were published after long discussions between the KIEM team and KEPA lawyers during the period November 2011-March 2012. The KIEM team defended the amended Article 76 Criteria Air Pollutant Standards and recommended revised limits for Sulfur Dioxide. The KIEM team responded to issues raised by KEPA and clarified all ambiguities in the language.
2. **Awareness Campaign of the New Articles 76 and 79** - The amended articles were presented in a number of open forums to KEPA and the regulated community including Oil, Power and private industries.
3. **Cooperation with Oil sector and Integration with KOC ACMP project** – The year 2012 marked a distinct cooperation between KIEM and KOC's ACMP. KOC has developed its emission inventory system and completed hotspot modeling. The KIEM project started active integration with KOC air quality and emission inventory programs and will be completed after the Air Quality Information Management System is procured.
4. **KEPA Capacity building** – As part of KOC project, KEPA staff received training on:
 - a. Air Quality Management
 - b. Control Technologies
 - c. Inventory Development
 - d. Air Pollution Modeling
5. **Kuwait Air Quality Management Information System** -
 - a. RFP was floated through UNDP website and 9 proposals were received. Evaluation of the proposals was finalized and the winner will be announced after completion of proposal selection review by UNDP.

- b. Survey of Shuaiba Industrial Area was conducted as preparation for the pilot permit program with KEPA. All four blocks were evaluated by identifying the company and basic products.
- c. The companies were converted to a spreadsheet with industrial sectors assigned to them. Once populated the spreadsheet was used to identify target companies for the Pilot Permit Program. The concept is to target 10-15 companies to participate – both KEPA and companies will conduct emission inventories and then establish operating conditions for each stationary source. They will then submit emission reports quarterly. The purpose is to establish procedures for deployment of a nation-wide emission permitting program.
- d. Industrial sectors under Kuwait Public Authority for Industry (PAI) were reviewed. The PAI sectors are comparing to the Standard Industrial Codes (SIC) to identify gaps where there are not PAI codes. While some industries do not exist in Kuwait, such as coal mining, many industries that do exist are not categorized under PAI. These include restaurants, farms, gas stations, and offices. While not heavy polluters, these industries have significant area effects, especially since they are often clustered together. Of the 84 different major SIC categories, PAI only represents 17 (20%) of them.

Key challenges (risks and issues)

Due to extensive procurement procedures, the Air Quality Management Information System is not purchased yet.

Recommendations (on risks, issues and way forward if applicable)

Since KOC finalized approximately 70% of Kuwait's emission sources, work during the year 2013 will go smoothly since KEPA staff and KIEM team were involved. Evaluation of the proposals was finalized and the winner will be announced after completion of proposal selection review by UNDP. Once winner is announced, we will immediately start the development of the Air Quality Information Management System. The selection accounted for avoiding any further delay in the execution. Budget for the system will be transferred to the year 2013.

2. Introduction

Environmental and sustainability issues are becoming an increasingly important business concern. As new regulations evolve in Kuwait and internal and external stakeholders increasingly focus their attention on sustainable business, the need for analytical and information solutions in this area is rapidly increasing. Compliance with the environmental laws is no longer an optional activity and is becoming a top concern of all pollution generators in Kuwait. Realizing the serious consequences of NOT complying with environmental laws; achieving and/or assuring compliance can be a tremendous challenge.

Kuwait Environment Public Authority (KEPA) is facing a challenging task of building a strong regulatory system capable of addressing existing and emerging environmental problems in Kuwait. Being the regulatory body responsible for regulating pollution sources, KEPA seeks to establish a regulatory-based Integrated Environmental Management system in Kuwait (KIEM) by addressing media specific problems in an integrated manner to provide protection of human health and ensure environmental sustainability. These problems are particularly complex and inter-related. Local initiatives to resolve one problem can lead to new problems elsewhere. These environmental challenges are serious and have significant impacts on health, the environment and economic performance.

According to the Government of Kuwait and UNDP 2009-13Country Programme Action Plan, the Kuwait Integrated Environment Management System Project (Air Emissions Management) falls under National

Priority Area 4: Environmental sustainability and contributes to outcome 4.2 of the CPAP, “Compliance of public and private institutions in environmental regulations enhanced” and is expected to achieve the following outputs:

1. Providing technical expertise and international best practices to support the development and implementation of a regulatory based integrated management system KIEMS (Air Emissions Management),
2. Support developing a strategic Action Plan with objectives, targets and performance indicators,
3. Support to enhance regulatory air emissions inventory,
4. Establish discharge and monitoring permit system for marine sources,
5. Support enhancements of an integrated chemical management system, and finalizing the Integrated Environment Management Systems.

KIEMS is, therefore, central to government efforts to implement a wide range of environmental enforcement programs designed to protect air, water, natural resources, wildlife and public health. Design and implementation of these programs is supported by: (1) Kuwait Government Program 2010-2014, (2) United Nations Development Program (UNDP)/Supreme Council of Planning and Development, and (3) Kuwait Oil Company (KOC).

KEPA is designated as the implementing partner for this project. The director of KEPA’s Office of Environmental Strategic Planning (OESP) will be responsible for “Project Support” due to their extensive experience working with UNDP in prior interventions. In addition to the project management assistant, three team Leaders work under the supervision of the Project Manager: Air Regulatory Management System Team, Air Emissions Management and Reporting System Team, and Air Quality Management Planning Team. The number of “KEPA Team Members” in each team is currently under selection. “Team Members” in each team will assist the “Team Leader” with KEPA-specific requirements’ identification and data gathering.

A quality assessment shall record progress towards the completion of key results, based on quality criteria and methods captured in the Quality Management table including quality criteria and quality methods.

3. Progress Review: January – December 2012

The reporting matrix below depicts the summary of achievements based on the 2012 Annual Work Plan.

EXPECTED OUTPUTS AND	PLANNED ACTIVITIES	PROGRESS TOWARDS ACHIEVING
<p>4.2.3. Support to enhance regulatory air emissions inventory</p> <p>Baseline:</p> <p>1. Lack of regulatory management system for air quality</p> <p>2. Lack of a national air emissions inventory</p> <p>Indicators:</p> <p>1. Presence of a unified database for reporting and modelling</p> <p>2. Presence of system to regulate air emissions in Kuwait</p> <p>3. Availability of air emissions inventory</p> <p>4 Reports and statistical analysis of hot spots</p> <p>5. 20 of KEPA staff trained in operating emissions inventory</p> <p>Targets</p> <p>1. Operational KIEMS GIS based air modelling and reporting system.</p> <p>2. Kuwait air-emissions inventory established</p>	<p>Activity Result 4.2.3.1: Unified database established</p> <p>Activity Description: Design of KIEM air quality management database that can integrate with KEPA system under development by KOC. The database will integrate all sources other than KOC with the KOC system to produce the national database.</p> <p>4.2.3.1.1: Procurement of software for database.</p> <p>4.2.3.1.2: Project plan and implementation.</p> <p>4.2.3.1.3: Software installation services for database.</p>	<p>Indicators:</p> <p>1. Presence of a unified database for reporting and modelling (70% through KOC project. Software development plan and test plans are under review)</p> <p>2. Presence of system to regulate air emissions in Kuwait (50%)</p> <p>3. Availability of air emissions inventory (70% All KOC sources are being finalized)</p> <p>4. Reports and statistical analysis of hot spots (30% only KOC)</p> <p>5. 20 of KEPA staff trained in Air quality Management, Control Technologies, Inventory Development and Air dispersion Modelling (100%)</p> <p>Targets</p> <p>1. Operational KIEMS GIS based air modelling and reporting system (Under development through integration with KOC after procurement of AQMIS).</p> <p>2. Kuwait air-emissions inventory established (Partially achieved through KOC system. In addition, field survey were conducted to for data population once the system is procured)</p> <p>3. Reports on hot spots established (30% Achieved)</p> <p>4. 20 KEPA staff trained in emission inventory through KOC project (100%).</p>

4. 2 Reports on hot spots established 5. 20 KEPA staff trained in operating emissions inventory		
Planned Budget for 2012		\$ 998,000
Annual Project Staffing	1. Project Manager=\$108,706.033 2. Project Management Assistant=\$100,192.83 Team Leader (Regulatory management system)=\$100,192.83 4. Team Leader (Reporting System) =\$100,192.83	\$409,284.52
Travel Costs		\$1,343.09
Misc.		\$8,125.32
General Management Support (GMS)		\$12,562.6
Total 2012		\$431,315.487
Excess budget transferred to 2013		\$566,684.513
Total Remaining Budget KIEM		\$1,137,070.9

4. Challenges and lessons learned

The Request for Proposal (RFP) to establish the AQMIS was finalized after being evaluated against UNDP procurement procedures. The RFP was floated on 15th July 2012 and bidding closed on 15th September 2012. 9 proposals were received and evaluation is finalized to select the final system. Once the evaluation is approved by UNDP, we will immediately start procurement and system implementation.

5. Partnerships and sustainability

This project is executed in collaboration with the Kuwait Oil Company (KOC) within the KEPA-KOC partnership for the improvement of Kuwait's regulatory system. KOC's project will support establishing a strong Air Regulatory Management System specific to Exploration and Production Operations to assist KEPA in enforcing regulatory requirements on KOC. KOC, on the other hand, will establish its Compliance Management System. Other oil sector operations such as refining, petrochemicals, transportation and distributions are under discussion with KEPA to enlarge the partnership scope to include UNDP, KPC and KEPA.

6. Financial Summary

The following table presents an overview of expenditures incurred during the reporting period.

CATEGORIES	EXPENDITURE (USD \$)
International Consultants	300,578.5
Local Consultants	108,706.0
Travel Costs (DSA-international)	1,343.1
Misc. Costs (insurance...etc)	8,125.3
Facilities & Administration (3%)	12,562.6
TOTAL (2012)	431,315.487

Annex I: Annual Work Plan (2013)

EXPECTED OUTPUTS	PLANNED ACTIVITIES	TIMEFRAME				RESPONSIBLE PARTY	PLANNED BUDGET			
		Q 1	Q 2	Q 3	Q 4		Funding Source	Budget Description	Amount (USD)	
<p>4.2.3. Support to enhance regulatory air emissions inventory</p> <p>Baseline:</p> <ol style="list-style-type: none"> 1. Lack of regulatory management system for air quality 2. Lack of a national air emissions inventory <p>Indicators:</p> <ol style="list-style-type: none"> 1. Presence of a unified database for reporting and modelling 2. Presence of system to regulate air emissions in Kuwait 3. Availability of air emissions inventory 4 Reports and statistical analysis of hot spots 5. 20 of KEPA staff trained in operating emissions inventory <p>Targets</p> <ol style="list-style-type: none"> 1. Operational KIEMS GIS based air modelling and reporting system. 2. Kuwait air-emissions inventory established 4. 2 Reports on hot spots established 5. 20 KEPA staff trained in operating emissions inventory <p>Related CP Outcome:</p> <ol style="list-style-type: none"> 4.2: Compliance of public and private institutions in environmental regulations 	<p>Activity Result 4.2.3.1: Unified database established</p> <p>Activity Description: Design of KIEM air quality management database that can integrate with KEPA system under development by KOC. The database will integrate all sources other than KOC with the KOC system to produce the national database.</p>	√				PM	UNDP	Costs for GIS reporting and modelling database		
	Activity budget lines									
		4.2.3.1.1: Procurement of software for database	√				System consultant	UNDP	Cost of procurement of software	
		4.2.3.1.2: Project plan and implementation	√				System consultant and Project Team Project Team	UNDP	Contracts for Local/International consultants	
		4.2.3.1.3: Software installation services for database	√				Team leader Reporting system consultant	UNDP	Contracts for Local/International consultants	
		<p>Activity Result 4.2.3.2: Air-based geographical information system established for Kuwait</p> <p>Activity Description: Design/provide comprehensive, user-friendly, and accessible' on-line Kuwait GIS based database management system to conveniently collate and analyze collected air quality data from sources other than KOC and integrate under the KEPA system under development by KOC consultant.</p>		√			PM	UNDP	Costs for establishment of air-based GIS system for Kuwait	
Activity budget lines										

Baseline: Nonconformity with international standards	4.2.3.2.1: Procurement of software for database		√			System consultant	UNDP	Cost of procurement of software		
	4.2.3.2.2: Defining map data for Kuwait		√			System consultant and Project Team	UNDP	Cost for developing map data		
	4.2.3.2.3: Evaluation of spatial location of pollution sources		√			System consultant and Project Team	UNDP	Cost of evaluations		
	Activity Result 4.2.3.3: Emissions inventory data implemented		√	√	√			Costs of developing inventory		
	Activity Description: collecting and estimating emissions data from all sources other than KOC in the south and integration under KEPA national emission inventory on the following criteria pollutants: SO ₂ , CO, NO _x , VOCs, PM ₁₀ , PM _{2.5} . This EI effort will also include data collection for ammonia (NH ₃), as a precursor of sulfate and nitrate PM _{2.5} formation, as well as for the toxic air pollutant, hydrogen sulfide (H ₂ S).					PM	UNDP			
	Activity budget lines									
	4.2.3.3.1: Procurement of software for database		√	√			System consultant	UNDP	Cost of procurement of software	
	4.2.3.3.2: Emissions source data collation & pollutant identification		√	√	√		System consultant and Project Team Project Team	UNDP	Cost of emissions data collection and pollutant identification	
	4.2.3.3.3: Evaluation of EI			√			System consultant and Project Team	UNDP	Cost of EI data evaluation	
	4.2.3.3.4: Evaluation of Report data			√			System consultant and Project Team	UNDP	Cost of report data evaluation	
4.2.3.3.5: Emissions inventory delivery			√			System consultant and Project Team	UNDP	Cost of delivering emissions inventory		

	4.2.3.3.6: Facility acceptance testing			√		System consultant and Project Team	UNDP	Cost of facility acceptance testing		
	Activity Results 4.2.3.4: Hot Spot modelling and monitoring conducted			√	√	UNDP	UNDP	Costs for modelling and monitoring of hot spots		
	Activity Description: Air Dispersion Modelling (ADM) will be conducted to support "hot-spot" identification already underway by KOC consultant and the analysis and validation of monitored pollutant concentrations.									
	Activity budget lines									
	4.2.3.4.1: Procurement of software for database			√		System consultant	UNDP	Cost of procurement of software		
	4.2.3.4.2: Analysis of available monitoring data			√		System consultant and Project Team	UNDP	Cost of analysis of monitoring data		
	4.2.3.4.3: Monitoring of CEM data implementation			√		System consultant and Project Team	UNDP	Cost of analysis of monitoring data		
	4.2.3.4.4: Statistical analysis and QA/QC			√		System consultant and Project Team	UNDP	Cost of statistical analysis and QA/QC		
	4.2.3.4.4: Providing final delivery report			√		System consultant and Project Team	UNDP	Cost of final delivery report		
	Activity Result 4.2.3.5: KEPA staff trained in operation of the emissions inventory				√	PM	UNDP	Costs of training KEPA staff in emissions inventory		
Activity Description: Provide training on system operations										
Activity budget lines										
	4.2.3.5.1: GIS based emissions inventory				√	System consultant and Project Team	UNDP	Cost of GIS based emissions inventory training		
	4.2.3.5.2: Training in operating the web-based database system				√	System consultant and Project Team	UNDP	Cost of conducting web-based system training		

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	4.2.3.5.3: Training in administration of database system				√	System consultant and Project Team	UNDP	Cost of conducting system administration training	
Monitoring & Evaluation Activities		√	√	√	√	UNDP	UNDP	Cost of M&E activities	
Direct Project Costs (including procurement of Air Monitoring System)									\$600,000
1. Project Manager [9,500 * 12 months]									\$114,000
2. Assistant Project Manager [8,500 * 6 months]									\$51,000
3. Team Leader (Regulatory management system) [8,500 * 12 months]									\$102,800
4. Team Leader (Reporting system) [8,500 * 12 months]									102,800
Project Staffing Costs									369,000
Public Awareness Seminar									12,000
Total Project Cost									981,000
Monitoring and Evaluation (5%)									49,050
General Management Support (GMS) (3%)									29,430
Total Project Cost									1,059,480