

**APPENDIX A**  
**QUESTIONNAIRE FOR METEOROLOGICAL STATIONS**

# METEOROLOGICAL STATIONS QUESTIONNAIRE

**Name/Location:**.....

**Contact Person:**.....

**Director of Station:**.....

## INFORMATION DISSEMINATION

1. Is the station part of any international climatic / meteorological observation organization or involved in sharing / exchanging data with any?

Yes  Name:..... No

If Yes: Are there standards followed in reporting data? Specify if yes.

.....

2. Are you connected to a Global Telecommunication System (GTS)?

Yes  Specify..... No

3. Are you involved in sharing meteorological data with other regional or local meteorological centers?

Yes  Names:..... No

4. Are you connected to a national network linking you with other meteorological stations?

Yes  No

If No, How do you transmit data to other stations and to the Airport Station?

.....

## STATION STATUS

5. Station altitude (m).....

6. Is the station Operational?

Yes  No

If Yes, What is operational age of station:.....

If not operational, Since when.....

7. Was station/equipment always located at its current location? If no specify change.

.....

8. Number of employees: Fulltime:..... Part  
time:.....

Title of employees and Qualification:

Fulltime:.....  
.....  
.....

Part time:

.....  
.....

9. What are the parameters measured? *Check square if operational and circle if reported*

**Temperature** Frequency:.....  
Type of sensor/equip.....  
Resolution.....  
Limitation / cutoff? .....

Reported Values:  Daily:.....  
 Monthly means of max, min, and mean temp:.....

Time series of homogeneous data sets (specify years) .....

**Precipitation:** Frequency:.....  
Type of sensor/equip.....  
Limitation / cutoff? .....

Reported Values:  Daily quantity:.....  
 Monthly quantity:.....  
 Number of days with precipitation:.....

Is snow equivalent measured? Yes  No

.....  
Time series of homogeneous data sets (specify years) .....

**Pressure:** Frequency:.....

Type of sensor/equip.....

Resolution.....

Limitation / cutoff ?.....

Reported Values:  Daily mean:.....

Monthly mean.....

Time series of homogeneous data sets (specify years) .....

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**Other:** Humidity, Wind speed, Wind direction, radiation, etc.

Parameter.....Frequency.....Sensor Type + limitation

.....Resolution.....Reported values .....

.....

Time series of homogeneous data sets (specify years) .....

.....

Parameter.....Frequency.....Sensor Type + limitation

.....Resolution.....Reported values .....

.....

Time series of homogeneous data sets (specify years) .....

.....

Parameter.....Frequency.....Sensor Type + limitation

.....Resolution.....Reported values .....

.....

Time series of homogeneous data sets (specify years) .....

.....

Parameter.....Frequency.....Sensor Type + limitation

.....Resolution.....Reported values .....

.....

Time series of homogeneous data sets (specify years) .....

.....

10. Do you write down specific and systematic observations about the weather? Ex.  
Sunny weather, cloudy, windy, etc.

.....  
.....  
.....

11. **Please supply a sample output of the data records**

12. Is equipment electricity dependent?

Yes  Any backup generators?.....

No  Equipment failure?.....

13. Is equipment regularly calibrated? Yes

Frequency.....

No

14. Do you maintain adequate quality control (check appropriate)

Fully  Partly  No

15. Do you maintain and update a database?

Yes  Since when?..... No

Is your database computerized? Yes  No

Software Type .....

16. In your opinion what do you think the station lacks?

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.....  
.....

What should be made to improve it?

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.....  
.....  
.....

What other problems?

Personnel qualifications.....

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Budgetary.....

.....

Institutional.....

.....

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Other.....

.....

.....

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**APPENDIX B**  
**LIST OF STAKEHOLDERS**

## LIST OF STAKEHOLDERS

<i>Institution</i>	<i>Contact Person</i>	<i>Interest</i>	<i>Contact Number</i>
Ministry of Transport and Public Works, Directorate General of Civil Aviation	Mr. Abdo Bejjani	Meteorological and atmospheric observing systems	01 628 187
Ministry of Transport and Public Works	Mr. Mohamad Nahle	Oceanographic observing systems	01 372 767
Council for Development and Reconstruction	Mr. Jawdat Abou Jaoude	Project financing and monitoring	01 981 373
Ministry of Environment	Dr. Naji Kodeih	Meteorological and atmospheric observing systems	04 522 222
Ministry of Environment	Ms. Lina Yamout	Terrestrial and ecological observing systems	04 522 222
Ministry of Environment	Ms. Lamia Chamas	Oceanographic observing systems	04 522 222
National Council for Scientific Research (NCSR)	Dr. Moueen Hamzeh	Research in different observing systems	01 840 260
NCSR, National Center for Remote Sensing (NCRS)	Dr. Mohamad Khawlie	Remote sensing, terrestrial and ecological observing systems	04 409 845
NCSR, National Center for Marine Sciences (NCMS)	Dr. Gaby Khalaf	Oceanographic observing systems	06 741 581
Institut de Recherches Agronomiques du Liban (IRAL)	Dr. Fadi Karam	Meteorological, terrestrial and ecological observing systems	08 901 577
Litani River Authority (LRA)	Dr. Elias El Haoui	Terrestrial observing systems (river discharge)	01 834 819
Ministry of Agriculture	Mr. Fadi Asmar	Terrestrial and Ecological observing systems	01 390 320
ICARDA	Mr. Mounir Soughayyar	Meteorological observing systems	08 955 127
American University of Beirut (AUB), Faculty of Engineering and Architecture	Dr. Nisreene Ghaddar	Meteorological observing systems	01 374 374 ext. 3594
AUB, Faculty of Engineering and Architecture	Dr. Mutasem El Fadel	Meteorological and atmospheric observing systems	01 374 374 ext. 3470
AUB, Biology Department	Dr. Riad Sadek	Ecological observing systems	01 374 374 ext. 3890
AUB, Faculty of	Dr. Salma Talhouk	Ecological observing	01 374 374

Agriculture and Food Sciences		systems	ext. 4508
AUB, Agriculture Research and Education Center (AREC)	Dr. Mohamad Farran	Meteorological observing systems	08 345 151
Ecole Supérieure d'Ingenierie de Beyrouth (ESIB)	Dr. Wajdi Najm	Meteorological observing systems	04 532 661
Université Saint Joseph (USJ)	Dr. Jocelyne Gerard	Meteorological observing systems	01 426 456
Lebanese University, Biology Department	Dr. Samir Safi	Ecological observing systems	04 862 749
Tripoli Environment and Development Observatory	Dr. Riad Madani	Meteorological and atmospheric observing systems	06 424 181

## **APPENDIX C**

### **ROUNDTABLE MEETING**

List of Participants  
Minutes of Meeting  
Presentation

## LIST OF PARTICIPANTS

<b>Institution</b>	<b>Participant</b>	<b>Contact</b>
Directorate General of Civil Aviation	Mr. Abdo Bejjaneh	01 628187
Council for Development and Reconstruction	Mr. Jawdat Abou Jawdeh	01 981373
National Council for Scientific Research	Dr. Hratch Kouyoumjian	01 840260/3
National Center for Marine Sciences	Dr. Gaby Khalaf	06 741581
Institut de Recherche Agronomique Libanais - IRAL	Mr. Chafik Stephan	03 567543
Litani River Authority	Dr. Elias El Haoui	01 834819
	Mr. Georges Nassif	01 834819
ICARDA	Mr. Mounir Sughayyar	03 211553 / 08 955127
AUB - Faculty of Engineering and Architecture	Dr. Mutasem El Fadel	01 350000 ext. 3470
AUB - Biology Department	Dr. Riad Sadek	01 350000 ext. 3890 03 726856
AUB - Faculty of Agricultural and Food Sciences	Dr. Salma Talhouk	01 350000 ext. 4508
Agricultural Research and Education Center - AREC	Mr. Hazem Yaghi	08 345151
Tripoli Environment and Development Observatory	Dr. Riad Madani	06 424181
CODEL / GTZ	Dr. Berthold Hansmann	
	Dr. Michael Schmidt	01 390320
UNDP	Ms. Abir Abul Khomdoud	
	Ms. Dima Khatib	01 981 301

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Climate Change Project	Mr. Nabil Mina	04 522222
	Mr. Georges Delorme	
ARD	Mr. Marc Metni	01 512121
	Mr. Ricardo Khoury	

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# MINUTES OF MEETING

Wednesday, October 2<sup>nd</sup>, 2002  
Gefinor Rotana Hotel - Clemanceau

The meeting was launched with the introductory speech of Mr. Nabil Mina. He described the overall objectives of the project, with particular emphasis on systematic observation networks. Mr. Ricardo Khoury from Arab Resources Development (ARD) then guided the discussion throughout an interactive presentation of the work conducted. ARD was assisted by a French expert in systematic observations, Mr. Georges Delorme. The stakeholders had the chance to first present themselves and express their interest in participating in the workshop. The different interventions of the participants are presented further below.

Hazem Yaghi (AREC)

*The AREC operates an agrometeorological station for research purposes. They are currently building a database on Excel.*

Chefik Stephan (IRAL)

*The IRAL at Tell al Aamara is operating an agrometeorological station for research purposes. It is also part of the SML network.*

Mounir Souhdayar (ICARDA)

*ICARDA has two stations: one in Terbol and one in Kfar Dan. Interested in weekly data related to agricultural research and to coordinate and exchange data with other institutions.*

Jawdat Abou Jawdeh (coordinator in CDR for environmental projects: solid waste, water and wastewater)

*The CDR manages internationally funded projects, and closely follows-up on new initiatives.*

Gaby Khalaf: (National Center for Marine Sciences - NCMS)

*The center is involved in research in the maritime domain, and is working on several projects; the NCMS coordinates its efforts with the LMS.*

Hratch Kouyoumjian (National Council for Scientific Research - NCSR)

*The NCSR promotes research through its different centers and is very interested in promoting systematic observations in Lebanon.*

Georges Nassif and Elias El Haoui (Litani River Authority - LRA):

*The LRA is responsible for monitoring rivers in Lebanon, and in particular, monitors their discharge through 45 limnigraphic stations placed in the different rivers.*

Riad Madani (Tripoli Environment and Development Observatory)

*The Tripoli Observatory is managed by the Freihaa Federation; the observatory is operating a state-of-the-art atmospheric station in Tripoli that monitors several air pollutants.*

Riad Sadek - AUB

*Dr. Sadek has participated in the Climate Change Phase I project and is conducting research on ecological monitoring that addresses climate change.*

Mutasem El Fadel - AUB

*AUB acquired 14 meteorological and atmospheric monitoring stations through a USAID grant; the stations are capable of measuring 4 air quality parameters (NO<sub>2</sub>, CO, PM, HC) in addition to meteorological ones; collaboration with MoE and CDR is being sought to obtain some funding for performing measurements and using the equipment.*

Abdo Bejjaneh (Directorate General of Civil Aviation - DGCA)

*Mr. Bejjaneh is the Director of the Lebanese Meteorological Service (LMS); the LMS network has been rehabilitated since 1995; the main system comprises 8 synoptic stations and 35 standard meteorological stations; the current system is not sufficient to appropriately characterize national climate.*

Abir abd el Khoudoud (Codel)

*Ms. Abir is working on the Codel project, and is trying to work out a monitoring system for desertification.*

Micheal Schmidt (Technical advisor for GTZ, CODEL)

*Dr. Schmidt is assisting in the development of a monitoring system for combating desertification; the system would be based on appropriate indicators to be identified.*

Berthold Hansman (Technical advisor for CODEL, GTZ)

*The monitoring system is to provide a feedback system that fulfills UNFCCC requirements.*

Several issues of relevance were raised during ARD's presentation; the most important of which being:

- There is a serious need to disseminate data
- All the small stations should cooperate and exchange data
- It is important to define the purpose of monitoring before identifying the needs
- For the purpose of monitoring climate change, perhaps one central station could be enough
- It is impossible to monitor all ecological systems; focus should be on crisis ecological zones and selection of few areas with limited tasks in terms of monitoring
- There is a severe lack of financial resources to recruit qualified personnel in public institutions
- For efficient monitoring one should determine sectors that are most important with respect to climate change and then select indicators
- Water is the most valuable and basic resource of the country and should be taken into consideration when designing observation systems

Overall Needs Identified during the roundtable are summarized below:

**Meteorological and Atmospheric Observing Systems:**

- ⇒ Additional Equipment and spare parts to allow for continuity of data
- ⇒ Human resources for maintenance, operation, and data processing
- ⇒ Data gathering and dissemination (database)
- ⇒ Data on CO<sub>2</sub>, CH<sub>4</sub>, NO<sub>2</sub>
- ⇒ Standardization of all reported data
- ⇒ Additional research
- ⇒ Indicators from desertification project

**Oceanographic Observing Systems:**

- ⇒ Need to measure additional parameters
- ⇒ Additional equipment from WMO mission needs to be procured
- ⇒ Upgrade LMS buoys
- ⇒ Graduates in Oceanography (training)
- ⇒ Exchange of technicians / expertise

**Terrestrial and Ecological Observing Systems**

- ⇒ Need to measure snow cover (water equivalent)
- ⇒ Springs measurements and suspended load
- ⇒ Bio-indicators in rivers (invasive organisms at sea)
- ⇒ Institutional setup to promote monitoring
- ⇒ Pedological soil parameters
- ⇒ Need for new graduates
- ⇒ Prioritize bio-indicators
- ⇒ Identify land cover in water rich areas that are important for good recharge
- ⇒ Should apply a watershed approach

The workshop was finalized by a thanking word from Mr. Nabil Mina, and all participants were invited for lunch.

**APPENDIX D**  
**UNFCCC REPORTING GUIDELINES (TABLES S1 TO S11)**

**Table S 1.** Atmospheric observing systems for climate and land surface (meteorological land surface observations)

Systems	Climate Parameters	Total # Stations	Appropriate for Characterizing National Climate ? (tick one box)			Time Series # stations/platforms (# Data Digitized )			Adequate Quality Control Procedures? (tick one box)			Metadata Available Total# Stations (% Digitized)	Continuity #expected operational in 2005
			Fully	Partly	No	30-50y	50-100y	>100y	Fully	Partly	No		
Synoptic Met stations : Basic, Regional & National network * [DGCA- MET DEPT]	Air pressure Cloud Weather Humidity Rainfall Radiation Air temp. Visibility Wind speed & direction	8		X						X		8 (0)	9
Climatologic observation network * [DGCA- MET DEPT]	Humidity Rainfall Air Temp. Wind speed & direction	10		X						X		10(0)	10
Climatologic Observation Network * [DGCA- MET DEPT]	Humidity Rainfall Air Temp.	25		X						X		18(0)	25
Stations Reporting Internationally [DGCA- MET DEPT]	Air pressure Cloud Weather Humidity Rainfall Radiation Air Temp. Visibility Wind speed & direction	6 out of 8								X			6
CLIMAT Reporting Stations [DGCA- MET DEPT]		3 out of 8								X			3
* Stations Useful for National Climate Monitoring													

**Table S1 (Cont'd).** Atmospheric observing systems for climate and land surface (meteorological land surface observations)

Systems	Climate Parameters	Total # Stations	Appropriate for Characterizing National Climate ? (tick one box)			Time Series # stations/platforms (# Data Digitized )			Adequate Quality Control Procedures? (tick one box)			Metadata Available Total# Stations (% Digitized)	Continuity #expected operational in 2005
			Fully	Partly	No	30-50y	50-100y	>100y	Fully	Partly	No		
AUB (Beirut campus; Bekaa AREC)	Humidity Precipitation Air Temp. Wind speed & direction Pressure Radiation Sunshine (secs)	2		X		X (Bekaa)	X (Beirut)			X			2 + 14 (?)
ICARDA (Terbol)	Precipitation Humidity Air Temp. Wind direction Radiation	1		X						X			1
ESIB	Temperature Precipitation Humidity Pressure Wind speed Wind direction Radiation	3		X						X			

**Table S 2.** Available homogeneous data sets for meteorological and land surface observations

Data Set Name	Climate Parameters	# Stations or Grid Resolution and Region covered	Time Period	References
AUB (Beirut)	Temperature Precipitation		1876-1957	AUB
AUB (Bekaa)	Temperature Precipitation		1957-99	AUB
Ksara	Temperature Precipitation		1909-70	LMS
Tripoli-Mina	Temperature Precipitation		1931-70	
Abou-Ali	Temperature Precipitation		1939-70	
Qlaiaat-Akkar	Precipitation		1937-68	
Halba			1940-70	
Machghara			1939-70	
Rachaya			1931-70	
Batroun I			1940-70	
Beirut-Nazareth			1923-70	
Bir Hassan			1940-70	
Aitaroun			1939-70	
Sir-ed-Diniye			1939-70	
Tourzaya			1940-70	
El-Qrayé			1901-70	
Ain Zhalta			1940-70	
Beit ed Dine			1941-71	
Jezine			1928-70	
Hermel			1932-70	
Fakehat Ras Baalbak			1933-70	
Yammouneh			1939-69	
Baalbeck			1939-72	
Qaa er Rim			1940-72	
Rayak			1931-74	
Anjar		1939-70		

**Table S 3.** Atmospheric observing systems for climate above the surface (meteorological upper air observations)

Systems	Total # Stations	Appropriate for Characterizing National Climate ? (tick one box)			Time Series # stations/platforms (# Data Digitized )			Adequate Quality Control procedures? (tick one box)			Metadata Available Total# Stations (% Digitized)	Continuity #expected operational in 2005
		Fully	Partly	No	30-50y	50-100y	>100y	Fully	Partly	No		
Radiosonde/ Radiowind Station (Beirut) [DGCA- MET DEPT]	1	X							X		1(0)	1
Stations reporting inter-Nationally	1								X			1
CLIMAT TEMP reporting stations	1								X			1
Profiler : Wind speed & direction in altitude	1	X							X		1(0)	1
Other : Met satellites Ground Receiving Station	1	X							X		1(0)	1
Total Upper Air Network		X										

**Table S 4.** Available homogeneous data sets for meteorological upper air observations

Data Set Name	Climate Parameters	# Stations or Grid Resolution and Region covered	Time Period	References
Radiosonde / Radiowind	Pressure Temperature	Beirut	1950-2002	SML

**Table S 5.** Atmospheric constituent observing systems for climate

Constituent	Total # Stations or Platforms	Appropriate for Characterizing National Climate ? (tick one box)			Time Series # stations/platforms (# Data Digitized)				Adequate Quality Control Procedures ? (tick one box)			Metadata Available Total# Stations (% Digitized)	Continuity #expected operational in 2005
		Fully	Partly	No	10-20y	20-30y	30-50y	>50y	Fully	Partly	No		
Ozone (Surface) [DGCA-MET DEPT]	1		X							X		1(0)	1
Nitrogen Oxides [DGCA-MET DEPT]	1		X							X		1(0)	1
Sulfur Dioxide [DGCA-MET DEPT]	1		X							X		1(0)	1
Aerosols (surface) [DGCA-MET DEPT]	1		X							X		1(0)	1

**Table S 6.** Available homogeneous data sets for atmospheric constituents

Data Set Name	Constituent	# Stations or Grid Resolution and Region covered	Time Period	References

**Table S 7.** Oceanographic observing systems for climate

System Component	Total # Stations	Appropriate for Characterizing National Climate ? (tick one box)			Time Series # stations/platforms (# Data Digitized )			Adequate Quality Control Procedures ? (tick one box)			Metadata Available Total# Stations (% Digitized)	Continuity #expected operational in 2005
		Fully	Partly	No	30-50y	50-100y	>100y	Fully	Partly	No		
SST (coastal moored buoys) [DGCA- MET DEPT]	3		X						X		3(0)	3
Swell height/period/direction (coastal moored buoys) [DGCA- MET DEPT]	3		X						X		3(0)	3
SST-Salinity [NCMS]	15		X						X			

**Table S 8.** Available homogeneous data sets for oceanographic observations

Integrated Data Sets Name & Brief Description	Climate Parameter	Platforms and/ or Grid Resolution and Region covered	Time Period	References

**Table S 9.** Terrestrial observing systems for climate

Systems useful for national climate monitoring	Total # Stations	Appropriate for Characterizing National Climate ? (tick one box)			Time Series # stations/platforms (# Data Digitized )			Adequate Quality Control Procedures ? (tick one box)			Metadata Available Total# Stations (% Digitized)	Continuity #expected operational in 2005
		Fully	Partly	No	30-50y	50-100y	>100y	Fully	Partly	No		
Soil Temperatures [DGCA – MET DEPT]	3		X						X		3(0)	3
Radiation (global, reflected, balanced, UV.A, UV.B ) [DGCA – MET DEPT]	1		X						X		1(0)	1
River height / stream flow	15		X						X			
AUB (AREC) -Soil Temperature at different depths -Radiation	1		X						X			1
ICARDA -Soil Temperature	1		X						X			



## **APPENDIX E**

### **CONCEPT PROPOSALS**

**Concept Proposal Number 1**

<b>PROJECT TITLE</b>	Establishing the Institutional and Legal Frameworks for Systematic Observation Networks in Lebanon
<b>OBJECTIVES</b>	The project aims at establishing the institutional and legal frameworks that will create a more effective system for systematic observation networks in Lebanon
<b>BASELINE CONDITIONS</b>	A meteorological and atmospheric observing network exists and is operated by the DGCA; the same applies for the oceanographic observing network; equipment proposals for these networks have recently been or will be submitted for funding; limited progress has been achieved in terrestrial and ecological observing systems
<b>PROJECT DESCRIPTION</b>	<p>The project will include the following components:</p> <ol style="list-style-type: none"> <li>1. Identification of the institutions involved in systematic monitoring</li> <li>2. Evaluation of different alternatives for the institutional setup that would govern systematic observations and selection of the best alternative in close coordination with stakeholders</li> <li>3. Preparation of the legal documents (decrees) that will set the roles and functions of the different institutions responsible for systematic monitoring and set responsibilities of different positions within these institutions</li> <li>4. Submittal of legal documents for approval by parliament and following-up any revisions that could be required</li> <li>5. Conducting capacity building activities at the institutions that will be responsible for the system as set by the new framework to ensure homogeneity and coordination across institutions and full understanding of the newly established system, its objectives, and goals</li> </ol>
<b>MAIN STAKEHOLDERS</b>	Ministry of Transport and Public Works; Ministry of Environment; Ministry of Agriculture; Ministry of Justice; Ministry of Energy and Hydraulic Resources; Litani River Authority; NCSR

**Concept Proposal Number 1 (cont'd)**

<b>PROJECT OUTCOMES</b>	<ol style="list-style-type: none"><li>1. Institutional setup and legal frameworks for systematic observations established</li><li>2. Coordination among institutions secured</li><li>3. Capacity of institutions in systematic observations and their importance improved</li></ol>
<b>BENEFICIARIES</b>	The different ministries and stakeholders identified above
<b>ESTIMATED DURATION</b>	1-2 years
<b>ESTIMATED BUDGET</b>	USD 500,000 - 700,000
<b>FINANCING</b>	To be identified

### Concept Proposal Number 2

<b>PROJECT TITLE</b>	Capacity Building, Data Dissemination and Detailed Needs Assessment for Systematic Observing Systems in Lebanon
<b>OBJECTIVES</b>	The project aims at reinforcing the capacity of different stakeholders in systematic observing systems, setting a data dissemination system, and performing studies to identify priorities and needs in each field
<b>BASELINE CONDITIONS</b>	A meteorological and atmospheric observing network exists and is operated by the DGCA; the same applies for the oceanographic observing network; limited progress has been achieved in terrestrial and ecological observing systems; significant needs for capacity building also exists; a system for data dissemination is lacking; current efforts concentrate primarily in equipment procurement
<b>PROJECT DESCRIPTION</b>	<p>The project will include the following components:</p> <ol style="list-style-type: none"> <li>1. Training sessions in different aspects of systematic monitoring to different stakeholders in order to satisfy local and global monitoring needs (data processing and analysis, maintenance and operation of equipment, ecological systems, etc.)</li> <li>2. Development of a data collection, processing and dissemination system to improve data exchange and use</li> <li>3. Testing of the existing long term series to verify homogeneity of the series and link old and new data sets</li> <li>4. Conduct a thorough needs assessment for each observing system to identify areas of poor data collection, additional parameters needed per area, and in particular identify priority indicators and vulnerable areas for ecological observing systems</li> </ol>
<b>MAIN STAKEHOLDERS</b>	Ministry of Transport and Public Works; Ministry of Environment; Ministry of Agriculture; Ministry of Energy and Hydraulic Resources; Litani River Authority; NCSR; research and academic institutions

**Concept Proposal Number 2 (cont'd)**

<b>PROJECT OUTCOMES</b>	<ol style="list-style-type: none"><li>1. Capacity of different stakeholders at all levels of systematic monitoring improved</li><li>2. A system of data collection and dissemination among stakeholders developed</li><li>3. Homogeneous long term series identified</li><li>4. Priority indicators for ecological observing systems identified and framework for ecological systematic monitoring developed</li><li>5. Detailed needs to fully characterize the national climate assessed and action plan developed</li></ol>
<b>BENEFICIARIES</b>	The different ministries and stakeholders identified above
<b>ESTIMATED DURATION</b>	1 -2 years
<b>ESTIMATED BUDGET</b>	USD 300,000 to 600,000
<b>FINANCING</b>	To be identified