



Economic and Social Commission for West Asia
الأمم المتحدة - اللجنة الاقتصادية والاجتماعية لغربي آسيا



Progress in Water Accounts in the ESCWA Region

Wafa Aboul Hosn

Team Leader , Statistics Division

aboulhosn@un.org

EGM on Environmental Economic Accounting for
the ESCWA Region

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ABOUT ESCWA COUNTRIES

Subregion1
Egypt, Iraq, Lebanon
Syria, Sudan

Subregion2
Arabian Peninsula
Jordan, Palestine
(about 200 m³/yr/capita)

Surface Water
Shared Water
Resources



Hard to Measure
Water Assets
Water Use
Water Supply

Economics of
Water: Cost
Subsidies, Taxes



Social Problems

Pilot Water
Accounts
Egypt, Lebanon
1st Step

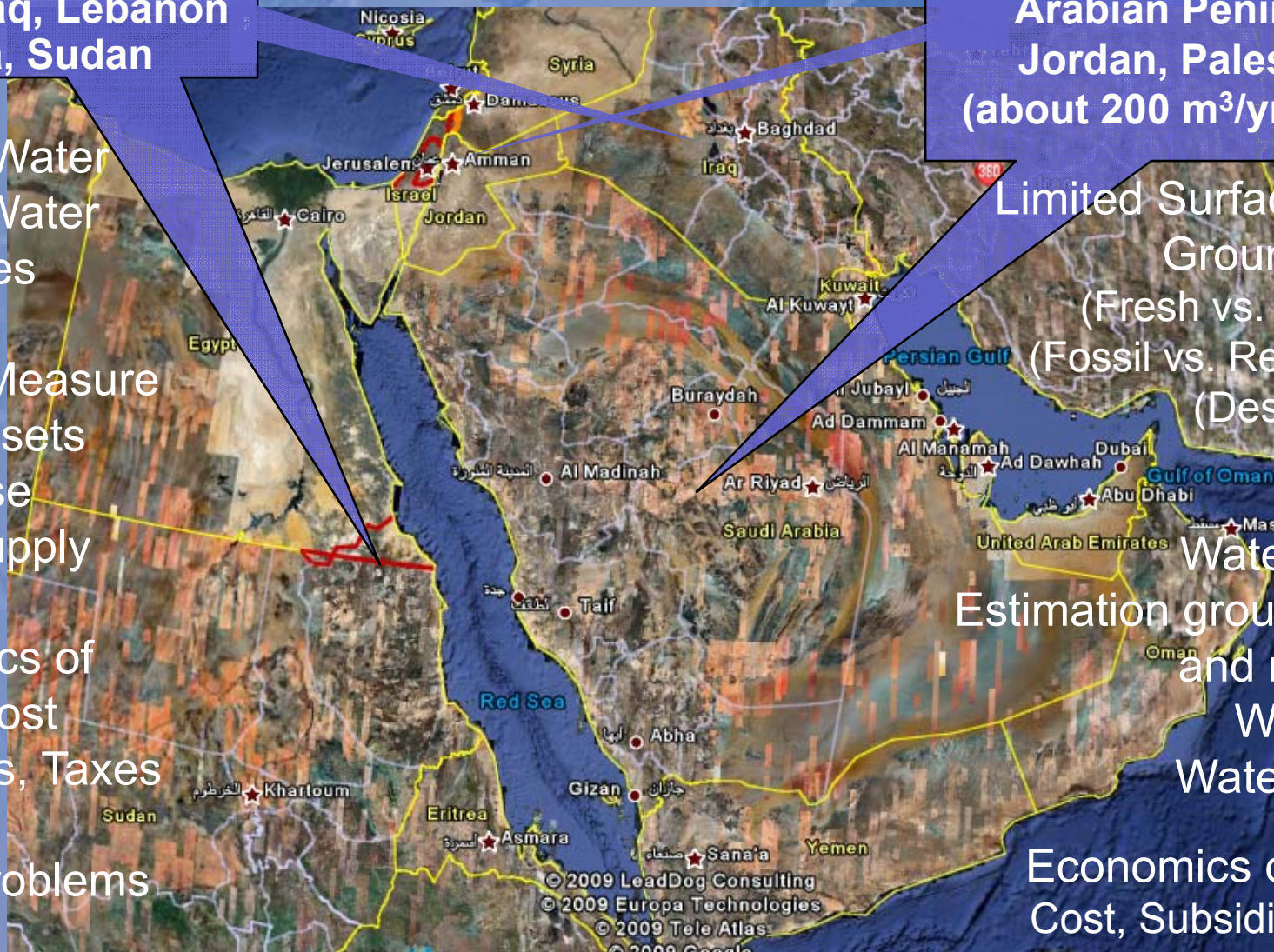
Limited Surface Water
Ground Water
(Fresh vs. Brackish)
(Fossil vs. Renewable)
(Desalination)

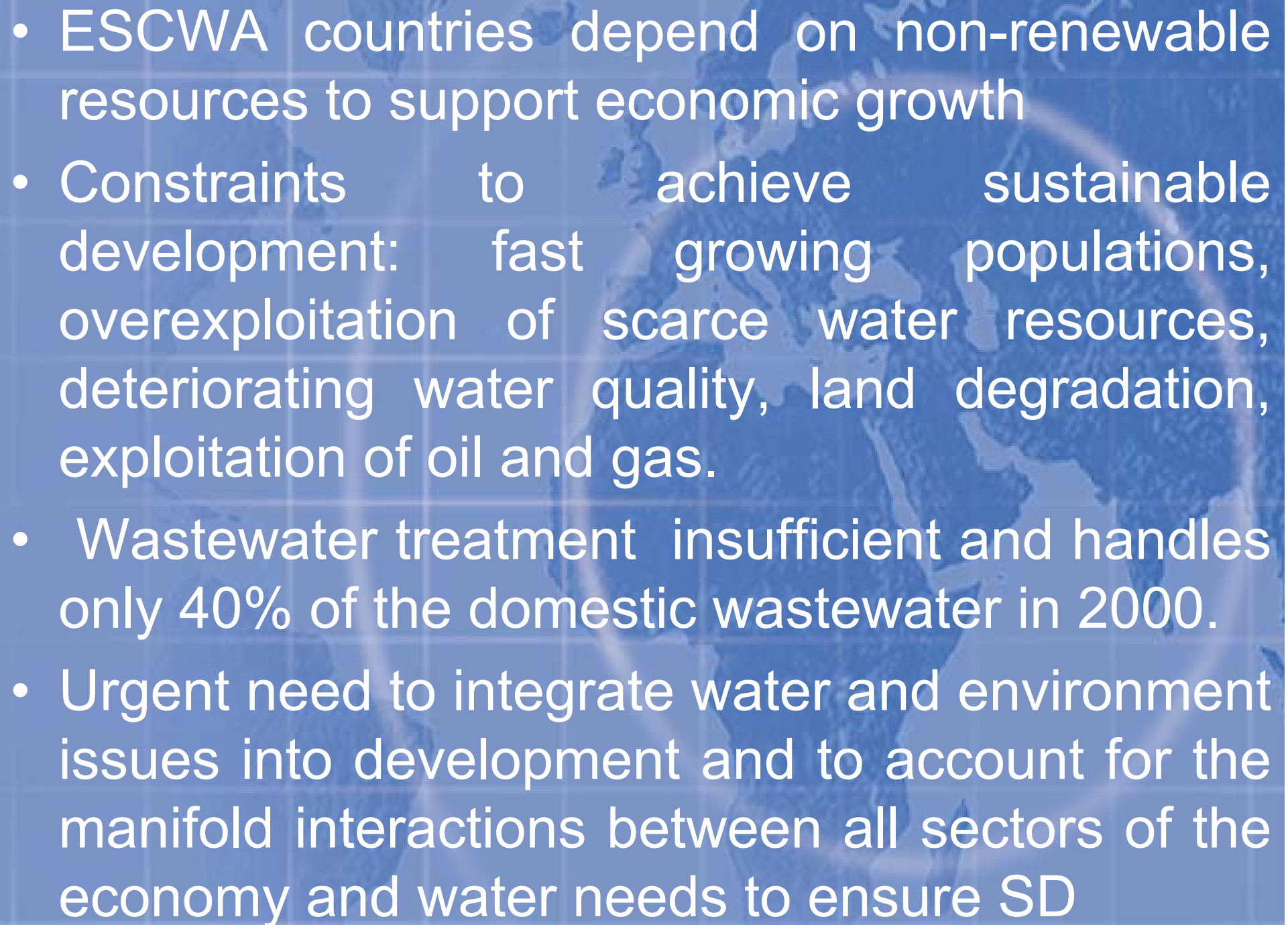
Water Assets
Estimation groundwater,
and recharge
Water Use
Water Supply

Economics of Water:
Cost, Subsidies, Taxes
Market values

Pilot Water Accounts
Jordan, Oman,
Bahrain, Palestine

SEEA-W
A STEP FORWARD!



- 
- ESCWA countries depend on non-renewable resources to support economic growth
 - Constraints to achieve sustainable development: fast growing populations, overexploitation of scarce water resources, deteriorating water quality, land degradation, exploitation of oil and gas.
 - Wastewater treatment insufficient and handles only 40% of the domestic wastewater in 2000.
 - Urgent need to integrate water and environment issues into development and to account for the manifold interactions between all sectors of the economy and water needs to ensure SD

Frameworks, Classifications, Methods

WATER SCARCITY in the **ESCWA** region requires data on water in the most efficient way

Frameworks	International Classification	Organize Store	Assess quality/ Manage	Present data into information
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Water Statistics

Quantities, Quality, Flow, Access

Water Indicators

CSD-WRI-PSIR

IWRM

Accounting Framework SEEA

Derive Most Indicators



SEEAW Pilot Studies

1. Jordan
2. Lebanon
3. Oman
4. Bahrain
5. Egypt

SEEAW Physical use table, JORDAN 2007

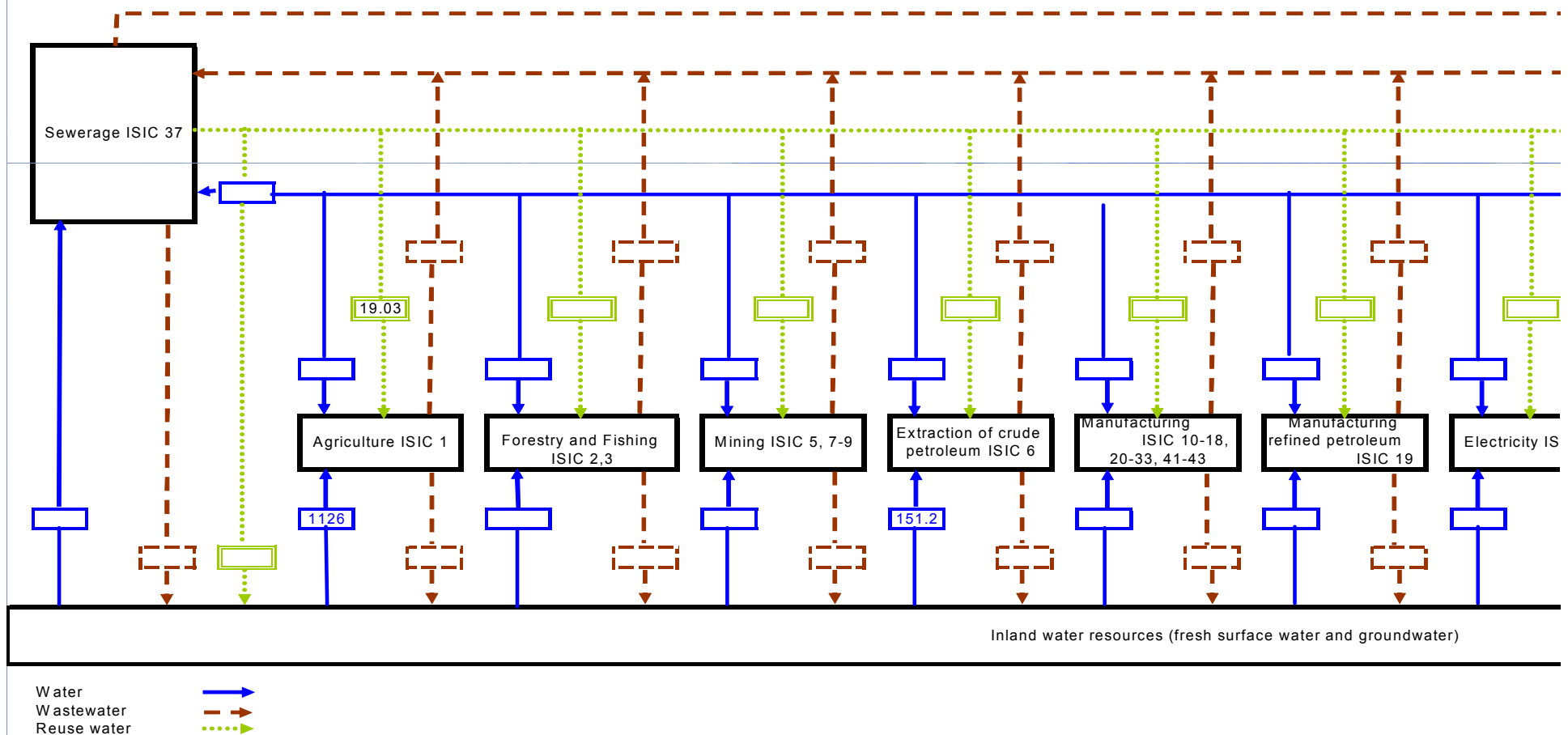
		Industries (by ISIC categories)					Households	Total
		1	36	37	others	Total		
From the environment	U1 - Total abstraction	506	294	0.0	49.0	849	0.0	849
	a.1- Abstraction for own use	506	0.0	0.0	49.0	555	0.0	555
	a.2- Abstraction for distribution	0.0	294	0.0	0.0	249	0.0	249
	b.1- From water resources:	506	294	0.0	49.0	849	0.0	849
	* Surface water	261	80	0.0	4.0	345	0.0	345
	* Groundwater	245	214	0.0	45.0	504	0.0	504
	* Soil water	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	b.2- From other sources	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	* Collection of precipitation	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	* Abstraction from the sea	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Within the economy	U2 - Use of water received from other economic units	91	0.0	113	0.0	202	147	351
	of which: Reused water	91	0.0	0.0	0.0	91	0.0	91
	Wastewater to sewerage	0.0	0.0	113	0.0	113	0.0	113
Total use of water = U1+U2=								1200

SEEAW Physical Supply Table, JORDAN, 2007

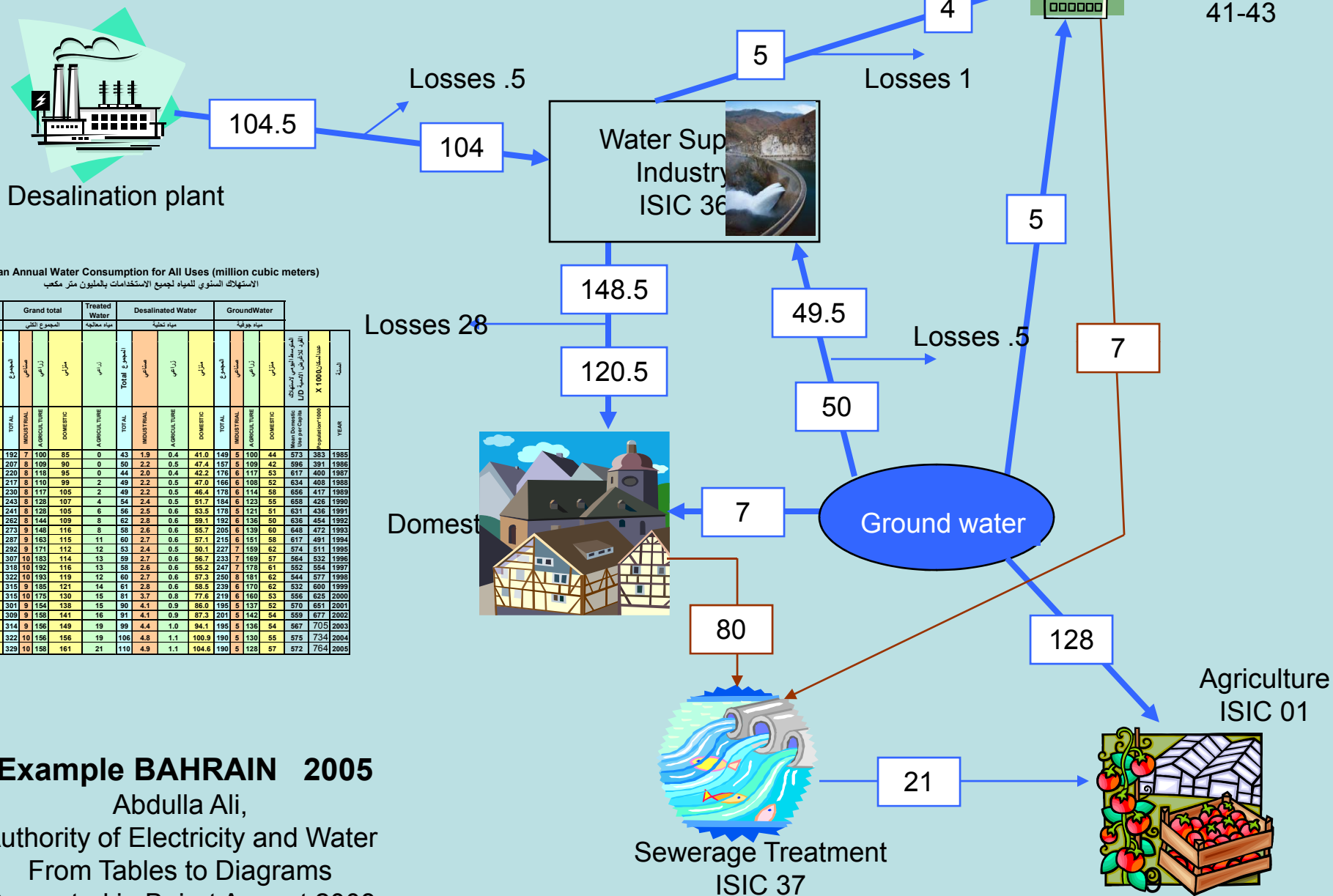
		Industries (by ISIC categories)					Households	Total
		1	36	37	others	Total		
Within the economy	S1- Supply of water to other economic units	0.0	147	91	23	271	90	351
	<i>of which:</i> Reused water	91	0.0	0.0	0.0	91	0.0	91
	Wastewater to sewerage	0.0	0.0	0.0	23	23	90	113
To the Environment	S2- total returns= (D1+D2)	60	140	6	5	211	0.0	211
	D1- to water resources	60	140	6	5	211	0.0	211
	* surface water	5	10	6	5	23	0.0	23
	* ground water	50	10	0.0	0.0	60	0.0	60
	* soil water	5	120	0.0	0.0	125	0.0	125
	D2- to other sources	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total supply of water = S1+S2=		562						
Water consumption= total use – total supply		638						

Pilot Water accounts for Oman

Trial population of standard physical supply and use diagram



Pilot Water accounts for Bahrain



Example BAHRAIN 2005

Abdulla Ali,

Authority of Electricity and Water

From Tables to Diagrams

Presented in Beirut August 2008

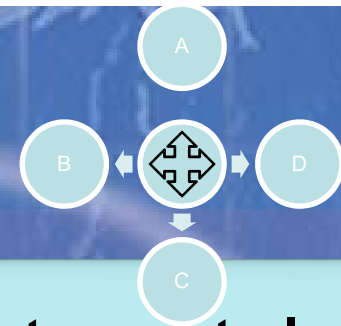
Lessons from countries implementing SEEAW,

- The development of an implementation and mechanism for coordinating the inputs of the various government departments and other stakeholders is essential
- Pilot reports, for particular regions, or with a simplified breakdown of industries, can be prepared relatively quickly (6-12 months), depending on the data availability and data quality and the resources available for compilation.
- Pilot reports very useful for engaging government decision-makers

What we need

- Commitments at the high level
- Institutional and legal provisions on official water statistics and accounts
- Cooperation
- Sustainability of process
- Good examples of water accounts convincing for policy makers and public

Institutionalisation



Interdepartmental and Intradepartmental
sustainable system for national coordination at
high level and technical level
steering committee, working group, etc.

Identifying
Agencies in
Country
producing or
using water
data
Identifying
focal points

Data
assessment
data
gaps
Identifying
Priorities

Defining
responsibilities: lead
agency,
rotating
responsibility

Developing
work
plan

Requesting
resources

Legislative Provisions

Existing Laws
and
Regulations
on Water
Management
and Statistics
and Accounts

Laws to be
developed

National
Strategies

In ESCWA, no laws on water accounts

If no legislative foundations, the institutional arrangements can still develop

Efforts should be made to strengthen the process with legislative

Technical

Installing
monitoring
stations

Conducting
environment
and water
surveys

Data
base

GIS

Satellite
Imagery

Use of common
Methodologies
concepts,
definitions and
classifications
within and
across countries
according to
International
Standards

Training
Technical
Assistance
Misssions

1. Water Accounts at the watershed levels (Lebanon, Oman, Egypt)
2. Supply by water tankers, cooling water, desalination
3. Soil water, brackish water...
4. Ensuring Quality of data
5. Need for aggregate Indicator

International and Regional Cooperation

Continuity of support from International Community
Interregional Knowledge exchange

UNEP
UNDP
UN Water
FAO

DESA/DSD
DESA/UNSD
and Stats
Division of
Regional
Commissions

World Bank

ESCWA, MEDSTAT, UNSD, UNEP, ECLAC worked together
More coordination needed with World Bank, UNDP, DSD and Others



Role of Organizations

ESCWA, UNSD, UNEP, MEDSTAT, ECLAC

1. Sharing Water Data (UNSD-UNEP Questionnaire)
2. Verifying and checking data, contacting and following-up with countries for clarifications and corrections
3. Conducting joint trainings and missions on Water Accounts (training material, coordinated assistance)
4. Adding countries concerns and comments in manuals and recommendations
5. Sharing lessons learned with other regions
6. Web Portal on Environmental Accounting for ESCWA Countries ESIAP.escwa.org.lb
7. Engaging other major partners mainly DSD, UNDP, UNEP, WB, FAO

Foreign Financing

FF on Projects on Water need to be coordinated and integrated for water accounts purposes

National
Water
Information
System

Environmental
Protection
Expenditure

Integrated
Water
Management

Communication and Dissemination

Practical Implementation Pilot

Trial population of standard tables for national level (if resources allow for one or more regions)

Physical supply and
use tables

Hybrid supply and use
tables

Assets accounts

Preliminary analysis of data, including a detailed data quality assessment of existing data sources

Circulation of trial tables and preliminary analysis

Revise tables and analysis for publication

Hybrid and economic accounts

- **Aligns** physical information recorded in the physical supply and use tables with the monetary supply and use tables of the 1993 SNA.
- Physical quantities can be compared with the matching economic flows (for example, linking volumes of water used with monetary information on the production process, such as value added, and deriving indicators of water efficiency).
- Identifies those elements of the existing 1993 SNA which are relevant to water. Information on the costs associated with water use and supply such as water abstraction, purification, distribution, and wastewater treatment, information on financing, that is, the amount users pay for the services of wastewater treatment, for example, and the extent these services are subsidized by government and other units.
- Useful for cost-recovery policies and water-allocation policies and can also be compiled for activities aimed at the protection and management of water resources so as to obtain information on the national expenditure and financing by industries, households and the government.

جداول الحسابات المائية الموحدة . SEAAW جداول العرض والاستعمال
 المهجنة (الفصل الخامس) . جدول 5. جدول العرض المهجن

Physical and monetary units

وحدات مادية ومالية

	Total supply at purchaser's price مجموع العرض بسعر المشتري	Trade and transport margins هوامش التجارة والنقل	Subsidies on products المعونات على المنتجات	Taxes on products الضرائب على المنتجات	Imports الاستيراد	Output of industries (by ISIC categories)							مخرجات الصناعات (بموجب أبواب الأيزيك)		
						Total output, at basic prices مجموع المخرج بأسعار الأساس	99-45 39 38	37	36	35		33-5 43-41			3-1
										:of which Hydro من بينها المائي	Total المجموع				
1. Total output and supply (monetary units) of which: 1.a Natural water (CPC 1800) 1.b Sewerage services (CPC 941)													1. مجموع المخرجات والعرض (وحدات مالية) من بينها: 1.أ. المياه الطبيعية (CPC 1800)) 1.ب. خدمات الصرف الصحي (CPC 941)		
2. Total supply of water (physical units) 2.a - Supply of water to other economic units Of which: 2.a.1 - Wastewater to sewerage 2.b - Total returns													2. مجموع عرض المياه (وحدات مادية) 2.أ. عرض المياه للوحدات الاقتصادية الأخرى من بينها : 2.أ.1 - المياه العادمة إلى الصرف الصحي 2.ب. مجموع العائدات		
3. Total (gross) emissions (physical units)													3. مجموع الانبعاثات (الإجمالي) (وحدات مادية)		
Pollutant 1													الملوث 1		
Pollutant 2													الملوث 2		
Pollutant													الملوث ...		

SEEAW Standard VI: Hybrid use table

	Total uses at purchaser's price	التصدير Exports	التكوين Capital formation	Actual final consumption الاستهلاك النهائي الفعلي			Intermediate consumption of industries by ISIC categories استهلاك الصناعات الوسيط (بموجب أبواب الأيزيك)										
				المجموع المجموع	الحكومة Government	المساكن Households	Total indust ry مجموع الصناع ة	،38 ،39 99- 45	37	36	35		،33-5 43-41	،3-1			
											المجموع المجموع	Social transfers in kind from gov. & NPISHs نحو ثلاث احتماعية عندية Final consumption expenditure				:of which Hydro من بينها المائي	Total المجموع
1. Total intermediate consumption and use (monetary units) of which: 1.a Natural water (CPC 1800) 1.b Sewerage services (CPC 941) 2. Total value added (monetary units)															1. مجموع الاستهلاك والاستعمال الوسيط (وحدات مالية) من بينها: 1.أ. المياه الطبيعية (CPC 1800) 1.ب. خدمات الصرف الصحي (CPC 941) 2. مجموع القيمة المضافة (وحدات مالية)		
3. Total use of water (physical units) 3.a Total Abstraction of which: 3.a.1- Abstraction for own use 3.b Use of water received from other economic units															3. مجموع استعمال المياه (وحدات مادية) 3.أ. مجموع الاستخراج من بينها: 3.أ.1- الاستخراج للاستعمال الذاتي 3.ب. استعمال المياه المتلقاة من الوحدات الاقتصادية الأخرى		

Example of Hybrid tables Mexico, CONAGUA

Tablas híbridas

Tabla híbrida de oferta																	
Millones de pesos corrientes,																	
	Producción total por industria (por categoría SCIAN) 2006									Producción total a precios básicos	Hogares (Uso Doméstico)	Oferta total de agua	Importación	Oferta Total a precios básicos	Impuestos menos subsidios a la producción	Margen de comercio y distribución	Oferta total a precios de comprador
	11	21,23,31-33	221		2221		2222	43-93									
	Agricultura, Ganadería, Silvicultura, Pesca y Caza	Minería, Construcción, Industrias Manufactureras	Generación, transmisión y Suministro de Energía Eléctrica	Del cual:		Captación tratamiento y suministro de agua	Alcantarillado	Suministro de gas por ductos	Servicios								
				Termoeléctricas	Hidroeléctricas												
1. Produccion y oferta total (Millones de pesos corrientes)	550,430	8,197,826	349,467	292,154	57312.6	28,269	245.1	1188.0	821468217,342,107			3,037,584	20,379,691	1401,643	0.0	20,781,334	
De la cual:						28268.8	0.0		28,269			0.0	28,269	0.0	0.0	28,269	
1.a Agua Potable	0.0	0.0	0.0	0.0	0.0				0.0	28,269		0.0	28,269	0.0	0.0	28,269	
1.b Sevicio de alcantarillado y saneamiento	0.0	0.0	0.0	0.0	0.0	0.0	245.1		0.0	245		0.0	245	0.0	0.0	245	
2. Oferta Total de agua (Millones de m3)	36747.2	2424.2	144352.7	14057.7	140295.0	10701.8	6396.9		201675.3	3579.1	205254.4	0.0					
2.a Oferta de agua a otras unidades economicas	0.0	1747.1	0.0	0.0	0.0	5456.3	3395.1		49.7	10648.1	3368.4	14016.5	0.0				
2.b Retornos totales	36747.2	677.2	144352.7	4057.7	140295.0	5245.5	3001.7		191027.2	210.7	191237.9						
3. Emisiones totales de DBO (Miles de toneladas)		5850.0					3300.0		9150.0								

Tablas híbridas, Mexico, CONAGUA

Tabla de uso híbrida

Millones de pesos corrientes																			
	Consumo Intermedio de las industrias (por categoría SCIAN) 2006										Consumo final actual					Formacion bruta de capital	Variación de Existencias	Exportaciones	Usos totales a precios de comprador
	11	21,23,31-33	221		2221		2222	43-93	Total consumo intermedio	Hogares (Doméstico)			Gobierno	Total					
	Agricultura, Ganadería, Silvicultura, Pesca y Caza	Minería, Construcción, Industrias Manufactureras	Generación, transmisión y Suministro de Energía Eléctrica	Del cual:		Captación tratamiento y suministro de agua	Alcantarrillado	Suministro de gas por ductos		Servicios	Gasto de Consumo final	Transferencias sociales del Gobierno			Total				
				Termoeléctricas	Hidroeléctricas														
1. Consumo intermedio y uso Total (Millones de pesos corrientes)	219,204,792,60	792,667	222,670	186,152	36517.9	8,664	75.1	759.0	2192876.0	7,436,912	6,709,611		1,082,039	7,791,625,527,410		121,225	2,904,137	20,781,334	
De la cual:																			
1.a Agua Potable	426.0	7649.6	23.4	4.2	19.1	93.9	0.0		7101.7	15294.5	12317.5	657.8	12975.3	0.0	12975.3	0.0	0.0	28269.8	
1.b Sevicio de alcantarillado y saneamiento	56.6	188.5	0.0	0.0	0.0	0.0	0.0		0.0	245.1	0.0	0.0	0.0	0.0	0.0		0.0	245.1	
2. Valor agregado total (Millones de pesos corrientes)	331,233,405,10	126,791,405,159	126,791,405,159	106,002,795	19,604	170			6,021,806	9,905,195								9,905,195	
3.Uso Total de agua (Millones de m3)	64293.9	3287.5	144566.2	140291.2	10701.8	6397.0			230540.4				4516.0	4516.0			0.0	235056.4	
3.a Extraccion Total	60170	2254	144504.0	140294.2	10702.5	2589			221001.7				38.2	38.2				221039.9	
De la cual:																			
3.a.1- Extraccion para uso propio	60170.0	2254.0	144504.0	140290.4	10702.5	2589	0.0	0.0	207710.8				38.2	38.2				207749.0	
3.b - Uso de agua recibida de otras unidades economicas	4123.9	1033.5	62.2	62.2	0.0	0.0	3807.9		511.3	9538.7			4477.8	4477.8			0.0	14016.5	
ISIC 36		705.7	0.0	0.0	0.0	0.0	0.0		272.8	705.7			4477.8	4477.8				5183.5	

AN EXPERIMENTAL MONETARY WATER ACCOUNT FOR AUSTRALIA 2007

5 USE TABLE - EXPENDITURE ON WATER AND RELATED SERVICES SUPPLIED BY THE WATER SUPPLY, SEWERAGE AND DRAINAGE SERVICES INDUSTRY—2004-05 and 2003-04

	Urban water	Rural water	Bulk water	Waste water & sewerage	Total
	\$m	\$m	\$m	\$m	\$m
2004-05					
Intermediate consumption					
Agriculture, forestry and fishing	—	291	—	—	291
Manufacturing	229	3	—	252	484
Mining	51	2	—	55	108
Electricity and gas supply	88	3	444	97	632
Water supply, sewerage and drainage	2	—	—	2	4
Construction	9	—	—	10	19
Wholesale & retail trade	77	—	—	84	161
Accommodation, cafés and restaurants	45	—	—	49	94
Transport and storage	56	—	—	61	117
Finance, property and business services	91	—	—	100	191
Government administration	80	—	—	88	168
Education	56	—	—	62	118
Health & community services	44	—	—	49	93
Cultural and recreational services	240	—	—	264	504
Total intermediate consumption	1 068	299	444	1 173	2 984
Final consumption by households	2 147	—	—	2 357	4 504
Exports	—	—	—	—	—
Total	3 215	299	444	3 530	7 488

8

INDUSTRY GROSS VALUE ADDED FOR WATER USING INDUSTRIES—2004-05

	<i>Industry gross value added</i>	<i>Water consumption</i>	<i>Industry gross value added per GL water consumed</i>
	\$m	GL	\$m/GL
Agriculture	27 153	12 191	2
Mining			
Coal Mining	10 146	118	86
Oil and gas extraction	14 349	12	1 196
Metal ore mining	11 468	230	50
Other Mining(a)	3 982	53	75
<i>Total mining</i>	39 945	413	97
Manufacturing			
Food beverage and tobacco	18 551	215	86
Textile, clothing and footwear	2 827	15	188
Wood and paper products	6 479	99	65
Printing, publishing and recorded media	10 127	6	1 688
Petroleum, coal, chemical & associated products	12 956	70	185
Non-metallic, mineral products	4 951	20	248
Metal products	18 730	146	128
Machinery and equipment	19 078	16	1 192
Other manufacturing	4 070	2	2 035
<i>Total manufacturing</i>	97 769	589	166
Electricity and gas	14 933	271	55
Water supply, sewerage and drainage services	5 101	2 083	2
Other industries	711 667	1 059	672
Total	896 568	16 606	54

Identifying Agencies in Country producing or using water data

Example Oman, Mission August 2008

1. Ministry of Agriculture
2. Ministry of Commerce and Industry
3. Authority for Electricity Regulation
4. Ministry of National Economy
5. Ministry of Planning
6. Ministry of Finance
7. Ministry of Housing Electricity and Water
8. Ministry of Regional Municipalities and Water Resources
9. Public Authority of Electricity and Water
10. Water supply industry (“companies”, public and private)
11. Sewerage industry (“companies”, public and private)
12. Oman Petroleum Development
13. Muscat municipality
14. Governorate of Dhofar
15. No doubt many more!

Preliminary data assessment

- Much water data already exists in government and private sector reports
- Supply side data appears good
- Use side data is less well developed
- Terms and definitions appear to differ between data sources
- Industry aggregations are different between data sources

Some specific data gaps and deficiencies - 1

In the national accounts

- The water and electricity supply are combined
- The sewerage industry is combined with other industries
- Value of fixed capital for water supply and sewerage is not known
- Costs of water supply and sewerage for own use are not known
- Sub-national data are not published

Some specific data gaps and deficiencies - 2

In the physical water data

- Volume of water extracted from wells is poorly known
- Industry aggregations are not consistent with ISIC and are less detailed than the national accounts
- Only limited economic data (e.g. on revenues from sales or government subsidy) are published

Opportunities in SEEAW

WHAT WAS ACCOMPLISHED UNTIL NOW!

1. Countries can use available data and put it into the system allowing gaps to be identified and addressed.
2. Improved data quality by cross- checking the different standard tables
3. Strengthening coordination among national statistical offices and water and environment ministries
4. SEEA-W as agent in creation of regional networks

REGIONAL AGENDA FOR DEVELOPMENT OF FOR WATER ACCOUNT AND ENVIRONMENT ACCOUNTS

Three groupings of ESCWA countries are distinguished:

- Group 1: Bahrain, Egypt, Jordan, Lebanon, Oman, Palestine. More advanced in Environment Statistics, Possibility of producing water accounts in one year according to the work plan below.
- Group 2: Saudi Arabia, United Arab Emirates, Kuwait, Qatar. Need to establish environment statistics. Possibility of compiling water accounts in two years. Financial and human resources available.
- Group 3: Iraq, Sudan, Syria, Yemen. Need to establish environment statistics. Financial and human resources not available. Possibility of compiling water accounts in 3 years.

REGIONAL AGENDA FOR DEVELOPMENT OF FOR WATER ACCOUNT AND ENVIRONMENT ACCOUNTS

Five phases for development according to the advancement of the country in environment statistics.

Phase I: Setting the ground

Phase II: Institutional Framework , Coordination

Phase III. Technical Support

Phase IV. Production of Pilot Sub-Accounts

Phase V. Dissemination

Suggested implementation Plan

Tentative work programme for Syria for Environment Statistics and Accounts, December 4, 2008

Activities	Period	Responsible
Technical		
Study the background documents (CD-ROM)		CBS with all organizations
Meeting to discuss first water accounts		CBS with all organizations
Prepare TOR for a MEDSTAT Study Visit(s)		CBS with all organizations
Water accounts		
<i>Build Physical supply and use tables</i>		CBS with all organizations
Identify available data sources and accessibility of them		
Find estimating methods for missing data		
Populate a first pilote table (SEEAW standard table I and II)		
<i>Build Hybrid accounts</i>		
Identify available data sources and accessibility of them		CBS
<i>Build Emissions tables</i>		
Identify available data sources and accessibility of them		CBS with MoI and MoH
<i>Build Asset accounts</i>		
Identify available data sources and accessibility of them		CBS with MoI
Expenditure accounts		
Introduce complements	when available	CBS with all organizations
Environment surveys		
<i>Revision of the environmental part of the industry questionnaire</i>		CBS with all organizations
<i>Revision of the economic part of the industry questionnaire</i>		CBS with all organizations
<i>Revision of the governmental enterprises reports</i>		CBS with all organizations
<i>Reflection about the "calibration" of the volumes</i>		CBS with all organizations
<i>New environmental survey of industries and services</i>		CBS with all organizations
<i>New environmental survey of households</i>		CBS with all organizations
Institutional		

WAY FORWARD

1. Publish trial accounts and analysis
2. Begin to implement plan for on-going production of water accounts
3. Continue with Hybrid Accounts
4. Implementing Water Quality Accounts and Valuation

LONGER TERM APPLICATIONS!

1. Integrating information for water policy and management
2. Developing Environmental Accounts
3. Flexibility and expansion to accommodate regional needs (i.e. inclusion of tourism industry, separate identification of oil industries etc)

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