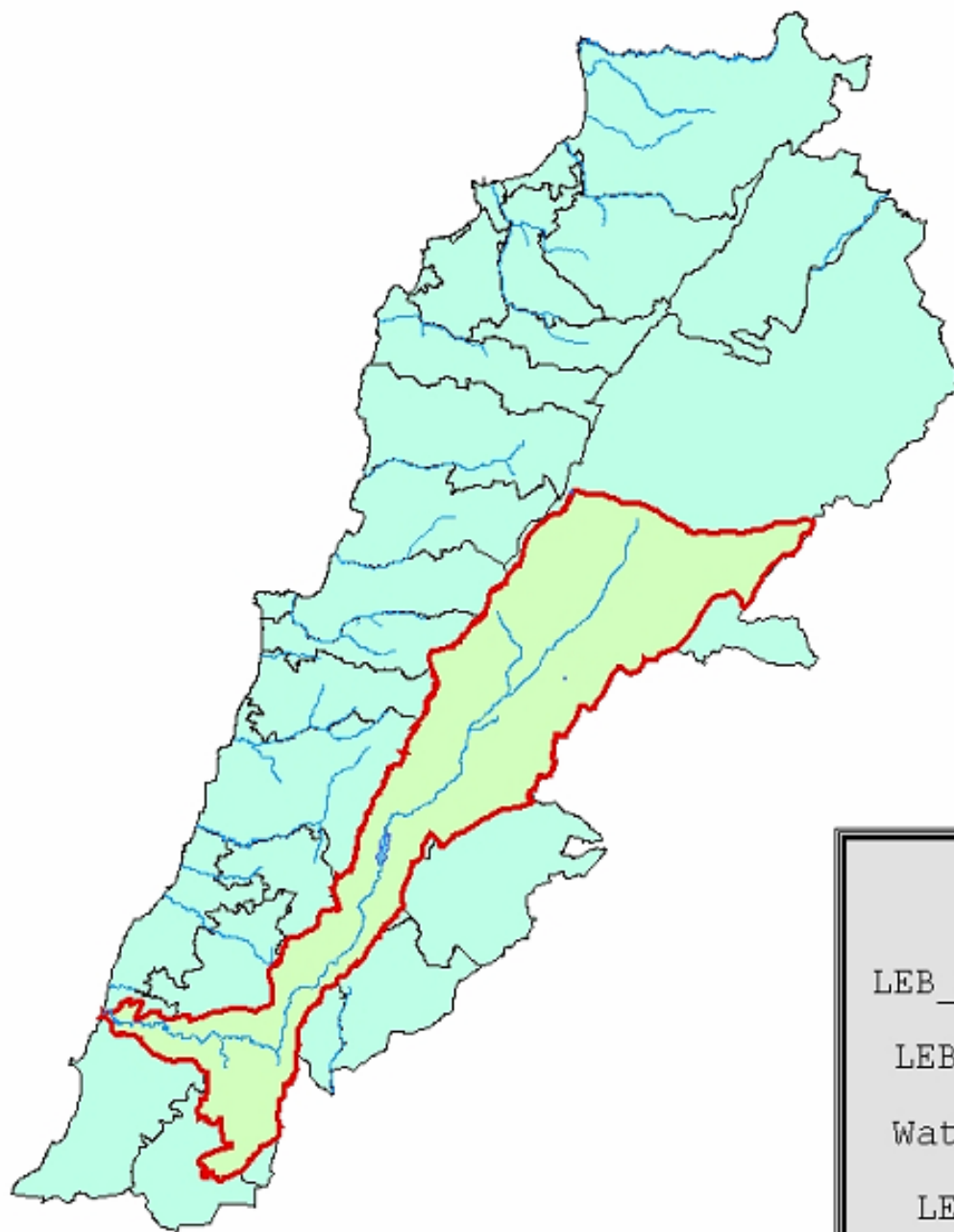




# **Litani River & Litani River Authority Projects**

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LITANI RIVER AUTHORITY - LEBANON**

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# Litani River & Watershed

- The Largest in Lebanon with 2170 Square Kilometer (20% of Lebanon Total Area)
- 30% From the total Flow of all Lebanon Rivers
- Totally running in Lebanon along 170 Km
- 60 Km of tributaries

# Litani River Authority

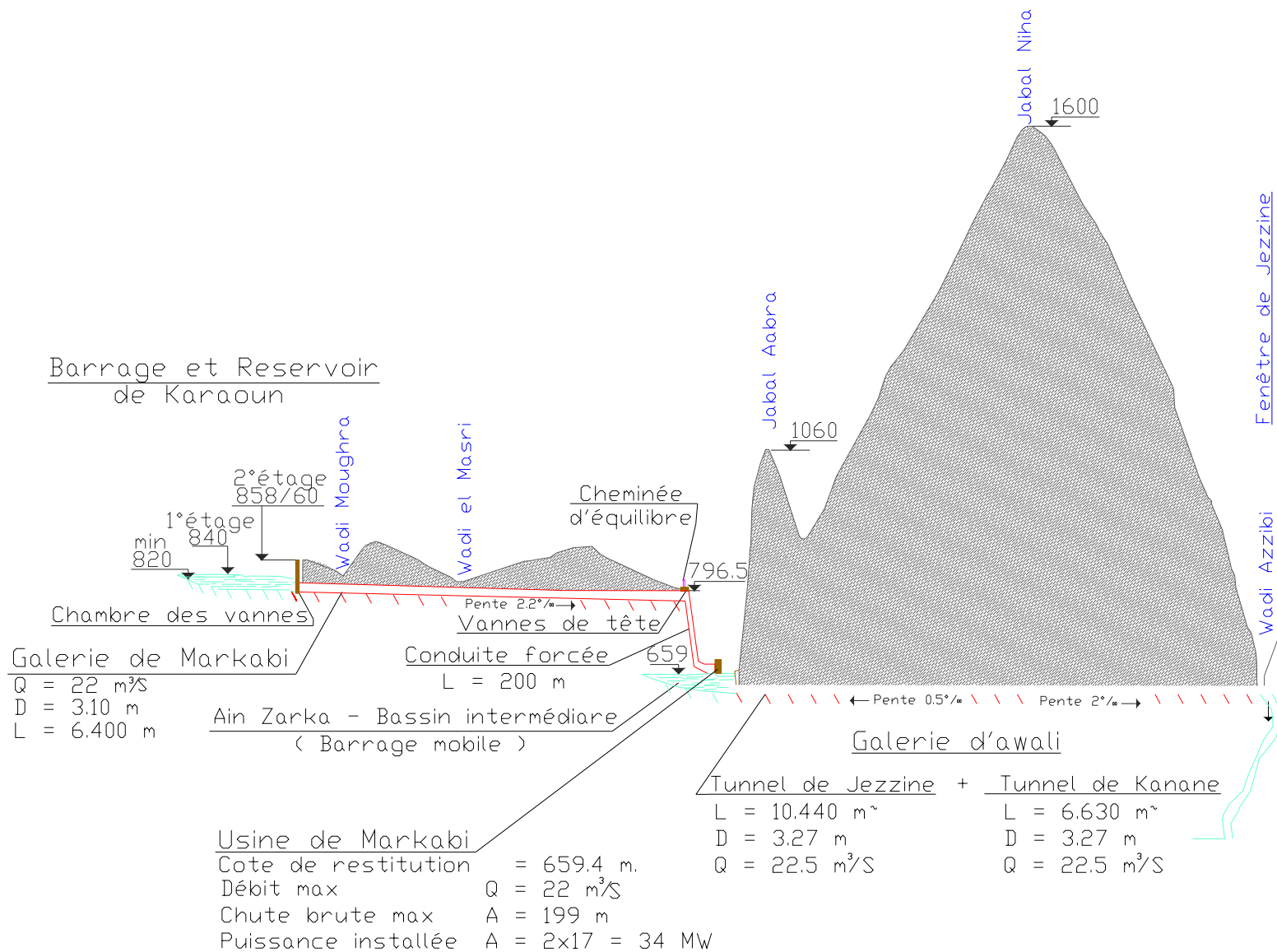
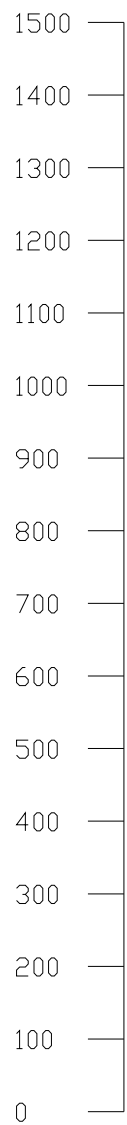
- Created by a Law dated on 14 August 1954 and rectified later on 30 December 1955:
  - Execute the Litani River Master Plan for irrigation, drainage and domestic water.
  - Execute the hydraulic electrical power generation and electrical networks between powerhouse and electrical distribution networks in all Lebanese regions.

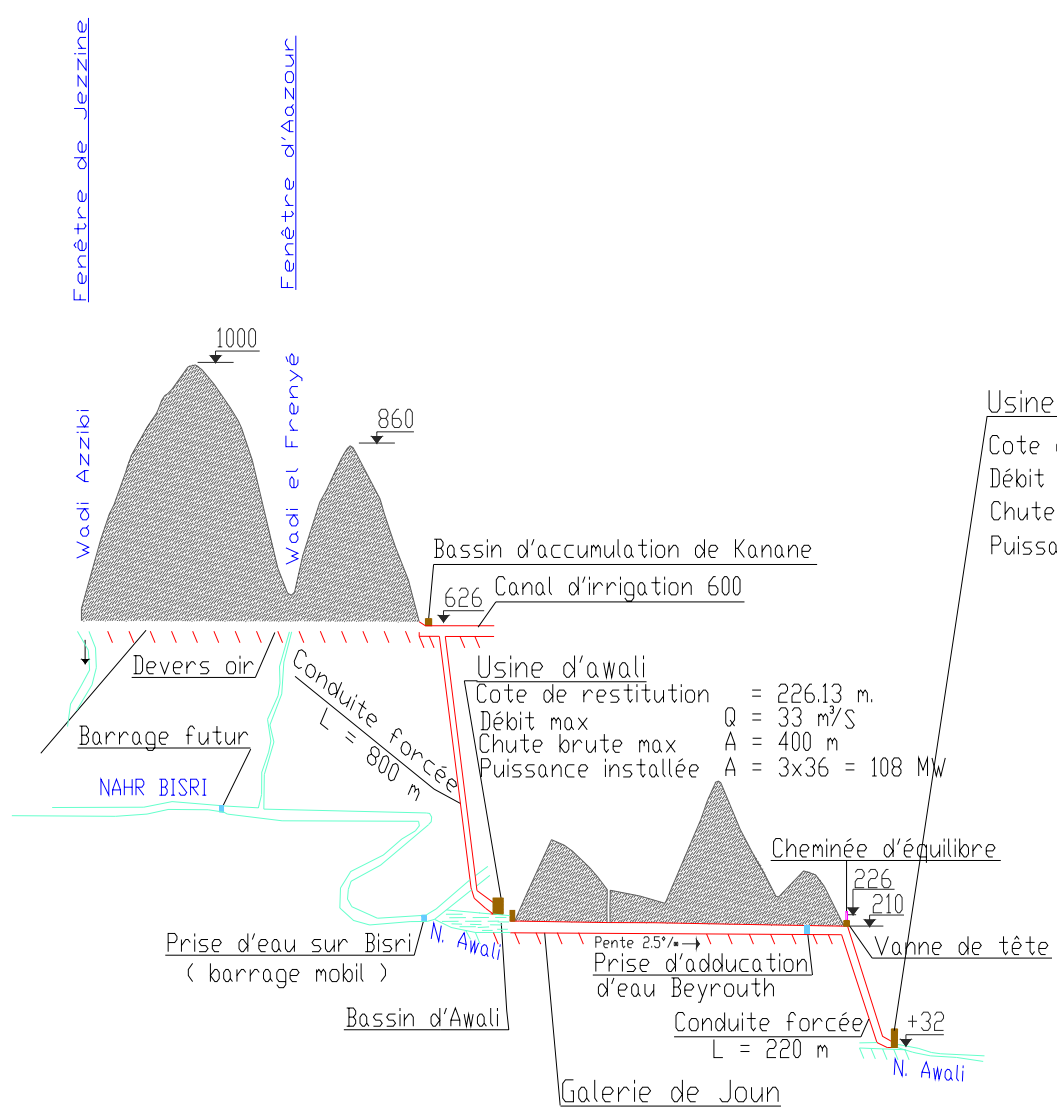
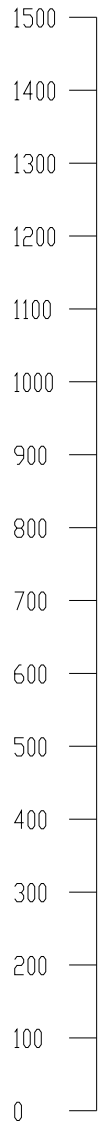
# Litani River Authority

- By different decrees, the government of Lebanon adds the following tasks:
  - Hydraulic measurements on all Lebanese rivers.
  - Study and execution of different mountain lakes like Kawachra in Akkar Zone, Kfarhouna in Jezzine and Ballout in Matn region.
  - Technical land survey and studies of dams on North Lebanon Rivers.
  - Bisri Dam Studies.
- Recently, new law 221 (water authorities Law) adds to its responsibilities all irrigation schemes in South Bekaa and South Lebanon Regions.
- A new Environmental department was created in 2006 to assess the water quality of Litani River & tributaries

# Litani River Authority Projects

- Sited in and out Litani River Basin
- Three Hydro electrical Plants producing 7-10% of Electrical Energy produced in Lebanon
- Potable Water for Southern Lebanon Region representing 20% of Lebanese population
- Irrigation Schemes for South Bekaa and South Lebanon – Concerned Regions Represent 42% of Lebanese Area (264 Villages and Towns)
- Possibility for Tourist Projects





Usine de Joun ( phase B )

Cote de restitution = 32.00 m.  
 Débit max Q = 30 m<sup>3</sup>/S  
 Chute brute max A = 196 m  
 Puissance installée



# Karaoun Dam Characteristics

Designation	Value
Total Length	1090 meters
Height (From ground level)	62 meters
Altitude Water level surface	858 meters
<b>Useful Volume of the Lake</b>	<b>220 MCM</b>
Area	12.3 Km <sup>2</sup>
width at Top	6 meters
width at Bottom	162 meters
Concrete mask area	50.000 m <sup>2</sup>



# Water Conveyance Structures Characteristics

	Markabi Tunnel	Awali Tunnel	Joun Tunnel
Length in meters	6400	17.070	6984
Diameter in meters	3.1	3.27	3.4
Useful cross section in square Meters	7.55	8.35	9.52
Flow Cubic Meters per Second	25	25	30
Slope (per Thousand )	2.2	-0.5 & + 2.2	3
Head loss friction in meters	9.7	35	

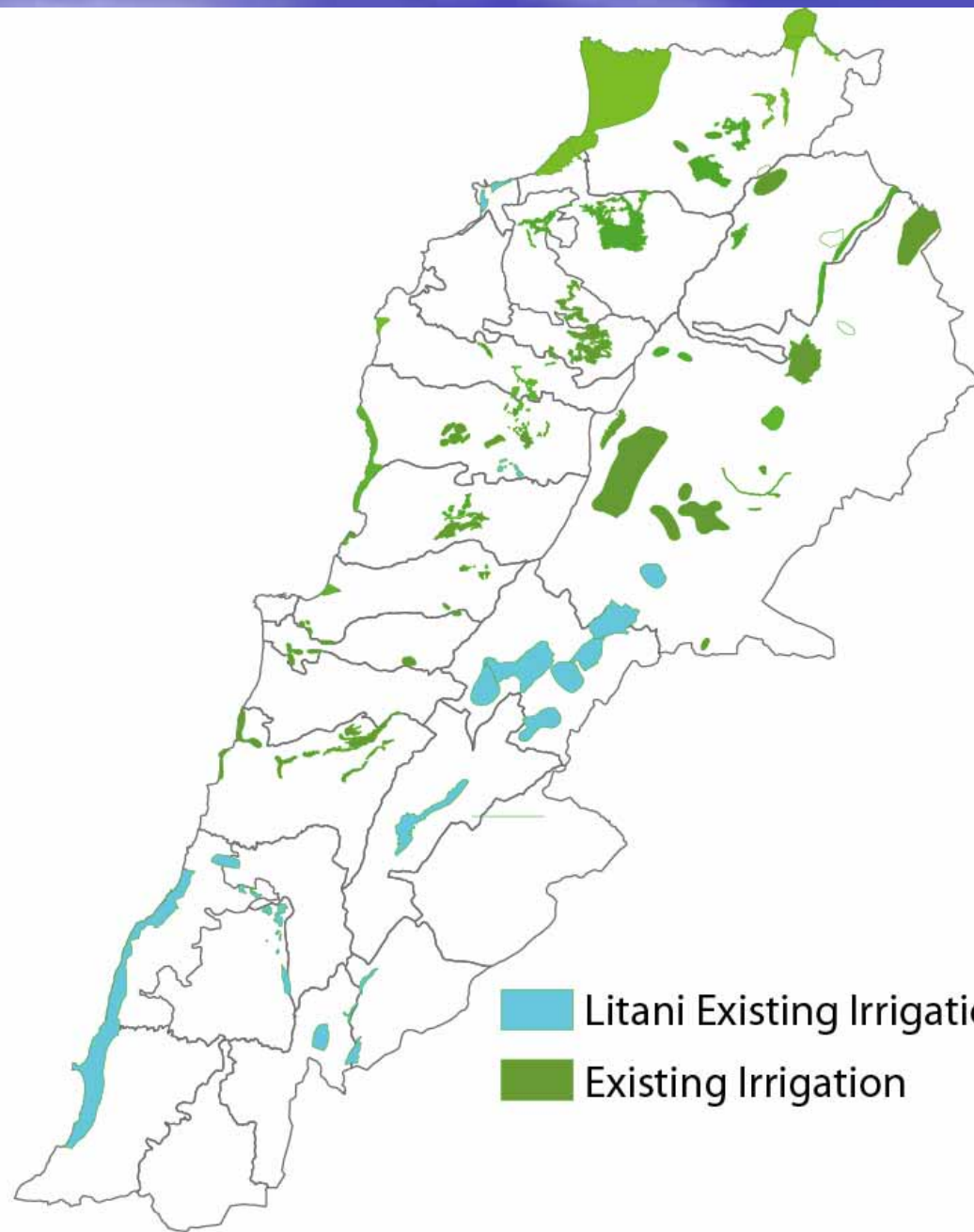
# Electrical Plants Power

- **Markabi** (2 X 21250 KVA) 2X17 MW -  
Waterfall (chute) 199 m
- **Awali** (3 X 45625 KVA) 3X36 MW: Waterfall  
400 m
- **Joun** (2 X 30000 KVA) 2X24 MW: Waterfall  
196 m

# Irrigation Schemes (Lebanon Vs LRA)

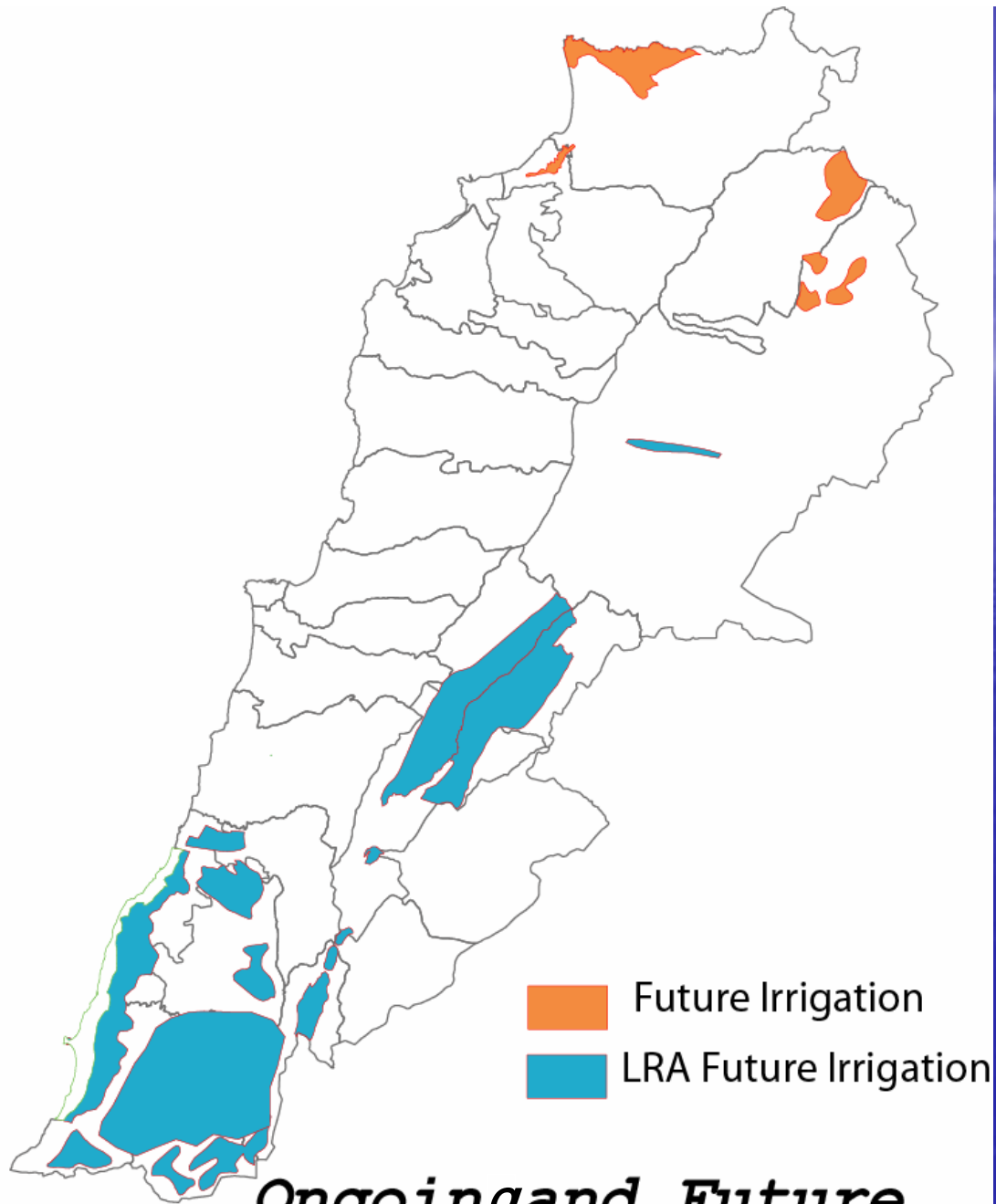
## AREA IN Ha

	Irrigated	Ongoing & Proposed	Total
Total Lebanon Schemes	60,900	82,000	142,900
LRA Schemes	16,530	60,330	76,860
LRA IN % OF LEBANON	27.14	73.75	53.79



■ Litani Existing Irrigation  
■ Existing Irrigation

***Existing Irrigations schemes***



*Ongoing and Future  
Irrigation Schemes*

# Litani River Authority Irrigation Schemes

Region	Project	Area in Ha			
		Irrigated	Ongoing	Proposed	Total
<b>South Bekaa</b>	South Bekaa	2000	6700	14800	23500
	South Qaraoun Dam		980		980
	Small and medium Schemes	8090			8090
	<b>Total</b>	<b>10090</b>	<b>7680</b>	<b>14800</b>	<b>32570</b>
<b>South Lebanon</b>	South Lebanon		15000	20000	35000
	Qasmieh	4000		2000	6000
	Pilot Sector	350	850		1200
	Small and medium Schemes	2090			2090
	<b>Total</b>	<b>6440</b>	<b>15850</b>	<b>22000</b>	<b>44290</b>
<b>Total</b>		<b>16530</b>	<b>23530</b>	<b>36800</b>	<b>76860</b>



# Cooperation with Foreign Projects

- Partnership
  - Water Saving in Mediterranean Area “WASAMED” (EU , IAM-Bari, LARI) – Ended
  - Improvement of Irrigation Water Management in Lebanon and Jordan “IRWA” ( EU, AVSI, ICU, CESAL, NCARTT)
  - Towards an ecosystem approach to the sustainable management of the Litani Watershed (IDRC, CNRS, DSA)
  - Sustainable Organic Agriculture in South Lebanon (USAid, World Vision)
  - Litani Water Quality Management Project “LWQM” (USAid) - Ended

# Cooperation with Foreign Projects

- Partnership

- Mediterranean dialogue on integrated water management "MELIA" (EU Project)
- Sustainable orchard irrigation for improving fruit quality and safety " IRRIQUAL" (EU, CSIC.INRA)
- Science-Policy Interfacing in support of the Water Framework
- Directive implementation "SPI-Water" (EU Project)

- Collaboration

- Institutional and Social Innovation in Irrigation Mediterranean Management "ISIIM" (CE, Agropolis, Chambre d'agriculture de Zahleh)- Ended

Thank You