



# GIS as a Management Tool in a Conflict Situation

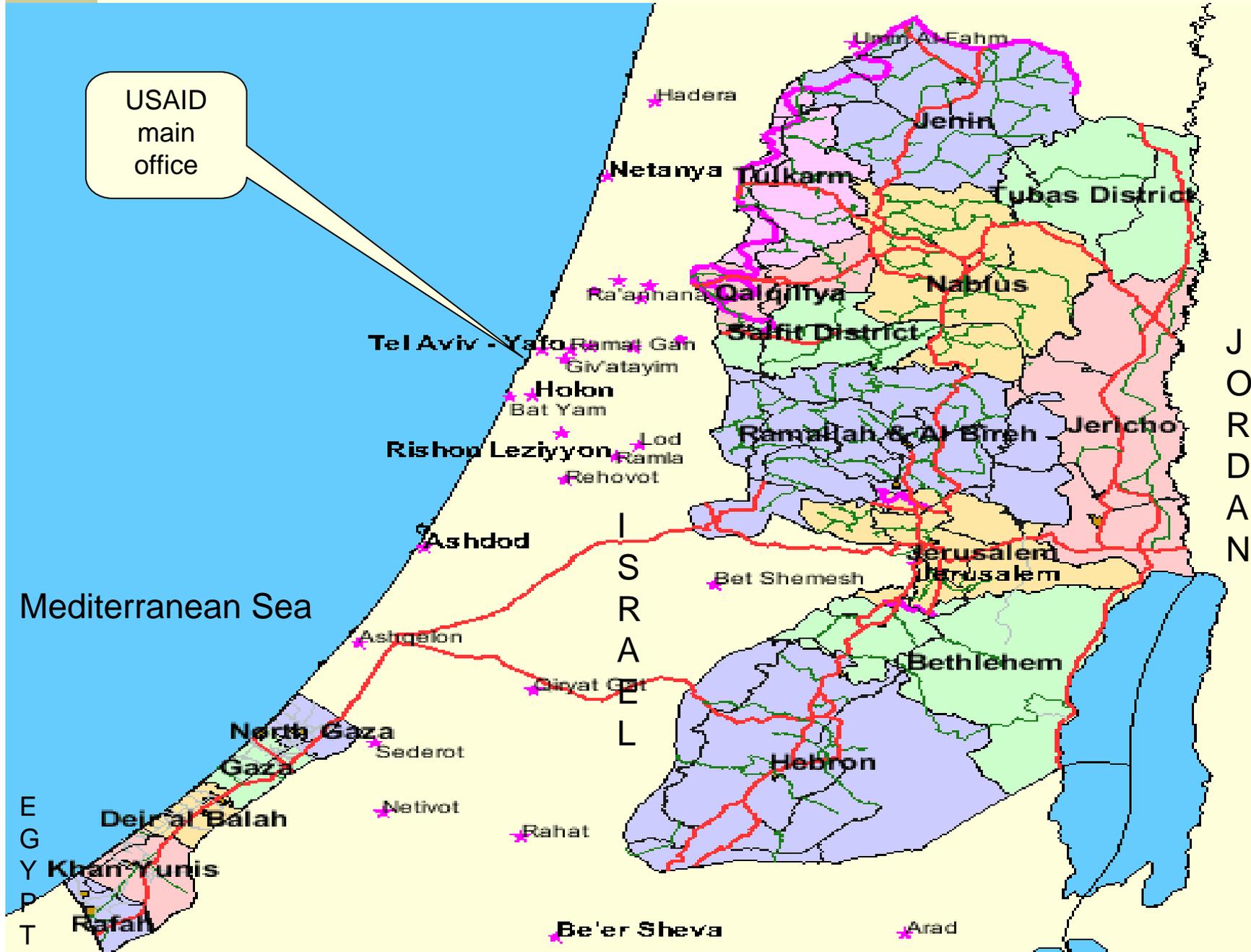
- Presenter /Author: Tayseer Edeas
- Organization: USAID/West Bank & Gaza
- Address: US Embassy, 71 Hayarkon St. Tel Aviv 63903
- E-mail: [tedeas@usaid.gov](mailto:tedeas@usaid.gov)
- GIS Domain: [www.usaidgiswbg.com](http://www.usaidgiswbg.com)
- Phone: +972-3-5114812, 972-505612117
- Fax: +972-3-5114888



# Abstract

- **Purpose:** USAID has developed an Internet-based Management Information System and GIS to help track and evaluate its projects, measure results, and tell its story to stakeholders and the public in general
- **Technology:** ArcIMS, ArcSDE and MS-SQL were used to develop an Internet-based system where USAID implementers enter their project details on-line.

# USAID Mission/ West Bank & Gaza



## ■ USAID Mission/ West Bank & Gaza

	<b>West Bank</b>	<b>Gaza Strip</b>	<b>Total</b>
<b>Population (Million)</b>	2.6	1.3	3.6
<b>Area (square Km)</b>	5655	365	6020
<b>Pop. Density</b>	407	3642	603
<b>Natural increase %</b>	3.2	4	3.5
<b>GDP</b>			1.2
<b>Annual per capita consumption of water in Liters/day</b>			70

- USAID has invested in the West Bank and Gaza more than \$1.3 Billion over the last 10 years, to support peace, stability, economic growth and provision of basic services.

# Why have an Internet MIS/GIS System

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- To track the thousands of activities being implemented by several contractors and grantees
- To better coordinate between engineers in the field and managers in the office; USDH travel is restricted
- To make planning, reporting, mapping, and results measurement faster and more efficient.
- To make information available to the public, the PA, and interested groups as to what USAID is doing (help tell the story)



## What does the System Include so far:

- **USAID activities:** approx. 8,000 activities, implemented by 60 partners, representing data from 5 SOs, 100 programs, 20 sectors and valued at \$400 Million
- **Monitoring Tools:** 150 activity types and 420 indicators (units of measure), and linked to the Mission IRs
- **Demographics:** statistics on most Palestinian localities/towns
- **Spatial data:** 13 Layers including USAID activities, water bodies, roads, cities and villages, camps, the Security wall, etc

# Process

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- USAID/WBG, its partners and the GIS contractor who won the RFP (a partnership between two companies one Israeli and one Palestinian) worked together to develop the system
- All USAID project managers and their partners agreed to a standardized coding system
- All partners agreed to add their data through the internet
- All partner' representatives received one-day of formal training and several days on-the-job training.
- A GIS team is guiding the process



# Types of Data in the System?

- **Activity related (entered by Partners)**
  - SO, location of activity, coordinates, description
  - Implementing partner, phase/program
  - Activity type which links each activity to specific Strategic Objectives, sector, and IR.
  - Output indicators per sector and activity type.
  - Dates, cost, beneficiaries, and employment
  - Pictures and success stories.
- **Engineers and oversight visits**
  - Date, activity being visited, problems, success, comments and recommendations
- **Demographic:** Census and sector/infrastructure indicators

# GIS Benefits and How it has been Used

## (1) Standardization and integration

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- GIS became the standardized reporting tool between USAID and all partners
- Integrates partner activities with the Mission's strategic framework, IRs, Sub-IRs, and the PMP.
- Integrates the work of the field engineers with the CTOs (progress, problems,...)

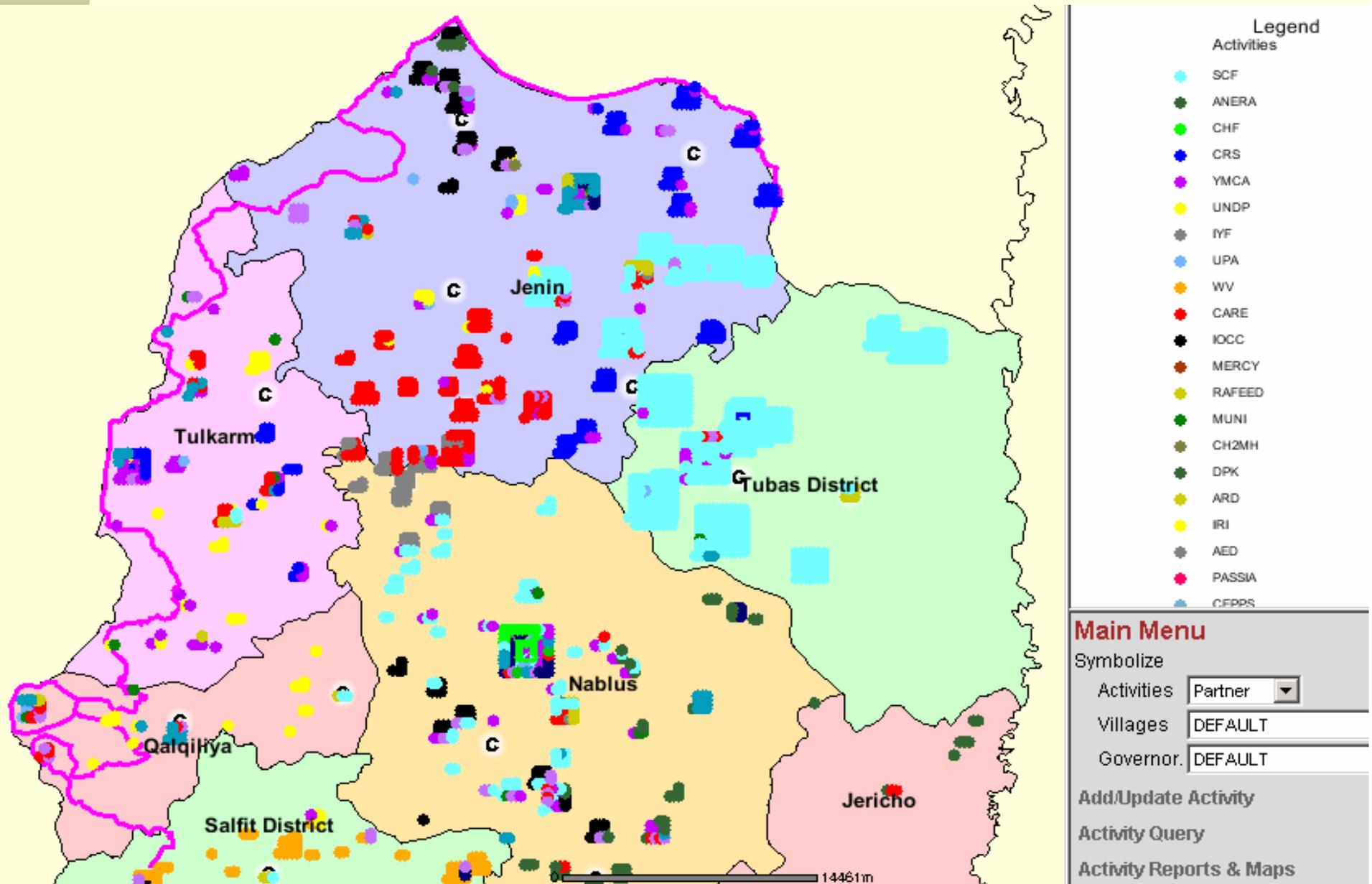
## (2) A Management Tool to:

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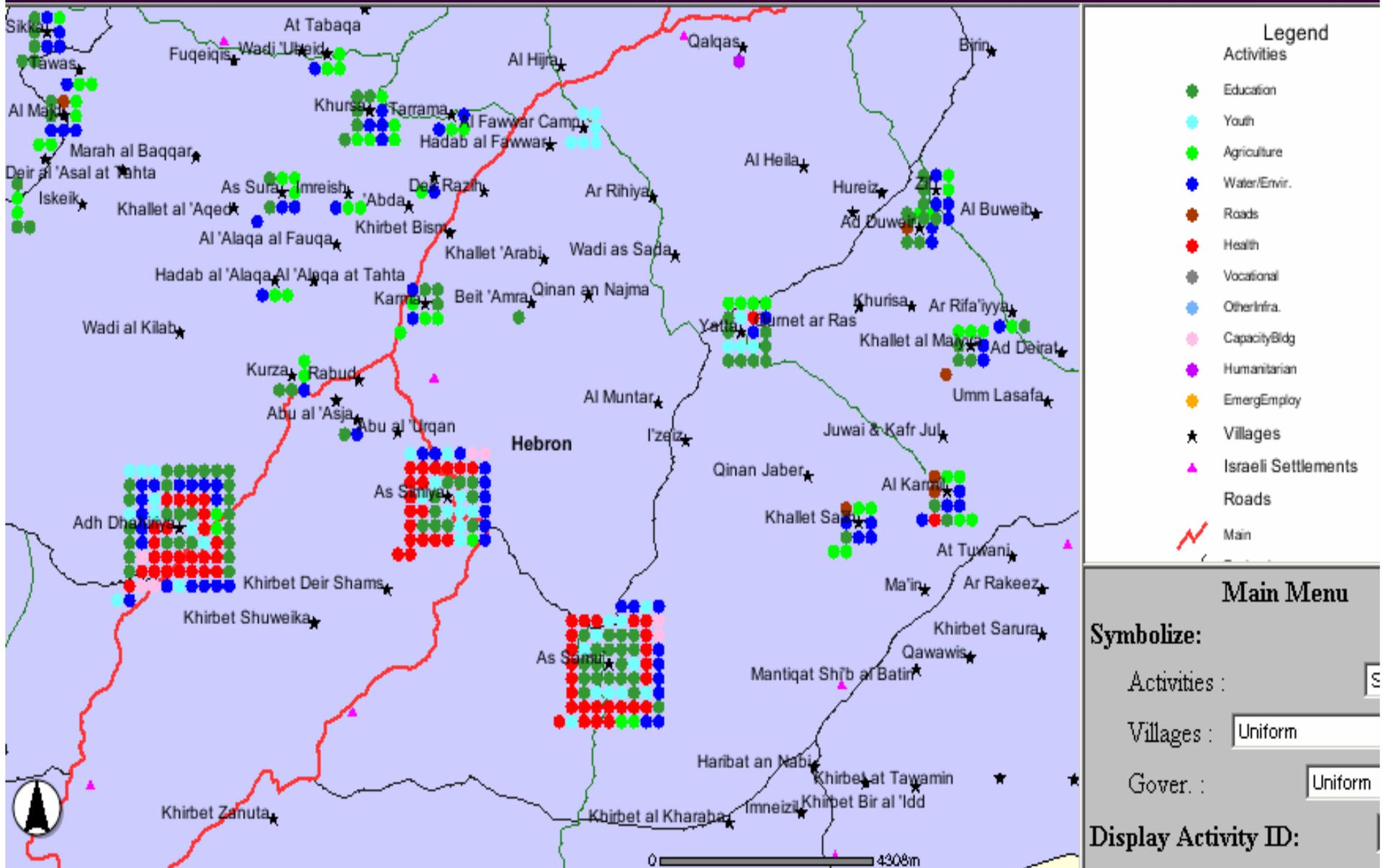
- Know who is doing what, and where, for example:
  - Are we targeting needy areas (poor, heavily populated, etc).
  - Are we supporting the most relevant sectors
- Track progress against implementation plans
- Track problems (oversight engineering feedback)



# Who is working, Where



# Activity Map symbolized by Sector



## Progress of Implementation per Strategic objective (program)

SO	Completed	Delayed	Dsgn/Apprvl	On Hold	On Time	Total
SO1	1,128	0	0	0	19	1,147
SO2	214	0	25	8	60	307
SO3	157	0	0	3	83	243
SO5	31	0	0	0	27	58
SO7	209	2	0	3	31	245
SO8	4,828	73	26	22	286	5,235
<b>Total</b>	<b>6,567</b>	<b>75</b>	<b>51</b>	<b>36</b>	<b>506</b>	<b>7,235</b>

### SO8 Programs

	Completed	Delayed	Dsgn/Apprvl	On Hold	On Time	Total
CRSP	1,842	0	0	0	0	1,842
EEGP	424	0	0	2	2	428
JOBS	625	48	22	3	186	884
JOBS-PEIP	0	0	0	0	18	18
RAFEED	84	13	0	12	27	136
VSP	1,853	12	4	5	53	1,927
<b>Total</b>	<b>4,828</b>	<b>73</b>	<b>26</b>	<b>22</b>	<b>286</b>	<b>5,235</b>

## View Pictures

Activity ID:  SO:

Partner:

Program:

Governorate:

Village:

Activity Description:

**Existing Pictures (Click on thumbnail to select; DoubleClick to enlarge) :**



OK

### Upload Pictures

Activity ID:  SO:

Partner:

Program:

Governorate:

Village:

Activity Description:

**Existing Pictures (Click on thumbnail to select; DoubleClick to enlarge) :**

<p>Jenin Road -before</p> 	<p>Jenin Road -after</p> 
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**Upload new picture (only in format JPG or JPEG and under 200 KB) :**

Path to picture file :

Caption :

## (3) An Analysis and Presentation Tool for:

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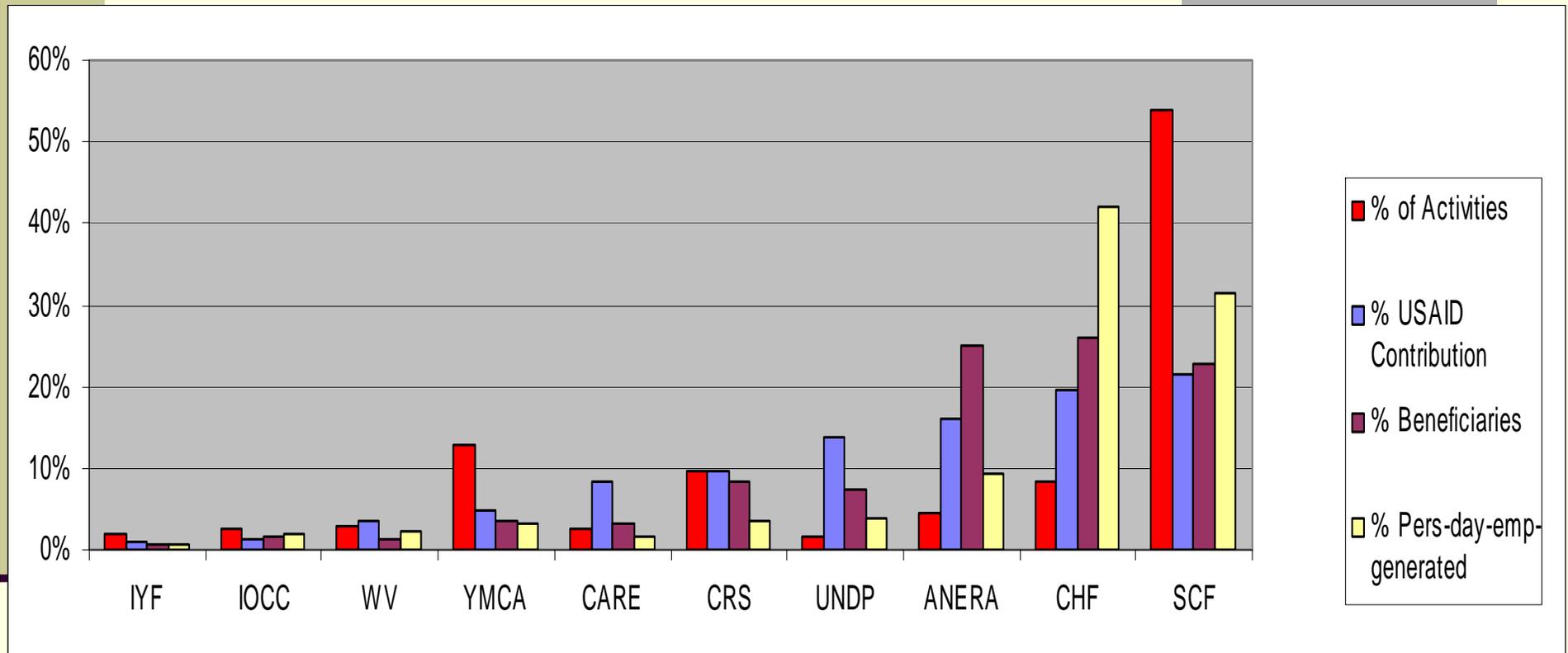
- Cost effectiveness (employment generated, overhead, etc.)
- Comparison between various USAID partners
- Compare activities in relation to relevant demographic indicators
- Summarize USAID funding by Sector, District, region, etc.

## (3) An Analysis and Presentation Tool for (cont.)

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- Respond to regular reporting needs (SAR, Annual Reports, and ad hoc requests).
- Share information with host country and other donors.

## Comparison of the Efficiency of various partners in Creating Jobs

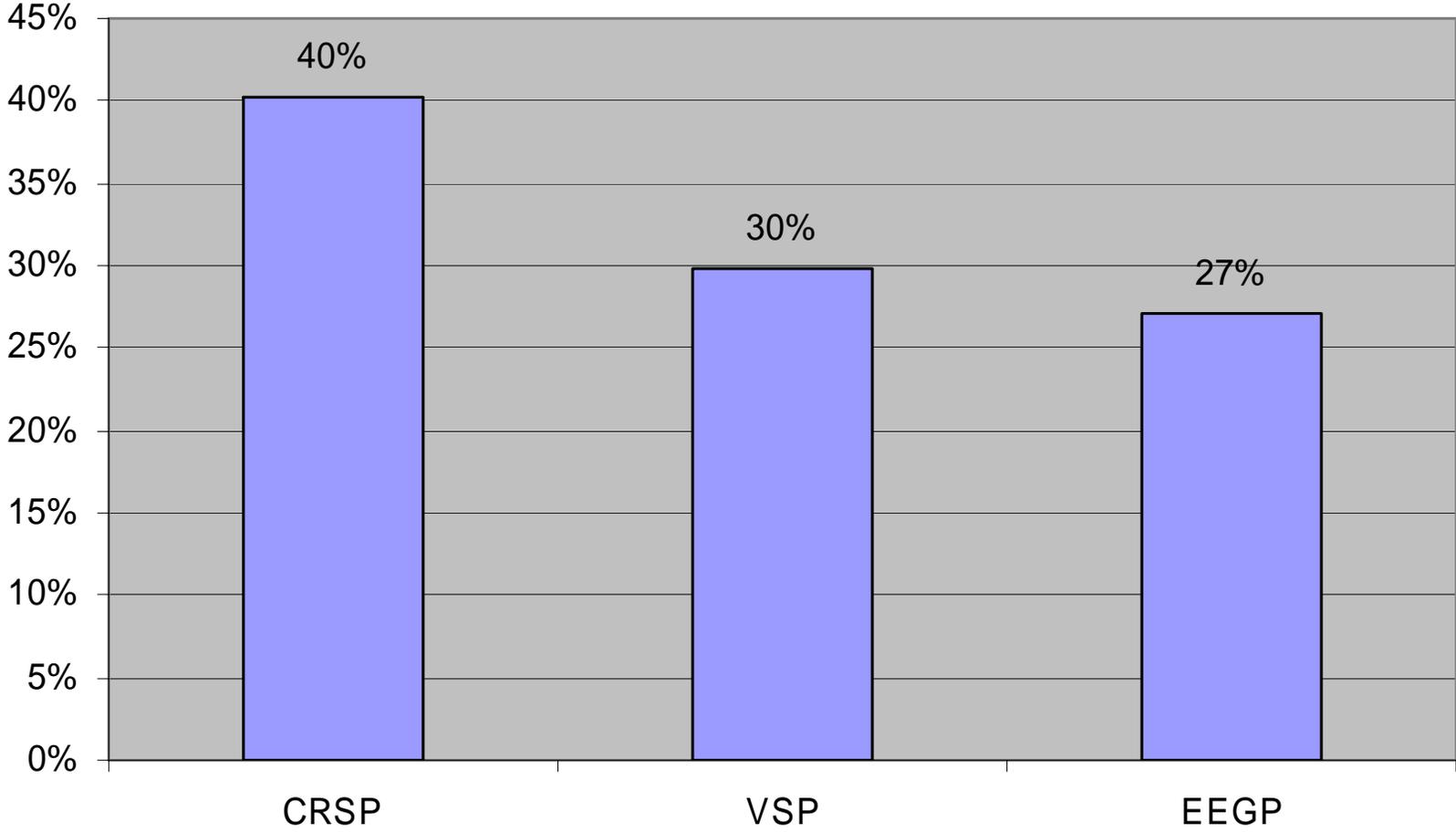


## Cost of Creating Jobs Varied among Partners

Partner	USAID (\$000)	Man-days	\$ per Day
A	4,002	115,000	34.8
B	1,267	14,000	90.5
C	5,531	263,000	21.0
D	4,554	171,000	26.6
E	543	25,000	21.7
F	7,014	179,000	39.2
G	1,869	22,000	85.0
H	906	21,000	43.1
I	1,666	42,000	39.7
<b>Total</b>	<b>27,352</b>	<b>852,000</b>	<b>32.1</b>

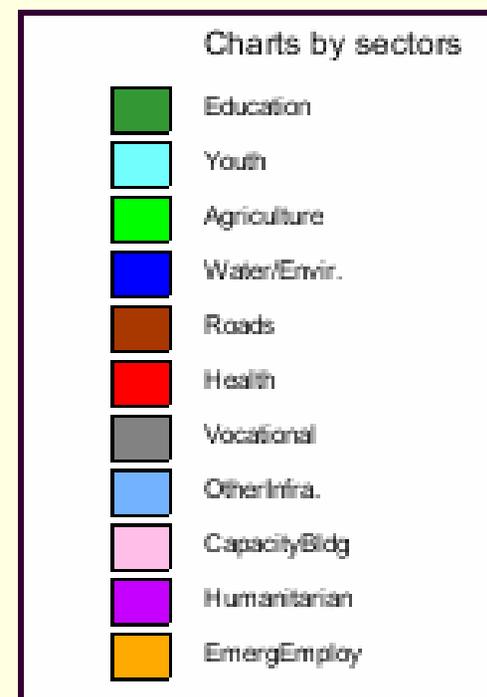
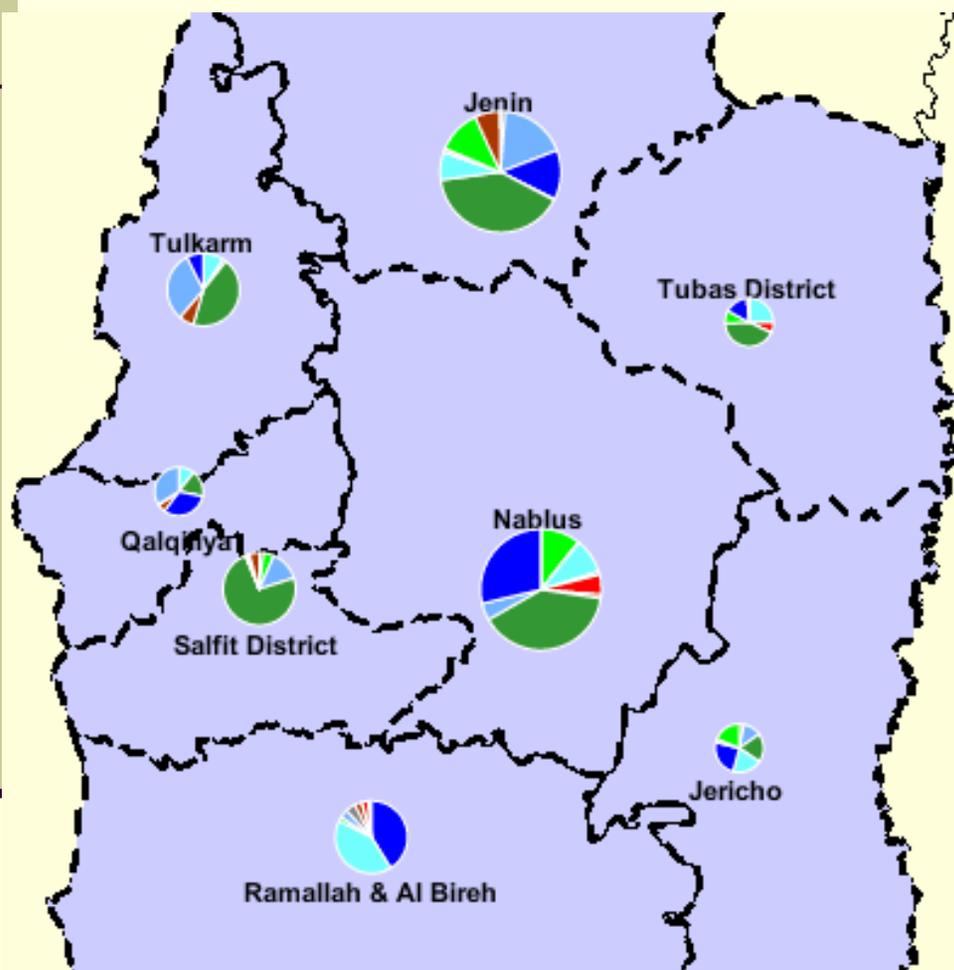
These figures include only those 1230 CSP construction-related activities that were completed and for which Person-days Work Generated  $\geq 1$

% of overhead and managment cost in relation to the total program value



■ % of overhead and managment cost

# Funding \$ by Gov. broken down by Sector



In Tulkarm, Jenin, Nablus and Tubas Education (dark green sector) is 40-60% of total; in Ramallah it is 2% and Salfit 70%.

## View Pictures

Activity ID: 3343

SO: 508

Partner: UNDP - United Nations Development Program

Program: JOBS - Job Opportunities through Basic Services

Governorate: Jenin

Village: Sanur

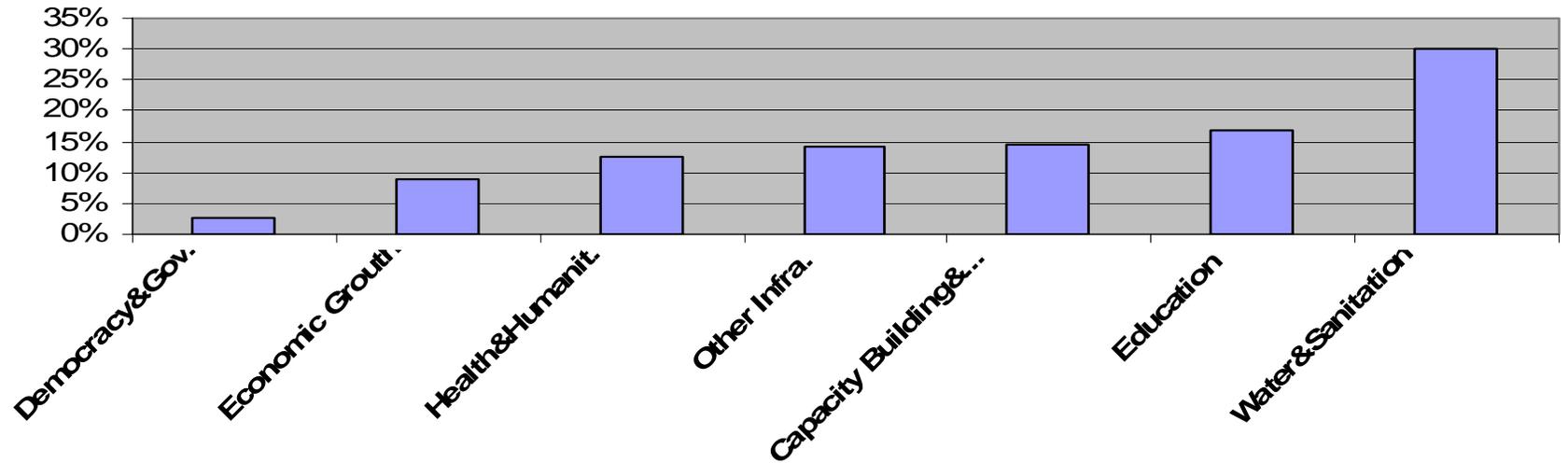
Activity Description: Paving of 3.0 km length and 5.0 wide (3m asphalt and 5m base course)

**Existing Pictures (Click on thumbnail to select; DoubleClick to enlarge) :**

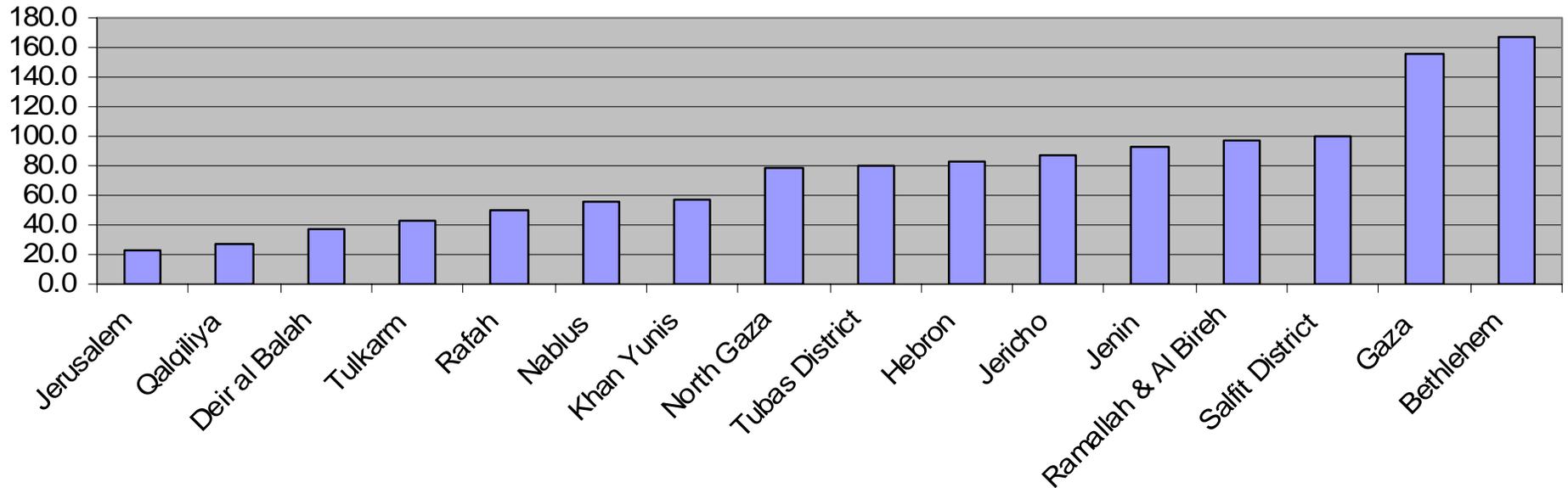


OK

### USAID Funding Level per Sector (%)



### Distribution of USAID funding by governorate (Per Capita \$)

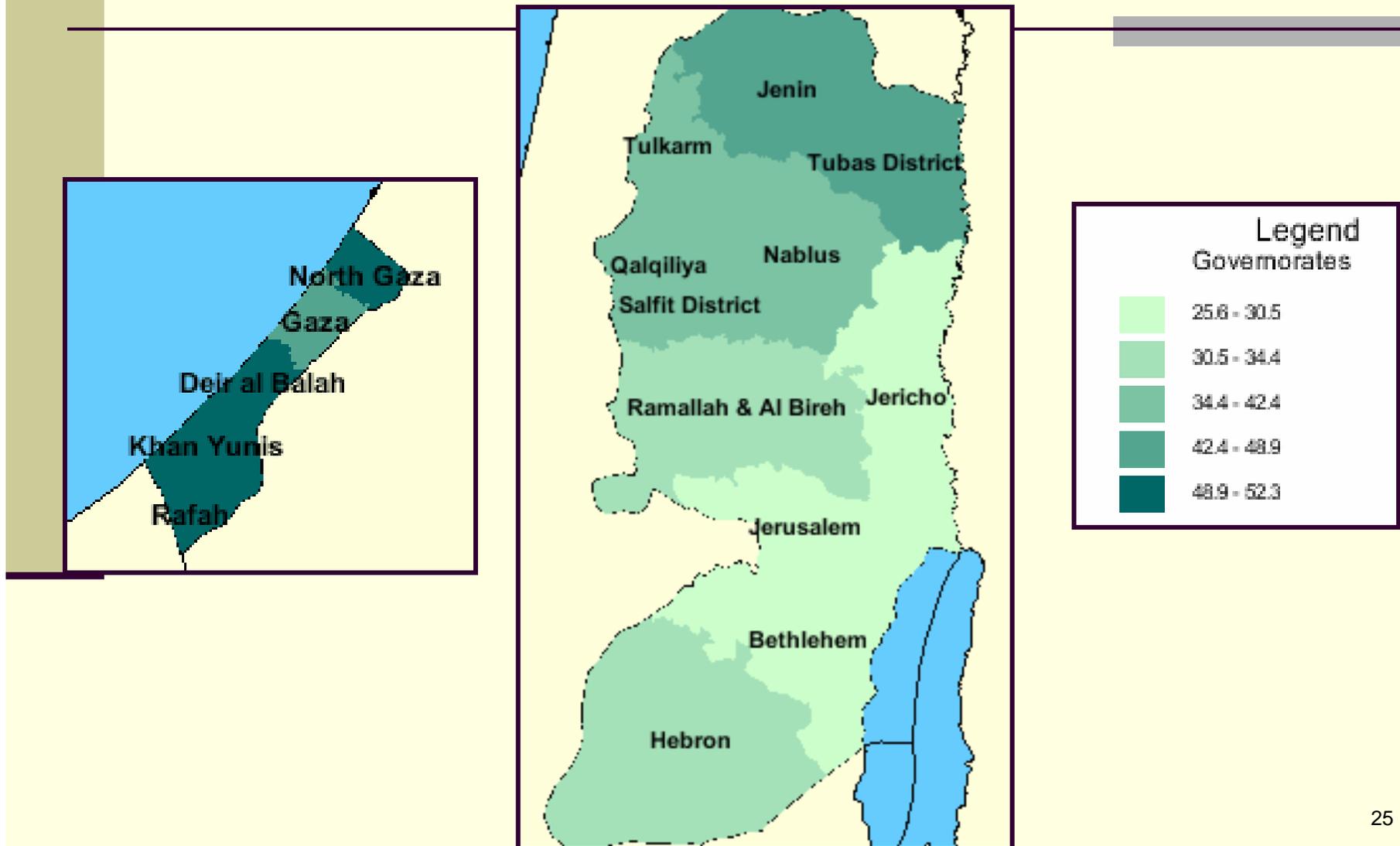


## (4) Planning and Mapping tool

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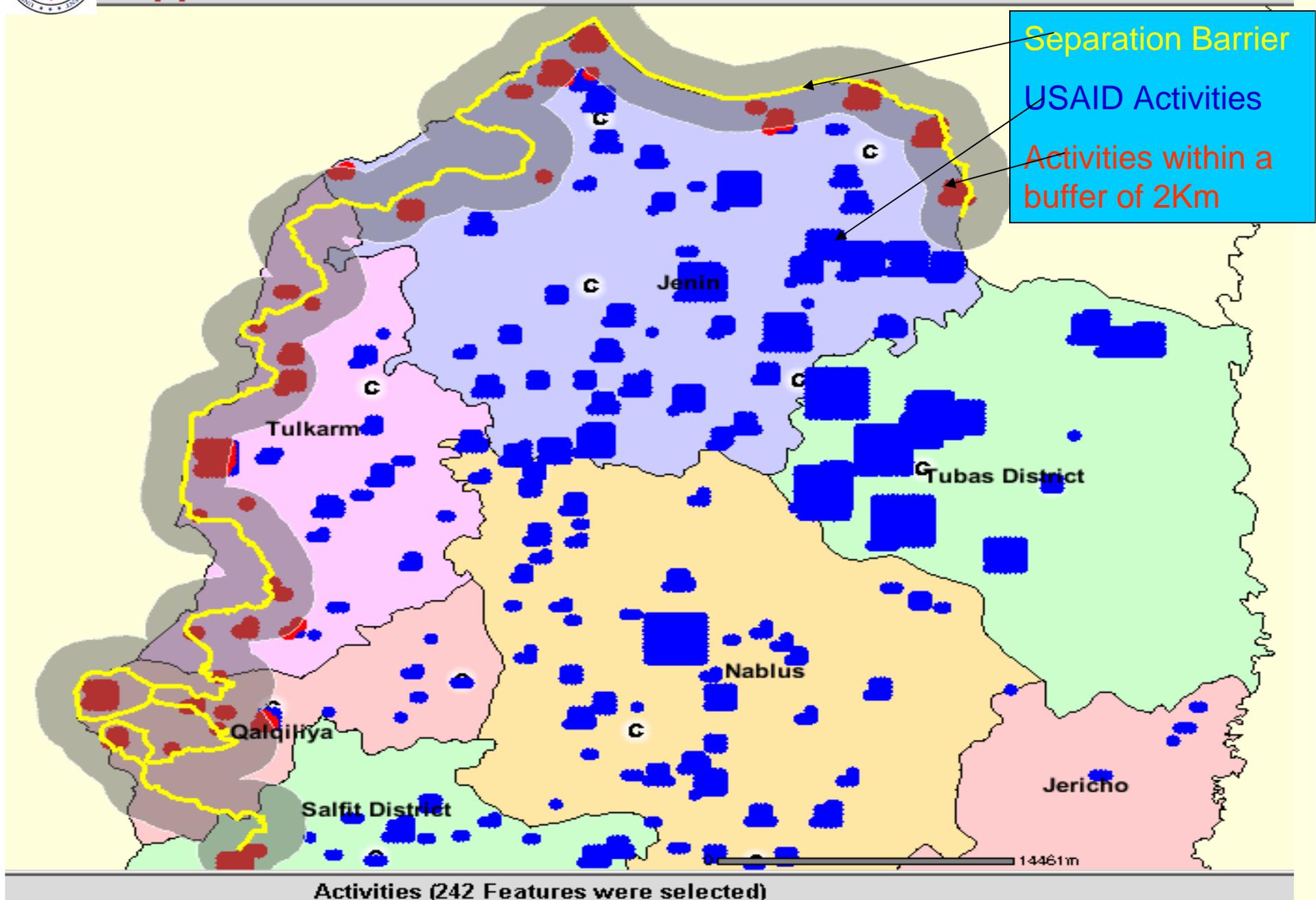
- Info as to who is doing what and where, before deciding on new projects in certain areas
- Demographic indicators (population density, poverty, un-employment, ..etc)
- Infrastructure situation (connectivity to certain utility, ..etc).

# Unemployment is Worse in Gaza

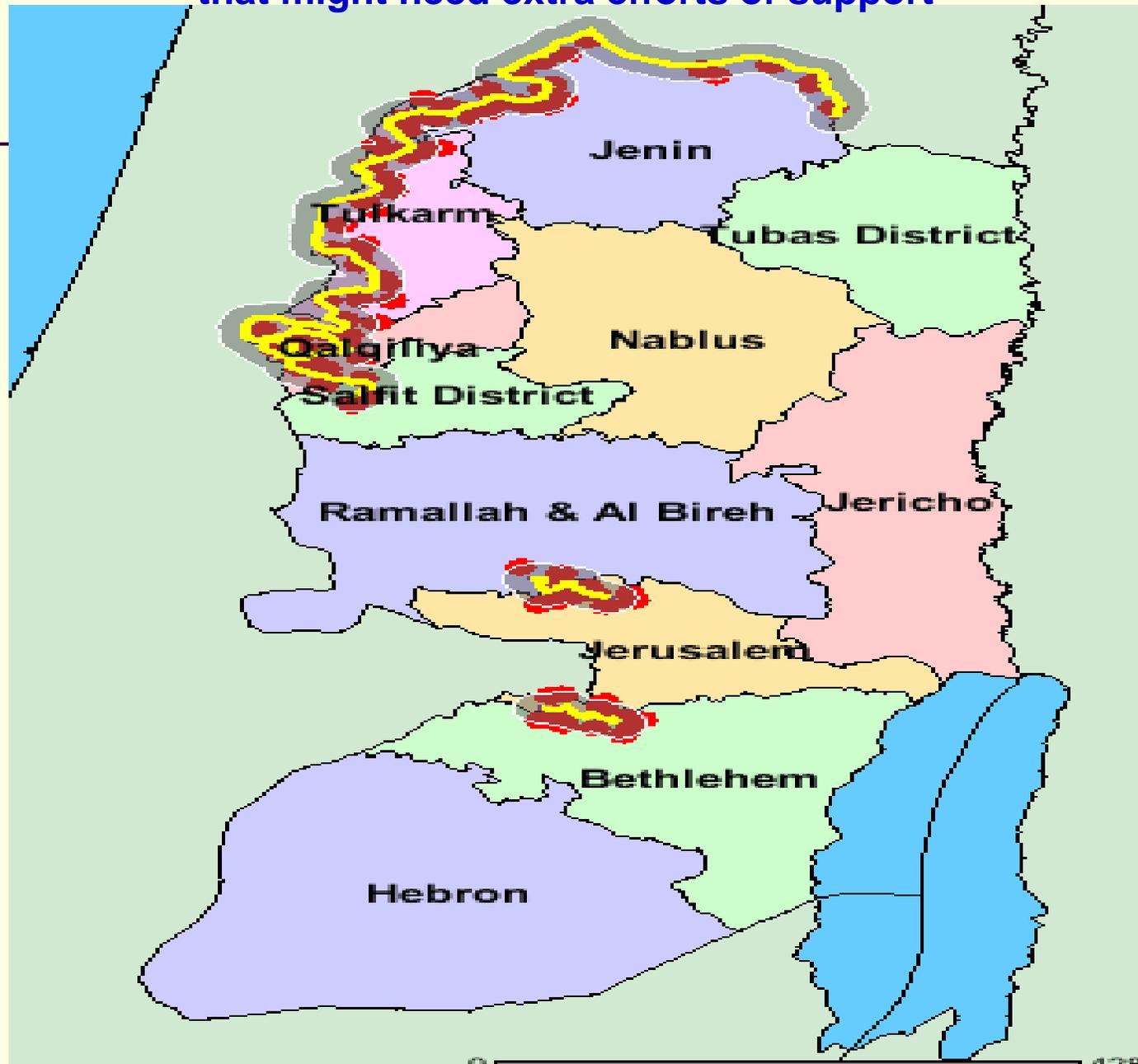




# USAID Activities within a buffer zone of 2 Km around the Israeli separation wall



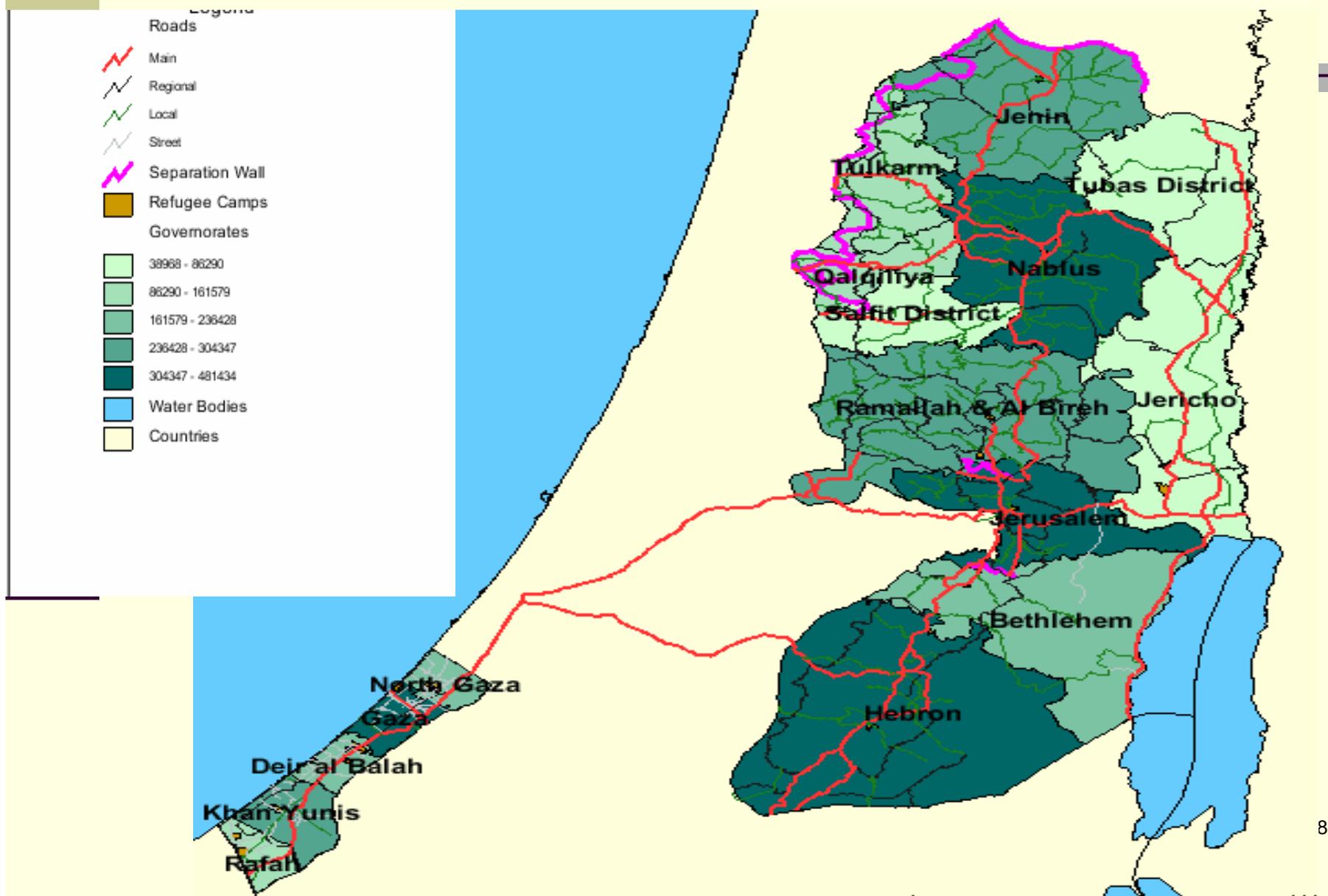
**Palestinian villages affected by the wall,  
that might need extra efforts of support**





## Population Density per Governorate

Mission/Partners can use the demographic and infrastructure statistics to decide on where to put new projects





# GIS: Spatial Representation of Hebron Governorate Water Networks

(GIS-enhanced highlighting of critically dry areas in red)



## (5) Output Measurement Tool:

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- Automatically calculate most end-of-year PMP indicators
- Help USAID identify inconsistencies and inaccuracies in Partners' PMP reports
- Provide Management with quick output indicators and accomplishments figures for BARS and any meeting/request

# Sample UM Cross Tabulation by Year

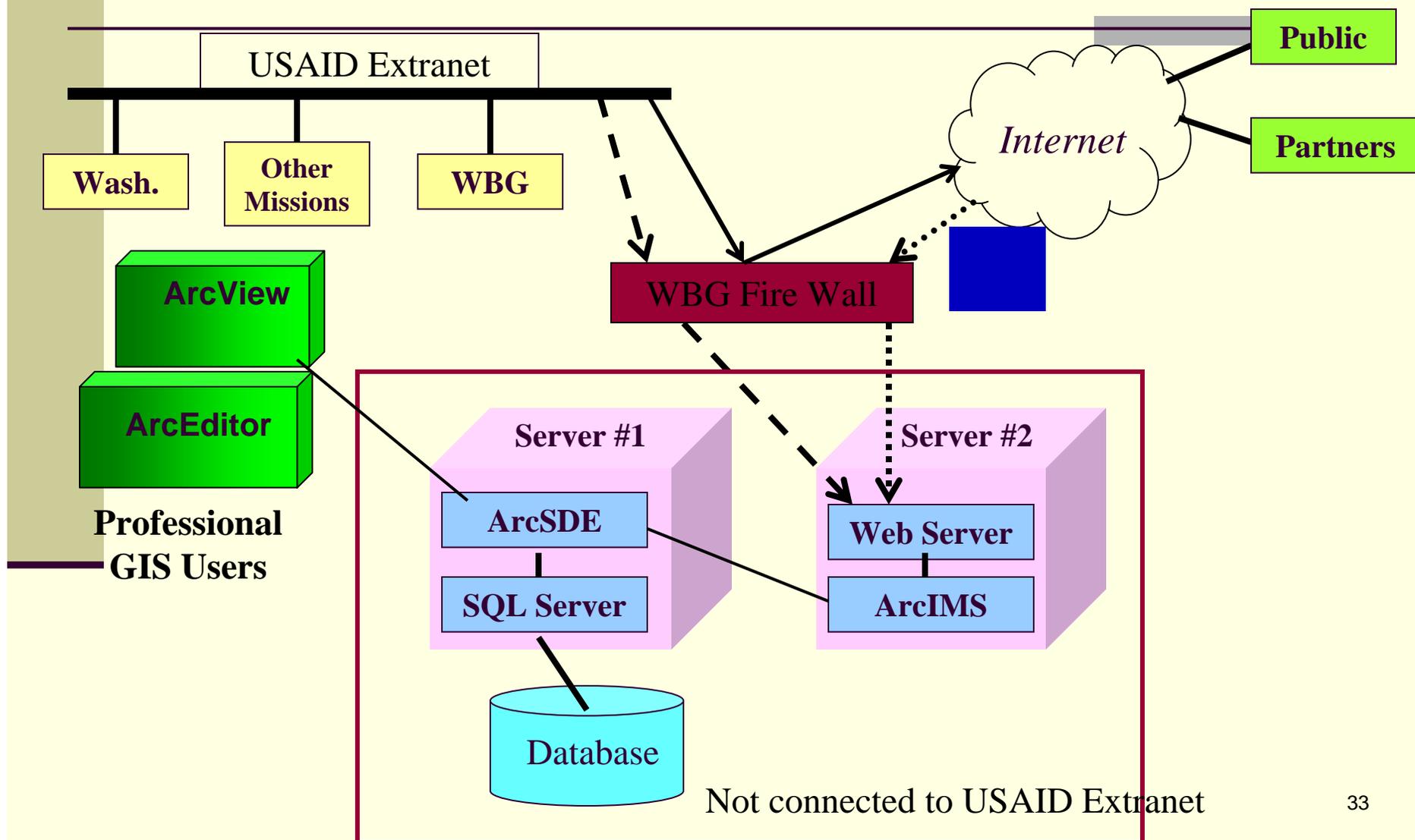
		CRSP	EEGP	JOBS	RAFEED	VSP	Total
<b>A011A - No. of educational rooms constructed</b>	<b>2000</b>						
	<b>Planned Qty</b>	8	0	0	0	0	<b>8</b>
	<b>Actual Qty</b>	9	0	0	0	0	<b>9</b>
	<b>2001</b>						
	<b>Planned Qty</b>	181	14	0	0	34	<b>229</b>
	<b>Actual Qty</b>	183	14	0	0	34	<b>231</b>
	<b>2002</b>						
	<b>Planned Qty</b>	87	78	0	0	142	<b>307</b>
	<b>Actual Qty</b>	93	78	0	0	142	<b>313</b>
	<b>2003</b>						
	<b>Planned Qty</b>	0	18	75	0	187	<b>280</b>
	<b>Actual Qty</b>	0	18	73	0	187	<b>278</b>
<b>2004</b>							
<b>Planned Qty</b>	0	25	308	4	41	<b>378</b>	
<b>Actual Qty</b>	0	27	326	4	41	<b>398</b>	
<b>Total</b>							
<b>Planned Qty</b>	276	135	383	4	404	<b>1,202</b>	
<b>Actual Qty</b>	285	137	399	4	404	<b>1,229</b>	
<b>A011B - No. of educational rooms renovated</b>	<b>2000</b>						
	<b>Planned Qty</b>	1	0	0	0	0	<b>1</b>
	<b>Actual Qty</b>	1	0	0	0	0	<b>1</b>
	<b>2001</b>						
	<b>Planned Qty</b>	48	9	0	0	1	<b>58</b>
	<b>Actual Qty</b>	48	9	0	0	1	<b>58</b>
	<b>2002</b>						
	<b>Planned Qty</b>	23	42	0	0	36	<b>101</b>
	<b>Actual Qty</b>	23	42	0	0	36	<b>101</b>
	<b>2003</b>						
	<b>Planned Qty</b>	0	0	20	0	58	<b>78</b>
	<b>Actual Qty</b>	0	0	20	0	58	<b>78</b>
<b>2004</b>							
<b>Planned Qty</b>	0	0	54	0	14	<b>68</b>	
<b>Actual Qty</b>	0	5	72	0	14	<b>91</b>	



## Sample Educational Output Indicators

<b>S e l e c t e d O u t p u t I n d i c a t o r s</b>	<b>T o t a l</b>
<b>A 0 1 1 A - N o . o f e d u c a t i o n a l r o o m s c o n s t r u c t e d / r e n o v a t e d</b>	<b>1,192</b>
<b>A 0 1 2 A - N o . o f s q . m e t e r s o f s c h o o l p l a y g r o u n d s c o n s t r u c t e d / r e n o v a t e d</b>	<b>60,864</b>
<b>A 0 1 2 B - N o . o f s q . m e t e r s o f s c h o o l f e n c e s , r e t a i n i n g w a l l s , s h a d e s , b a l c o n i e s , s i d e w a l l s , r o o f s , c a n t e e n s c o n s t r u c t e d / r e n o v a t e d</b>	<b>32,203</b>
<b>A 0 1 2 C - N o . o f s q . m e t e r s o f s c h o o l s a n i t a r y u n i t s c o n s t r u c t e d / r e n o v a t e d</b>	<b>4,156</b>
<b>A 0 1 3 A - N o . o f k i n d e r g a r t e n r o o m s c o n s t r u c t e d / r e n o v a t e d</b>	<b>388</b>
<b>A 0 1 3 C - N o . o f k i n d e r g a r t e n o u t d o o r f a c i l i t i e s c o n s t r u c t e d / r e n o v a t e d i n c l u d i n g g a r d e n s / p l a y g r o u n d s .</b>	<b>17</b>
<b>A 0 1 7 A - N o . o f k i n d e r g a r t e n s f u r n i s h e d</b>	<b>22</b>

# GIS Architecture



# Cost of development and Running

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- Development: \$500,000
- Yearly Maintenance: \$30,000
- Staffing: 2 full time.



# USAID/WBG GIS Application Vers. 3.0

WBG GIS Portal

Activity Update | **Activity Reports** | Oversight Visits | Tools | Help | Admin

### Navigation Tools



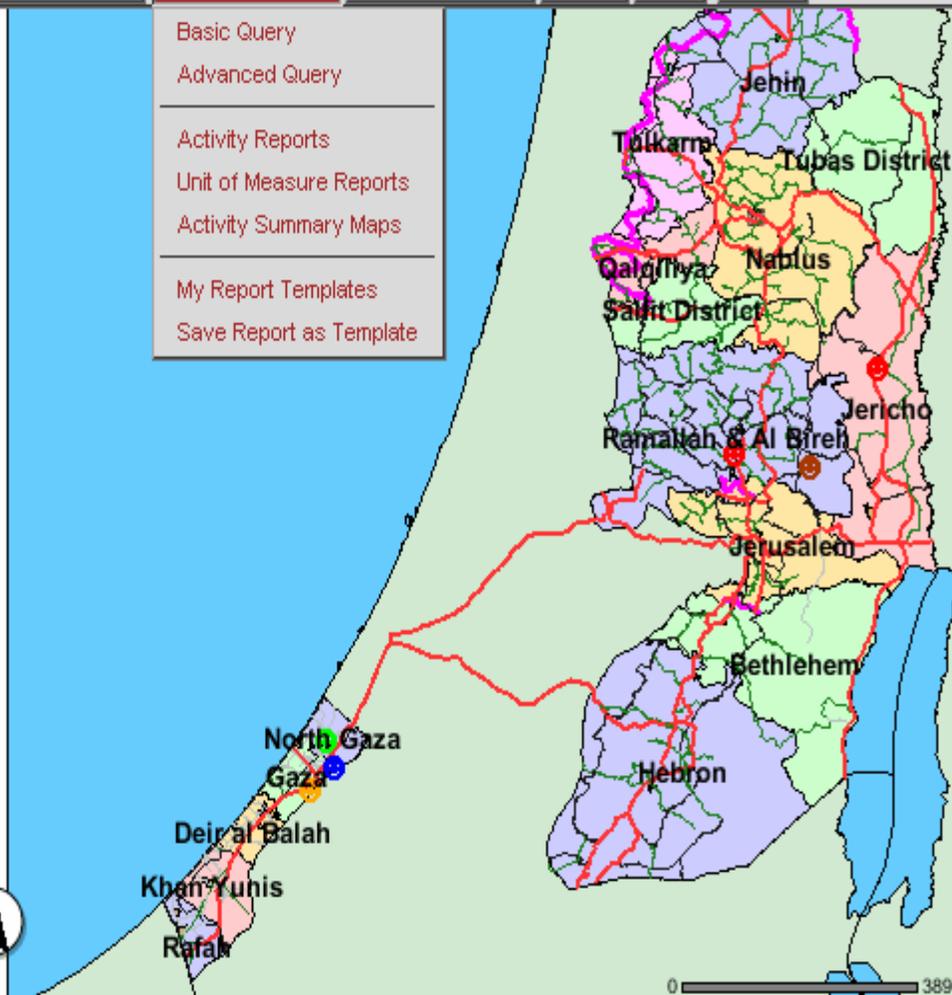
### Feature Selection



### Other Tools



- Basic Query
- Advanced Query
- Activity Reports
- Unit of Measure Reports
- Activity Summary Maps
- My Report Templates
- Save Report as Template



### Layers

Active Layer: Activities

Refresh Map

Visible

- Activities
- Success Stories
- Cities and Villages
- Israeli Settlements
- Roads
- Separation Wall
- Wells
- Water Pipelines
- Village clusters
- Builtup areas
- Refugee Camps
- A/B/C Areas
- Orthophoto of Part of Nablus
- Overpasses

### New in Version 3.0:

- Dropdown Menus
- Success Stories and Pictures
- Pictures at the Activity Level
- Fully parameterized Cross Tabulation Reports
- One-level Activity Summary Reports
- Two small orthophotos in area of Nablus
- Wells and Pipelines in area of Nablus
- Context-sensitive Help (right click on any tool, menu item or class of reports)