Annex

Annex A: Installation and Configuration

A1. Installation

System requirements:

The program runs on a windows PC with the operating systems Win NT, Windows 95/98/2000. The MS Office products MS Access and MS Excel have to be installed. The Office version has to be 97 or greater.

Recommended hardware:

speed : no limits

ram >= 64 Mbyte

network speed: >= 10 Mbit

Recommended Software:

Operating systems: Win NT, Windows 95/98/2000

MS Office (MS Access and MS Excel) 97 or 2000

Oracle ODBC Driver for the Oracle WIS at MOWI

The DVS comes on a Installation CD with a setup.exe program for Windows PCs. An installation wizard guides the user trough the setup procedure. The installation CD installs the DVS application and the supporting DLLs and OCX functionalities, it is neither installing any of the data (the data is coming from the network server), nor the necessary ODBC drivers for accessing the Oracle database. Ask the network and Oracle administrators to give you the necessary rights, if you encounter problems. It does not install the necessary MS Office applications MS Excel and MS Access.

The program is installing the following files (the system's "programs path", "system path" and "shares path" are read from the registry):

Filename	Path	Content
dvs.mdb	C:\Programs\DVS\	The main MS Access Application
shp_path.pth	C:\Programs\DVS\	The information about where to find the spatial data and the MS Access database, if there is any
allmageLT20.dll AFLT20.dll libTiff.dll MOLT20.OCX Pe.dll Sg.dll ShapeLT20.dll Dao3032.dll	C:\Programs\Common Files\Esri\	Supporting files for MapObjects LT
Stdole.tlb msvcp60.dll Msvcrt.dll Msvcrt40.dll Olepro32.dll Mfc42.dll Oleaut32.dll Stdole2.dll RegSvr32.exe Ctl3dNT.dll Msvcirt.dll Ctl3d95.dll	C:\Windows\System\	Supporting files for MapObjects LT

A2. Oracle Access Rights

This table shows the Oracle Tables listed per data type and chart type.

Data Type Code	Data Type Name	Chart Type Code	Chart Type	Table code	Table Name
D1	Municipal demands	01	Municipal demand projections	D01	STP_MUNICIPAL
		02	Annual billed water	D08	WATER_USE_BILLING
				D09	WATER_USE_BILL_CAT
				D10	WATER_USE_TYPES_MWI
		03	Quarterly billed water	D08	WATER_USE_BILLING
				D09	WATER_USE_BILL_CAT
				D10	WATER_USE_TYPES_MWI
		05	Demands and losses in municipal network	D01	STP_MUNICIPAL
				D02	STP_INDUSTRY
				D03	STP_TOURISTIC
				D04	STP_LOSSES
D2	Industrial demands	01	Industrial demand projections	D02	STP_INDUSTRY
				G02	FACILITIES
		02	Annual billed water	D11	QURT_BILLED_INDUSTRY
		03	Quarterly billed water	D11	QURT_BILLED_INDUSTRY
		04	Generated wastewater projections	D02	STP_INDUSTRY
				G02	FACILITIES
D3	Touristic demands	01	Touristic demand projections	D03	STP_TOURISTIC
		02	Annual billed water	D08	WATER_USE_BILLING
				D09	WATER_USE_BILL_CAT
		03	Quarterly billed water	D08	WATER_USE_BILLING
				D09	WATER_USE_BILL_CAT
D4	Irrigation demands	01	Net irrigation demand projections	D05	STP_AGRICULTURE
		08	Farmgate demand projections	D05	STP_AGRICULTURE
				D06	STP_LOSSES_ONFARM
		09	Gross irrigation demand projections	D05	STP_AGRICULTURE
				D06	STP_LOSSES_ONFARM
				D07	STP_LOSSES_AGRODISTRIB
		10	On farm irrigation losses	D06	STP_LOSSES_ONFARM
		11	Distribution system losses	D07	STP_LOSSES_AGRODISTRIB

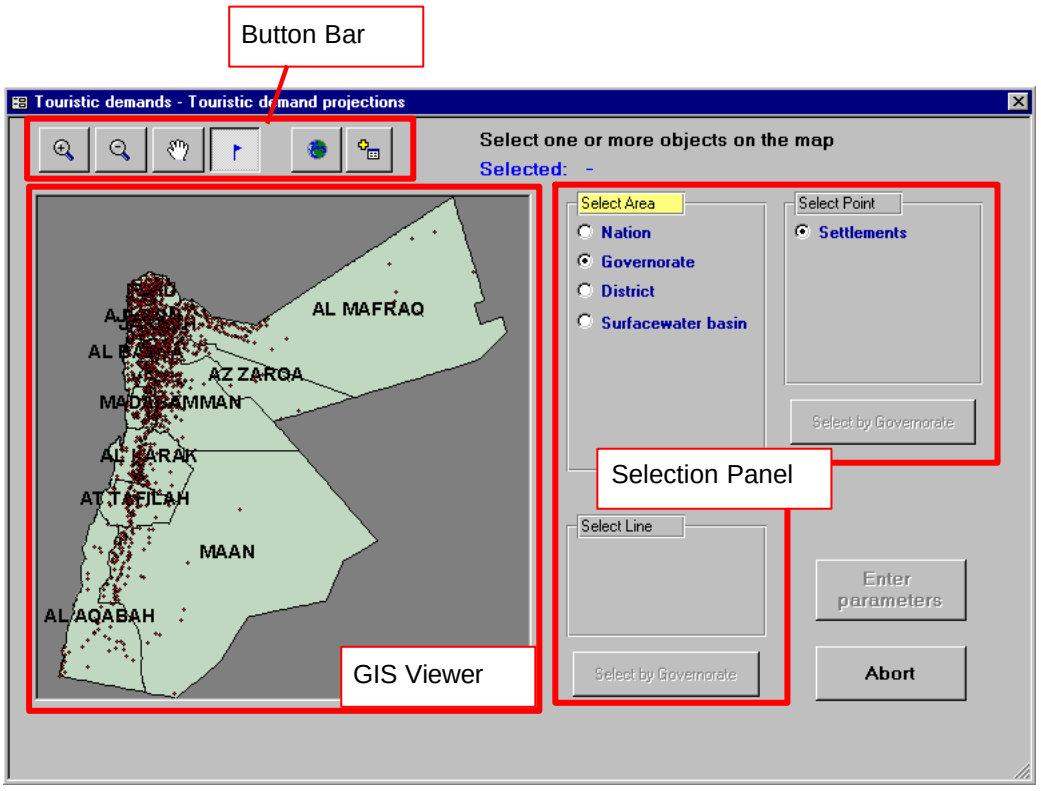
R1	Ground and surface water	13	Projections for ground water	R07	SPATIAL_INTERSECT_UNITS
				R08	STP_GROUNDWATER
		14	Projections for base flow	R07	SPATIAL_INTERSECT_UNITS
				R09	STP_BASEFLOW
				R10	STP_BASEFLOW_END
		15	Projections for flood flow	R11	STP_FLOOD_FLOW_OUT
		16	Projections for base flow and flood flow	R07	SPATIAL_INTERSECT_UNITS
				R09	STP_BASEFLOW
				R10	STP_BASEFLOW_END
				R11	STP_FLOOD_FLOW_OUT
		17	Projections for ground and surface water	R07	SPATIAL_INTERSECT_UNITS
				R08	STP_GROUNDWATER
				R09	STP_BASEFLOW
				R10	STP_BASEFLOW_END
				R11	STP_FLOOD_FLOW_OUT
R2	Wastewater	20	Projection of total treated effluent	G02	FACILITIES
				R01	STP_WWTP
		21	Projection of domestic and touristic treated effluent	D02	STP_INDUSTRY
				G02	FACILITIES
				R01	STP_WWTP
		22	Projection of industrial treated effluent	D02	STP_INDUSTRY
				G02	FACILITIES
R3	Water transfer	18	Imported and exported water	R02	STP_TRANSFER
				R03	STP_TRANSFER_LOSSES
				R04	TRANSFER_POINTS
		19	List of network transfers	R04	TRANSFER_POINTS
				R05	TRANSFER_STATIONS
				R06	MONTHLY_PRODUCTION

Annex B. Spatial Selection

The Digital Visualization System enables the user to visualize future demands and availability of water resources. These values all have a spatial reference. Most of the demand values for instance are stored in the Scenario Table Pool for single settlements. The user might be interested in the demand of a certain settlement or the water resource of a single treatment plant. It might also be interesting to have these values summarized for a whole governorate, district etc...

The Spatial Selection Window enables the user in formulating his whishes concerning the aggregation of the results. The program gives the possible choices for the chosen chart type. The user can select one single object, a set of objects or spatial administrative or physical units for an aggregation of the wanted values.

With a set of more than 1300 settlements and the common problem of translating settlement names from Arabic language into English, it can be quiet hard to find a certain settlement by typing its name or by searching it in a list. To simplify this, the DVS provides a GIS viewer where the objects can be selected on a map. This is a fast and perfect way to find certain objects, as humans usually think spatially. Of course the DVS provides the names of the settlements/treatment plants etc. on the map to support the user during his search. The selection even can be done in a list, if the object cannot be found on the map.



The Button-Bar

Use the buttons to select the action you want to apply on or to the map:

Button	Action
	Drag a rectangle on the map to zoom in. This will result in a more detailed view of the map extent. Below a certain map scale labels will be plotted on the map to identify the loaded objects.
	Click on the map to zoom out. The view will show a larger extent. The zoom factor is fixed to the factor 2.
	You can drag the view extent by moving the mouse while you hold the left mouse button down. This is only applicable, if you zoomed into the map. If you look at the full extent, there is nothing to pan.
	Click on an object to select it on the map (e.g. settlement). The type of object for the selection can be chosen on the selection panel. See description below.
	Press this button to zoom to full extent. You will get the initial status for the map.
	Press this button to open the selection table. Depending on the theme of selection, a table view will open for the selection of objects from a list.

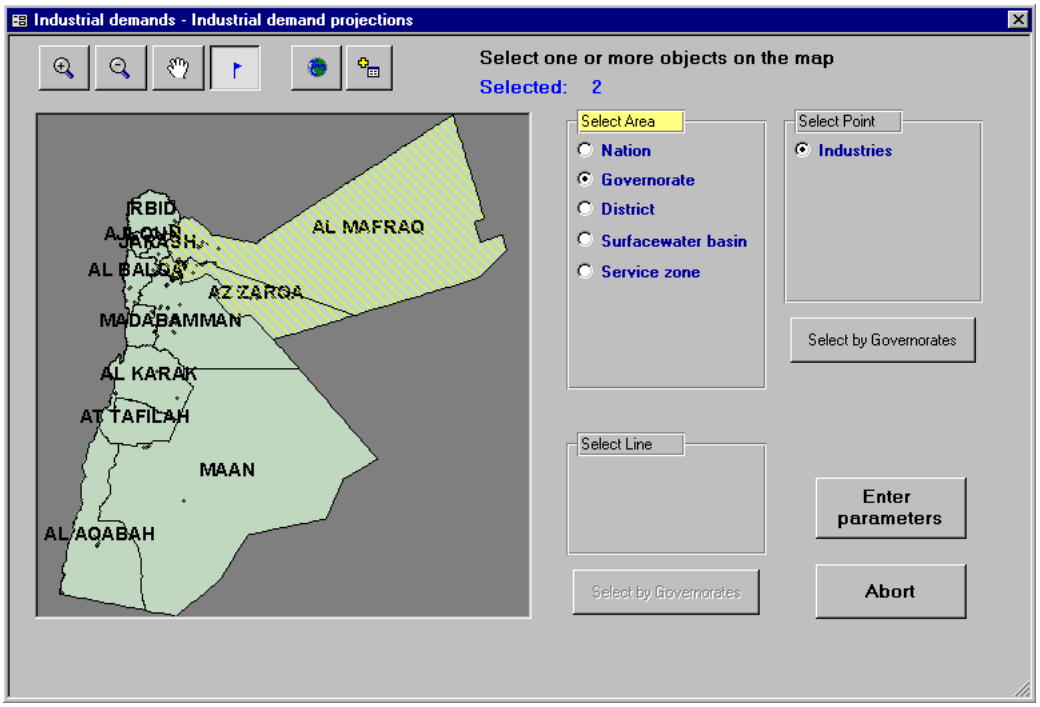
The GIS Viewer

The GIS Viewer provides you with geo-referenced spatial data of the Hashemite Kingdom. The following table gives you a complete listing of the available spatial themes. Depending on the selections made in the previous windows, a subset of this data will be loaded to the View for further selections by the user.

File Name	Content
Nation.shp	Nation boundary
govern.shp	Governorate boundaries
districts.shp	District boundaries
mainswbasins.shp	Surface water basins
service_zones.shp	Service zones
agro_zones.shp	Agro-climatic zones
gw_basins.shp	Groundwater basins
settle.shp	Settlements
treatment_plants.shp	Waste water treatment plants
irri_centers.shp	Irrigation centers
transfer_stations.shp	Transfer stations
transfer_tp.shp	Transfer points
wadi_endpoints.shp	Wadi endpoint
industries.shp	Industries
transfersystems.shp	Transfer systems

Example:

If the user asks for the "Industrial demands" and the chart type "Industrial demand projections", the system will load the treatment plants to the GIS view. There is no need to visualize the settlements, as the industrial demands are aggregated to the industries in the Oracle facilities table JORDAN.FACILITIES. As you might want to summarize the industrial demands for the whole nation, a set of governorates, districts, surface water basins or service zones, these themes get loaded to the GIS Viewer in order to enable you to select your whishes (figure X.X).



The GIS Viewer set up for the projected industrial demand.

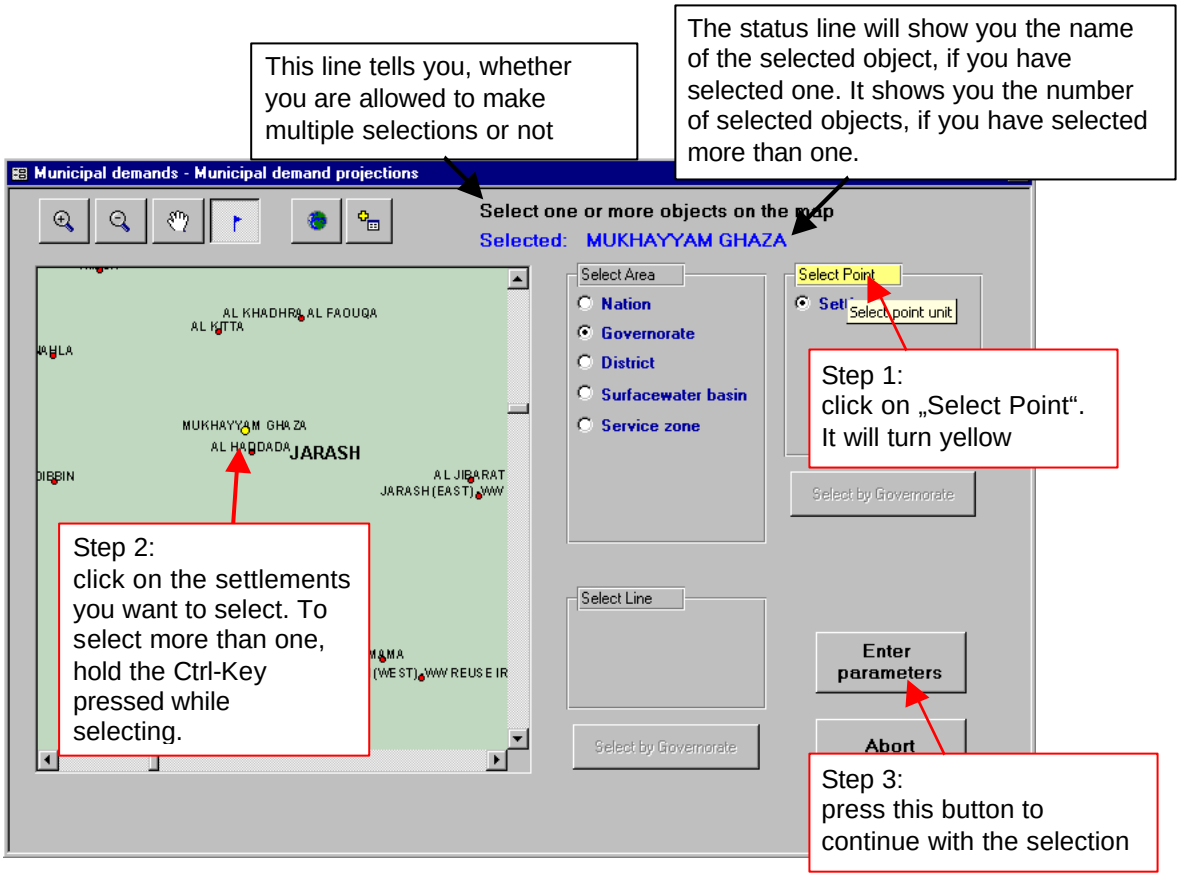
Making Selections

As mentioned above, you can select single objects, a set of objects or spatial polygons for an aggregation of the values. Depending on the choice, you will receive different charts/tables in Excel. If, for instance, you select the three treatment plants which are located in a governorate, you get a multi-(trhree-) bar chart, where every bar represents one treatment plant. If you select the governorate instead, you will get the waste water of the three treatment plants summarized and represented by one bar only. The latter method allows the comparison of different governorates (you can select more than one) while the first method shows the difference between single plants.

Selecting point objects

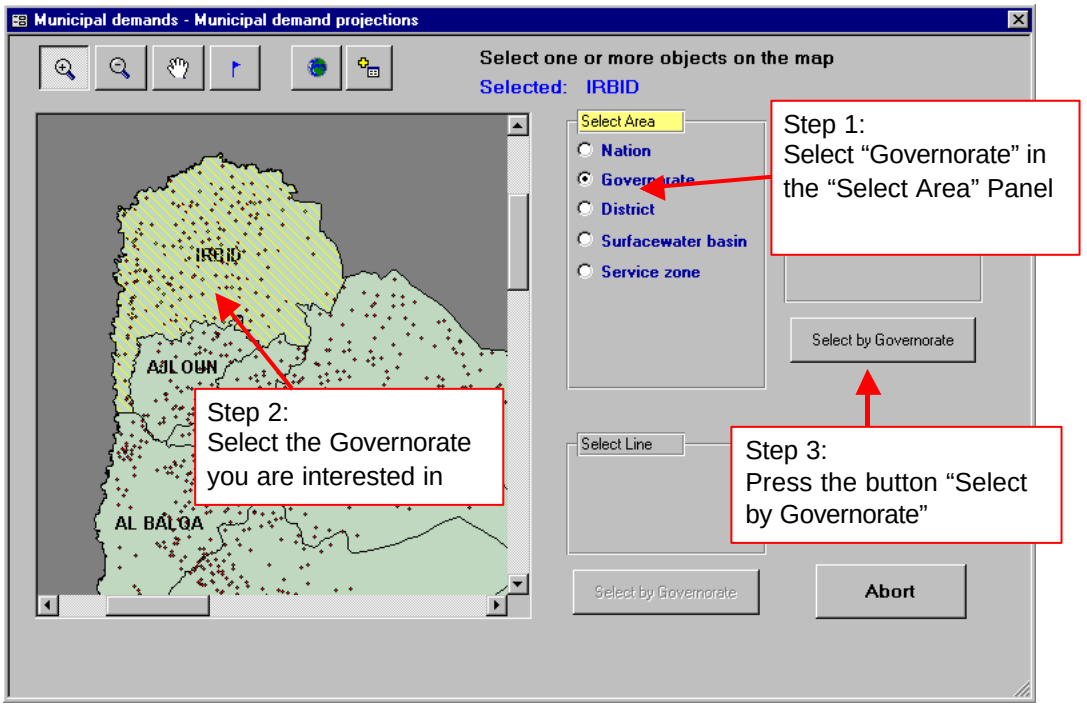
The following point objects can be selected (depending on the previous settings):

settlements	for municipal, touristic demand
treatment plants	for waste water
Industries	for industrial demand
Irrigation centers	for irrigation demand
Transfer points	for water transfer
wadi endpoints	surface water (flood flow and base flow)

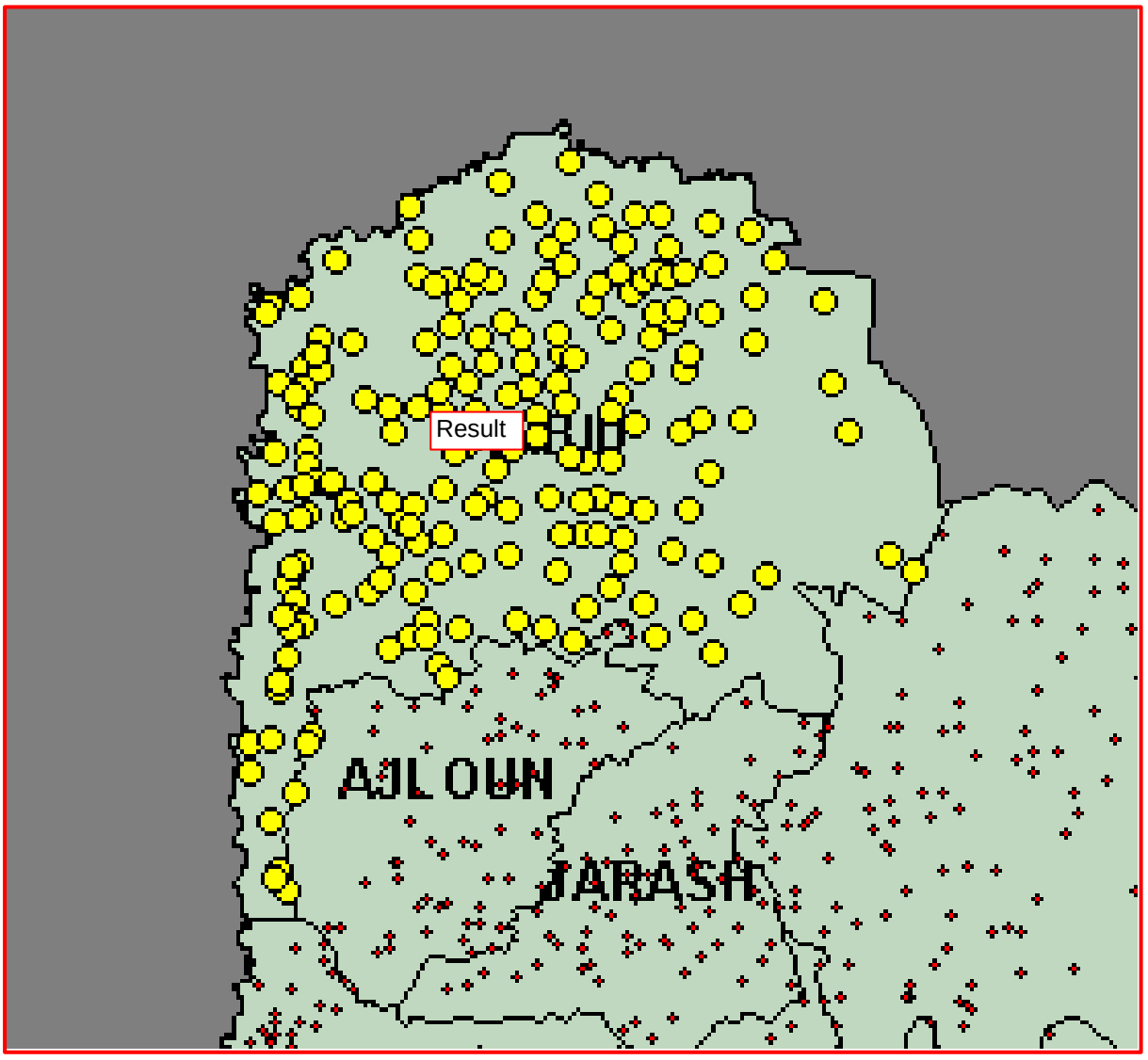


Selecting points within an area

If you are interested in the figures for all points within an area (e.g. all settlements within governorate Irbid), you have to select all objects within the polygon. To avoid doing it manually, follow the described procedure:



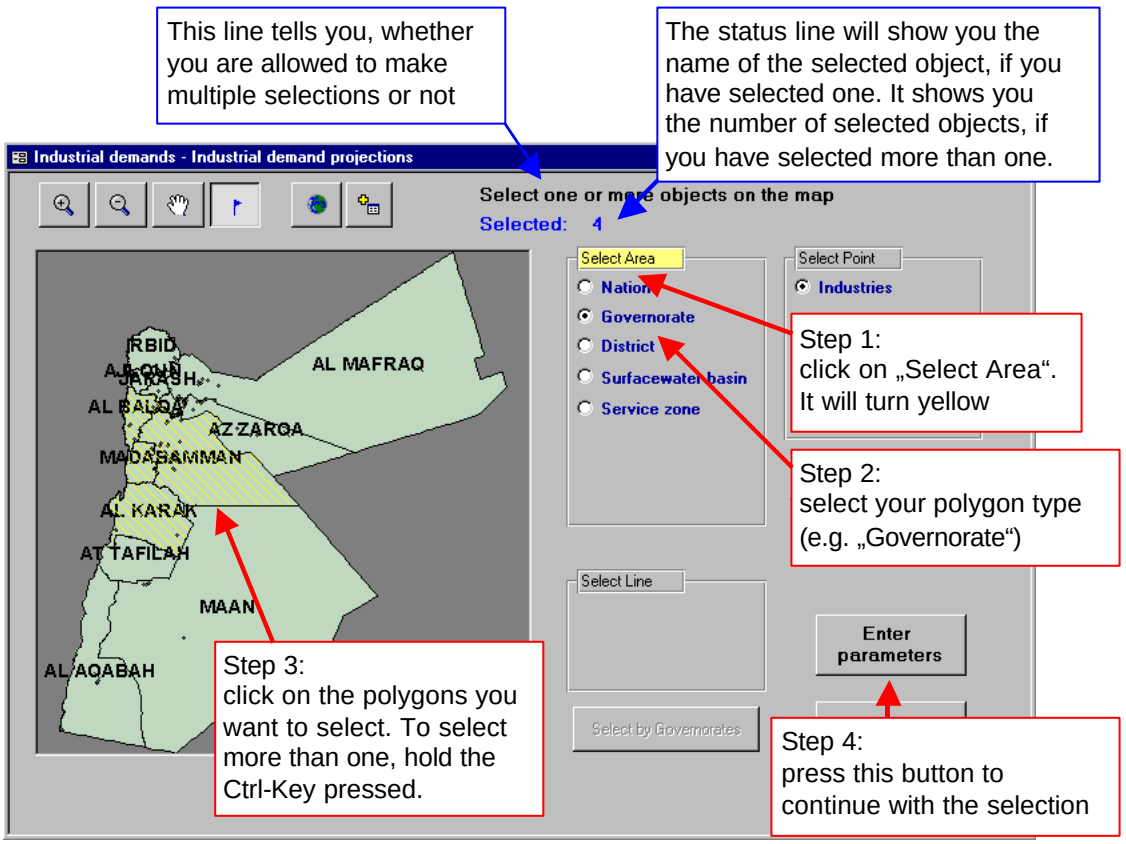
Selecting all points within a polygon.



Selecting area objects

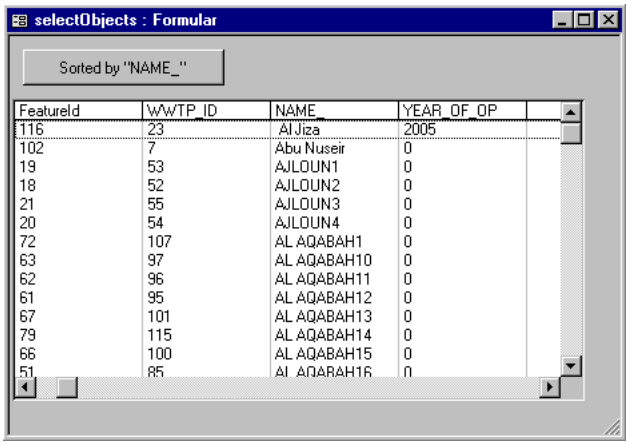
The following area objects can be selected (depending on the previous settings):

Nation	for water allocation, ground and surface water, water transfer, wastewater, irrigation demands, municipal demands, touristic demands, industrial demands
Governorates	for water allocation, ground and surface water, water transfer, wastewater, irrigation demands, municipal demands, touristic demands, industrial demands
Districts	for wastewater, irrigation demands, municipal demands, touristic demands, industrial demands
Surface water basin	for ground and surface water, wastewater, irrigation demands, municipal demands, touristic demands, industrial demands
Service zones	for wastewater, irrigation demands, municipal demands, industrial demands
Groundwater basins	for irrigation demands, ground and surface water
Agro-climatic zones	for irrigation demands

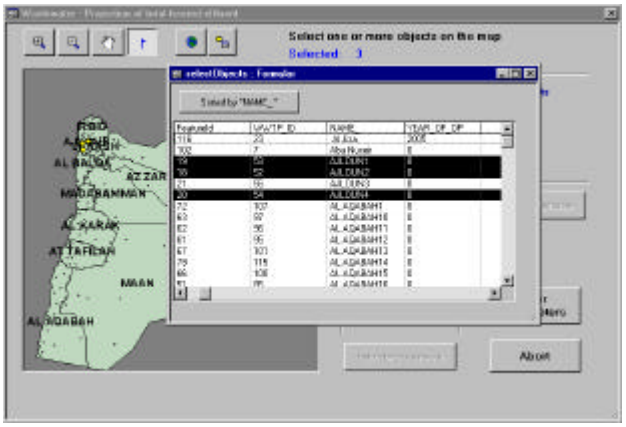


Selecting from a list

Sometimes it is more convenient to select objects from a list. For instance you might know the name of a treatment plant but you do not know its exact location. Searching a settlement in a list of 1300 still is quiet difficult, but to find a treatment plant within a set of 120 is an easy job to do.



The table shows all fields from the original shapefile. You can sort the table by any field in the list. The select-button browses through the fields. First time you click the select button, the list is sorted alphabetically by the first field. Second click on the button will result in sorting the list by the second field (WWTP_ID). Finally, the third click will sort the list with the name of the treatment plants and this is exactly what you need.



You select the objects by clicking on the rows in the list. To select more than one, you do not have to hold any key pressed – simply click on all rows, you want to select. You deselect an object by clicking on the row again.

The according objects on the map are automatically drawn with the usual selection symbol. You can switch between the list and the map but you will lose the sorting parameters in the list.

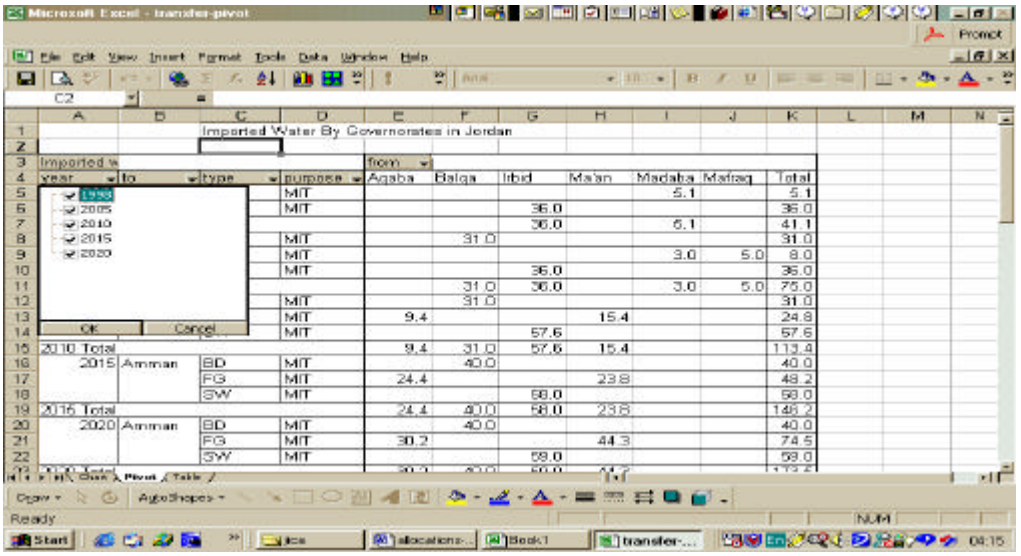
Annex C : Projections of Import/Export of Water between Governorates – Detailed Manual

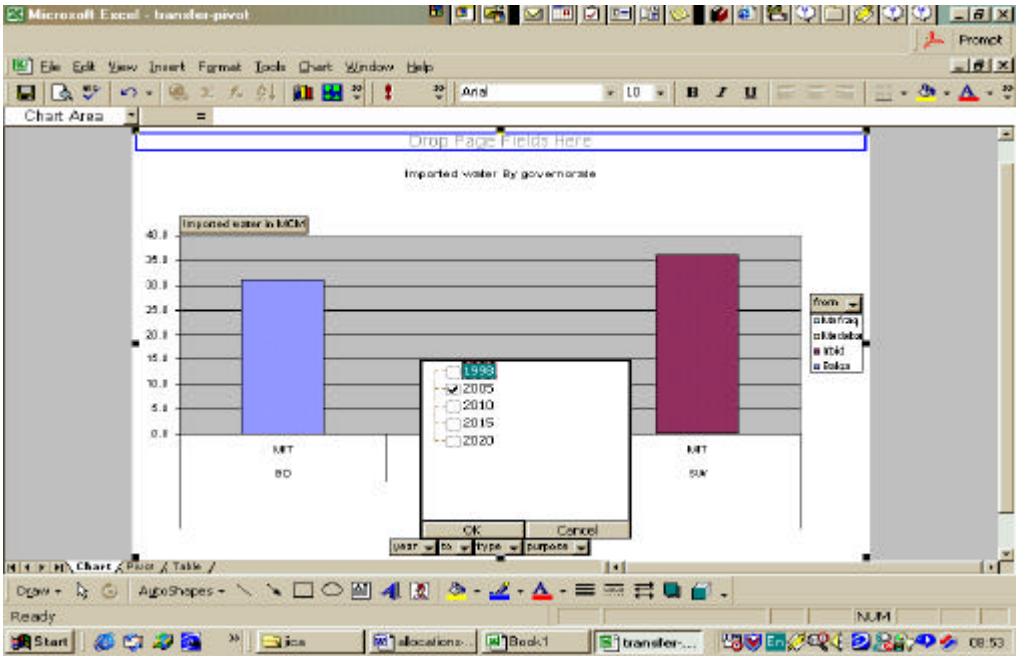
C1: The filters provided for the user on the pivot table and on the chart:

1- Year

The user can choose between 5 years : 1998,2005,2010,2015,2020 or the user can choose to see data for all these years, which is the default.

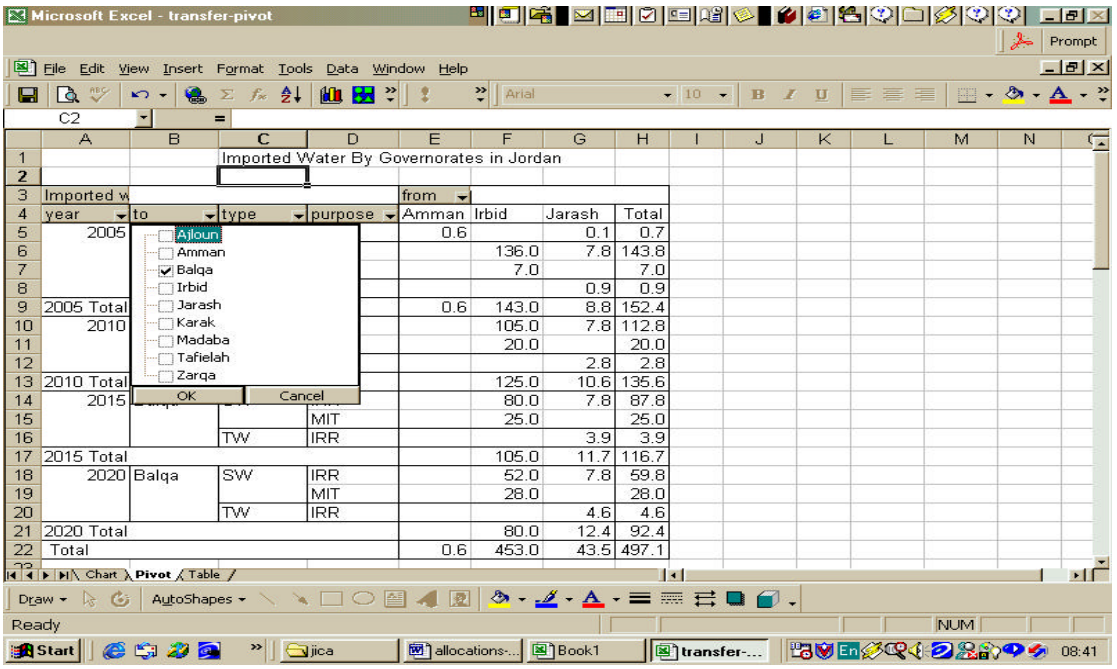
The figures below shows the screen where the user can choose the year required, the first figure shows how the user can choose the year on the pivot table, in this caase the user chose to see all the years. The second chows how can the user choose the year from the chart filters, in this case the user choose to see the quantities for year 2005

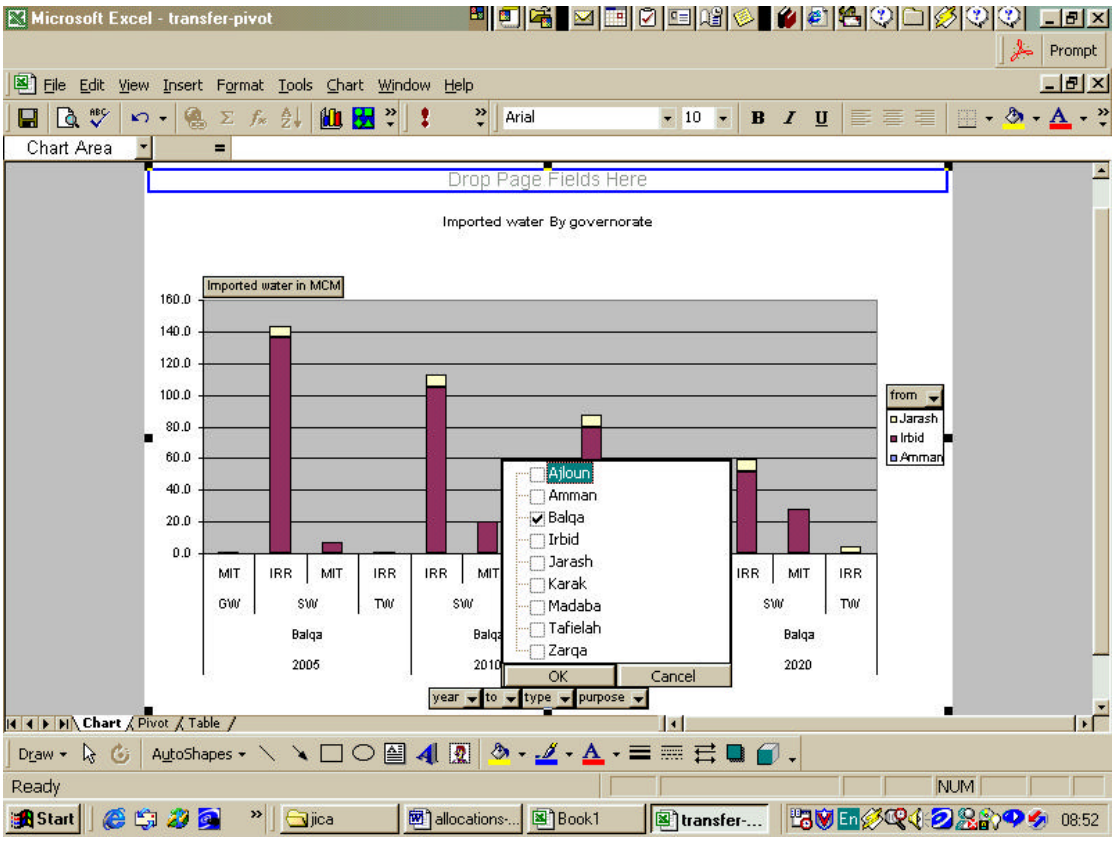




2- Importing Governorate

The user can choose one or more of the 12 governorates or can choose all governorates which is the default. The figures below shows the screen where the user can choose the importing governorate required, the first figure shows how the user can choose the "To governorate" on the pivot table and the second shows how can the user choose the "To governorate" from the chart filters.





3- Exporting Governorate

The user can choose one or more of the 12 exporting governorates or can choose all governorates which is the default.If the users chooses one governorate then all the values exported by that governorate to other governorates will be shown in the chart. The figures below shows the screen where the user can choose the exporting governorate required, the first figure shows how the user can choose the "From governorate" on the pivot table, in the figure the user chooses to see all exports from Madaba and irbid governorate. The second shows how can the user choose the "From governorate" from the chart filters, in the figure shown the user chooses to see the quantities exported by Balqa governorate.