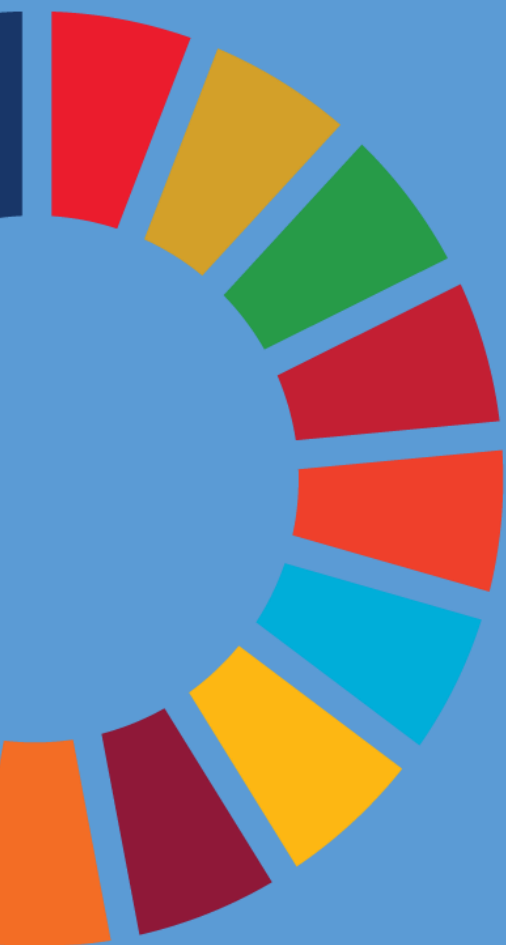# REFERENCE GUIDE

Web Application for the management of SDGs and other national indicators integrated with the PxWeb dissemination system

Version 3
14/01/2022

Contents

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AICS	Italian Agency for Development Cooperation
NSI	National Statistical Institution
Istat	Italian National Institute of Statistics
IT	Information Technology
PCBS	Palestinian Central Bureau of Statistics
PxWeb	Web application developed by Statistics Sweden together with other National Statistical Institutions to disseminate public statistics in a structured way https://www.scb.se/px-web
SDGs	Sustainable Development Goals
SDMX	Statistical Data and Metadata eXchange. International initiative that aims at standardising and industrialising the mechanisms and processes for the exchange of statistical data and metadata among international organisations and their member countries. https://sdmx.org
SQL	Structured Query Language
UNSD	United Nations Statistics Division
WA	Web Application

ABOUT THIS DOCUMENT

Title	REFERENCE GUIDE - Web Application for the management of SDGs and other national indicators integrated with the PxWeb dissemination system
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Sensitivity	PUBLIC
Repository	The application suite to which the document refers to is available at https://github.com/IstatCooperation/SDGs

Introduction

The present document draws on the work carried out in the framework of the **project in Palestine "Monitoring of Sustainable Development Goals Indicators - SDGs"** funded by the Italian Government through the Italian Agency for Development Cooperation (AICS) and implemented by the Italian National Institute of Statistics (Istat) with the aim to provide technical support to the Palestinian Central Bureau of Statistics (PCBS) for building up the National System of SDG indicators.

Under the IT Component, PCBS and Istat IT experts jointly developed a Web Application firstly to improve the SDGs data and metadata management process and allow data dissemination in automatic way, through the dissemination system PxWeb. At a later stage, the Web Application was extended, to also cover another family of monitoring indicators for national purposes.

The integrated architecture developed to meet PCBS needs is potentially applicable to different cases; it can provide other National Statistical Institutions (NSIs) that are already using the PxWeb System with a simple solution for managing and disseminating SDG indicators (or other families of indicators having the same hierarchical data structure of SDGs) without developing a software suite from the ground up.

How to use this document

The document is to be used as a reference guide for understanding the main features of the mentioned Web Application (hereafter referred to as WA). The guide is split into two parts.

The first part (Section I) contains written and visual information to assist statisticians (as for example the staff responsible of SDG sub-indicators) in completing tasks associated with the usage of the application.

The second part (Section II) is mainly addressed to IT staff who will manage the WA and describes:

- the schema of the SQL Server database which interfaces the WA, to share information regarding data modelling;

- the steps to configure the WA to add new dimensions, since in this case some records must be manually inserted into the database.

- the steps to run the companion application developed to migrate data from the WA database to the PxWeb dissemination system (MDT2PxWeb).

SECTION I - USING THE WEB APPLICATION

1. Purpose of the Web Application

A Web Application is an application software stored on a remote server and delivered over the web through a browser interface.

In this case, the WA is installed for local purposes, so it is only available to users of the Intranet, after a proper authentication.

The application was originally developed for managing SDG indicators and sub-indicators. It was later improved and expanded in order to allow a generalized management of indicators and sub-indicators having the same hierarchical structure as the SDGs indicators.

Now, the application has the ability to manage:

- Indicators included in the framework for Sustainable Development Goals (SDGs)

- Other families of indicators, as the ones included in the Palestinian National Statistical Monitoring System (Monitoring).

Since the indicators must have equal hierarchical structure in all of the cases, the usage and functionality of the WA are the same, whether you are managing SDGs indicators or another family of indicators.

NB Labels "goal" and "target" have been used to identify "class" and "sub-class" of indicators whether it is SDGs framework or another family of indicators.
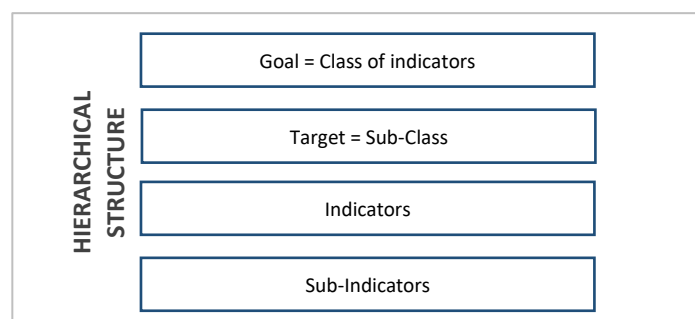
The WA provides a number of functionalities that help the system to run more smoothly, reducing the manual effort in the management of data and metadata and the possibilities of human error with controlled flows and error checks.

It enables statisticians to focus only on data and metadata of a single goal (i.e. class of indicators)/target (ie sub-class of indicators)/indicator/sub-indicator and to work in cooperative way.

The WA allows to:

- create new sub-indicators selecting theirs dimensions

- update sub-indicators metadata

- download a sub-indicators data Excel template

- upload sub-indicators' data to the database through the Excel files or the WA interface

- monitor the data upload status of a sub-indicator

- improve security

- restrict access to the data based on department groups

The application software has been installed in the PCBS production infrastructure and the examples used in this document refer to those case.

2.   Instructions for users

To access the main page a user must login with his own credentials:

Once get inside application, user can choose the system of indicators:

A.   **Framework for Sustainable Development Goals (SDGs)**

B.   **Another family of indicators**

NB Other families of indicators manageable through the WA may appear in the bar at the top of the screen

Palestinian National Statistical Monitoring System (Monitoring)

Considering that the usage, functionality and labels of the WA is the same, whether you are managing SDGs indicators or another family of indicators, in the following of the present document we will provide instructions on how to use the WA by referring only to the system of SDGs indicators.

Whenever there are significant differences in comparison with the National Statistical Monitoring System, they will be specifically indicated.

2.1   Managing metadata and data

From the home page of SDG indicators, the user will see only the allowed goals, based on his role and membership in departments.

After selecting a goal, the list of related targets and indicators is shown.
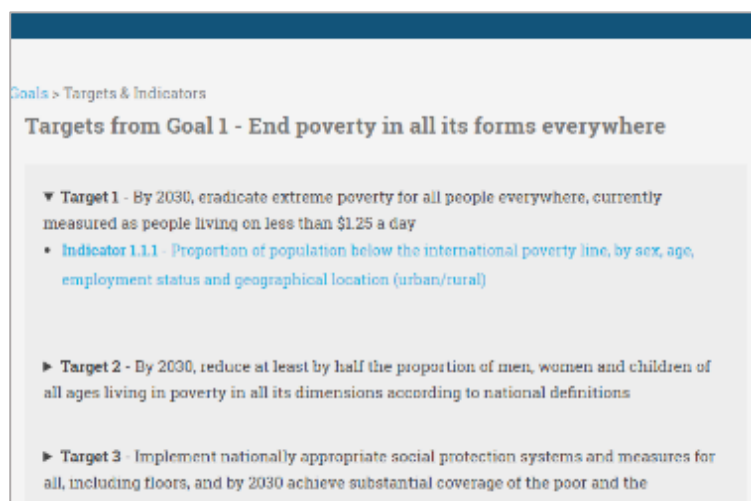
Selecting one indicator, the list of its sub-indicators appears. From this list of sub-indicators, it is possible to:

1. **MODIFY THE METADATA.** It is allowed to modify some characteristics of sub-indicators such as:
   - Series
   - Description in English and local language
   - SDMX attributes (unit measure, unit multiplier, observation status).

2. **INSERT DATA**. It is allowed to download the Excel template of the selected sub-indicator by clicking on the "Template" button: the Excel template is already filled with all the possible combinations of the dimensions of the selected sub-indicator and the metadata about goal, target, indicator and sub-indicator.

For indicators and sub-indicators common to both systems of indicators, the WA shows all the relative original codes in the various systems.

Goals > Targets & Indicators > Subindicators > Insert values

Indicator from Target 1.1 - By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day

Indicator 1.1.1 - Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)

Subindicator: **C010101_01** *Monitoring code: 970070101060001*

OBS_VALUE	TIME_DETAIL	BASE_PER	COMMENT_OBS	SOURCE_DETAIL	SOURCE_DETAIL_AR

After downloading the template file, the responsible of the selected sub-indicator can insert the data and upload the file to the database using the "Load Data" functionality of the Web Application. A traffic light turns green when the data is loaded properly. This allows the users to monitor the status of the sub-indicator data.

Subindicator_Code	TIME_PERIOD	REF_AREA	SEX	OBS_VALUE	U
n l C010201_05	2000	West Bank	M	34	
n l C010201_05	2001	West Bank	F	45	
n l C010201_05	2002	West Bank	_T	3	

Subindicator_C010201_05_template.xlsx | Load Data

Inserted: 12 Uploaded: 15 Error: 0 | Select file... | Load Data

As an alternative, the responsible of the sub-indicator can insert data from the Web Application using the functionality "Insert Data".

3. **ADD A SUB-INDICATOR TO AN INDICATOR.** Using the functionality "Add new sub-indicator", the user can link a national monitoring indicator (sub-indicator) to an SDG indicator. For this sub-indicator it is possible to insert the descriptions and to select its dimensions (at least one dimension is required).

2.2 Administrator functionalities

If the logged in user has an administrator role, he can manage the following items:

Home > System Management

- 👥Users
- 👥Indicator's Elements
- 👥Departments
- 👥Time Period
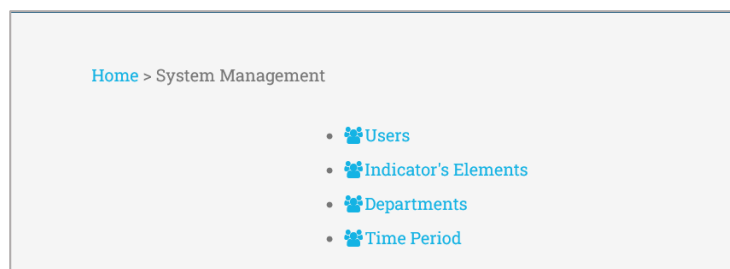
■ **Managing the list of authorized users**

Home > Users List

👤+ Add user

Username	Role				
User1	Admin ▼	🖫 Update Role	🗑 Delete User	📧 Change Password	⊘ Edit Indicators Access
User2	Admin ▼	🖫 Update Role	🗑 Delete User	📧 Change Password	⊘ Edit Indicators Access
User3	Admin ▼	🖫 Update Role	🗑 Delete User	📧 Change Password	⊘ Edit Indicators Access
User4	User ▼	🖫 Update Role	🗑 Delete User	📧 Change Password	☰ Edit Indicators Access
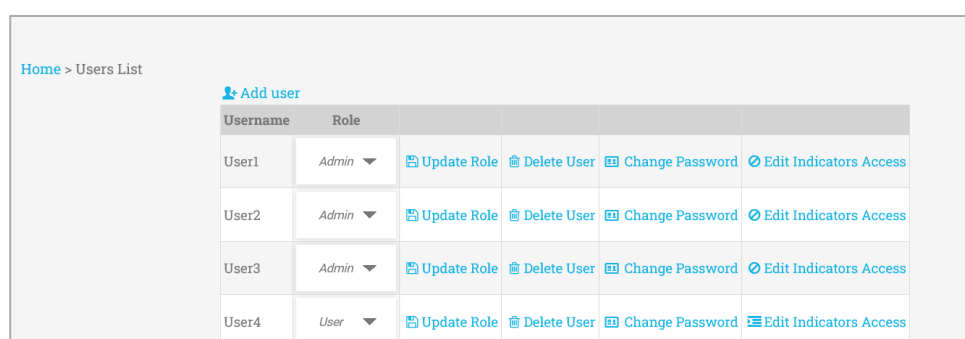
From this dashboard the administrator can:

1. **ADD USERS**: by clicking on the link at the left-top position "Add User", a new user can be added to the list. The administrator must define a password and a role for him.

2. **CHANGE ROLE**: by selecting the role in the option menu and clicking on the button link "Update Role", the administrator can update a user role. If an Admin role is selected the user will have access to all the indicators automatically.

3. **DELETE USERS**: by clicking on the button link "Delete User", the administrator can delete every user he wants, after confirming on the validation popup (he cannot delete himself).

4. **CHANGE PASSWORD**: the administrator can change the password of every user.

5. **EDIT INDICATORS ACCESS**: by clicking on the button link "Edit Indicators Access", the administrator can choose the indicators that the selected user will see:

Enable access to indicators for *user2*   Save

— Close All   ☐ Select All

▼ **Administrative Records Department**
- ☐ Goal 17: Indicator 17.19.2 - Proportion of countries that (a) have conducted at least one population and housing census in the last 10 years; and (b) have achieved 100 per cent birth registration and 80 per cent death registration

▼ **Agriculture Statistics Department**
- ☑ Goal 2: Indicator 2.3.1 - Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size (الى 3 مستوى من حول حيث الزراعة وزارة في البيانات توفر فحص مستوى 2)
- ☑ Goal 2: Indicator 2.3.2 - Average income of small-scale food producers, by sex and indigenous status
- ☐ Goal 2: Indicator 2.4.1 - Proportion of agricultural area under productive and sustainable agriculture
- ☑ Goal 2: Indicator 2.a.2 - Total official flows (official development assistance plus other official flows) to the agriculture sector
- ☐ Goal 2: Indicator 2.b.1 - Agricultural export subsidies

Indicators are grouped by Departments of the organizational structure.

The administrator could select each indicator alternatively from the same or from different Departments or he could select all the indicators belonging to a single Department, depending on the topic the user is working on.

Thanks to this feature the administrators can easily control which user is responsible for which indicator.

Managing the families of indicators and related elements

After having clicked on *"Indicator's Elements"*, the following screen will appear:

Home > Type List

+ Add Indicators Type

#	Short Descr	Descr EN	Descr AR	Label's Goal EN	Label's Goal SL	Separator	URL IMG	Order	Goals	Targets	Indicators	SubIndicators	Edit	Status
1	SDGs	Sustainable Development Goals	Sustainable Development Goals	Goal	Goal AR	–	images/SDGs /sdgsfirs...	2	17	169	248	323	⊟	⊖
2	Monitoring	National Statistical Monitoring System	National Statistical Monitoring System	Subject	Monitoring AR		https://encrypted- tb...	1	25	172	326	273	⊟	⊖

From this dashboard, the administrator can:

1. **ADD A NEW FAMILY OF INDICATORS (TYPE)**: by clicking on the link at the top-right position "Add Indicators Type", a new family of indicators can be added to the list.

Home > Type List > Add new Type

Descr En* ❓ :

Descr SL ❓ :

Descr Short* ❓ :

Label En* ❓ :

Label SL ❓ :

Subindicator Separator ❓ :

Path img ❓ :

Order code ❓ :

*Required fields

Reset   Save

2. **CHANGE THE INFORMATION RELATED TO EACH FAMILY OF INDICATORS (TYPE):** by clicking on the button link "Edit", the administrator can update the following information:

3. **CHANGE THE STATUS OF EACH FAMILY OF INDICATORS (TYPE):** by clicking on the button link "Status", the administrator can able/disable the indicators type, so that users will not be able to work on it.

4. **CHANGE THE GOALS (CLASSES) OF EACH FAMILY OF INDICATORS:** by clicking on the button link "Goal", the following screen will appear:

From the above dashboard, the administrator can:

a. **ADD A NEW GOAL:** by clicking on the link at the top-right position "Add Goal", a new goal (class of indicators) can be added to the list.

b. **CHANGE THE INFORMATION RELATED TO A GOAL:** by selecting a goal and clicking on the button link "Edit", the administrator can update the following information:

c. **CHANGE THE STATUS OF EACH GOAL:** by clicking on the button link "Status", the administrator can able/disable the goal, so that users will not be able to work on it.

d. **CHANGE THE TARGETS RELATED TO A GOAL:** by selecting a goal and clicking on the button link "Target", the following screen will appear:

From the above dashboard, the administrator can:

d.1 **Add a new target:** by clicking on the link at the top-right position "Add Target", a target can be added to the goal:

d.2 **Change the information related to a target:** by selecting a target and clicking on the button link "Edit", the administrator can update the following information:

d.3 **Change the status of the target** by clicking on the button link "Status", the administrator can able/disable the target, so that users will not be able to work on it.

d.4 **Change the indicators related to a target:** by selecting a target and clicking on the button link "Indicators", the following screen will appear:

From the above dashboard, the administrator can:

> d.4.1 **Add a new indicator,** by clicking the first button at the top right:

> d.4.2 **Add an indicator already existing in another system.** With this feature (second button at the top right), it is possible to link to the selected target an indicator already existing under another system of indicators (ex. Monitoring):

d.4.3 **Change the information related to an indicator:** by selecting an indicator and clicking on the button link "Edit", the administrator can update the following information:

d.4.3 **Change the status of each indicator**: by clicking on the button link "Status", the administrator can able/disable the indicators, so that users will not be able to work on it.

■ **Managing the list of Departments**

From this dashboard the administrator can:

1. **ADD A DEPARTMENT:** by clicking on the link at the top-right position "Add Department", a new organizational structure can be added to the list.

2.   **CHANGE THE INDICATORS** associated to the Department, by clicking on the number of indicators:

3.   **CHANGE THE INFORMATION** related to the Department

4.   **DELETE DEPARTMENTS**

- **Managing the time period**

From this dashboard the administrator can both:

1.   **ADD A NEW TIME PERIOD,** by using the drop down menu at the top position and clicking on the button link "Add"

2.   **DELATE A TIME PERIOD,** by clicking on the button link "Remove"

2.3   Non-admin users' functionalities

A non-admin user does not have access to any of the administrator features seen before.

He can only **change his own password**:

> Change Password

Username:	*user1*
Password:	
Repeat Password:	

Reset   Save

SECTION II – INSTRUCTIONS FOR IT STAFF

A01. Database schema

The Web Application interfaces with a SQL Server database. The schema of the tables is shown in the following image:
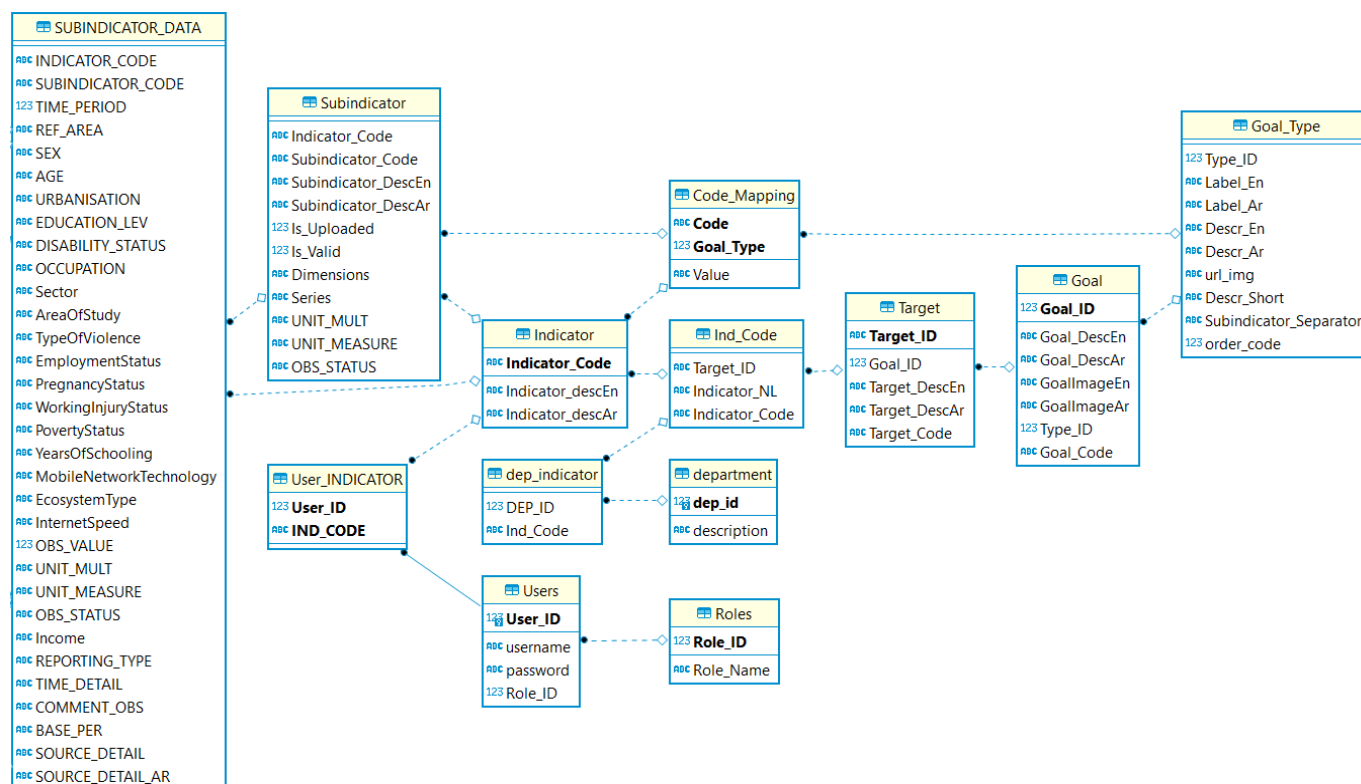
The schema is based on the Multi-Dimensional Table (MDT) data structure as defined by the United Nations Statistics Division (UNSD). The MDT table is: SUBINDICATOR_DATA

The main tables are described in Appendix 1 to this Section.

A02. Instructions to manually add new dimension

This paragraph describes the steps needed to configure the Web-Application in order to add new dimensions, since in this case some records must be manually inserted into the database.

Add a new dimension

1. Create a new table CL_[DIMENSION] with columns:

   a. *[DIMENSION],* the CODE of [DIMENSION], (primary key);

   b. *[DIMENSION]_DESC_EN,* description of the [DIMENSION] in English language;

   c. *[DIMENSION]_DESC_AR,* description of the [DIMENSION] in the local language (Arabic for Palestine); it is possible to choose a different suffix for the name of the column (it is customized in the next table).

2. Add a new record into DIMENSION table:

   a. *SEQUENCE*, the order of DIMENSION;

   b. *NAME*, the name of the DIMENSION;

   c. *LABEL,* the label of the DIMENSION displayed in the application's page;

   d. *TABLE_NAME,* the table CL_[DIMENSION] of the DIMENSION;

   e. *CODE,* the code column name of the DIMENSION;

   f. *DESCRIPTION,* the description column name of the local language of the DIMENSION;

   g. *IS_TIME,* flag for time field (1=true, 0=false);

   h. *INT_CODE,* boolean value for integer value code (1=true, 0=false);

   i. *LABEL_ENG,* the label of the DIMENSION in English language displayed in the application's page;

   j. *DESCRIPTION_ENG,* the description column name of English of the DIMENSION.

A03. MDT2PxWeb

MDT2PxWeb is a tool to export data and metadata from the Web-Application database to a PxWeb database, following the Nordic Data Model (CNMM) 2.3.

The tool can run with the following commands:

1) create SDGs structure into the PxWeb database

```
MDT2PxWeb conf.json [print [output.sql]]
```

2) update SDGs data into the PxWeb database

```
MDT2PxWeb conf.json update [output.sql]
```

If specified the output.sql file, the tool will also create a sql script file.

The file conf.json is a configuration file for the tool. An **example** of configuration file is shown below (organizationCode, organizationName and "mainLanguage" code to be changed according to the organisation):

```
{
  "organizationCode": "PCBS",
  "organizationName": "Palestinian Central Bureau of Statistics",
  "goalType": "1",
  "goalTypeLabel": "SDGs Indicators",
  "userId": "SDGS",
  "obsValue": "OBS_VALUE",
  "mainLanguage": {
  "code": "ar",
  "suffixDB":"",
  "labelValue": "Sub Indicator",
    "labelContent": "Sustainable Development Goals - SDGs"
  },
  "secondaryLanguage": {
  "code": "en",
  "suffixDB":"ENG",
  "labelValue": "Sub Indicator",
    "labelContent": "Sustainable Development Goals - SDGs"
  },
  "mdtDb": {
    "connectionString":
"Server=localhost\\SQLEXPRESS;Database=SDGs;Trusted_Connection=True;",
    "username": null,
    "password": null,
    "dimensionsTable": {
      "name": "DIMENSION"
```

```json
    },
    "dataTable": {
        "name": "SUBINDICATOR_DATA",
        "code": "SUBINDICATOR_CODE",
    "code1": "INDICATOR_CODE"
    },
"goalTable": {
        "name": "V_GOAL",
        "id": "Goal_ID",
    "code": "Goal_CODE",
    "typeId": "Type_ID",
        "desc": "Goal_DescAr",
    "descEn": "Goal_DescEn",
        "order": "Goal_ID",
    "reference": "Type_ID"
    },
    "targetTable": {
        "name": "V_TARGET",
    "id": "Target_ID",
        "code": "Target_Code",
        "desc": "Target_DescAr",
    "descEn": "Target_DescEn",
        "reference": "Goal_ID"
    },
    "indicatorTable": {
        "name": "V_INDICATOR",
        "code": "Indicator_Code",
        "codeValue": "Indicator_CodeValue",
        "desc": "Indicator_descAr",
    "descEn": "Indicator_descEn",
        "reference": "Target_ID",
    "reference1": "Goal_Type"
    },
    "subIndicatorTable": {
        "name": "V_SUBINDICATOR",
        "code": "Subindicator_Code",
    "codeValue": "Subindicator_CodeValue",
        "desc": "Subindicator_DescAr",
    "descEn": "Subindicator_DescEn",
        "dimensions": "Dimensions",
        "reference": "Indicator_Code",
    "reference1": "Goal_Type",
    "reference2": "Target_ID",
        "condition": "Is_Valid = 1"
```

```
      }
   },
   "pxwebDb": {
      "connectionString":
"Server=localhost\\SQLEXPRESS;Database=PxSDGs;Trusted_Connection=True;",
      "username": null,
      "password": null,
      "dataTable": {
         "name": "INDICATORDATA",
         "code": "SUBINDICATOR_CODE",
      "code1": "INDICATOR_CODE"
      }
   }
}
```

APPENDIX 1 – DESCRIPTION OF THE MAIN DATABASE TABLES

TABLE	Description
GOAL	List of the goal
GOAL_TYPE	List of type of goal
TARGET	List of target
INDICATOR	List of indicators
IND_CODE	List of relationships between Target and Indicators
SUBINDICATOR	List of sub-indicators
TIME_PERIOD	List of time period
SUBINDICATOR_DATA	Multidimensional table contains sub-indicator's data
CODE_MAPPING	List of labels of indicators and sub-indicators, by goal_type, displayed in web application
DIMENSION	List of the classifications
CL_*	Classification of the indicators
USERS	List web application's users
ROLES	List of roles of users (Admin, User)
DEPARTMENT	List of departments of Institute
DEP_INDICATOR	List of relationships between indicators and departments
USER_INDICATOR	List of users enabled for indicators