IWMI
International Water Management Institute

CGIAR
RESEARCH PROGRAM ON
Water, Land and Ecosystems

Systematic Asset Management Software (SAMS)

User Manual

SAMS USER MANUAL

CONTENTS

Introduction

1. WHAT IS SAMS?

Systematic Asset Management Software (SAMS) is a geographic information system (GIS) platform for government departments, donors, investment agencies, researchers, and students to facilitate learning, planning, operation and management of the assets of a reservoir or tank irrigation system.

Since ancient time, a village tank has been the backbone of village economies in Asia-Pacific and African. Over time, irrigation agriculture becomes an important part of a national economy by contributing to agricultural production. Therefore, it is important to monitor and maintain the performance of tank irrigation systems. An irrigation asset management system involves the collection of information of each asset in the system. This information can be recorded and stored as different layers (vector or raster) in a GIS in the form of spatial and non-spatial data and SAMS has the capability of integrating and analyzing spatial, non-spatial and multi-layered information in different formats and for creating management strategies for an irrigation system and socio-economic development.

The SAMS system can also generate outputs in the form of maps, tables and graphs that help irrigation officials (engineers), donor agencies, agriculturalists (researchers/students) and farmer organizations monitor the performance of an irrigation scheme at any place and time and take the necessary steps to manage the resources effectively

2.1. SAMS ROLES

SAMS users can take on one of three roles: Editor, Explorer, or Reviewer.

i. Editor

The role of Editor is recommended for irrigation engineers, irrigators, agriculturalists, researchers, and students. Editors can build one or more irrigation schemes in SAMS, can see, and edit the irrigation schemes they create, and can start with the basic details of an irrigation scheme and further develop it with new data.

ii. Explorer

The role of Explorer is recommended for investors, donor agencies, NGOs, farmer organizations and school communities (teachers, students). Explorers can edit irrigation schemes. Explorers can view, learn and update irrigation schemes on SAMS as permitted by SAMS's admin.

If you would like to change your role, contact SAMS Admin (see Image 2)

iii. Reviewer

The role of Reviewer is recommended for government organizations (e.g., irrigation administration officers). Reviewers can see and update irrigation schemes as permitted by SAMS Admin. Reviewers cannot edit irrigation schemes.

If you would like to change your role, contact SAMS Admin (see Image 2).

SECTION 1

1. Role: Editor

1.1 REGISTRATION AND LOGIN

You must create a SAMS login account. One email address can register one time only.

Once you have registered, begin by clicking Start Work and enter the basic information in the form provided. You do not need to choose a role because you will be automatically registered as a SAMS Explorer.

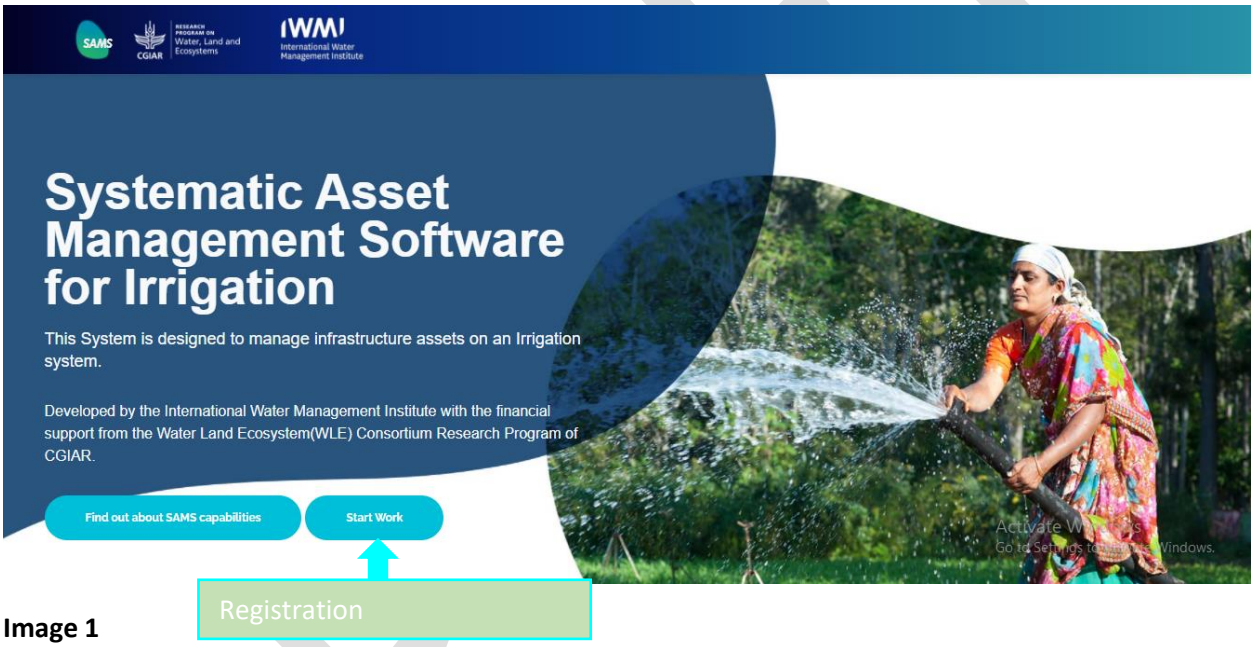


Image 1

Once you have completed registration, go to the Home page. To create a new irrigation scheme, click Input Data.

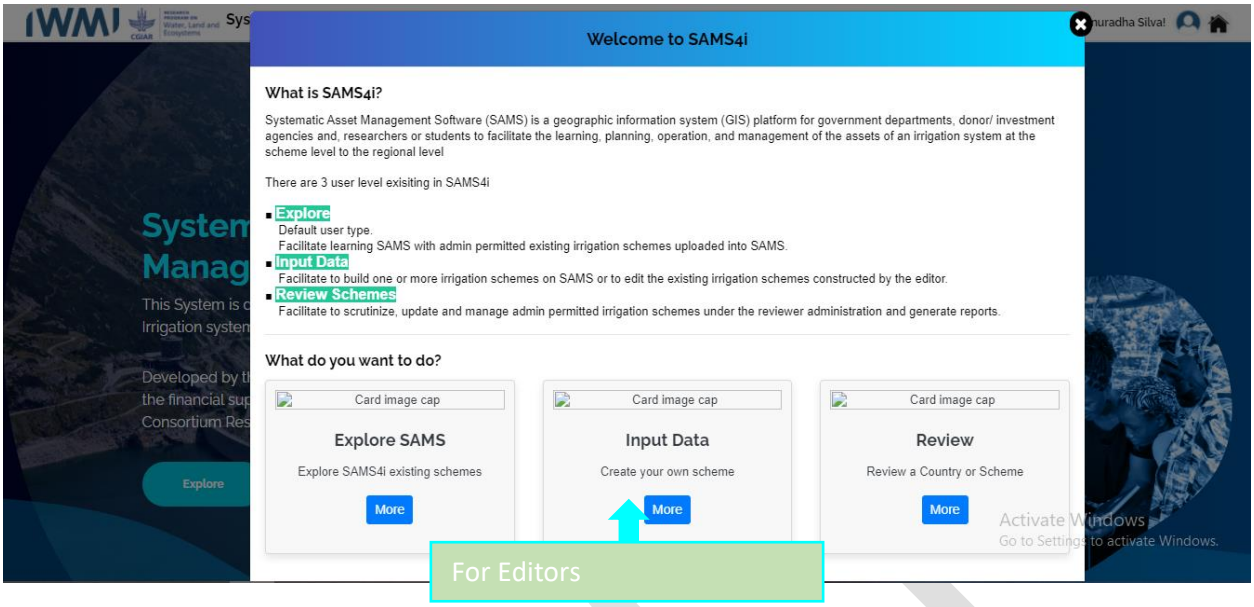


Image 2

When you click More, you will be asked to send an email to SAMS Admin to request the role you want, for example Editor (Input Data).

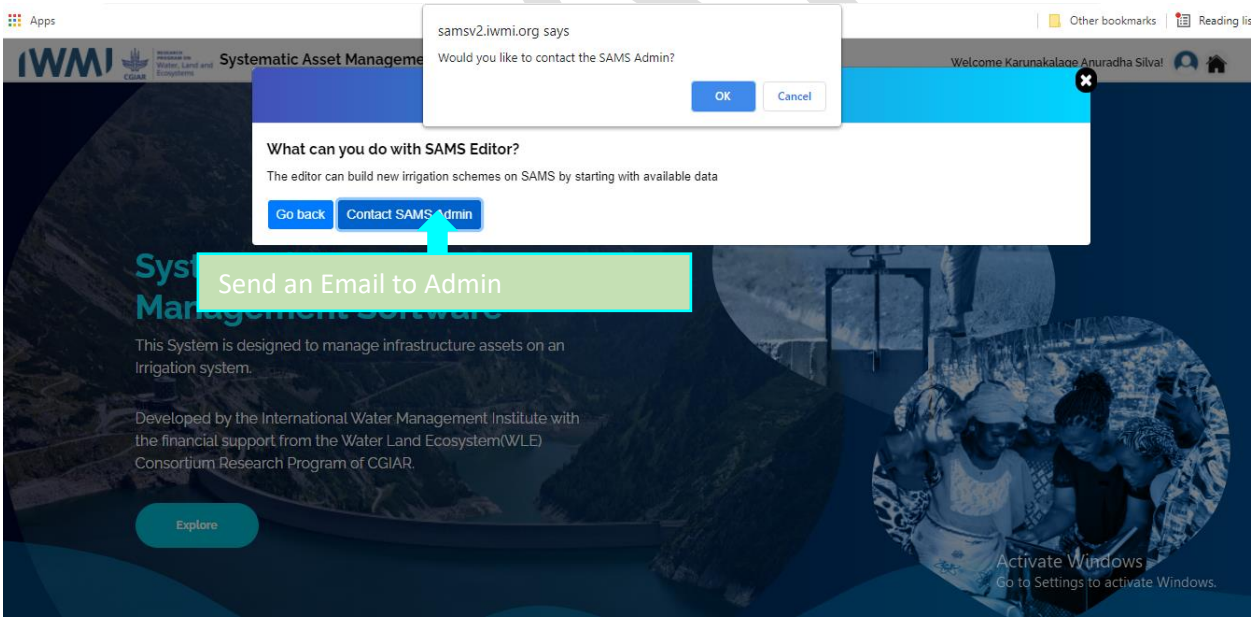


Image 3

You will receive a permission confirmation email from SAMS Admin. Login using the Username and Password you entered into the registration form.

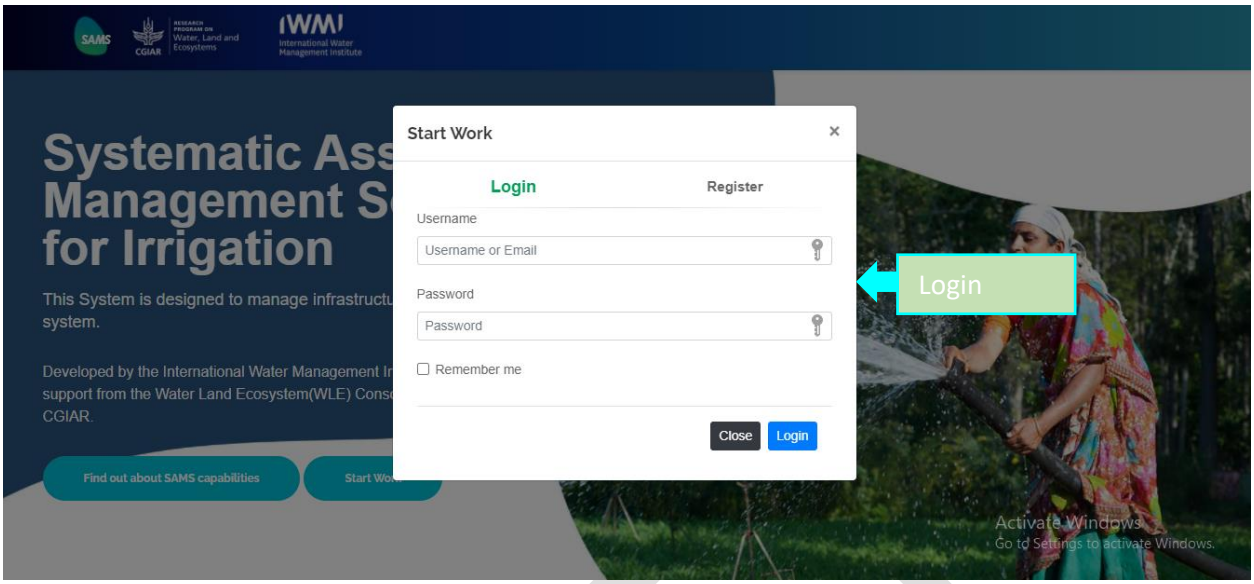


Image 4

1.2. CREATE NEW

As an Editor, you can create a new irrigation scheme and edit other schemes you have created. Once you login as the Editor, you will be redirected to the HOME page where you can click Create New to start building a new scheme.

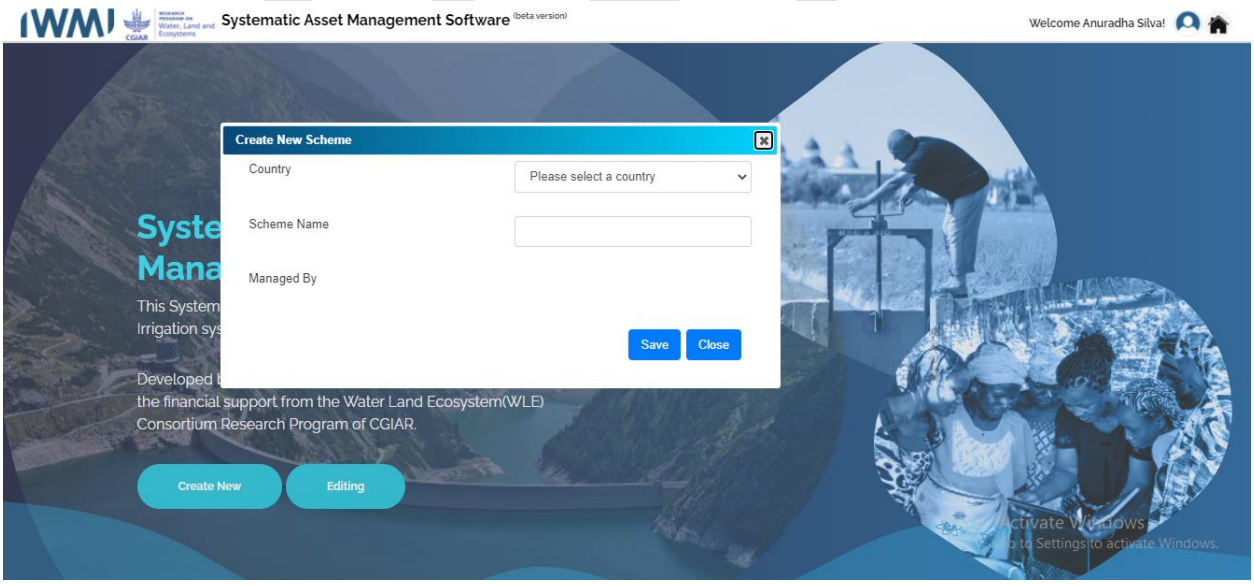


Image 5

You must complete all three sections in the Create New Scheme box.

- For Scheme Name, enter the name of the agency responsible for the scheme (e.g., ministry, department, board).

Example: A country usually has several levels in its irrigation management hierarchy (national, state/provincial, district and scheme).

- For Managed By, if there is no defined hierarchy for the selected country, you can define the administrative levels.
- If a previous Editor has already entered the agency name for a country, those names will display under the down arrow and you are not required to define a level.
- As an Editor, you can also create new administration levels, but they should match administration levels for the country in which the scheme is located.

1.3. DEFINE UNITS

Once you have created a new irrigation scheme, you need to define Country Setting unit categories and the corresponding asset types related to the new irrigation scheme. SAMS has both metric and imperial unit systems. Go to Measurement Units System under the Country Setting tab.

SAMS has default unit categories for Length, Area, Mass/Weight, Volume/Capacity and Currency (red boxes) as well as units for length, kilometer, meter, centimeter and millimeter.

Default Unit Category: These categories are defined by the System Administrator.

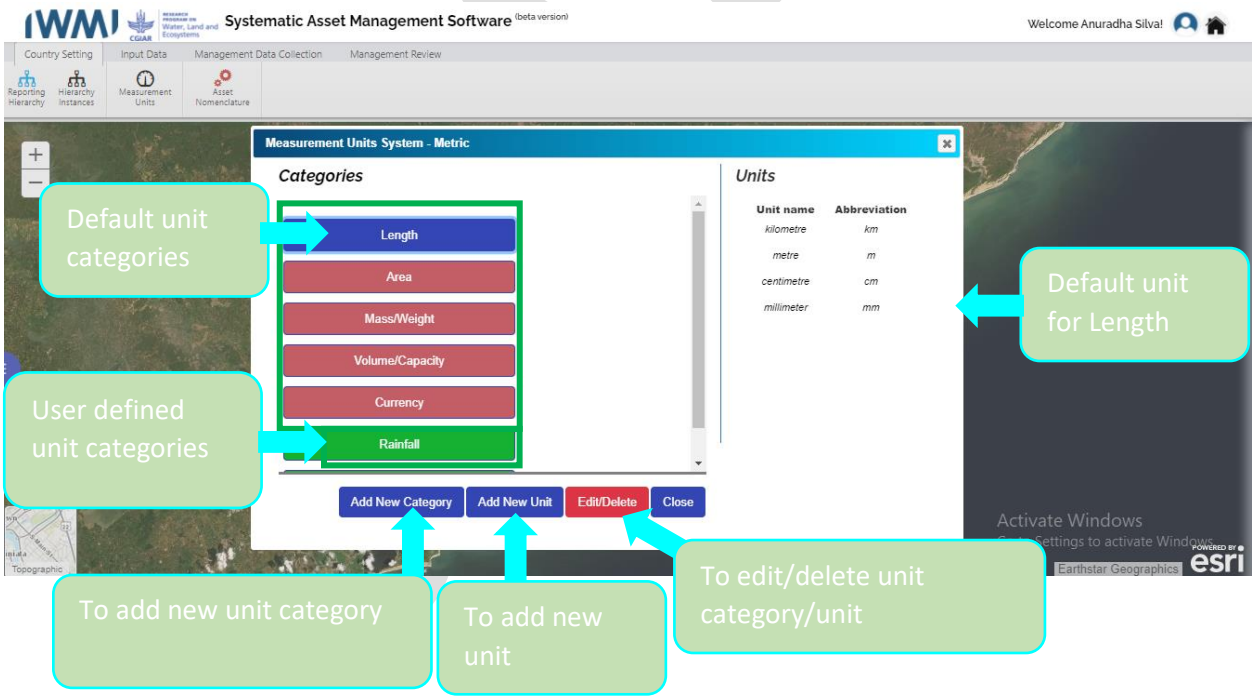


Image 6

- As an Editor, you can add new default unit categories by clicking Add New Unit or you can add a new unit category and related units as a user-defined category (green boxes) with the relevant units by clicking Add New Category and Add New Unit.
- Once defined, you can use these categories and units for other irrigation schemes.

- Editors can also edit or delete user-defined unit categories or units by clicking Edit/Delete.

1.4. DEFINE ASSETS

To define assets related to a new irrigation scheme, go to Asset Nomenclature under the Country Setting tab.

- An asset is not an independent feature. An asset is always related to an Asset Category and a family called Asset Type.
- SAMS identifies an asset by using the family of the asset.
- An asset category consists of a cluster of asset types.
- Feature class type (point, line or polygon), size and color are qualities of an asset type and do not depend on the asset category.
- The geometry (length and shape) is a quality of an asset.

SAMS has default asset categories and default asset types under each default category. An Editor cannot edit or delete default categories or types.

An Editor can add new asset types to default categories or new categories with a new group of types. You can also edit and use the user-defined categories and types for other irrigation schemes.

Default Asset Category: Asset categories in the In-built Asset section are defined by the System Administrator.

Default Asset Type: Asset types under default asset categories are defined by the System Administrator.

Defining an asset type for a new irrigation scheme can be done two ways (A and B).

A. Incorporating in-built assets (default assets) for the new irrigation scheme.
B. Adding user-defined assets.

A. Procedure for incorporating in-built assets

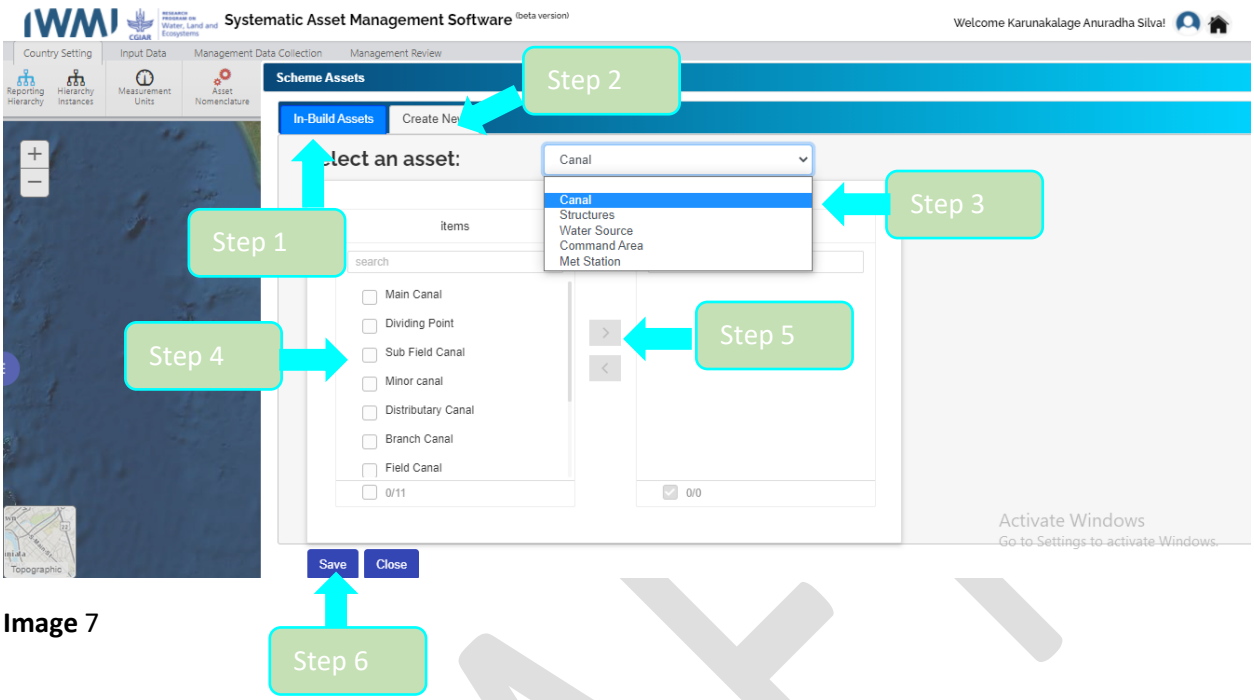


Image 7

Step 1: Under the Country Settings tab, click Asset Nomenclature.
Step 2: Click In-Build Asset.
Step 3: Select the relevant asset category from the default categories for the irrigation scheme.
Step 4: Select relevant default asset types for the irrigation scheme, including the selected default asset categories.
Step 5: Move the selected asset types to the panel on the right by clicking the arrow.
Step 6: Click Save to move the selected default assets.

Adding other assets for an irrigation scheme can be done after saving by following the same steps for other categories.

B. Procedure for creating user-defined assets

This procedure can be carried out in two ways.

1) Adding a user-defined asset to the in-built asset category.

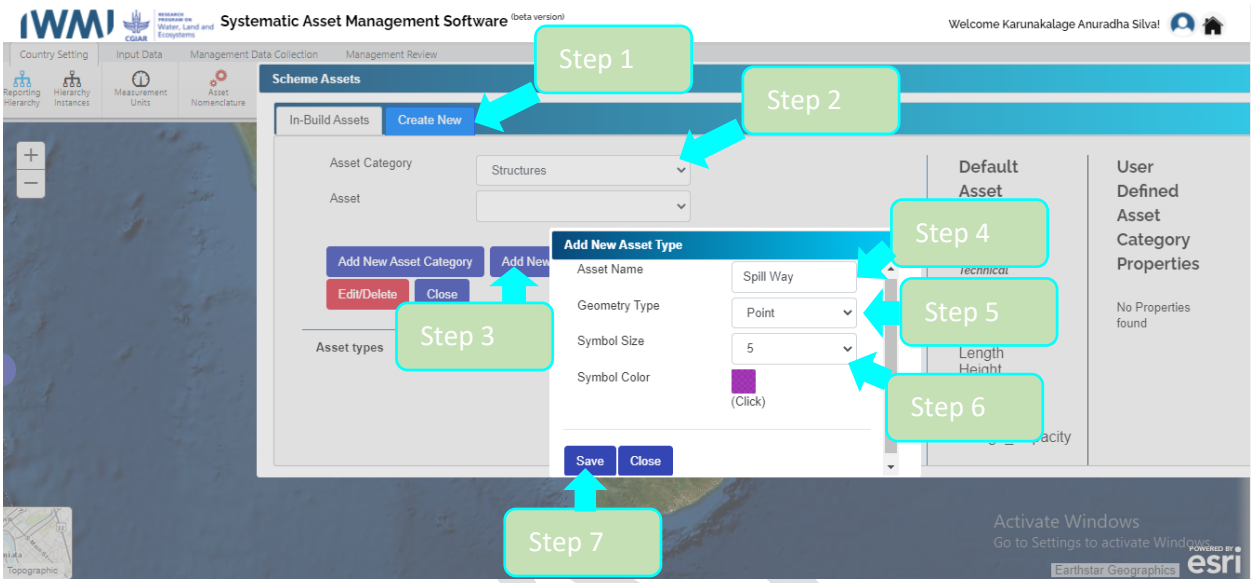


Image 8

Step 1: Open Asset Nomenclature and click Create New.
Step 2: Select the default Asset Category you want to add.
Step 3: Click Add New Asset to open the Add New Asset Type box.
Step 4: Enter a new Asset Name.
Step 5: Select a Geometry Type for the new asset (Point, Line and Polygon).
Step 6: Select display properties for the new asset (Symbol Size and Symbol Color).
Step 7: Save.

2) Create user-defined asset categories and add new assets.

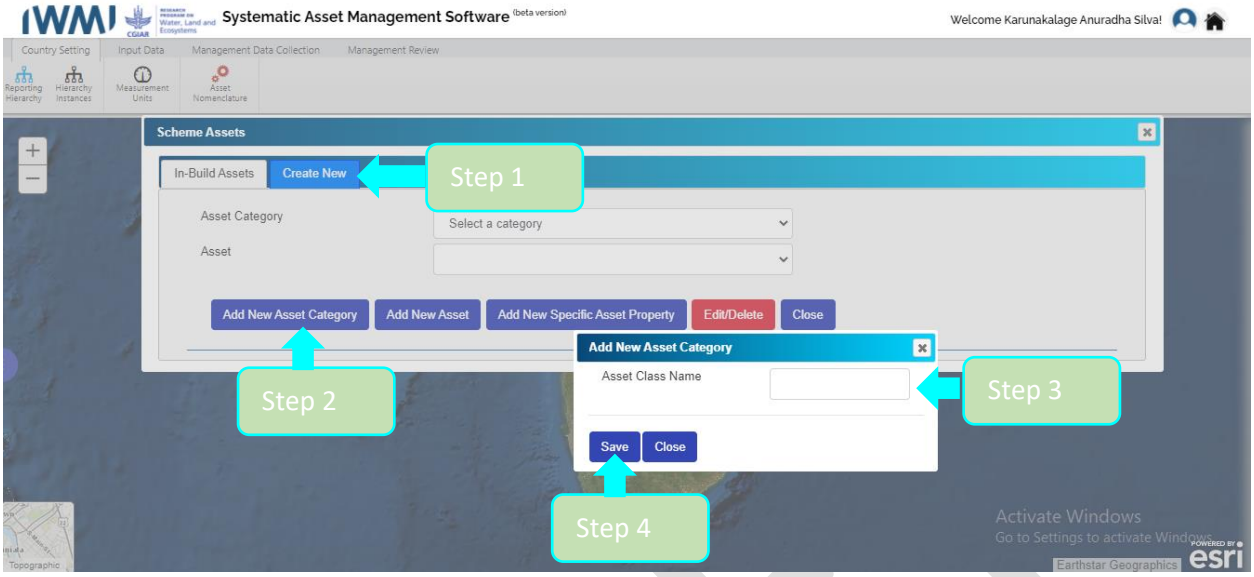


Image 9

Step 1: Open Asset Nomenclature and click Create New.
Step 2: Click Add New Asset Category to open the Add New Asset Category box.
Step 3: Enter an Asset Class Name.
Step 4: Save.
Step 5: Follow the steps in subsection 1.4. B (1) for adding a user-defined asset to the in-built asset categories.

An Editor can edit or delete only user-defined asset categories and asset types. To delete asset categories or asset types, use Edit/Delete in the Create New Section.

After adding data related to an asset type, you cannot delete that asset type or the related asset type category.

An Editor can add properties to all selected asset categories and asset types (default + user-defined) and use them in building a new case study.

The incorporated asset categories and the related asset types can be visualized using the Drawing Toolkit in the admin section (left-hand pane).

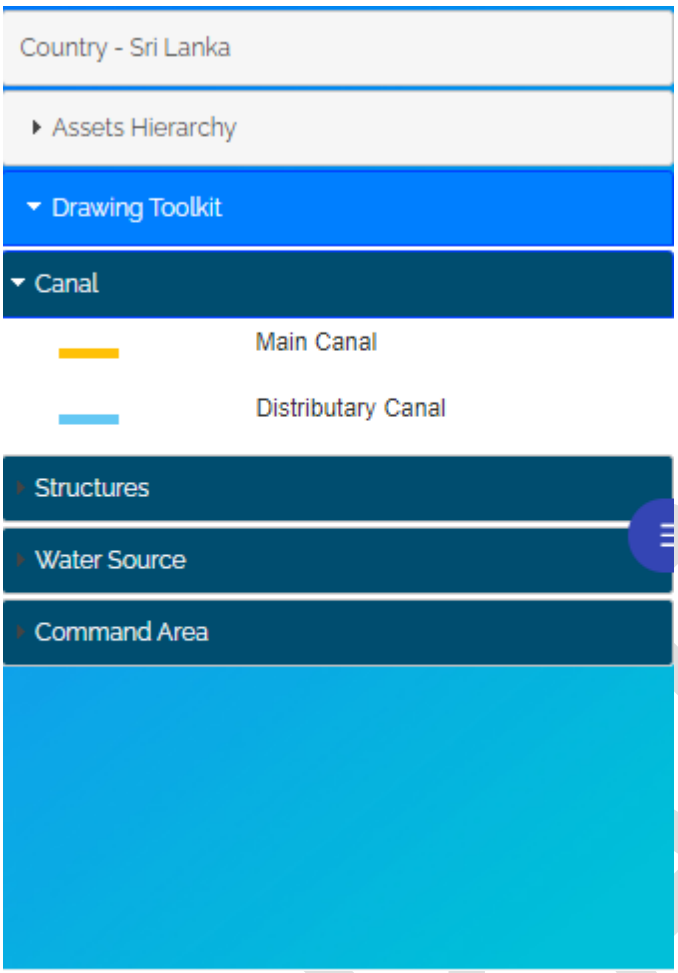


Image 10

1.5. DEFINE ASSET PROPERTIES

An Editor can define Properties to an Asset Category or Asset Type related to the basic information and technical information showing in the right-hand pane.

A property belonging to an Asset Category is also related to all Asset Types under that category.

A Property belonging to an Asset Type is only related to that Asset Type.

C. Adding Properties to Selected Asset Categories and Types.

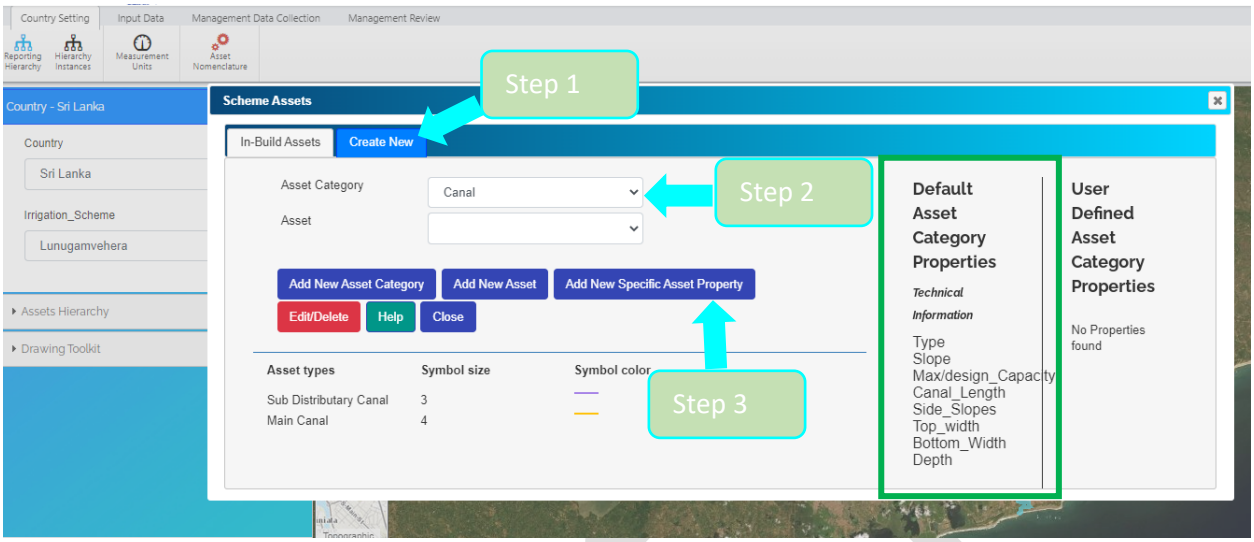


Image 11

Step 1: Open Asset Nomenclature and click Create New.
Step 2: Select an Asset Category for the new Asset Category Property.
Step 3: Click Add New Specific Asset Property.

If you select a default Asset Category, SAMS will show the default Asset Category Properties under the Default Asset Category Properties (green box) defined by the System Administrator.

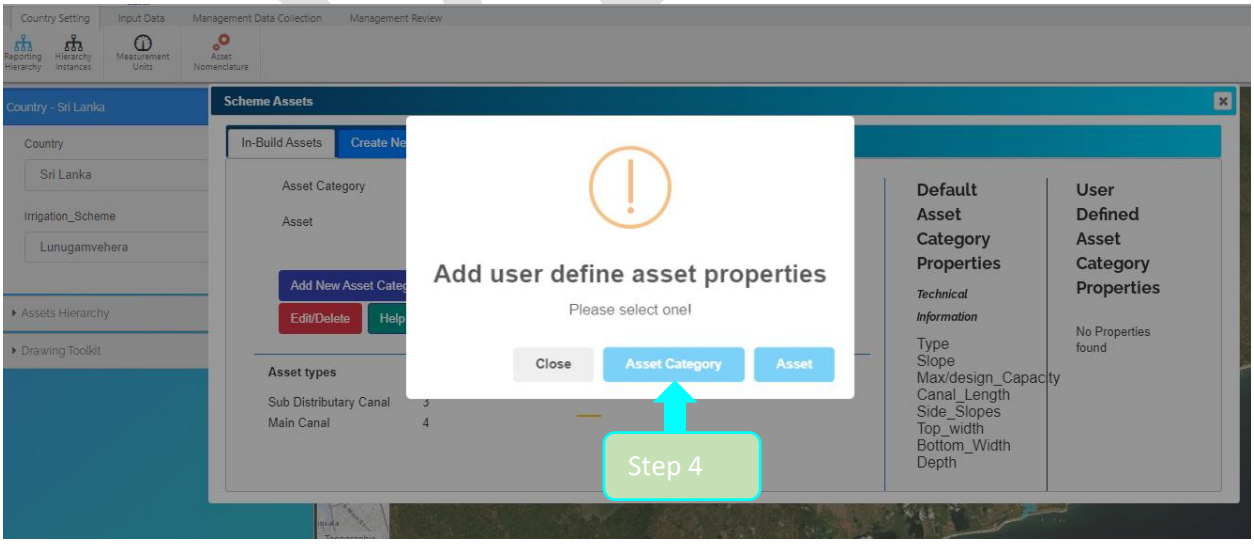


Image 12

Step 4: When the decision box (!) opens, click Asset Category.

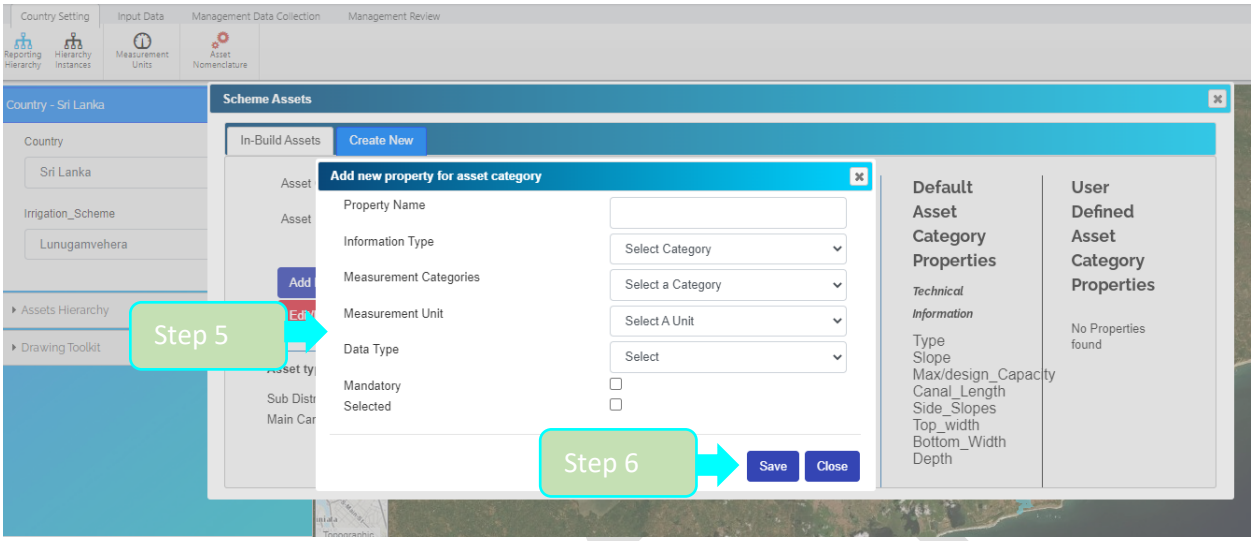


Image 13

Step 5: in the Add new property for asset category box, enter values for Property Name, Information Type, Measurement Categories, Data Type and click either Mandatory or Selected
If the Property is required for an Asset Category, select Mandatory, otherwise choose Selected.
Step 6: Save

A. To add a new Property to Asset Type, select the relevant default asset or user-defined asset under a default Asset Category or a user-defined Asset Category.
B. Apply Step 3 in subsection 1.5(c) and select Asset in the (!) box for Step 4 on the same subsection.
C. Follow Step 5 and Step 6 on the subsection 1.5(c)
D. An editor can edit or delete only user-defined Asset Category Properties and Asset Type Properties. Added Properties cannot be deleted.
E. The same Editor can use the user-defined Properties related to Categories and Types for other irrigation schemes.

1.6. UPLOADING ASSETS FOR BUILDING IRRIGATION SCHEME

This is the final step for building an irrigation scheme on SAMS.

An Editor can upload asset properties and parameters in two ways.

1. Uploading a shapefile or a CSV file of the scheme with in-built properties related attributes.
2. Manually, by screen digitizing and entering data.
3. Building an Asset Hierarchy

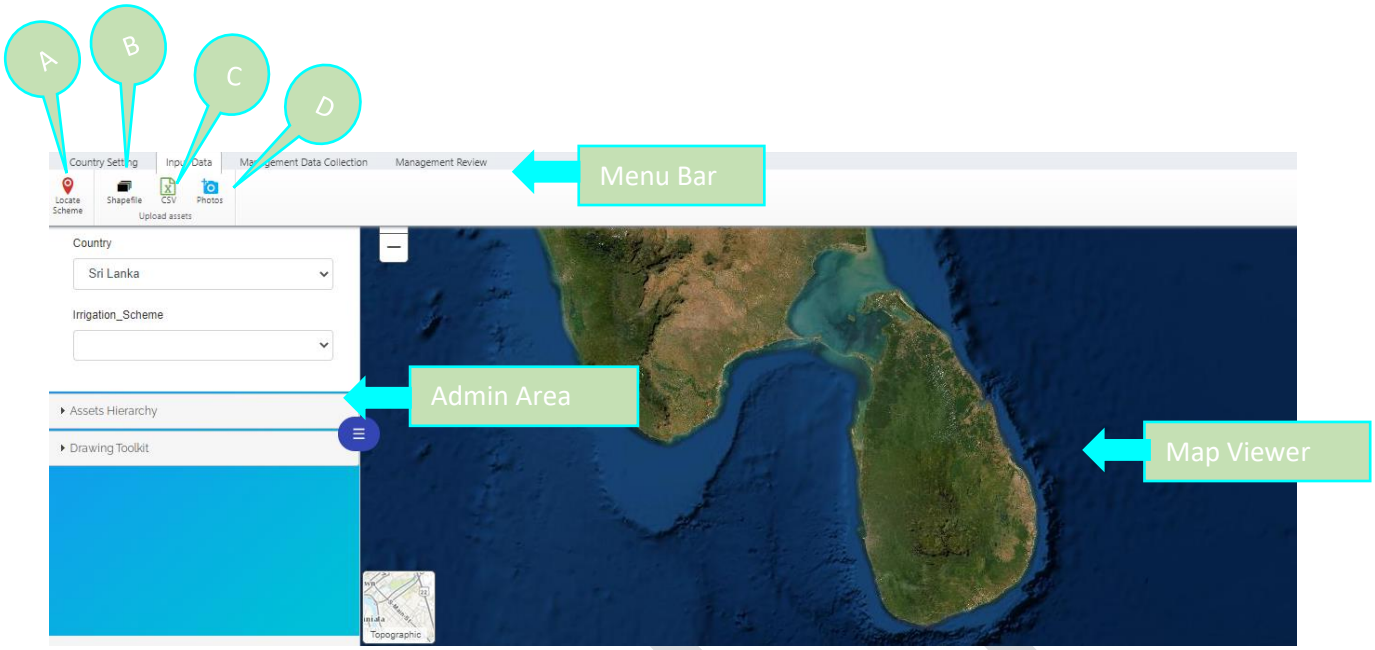


Image 14

Under the Input Data tab, you will see a Menu Bar, Admin Area and Map Viewer.

The Menu Bar (A, B, C and D) has tools to locate the scheme and uploads assets.

A: Locate Scheme

B: Shape File

C: Excel

D: Photos

1. Uploading a shapefile or a CSV file with in-built properties and related attributes.
   To upload a shapefile or CSV to SAMS, the file must meet the following prerequisites:
   - Should be in WGS84 Geographic coordinate system.
   - The file extensions are required are .cpg, .dbf, .prj,. sbn, .sbx, .shp and .shx
   - The attribute table of a shapefile must have the following columns:

   gid: primary key (similar to fid or id and fill as zero 0)

   parent: The parent ID of the asset needed to identify the sequence of assets can be filled in or kept as zero until you start building the asset hierarchy.
   When uploading a shapefile, the SAMS database automatically creates a unique Asset ID and Parent ID for each uploaded asset and therefore it is not mandatory to fill in gid and parent fields.

   type: For the type of asset (asset types must have been defined as incorporated asset types of a scheme or Asset Types under Country Settings. It is important to define the asset type (refer to subsection 1.4).

asset_name: For the names of the assets

photo_id: Adding this field is mandatory but it is not mandatory to fill it in. If the Editor has a photo related to the asset, then he/she can enter the name or id of the photo using the same name as the one for the photo in the Editor's device.

All photos can be put in one folder and you can add asset-related photo IDs or names to the attribute field in the relevant shapefile and then upload the photo folder directly to SAMS with the Photos tool (D on the Menu Bar in Image 14).

You can add only 4 photos to one asset.

As an Editor, you can upload an Asset Property as an attribute of a shapefile. If there is no default property, you need to create them as scheme specific (user-defined) Properties as in subsection 1.5. This is not mandatory, and you can enter them later using the right-hand panel (refer to Image 19).

In addition to these requirements for uploading CSV files, you need two special fields for longitude and latitude. The geographic coordinate system should be WGS84.

Note: You can only upload point features in a CSV file.

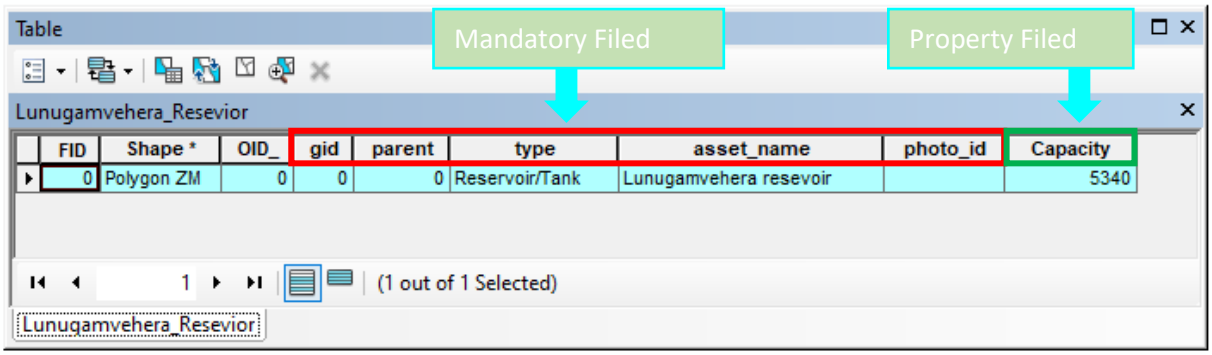


Image 15

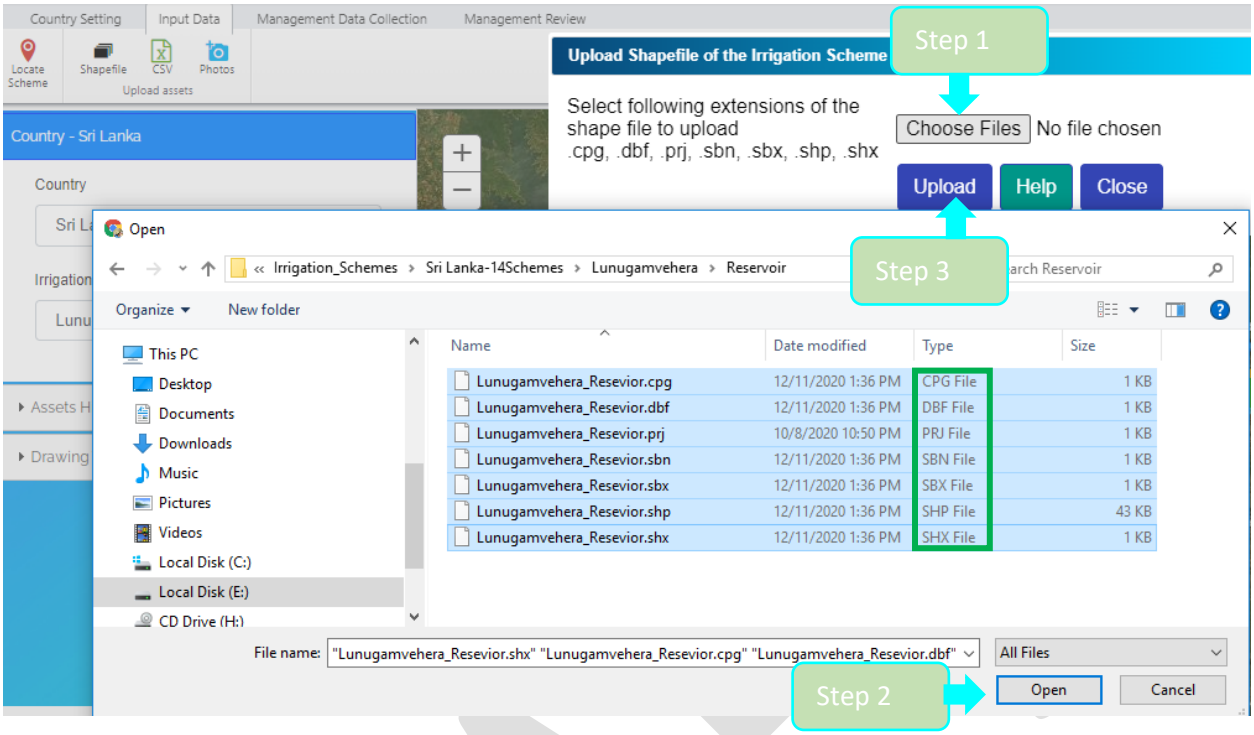


Image 16

Uploading Shape Files

Step 1: In the Upload Shape File of the Irrigation Scheme box, click the Shape File and Choose Files.
Step 2: Go to the drive and folder where the shapefiles are saved and select all 7 files with these extensions: .cpg, .dbf, .prj, .sbn,.sbx, .shp and .shx
Click Open to send the files to SAMS.
Step 3: Select Upload.

2. Screen Digitizing and Entering Data

If there are no shapefiles available to upload, as an Editor you can do an on-screen digitizing on the map.

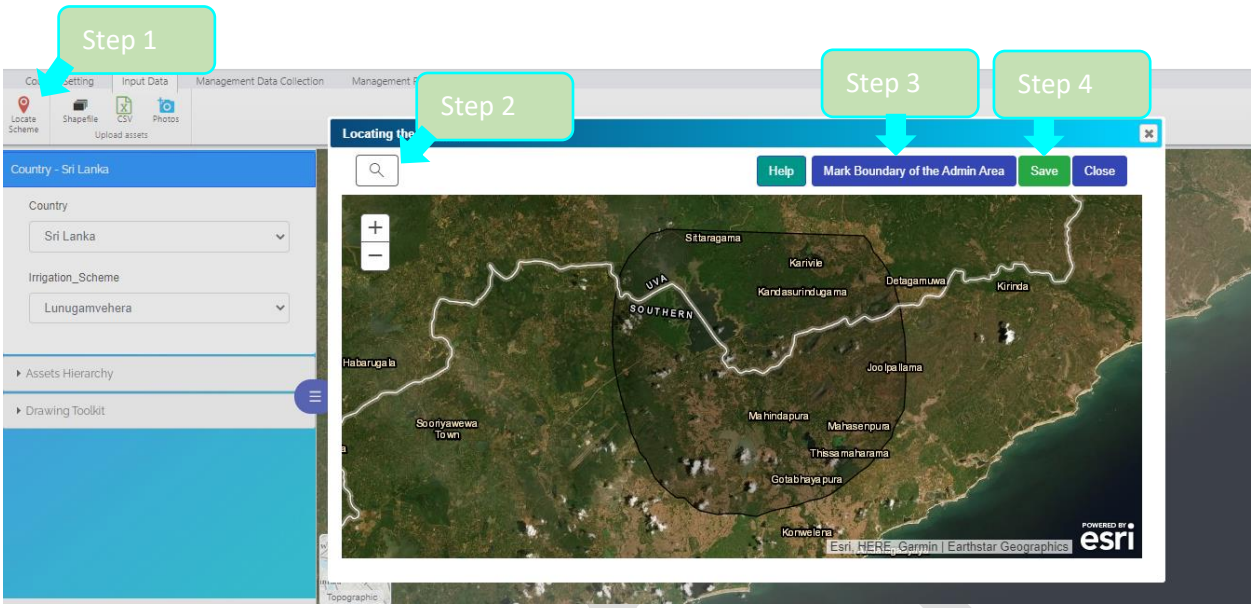


Image 17

Step 1: Under Input Data tab, select Locate Scheme (A) tool.
Step 2: Using the search bar in the Locating the Scheme box, enter the scheme location.
Step 3: Using the Mark Boundary of the Admin Area, demarcate the irrigation area boundary with mouse clicks.
Step 4: Save. After saving, SAMS will redirect the map window to the demarcated boundary area and you can start to draw geometrical features inside the Map Viewer using your mouse.

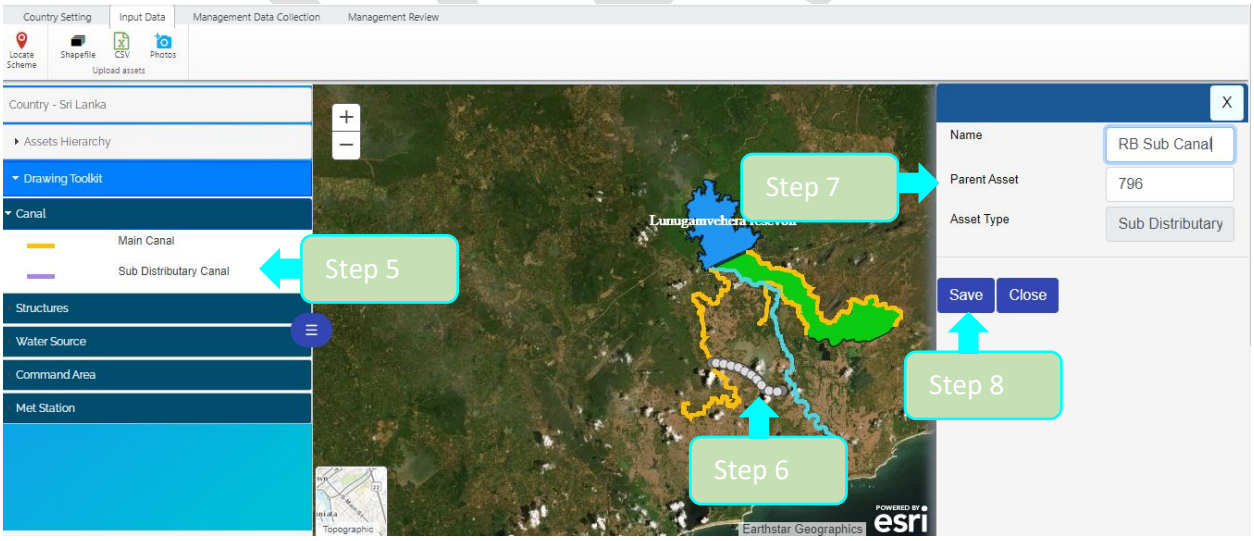


Image 18

Step 5: To draw an asset for the scheme, select an asset category from the Drawing Toolkit in the Admin Section on the left.

Step 6: Create a line by clicking the mouse. Double click to stop drawing.

Step 7: When you double click to stop drawing, a new pane will open on the right. Enter values for Name, Parent Asset and Asset Type.

- If there is no asset inside the map viewer, zero is assigned automatically as the Parent number for the newly created asset.
- If there are assets available, SAMS automatically assigns a parent ID to the new asset as a child of the nearest asset. However, as an Editor you can change it and assign a different parent to the new asset.
- If the asset is not linked with any existing assets in the map viewer, you should change the Parent Asset number to zero.
- This Parent-Child relationship indicates the upstream-downstream connection of assets and helps build the Asset Hierarchy of the system.

Step 8: Save

The last step for building an irrigation scheme on SAMS is building the asset hierarchy.

3. Building an Asset Hierarchy

Asset Hierarchy is a collapsible Issue Tree view, where all the assets in the scheme are listed according to their Parent-Child connectivity and geographic location. It allows users to view assets from head to tail. SAMS automatically develops a hierarchy based on geographical distance, but as the Editor you can develop it based on the actual Parent-Child connections.

An Editor can change the parent ID of each child asset to connect it with its parent asset.

To activate the Asset Hierarchy, update the Asset which has a Parent ID of zero.

When you click on an asset from the Asset Hierarchy list on the left, a popup box opens for the selected asset (red box) and an Asset Details box (green) showing Asset Name, Asset Management Details and A Recent Performance Indicator Value.

With the use of the open right pane, you can edit Asset Details, including Asset Name, Parent Id, Parent Asset, Asset Type and Symbol Color.

Asset Type and Asset Id is generated and locked by the SAMS database and cannot be edited here.

In addition to these properties, as an Editor you can edit Symbol color and Geometry.

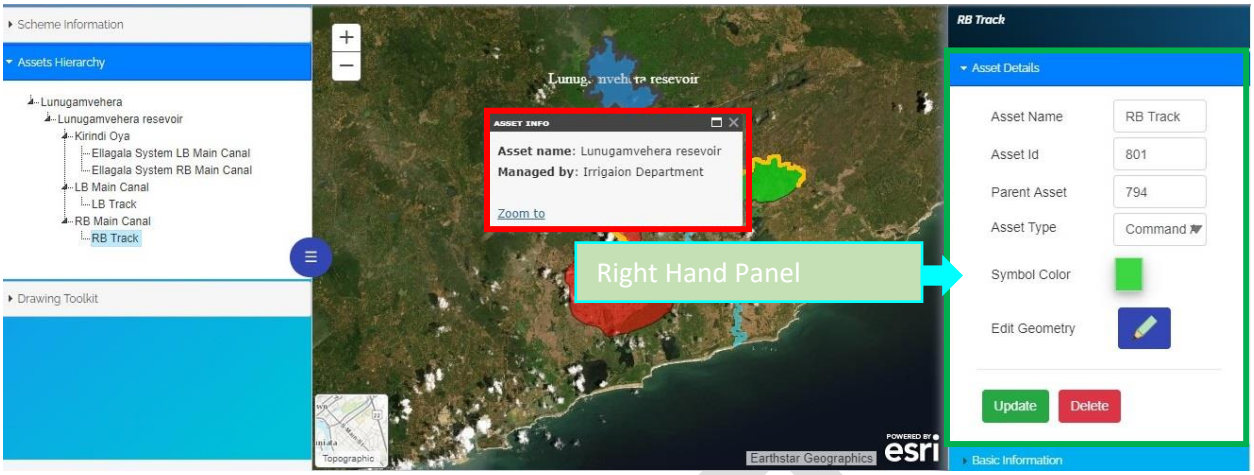


Image 19

As the Editor, you can enter asset properties and a photo related to the asset by clicking on the right-hand pane.

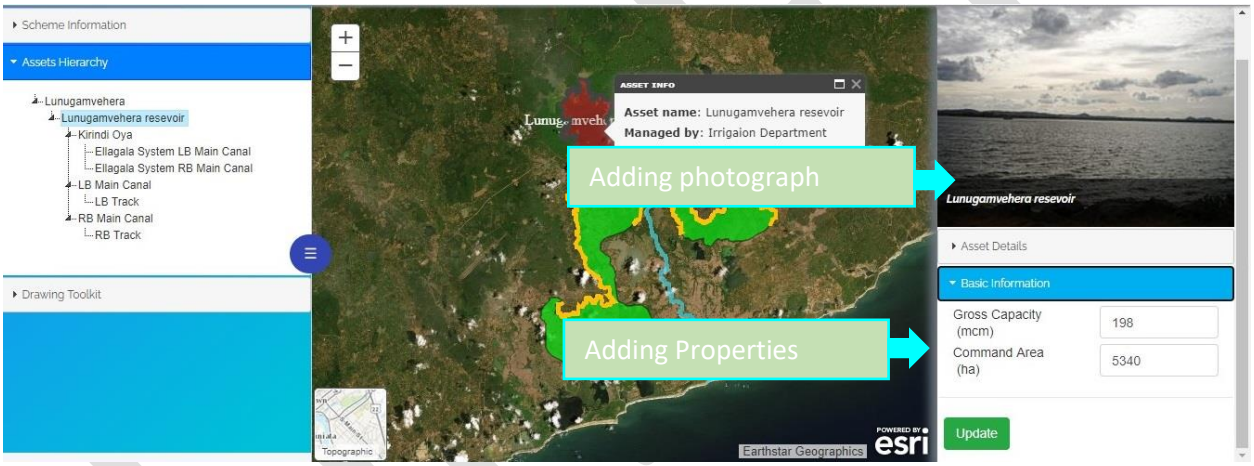


Image 20

1.7. MANAGING ASSETS

Once the Irrigation scheme is established on the SAMS platform, you can manage tasks such as maintenance, repair, production, water issues, and farmer organization details.

Some tasks are listed as defaults. As an Editor, you have the option of defining new tasks required for the irrigation scheme.

Handling tasks depends on obtaining data, which can be collected using Default Forms and Sub forms inside Main Forms. Adding data fields to both types of forms is the same process.

Default forms cannot be edited or deleted.

To activate Forms, you need to connect a form to an Asset, which means activating the Asset on the map or hierarchy list.

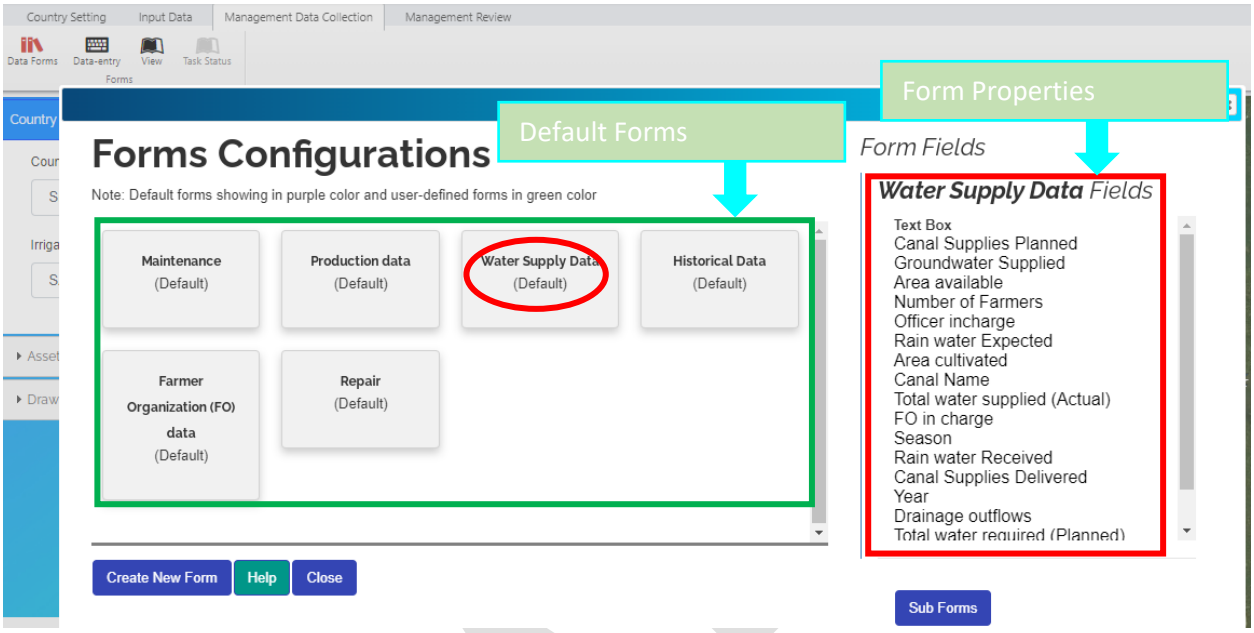


Image 21

There are two processes.

1) Creating New Managing Tasks
2) Entering and Managing Data in Forms

1) Creating New Managing Tasks

Building a new Form

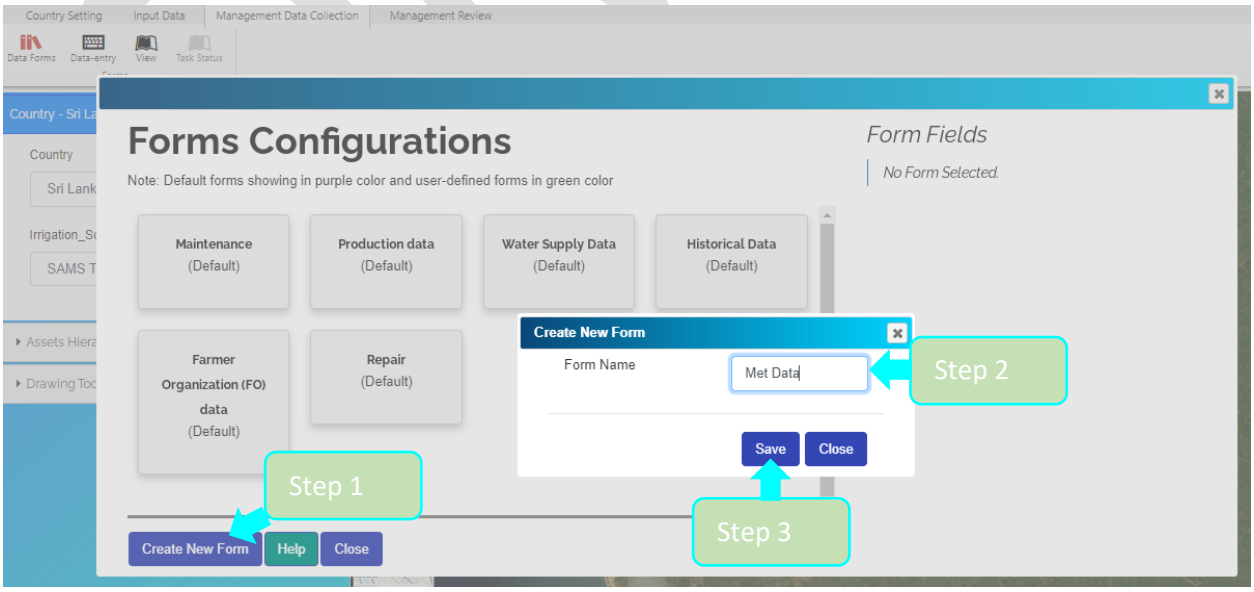


Image 22

Step 1: Under the Management Data Collection Tab Open Data Forms (top left on the navigation bar) and in the Forms Configuration box select New Form.
Step 2: In the Create New Form box, enter a Form Name.
Step 3: Save.

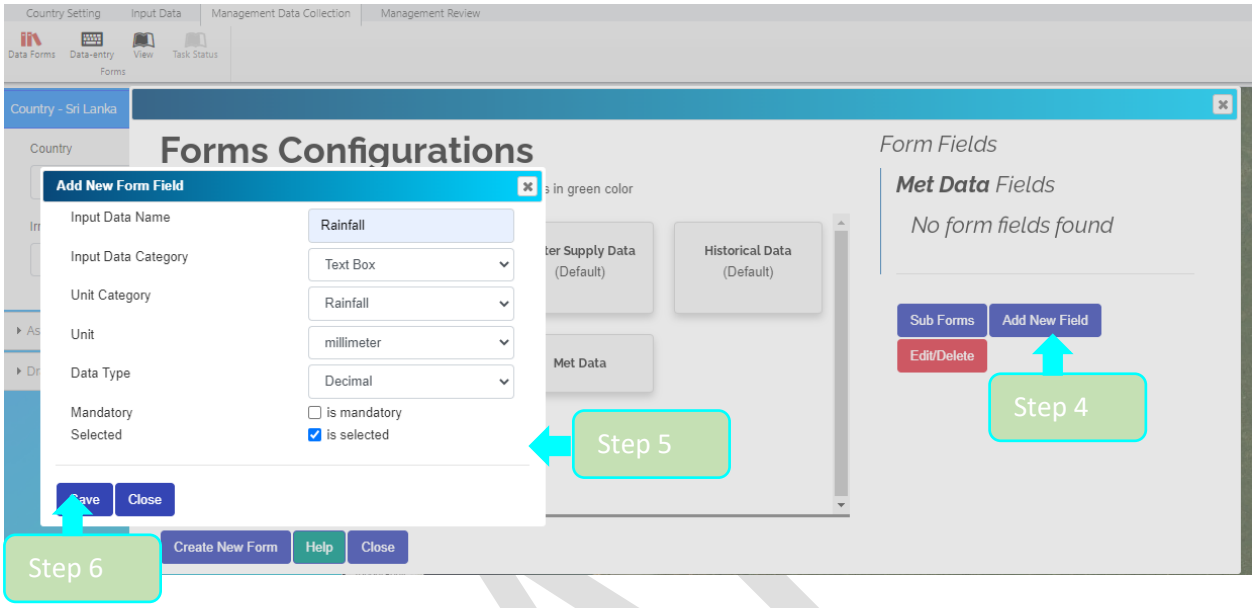


Image 23

After generating the form, you can add new fields and manage the data needed for irrigation management.

If a management task is connected to several secondary tasks, you can create subforms inside the main form.

Step 4: Click Add New Field in the right pane of the Create New Forms box.
Step 5: In the Add New Form Field box, enter values for the fields.

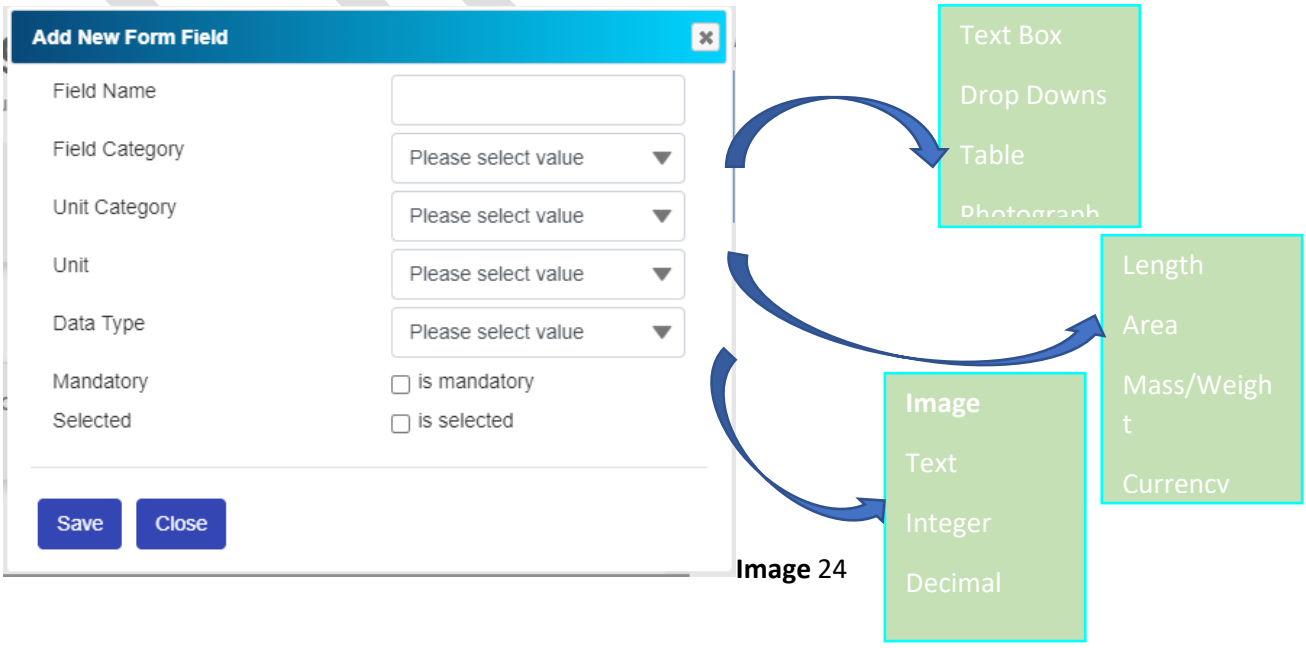


Image 24

Enter a Field Name and values for the other options from the drop-down menus.

As the Editor, you decide if a data field is mandatory or not. If you select mandatory, you will not be able to save the form without entering values for mandatory fields.

Example 1: How to add a Table Field

You can create tables by selecting the field category Tables. To add table columns, in the Add New Form Field box, click the + icon. The procedure for adding a table column is the same as the procedure described in Adding New Field Step 5 on the subsection 1.7 (1).

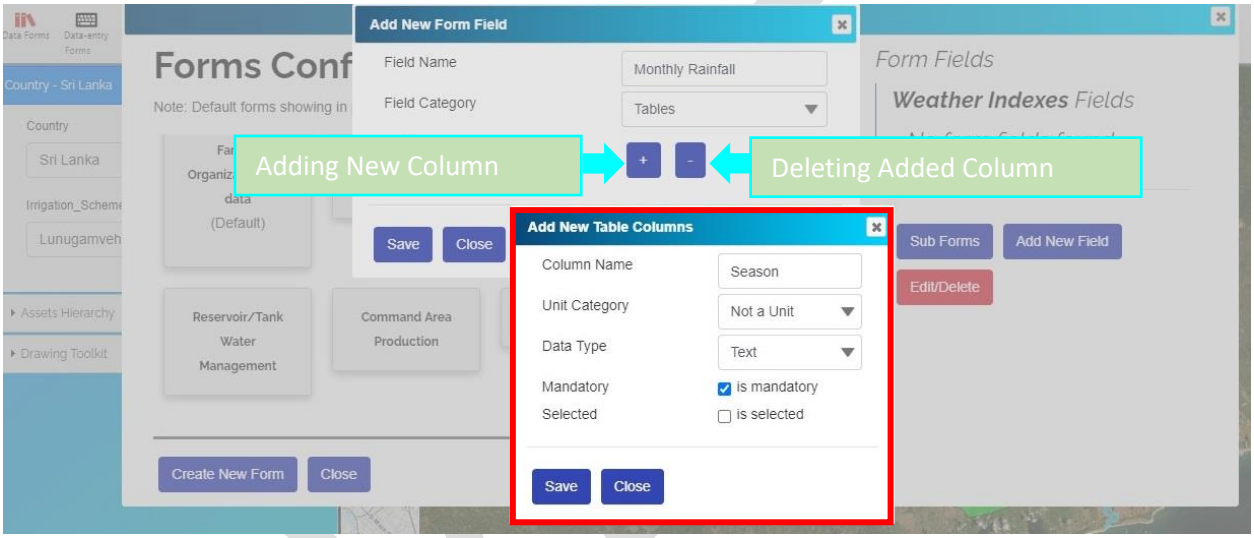


Image 25

If you want to change an added table column, click the name of the table column and update the column. If there is nothing to change, click Save.

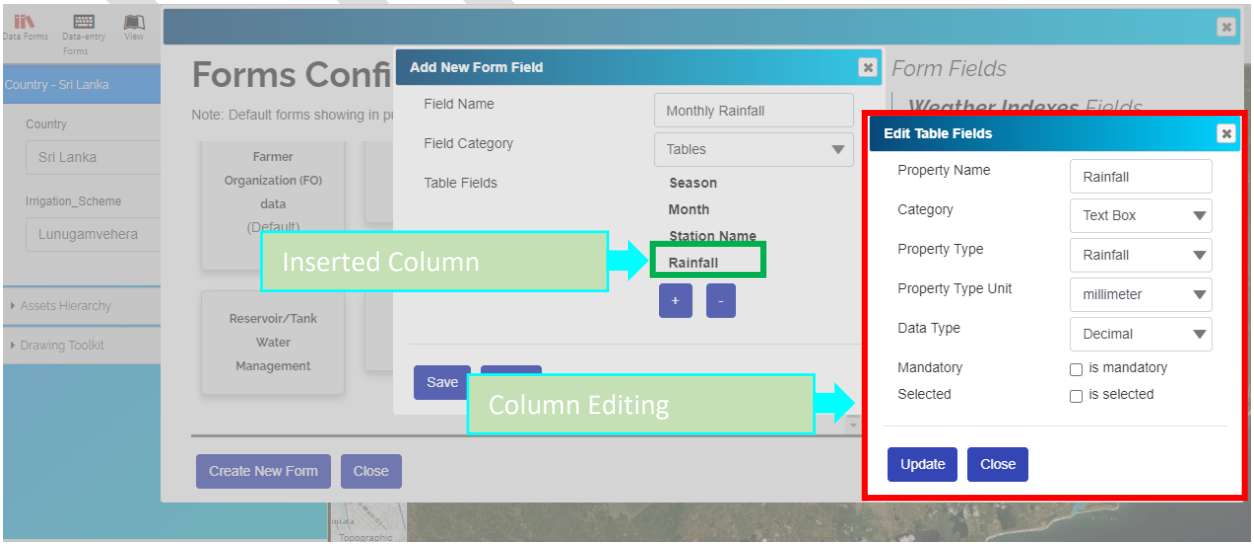


Image 26

Example 2: Add Photograph

You add photographs to a user-defined form by choosing Photograph as the Field Category.

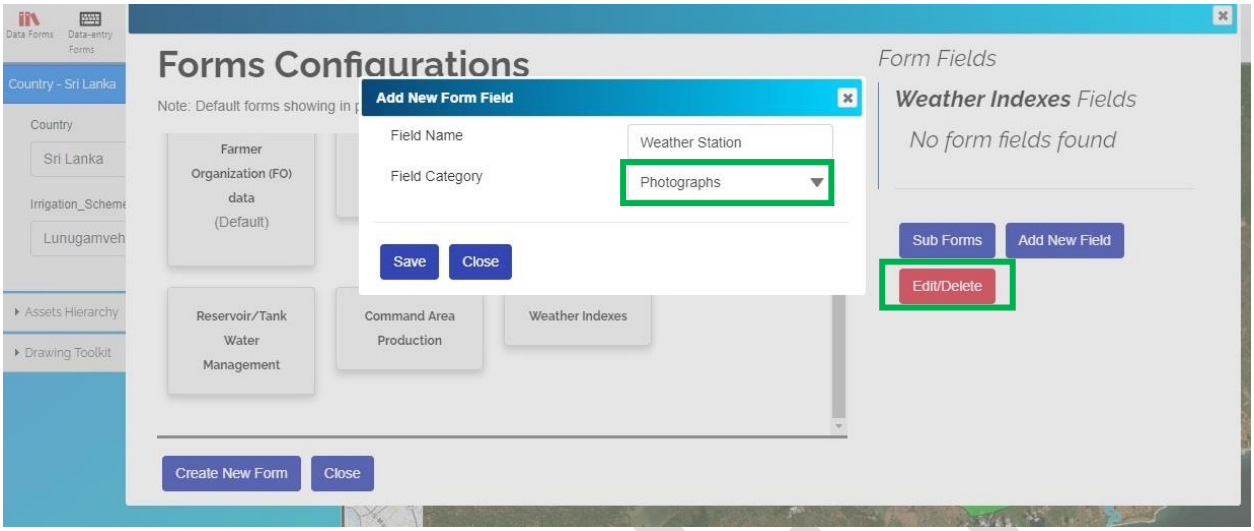


Image 27

Step 6: After adding all required fields to the form, click Save.

To delete or edit forms or the added fields in user-defined forms, select Edit/Delete in the right-hand pane (Image 27).

Example 3: How to add Dropdown boxes

Create drop-down boxes by selecting Dropdown as the Field Category.

Table 1 shows the default Dropdown category list you can choose from. In Image 28, click + to open the Dropdown Configuration box. Click each category (red outline) and select Properties (green outline).

Dropdown Category	Properties
Urgency	Urgent
	Not urgent
Priority	High
	Medium
	Low
Membership	Men
	Women
Performance	Active
	Medium
	Inactive

Table 1

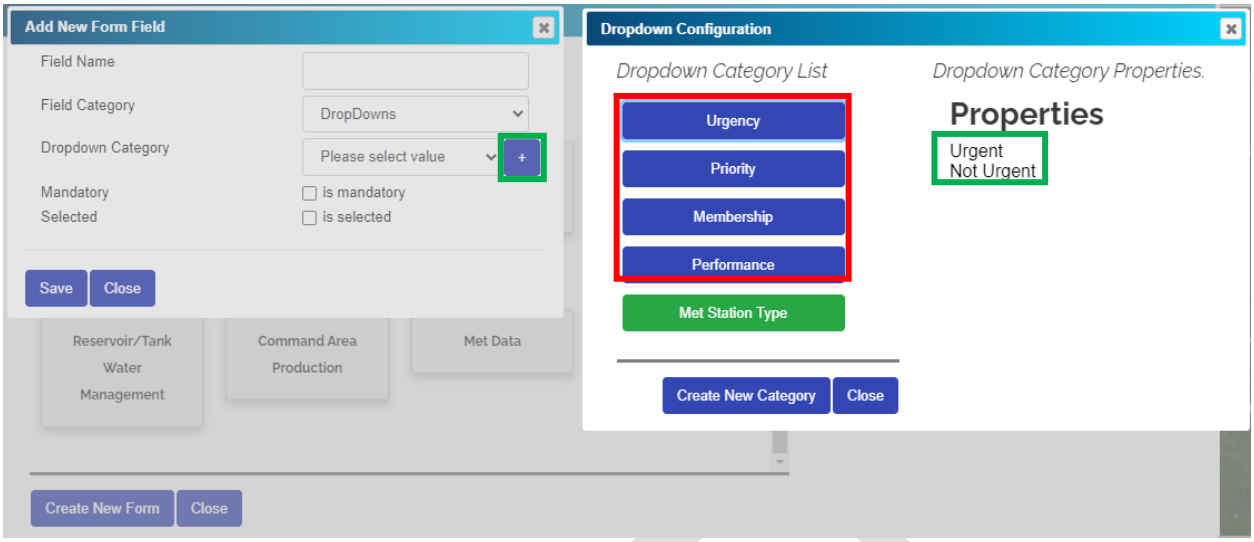


Image 28

Add a new Dropdown Category

Step 1: Click Create New Dropdown Category in the configuration box.
Step 2: Add a Category Name.

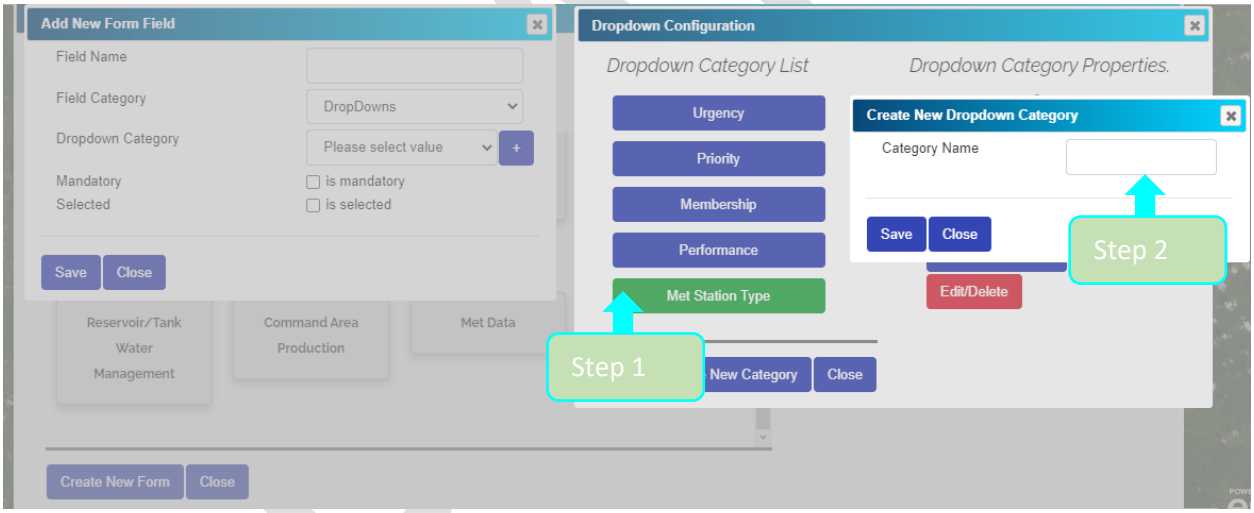


Image 29

Step 3: Click on a user defined drop down type (Ex; Met Station Type) to add properties for the category.
Step 4: Click Add New Property.
Step 5: In the Add New Dropdown Property box, enter a Property Name and click Save.

An Editor can add new properties to the dropdown category by applying Steps 3 to 5 above.

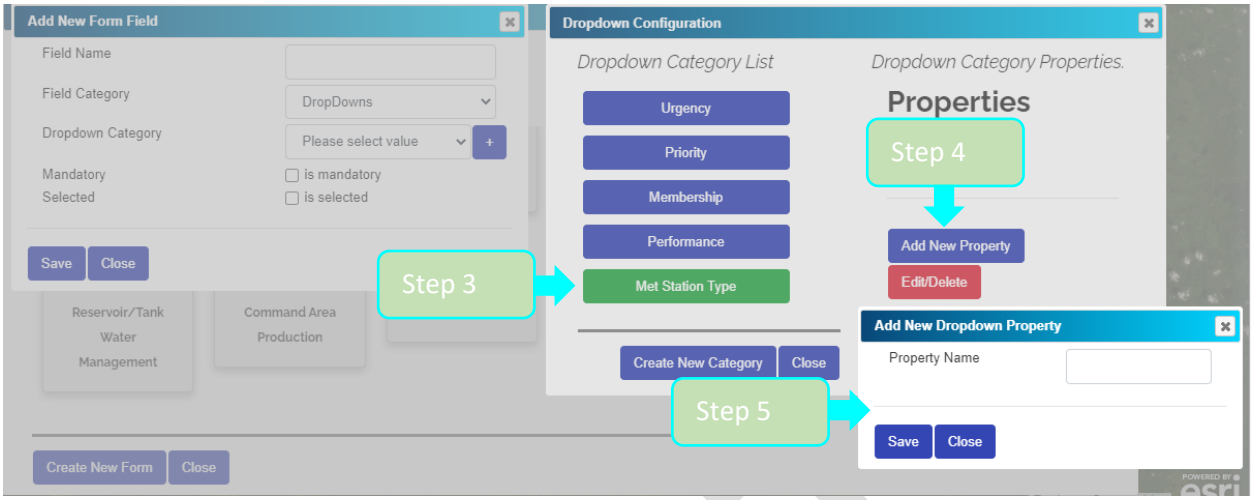


Image 30

You can only edit or delete user-defined dropdown categories and related properties.

After adding fields to the main form, you can add subforms if needed.

Using subforms, an Editor can hide data. This means Explorers and Reviewers would need to ask SAMS Admin for permission to see the data in the subforms.

Step 1: Click Sub Forms in the right pane of Forms Configuration.
Step 2: Click Create New sub Form.
Step 3: Enter a Form Name and Save.

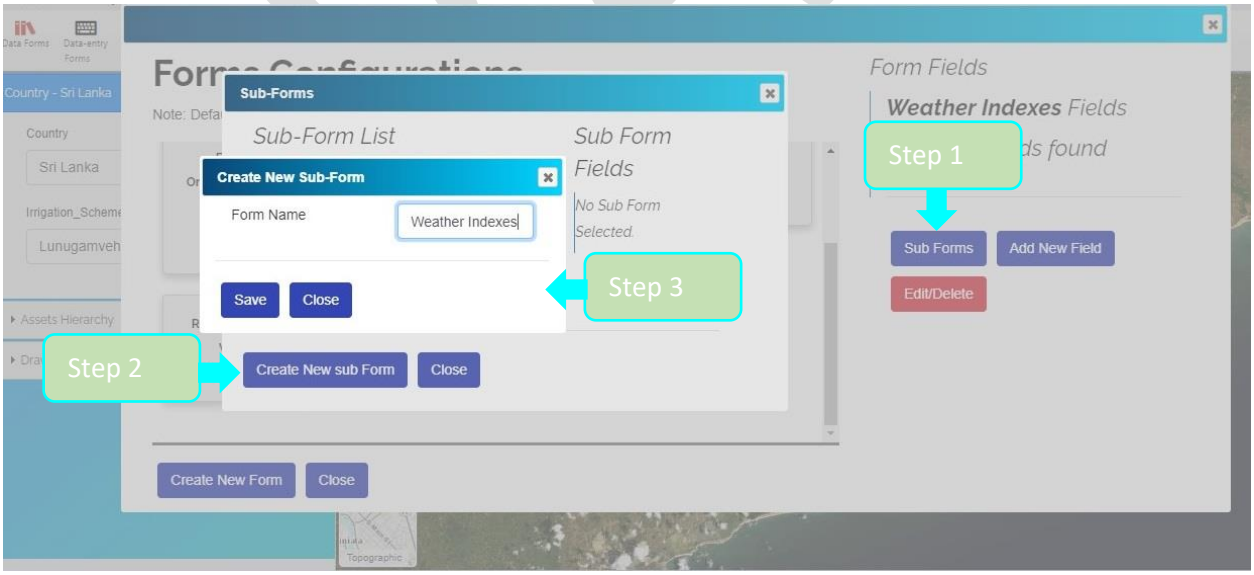


Image 31

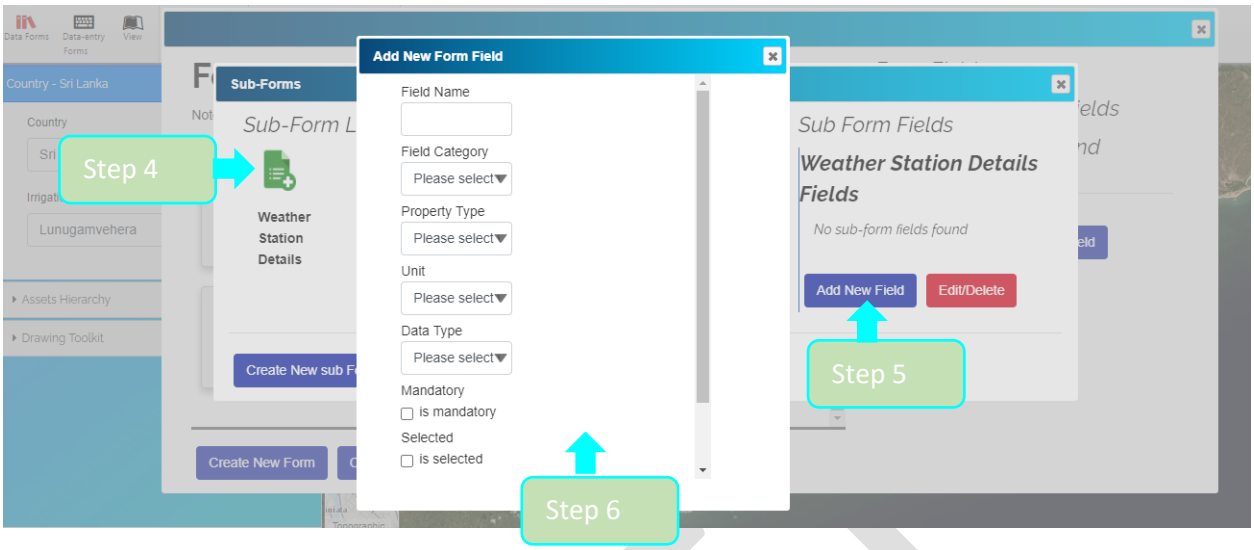


Image 32

Step 4: Click the newly created Sub-Form.
Step 5: Click Add New Form Field.
Step 6: In the Add New Form Field box, enter a Field Name and select values from the drop-down boxes.

When adding fields to a main form or a subform, there are no available unit categories for some fields. As an Editor, you can add unit categories and their related units by following subsection 1.3.

Using subforms, an Editor can hide data. This means Explorers and Reviewers would need to ask SAMS Admin for permission to see the data in the subforms.

2) Entering and Managing Data in Forms

Editors can fill in data forms related to an asset in an established irrigation system.

a) Entering Data

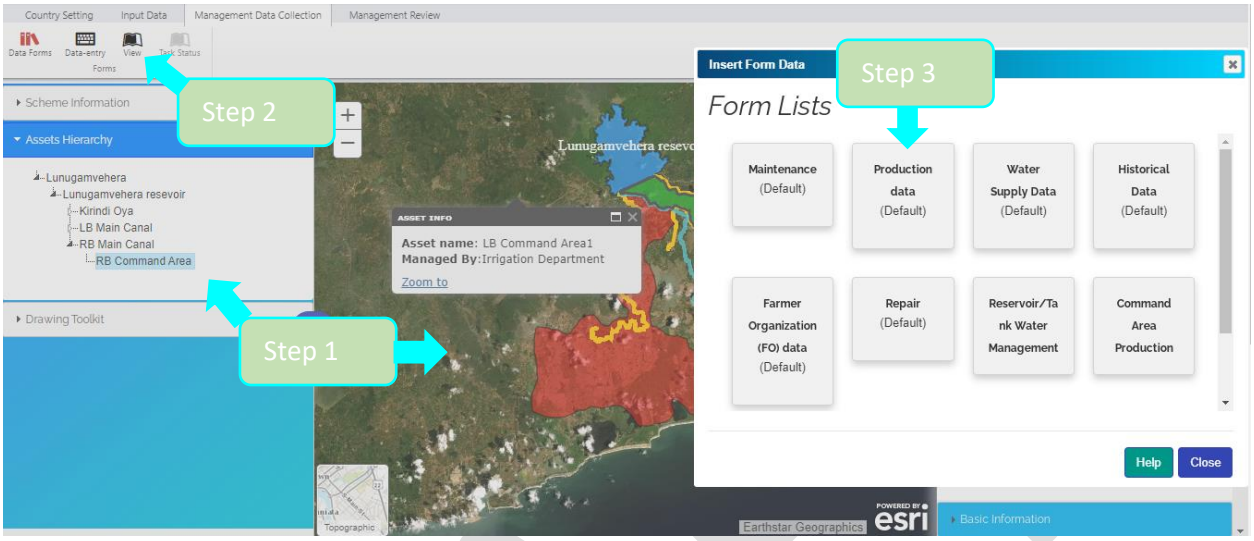


Image 33

Step 1: Select an asset from the Asset Hierarchy or by clicking an asset on the map.
Step 2: On the Management Data Collection menu, click Data Entry Forms.
Step 3: From the Form Lists, select a data form (e.g., Production data).

As an Editor, you can select the data form relevant to your objective or the data which you have.

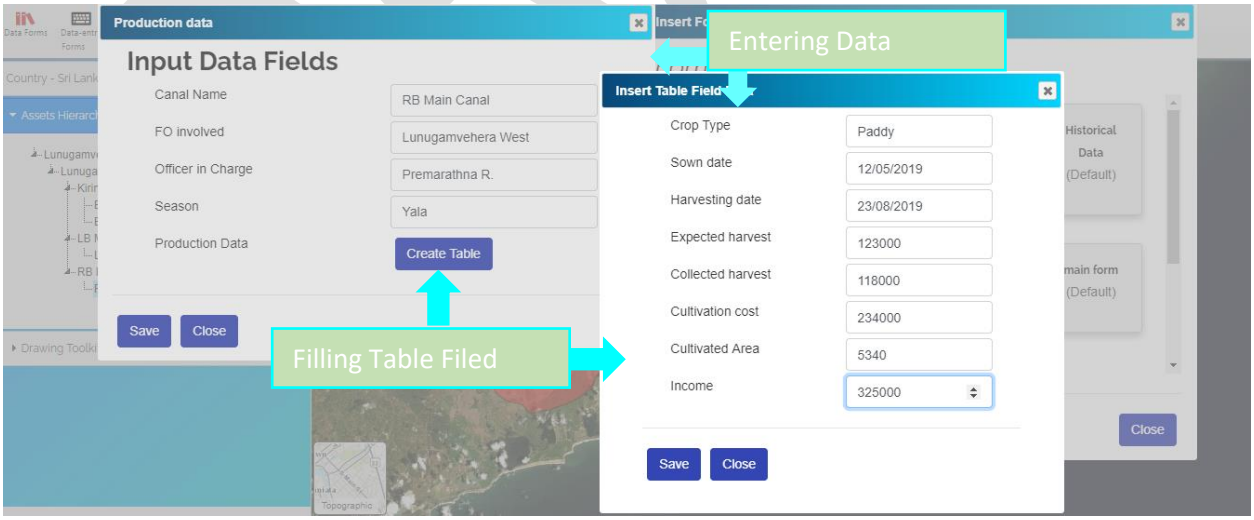


Image 34

b) Managing Data

After entering data for each asset, you can view and edit data. To begin, select an asset from the Asset Hierarchy or by clicking an asset on the map.

Step 1: On the Management Data Collection tab, click View.
Step 2: Select a Task Type according to year or season.

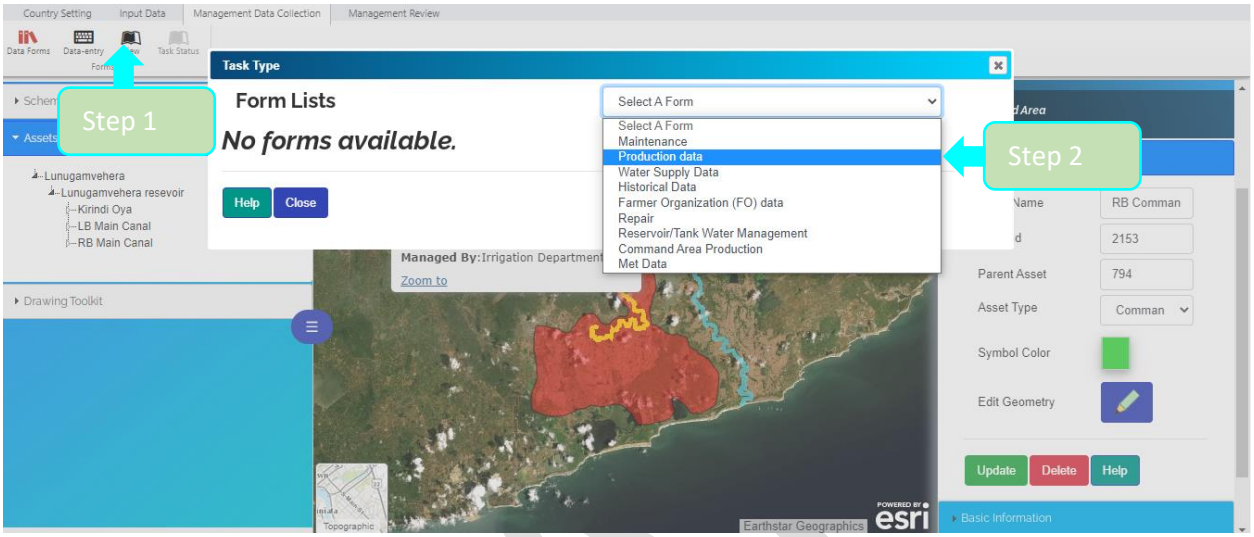


Image 35

Step 3: Click View table and Edit in the Production Data box (green outline). You can edit data in the table columns or Delete the entire row.
Step 4: Update

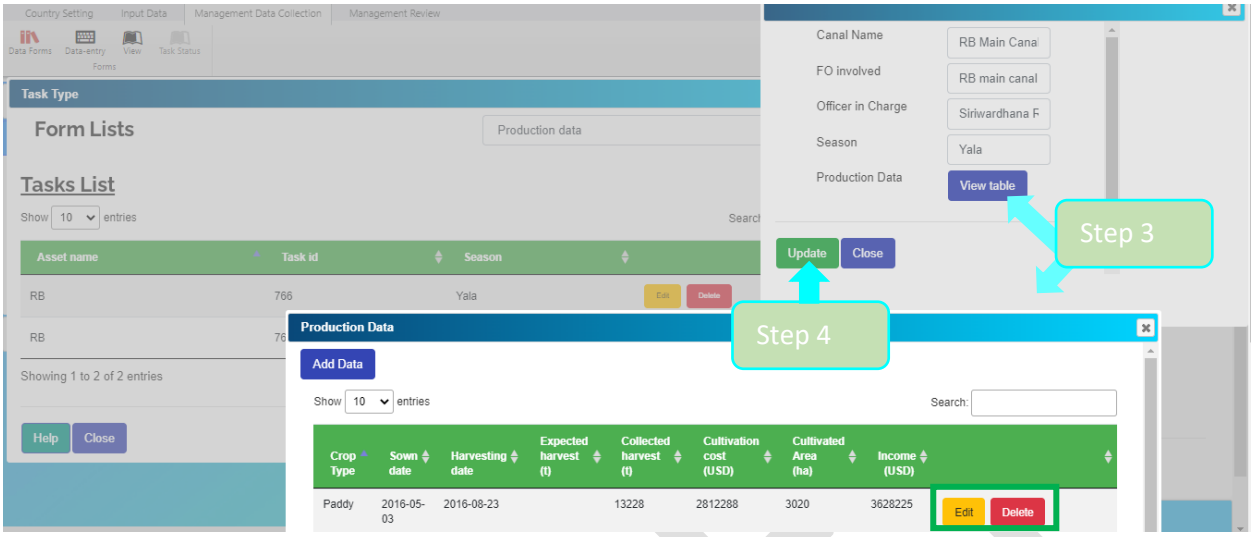


Image 36

1.8. ANALYZING DATA

After data entering and editing are finished, the Editor can analyze data concerning irrigation management purposes.

The Editor can use Summary Tables and Reports tools under Management the Review tab.

a) Summary Tables

Example 1: Paddy production from 2016 to 2020 related to an irrigation scheme.

Select the asset you want to analyze, e.g., irrigation track (right bank track or left bank track).

Step 1: Click Summary Tables on the Management Review tab.

Step 2: Select the relevant form from the Form Lists in the Summary box.

Step 3: Select a season from the Form Summary, e.g., Yala Season (Sri Lanka).

Step 4: Search for a crop type in the search bar in the opening summary table, e.g., Paddy.

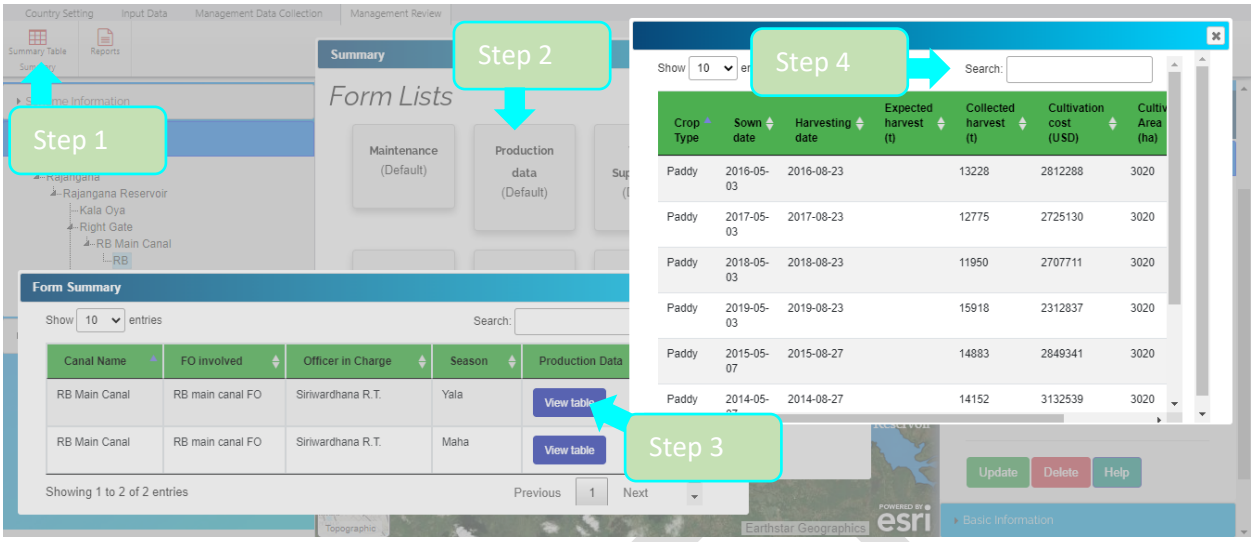


Image 37

b) Reports

In this section, an Editor can generate tables and graphs related to all records in each form and a full report with data analysis for each form. In this version of SAMS, you can generate default graphs only for the following default forms:

a) Maintenance form
b) Production Data form
c) Water Supply Data form
d) Historic Data form
e) Farmer Organization (FO) Data
f) Repair

Example 2: Creating a table related to maintenance including all records from 2020 to 2021.

Go to Management Review tab.

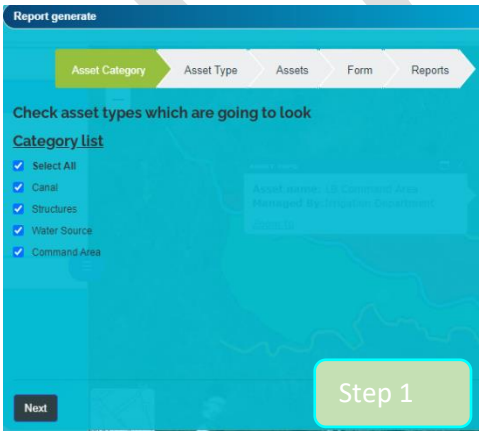


Image 38

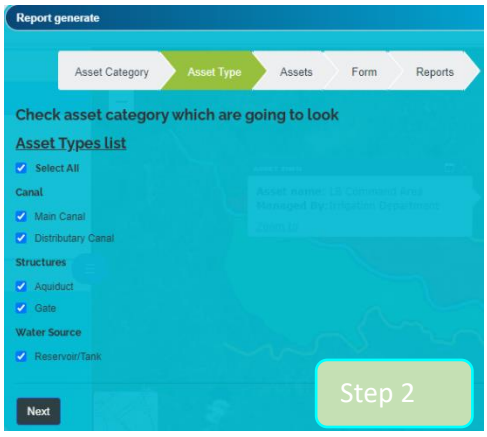


Image 39

Step 1: Select the Asset Categories you want to analyse. In this example, the Editor has clicked Select All. Click Next.

Step 2: Select Asset Types. In this example, the Editor has chosen Select All. Click Next.

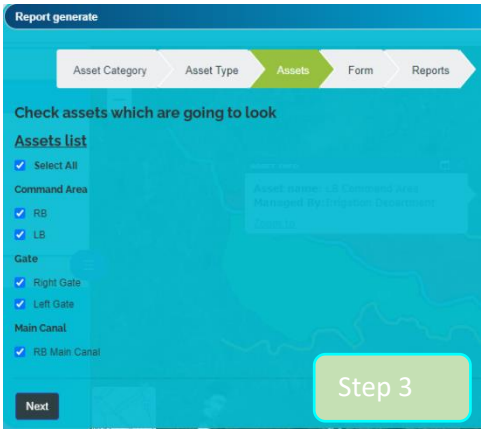


Image 40

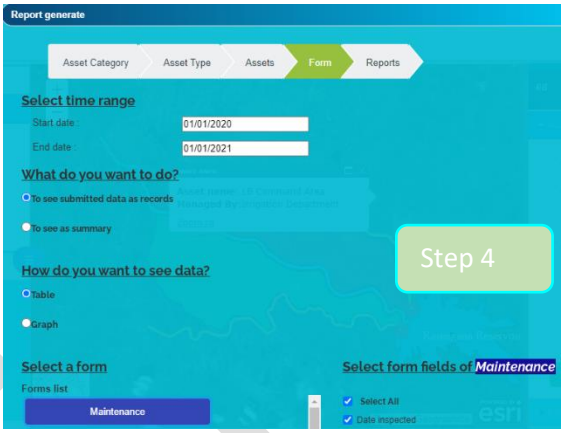


Image 41

Step 3: Select Assets. In this example, the Editor has chosen Select All. Click Next.

Step 4: Select a period using dd/mm/yyyy format. Under What do you want to do? select an action, for example, to see submitted data as records. Then select, How do you want to see the data? Select a form, for example, Maintenance. Click Next.

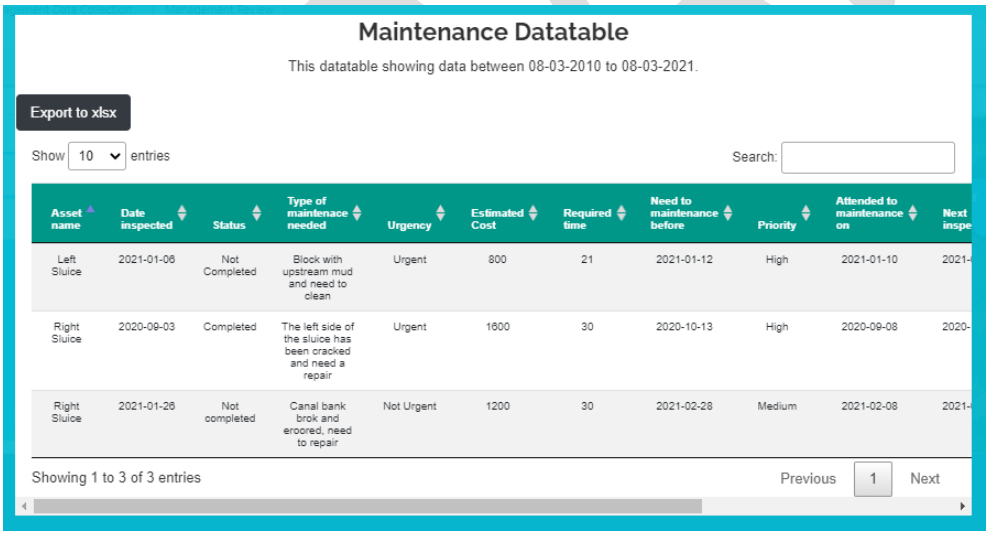


Image 42

You can export content as a CSV file and change the period or asset type using the search bar.

Example 3: Create a full report for production data from 2012 to 2016.

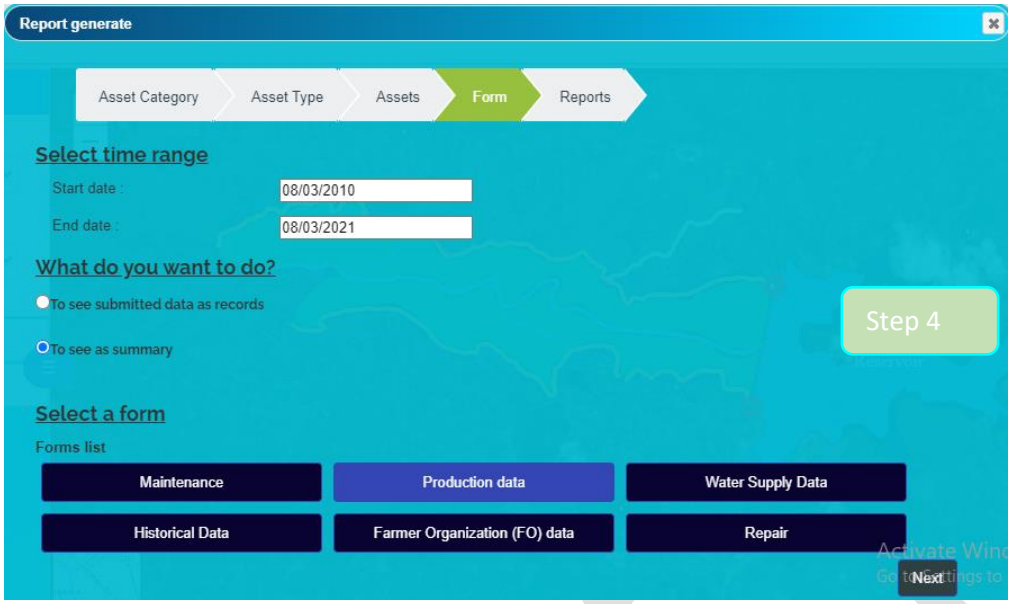


Image 43

F. Follow Steps 1 to 3 in Image 40 and 41.

Step 4 (Image 43): Enter a Start date and End date. (e.g., 08/03/2010 and 08/03/2021). Choose what you want to do (e.g., To see as summary). Select a form and click Next.

The report will have the following sections for the period you indicated:

1) Production data available assets.
2) Total cost, total income and total collected harvest for each asset.
3) Total income for each asset and each season.
4) Total cultivation cost for each asset and each season.
5) Total cultivation area for each asset and each season in each year.
6) Total cost, total income and total collected harvest for each crop type in each asset in each year.

Performance Indicators

In addition to a detailed analysis of an irrigation scheme, an Editor can evaluate the irrigation scheme's performance for different years using the Performance Indicators function on the right pane of the Map viewer. This version of SAMS can calculate outputs for four agricultural performance indicators:

Eq. 1 Income for unit cultivated area.

Eq. 2. Income for the unit available area.

Eq. 3. Income for unit water supply.

Eq. 4. The ratio between cultivated area versus available area (maximum is 1).

Performance indicator equations

(Eq1)	$$=\frac{\textbf{Income }(\$)}{\textbf{cultivated area }(\textbf{ha})}$$

Related to a reservoir where Income ($) is the total income of the scheme in US$ in terms of the gross or net value of production measured at local or world prices for a specific year.

Cultivated area (ha) is the total cropping area or sum of cultivated areas of all irrigation tracks of a scheme in terms of hectares for a specific year.

Related to an irrigation track of a scheme where Income ($) is total Income of an irrigation track of a scheme as an output in US$ in terms of the gross or net value of production measured at local or world prices for a specific year.

(Eq2)	$$=\frac{\textbf{Income }(\$)}{\textbf{Available area }(\textbf{ha})}$$

Related to a reservoir where Income ($) is the total income of the scheme in US$ in terms of the gross or net value of production measured at local or world prices for a specific year.

Available area (ha) is the total allocated area for cropping of all irrigation tracks of the scheme in terms of hectares (ha) for a specific year.

Related to an irrigation track of a scheme where Income ($) is the total Income of an irrigation track of a scheme in US$ in terms of the gross or net value of production measured at local or world prices for a specific year.

Available area (ha) is the total allocated area for cropping in an irrigation track of a scheme for a specific year.

(Eq3)	$$=\frac{\textbf{Income }(\$)}{\textbf{Water supply }(\boldsymbol{m^3 * 10^6})}$$

Related to a reservoir where Income ($) is the total income of a scheme in US$ in terms of the gross or net value of production measured at local or world prices for a specific year.

Water supply ($m^3 * 10^6$) is the total water supply for an irrigation scheme from a reservoir or the sum of water releases from all gates of a reservoir for a specific year.

(Eq4)	$$=\frac{\textbf{Cultivated Area }(\textbf{Ha})}{\textbf{Available area }(\textbf{Ha})}$$

e ($) is the total income of an irrigation track in
asured at local or world prices for a specific year.

Related to a reservoir where cultivated area (ha) is the total cropping area of a scheme and Available area (ha) is the total available cropping area for a scheme.

Related to an irrigation scheme where Cultivated area (ha) is the total cropping area of an irrigation track and Available area (ha) is the total available cropping area for an irrigation track.

Example 1: Evaluate the performance of the left-bank track of Lunugamvehera scheme in Sri Lanka.

An Editor can access the Performance Indicators function from the right pane of the Map viewer.

Activate the Asset you want by clicking on the map, e.g., LB (left bank track) of Lunugamvehera at the startup.

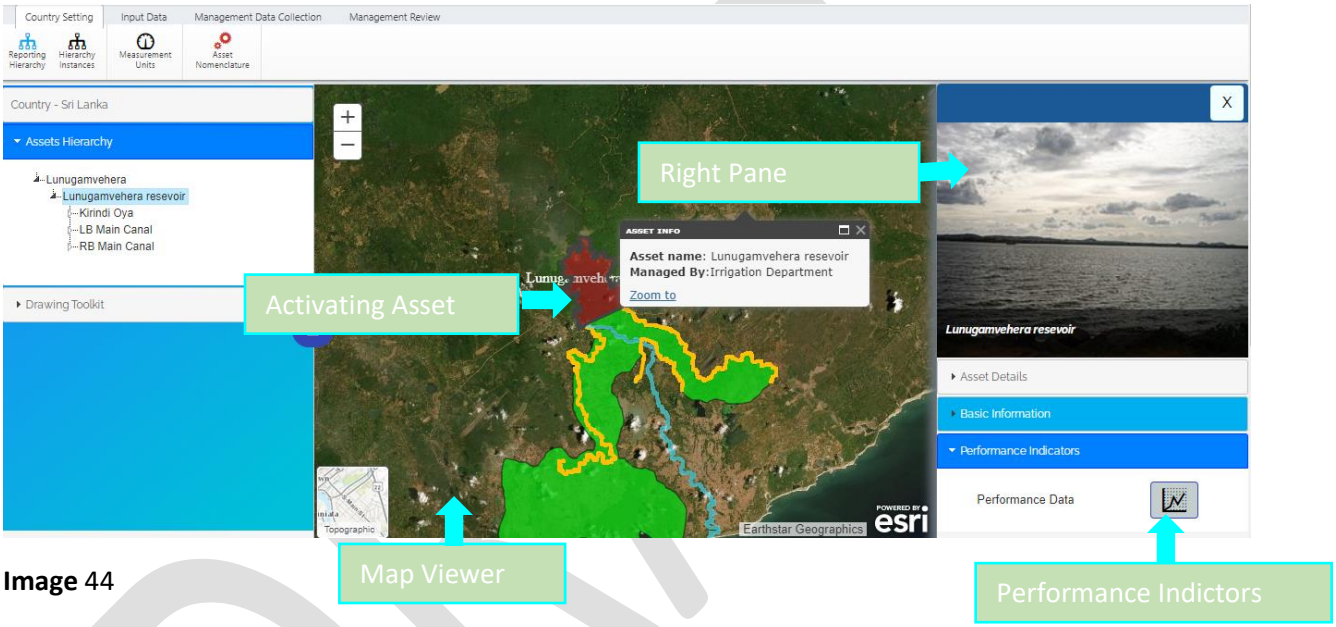


Image 44

Performance Indicators consists of two sub-functions: tables and graphs.

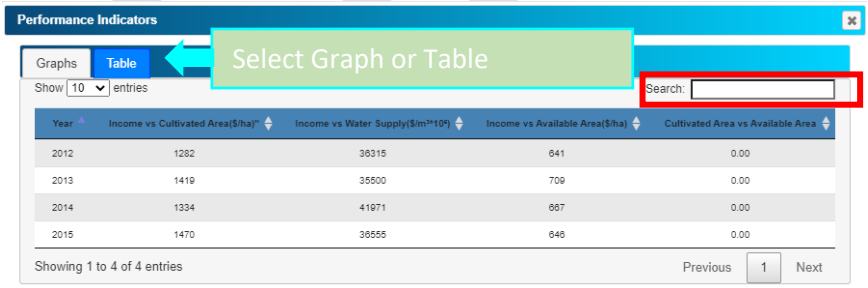


Image 45

If you want to search performance for a specific year, you can use the search bar.

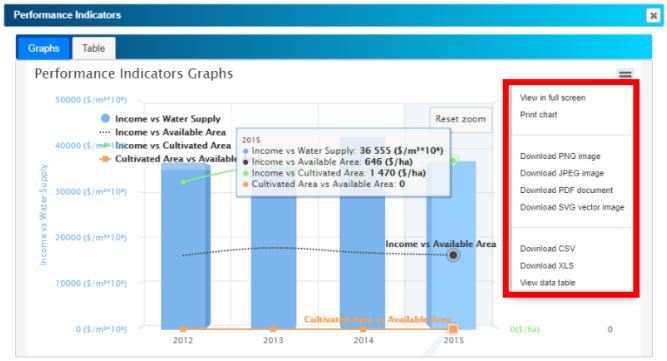


Image 46

You can save the graph as a JPEG, PNG or PDF file.

c) Traffic Light System

SAMS has an alert system for maintenance of an irrigation system based on the Maintenance data form (default).

In the current version of SAMS, the Traffic Light System only works for point assets of an irrigation scheme.

Traffic Light System indicators

	The task is not complete. 10 days remaining.
	The task is not complete. 2 days remaining.
	The task is not complete. The inspection date has expired.

d) System Maintenance and Repair Forms

The Maintenance and Repair forms consist of three operations:

- Edit
- Delete
- Complete

On the Management Data Collection Tab, select the View menu.

Click Complete when a maintenance or repair action is completed.

After clicking Complete, you cannot Edit or Delete.

The bell icon shows details of maintenance tasks related to each a

SECTION 2

2. Role: Explorer

2.1. REGISTRATION AND LOGIN

You must create a SAMS login account. One email address can register one time only.
Once you have registered, begin by clicking Start Work and enter the basic information in the form provided. You do not need to choose a role because you will be automatically registered as a SAMS Explorer.

Image 1

To explore irrigation schemes, go to the Home page and click Explore SAMS.

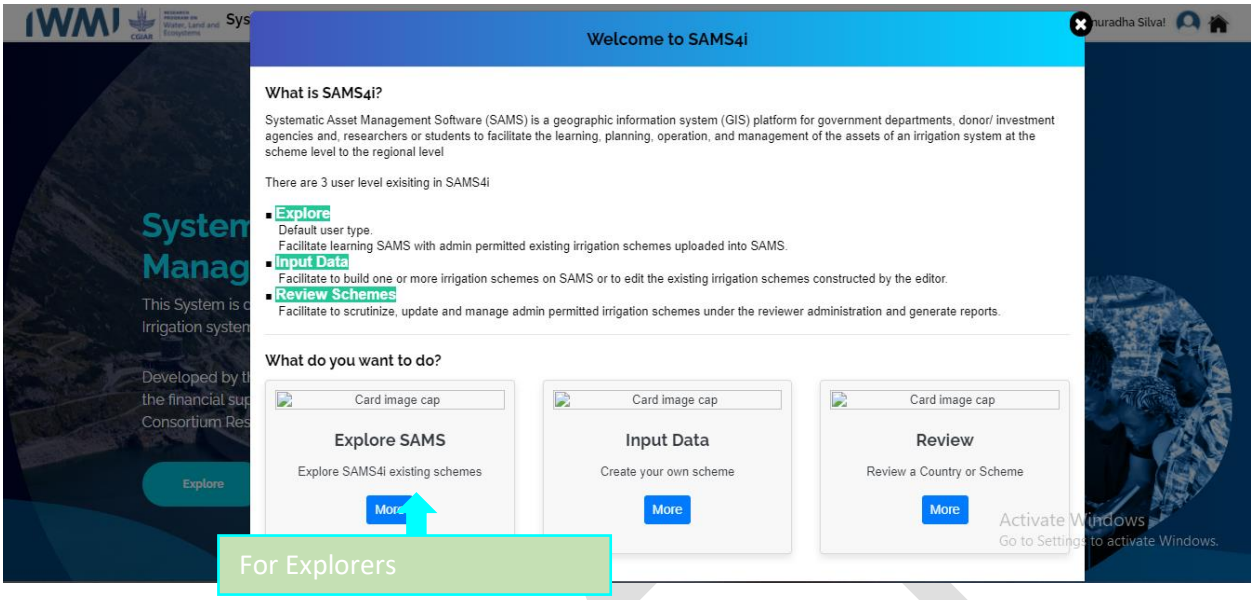


Image 2

You will be redirected to the map window.

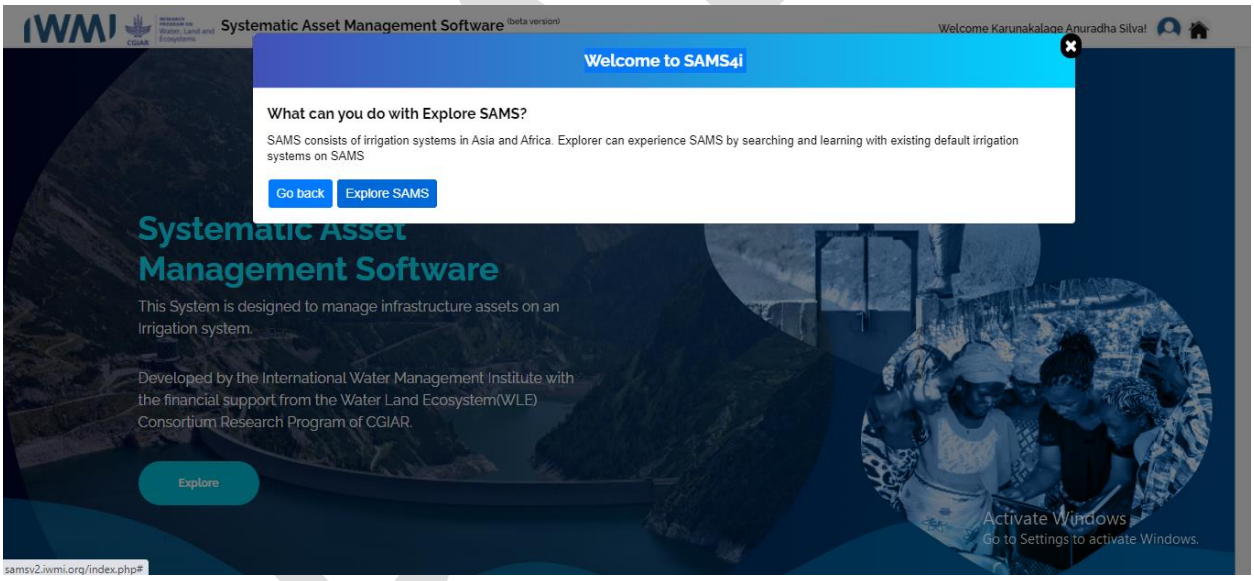


Image 3

2.2. SEARCHING FOR AND EXPLORING AN IRRIGATION SCHEME

On the map, select the irrigation scheme you want to explore. Irrigation schemes have been created by multiple Editors, but you can only view schemes for which you have permission from SAMS Admin.

There are two ways to search irrigation schemes.

1. Select from Asset Hierarchy
2. Select from Scheme Information

1. Selecting from Asset Hierarchy

Select a country, and all the irrigation schemes for that country will be listed under Assets Hierarchy.

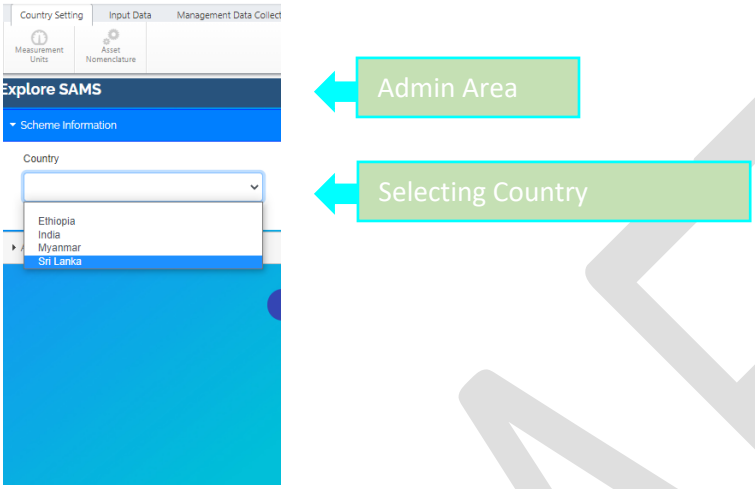


Image 4

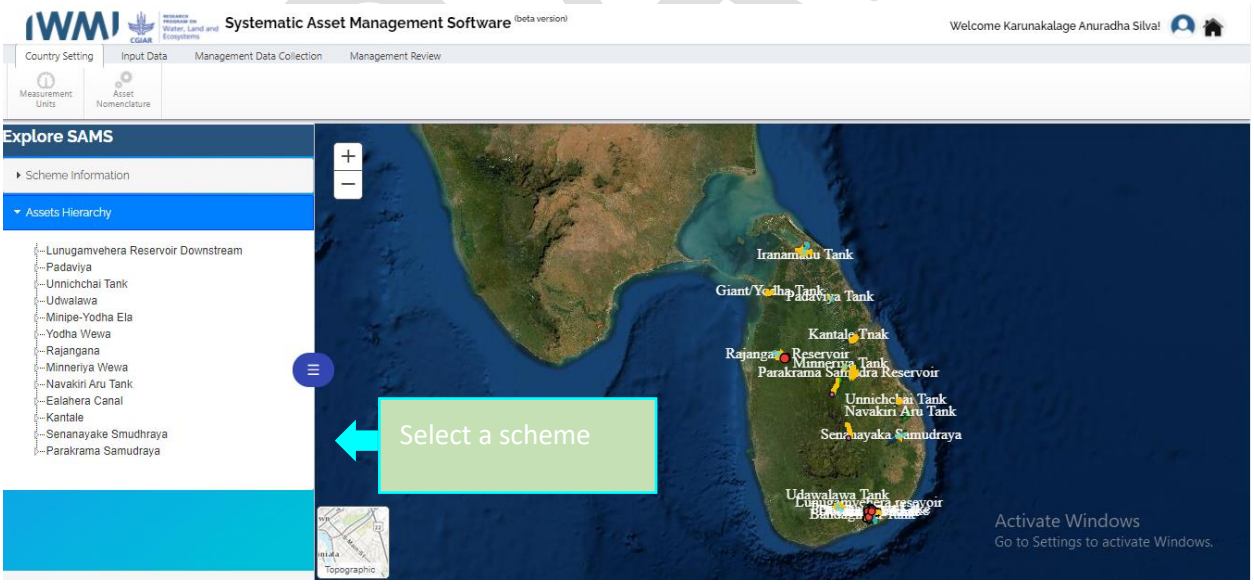


Image 5

From Assets Hierarchy, select a scheme.

As an Explorer, you can do a basic survey on the selected irrigation scheme with the current interface before moving to advanced options under other tabs.

- Assets Hierarchy belongs to the selected irrigation scheme and is shown under Assets Hierarchy in the Admin Section.

Assets Hierarchy is a collapsible Issue Tree view, where all the assets in an irrigation scheme are listed based on their Parent-Child relationship and geographic location. It shows how assets are linked from the head to the tail of the scheme

- When you click on an asset, a pop-up box will open showing Scheme Name, Scheme Management Agency and Recent Performance Indicator of the asset.

- At the same time, the right pane has opened and shows the Asset Information, Photo, Basic Information and Technical Information related to the asset.

In some cases, the Production Data for a selected irrigation scheme will not be available. This depends on what data the Editor entered for the scheme.

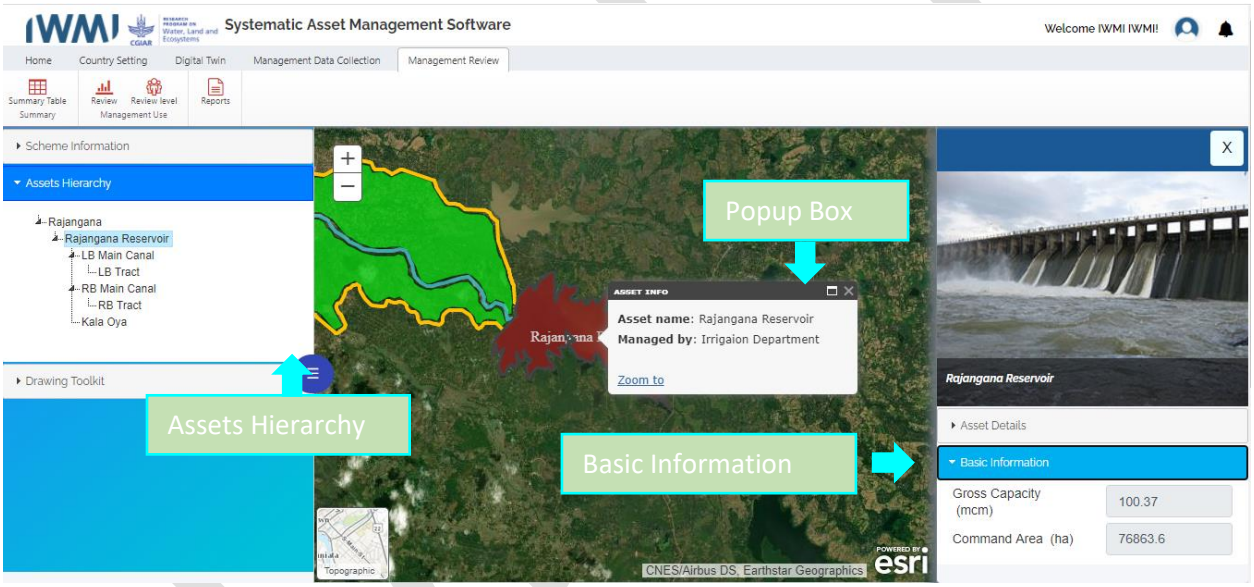
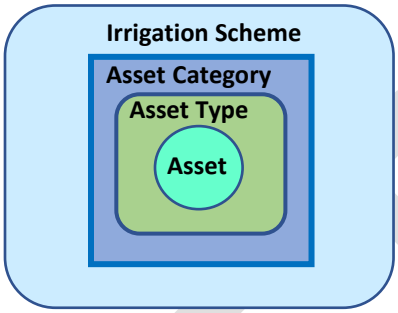


Image 6

2.3. UNDERSTANDING SAMS DATA STORAGE STRUCTURE

Asset

- SAMS data is related to an asset.
- An asset always belongs to a Caste, which is called an Asset Category and contains Asset Types and individucal Assets.



- Only an Editor can define Asset Categories and Asset Types.
- An Explorer can see a set of Incorporated Asset Categories (default + user-defined) and Incorporated Asset Types (default + user-defined) for each irrigation scheme.

2.4. SURVEYING AN IRRIGATION SCHEME

An Explorer can survey a scheme's condition by viewing the Performance Indicators.

a) Performance Indicators

Performance indicators are defined by the following equations.

(Eq1)	$= \frac{\textbf{Income } (\$)}{\textbf{cultivated area } (\textbf{ha})}$

Income ($) is the total income of the scheme as an output of (US$) in terms of the gross or net value of production measured at local or world prices for a specific year.

Cultivated area (ha) is the total cropping area or sum of cultivated areas of all irrigation tracks of the scheme in terms of hectares (ha) for a specific year.

(Eq2)	$= \frac{\textbf{Income } (\$)}{\textbf{Available area } (\textbf{ha})}$

Income ($) is the total income of the scheme as an output (US$) in terms of the gross or net value of production measured at local or world prices for a specific year.

Available area (ha) is the total allocated area for cropping of all irrigation tracks of the scheme in terms of hectares (ha) for a specific year.

(Eq3)	$= \frac{\textbf{Income (\$)}}{\textbf{Water supply } (m^3 * 10^6)}$

Income ($) is the total income of the scheme as an output (US$) in terms of the gross or net value of production measured at local or world prices for a specific year.

Water supply ($m^3 * 10^6$) is the total water supply for an irrigation scheme from a reservoir or the sum of water released from all gates of a reservoir for a specific year.

(Eq4)	$= \frac{\textbf{Cultivated Area (Ha)}}{\textbf{Available area (Ha)}}$

Cultivated area (ha) is the total cropping area of a scheme and Available area (ha) is the total available area for cropping of a scheme.

Example 2: Evaluate the performance of the Left-bank track of Rajanganaya scheme in Sri Lanka.

Access the Performance Indicators function from the right pane of the Map viewer.

To activate right pane related to an Asset, click the asset on the map. In this example, the Left bank track of Rajanganaya at the startup.

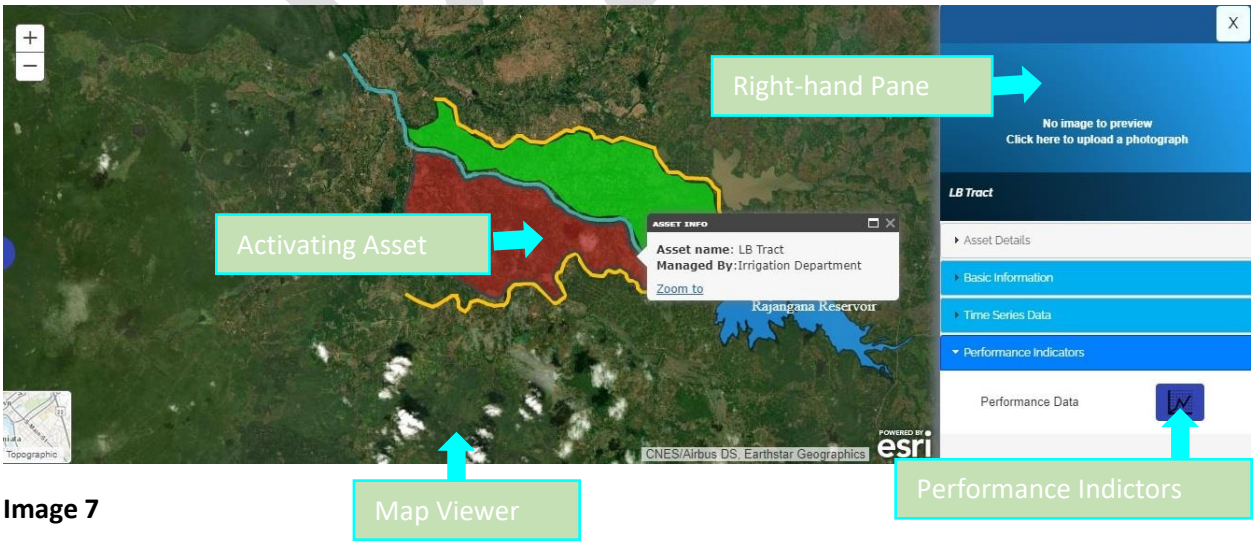


Image 7

Performance Indicators consist of two subfunctions shown as tables and graphs.

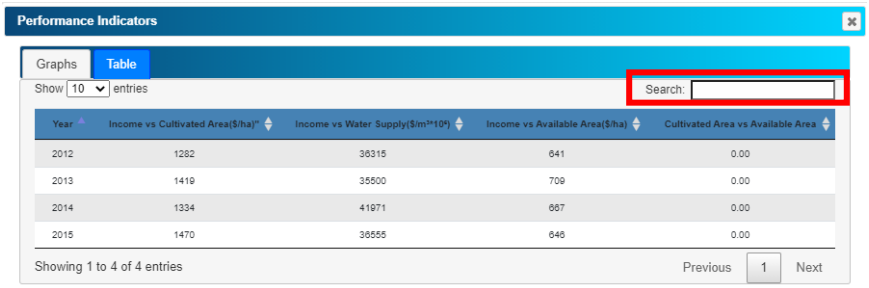


Image 8

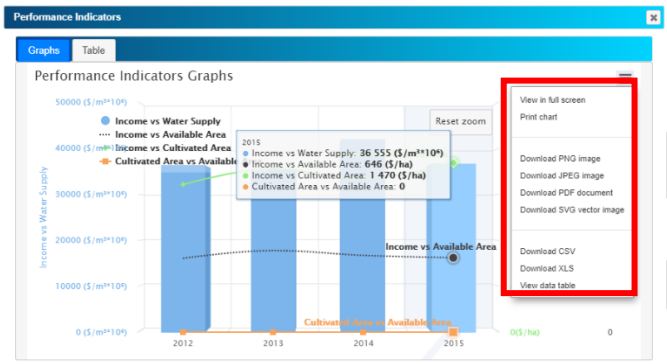


Image 9

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International Water Management Institute

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