

TRAINING GUIDE FOR
PREPARATION OF VILLAGE AND WARD AGRICULTURAL SECTOR REPORT

September 2013

AGRICULTURAL SECTOR DEVELOPMENT PROGRAMME (ASDP)
MONITORING AND EVALUATION THEMATIC WORKING GROUP

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Annex

(1) Conversion table

1. Purpose of the Training Guide

- To have common understanding on how to fill out the reporting format for village/ward agricultural extension officers (VAEO/WAEO).
- To show techniques to help VAEO/WAEO collect accurate data / information on the agricultural sector.
- To simplify filling data in order to save time.
- To have quality and accurate data that will help the officers develop a good plan in the agricultural sector.
- To exchange ideas on the importance of data collection.

2. Importance of data collection

- These data will be used in planning in the agricultural sector at village/ward, district and national level.
- The Extension Officers can understand the needs of farmers.
- Having systematic recording system helps the preparation of various reports of the village/ward, district and national levels.
- It will help make proper decisions at different administrative levels from village up to national level.
- It will reduce the wasteful uses of resources i.e. money, manpower and time in the agricultural sector.

3. Implementation steps for report preparation

1) Distribution

- The Monthly Format will be distributed quarterly. Ward/Village Extension Officers are given the blank format from the 20th to 30th of the last month of each quarter.
- The Quarterly Format is distributed once per quarter at the same time when the monthly format is distributed.
- The Annual Format is distributed when the formats for the fourth quarter are distributed (March).

Tip 1: If the formats are not distributed on time, Village/Ward Extension Officer should contact the district office.

2) Data Entry:

- In the Village Level, the format is filled out by the end of the month. In filling out the format, Extension Officers should use the data which were collected and recorded when they visited farmers.
- In the Ward level, the report is completed before the 5th of the following month. Ward Extension Officers can work together with the VAEOs.

3) Submission

- At the village level, the report is submitted to Ward Extension Officer by the end of the month.
- At the ward level, the report is submitted to district office within the first week of the following month. Ward Extension Officer should keep a copy of the report in the ward office.
- Ward Extension Officer should go to the district office to submit the report. In case that he/she is not able to go to the district office, he/she will ask other extension officers to submit the report.

4) Feed back

- Ward Extension Officer should provide feedback to village Extension Officers through a mobile or any other means of communication. If there is a problem, the officer will should ask for clarification or correction.
- Ward and Village Extension Officer may sit together to prepare the report, particularly when the ward has few Village Extension Officers.

4. Monthly Report Format

Don't forget to write the name of the Village/Ward and your phone number.

Delete those which are not applicable (Village/Street/Ward).

PRIME MINISTER'S OFFICE-REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT (PMO-RALG)
MONTHLY AGRICULTURAL SECTOR REPORT FORMAT (VILLAGE/WARD)

Revised September 2013

Name of Village/Ward: _____

Name of Extension Officer: _____

Telephone Number: _____

Month: _____ Financial Year: _____

Date of Submission: _____

To be submitted to WAEO before the end of each month by VAEO. To be submitted to DALDO within first week of the following month by WAEO.

NOTE:

- 1) If your village/ward do not produce the crop / livestock products or do not have the machinery/infrastructure in question, write 'no'.
- 2) If the item exists in your village/ward, write the best estimated number.
- 3) Use National Standard Measurement in each table where needed.
- 4) Read the instruction in each table carefully before writing.

1. Introduction

1.1 Weather Condition

a) Rainfall: Write the number of days it rained, and the amount of rainfall.

Number of days	Amount of rain (mm)	Comments (Much, Average, Little, no rain)

Note

- i. If there is a rain gauge in your station, please write amount of rainfall in millimeters in the second column.
- ii. If there is no rain gauge in your village, skip the second column and fill in the third column.

1.2 Disaster:

Please describe if any disaster (drought, flood, hunger, plant/livestock diseases etc.) occurred in this month.

At ward level, all the disasters in each village should be mentioned. If data are available, also write them.

1.3 Achievement and Challenges

Please summarize your output of main activities, and any comments in agricultural sector in this month.

Achievement:

Challenges / Problems :

Please read the note carefully before filling out the format.

Fill the amount of rain (in mill meters) in this column, if there is a rain gauge station in your village/ward. You should communicate with the station to get the information.

If there are two or more stations with rain gauges in a village, write an average.

If there are two or more stations with rain gauges in a ward, write an average.

Choose one from "much, average, little or no rain" according to the previous experience.

Example: At Ward level, if the rain gauge shows average rain in most villages please write average.

List of Crops

Na.	Sub category	Items											
1	Cereals	Maize	Paddy	Sorghum	Bulrush Millet	Finger Millet	Wheat	Barley					
2	Roots and Tubers	Cassava	Sweet Potato	Irish Potato	Yam	Coco Yam							
3	Industrial Crops	Seed Cotton	Tobacco	Coffee	Tea	Pyrethrum	Cocoa	Rubber	Wattle	Sugar cane	Jute	Sisal	Cashew nut
4	Oil Crops	Sunflower	Simsim/Sesame	Groundnut	Palm Oil	Coconut	Soya Bean	Castor Oil Seed	Jatropha				
5	Pulses	Cow Pea	Pigeon Pea	Green /Black Gram (Choroko)	Garden Pea	Chick Pea/Lenti	Bambara	Bean					
6	Spices	Ginger	Black Pepper	Coriander	Cinnamon	Turmeric	Vanilla	Chilli Pepper	Clove	Garlic	Cardamom	Paprika	
7	Vegetables	Cucumber	Mushroom	Cauliflower	Cabbage	Amaranthus	Spinach	Chinese Cabbage	Tomato	Eggplant	Onion	Sweet Pepper	Carrot
		African Eggplant	Black Night Shade (Mnafu)	Kale	Leek	Swiss Chard	Okra						
8	Fruits	Sweet Banana	Cooking Banana	Mango	Pawpaw	Orange	Tangerine	Guava	Apple	Pineapple	Avocado	Water Melon	Lemon
		Lime	Plum	Pear	Passion Fruit								
9	Flowers	Rose	Chrysanthemum	Carnation	Aster	Gypsophylla	Ginger rose	Helianthus					
10	Others	Rosella											

2. Target, Implementation and Crop Prices

Before filling in this section, please read the note at the end of the table.

Annual target should be written only in July and left blank for

Please refer "List of Crops" attached separately and add key crops not listed in the first column which are produced in your LGA.

* Kipaumbele kikubwa ni zao la mahindi kwa kutumia njia hii. Kwa mazao mengine tumia makadirio.

Implementation of seasonal crops

Name of the Crops	Annual Target		Implementation	Market
	Expected	Actual		

In order to collect data on planted area, productivity (yield) and production of **maize** and other common crops if any*,

- 1) Prepare a list of all the farmers in the village. Don't include livestock keepers who don't cultivate farm in the list. In case that you are a ward agricultural extension officer and there is no VAEO in your ward, prepare a list of all the farmers in the ward.
- 2) Choose 10 farmers from the list** using the following procedure;-
 - i) Divide the number of farmers by 10 (e.g. 300/10=30).
 - ii) Choose a number between 1 and the number you get above (e.g. from 1 to 30).
 - iii) Add the number you get in i) to the first number you choose in ii) until you get 10 farmers. (e.g. if you start at 3, you will select 33, 63, 93, 123... and continue).
- 3) At the end of a year (June), visit farmers who are selected in the above procedure, and ask about crop **productivity** (yield, that is production per unit area). Don't ask them about total production.
- 4) Take an average of 10 farmers and fill the number in column (v). If there is an outlier, don't use it in calculating the average.
- 5) As for **planted area** (ha),
 - i) Estimate the area planted based on your observation regarding the percentage of the land area in the village which are cultivated/planted for certain crops.
 - ii) Ask the 10 selected farmers about the area planted of a certain crop and take an average. Then multiply the average by the number of farmers in the village/ward. You will get the estimate of the planted area in the whole village/ward.
 - iii) Compare the estimates of i) and ii).

Note that the international measurement (e.g. kilogram, ton) should be used. It is suggested to use the conversion table which are available at district offices or attached to this guide (page 29).

- 6) You will get the amount of **production** by multiplying the area planted and productivity. Then, put the estimates in column (vi).
- 7) It is suggested that you submit these data to VEO/WEO for cross-checking purposes before you submit it to DALDO.

** Kama hakuna afisa ughani wa kijiji katika kata yako, basi afisa ughani wa kata wachague kaya 10 kutoka kata nzima.

5. Meat Inspection

Name of Place for Slaughter/ Inspection	Type of Animal (i)	Number of Animals affected (ii)	Condemnations	
			Reasons for Condemnations (iii)	Number of cases (iv)

These data are available at the official slaughtering facilities and other places where Extension Officers conduct meat inspection.

Total number of animals should be equal to or less than the number of condemnations.

Read the note carefully when you fill out this table.

- i) Write the names of animals (e.g.. cattle, sheep, goat, pigs) which were condemned.
- ii) Write the number of animals condemned corresponding to the animals in column (i).
- iii) Use one row for each disease/condition in each animal type. If there are more than one reasons, use different rows and leave the preceding columns blank.
- iv) Write the number of cases for each reason of condemnations.

6. Livestock Products

6.1 Milk

Type of product	Whole milk (This Month)
Milk - Indigenous Cattle (litre)	
Milk Dairy Cattle (litre)	
Cheese (kg)	
Butter (kg)	
Ghee (kg)	

Data on milk and dairy products are available from the milk collecting centre.

6.2. Hide and Skin

Type of Product	Unprocessed (piece) (This Month)		Processed (piece) (This Month)	Remarks
	suspended	Dry salted	Wet Blue	
Hide				
Skin				

Data are available at slaughtering points.

7. Livestock Health
7.1 Medication

Type of livestock	Type of disease	Number Affected	Number Treated	Number Recovered	Number Died	Treatment/Medicine Applied

Number of animals affected is the sum of "number of recovered" and "number of died".

Write all medicines applied in one cell for each disease.

7.2 Dipping, Spraying and vaccination

Type of Livestock	Number Dipped	Medicine Applied	Number Sprayed	Medicine Applied	Number vaccinated	Vaccine Applied

Use one row per type of animal.

7.3 Livestock Service

Type of Livestock	Cutting hoof	Castration	AI	Cutting Horn	Branding	Cutting tail	Cutting teeth	Cutting bill/beak
Cattle								
Goat								
Sheep								
Pig								
Chicken								
Duck								

Data on livestock service are obtained from the services provided by Extension Officers. If the farmers provided these services themselves but you gave some advice to them, include those numbers.

* Please write the number of services cumulative from July.

5. Quarterly Report Format

PRIME MINISTER'S OFFICE - REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT (PMO -RALG)
 QUARTERLY AGRICULTURAL SECTOR REPORT FORMAT (VILLAGE/WARD)

Revised September 2013

Don't forget to write the name of the village/ward and your name. Delete those which are not applicable (village/Ward).

Name of Village/Ward :

Name of Extension Officer:

Telephone Number: _____

Quarter: _____ (Month: _____ Up to _____) Financial Year: _____ date of Submission: _____

To be submitted to WAEO before the end of each quarter by VAEO. To be submitted to DALDO within first week of the following

NOTE:

- 1) If your village/ward do not produce the crop / livestock products or do not have the machinery/infrastructure in question, write "N/A".
- 2) If the item exists in your village/ward, write the best estimated number.
- 3) Use National Standard Measurement in each table where needed.
- 4) Read the instruction in each table carefully before writing.

Choose food status and put "tick (v)". Explain the reason why you have chosen the status referring to food prices, amounts of emergency food consumed etc.

The amount of loan for marketing: The initial loan given for running business of agricultural sector e.g. marketing and food processing.

Data on food situation are available from hamlet leaders.

1. Village Food Situation

	Check one	Remarks
Good	<input type="checkbox"/>	
Average	<input type="checkbox"/>	
Bad	<input type="checkbox"/>	

Describe food situation in this quarter

Number of household with no food	Number of household with insufficient food	Number of household with enough food	Number of household with excess food

Household with no food are those who do not have even one meal per day.

Household with insufficient food are those with fewer than three meals per day.

2. Farmers groups/Associations

2.1 SACCOS

Number of SACCOS	Number of Members				Amount of Loans (Tsh)				
	Individual members		Group *	Total	Crop	Livestock	Fishery	Marketing	Total
	Male	Female							

Note: * A group should be counted as one member.

2.2 Other Farmer groups

Type of Associations/Groups	Number of Associations/ Groups	Number of Members			Total number Registered	Total number with Bank Account
		male	Female	Total		
Crop	Production					
	Processing					
	Marketing					
Livestock	Production					
	Processing					
	Marketing					
Fisheries	Production					
	Processing					
	Marketing					

Write the number of Groups which are registered by the Ministry of Home Affairs, LGAs, and those which are known by district.

The data are available at the Groups in your village.

Training of farmers through the methods other than FFS include the training provided by MATI, LITI, other institutes, NGOs, CBOs, VICOBA, Bank etc. or those provided by the district offices which are not related to FFS.

3. Extension Services

3.1 Training of farmers through the methods other than FFS

Topic of Training	Total number of farmers trained		Total number of Farmers Trained		Training method	Training providers	Remarks
	Male	Female	Equal or Less than one week	More than one week			
Crop							
Livestock							
Fishery							
Marketing and Processing							
Irrigation							

Example of the topics of training include "maize husbandry", "preparation for planting" etc.

Training method could be seminar, workshop, course, or study tour etc.
 Training providers could be MATI, LITI, other college, NGOs, CBOs, VICOBA etc.

Note: i) List topic which were trained to farmers.

Type of soil erosion should be written in English. Most of the names originate in the cause/reason e.g. gully erosion is caused by water which forms gully.

6. Soil Erosion

Type of Erosion (i)	Name of Village(s) Involved	Area Destroyed (ha)	Type of Control Measures	Area Controlled (ha)	Remarks

i) Write the name of erosion in English term.

Write the measures applied to control the soil erosion.

7. Area Cultivated by Village/Ward and Means of Cultivation

7.1 Short Rains Season (Vuli)

	By Tractors/power tillers (ha) (i)	By Draught Animals (ha) (ii)	By hand Hoes (ha) (iii)	No tillage (ha) (iv)	Total Area (ha) (v) = (i)+(ii)+(iii)+(iv)
Cultivated					
Planted					
Weeded					
Harvested					

Note : Do not double - count if the same land is cultivated more than once in one season.

7.2 Rainy Season (Masika)

	By Tractors/power tillers (ha) (i)	By Draught Animals (ha) (ii)	By hand Hoes (ha) (iii)	No tillage (ha) (iv)	Total Area (ha) (v) = (i)+(ii)+(iii)+(iv)
Cultivated					
Planted					
Weeded					
Harvested					

Note : Do not double - count if the same land is cultivated more than once in one season.

For harvested area, other equipments than listed in the table (e.g. combine harvester, knives) can be used.

Data are available at the Village Government or owners of tractor/ other machines.

6. Annual Report Format

**PRIME MINISTER'S OFFICE - REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT (PMO-RALG)
ANNUAL AGRICULTURAL SECTOR REPORT FORMAT**

Revised September 2013

Name of Village/Ward: _____
 Name of Extension Officer: _____ Telephone No: _____
 Month: _____ Financial Year: _____ Date of Submission: _____
 To be submitted to WAEO before the end of each year by VAEO. To be submitted to DALDO within first week of the following year by WAEO.

Don't forget to write your name of the village/ward your name. Delete those which are not applicable (Village/-Ward).

NOTE:
 1) If your village/ward do not produce the crop / livestock products or do not have the machinery/infrastructure in question, write 'None'.
 2) If the item exists in your village/ward, write the best estimated number.
 3) Use National Standard Measurement in each table where needed.
 4) Read the instruction in each table carefully before writing.

i) If the Village Government updates this information every year, use the information.
 ii) If the Village Government doesn't update the data, ask the latest information on population at District Council and use them.
 iii) Otherwise, use the data from the Census. But don't estimate the number of population using a formula.

1. Introduction, Basic Information of Village/Ward

	Male headed household	Female headed household	Total	Number of household engaged in agriculture
Number of Household				
	Male	Female	Total	Population engaging in agriculture
Population				

2. Number of Smallholder Households Participating in Contracting Production and Out-growers Schemes

Get information from the Village Government.

	Contracting Production (i)			Out-growers scheme (ii)		
	Number of household involved (iii)	Number of Contractors Involved (iv)	Major Products (v)	Number of household involved (vi)	Number of Contractors Involved (vii)	Major Products (viii)
Crop						
Livestock						
Fishery						

Note
 i) Contracting production is defined as a partnership between smallholder household/group and an agribusiness company for the production of commercial products detailed in formal contract.
 ii) Out-growers scheme is defined as a partnership between smallholder household/group and an agribusiness company for the production of commercial products that may not involve formal contracts.
 v), viii) Write the names of major products.

A scheme is a place where there are (improved or traditional) irrigation infrastructures for in crop production.

3. Irrigation
3.1 Irrigation scheme

Name of the Scheme (i)	Name of water source (e.g. Rufiji river) (ii)	Potential Area (ha) (iii)	Area under Improved irrigation (ha) (iv)	Season irrigated (1=Both rainy and dry season, 2=Only rainy season, 3=Only)	Status of the scheme (1=Good, 2=Acceptable, 3=Need)	Number of members in Irrigation Organisations (IO)		Number of farmers using irrigation infrastructures (both members and non members of IO)	
						Male	Female	Male	Female
Improved scheme									
Traditional scheme									

Improved Irrigation encompasses constructed structures/ canal, weir using cement or stones, etc. Do not count area where the irrigation infrastructures are not completed.

Traditional irrigation encompasses unconstructed structures/ traditional temporary canal.

Note: (iii) "Irrigation potential area" means the total area of the scheme which has been brought under irrigation and which can be planned for irrigation on the basis of water availability.
(iv) "Area under irrigation" is the area developed for irrigation within the scheme.

4. Machines and other Agricultural, livestock and Fishery machines

This section refers to the machines/equipment which are basically stationed in your village. The machines which farmers rent from other villages are not included .

4.1 Number of agricultural, livestock and fishery machines

Type of machines/Equipment	Working		Not Working		Reason for not working
	Individually-owned	Group-owned	Individually-owned	Group-owned	
Tractor					
Power Tiller					
Combine harvester					
Mower					
Bailer					
Feeder					
Drinker					
Milking Machine					
Chillers					
Electric Meat Cutter					
Patrol Boat					
Fishing Boat with Engine					
Fishing Boat without Engine					
Others					

All the machines should be known to the village government.
Count all the machines which are owned by villagers only, don't count machines which are used in the village/ward but come from other villages/wards.

Note : i) Write the name of machine if there are other machines than these listed above .
ii). Write the number of machines which are owned by either individual or group. Count those owned by the Government and institutions (private companies) as a group.

4.2 Number of Agricultural Implements

Data on Implements are obtained from the owners.

a) Machinery Drawn (Tractors /Power Tillers)

Type of implement	Working	
	Individually-owned	Group-owned
Harrow		
Planter		
Disk plough		
Sub-soiler		
Weeder		
Boom Sprayer		
Ripper		
Rake for Hay Making		
Trailer		
Others		

b) Animal Drawn (Draught Animals)

Type of Implement	Working	
	Individually-owned	Group-owned
Harrow		
Planter		
Moldboard plough		
Sub-soiler		
Weeder		
Ripper		
Ridger		
Cart		
Other		

4.3 Number of Hand Operated Implements

Hand hoes	Spray pump (Plant/ Livestock)	Flaying Knives	Fishing Nets	Branding Iron*	Others (specify)		

Note: *For Livestock identification

4.4 Number of Agro Processing Machine

Type of Machine	Working		Not Working		Reason for not working
	Individually-owned	Group-owned	Individually-owned	Group-owned	
Milling Machines					
Dehulling Machines					
Oil Extracter					
Kernel Opening					
Pulperies					
Ginneries					
Shelling					
Hay Making Machines					
Dairy Products Processing Machines					
Hatching Machines					
Meat Processing Machines					
Hides and Skins Processing Machines					
Meat Vans					
Milk Vans					
Ice Making Machines					
Fish Product Processing Machines					
Others (specify)					

Good relationship between the owners of the machines and Extension Officers is very important in order to obtain accurate data.

Note: i) Count the number of machine in the factory/plant.

ii) Write the name of machine if there are machines other than those listed above.

iii) Write the number of machines which are owned by either individual or group. Count those owned by the Government and Institutions (private companies) as group.

Extension services provided by either government or private sector should be reported here.

5. Extension Services

5.1 Farmers Field School (FFS)

Purpose of FFS (i)	Number of Field School	Number of Farmers Started		Average Duration (days)	Number of Completed Farmers		Number of Villages Covered	Number of Farmers who applied technique	Remarks
		Male	Female		Male	Female			
Crop									
Preservation of cereals	2	16	9	14	16	9	2	25	
Improving sunflower production	3	41	33	36	41	33	3	74	
Livestock									
Indigenous chicken management	2	5	6	12	5	6	2	11	
Improved dairy goat husbandry	2	12	28	24	12	28	2	40	
Processing hide and skin	1	6	2	7	6	2	1	8	
Fishery									

The purpose of the FFS can be broad e.g. good practise of maize husbandry, which includes usage of improved seeds, preparation of the farm, fertilize application, etc.

The completed farmers are those who attended at least 75% of the training.
Only those training that were completed in that particular year should be reported in this table.

The number of farmers those who actually practised the technique should be reported here.

Purpose of FFS (i)	Number of Field School	Number of Farmers Started		Average Duration (days)	Number of Completed Farmers		Number of Villages Covered	Number of Farmers who applied technique	Remarks
		Male	Female		Male	Female			
Marketing and Processing									
Others									

6. Input Use

6.1 Inorganic Fertilizer

Type of Fertilizer	Annual requirement	Amount used per year (ton)	Remarks
SA			
CAN			
UREA			
TSP			
DAP			
NPK 10:10:10			
NPK 25:5:5			
NPK 6:20:18 / 10:18:24			
NPK 4:17:15			
NPK 17:17:17			
MRP (Minjingu Rock Phosphate)			
MOP			
Others (specify)			

Requirements should be set in collaboration with farmers / livestock keepers.

Data on the amount used are available at stockist in the village/ward or based on the services provided by Extension Officers.

Note: The amount of fertilizer includes those used for grazing area preparations.

6.2 Agro Chemicals

Type of Chemicals	(Generic or Trade) Name of Chemicals	Unit (kg/ litre)	Amount used per year	Remarks
A: INSECTICIDES	Actellic 50EC	litre	40	
A: INSECTICIDES	DURSBAN	litre	60	
A: INSECTICIDES	Karate	litre	20	
A: INSECTICIDES	Thionex	litre	50	
A: INSECTICIDES				
B: FUNGICIDES	Blue copper EC	litre	0.5	
B: FUNGICIDES	Dithane M. 45	kg	20	
B: FUNGICIDES	Ridomil	kg	1	
B: FUNGICIDES	Zinc	kg	0.25	
B: FUNGICIDES				
C: HERBICIDES	Gramoxone	litre	100	
C: HERBICIDES	Roundup	litre	350	
C: HERBICIDES				
C: HERBICIDES				
C: HERBICIDES				
D: RODENTICIDES	RAT CIDE	litre	0.1	
D: RODENTICIDES				
D: RODENTICIDES				
D: RODENTICIDES				
D: RODENTICIDES				
E: AVICIDES				
E: AVICIDES				
E: AVICIDES				
E: AVICIDES				
E: AVICIDES				
F: Others				
F: Others				
F: Others				
F: Others				
F: Others				

Write the unit of chemicals either kg or litre.

Data on the amount used are available at stockist in the village/ward or based on the services provided by Extension Officers.

Note: Write about the most common brand (trade) names in each category.

6.3 Improved Seeds

Annual requirement (targets) should be set in collaboration with farmers and livestock keepers.

Type of Crops	Annual Requirement for the reporting year (kg)	Name of Improved Variety	Amount used in the reporting year		Remarks
			Quality Declared Seed	Certified seed	
Maize	1,200	Kilima	400	50	
Maize		Staha	300	30	
Maize		Stuka	200		
Maize		TMV I	250	100	
Maize					
Paddy					
Paddy					
Paddy					
Paddy					
Paddy					
Beans	150	C. Wonder		30	
Beans					
Beans					
Beans					
Beans					
Sorghum	450	Macia	180	30	
Sorghum		Wahi	150		
Sorghum					
Wheat					
Wheat					
Wheat					
Sunflower	50	Record		50	
Sunflower					
Sunflower					
Others (specify)					

QDS are produced by farmers who are trained and allowed to sell seeds within the ward.

Certified seeds are those which are produced by agricultural research institutes (e.g. ASA).

Data on the amount used are available at stockist in the village/ward or based on the services provided by Extension Officers.

Note: Write the names of the most common varieties of improved seeds for each crop.

7. Livestock population

These data are available at the village government and livestock keepers.

Type of Animal	Number of indigenous	Number of Improved		Total	Total Registered
		Meat	Dairy		
1. Cattle					
Bull*	725	7	28	760	
Cow**	1,500	10	127	1,637	
Steer***	103		12	115	
Heifer****	1,227		58	1,285	
Male Calf*****	302	5	53	360	
Female Calf	321		60	381	
Ox	200			200	
Sub Total Cattle	4,378	22	338	4,738	
2. Sheep					
Male Sheep	633	2		635	
Female sheep	1,079	4		1,083	
Sub total Sheep	1,712	6		1,718	
3. Goat					
Male Goat	1,900	6	85	1,991	
Female Goat	2,008	2	203	2,213	
Sub Total Goat	3,908	8	288	4,204	
4. Others					
Pig	127	50		177	
Water Buffalo	0			0	
Donkey	3			3	
Horse	213			213	
Camel	0			0	
Dog					
Cat	112			112	
Rabbit					
5. Avian					
	Number of Indigenous	Broiler	Layer	Total	
Chicken	5,223	112	145	5,480	
Duck	16			16	
Turkey	0			0	
Guinea Fow	27			27	

If there is no data on each type of cattle, you can write the estimated number of cattle in subtotal only.

Note: Count all livestock population EXCEPT those owned by large scale farmers (who have more than 50 head of cattle, and/or more than 100 head of sheep/ goats/pigs, and/or more than 1000 chickens/turkeys/ducks/rabbits, and who have permanent stations/farm, use machines such as milking machine, drinker, etc., practice commercial farming (with modern facilities) and usually have title of the land they own).

- * Bull is mature uncastrated male cattle used for breeding.
- ** Cow is mature female cattle that has given birth at least once.
- *** Steer is castrated male cattle over 1 year .
- **** Calf is young cattle under 1 year of age .

8. Livestock Infrastructure

Type of Infrastructure	Working	Not working	Number Required	Number of Registered	Reasons for not working
Slaughter House *	1		2		
Slaughter Slab **	2		5		
Butcher	3		5		
Hide and Skin Banda	1		2		
Permanent Crash					
Charco	5	1	10		
Water Trough	2		5		
Cattle Dip	2	2	5		
Dog Dip			5		
Spray Race					
Hatchery ***					
Milk Collection Centre					
Auction Market	1	1	2		
Godown	1		2		
Others (specify)					

Be careful when you write the number of infrastructure needed, because these data will be used for VADP/DADP.

Note : i) Write the name of infrastructure if there are infrastructure other than those listed above.

* Slaughter house is defined as a facility where animals are slaughtered into carcasses (no processing).

** Slaughter slab is defined as a flat concrete floor where animals are slaughtered in an open air.

*** Hatchery includes a facility for producing on day chicks of any size.

These data are available at the village government because all land must be registered.

9. Grazing land

Type of Animals (i)	Number of Animals (ii)	Total Grazing Land in the Village (ha) (iii)	Utilized land (ha) (iv)	Total Demarcated Area (ha) (v)	Total Area Leased (ha) (vi)
Cattle	4,378				
Goat	3,908				
Sheep	1,712	3,557	3,531	3,531	3,531
Donkey	3				

Note:

(iii) Total area available for grazing.

(iv) Area actually used for grazing.

(vi) Area officially leased to individuals or groups by village and certified by Ministry of Land.

If the area available has not been measured, write the estimated number, otherwise leave the cell blank. The information may be available at the village government.

10. Pasture

10.1 Improved Pasture

Number of farms / plots	Area (ha)	Seed Production (kg)	Amount of Hay Bales/Bundles produced (Hay*)	Remarks

* One bale of hay is about (20kg).

Data are available at agricultural / livestock institutes such as LITI etc.

10.2 Crop Residue

Type of crop	Amount of Hay Bales/Bundles produced (Hay*)	Area of Farms/ Plots Grazed in Situ (ha)	Remarks

* One bale of hay is about (20kg).

Data are available from livestock keepers.

11. Dissemination of Agricultural Information (TV, radio and telecommunication)

11.1 TV and Radio station

Name of TV Station Available	Number of villages covered
TBC	
ITV	
Star TV	
Local, specify:	

Name of Radio Station Available	Number of villages covered
Radio 1	
TBC Taifa	
Radio Free Africa	
Local, specify:	

If the LOCAL radio or TV station air any program on agriculture/ livestock, please write.

Name of station	Name of program	Frequency (time in a week)	Type of information

11.2 Telecommunication

Name of telecommunication company	Number of villages covered
Sasatel	
Tigo	
TTCL	
Vodacom	
Airtel	
Zantel	
Others, specify	

Write name of program of agriculture, livestock and fisheries which is aired by local radio and TV station if you can listen/ watch in your village/ward.

7. Good Practices and Lessons Learned (through the Pilot Implementation)

Data collection:

- This form shows what should be written in a report clearly, therefore extension officers are clear what kinds of information to report. Before the introduction of this form, some data were not reported because of the differences in the interests of extension officers.
- This form covers the whole agricultural sector including livestock, cooperatives etc.
- It will be easy to fill out the form if extension officers keep a record on their activities every day **in the agricultural diary**.
- It is very important that village and ward agricultural extension officers cooperate so that they organize themselves in data collection.
- It is also important to cooperate with village executive officers in data collection, but sometimes they have uncooperative attitude towards providing data. In this case, it is suggested to communicate with hamlet leaders.
- When a village agricultural extension officer is on a leave, he/she can ask his/her colleague in a nearby village to write this report. As for ward agricultural extension officer, he/she may ask one of the village agricultural extension officers in the ward.

Report writing:

- Before the introduction of this format, village extension officers had been late in submitting agricultural monthly reports to ward. But with this format, village and ward extension officers get together to fill out the form on an agreed date (e.g. every 30th of the month).
- Extension officers now have enough stationary to write a report because forms are distributed every month.

- This form has reduced the work load of extension officers in writing a report because now all extension officers need to do in terms of report writing is to fill out this form.

Work:

- This form reminds extension officers of their routine/daily jobs e.g. keeping a record in a notebook such as it rained on a certain day.
- With this form, extension officers are obliged to visit farmers more frequently.
- With this form, extension officers have learned how to work hard in an area where they didn't do before.

Data usage:

- It became easier to keep records because they are kept at one place / report.
- With this form, the number of reports/data asked by district officers (especially DALDO) has been reduced because this form includes most data needed. When DED/DC asks agricultural data (e.g. food situation etc.), the extension officers can look for data in their report.
- The data in this report can be used for preparing food aid.
- The data are useful for preparing and monitoring Action Plan.

Feed Back:

- A district officer visited division centres to meet village and ward extension officers for backstopping for data collection. After the visit, extension officers gained confidence in filling the form and become more serious in filling out the form. Therefore the quality of data is improving. Extension officers were highly motivated through a visit.
- With this form, an extension officer visits VEO more often to collect data. Then she found that some VEOs learned to file papers.

Conversion table

Weights and measures		Conversions	
1 hectare	= 10,000 sq metres (100 x 100 mita)	1 hectare	= 2.47 acres
1 acre	= 4050 sq metres	1 acre	= 70 times 70 steps
1 kilometre	= 1,000 metres		
1 foot	= 30.48 centimetres		
1 step	= 3 feet		
1 tonne	= 1,000 kgs		

Kg Equivalents

	Crop Name	Standard (kgs)		Non-standard	
		Bag	Tin	Name	kgs
Cereals	Maize	100	18	Rumbesa	140
	Paddy	75	15		
	Sorghum	100	18		
	Bulrush Millet	100	18		
	Finger Millet	120	20		
	Wheat	75	15		
	Barley	75	15		
Roots and Tuber	Cassava	60	12		
	Sweet Potatoes	80	16		
	Irish Potatoes	80	16		
	Yams	80	16		
	Cocoyams	80	16		
Industrial Crops	Cotton	50	10		
	Tobacco	70	14		
	Coffee	55			
	Tea	60			
	Pyrethrum	60	12		
	Cacao	60			
	Rubber				
	Wattle	90			
	Sugar Cane	120			
	Sisal	130			
Cashewnut	80				

	Crop Name	Standard (kgs)		Non-standard	
		Bag	Tin	Name	kgs
Oil Crops	Sunflowe	60	12		
	Simsim	100	20		
	Groudnut	50	10		
	Palmoil	100			
	Coconut	75			
	Soyabeans	100	20		
	Caster Seed	100	20		
Pulses	Cow Pea	100	20		
	Pigeon Pea	100	20		
	Green Gram	100	20		
	Chick Pea	100	20		
	Bambara Nut	100	20		
	Bean	100	20		
Spices	Ginger	75	15		
	Chilli Pepper	85			
	Cardamon	100			

	Crop Name	Standard (kgs)		Non-standard	
		Bag	Tin	Name	kgs
Vegetables	Cucumber	80			
	Cauliflower	50			
	Cabbage	50			
	Amaranthus	50			
	Spinach	45			
	Tomato	90			
	Eggplant	70			
	Onion	80	16		
	Carrot	110			
Fruits	Banana	120			
	Mango	130			
	Paw paw	100			
	Orange	130			
	Tangerine	110			
	Guava	110			
	Apple	110			
	Pineapple	90	18		
	Avogado	140			
	Water Melon	80			
Plum	110				
Pear	110				

SUPPORTED BY TECHNICAL COOPERATION IN CAPACITY DEVELOPMENT FOR
ASDP M&E SYSTEM PHASE 2

**Introduction to Beginners
Who wish to learn
How to use data with EXCEL**

ASDP M&E Thematic Working Group

April, 2014

1. Introduction

The EXCEL spreadsheet program is designed to make the manipulation of information easy and fast. The program can process many types of data from many numeric tables such as statistical tables, balance sheet, sales returns, and production schedules to the sort of lists more usually associated with database programs. In order to perform various statistical manipulations quickly and in low cost, use of EXCEL is highly effective.

In this textbook, we can learn how to enter formulae as well as data, in advance of analyzing data. Let's do practice now!

2. Entering Data

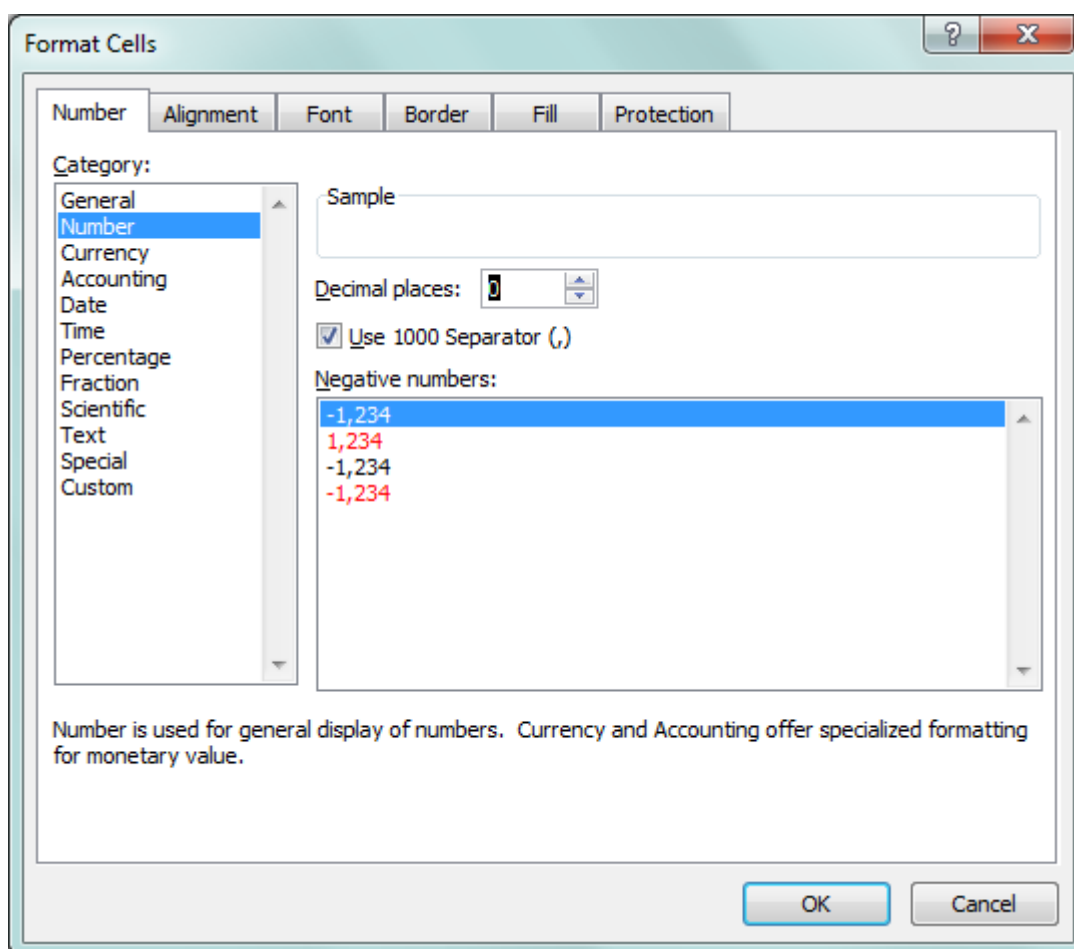
Format Cell:

Entering data is simply of selecting a cell and then typing a value.

	A	B	C	D	E	F
1						
2		Number of Cattle by Region (indigenous)				
3			2003	2008		
4		Dodoma	1,025,388			
5		Arusha	1,532,103			
6		Kilimanjaro	351,191			
7						
8						
9						

Active cell

Meanwhile, when you enter data, you need to set up the format of cell as the following screen. So, click on the symbol for **Format Cell**, and choose category as “number”, decimal place as “0”, use 1000 separator.



Decrease decimal:

When the values on the cells are presented in full decimals, it looks redundant. So, click on the symbol for Decrease decimal, and repeat to click until attaining the necessary decimal point.

Notice for calculation: Round off

1. For example, calculate down to two decimal places. Then, round off the figure to one decimal place.
2. A manner for a rounding off.
 - A digit is 0,1,2,3 or 4 Round down
e.g. 34.52 → 34.5, 12.14 → 12.1
 - A digit is 5,6,7,8 or 9 Round up
e.g. 34.56 → 34.6, 12.19 → 12.2

Multiple Worksheets:

EXCEL allows you to have several worksheets in a single file, referred to as a workbook. The sheets are shown in the sheet tab at the bottom of the window. Whenever you save the file, all sheets will be saved together.

3. Entering Formulae

A “formula” is used to calculate the value of a cell from the contents of other cell. For example, formulae may be used to calculate totals or average, produce percentages or find the minimum and maximum values in ranges.

A formula consists of a mathematical expression, which refers to other cells or to constant values. Formula must start with an =, +, or – sign. The components of the formula are linked together by “operators” (+, –, etc.) as follows.

Operators:

The following numeric operators are recognized.

- + Addition
- Subtraction
- * Multiplication
- / Division

You can also use

- Negation (in front of a number)
- % Percentage (after a number)

Using Brackets:

Using brackets (parentheses), the order of calculation is changed. Anything inside a pair of brackets is calculated at first. For example, the formula given such as $(A - B) \times (C + D)$ is placed on the cell in the order of $= (A - B) * (C + D)$.

Copying Formula:

In most worksheets, the same formula will be needed to repeat in a number of cells, or a range of cells will be needed to fill with a similar formula. EXCEL makes it very easy to copy a formula to other cells as follows.

1. Move the pointer to the Symbol of Copy on Tool bar.
2. Click on the Symbol, and then move the pointer to the cell where the formula is to be copied.
3. Click on the cell and move the pointer to the Symbol of Paste on Tool bar and click on it.

Option

(1) Move the pointer to the bottom right-hand corner.

	Males	Females	Total
Class A	256	234	490
Class B	300	341	641
Class C	196	240	436
Total			

(2) Drag and press { Enter }.

Relative Cell Reference vs. Absolute Cell Reference:

Here, it should be noted that another operator { \$ } is played very important roll on the calculation of the proportions.

When you copy a formula to another cell, any cell references are automatically updated so that they refer to the cell in the same relative position: these are called “*relative cell references*”.

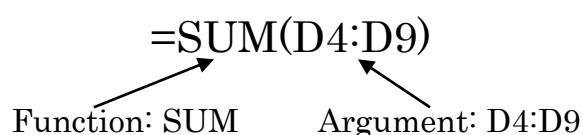
Often, you want the formula to refer the same cell, regardless of where the formula is copied. To do this, each part of the cell reference is preceded by a \$ sign: for example, a formula that refers to \$D\$3 will always use the value in D3, no matter where it is copied to. This is called an “*absolute cell reference*”.

Sometimes, you need to keep one part of the reference absolute while allowing the other part to change. For instance, the items in

a table may be based on the values at the top of each column or on the left of each row. In these cases, the \$ sign is placed in front of the part that is to remain unchanged. These are “*mixed cell references*”.

Functions:

EXCEL contains a large numbers of built-in functions. These are special routines that can be used within a formula to perform particular tasks. Among those functions, the most commonly used one is “SUM”, which calculates the total of all the cells in a specific range. Other common arithmetic functions are “AVERAGE” to calculate the average of a range; “MIN” and “MAX” to find the smallest and the largest numbers in a range. The function name is followed by a pair of brackets containing one or more arguments. Functions are used in a formula in the same way as a constant value or cell reference.



[End]

SUPPORTED BY TECHNICAL COOPERATION IN CAPACITY DEVELOPMENT FOR
ASDP M&E SYSTEM PHASE 2

Textbook for the Training of Data Use and Analysis

"Let's use and analyze Data!"

ASDP M&E Thematic Working Group

[Ver.1.1]

May, 2014

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Target of Practice: Relative Change (%) and Imputation for Missing Data

- Basic Technique (4): “Relative Change (%) to the last year, to the average of several years” p.14
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- Advanced Technique (2): “Continuous Annual rate of population growth” p.23

Introduction:

One of the purposes for using data is to make comparison in numeric manner between different populations, between one sub-population and another sub-population, or between different objects or events, etc.

Commonly, the comparison in values is very easy. Observe the values on the table, and judge which is larger or the largest, or which is smaller or the smallest. Then, the comparison is finalized. However, it is not always easy to make comparison on the table containing a lot of values cross-classified between several items on the row and another set of items on the column.

In this case, use of the several basic techniques showing in the followings, such as “measuring rank”, “breaking down into the composition”, “seeing as per unit”, “checking relative change” and so on, makes comparison easy and gives clear solution in analysis.

Let’s start the practice together, and learn all from now on!

Target of Practice: Rank, Composition and Per Unit Value

Basic Technique (1): “Measuring Rank”

The ranking information can show you the clear picture as a whole, especially the trend between different years, although the information volume of data contents has been dropped off. Now, let's make up the ranking!

[Sample Data 1]		
Region	Oct. 2003 Number of Cattle (indigenous)	Oct. 2008 Number of Cattle (indigenous)
Dodoma	1,025,388	1,166,715
Arusha	1,532,103	1,716,514
Kilimanjaro	351,191	321,171
Tanga	350,210	688,114
Morogoro	455,985	628,475
Pwani	110,360	225,610
Dar es salaam	4,660	6,108
Lindi	2,019	26,450
Mtwara	16,383	17,415
Ruvuma	105,884	61,768
Iringa	401,773	459,275
Mbeya	898,050	787,912
Singida	1,255,118	1,584,313
Tabora	1,566,169	2,123,645
Rukwa	503,345	799,700
Kigoma	421,613	154,000
Shinyanga	2,591,532	3,635,260
Kagera	869,424	813,212
Mwanza	1,710,309	1,970,901
Mara	1,090,007	1,682,569
Manyara	1,163,051	1,648,488
Mainland	16,424,574	20,517,615

Data Source: "National Sample Census of Agriculture 2002/03, 2007/08"

[Analytic Procedure] Making rank and comparing the difference for tracking the trend

1. **Calculate** Regional rank for the number of Cattle in both 2003 and 2008, using the following “RANK” function on EXCEL.

RANK (number, a list of numbers, [order, 0: descending, 1: ascending])

**applying “mixed cell references”, i.e. B\$3:B\$23*

2. **Calculate** the difference of ranks, subtracting the 2008 year’s rank from the rank in 2003.
3. **Analyze** the rank’s difference, and track the trends between 2003’s and 2008’s.

“What do you observe now on the difference?”

Please write down your observation:

(1) ...

(2) ...

(3) ...

Then, consider “what is the reason why it happens?”

[Analysis Result 1] Let's see the difference of ranking for each region.

Region	Oct. 2003 Ranking	Oct. 2008 Ranking	Rank Difference (Number of Cattle)
Dodoma	8	8	0
Arusha	4	4	0
Kilimanjaro	15	15	0
Tanga	16	12	4
Morogoro	12	13	-1
Pwani	17	16	1
Dar es salaam	20	21	-1
Lindi	21	19	2
Mtwara	19	20	-1
Ruvuma	18	18	0
Iringa	14	14	0
Mbeya	9	11	-2
Singida	5	7	-2
Tabora	3	2	1
Rukwa	11	10	1
Kigoma	13	17	-4
Shinyanga	1	1	0
Kagera	10	9	1
Mwanza	2	3	-1
Mara	7	5	2
Manyara	6	6	0

Basic Technique (2): “Breaking it down into the composition”

Important information that could be extracted from the data is how the proportion of population among regions varies. As it could show how large portion it holds in the list, you can easily see which one is the most largely occupying. Note that the proportion is commonly represented as percentage (per 100). So, calculation of the proportion is performed as composition, which means the percentage of each component, such as region or district, crop’s or livestock’s names and *etc*, to the total figure.

[Analytic Procedure] Calculating the percentage as a composition and comparing the change of increase/decrease

1. **Calculate** all of the percentage of “Number of Cattle” in each region, to the total number in mainland, in both 2003 and 2008.
2. **Calculate** the difference in each region between 2003’s figure and 2008’s.
3. **Analyze** the change of composition between 2003 and 2008, and check the maximum points of increase/decrease.

“What do you observe now on the change?”

Please write down your observation:

(1) ...

(2) ...

Then, consider “what is the reason why it happens?”

[Analysis Result 2] Let's see the composition for each region.

Region	Oct. 2003			Oct. 2008			Change of Composition
	Number of Cattle (indigenous)		Composition	Number of Cattle (indigenous)		Composition	
Dodoma	1,025,388	8	6.24%	1,166,715	8	5.69%	-0.56%
Arusha	1,532,103	4	9.33%	1,716,514	4	8.37%	-0.96%
Kilimanjaro	351,191	15	2.14%	321,171	15	1.57%	-0.57%
Tanga	350,210	16	2.13%	688,114	12	3.35%	1.22%
Morogoro	455,985	12	2.78%	628,475	13	3.06%	0.29%
Pwani	110,360	17	0.67%	225,610	16	1.10%	0.43%
Dar es salaam	4,660	20	0.03%	6,108	21	0.03%	0.00%
Lindi	2,019	21	0.01%	26,450	19	0.13%	0.12%
Mtwara	16,383	19	0.10%	17,415	20	0.08%	-0.01%
Ruvuma	105,884	18	0.64%	61,768	18	0.30%	-0.34%
Iringa	401,773	14	2.45%	459,275	14	2.24%	-0.21%
Mbeya	898,050	9	5.47%	787,912	11	3.84%	-1.63%
Singida	1,255,118	5	7.64%	1,584,313	7	7.72%	0.08%
Tabora	1,566,169	3	9.54%	2,123,645	2	10.35%	0.81%
Rukwa	503,345	11	3.06%	799,700	10	3.90%	0.83%
Kigoma	421,613	13	2.57%	154,000	17	0.75%	-1.82%
Shinyanga	2,591,532	1	15.78%	3,635,260	1	17.72%	1.94%
Kagera	869,424	10	5.29%	813,212	9	3.96%	-1.33%
Mwanza	1,710,309	2	10.41%	1,970,901	3	9.61%	-0.81%
Mara	1,090,007	7	6.64%	1,682,569	5	8.20%	1.56%
Manyara	1,163,051	6	7.08%	1,648,488	6	8.03%	0.95%
Mainland	16,424,574			20,517,615			
	Median:		3.06%	Median:		3.84%	

-1.82 point	↓
1.94 point	↑

Basic Technique (3) - 1: “Seeing as per unit (I)”

You know that the human population / number of household in each region are so various. So, the total number of cattle doesn't show the scale of stockbreeding by farmers. That is why we shall see the number of cattle “*par household*”. Now, let's check it up!

[Sample Data 2]

Region	Oct. 2003	Oct. 2008
	Number of household	Number of household
Dodoma	62,255	75,878
Arusha	88,000	124,977
Kilimanjaro	69,554	73,788
Tanga	46,947	62,306
Morogoro	8,826	15,818
Pwani	4,864	7,162
Dar es salaam	532	1,091
Lindi	391	1,854
Mtwara	3,474	3,172
Ruvuma	12,909	20,286
Iringa	49,481	54,325
Mbeya	104,647	135,544
Singida	72,363	98,701
Tabora	65,854	96,511
Rukwa	43,345	67,731
Kigoma	21,627	19,552
Shinyanga	147,784	216,875
Kagera	43,483	46,486
Mwanza	117,613	145,461
Mara	62,730	96,260
Manyara	88,807	118,582
Mainland	1,115,486	1,482,360

Data Source: "National Sample Census of Agriculture 2002/03, 2007/08"

Key Points: But... divided by what variable?

- "per unit", which provides a new viewpoint to you.
- To be divided by another variable, but note that "by what variable?"

[Analytic Procedure] Making up the new value as the number of cattle "*per household*"

1. **Calculate** "Number of Cattle per household", dividing "Number of Cattle" by "Number of household".
2. **Calculate** regional rank for "Number of Cattle per household", using "RANK" function.
3. **Analyze** the rank's difference of "Number of Cattle per household", and track the trends between 2003's and 2008's.

"What do you observe now on the difference between 2003's and 2008's?"

Please write down your observation:

(1)...

(2)...

(3)...

"What do you observe now on the two different ranks, "Number of Cattle" and "Number of cattle per household"?"

[Analysis Result 3] Let's see the number of cattle "per household".

Region	Oct. 2003				Oct. 2008				Rank Difference (Number)	Rank Difference (/HH)		
	Number of household	Number of Cattle (indigenous)	Per Household		Number of household	Number of Cattle (indigenous)	Per Household					
Dodoma	62,255	1,025,388	8	16.5	10	75,878	1,166,715	8	15.4	8	0	2
Arusha	88,000	1,532,103	4	17.4	7	124,977	1,716,514	4	13.7	11	0	-4
Kilimanjaro	69,554	351,191	15	5.0	20	73,788	321,171	15	4.4	20	0	0
Tanga	46,947	350,210	16	7.5	18	62,306	688,114	12	11.0	14	4	4
Morogoro	8,826	455,985	12	51.7	1	15,818	628,475	13	39.7	1	-1	0
Pwani	4,864	110,360	17	22.7	3	7,162	225,610	16	31.5	2	1	1
Dar es salaam	532	4,660	20	8.8	14	1,091	6,108	21	5.6	18	-1	-4
Lindi	391	2,019	21	5.2	19	1,854	26,450	19	14.3	9	2	10
Mtwara	3,474	16,383	19	4.7	21	3,172	17,415	20	5.5	19	-1	2
Ruvuma	12,909	105,884	18	8.2	16	20,286	61,768	18	3.0	21	0	-5
Iringa	49,481	401,773	14	8.1	17	54,325	459,275	14	8.5	15	0	2
Mbeya	104,647	898,050	9	8.6	15	135,544	787,912	11	5.8	17	-2	-2
Singida	72,363	1,255,118	5	17.3	9	98,701	1,584,313	7	16.1	7	-2	2
Tabora	65,854	1,566,169	3	23.8	2	96,511	2,123,645	2	22.0	3	1	-1
Rukwa	43,345	503,345	11	11.6	13	67,731	799,700	10	11.8	13	1	0
Kigoma	21,627	421,613	13	19.5	5	19,552	154,000	17	7.9	16	-4	-11
Shinyanga	147,784	2,591,532	1	17.5	6	216,875	3,635,260	1	16.8	6	0	0
Kagera	43,483	869,424	10	20.0	4	46,486	813,212	9	17.5	4	1	0
Mwanza	117,613	1,710,309	2	14.5	11	145,461	1,970,901	3	13.5	12	-1	-1
Mara	62,730	1,090,007	7	17.4	8	96,260	1,682,569	5	17.5	5	2	3
Manyara	88,807	1,163,051	6	13.1	12	118,582	1,648,488	6	13.9	10	0	2
Mainland	1,115,486	16,424,574		14.7		1,482,360	20,517,615		13.8			
		Median:		14.5			Median:		13.7			

Basic Technique (3) - 2: “Seeing as per unit (II)”

Now, we can have another sample data related to the Maize production and area planted.

So, let’s see and continue the practice on the same topic.

[Sample Data 3]**Maize production (in thousand tons)**

Region	District	2005/2006	2006/2007	2007/2008*	2008/2009	2009/2010
	Arusha (Rural)	–	24.34	–	23.67	18.15
	Arusha (Urban)	6.03	1.87	–	0.76	4.44
	Karatu	67.39	36.68	–	35.00	59.16
	Longido	3.68	1.00	–	–	1.47
	Meru	–	46.22	–	33.38	21.29
	Monduli	14.29	12.81	–	3.89	16.55
	Ngorongoro	18.15	21.88	–	5.63	22.90
Arusha	Total	109.53	144.80	–	102.32	143.95
National	Total	3,423.03	3,302.06	–	3,326.20	4,733.07

Maize Area Planted (in thousand hectares)

Region	District	2005/2006	2006/2007	2007/2008*	2008/2009	2009/2010
	Arusha (Rural)	–	13.62	–	9.55	11.10
	Arusha (Urban)	1.78	1.57	–	1.97	1.77
	Karatu	21.39	22.36	–	23.98	31.83
	Longido	3.18	3.11	–	–	2.50
	Meru	–	27.17	–	22.52	20.99
	Monduli	8.43	11.46	–	10.49	10.56
	Ngorongoro	10.72	9.99	–	10.13	10.15
Arusha	Total	45.50	89.29	–	78.63	88.90
National	Total	2,570.99	2,600.35	–	2,961.33	3,050.71

* National Sample Census of Agriculture 2007/08

Note: In advance of data analysis, we will not include 2007/08’s data, since it has been captured from another data source, compared to the other years.

Data Source: “Basic Data Agriculture and Cooperative Sector 2005/06 – 2009/2010 Tanzania Mainland”

[Analytic Procedure] Making up the value of yield (“production per area”).

1. **Calculate** “yield” for each district, region and national, dividing “Maize production” by “Maize Area planted”.
2. **Question** now that you are wondering how you can handle the cells of missing data! The answer will come to you in next training session! Please do not mind continuing to carry it out for the moment.
3. **Analyze** the yield data, checking whether it is above the national average or below. If “*above*”, mark “+” just beside the figure as a pictogram. If “*below*”, mark “-”.

“What do you observe now on these marks?”

Please write down your observation:

(1)...

(2)...

[Attention!] The following regional figures are the value described in the officially published booklet as “Basic Data Agriculture and Cooperative Sector 2005/06 – 2009/2010 Tanzania Mainland”. Now you see the difference. ***“Why do not the same?”***

Maize Yield, Productivity of Land (tons/ha)

Region		2005/2006	2006/2007	2007/2008*	2008/2009	2009/2010
Arusha	Total	2.22	1.42	-	1.12	1.63

In fact these figures are all wrong! Because it came from the calculation with “average of all districts”. You can try to check it with using Excel function “AVERAGE” right now.

[Analysis Result 4] Let's see the productivity of land, i.e. yield of Maize (tons/ha).

Maize Yield, Productivity of Land (tons/ha)

Region	District	2005/2006		2006/2007		2007/08*	2008/2009		2009/2010	
		Yield	[National] Above or Below	Yield	[National] Above or Below		Yield	[National] Above or Below	Yield	[National] Above or Below
Arusha	Arusha (Rural)	*		1.79	+	*	2.48	+	1.63	+
	Arusha (Urban)	3.39	+	1.19	-	*	0.39	-	2.51	+
	Karatu	3.15	+	1.64	+	*	1.46	+	1.86	+
	Longido	1.16	-	0.32	-	*	*		0.59	-
	Meru	*		1.70	+	*	1.48	+	1.01	-
	Monduli	1.69	+	1.12	-	*	0.37	-	1.57	+
	Ngorongoro	1.69	+	2.19	+	*	0.56	-	2.26	+
Arusha Regional Level		2.41	+	1.62	+	*	1.30	+	1.62	+
Tanzania National Level		<u>1.33</u>		<u>1.27</u>		*	<u>1.12</u>		<u>1.55</u>	

+: Above the National Average,

-: Below the National Average

*: Missing Data or not applicable

* National Sample Census of Agriculture 2007/08

Target of Practice: Relative Change (%) and Imputation for Missing Data

Basic Technique (4): “Relative Change (%) to the last year, to the average of several years”

Last basic technique (3) – 2 was based from the Cross sectional viewpoints. Now, we will go on from the Time series’ point of view. It is the relative change that can show you the percentage increase to the value as compared, especially the trend between different years. Let’s do the analysis in this regards.

[Sample Data 3]

We will reuse the “Sample Data 3” for this practice. (*see p.11*)

[Analytic Procedure] Making up the relative change for 2009/10 data as compared with the value of last year’s production.

1. **Calculate** “the relative change to the last year” for region and national as well as each district, using the following formula:

$$C = ((P_1 / P_0) - 1) * 100$$

C: Relative change (%)

P₀: production in last year

P₁: production in this year

2. **Analyze** the trend of change to the last year’s production, checking whether it is increasing or decreasing. If “*increase*”, mark “*upward arrow*” as a pictogram. If “*decrease*”, mark “*downward arrow*”.

“What do you observe now on these figures and marks?”

Please write down your observation:

(1)...

(2)...

[Analysis Result 5] Let's see the trend of change in each district.

Maize production (in thousand tons)

Region	District	2008/2009	2009/2010	
			Relative Change (%) (to the last year)	Trend
	Arusha (Rural)	23.67	18.15	-23% ↘
	Arusha (Urban)	0.76	4.44	485% ↗
	Karatu	35.00	59.16	69% ↗
	Longido	-	1.47	-
	Meru	33.38	21.29	-36% ↘
	Monduli	3.89	16.55	326% ↗
	Ngorongoro	5.63	22.90	307% ↗
Arusha	Total	102.32	143.95	41% ↗
National	Total	3,326.20	4,733.07	42% ↗

Up or Down ?

[Analytic Procedure] Making up the relative change for 2009/10 data as compared with the average value of last 4 years' production.

1. **Calculate** the average value of last 4 years' production in each district.
2. **Calculate** "the relative change to the last 4 years average" for region and national as well as each district, using the same formula that you did:
3. **Analyze** the figures of "relative change to the last 4 years average", comparing it with the figures of "relative change to the last year".

"What do you observe now on the difference between both figures?"

Please write down your observation:

(1)...

(2)...

[Analysis Result 6] Let's see the difference of the relative changes between to the last year and to the 4 years average.

Maize production (in thousand tons)

Region	District	2005/2006	2006/2007	2007/08*	2008/2009	2009/2010		Average (4 years)	
						Relative Change (%) (to the last year)	Relative Change (%) (to the 4 years average)		
	Arusha (Rural)	-	24.34	*	23.67	18.15	-23%	-24%	24.01
	Arusha (Urban)	6.03	1.87	*	0.76	4.44	485%	54%	2.89
	Karatu	67.39	36.68	*	35.00	59.16	69%	28%	46.36
	Longido	3.68	1.00	*	-	1.47	-	-37%	2.34
	Meru	-	46.22	*	33.38	21.29	-36%	-47%	39.80
	Monduli	14.29	12.81	*	3.89	16.55	326%	60%	10.33
	Ngorongoro	18.15	21.88	*	5.63	22.90	307%	50%	15.22
Arusha	Total	109.53	144.80	*	102.32	143.95	41%	21%	118.88
National	Total	3,423.03	3,302.06	*	3,326.20	4,733.07	42%	41%	3350.43

Key Points: **Geographical distribution**

For various administrative purposes, the most important information is that on sub-divisional distributions within their own administrative areas. For instance, the mainland in Tanzania is divided administratively into 25 Regions and 168 Districts. The information on how the inhabitants, households, farms, livestock or crop production *etc.* is distributed in each region/district as well as how many it is, may be indispensable for their administrative purpose. Those distributions are called a “***geographical distribution***” or a “***spatial distribution***”, where analytical eyes are usually aimed as cross sectional, in contrast to the view of time series.

Advanced Technique (1): “Imputation for Missing Data”

You remember that missing value could seriously affect the result of aggregated data on the both regional and national levels, through the observation of the Sample Data 3. In fact such an underestimation used to be happened in doing sum up so widely. So that now we need to learn how to handle the missing data.

[Sample Data 4]

Maize production (in thousand tons)

Region	District	2004/2005	2005/2006	2006/2007	Relative Change (%) (to the last year)
	Arusha (Rural)	–	–	24.34	
	Arusha (Urban)	1.00	6.03	1.87	
	Karatu	11.00	67.39	36.68	
	Longido	–	3.68	1.00	
	Meru	–	–	46.22	
	Monduli	6.50	14.29	12.81	
	Ngorongoro	19.40	18.15	21.88	
	Arumeru	15.2			
Arusha	Total	53.10	109.53	144.80	32%

Attention! : The figure of regional total in 2005/06 has been apparently underestimated, due to the missing data of two districts “Arusha Rural” and “Meru”. So that the relative change on the regional total in 2006/07 has also been wrong as an overestimation.

[Analytic Procedure] Making up the relative change again.

1. **Calculate** “the relative change to the last year” for each district, following the same as last analytic procedure.
2. **Analyze** the trend of change to the last year’s production, checking whether it is increasing or decreasing. If “increase”, mark “upward arrow” as a pictogram. If “decrease”, mark “downward arrow”.

“What do you see and feel the trend of regional total as “upward”, while most arrows of districts are showing downward?”

[Analysis Result 7]

Maize production (in thousand tons)

Region	District	2005/2006	2006/2007	
			Relative Change (%) (to the last year)	Trend
	Arusha (Rural)	–	24.34	–
	Arusha (Urban)	6.03	1.87	–69% ↓
	Karatu	67.39	36.68	–46% ↓
	Longido	3.68	1.00	–73% ↓
	Meru	–	46.22	–
	Monduli	14.29	12.81	–10% ↓
	Ngorongoro	18.15	21.88	21% ↗
Arusha	Total	109.53	144.80	32% ↗

Up or Down

[Imputation Procedure]

1. Calculate the composition of the missing district data in previous year (2004/05) firstly.
2. Apply the previous year's composition to the value in this year (2005/06).
3. Calculate the missing production value in this year, using the following formula:

$$P_i = R_i / (1 - R_i) * P_{total}$$

P_i : the district "i"’s production to be imputed

P_{total} : initial value of total production in region

R_i : the district "i"’s composition in last year

4. Calculate the regional total production, and revise it.

“How do you feel the difference between before imputation and after?”

[Imputation Result]**Maize production (in thousand tons)**

		2004/2005		2005/2006		2006/2007	
Region	District	Compsition		Compsition		Relative Change (%) (to the last year)	
	Arusha (Rural)	*		—		24.34	
	Arusha (Urban)	1.00		6.03	4%	1.87	-69%
	Karatu	11.00		67.39	44%	36.68	-46%
	Longido	*		3.68	2%	1.00	-73%
	Meru	*		—		46.22	
	Monduli	6.50		14.29	9%	12.81	-10%
	Ngorongoro	19.40		18.15	12%	21.88	21%
	Arumeru	15.2	29%	43.93	29%	70.56	61%
Arusha	Total	53.10		109.53 153.45		144.80	32% -6%

*Impute based on the "proportion"

[Exercise]

Impute the value of area planted as same procedure as you did. Sample data is as follow:

Maize Area Planted (in thousand hectares)		2004/2005	2005/2006	2006/2007
Region	District			
	Arusha (Rural)	–	–	13.62
	Arusha (Urban)	1.60	1.78	1.57
	Karatu	25.10	21.39	22.36
	Longido	–	3.18	3.11
	Meru	–	–	27.17
	Monduli	5.70	8.43	11.46
	Ngorongoro	12.00	10.72	9.99
	Arumeru	19.00		
Arusha	Total	63.40	45.50	89.29

Target of Practice: Measuring changes over time interval; Inter-statistical survey's growth

Advanced Technique (2): “Continuous Annual rate of population growth”

One of fundamental indicators to measure the growth of livestock population is the annual rate of change of its total size during the intervening period. For this purpose, we need only two numbers of a population at two different dates, at the beginning of the period and at the end, of two Sample Censuses of Agriculture.

Continuous annual rate of population growth (%):

This method is usually used in practice, generally described as “**average annual growth rate**”.

The population at later date, Q_1 , can be defined as follows in relation to the population at earlier date, Q_0 , taking “ r ” as the annual rate of growth and “ n ” as the exact number of years between time 0 and 1:

$$Q_1 = Q_0 * e^{rn}$$

$$e^{rn} = Q_1 / Q_0$$

$$r = \text{Ln} (Q_1 / Q_0) / n$$

where “Ln” is natural logarithm, “e” is base of natural logarithm.

[Sample Data 1]

We will reuse the “Sample Data 1” for this practice. (*see p.3*)

[Calculation Procedure]

Calculate Continuous annual rate of population growth for Cattle between 2003 and 2008, using EXCEL function “*LN(value)*” for the calculation of natural logarithm.

[Calculation]

Q_{2003} : population of cattle in 2003,

Q_{2008} : population of cattle in 2008,

Years: the number of years during Survey's year: $n = 2008 - 2003 = 5$

Exact average annual growth rate during the 2003 – 2008 (%) in nation can be calculated from the following way:

$$Q_{2008} / Q_{2003} = e^{nr}$$

Where “n” denotes number of years between two surveys, and “r” does average annual growth rate.

$$\begin{aligned} r &= \text{Ln}(Q_{2008} / Q_{2003}) / n * 100 = \\ &= \text{Ln}(20,517,615 / 16,424,574) / 5 * 100 = 4.45 (\%) \end{aligned}$$

A few illustrations are given in the following to show the practical application of annual rate of population growth. Now we may compute how many the population will be in the following years by means of extrapolation or interpolation.

(1) Population as of 2014 is denoted as Q_{2014} (*“Extrapolation”*)

$$n \text{ (the number of years)} = 2014 - 2008 = 6$$

$$rn = 0.0445 * 6 = 0.267$$

$$Q_{2014} = Q_{2008} e^{rn} = 20,517,615 e^{0.267}$$

$$= 20,517,615 * 1.30604 = \underline{26,796,835}$$

Where using EXCEL function “*exp(value)*” for the exponential calculation of “ $e^{0.267}$ ”.

(2) Population as of 2006 is denoted as Q_{2006} (*“Interpolation”*)

$$n \text{ (the number of years)} = 2006 - 2008 = -2$$

$$rn = 0.0445 * (-2) = -0.089$$

$$Q_{2006} = Q_{2008} e^{rn} = 20,517,615 e^{-0.089}$$

$$= 20,517,615 * 0.914846 = \underline{18,770,449}$$

[Calculation Result]			
Region	Oct. 2003 Number of Cattle (indigenous)	Oct. 2008 Number of Cattle (indigenous)	Annual Increase Rate
Dodoma	1,025,388	1,166,715	2.58%
Arusha	1,532,103	1,716,514	2.27%
Kilimanjaro	351,191	321,171	-1.79%
Tanga	350,210	688,114	13.51%
Morogoro	455,985	628,475	6.42%
Pwani	110,360	225,610	14.30%
Dar es salaam	4,660	6,108	5.41%
Lindi	2,019	26,450	51.45%
Mtwara	16,383	17,415	1.22%
Ruvuma	105,884	61,768	-10.78%
Iringa	401,773	459,275	2.68%
Mbeya	898,050	787,912	-2.62%
Singida	1,255,118	1,584,313	4.66%
Tabora	1,566,169	2,123,645	6.09%
Rukwa	503,345	799,700	9.26%
Kigoma	421,613	154,000	-20.14%
Shinyanga	2,591,532	3,635,260	6.77%
Kagera	869,424	813,212	-1.34%
Mwanza	1,710,309	1,970,901	2.84%
Mara	1,090,007	1,682,569	8.68%
Manyara	1,163,051	1,648,488	6.98%
Mainland	16,424,574	20,517,615	4.45%

[End]

SUPPORTED BY TECHNICAL COOPERATION IN CAPACITY DEVELOPMENT FOR
ASDP M&E SYSTEM PHASE 2

Report Writing Assignment with Data Analysis

ASDP M&E Thematic Working Group

April, 2014

Assignment

Here is the instruction for a report writing assignment with data analysis. Following the steps below, please try to do your own analytical work and make a short report.

Reference data sets for your assignment:

1-(1). Basic Data Agriculture and Cooperative Sector 2005/06 – 2009/2010, Tanzania Mainland

(File name: Agriculture Basic Data 2005_06-2009_10_Crop-Production Tables.xls)

1-(2). Basic Data Agriculture and Cooperative Sector 1998/99 – 2004/2005 Chapter 4 Food Crop Production, Area and Yield, Tanzania Mainland

(File name:

Agriculture Basic Data 1998-2004 Food Crop Production_Area and Yield.pdf)

2. CountrySTAT, 2002/03-2008/09 Number of Live Animals in mainland by Year, Region, Type of Livestock

(File name:

CountrySTAT_Number of Live Animals in mainland_(215S1PD035).xls)

Of course, you can use other data sources which you have already had or known. For example you could download the data from “*LGMD2i*” as you wish.

[Step 1] Clarifying your view and focusing on your target:

“What do you throw light in your analysis?”

First of all, you will consider what you wish to verify through your analytical investigation, and hope to gain in your conclusion.

[Step 2] Preparing Data:

“Which data do you use, and how can you obtain?”

Secondly, you will check whether data fitting for your analysis are available or not. In addition, you need to find it out that there is no missing value in time series of the years' period as well as on the cross session of geographical categories. If there is, try to impute it by a proper manner.

[Step 3] Doing Analysis:

“How do you analyze data?”

At third, referring the techniques that we have learned now, find the appropriate way for your analytical work.

[Step 4] Writing Report:

“What are your findings of the result?”

Finally, the findings of your analysis should be presented in written form with graphs, tables and statistical figures. Note that the analytical investigation and findings are outlined in a logical sequence.

TIPS:

- * Don't use long, ramblings sentences or explanations. Write simply and clearly.
- * Don't add your report with irrelevant information. Focus on the topic and the data and write in a non-personal way.

For your reference, examples of the table in analysis are shown below.

Annual Livestock population	2009/10	2010/11	2011/12
Cattle			
Goat			
Sheep			
....			

Annual cereal production	Maize		Rice	
	Area (Ha)	Production (ton)	Area (Ha)	Production (ton)
2010/11				
2011/12				
....				

Monthly livestock production	Beef (kg)	Goat meat (kg)	Milk (litre)	Egg (piece)
July 2012				
August 2012				
....				

Monthly meat production	Production (kg)	Average price (Tsh)
July 2012		
August 2012		
....		

Monthly rain fall	2011		2012	
	No. of Days	MM	No. of Days	MM
January				
February				
...				

Data Capture from LGMD2i

For the regional or district level data, data analysis is easily done by utilizing the “Figure Analysis” function in LGMD2i. See the LGMD2i Operating Manual on “Figure Analysis” to design tables and export it to Excel files. If tables/items are not listed in “Figure Analysis,” export the report to Excel and analyze with Excel functions.

1. At Figure Analysis of LGMD2i, select “variables” in row and time in column. Click Get XML.

The screenshot shows the LGMD2i software interface. On the left is a navigation tree with categories like Data entry, Outputs, System Utilities, Database Management, and Security. The main window is titled 'production' and contains a search bar and a list of search results. The selected result is 'Production quantity (ton) achieved to date - Quarterly report, page 01, page 02, page 03, table 01'. Below this, there are dropdown menus for 'Crops' (set to 'Show in columns'), 'Geographical areas' (set to 'District' and 'Morogoro Rural'), and 'Time periods' (set to 'Show in rows'). There are buttons for 'Get XML' and 'Show in Grid'. At the bottom, a table displays the production data for Morogoro Rural.

Period	Maize (cereal)	Paddy (cereal)	Sorghum (cereal)	Bulrush Millet (cereal)	Finger Millet (cereal)	Wheat (cereal)
01 Jul 2009 to 3...	300	120	85	0	20	0
01 Oct 2009 to 3...	10470	240	350	0	30	0
01 Jan 2010 to 3...	1580	400	450	0	0	0
01 Apr 2010 to 3...	21668	15285	2981	0	60	0
01 Jul 2010 to 3...	0	0	0	0	0	0

2. Open the XML file with Excel. Select the area you want to create a chart.

ANNEX.**Work sheet: Training of Data Use and Analysis****Name:****ABC XYZ****1. Clarifying your view and focusing on your target, - “What do you throw light in your analysis?”****(For example,)**

The purpose of this analytical work is to identify which crop is higher productivity. Then, time series data will track the change of trend for each crop’s productivity as compared.

2. Preparing Data, - “Which data do you use, and how can you obtain?”**(For example,)**

The source of data in this analysis is the Statistical Abstract published by National Bureau of Statistics (NBS), while data source came from the Ministry of Agriculture, Food Security and Cooperatives (MAFC).

3. Doing Analysis, - “How do you analyze data?”**(For example,)**

The main procedure is to calculate the productivity through dividing food crop production (thousand tons) by area planted/harvested of crop (thousand hectares). Food crops composed of maize, paddy, wheat, millet, sorghum and cassava.

Sample Report

Comparison for the Food Crop Productivities in the Tanzania

1. Introduction:

The United Republic of Tanzania at present is predominantly an agrarian country. It is, therefore, so important to nurture the sound growth of agriculture while encouraging a balanced development of other sectors of economy is necessary.

In this regards, available data in the Statistical Abstract published by National Bureau of Statistics (NBS), while data source came from the Ministry of Agriculture, Food Security and Cooperatives (MAFC), will be analyzed to throw light on the productivities of several food crops.

In conclusion, the most productive food crop will be identified through the comparison analysis.

2. Production of food crops:

Production of food crops in Mainland has risen considerably in the past 9 years (*see*, Table 2.1). The sum of the production of 6 major crops rose from 3,944 tons in 1994 to 7,169 tons in 2002. The increase during the period is 81.8 percent (annual average of 7.5 percent), which is more than double the annual growth rate of general population of 2.9 percent between 1988 and 2002.

The most important food crops in Mainland in 2002 were Maize (48.8 percent), Cassava (29.2 percent) and Paddy (14.9 percent). In addition, production of sorghum, millet and wheat is also recorded. If these six types of crops are combined, the increase in

production was from 3,944 tons in 1994 to 7,169 tons in 2002, with the period growth rate of 82 percent as quoted earlier. During the period, the production of paddy and maize increased rather dramatically, 5.5 times and 2.4 times respectively, while that of millet declined by three quarters.

Table 2.1 Production of Food Crops in Tanzania Mainland, 1994-2002
(Quantities in 1,000 tonnes)

a. Food crop production (in thousand tons)

Food crops	1994	1995	1996	1997	1998	1999	2000	2001	2002
Maize	1,458	2,875	2,822	2,386	2,073	2,848	2,870	3,348	3,495
Paddy	192	517	495	413	847	439	443	1,010	1,054
Wheat	44	47	49	51	53	68	61	65	68
Millet	295	222	269	195	50	76	72	74	77
Sorghum	258	443	360	449	249	363	365	364	380
Cassava	1,697	1,812	1,873	1,936	2,048	2,187	2,118	2,007	2,095
Total	3,944	5,916	5,868	5,430	5,320	5,981	5,929	6,868	7,169

Source: Ministry of Agriculture/National Bureau of Statistics

c. Food crop production index

Food crops	1994	1995	1996	1997	1998	1999	2000	2001	2002
Maize	100	197	194	164	142	195	197	230	240
Paddy	100	269	258	215	441	229	231	526	549
Wheat	100	107	111	116	120	155	139	148	155
Millet	100	75	91	66	17	26	24	25	26
Sorghum	100	172	140	174	97	141	141	141	147
Cassava	100	107	110	114	121	129	125	118	123
Total	100	150	149	138	135	152	150	174	182

b. Food crop production composition

Food crops	1994	1995	1996	1997	1998	1999	2000	2001	2002
Maize	37.0	48.6	48.1	43.9	39.0	47.6	48.4	48.7	48.8
Paddy	4.9	8.7	8.4	7.6	15.9	7.3	7.5	14.7	14.7
Wheat	1.1	0.8	0.8	0.9	1.0	1.1	1.0	0.9	0.9
Millet	7.5	3.8	4.6	3.6	0.9	1.3	1.2	1.1	1.1
Sorghum	6.5	7.5	6.1	8.3	4.7	6.1	6.2	5.3	5.3
Cassava	43.0	30.6	31.9	35.6	38.5	36.6	35.7	29.2	29.2
Total	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0

3. Cultivated land area:

According to data mentioned in Table 3.1, the cultivated areas had nearly doubled with a rate of 91 percent in 2002 compared to 1994. It shows that, the area of cultivated land expanded very rapidly, by 128 percent, from 1994 to 2000, followed by a slight decline after that. More than half of the cultivated areas are used for maize production (55.6 percent), followed by cassava (14.7 percent), sorghum (12.7 percent) and paddy (12.7 percent) as of 2002.

The extent of cultivation, of course, depends not only the size of land but also many other factors like population, topology, quality of soil, climate, rainfall, mountains, desert, etc, but a recent steady expansion of cultivated land areas in this country seems to indicate a possibility of plentiful further development of agriculture on this land.

Table 3.1 Areas Planted/harvested of Crops in Tanzania Mainland, 1994-2002
(Quantities in 1,000 hectares)

a. Areas Planted / Harvested of Crops

Food crops	1994	1995	1996	1997	1998	1999	2000	2001	2002
Maize	1,203	1,368	1,580	2,391	3,359	3,637	3,701	2,622	2,737
Paddy	162	274	285	343	738	602	606	604	605
Wheat	35	55	60	57	99	57	54	58	61
Millet	275	208	231	186	265	174	175	175	175
Sorghum	212	389	320	523	692	617	625	621	623
Cassava	693	585	588	664	745	656	731	693	723
Total	2,580	2,879	3,064	4,164	5,898	5,743	5,892	4,773	4,924

Source: Ministry of Agriculture/National Bureau of Statistics

b. Index of Changes in Areas Planted / Harvested of Crops

Food crops	1994	1995	1996	1997	1998	1999	2000	2001	2002
Maize	100	114	131	199	279	302	308	218	228
Paddy	100	169	176	212	456	372	374	373	373
Wheat	100	157	171	163	283	163	154	166	174
Millet	100	76	84	68	96	63	64	64	64
Sorghum	100	183	151	247	326	291	295	293	294
Cassava	100	84	85	96	108	95	105	100	104
Total	100	112	119	161	229	223	228	185	191

c. Composition of Areas Planted / Harvested by Kinds of Crops

Food crops	1994	1995	1996	1997	1998	1999	2000	2001	2002
Maize	46.6	47.5	51.6	57.4	57.0	63.3	62.8	54.9	55.6
Paddy	6.3	9.5	9.3	8.2	12.5	10.5	10.3	12.7	12.3
Wheat	1.4	1.9	2.0	1.4	1.7	1.0	0.9	1.2	1.2
Millet	10.7	7.2	7.5	4.5	4.5	3.0	3.0	3.7	3.6
Sorghum	8.2	13.5	10.4	12.6	11.7	10.7	10.6	13.0	12.7
Cassava	26.9	20.3	19.2	15.9	12.6	11.4	12.4	14.5	14.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

4. Conclusion:

If a productivity of land is measured by the weight of crops produced per hectare of cultivated land, it was highest when cassava is planted (2.90 tons par hectare), followed by paddy (1.74 tons) and maize (1.28 tons). This means that if you want to increase maize and cassava productions for a same amount, you have to have more land for maize than cassava.

Of course, this productivity measure is very primitive. To get more useful data on productivity, the value or the calorie of each crop must also be taken into account.

d. Productivity of Land: Production par Areas Planted / Harvested by Kinds of Crops

Food crops	1994	1995	1996	1997	1998	1999	2000	2001	2002
Maize	1.21	2.10	1.79	1.00	0.62	0.78	0.78	1.28	1.28
Paddy	1.19	1.89	1.74	1.20	1.15	0.73	0.73	1.67	1.74
Wheat	1.26	0.85	0.82	0.89	0.54	1.19	1.13	1.12	1.11
Millet	1.07	1.07	1.16	1.05	0.19	0.44	0.41	0.42	0.44
Sorghum	1.22	1.14	1.13	0.86	0.36	0.59	0.58	0.59	0.61
Cassava	2.45	3.10	3.19	2.92	2.75	3.33	2.90	2.90	2.90
Total	1.53	2.05	1.92	1.30	0.90	1.04	1.01	1.44	1.46

[End]

SUPPORTED BY TECHNICAL COOPERATION IN CAPACITY DEVELOPMENT
FOR ASDP M&E SYSTEM PHASE 2

Introduction to Graphical Presentation

ASDP M&E Thematic Working Group

April, 2014

1. [Bar chart] (p2)

- Bar Chart shows each variable separately as a bar

2. [Line graph] (p3)

- Line Graph shows a bar chart as line

Note: This graph is generally used when data shows some changes of time series like daily, weekly, monthly, yearly, etc.

3. [Pie chart] (p4)

- Pie Chart shows the percentages of each class as areas

Note: This chart emphasizes both “the name of class or item” and “percentage”, so that anyone can easily understand the composition.

4. [Pictogram] (p5)

- Pictogram shows the quantities of each class or item as an imaginable picture

Key Points:

- 1.To show the data in a compact form**
- 2.To give a good overall picture**

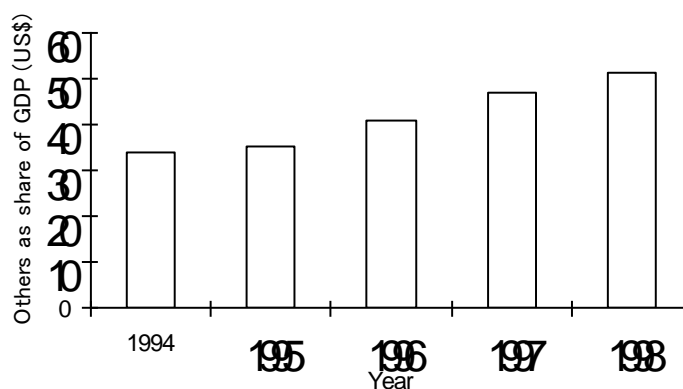
<Bar Chart>

Example for the Bar Chart

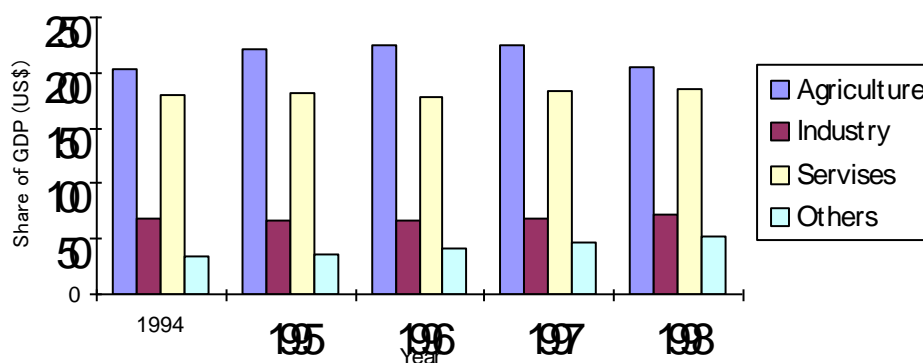
GDP per capita (US\$) of Tanzania

Year	1994	1995	1996	1997	1998
GDP per capita (US\$)	485	503	511	522	513
Agriculture as share of GDP (US\$)	204	221	225	224	205
Industry as share of GDP (US\$)	68	66	66	68	72
Services as share of GDP (US\$)	179	181	179	183	185
Others as share of GDP (US\$)	34	35	41	47	51

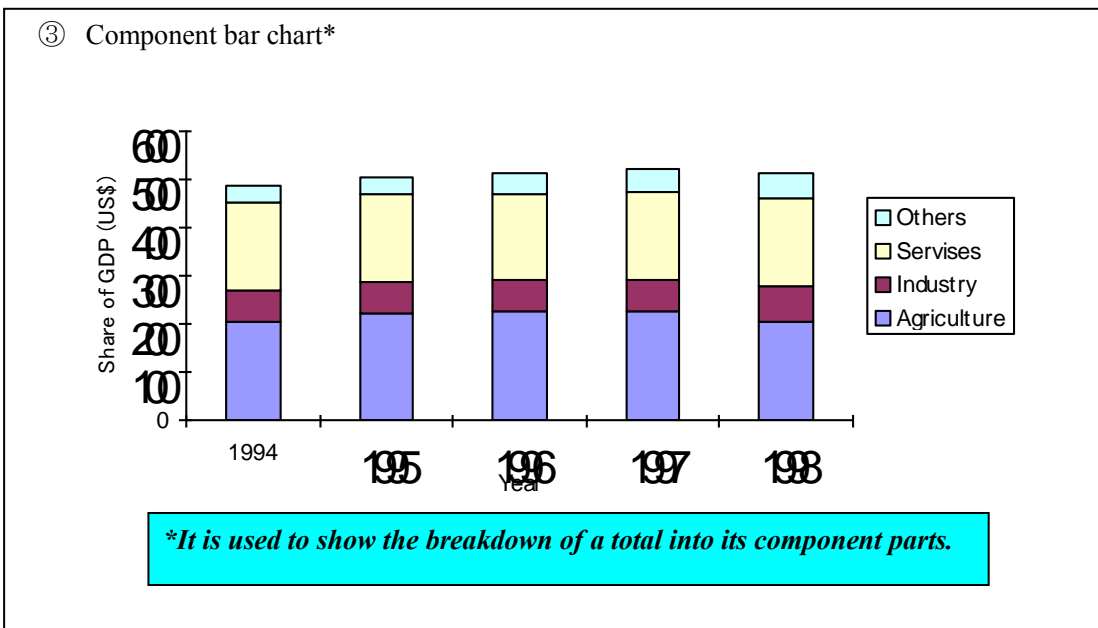
① Single bar chart



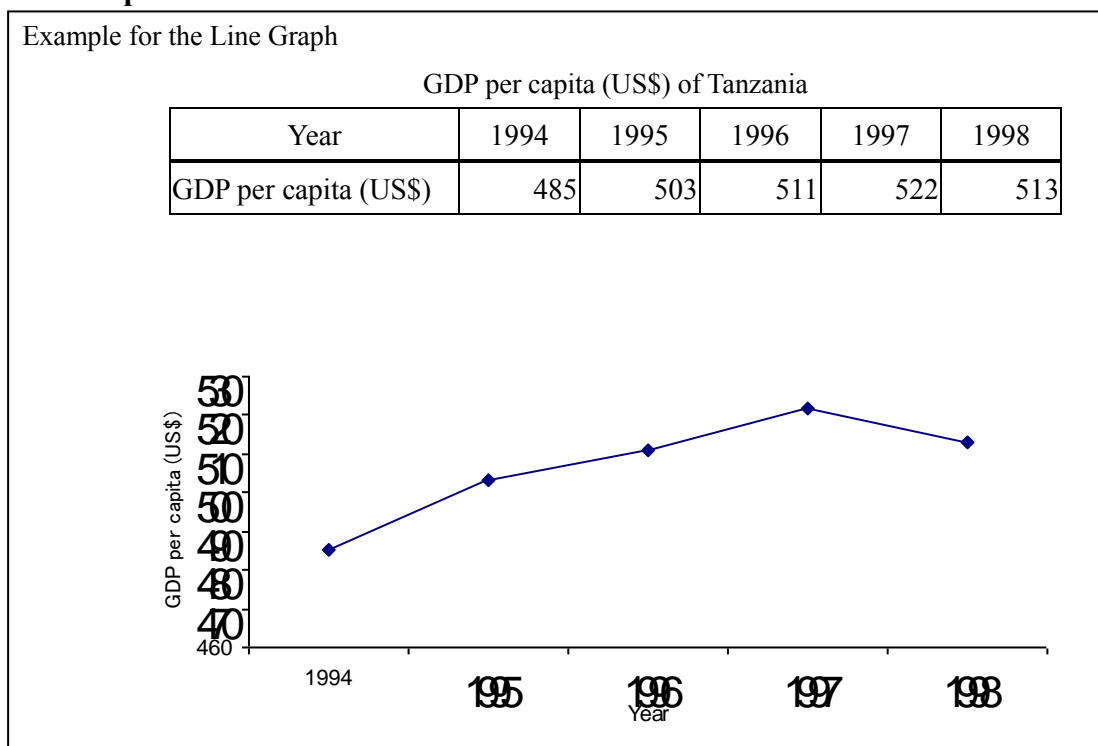
② Compound bar chart*



**Two or more bars are drawn for each item.*



<Line Graph>

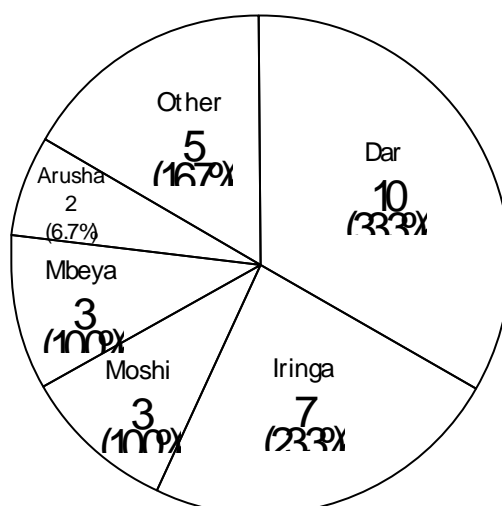


<Pie Chart>

Example for the Pie Chart

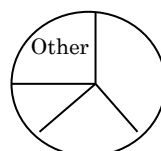
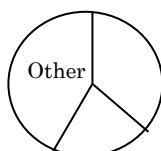
<i>Items</i>	<i>Variable</i>
Dar	10
Iringa	7
Moshi	3
Mbeya	3
Arusha	2
Other	5
Total	30

Pie chart

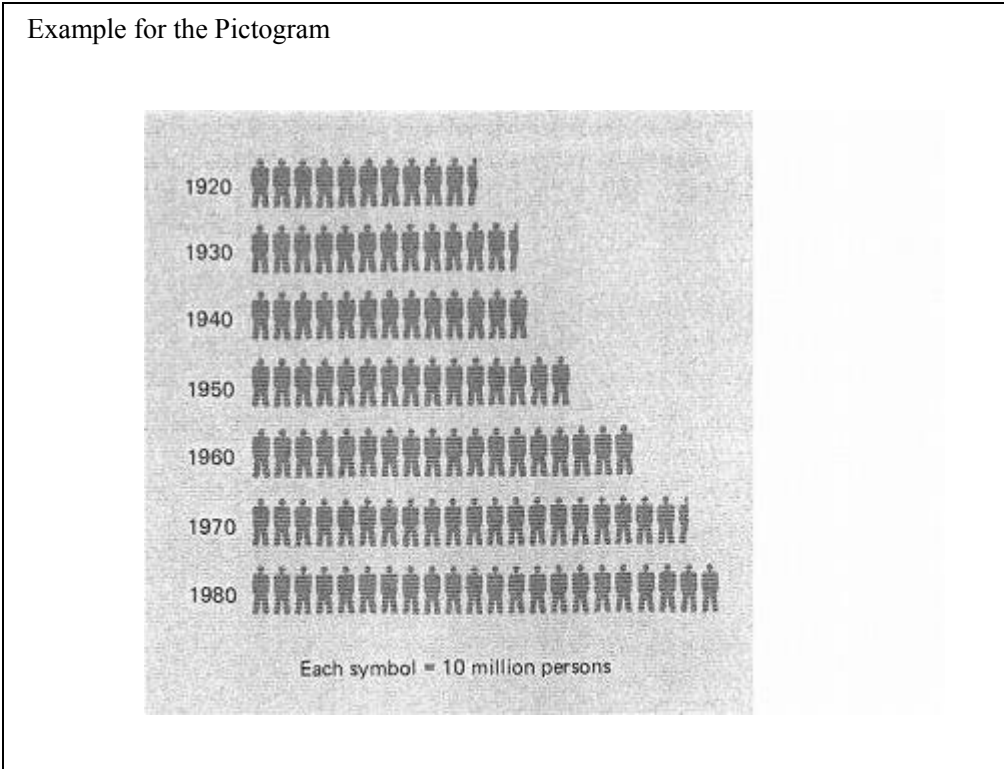
***Tips for the Pie Chart**

If the categorical item includes "other," "unknown," or "unidentified," these items are put at last even if these are greater than another.

e.g.



<Pictogram>

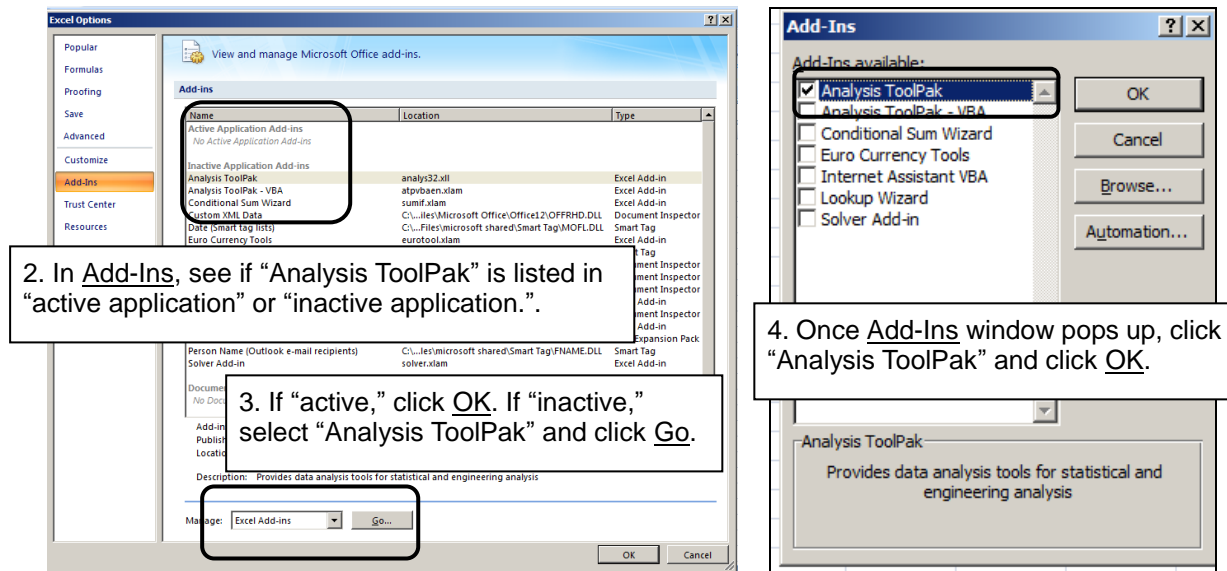
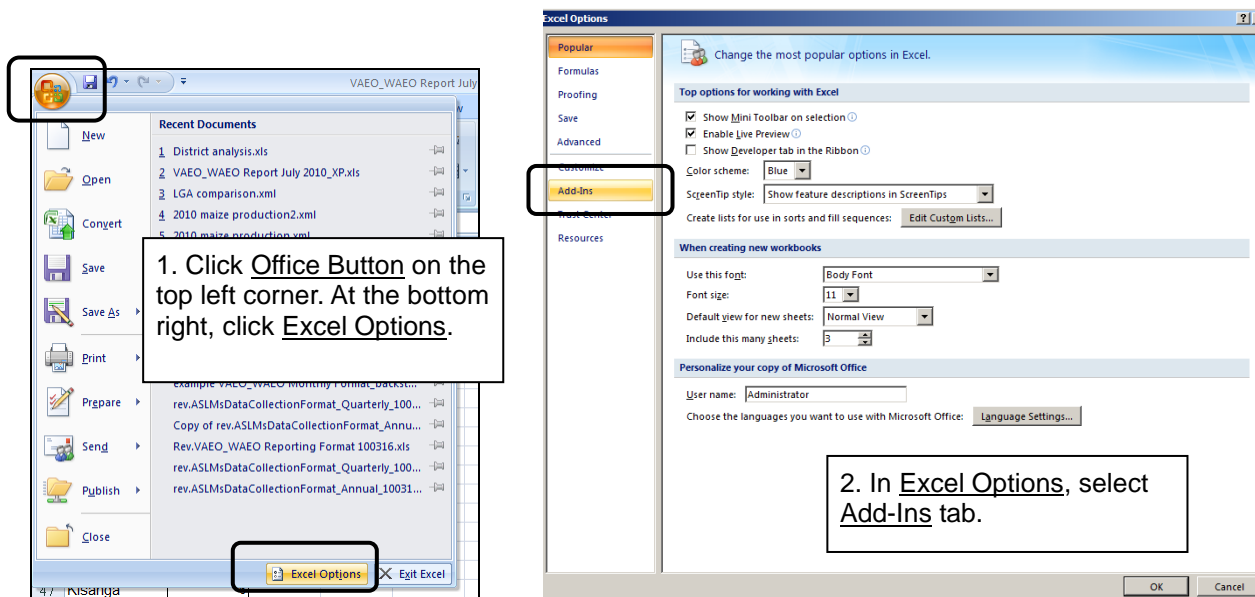


[End]

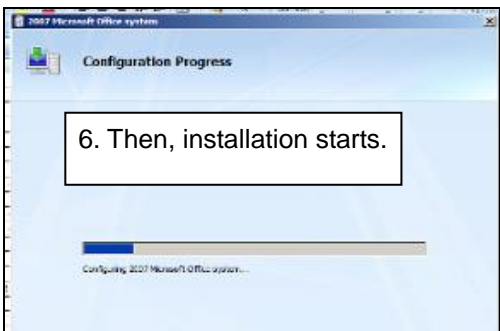
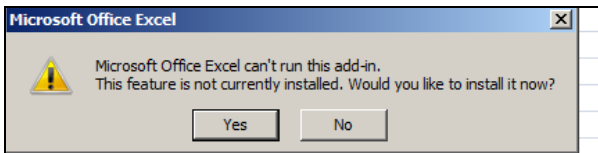
ANNEX.

Activation of “Analysis Tool Pack”

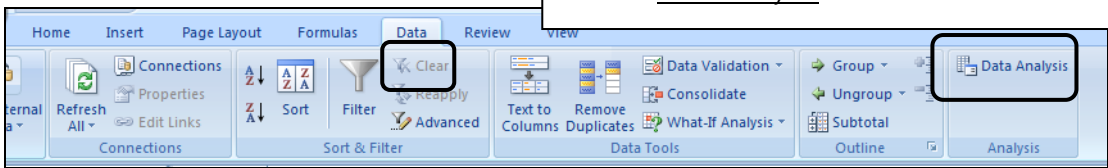
In order to create histogram which helps you to analyze distribution of data, your Excel needs to have “Analysis Tool Pack” activated. If you do not have it, take the following steps.



5. You will be asked whether to install this feature. Click Yes.



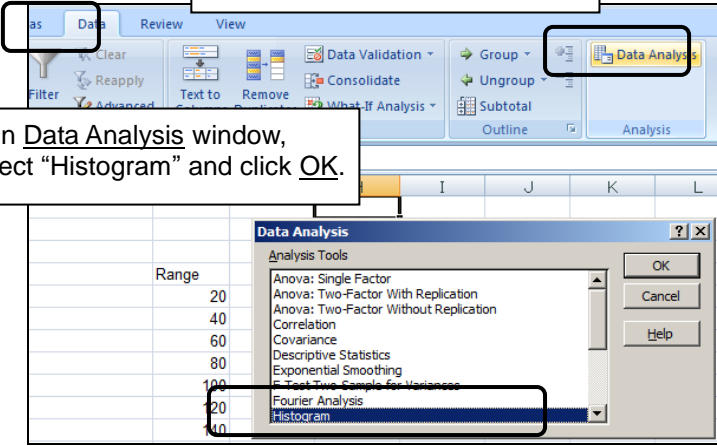
7. Once installation is completed, go to Data and see Data Analysis is shown in tool bar.



Now, let's create histogram which helps you analyze distribution of data.

8. Go to Data on the menu bar and select Data Analysis. *

9. In Data Analysis window, select "Histogram" and click OK.





AGRICULTURAL ROUTINE DATA SYSTEM WEB APPLICATION DEVELOPMENT PROJECT

User Manual (Version 2)

PREPARED AND SUBMITTED BY:
PROJECT TEAM
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
UNIVERSITY OF DAR ES SALAAM
FOR
JICA TECHNICAL COOPERATION PROJECT
FOR CAPACITY DEVELOPMENT FOR THE ASDP MONITORING AND
EVALUATION SYSTEM, PHASE II
MINISTRY OF AGRICULTURE, FOOD SECURITY, AND COOPERATIVES

February 13, 2015



Revision History

Date	Version	Author	Section	Amendment
June 11, 2014	Zero	UDSM	All	n/a
November 24, 2014	Version 1	UDSM	1.3.2, 3.1,3.2, 3.4, 3.6, 3.7, 3.8, 3.8.1,3.8.3, 3.11	Help desk contact added to section 1.3.2, 3.1 and 3.2 contents updated as per improvement made, Section 3.4, 3.6,3.7, 3.8.3 and 3.11 are new contents, 3.8 and 3.8.1 report overview added
February 13, 2015	Version 2	UDSM	1,2, 3.3-3.6	Section 3.3 - 3.6 are new contents and section 1&2 have been revised to include A ARDS-LGMD2 Web Based Data Entry that has been integrated to the portal. Minor changes have been made on other sections too.

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1 General Information

1.1 System Overview

The Agricultural Routine Data System (ARDS) Web Portal was primarily intended to provide functions where ARDS data from the LGMD2/2i database can be uploaded at the portal, viewed, analyzed, and downloaded for further processing. The ARDS Web Portal aims to enable sharing of the ARDS data broadly among all relevant Local Government Authorities (LGAs) and Monitoring & Evaluation Units of Agriculture Sector Leading Ministries (ASLMs). Such that, officers of authorities can easily access and download the data for their specific demands regardless their computer has LGMD2/2i application installed. Currently, the application has been upgraded and integrated as the ARDS-LGMD2 web based data entry module of the ARDS Web Portal.

The ARDS Portal is a web-based application thus accessible through the Internet by a web browser. Users access all functions provided by the portal, including the ARDS-LGMD2 Web Based Data Entry, through friendly and intuitive interactive controls of the graphical user interface.

ARDS Web Portal can be perceived as a platform on several levels. First, the portal's key source of data is the improved ARDS-LGMD2 web based data entry, which serves as a tool for collecting ARDS data. Second, the ARDS Web Portal database is designed ground-up with flexibility in mind. Data structures such as data elements, forms and user roles can be defined completely freely through the application user interface. These make it possible for the portal to incorporate the improved ARDS-LGMD2 web based data entry while offering flexibility to accommodate future changes at the portal user interface.

Third, The ARDS Web Portal architecture and functions is broken up into separate modules. Due to the modular design of portal, it can be extended with additional modules. These modules can live side by side with the core modules of ARDS Web Portal. This is a powerful feature as it makes it possible to extend the portal with extra functionality when needed.

The application delivered in this phase is functional system in that it includes the ARDS-LGMD2 web based data entry, report, pivot table, Data Visualizer, Maps, Data Analysis, dashboard, News and Content Management System (CMS) and other maintenance tools. Functions provided by these tools will be discussed later in this document.

1.2 Authorized Use Permission

This section will provide a warning regarding unauthorized usage of the ARDS Web Portal and making unauthorized copies of data, software, reports, and documents, if applicable.

1.3 Points of Contact

1.3.1 Information

For additional information, UDSM team of ARDS Web Application Development Project can be contacted through Project coordinator: Dr. Honest Kimaro (honest_c@yahoo.com).

1.3.2 Help Desk

For further user support the M&E TWG technical team can be contacted through Mr. Raphael Sendalo, (rsendalo@yahoo.co.uk).

1.4 Organization of the Manual

The remaining sections of this manual provide system summary and explanation on how to get started with the ARDS Web Portal. General overview of the system is outlined in section 2 of this document. Section 3 provides a user guide on how to start the portal and login; how to navigate through the user interface of the portal and the ARDS-LGMD2 Web Based Data Entry; how to perform data entry, synchronization and aggregation, and data approval; how to use dashboard, data analysis, pivot table, data visualizer, GIS Map and report modules of the portal. Also, section 3 shows how a user can update his/her account information including changing of the password and finally introduces online inbuilt help.

1.5 Acronyms and Abbreviations

ARDS	Agricultural Routine Data System
ASLMs	Agricultural Sector Lead Ministries
GIS	Geographical Information System
HTTPS	Hypertext Transfer Protocol Secure
JICA	Japan International Cooperation Agency
LAN	Local Area Network
LGA	Local Government Authority
LGMD	Local Government Monitoring Database
MAFC	Ministry of Agriculture, Food Security and Cooperatives
M&E	Monitoring and Evaluation
MSSQL	Microsoft SQL Server
SDS	Software Design Specification
SRS	Software Requirement Specification
TOR	Terms of Reference
TWG	Thematic Working Group
UDSM	University of Dar es Salaam
URL	Universal Resource Locator
VAEO	Village Agricultural Extension Officer(s)
WAEO	Ward Agricultural Extension Officer(s)

2 System Summary

This section provides a general overview of the system. It outlines the uses of the system in supporting the activities of the user.

2.1 System Configuration

The Diagram below illustrate configuration of the ARDS Web Portal and its integration with the ARDS-LGMD2 web based data entry. A user can use a desktop, laptop, tablet, Personal Data Assistant (PDA), smart phone or any other device, which is running any web browser except Internet Explorer version 7 and below. The device shall be connected to the ARDS Web Portal Server either through the LAN or the Internet. A user will be required to run a web browser and provide URL of the ARDS Web Portal Server. Currently, the web browser communicate with the server using HTTP but later HTTPS will be used to encrypt data transmitted between user's web browser and the server so as to ensure confidentiality of data, in particular when a user access the server through the Internet.

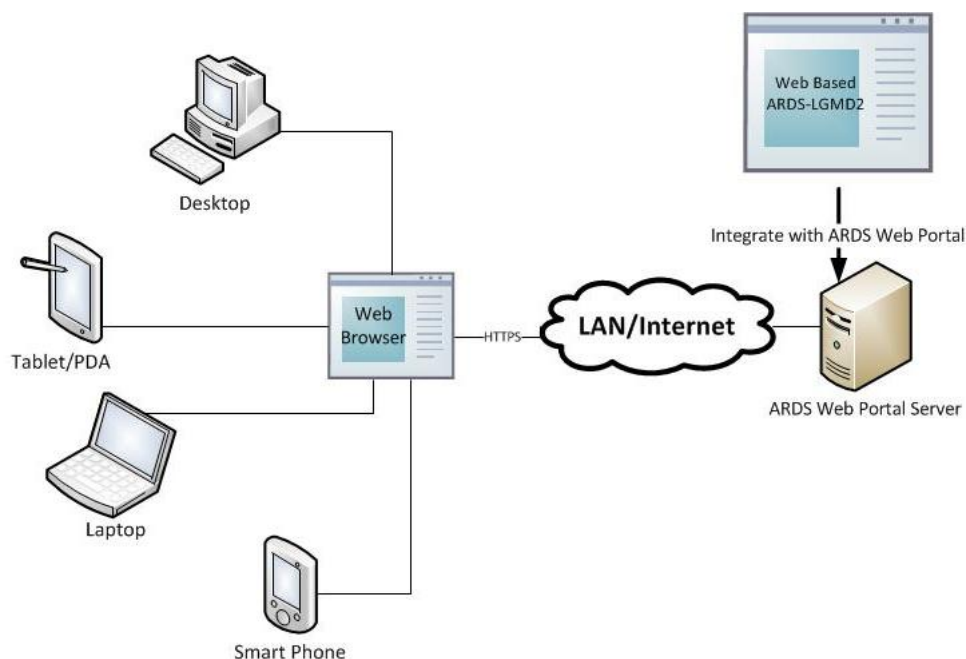


Figure 1: ARDS Web Portal Configuration

2.2 Data Flows

Major data flow in the ARDS Web Portal integrated with the ARDS-LGMD2 web based data entry are as summarized in figure 2 which involves submission of data entry forms by LGAs, checking of the reports to assess submitted data and provide feedback to LGAs when necessary by regional officers, view feedback and resubmit data correction when necessary by LGAs, approve reports when ready by regional officers as well as data utilization by ASLMs.

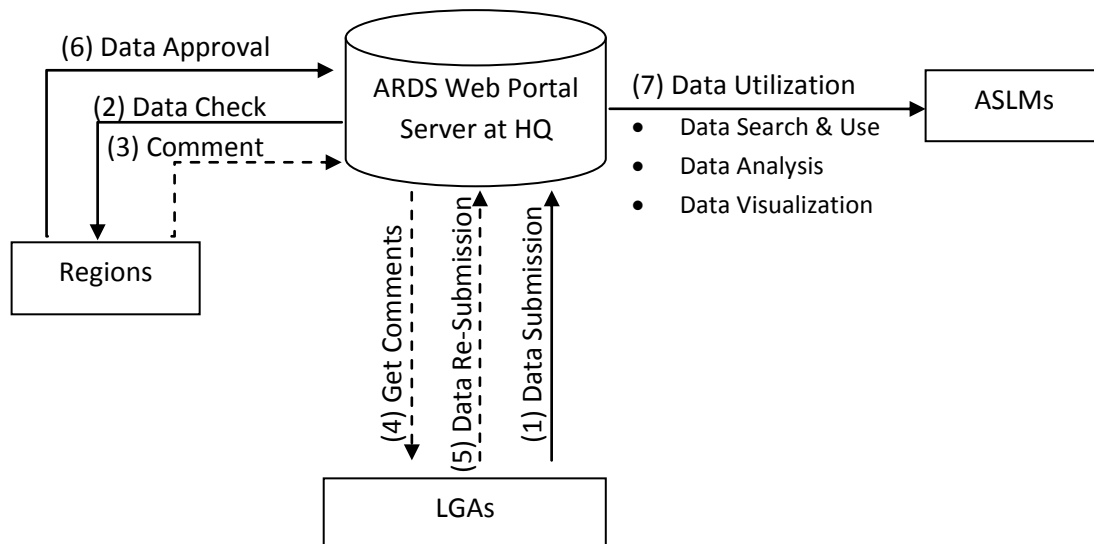


Figure 2: Diagram of Data Flow in ARDS-LGMD2 Integrated with the ARDS Portal

The ARDS data is stored in the central database of the portal so that is accessible and can be manipulated by the system modules. The Modules, which includes the ARDS-LGMD2 web based data entry, Metadata Search & Browse, Pivot Table, Data Visualize & Charting, GIS Framework, Data Analysis, Report, and Dashboard, enable a user to perform the following on the data:

- Enter ward annual target data.
- Enter prior estimate for estimating missing ward data.
- Enter monthly, quarterly, annually ward agricultural sector data from completed data collection forms (VAEO/WAEO format).
- Obtain monthly, quarterly, annual district aggregate data automatically.
- Enter quarterly, annually district agricultural sector data from completed data collection forms.
- Validate the entered data and check for various errors to enforce data quality.
- Estimate missing ward data.
- Upload the entered data, through the Internet, to the central server as they entered, or save them locally when the Internet connection goes down during data entry, and upload them to the server when connection is back.
- Import and export data and-or metadata for transferring of data between different instances of the system. Import GML data to update changes in the administrative unit's geographical coordinates.
- Print forms/reports with the data or blank forms.
- Report generation
 - Monthly, quarter and annually ward report
 - District report for monthly, quarterly and annually
 - District, regional, national integrated report for quarter and annual
- Post comments from the region about unapproved reports and-or approve report.
- View approval status, comment and edit data (if required) for final approval by the

region.

- Use an offline standalone copy in areas with no connectivity at all; export the entered data as a local file for sending to national headquarters, or another area with the Internet connectivity via a USB Key (or any external storage) or by email, so that can be imported to the central server.
- Metadata search and browse using different properties of content available in the database and in predefined categories.
- Represent and manipulate the data in pivot table based on existing dimensions such as what data, from which locality and of which period.
- Represent the data in various types of charts.
- View the data on top of a map along with thermal indicators of presented data for association of captured geographical locality.
- Create and generate various custom reports.
- Create and manage a dashboard that helps users to get an overview of important trends or performance of particular variables in charts, graphs, summary tables, maps and headlines.
- Download data from the portal to PDF, Excel, CSV, and-or XML. Print out information created by the system.

Besides, users of the ARDS Web Portal can get various news and online support through the news and online help modules respectively. Figure 3 illustrate the ARDS-LGMD2 inputs and outputs, which has been improved and integrated as a web based data entry in the ARDS Web Portal.

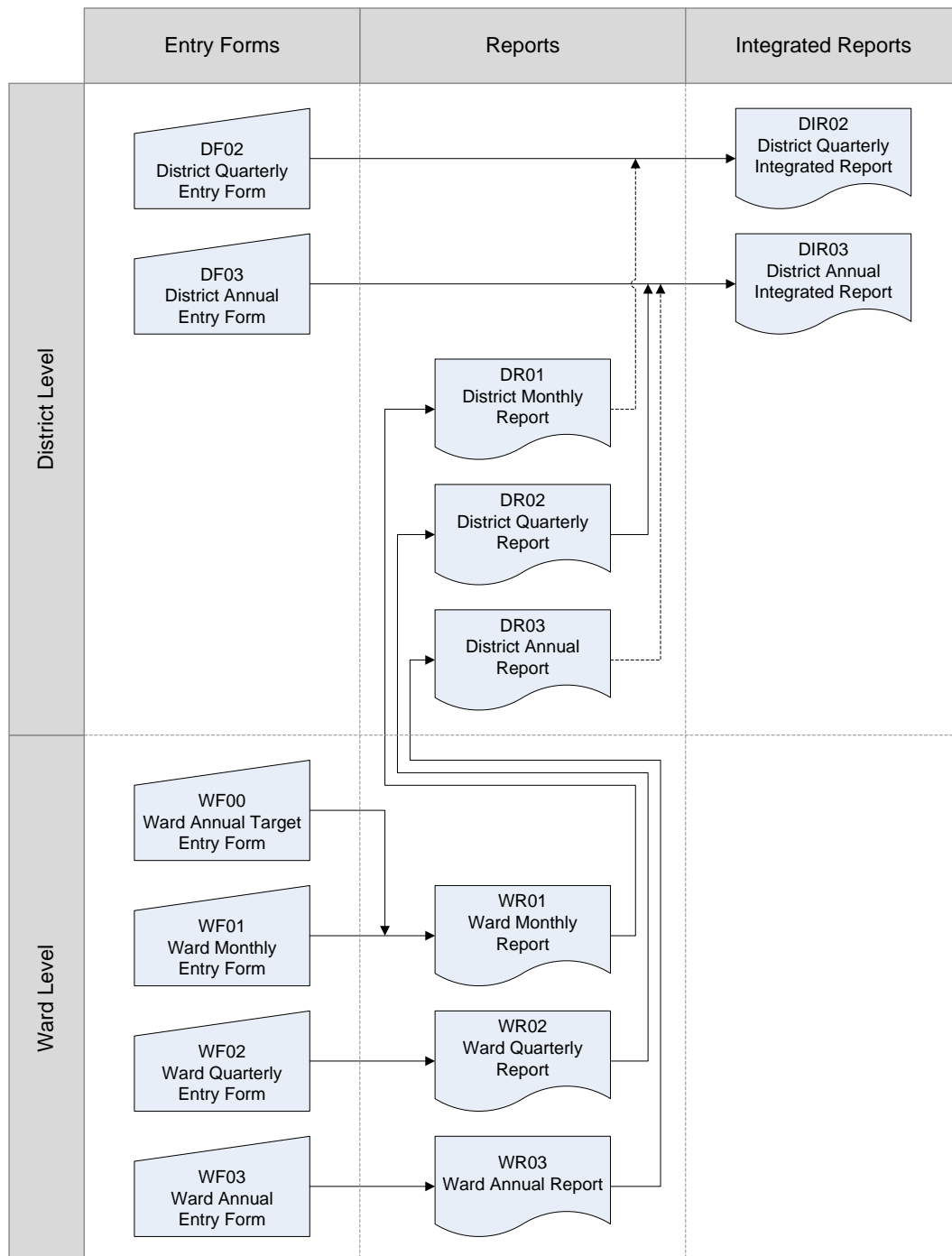


Figure 3: The summary of ARDS-LGMD2 module inputs and outputs

The Regional Integrated Reports (RIR02 and RIR03) are consolidated from the District Integrated Reports (DIR02 and DIR03). The National Integrated Reports (NIR02 and NIR03) are consolidated from the Regional Integrated Reports.

2.3 User Access Levels

Information in the ARDS is confidential. Therefore, when a user opens the portal is required to use name and password to get access to the rest of the features. The portal restricts access privilege based on user roles including administrative and normal users.

The administrative user is a super user and can carry out all activities that are supported by the portal including system maintenance and configuration activities.

The portal restricts normal users based on their information access level. Table 1 shows the current ARDS Web Portal user levels and roles. Any user account shall belong to at least one of the levels identified below and should be assigned to the respective user role(s) in the system.

Table 1: ARDS Web Portal User Level and User Roles

User Level and User Roles					
* When user use Web portal in the first time, we requested to input all information about users, such as contact number and e-mail address to prepare contact list.					
	User Level	User Group	List of <u>NOT Available</u> functions	Data accesibility for Data analysis	Remarks
1	Super User	Administrator	None (All functions are available for Administrators)	All	
2	National	TWG	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	incl. uploading .zip files from LGA
3	National	Min. Agriculture Staff	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
4	National	Min. Livestock	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
5	National	Min. Industry and Trade	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
6	National	PMO-RALG	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
7	National	Others	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
8	Region	Region	Data entry, User management, update lookup tables, update administrative unit	All	Can see other District/ Region data (can't enter other LGA data)
9	District	District	Data approval, User management, update lookup tables, update administrative unit	Within same Region	Can see other District within same Region and Region level data (not allow to enter other LGA data)
10	Others	Others	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	For e.g. JICA Expert team members, JICA, other Donors
11	Others	Trainers	User management, update lookup tables, update administrative unit	All	Functions for both District and Region, this is only for training

3 Getting Started

To start ARDS Web Portal the user opens a web browser:

- Start → All Programs → Google Chrome (Or any other browser)
- Enter URL for the ARDS Web Portal Server. For instance <http://41.59.254.77:8180> a URL to the demo server.
- Then Press ENTER. The login screen shall open

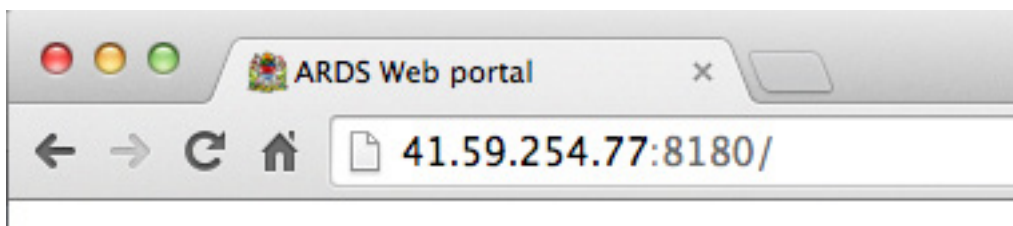


Figure 4: Entering URL to the Web Browser

3.1 Login Screen

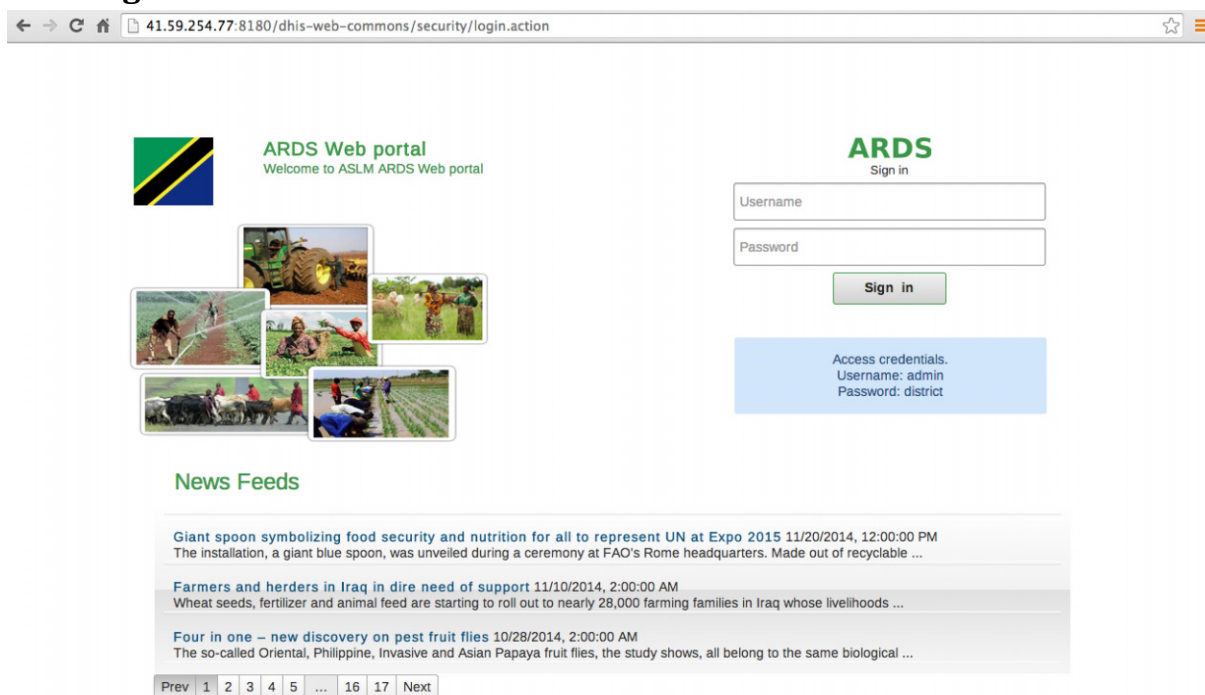


Figure 5: Login Screen

- If you are interested to view agricultural related news before login go to the News Feeds panel. Here you will see a list of news headings and when you select one by a single left click a new tab will open containing the selected news in detail from its original source (website).
- You may use “Prev” and “Next” buttons of the menu below the news feed to navigate back and forth of the list of available news respectively. The numbered menus shows available pages containing list of news, you may use the menu to go to a specific page.

- To login to the ARDS Web Portal, type your username and password correctly and click “Sign in”. The default page (Home page) shall open as shown in figure 6. District users do not get to the same home page as other users.
- When a district user login is directed to the ARDS-LGMD2 web based data entry where the default page is data entry screen as shown in figure 16.

3.2 ARDS Web Portal Home Page



Figure 6: Home Page

3.2.1 Menus

3.2.1.1 ARDS (Home icon)

Left click on this menu takes you to the home page shown above.

3.2.1.2 Dashboard

Left click on this menu takes you to the dashboard module where you can create and manage a dashboard of charts, graphs, summary tables, maps and headlines as it will be explained in the later sections.

3.2.1.3 Report

Left click on this menu take you to the report module, where you can run on demand aggregation of the submitted data for reports, create and view standard, custom, and submission status reports as well as comment and-or approve reports. More detail about these functionalities will be explained in the later section.

3.2.1.4 Analysis

Left click on this menu aim to provide you with simple analysis of data. You can search for data and visualize the data using different type of charts in different dimension, as it will be explained in the later section.

3.2.1.5 Data

Left click on this menu provide links to Pivot Table, Data Visualize and Map module of the ARDS portal. Each module will be explained in the later section.

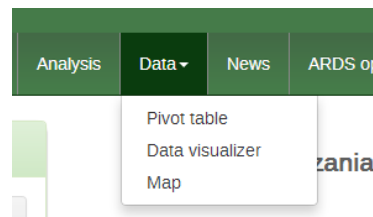


Figure 7: Data Menu

3.2.1.6 News

Left click on this menu aims to take you to the list of current agricultural related news automatically searched from various sources over the Internet through ARDS Web Portal automatic news feed. Essentially, these are the same news as the one you get in the login page before login and you can navigate and read the news in the same way. The purpose is to make the news easily available to the user even after login.

3.2.1.7 Articles

Left click on this menu aims to take you to the list of all available articles (pages) created by other users for information sharing. Logically, each article is an additional web page created and managed by a user for the purpose of sharing specific information in more details. The menu opens a page with a list of available articles as links. You can read the particular article by clicking on its name (link).

3.2.1.8 ARDS Operational

Left click on the ARDS operational menu aims to provide you with a link to ARDS and LGMD2 user manuals and other important documentation.

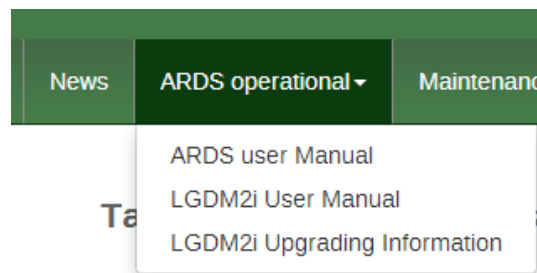


Figure 8: ARDS Operationl Menu

3.2.1.9 Maintenance

Left click on this menu provides an administrative user with the system maintenance options shown below. Operation of most of this menu is explained in the Operational and Maintenance Technical Manual. Data Entry, Import Export and Data Estimation is explained in the data entry section of this user manual.

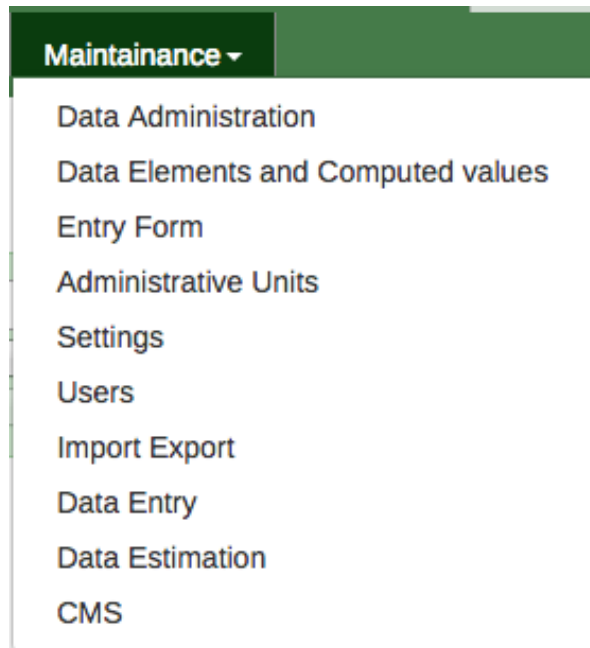


Figure 9: ARDS Maintenance Menu

3.2.1.10 Who login menu

This menu displays the current user. Left click on this menu provides to the current user, links to update his/her account information, change password, log out, about ARDS and help as shown below. Operation of this links will be explained in the later sections

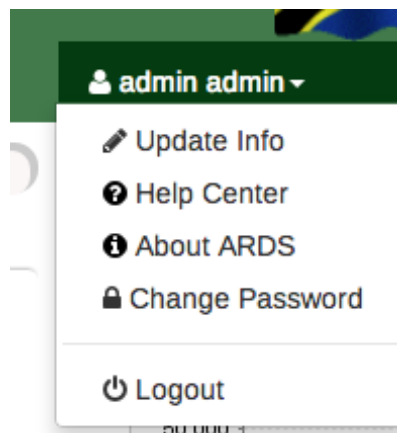


Figure 10: Who Login Menu

3.2.2 Left Panels

3.2.2.1 Data Analysis

Left click on tree like navigation menus provided in this collapsible panel aim to provide you with simple analysis of predefined data category while allowing manipulation of data in only two dimensions. Categories shown in the diagram below are just examples but will be created when saving favorite tables in the pivot table, as it will be explained later.

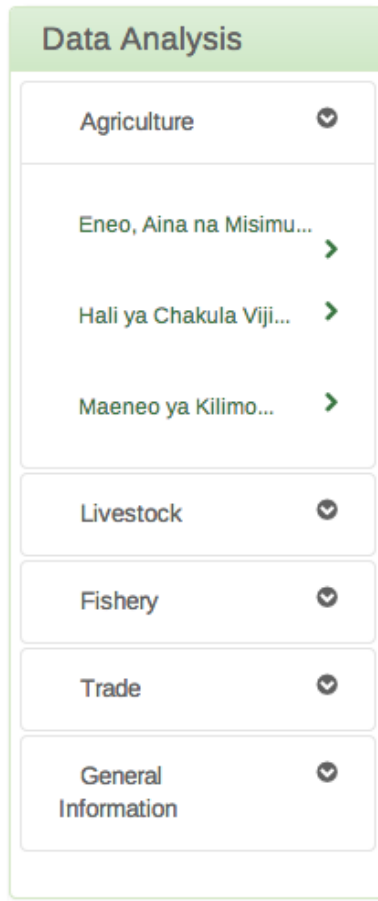


Figure 11: Left Panel of ARDS Home Page

3.2.2.2 Document

Left click on the links provided in this collapsible panel download the corresponding document. The administrator will maintain contents of this panel by using the CMS feature, which is explained in the operation and technical manual. Contents shown below only serve as an example.

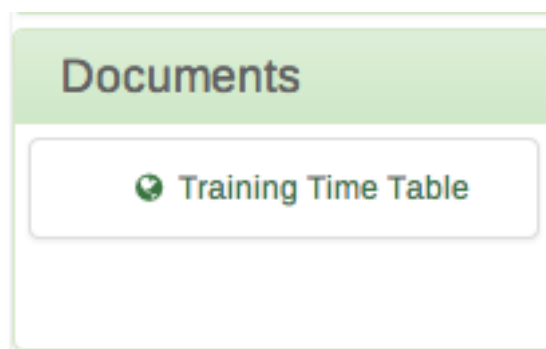


Figure 12: Documents Panel

3.2.2.3 Links

Left click on the links provided in this collapsible panel open the corresponding website. The administrator will maintain contents of this panel by using the CMS feature, which is explained in the operation and technical manual. Contents shown below only serve as an example.

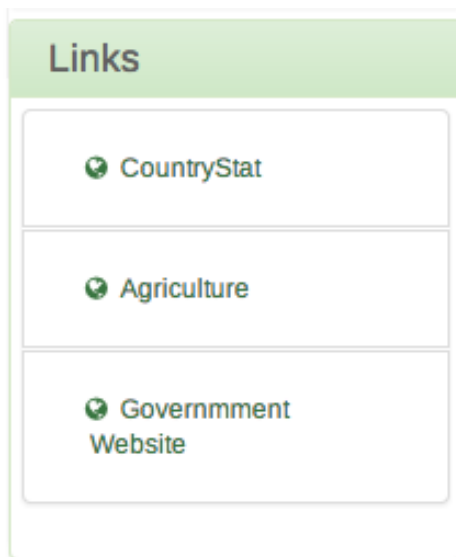


Figure 13: Useful Links Panel

3.2.3 Right Panel

3.2.3.1 *Sliding Pictures*

This panel aims to contain appealing and relevant agricultural sector related pictures as shown in the example below. However, the contents in this panel will be maintained by an administrator using the CMS feature which is explained in the operation and technical manual.



Figure 14: Sliding Picture Panel

3.2.3.2 *Statistics*

This panel aims to display most significant statistics (Charts) and will be maintained by an administrator using the CMS feature, which is explained in the operation and technical manual. The content below only serves as examples.

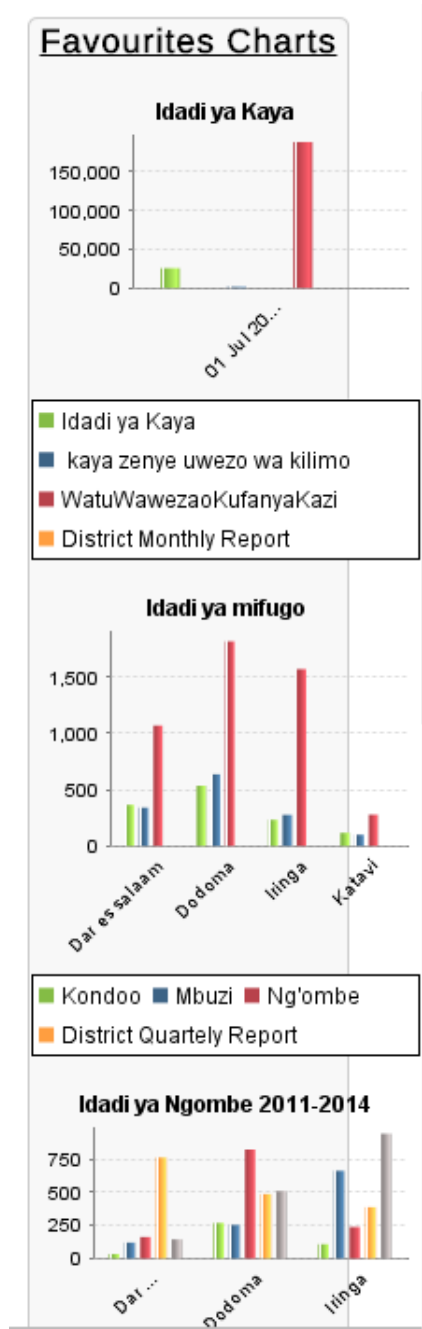


Figure 15: Most Significant Statistics Panel

3.2.4 Center Panel

This panel currently contains news for the home page but the contents here will be maintained by administrator using CMS which is explained in the operation and technical manual. The contents in the home page are categorized as shown in the figure 6, a user may select to view contents in a specific category by using the menu tabs located at the top or choose to view all. The categories and their menu tabs are also manageable by administrative user using the CMS. Also, for some other pages this will be displaying content based on the navigations that will be made by the user.

3.3 ARDS-LGMD2 Web Based Data Entry Default Page

When a district user login will be directed to the ARDS-LGMD2 Web Based Data Entry where the default page is data entry screen as shown in figure 16 below.



Figure 16: ARDS-LGMD2 Web Based Data Entry Default Page

3.3.1 Menu of ARDS-LGMD2 Web Based Data Entry default page

3.3.1.1 ARDS-LGMD2 (Home icon)

Left click on this menu takes you to the default page (data entry screen) that is shown in figure 16.

3.3.1.2 Report

This is the same as in the ARDS Web Portal, left click on this menu take you to the report module, where you can run on demand aggregation of the submitted data for reports, create and view standard, custom, and submission status reports as well as comment and-or approve reports. More detail about these functionalities will be explained in the later section.

3.3.1.3 Analysis

This is the same as in the ARDS Web Portal, left click on this menu aim to provide you with simple analysis of data. You can search for data and visualize the data using different type of charts in different dimension, as it will be explained in the later section.

3.3.1.4 Pivot Table

Left click on this menu aim to provide you with advanced analysis of data. You can search for data and present the data in tables in different dimension, as it will be explained in the later section.

3.3.1.5 Data Entry

Left click on this menu provide links to Data Entry, Import-Export and Data Estimation of the ARDS portal. Each module will be explained in the later section.

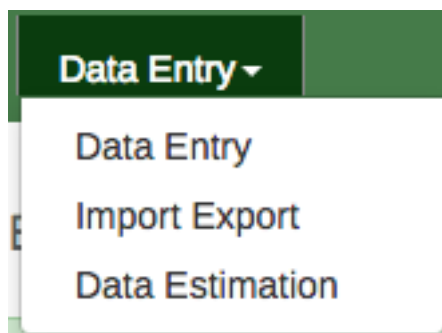


Figure 17: Data Entry Menu

3.3.1.6 Who login menu

Similar for all users, it displays the current user. Left click on this menu provides to the current user, links to update his/her account information, change password, log out. Operation of this links will be explained in the later sections.

3.3.2 Left panel of ARDS-LGMD2 Web Based Data Entry default page

The left panel consists of administrative unit tree like navigation menu. Left click on any level on the tree aim to expand the tree to see the children. Administrative unit displayed in this tree may differ from different users since are determined by the user level and roles. Left click on a ward or district aim to select an administrative unit for data entry, as it will be explained later. The search icon on top of the tree allows you to locate an administrative unit by searching its name.

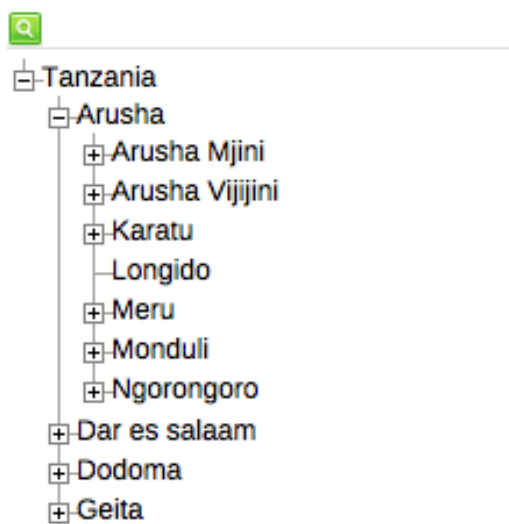


Figure 18: Administrative Unit Tree

3.3.3 Center panel of ARDS-LGMD2 Web Based Data Entry default page

The center panel consists of the following options, which are used to select the particular form for data entry: First, a text field, which aim to display name of the administrative unit that you have selected from the tree in the left panel. Second, a drop down that allows you to select a form, for example the Ward Monthly Entry Form. Lastly, a drop down that allows you to

select a specific period for data entry, for example July 2014 or July 2014 – June 2015 if you select monthly or annual form respectively. If you left click on the question mark icon gives you a quick help tip. “Prev year” and “Next year” menus allow you to navigate to previous financial years and next financial years respectively. Successfully selection of the three options i.e. an administrative unit for which data is going to be entered, a form type, and a specific period of the data to be entered, opens the form and you can continue with data entry process as it will be detailed in the later sections.

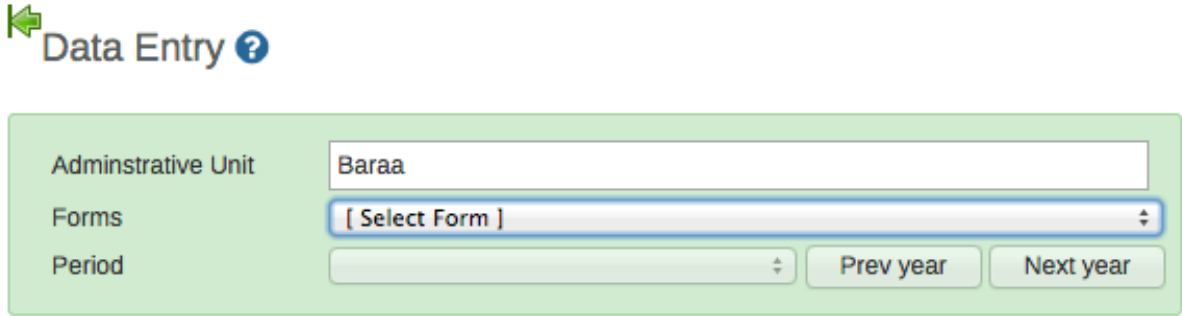


Figure 19: Data Entry Form Selection Menu

3.3.4 Right panel of ARDS-LGMD2 Web Based Data Entry default page

The right panel consists of three menus: Run validation allows you to validate the form after you complete entering data as it will be detailed in the later section. Print form allows you to print the selected form with the data, which has been entered. Print Blank form allows you to print the selected form but with no data.

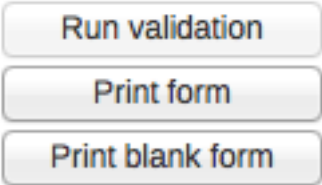


Figure 20: Right panel of the data entry screen

3.4 Data Entry

The data entry module is where ARDS data is manually registered in the system database. Data is registered for an administrative unit, a period, and a set of data elements (form) at a time. A form often corresponds to a paper-based VAEO/WAEO Formats.

If you are a district user for data entry you are always directed to the data entry screen by default when you login, or simply by clicking on the ARDS-LGMD2 home icon after you login. You can also access the data entry screen from the main menu by clicking on Data Entry and select Data Entry from the drop down list.

Other users of the system may access the Data Entry module through the ARDS portal by going to the Maintenance from the main menu and select Data Entry.

3.4.1 Selecting data entry form

To start entering data the first step is to open the correct form by following these steps:

- Locate the administrative unit you want to enter data for in the tree menu to the left. Expand and close branches by clicking on the +/- symbols. A quick way to find an administrative unit is to use the search box just above the tree (the green symbol), but you need to write in the full name to get a match.
- Select an entry form from the dropdown list of forms available to your selected administrative unit.
- Select a period to enter data for. The available periods are controlled by the period type of the form (reporting frequency). You can jump a year back or forward by clicking on “Prev year” and “Next year” menu.
- By now you should see the data entry form. From ARDS entry forms perspective, there are six types for forms: Monthly, quarterly, annual ward entry form, quarterly, annual district entry forms, and ward annual target entry form. In addition to that there is form for entering prior estimate for missing ward data.

Administrative Unit: Baraa
Forms: Ward Annual Entry Form
Period: July 2013 - June 2014

Ward: Baraa
July 2013 - June 2014
ANNUAL REPORT

Jina la Afsa Ugani: Tarehe ya kuwasilisha:

(wasilishwe kwenye kata kabla ya mwisho wa mwaka kutoka kwenye kijiji, na wilayani mwisho wa wili ya kwanza ya mwaka unafuata kutoka kwenye kata)

ANGALIZO

- 1) Iwapo kitu kinacho ulizwa hakipo kwenye kijiji/Kata yako, andika "0"(Sifuri)
- 2) Iwapo kitu kinacho ulizwa kwenye kijiji/Kata yako andika makadirio kwa takwimu /idadi.
- 3) Vinginevyo acha kisanduku wazi
- 4) Tumia vipimo vya kitaifa kwa kila jedwali vinapo hitajika
- 5) Soma kwa makin maelezo katika kila jedwali kabla ya kuanza kujaza.

1.0 Taarifa za Wilaya

	Wanaume	Wanawake	Jumla	Wenye uwezo wa kufanya kazi za kilimo
Idadi ya watu	<input type="text"/>	<input type="text"/>	0	<input type="text"/>

Figure 21: Part of the annual entry form of Baraa ward for July 2013 - June 2014 financial year

3.4.2 Entering data

Start entering data by clicking inside the first field and type in the value.

- Move to the next field using the Tab button. Shift+Tab will take you back one step.
- You can also use the "up" and "down" arrow keys to navigate between the form cells.

- The values are saved immediately and do not require to be saved at a later stage.
- A green field indicates that the value has been saved. A yellow field indicates that data is still saving. A red field means data is not saved.

	Wanaume	Wanawake	Jumla	Wenye uwezo wa kufanya kazi za kilimo
Idadi ya watu	5	77	82	23
	Zinazoongozwa na wanaume	Zinazoongozwa na wanawake	Jumla	Zenye uwezo wa kufanya kazi za kilimo
Idadi ya kaya	2	45	45	3

Figure 22: A sample of saved and unsaved values in data fields

- When in the middle of the form/table during data entry, there is no need of scrolling to get description of the cell's value, simply get description in the pop up message as shown on the screenshot below.

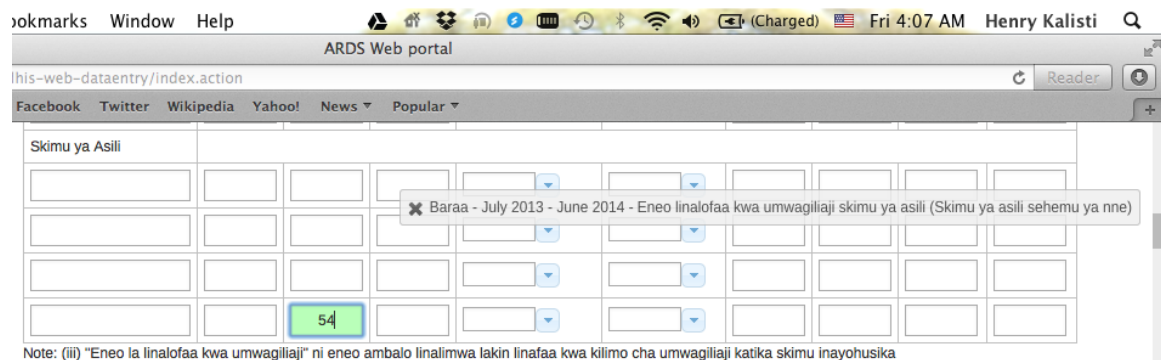


Figure 23: Information message describing a data entry field

3.4.2.1 Input validation

- If you type in an invalid value, e.g. a character in a field that only accepts numeric values you will get a pop-up that explains the problem and the field will be colored yellow (not saved) until you have corrected the value.

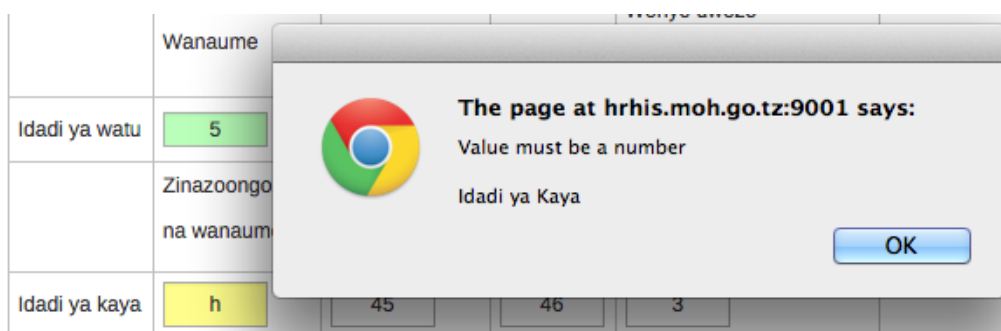


Figure 24: Invalid value error message

- If you have defined a min/max range for the field (data element+ administrative unit combination) a pop-up message will notify you when the value is out of range, and the value will remain unsaved until you have changed the value (or updated the range and then re-entered the value).

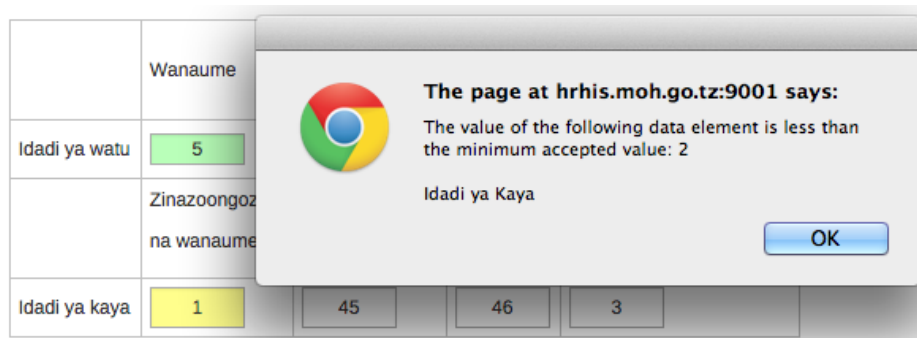


Figure 25: Min-Max violation error message

3.4.2.2 Disabled fields:

If a field is disabled (grey) it means that the field should not be filled. The cursor will automatically jump to the next open field.

3.4.2.3 Data history:

By double-clicking on any input field in the form a data history window opens showing the last 12 values registered for the current field in a bar chart. This window also shows the min and max range and allows for adjusting the range for the specific administrative unit and data element combination. In the comment box you will be informed if the value was estimated.

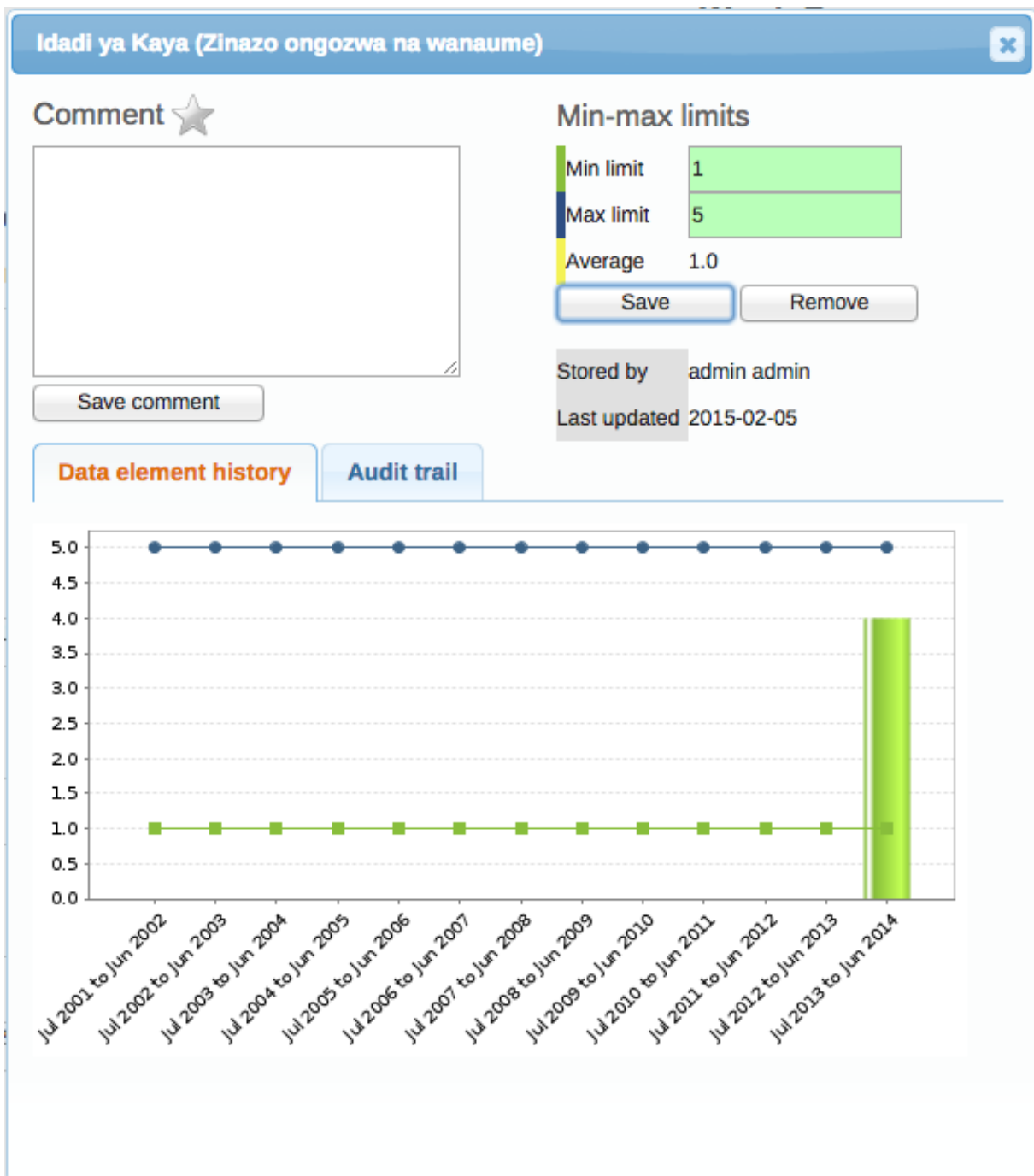


Figure 26: Data history window

3.4.2.4 Audit trail:

The audit trail allows you to view other data values that have been entered prior to the current value. As an example, the data element was changed from its original value several times. The audit trail shows when the data value was altered along with which user made the changes.

Data element history		Audit trail	
On	Modified by	Value	Modification
2015-02-05 02:20	admin	5	Update
2015-02-05 02:20	admin	1	Update
2015-02-05 02:19	admin	2	Update
2015-02-05 02:09	admin	45	Delete
2015-01-30 06:52	admin	45	Delete
2015-01-30 00:55	Kalisti	2	Delete

Figure 27: Audit trail screen

3.4.3 Editing and deleting data

If you wish to enter data that has already been entered, simply replace the data entry value with the update values.

If you want to delete a data value completely, you should select the value of interest, and press "Delete" on your keyboard. If you enter a zero and the data element has been configured to not store zeros, the previous data value (i.e. the one you wish to modify) will not be overwritten with the new value.

NOTE: Therefore, it is better practice to delete the data value completely (waiting for the cell to turn green) and then to enter the new value.

3.4.4 Validating data in the form

When all the available values for the form have been filled in you can run a validation check on the data in the form.

- Click on the "Run Validation" button in the top right corner or at the end of the form.
- All validation rules, which involve data elements in the current form, will be run against the new data.
- Upon completion you will be presented with a list of violations or a simply a message that says "The data entry screen successfully passed validation".

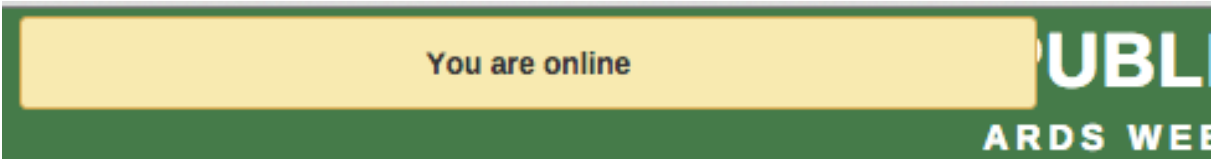
NOTE: When you have corrected any erroneous values and are done with the form the recommended practice is to click on the "Complete" button below the form to register the form as complete. This information is used when generating submission status reports for ward, district, region or the national level.

3.4.5 Offline data entry

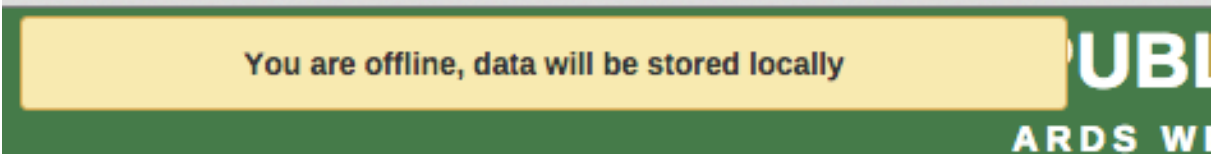
The data entry module will function even if during data entry the Internet connectivity is not stable. In order to utilize this functionality, you must login to the server while Internet connectivity is present, but if during data entry, the Internet link between your computer and the server becomes unstable, data can still be entered into the data entry form, saved to your local computer, and then pushed to the server once the Internet connectivity has been restored.

Data can be entered and stored locally while being offline and uploaded to the central server when on-line. This means that the online deployment strategy will be more viable in areas with unstable Internet connectivity. The total bandwidth usage is greatly reduced since forms no longer are retrieved from the server for each rendering.

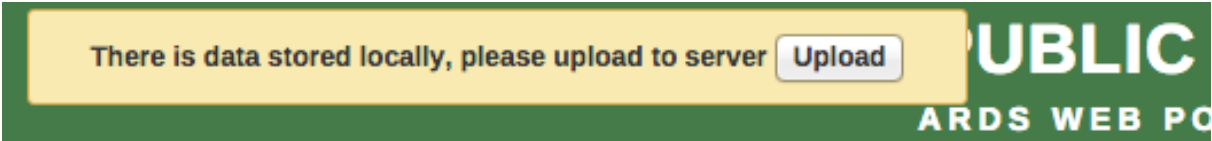
When the server can be reached through the Internet connection, a message is displayed at the top of the data entry screen as shown below.



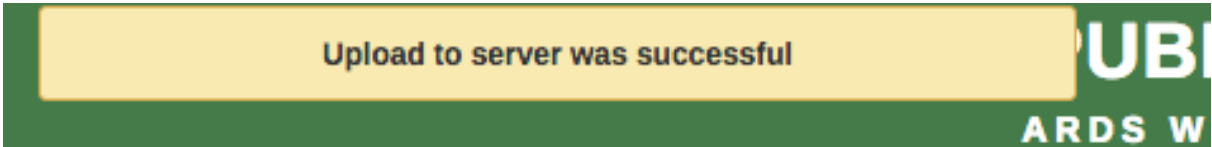
If the Internet connection should disconnect for some reason during the data entry process, this will be detected by the application, and you will be informed that your data will be stored locally.



Data entry can proceed as normal. Once you have entered all of the necessary data, and the application detects that the server is back online, you will be informed that you have data that needs to be synchronized with the server. Always click upload.



Once the data has successfully synchronized with the server, you will receive a confirmation message that the data has been successfully uploaded to the server.



3.4.6 Data Estimation

Data estimation module allows users to estimate missing values for wards. Un-submitted District Reports are to be demanded, that is, no estimates will be attempted. Estimation is only

for all data elements that need to be estimated and have no value, that is some un-submitted ward data are not estimated.

Estimation is done as per agreed rules on missing data handling set by M&E TWG. Please refer to Agreed Rules on Missing Data Handling by M & E TWG for more details about data elements, that need to be estimated and their respective rule of estimation. In this system there are four main techniques applied for data estimation in ARDS and the choice depends on the data element that needs to be estimated.

- Some data elements are estimated by applying the average of the submitted ward data to the un-submitted Ward.
- Some data elements are estimated based on the prior estimate prepared by LGA's officers.
- Some data elements are estimated by taking a previous data of the same ward.
- Other data elements are estimated by using 2-stage prior estimate which need:
 - To prepare first the prior estimates across Wards of "Total Area (Cultivated)."
 - Also to prepare prior area estimates within a ward across all services and all means.
 - The total of the row-wise prior estimates must be equal to total area (100%) for each row.
 - In order to fill the missing data of un-submitted Ward, first estimate the Total Area (Cultivated).
 - Then, assuming that Total Areas of services (i.e. cultivated, planted, weeded and harvested) are all equal,
 - The area of particular service and of particular means can be estimated.

All computation for estimation based on the rules summarized above are automatically done by the system. You only need to follow few simple steps to run the estimation and LGA's officers may be required to prepare prior estimate as shown below.

3.4.6.1 Entering prior estimate for missing data estimation

The prior estimates that are used for estimation may be revised annually. The prior estimates are stored by year in the system (regardless if modified or not). To enter prior estimates for a ward follow the following steps;

- Login for data entry
- Select the ward from administrative unit tree
- Select **Prior Estimate for Missing Data Estimation** form
- Select the financial year
- Continue filling the form accordingly
- Entering of the value and validations works the same as in other data entry forms

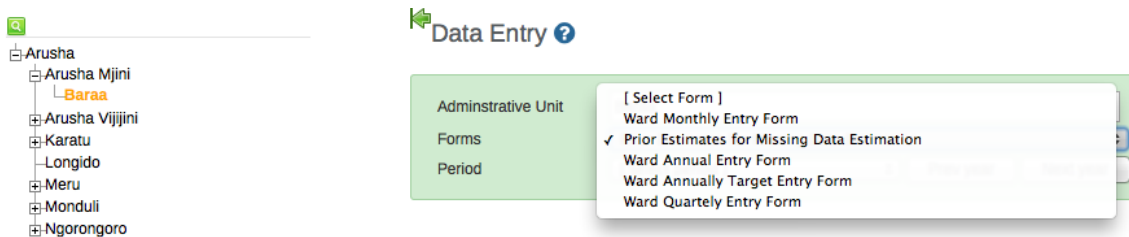


Figure 28: Selecting prior estimate form for Baraa ward

3.4.6.2 Estimating missing ward data

All computation for estimation based on the rules summarized above are automatically done by the system. To run estimation of missing data for wards follow the following steps:

- Login for data entry
- Select “**Data Entry**” from the Main Menus
- Select “**Data Estimation**” from the list
- Select a district (**not otherwise**) from the administrative unit tree
- Select ward form (monthly, quarterly, or annual entry form)
- Select the Period

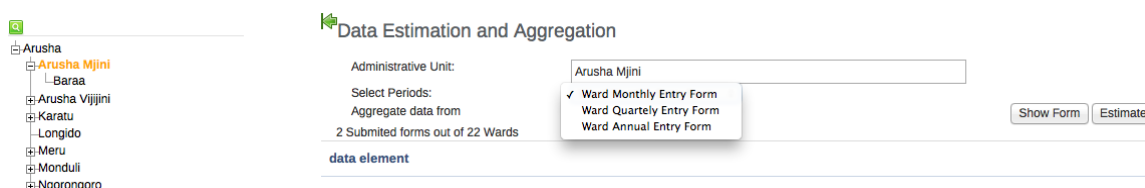


Figure 29: Selecting a district and period of ward's data that need estimation

- Click on “**Show Form**” button
- A list of all wards of the selected district and required data elements (**with/with no value**) will be displayed.
 - Only those with no value will be estimated.

Data Estimation ?

Administrative Unit	Arusha Mjini										
Forms	Ward Annual Entry Form										
Period	July 2013 – June 2014										
Estimate data from											Estimate
0 Submitted forms out of 17 Wards											
data element	Elerai	Levolosi	Sombetini	Sokoni	Baraa	Ngarenaro	Kaloleni	Kimandolu	Engutoto	Kati	Daraja Mbili
Malengo ya Uzalishaji/Tija wa maua (Waridi (Rose))					2						
Malengo ya Uzalishaji/Tija wa maua (Chrysanthemum)					2						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Tumbaku)					2						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Pamba)					2						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Kahawa)					1						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Viazi vikuu)											
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Chai)					2						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Pareto)					1						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Kakao)					3						

Figure 30: List of wards and their data elements for estimation (with/with no value)

- Click on “**Estimate**” to start estimation
 - The time that is taken for estimation process varies depending on the number of wards and data elements which need estimation.
 - While running a status is displayed above the ward names showing which data element is currently being processed, estimation rule, percentage completion and the number of wards, which have submitted data out of the total number of ward in the selected district.

Data Estimation ?

Administrative Unit	Arusha Mjini										
Forms	Ward Annual Entry Form										
Period	July 2013 – June 2014										
Estimate data from											Estimate
Processing Estimating Malengo ya eneo litakalo pandwa mboga mboga (Bamia) By undefined											352 of 352 (100%)
0 Submitted forms out of 17 Wards											
data element	Elerai	Levolosi	Sombetini	Sokoni	Baraa	Ngarenaro	Kaloleni	Kimandolu	Engutoto	Kati	Daraja Mbili
Malengo ya Uzalishaji/Tija wa maua (Waridi (Rose))					2						
Malengo ya Uzalishaji/Tija wa maua (Chrysanthemum)					2						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Tumbaku)					2						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Pamba)					2						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Kahawa)					1						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Viazi vikuu)											
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Chai)					2						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Pareto)					1						
Malengo ya Uzalishaji/Tija wa mazao ya viwandani (Kakao)					3						

Figure 31: Estimation result of each data element for each ward of the selected district

Note that:

- You need (to be online) the Internet connection in order to run estimation.
- Estimation is done for all ward of the selected district.
- If you select ward, region or national will not run.
- Estimation is only for all data elements that need to be estimated and have no value.
- A data element of a ward, which displays a value when you click show form means its value was entered, and will not be estimated.

3.5 Synchronization & Aggregation

In ARDS, the LGMD2i typically involves a distributed application, where the same application is running in different administrative unit (district, regional, and national). Therefore, the data needs to be synchronized through the Internet in order to have a consolidated database at the national level. However, some of these physical locations do not have stable Internet connectivity, and hence they work offline. For this, it is important to be able to export and import data from a location, which is working offline to national level or to another location where it needs to be imported. The ARDS-LGMD2 Web Based Data Entry uses the online synchronization strategy (online/offline mode), which is more viable in areas with unstable Internet connectivity.

Besides, the ARDS-LGMD2 Web Based Data Entry also provides robust import-export functionality to support areas with unstable Internet connectivity. It allows transferring of data between computers for different purpose.

“For instance, a user at Arusha Vijijini district was entering data, unfortunately he becomes disconnected from the Internet for a long time until he finishes entering data, he may decide to export the data and take it to a near by computer (or district such Arusha Mjini), which has the Internet connection and import the data to the server. Also, if it seems more convenient, a user may send the exported file to the national headquarter technical team to be imported to the server”

This feature helps overcome the dependency on Internet to some degree, as data updates can be transferred via USB key where there is no connectivity, or through email where there is limited Internet connectivity.

Also, the standalone offline copy can be installed in areas with no Internet connectivity, such that the system is accessed offline and data are always entered offline and uploaded to the server through import-export feature. The standalone copy can be configured to automatically synchronize with the central server in areas with limited connectivity. However, online/offline mode is highly recommended over standalone copy in areas with limited connectivity. It only need to:

- Login when there is connectivity,
- Continues entering data offline and,
- Upload offline data when connectivity is back.

3.5.1 Online/offline data entry

When entering data while online the values are saved immediately:

- Do not require any save/finished/Sync button click.
- A green field indicates that the value has been saved in the system (on the server).
- On a slow connection it might take some time before the values are saved.
- The data entry module will function even if during data entry the Internet connectivity is not stable.
- In order to utilize this functionality, you must login to the server while the Internet is functional

If during data entry, the Internet link becomes unstable, data can still be entered into the data entry form,

- Data are saved to your local computer, and then uploaded to the server once the Internet connectivity has been restored.
- This means that the on-line deployment strategy will be more viable in areas with unstable Internet connectivity.
- When the server can be reached through the Internet, a message is displayed at the top of the data entry screen telling that you are online.
- Any Internet disconnection will be detected by the application, and you will be informed that you are offline and data will be stored locally.
- You can proceed with data entry as normal.
- Once the application detects that the server is back online. You will be informed that there is data stored locally, please upload to the server. You should always click Upload.
- Once the data has successfully synchronized with the server, you will receive a confirmation message.

More detail about how this work during data entry can be found in the data entry section.

3.5.2 Import-export

To access the main Import-Export module, go to Data Entry menu in the ARDS-LGMD2 Web Based Data Entry or ARDS-LGMD2 menu in the ARDS Portal and select “Import Export”. A number of import export services are available, Data import and export is described in detail in respective sections below. Metadata import and export, GML import and more advanced data import options can only be done by administrative user and are explained in the ARDS O & M Maintenance Technical Manual.

3.5.2.1 Data import

To import data in XML format, simply choose "Import Export" from Data Entry menu in the ARDS-LGMD2 Web Based Data Entry interface or ARDS-LGMD2 menu in the ARDS Web Portal, and then follow the following steps:

- Select the file to import by pressing "Choose File" and choose the file from your local file system.
- When importing XML and JSON files, the system will automatically detect which format of the file should be imported. When importing CSV data, you will need to specify the format.

Consult the ARDS O & M Technical Manual on "CSV data import" for more specific information on how the CSV file should be created.

There are two separate options for importing data.

- **Dry run:** This gives a preview option. It will do a dry run import, and give you information about any errors.
 - **Note:** It is recommended always using the Dry run option when importing data to make sure you keep control over any changes to your data.
- **Strategy:** There are three options here, "New and Updates", "New only", and "Update only".
 - New and updates tells the importer to expect both new data, and updates to existing ones.
 - New only will only accept fresh data, usually you would use this on an empty database.
 - Updates only will only allow the data to match data that is already there (same identifiers, new name etc.).

3.5.2.2 Data export

To export raw data from the system, choose "Import Export" from Data Entry menu in the ARDS-LGMD2 Web Based Data Entry or Maintenance menu in the ARDS Portal, and then follow the following steps:

- Click on Data Export,
- Select the administrative unit(s),
- Select Entry Form(s) and-or Report(s) for which data export should be selected,
- Select the start and end date for which data export should be selected,
- Once you have specified all options as required, press "Export as XML".

You can also select which types of identifiers which will be exported by pressing "More options" and then selecting either UID, Code, or Name for data elements, administrative units and category options. Also, you can go to more option when you would like to export the data as JSON or CSV. However, only technical personnel may need to go to more options.

Administrative unit

- [-] Tanzania
 - [+] Arusha
 - [+] Dar es salaam
 - [+] Dodoma
 - [+] Geita
 - [+] Iringa
 - [+] Kagera
 - [+] Katavi
 - [+] Kigoma
 - [+] Kilimanjaro
 - [+] Lindi
 - [+] Manyara
 - [+] Mara

Available data sets

Filter

- Annual Integrated Report
- District Annually Entry Form
- District Annually Report
- District Quarterly Entry Form
- Monthly District Report
- Prior Estimates for Missing Data Estimation
- Quarterly District Report
- Quarterly Intergrated Report
- Ward Annual Entry Form
- Ward Annually Target Entry Form
- Ward Monthly Entry Form
- Ward Quartely Entry Form

Selected data sets

Options

Start date	2015-02-03
End date	2015-02-03

[More options](#)

Figure 32: Data export screen

3.5.3 Standalone copy

This feature helps overcome the dependency on the Internet, as data updates can be transferred via USB key (or other external storage) through export and imported to the server through a computer connected to the Internet as introduced earlier in section 3.5. To set up standalone copy:

- Requires installing an offline instance of the system to a computer in the location where there is no Internet connectivity.
- Installation of the local copy follows same steps as installing the server (see ARDS O & M Technical Manual).
- Make use of import-export functionality as described in the previous section 3.5.2 to synchronize data to the central server.

Note: Set up of the standalone offline copy should be done by administrative user (technical personnel), other users will then continue working with the offline copy and use import-export to sync with the server.

Also, in areas with limited connectivity, administrative user can configure the standalone copy to synchronize with the central server at a specified time. See ARDS O & M Technical manual on how to schedule a standalone copy for automatic synchronization.

However: If the problem is limited connectivity, consider using online/offline mode first. Standalone offline copy is suitable when the Internet connection is a serious problem or no Internet connection at all.

3.5.4 Aggregation

Aggregation allows you to control the process of converting collected data into aggregated and write them to the resource and analytic tables. This process improves performance of the system by speeding up response to the user when requesting a report or performing analysis on the data.

Note: In order to see any new data submitted to the server, aggregation process should run between the time data was submitted and before you view the reports.

Aggregation process can be scheduled to run periodically at a certain time or you may choose to run it when you want to view report immediately after the data was entered. However, the process might take a long time and heavily utilize the resources of the server, so make sure you start such processes at a feasible time in production environments.

3.5.4.1 *Scheduled aggregation*

Aggregation processes is scheduled as regular tasks in the data administration module. Run at a pre-determined time (always at midnight based on the server time). Administrative user can disable (stop) or start scheduling.

- Go to Maintenance
- Select Data Administration
- Select Scheduling
- Click stop if scheduling is active
- Select Resource Tables & Analytic Tables task strategy to run “All daily”
- Click start to the activate scheduling.

See ARDS O & M Technical Manual for more details.

3.5.4.2 *On demand aggregation*

If you do data entry and you would like to view the changes in the reports immediately, run on demand aggregation. Follow the following simple steps

- Go to Report from the main menu
- Select Aggregation
- Click on start aggregation
- The steps above will aggregate all data to make them ready for report.



Figure 33: On demand aggregation management screen

3.6 Data Approval

- Once the data are synchronized, the authorities at regional level can view the data and are able to approve and-or comment as necessary.
- Users at district level can view the comments when view the report in the data approval.
- Whenever supervisor is okay with the report submitted by district officer, can approve it.
- To access Data Approval go to the report menu in the main menu of ARDS-LGMD2 or through the ARDS Web Portal interface, and then select Data Approval.
- To comment on or approve a report follow the following steps:
 - Select the Repot (What?)
 - Select the period from the available periods (When?)
 - Select the Administrative Unit (Where?)
 - Finally select Get data
 - The requested report will be displayed
 - You can go through the report and write a comment and-or approve the report
 - If the report is mistakenly approved you can disapprove

Figure 34 and 35 below illustrate steps for writing comment and-or approves report and viewing comment and-or approval status respectively. In each figure the left side illustrate how to select the report while the right side of the figure shows the report to comment, approve or view comment and approval status, which is displayed after you click on get data. While in the specific report you can always click on data criteria select and get another report.

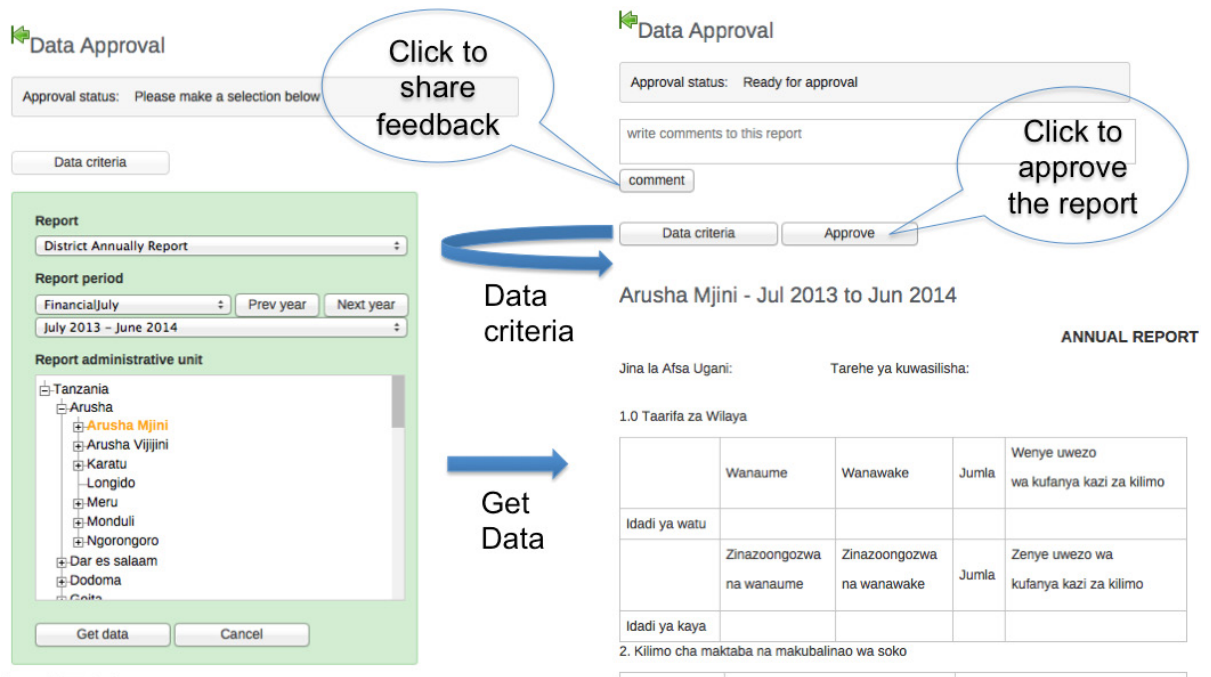


Figure 34: Writing comment and-or approve

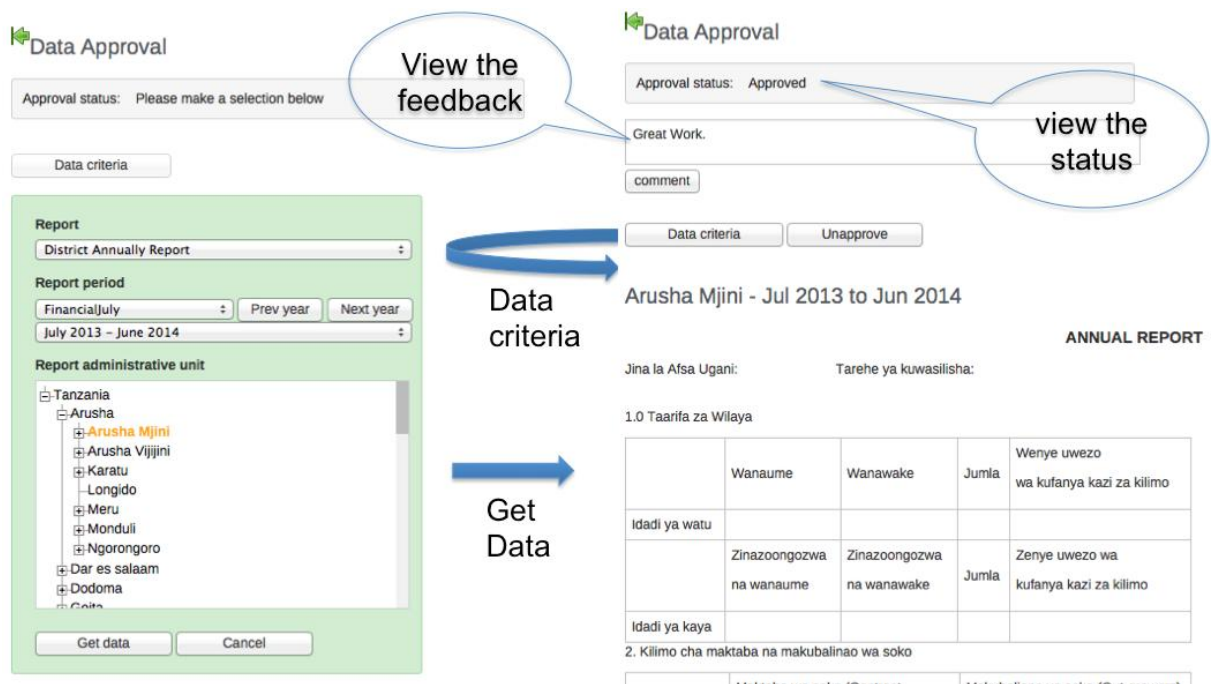


Figure 35: View comment and-or approval status

3.7 Dashboard

Dashboard provides a mechanism to organize and share the saved favorite of more interest for quick view. When you left click on the dashboard menu of the home page the following menus as displayed in the diagram below appear for dashboard operation outlined below.

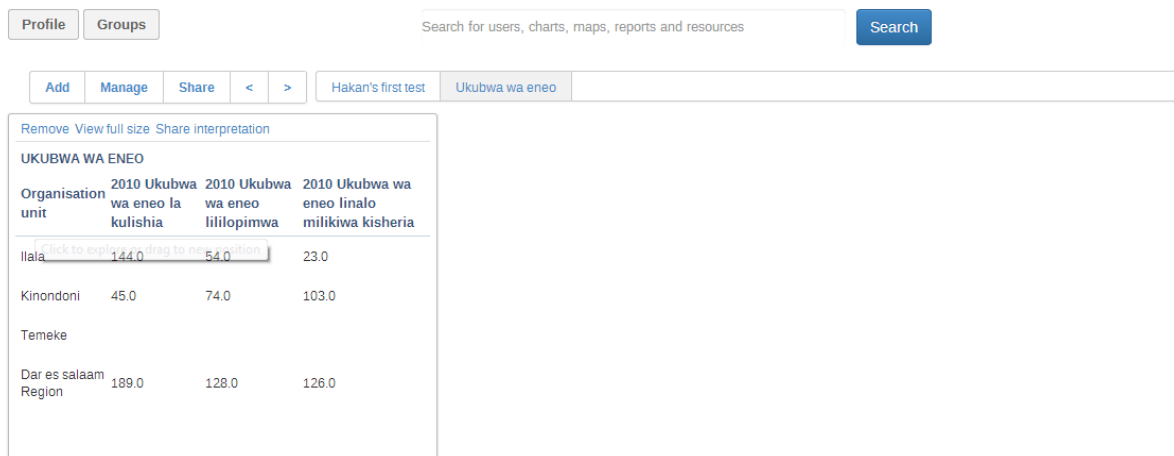


Figure 36: Dashboard Module

3.7.1 Add a dashboard

- You click Add button to add a new dashboard.
- You shall then provide a self descriptive name as shown in the example below and click create button.

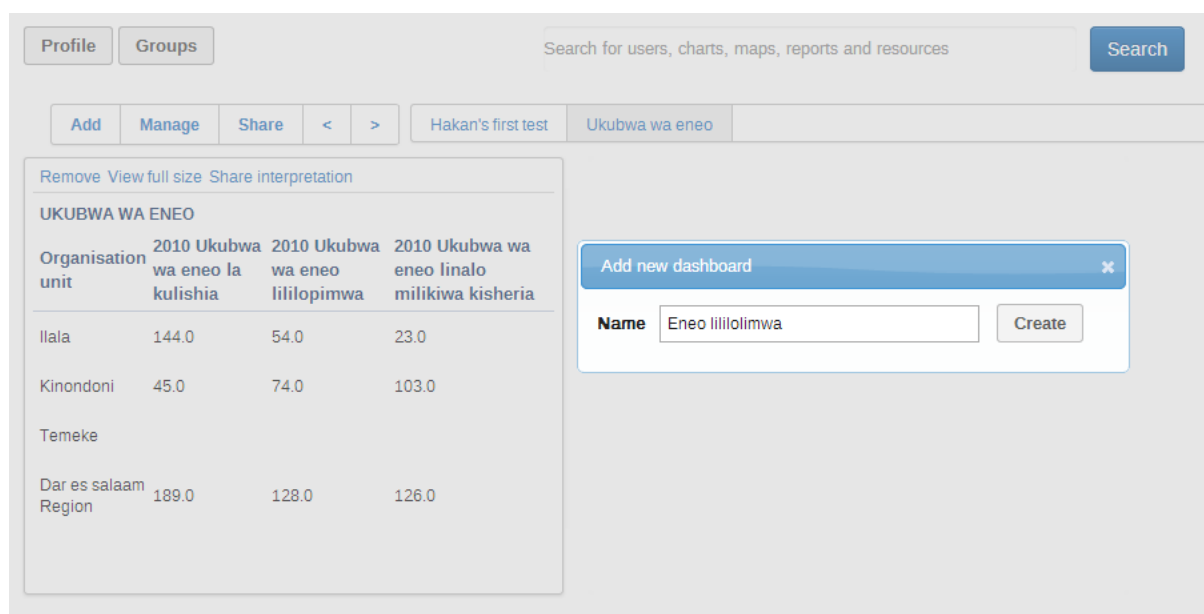
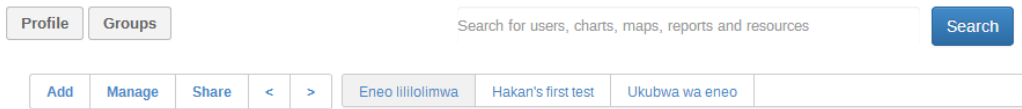


Figure 37: Add new Dashboard Menu

3.7.2 Add contents to a dashboard

- To add stuff/contents to the created dashboard search for the saved charts, maps and etc. using the search filed shown below.



Add stuff by searching from the search field above

Then arrange dashboard by dragging and dropping items

Figure 38: A New Created Empty Dashboard

- From the search result choose the content you wish to appear on your dashboard and click Add button as shown below.
- You may rearrange contents on the dashboard by dragging and dropping the items.
- You may update/change the table, chart, or map displayed on a dashboard by left click on it and it will open in the corresponding tool. For example a table will be open in the Pivot Table module.



Then arrange dashboard by dragging and dropping items

Figure 39: Search and Add Dashboard Contents Menu

3.7.3 Manage Dashboard

- If you wish to rename or delete the current dashboard or add headline to the current dashboard click on manage button and use the available options as shown below

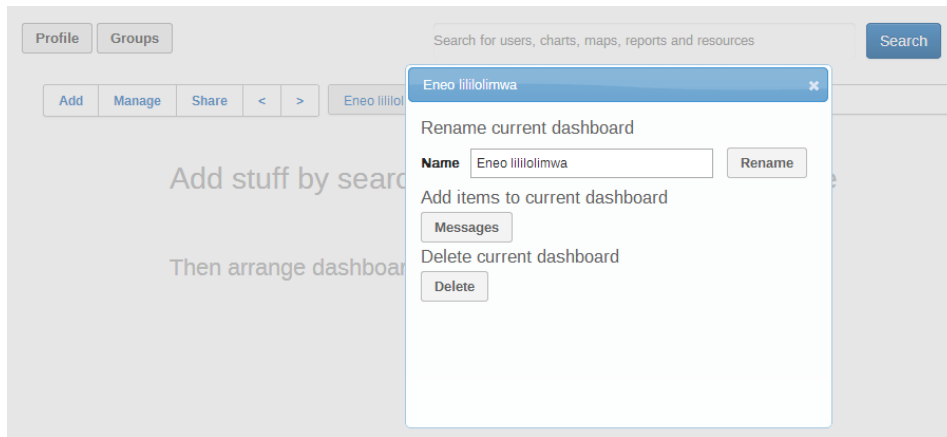


Figure 40: Dashboard Manage Menu

3.7.4 Share a dashboard

- An administrative user can share the dashboard of interest.
- To share the dashboard left click on the Share button and follow the popup menu shown below

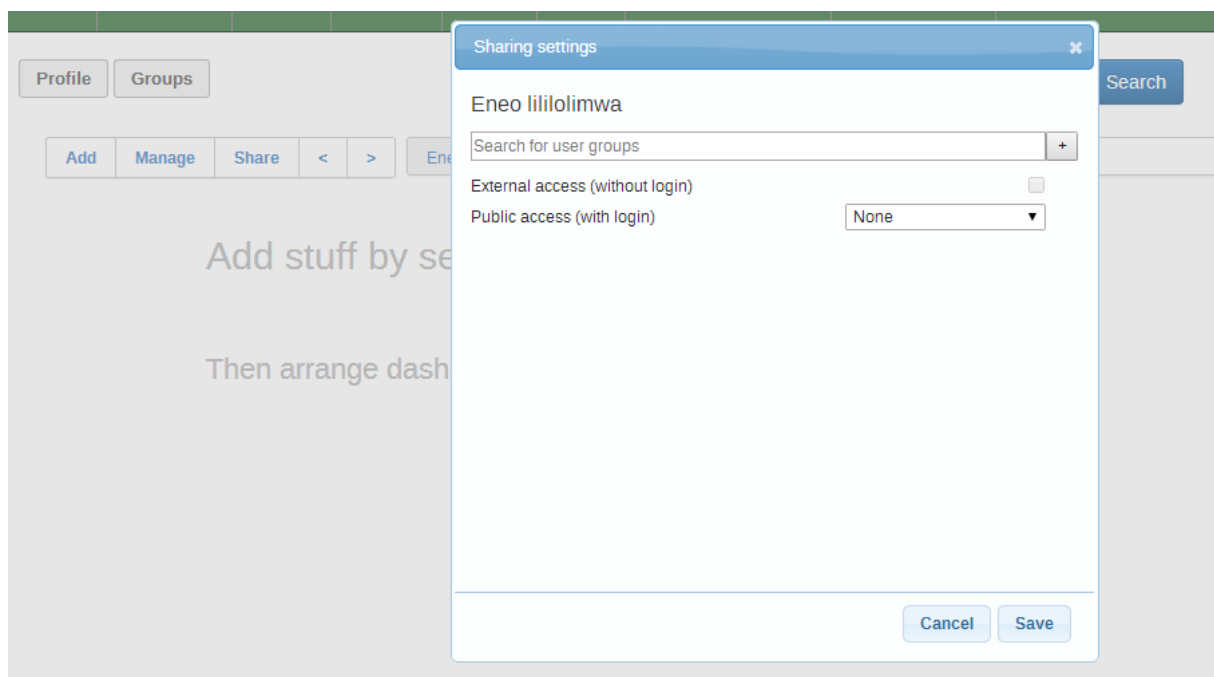


Figure 41: Dashboard Sharing Menu

3.7.5 Create user group for dashboard sharing

If you are an administrative user you can create user group for sharing dashboards.

- Left click on the Groups button to view and edit existing user groups for dashboard.

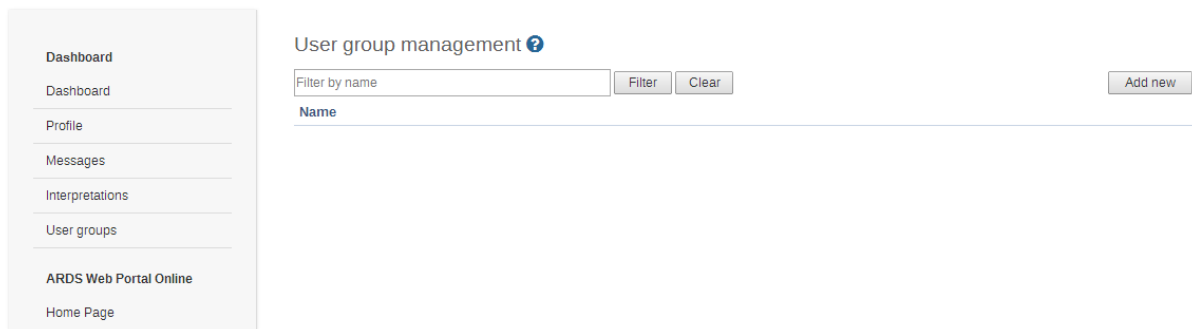


Figure 42: Dashboard User Group Management Menu

- Click on Add new to create a new group by using the menu options shown below

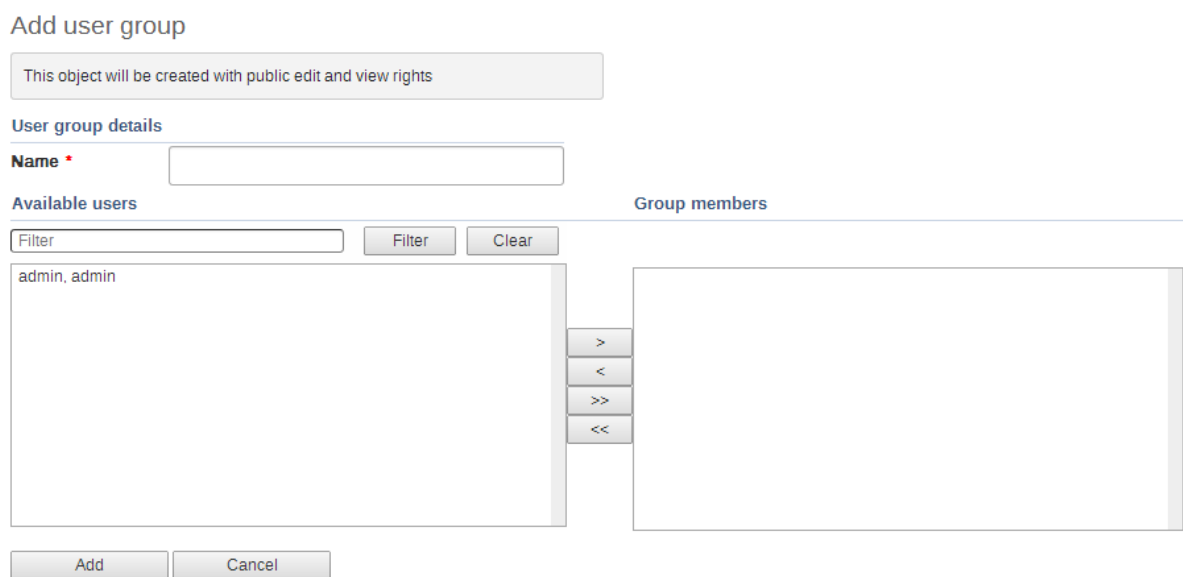


Figure 43: Dashboard Add User Group Menu

- You may edit your profile for dashboard sharing purposes by click on the Profile button and follow instruction provided.

3.8 Data Analysis

Data Analysis is found in the Main Menu as “Analysis” or through “Data Analysis” menu panel in the left menus. Consist of Left Panel, Top Panel & View Port. Data analysis aim to provide a simplified search for data and allow user to create and save their tables and charts. The figure below show data analysis module working screen.

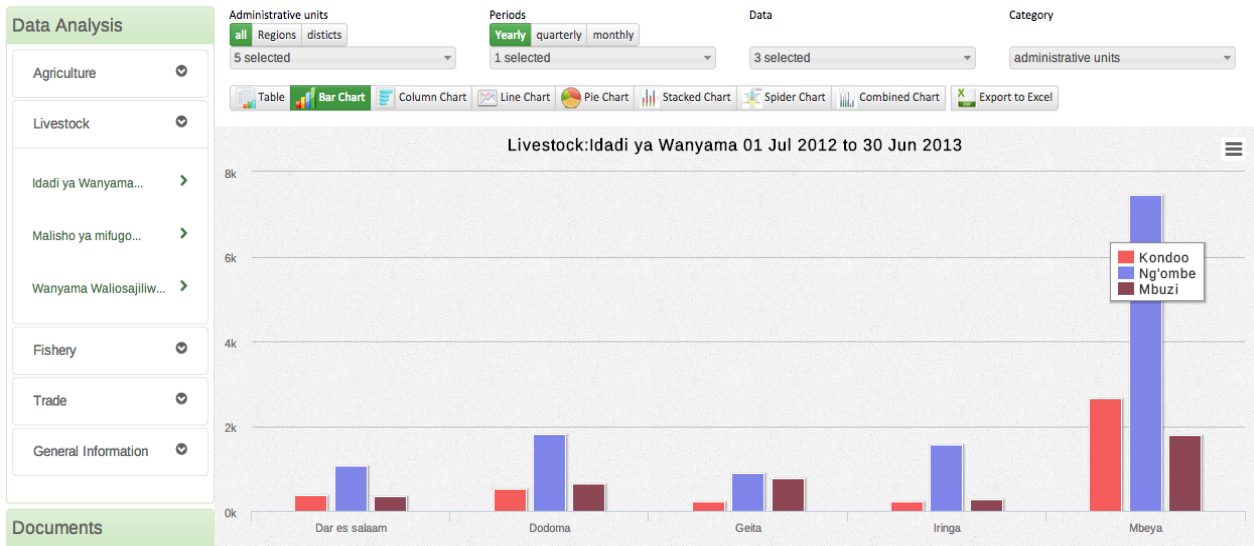


Figure 44: Data Analysis Module

- Data Analysis menus in the left panel is a list of saved favorite table in their respective categories.
- The table are produced and saved for this purpose using Pivot Table (to be explained in the Pivot Table module in the later section).
- When you select a menu the table will open. The table contains the data as it was selected by the one who created it in pivot table.

	Kondoo	Ng'ombe	Mbuzi
Dar es salaam	364.0	1070.0	340.0
Dodoma	534.0	1818.0	636.0
Geita	228.0	893.0	768.0
Iringa	233.0	1570.0	276.0
Kagera			
Kigoma			
Kilimanjaro			
Mbeya	2656.0	7453.0	1796.0

Figure 45: Default Table in Data Analysis as a Result of Saved Favorite in the Pivot Table

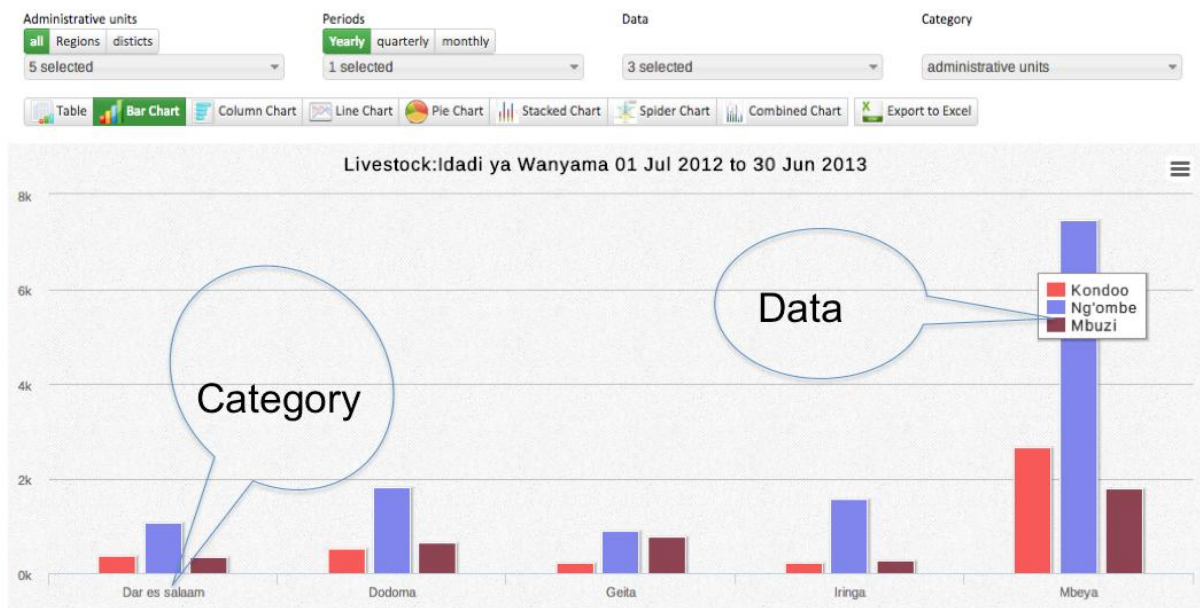
3.8.1 Selecting chart Type

- The Data Analysis module provides seven different chart types, each with different characteristics. You can select the type of your chart by clicking on one of the icons in top bar titled "Chart type". Chart Types consist of:
 - Column chart
 - Bar Chart
 - Line Chart

- Pie Chart
- Stacked Bar Chart
- Spider Chart
- Combined Chart

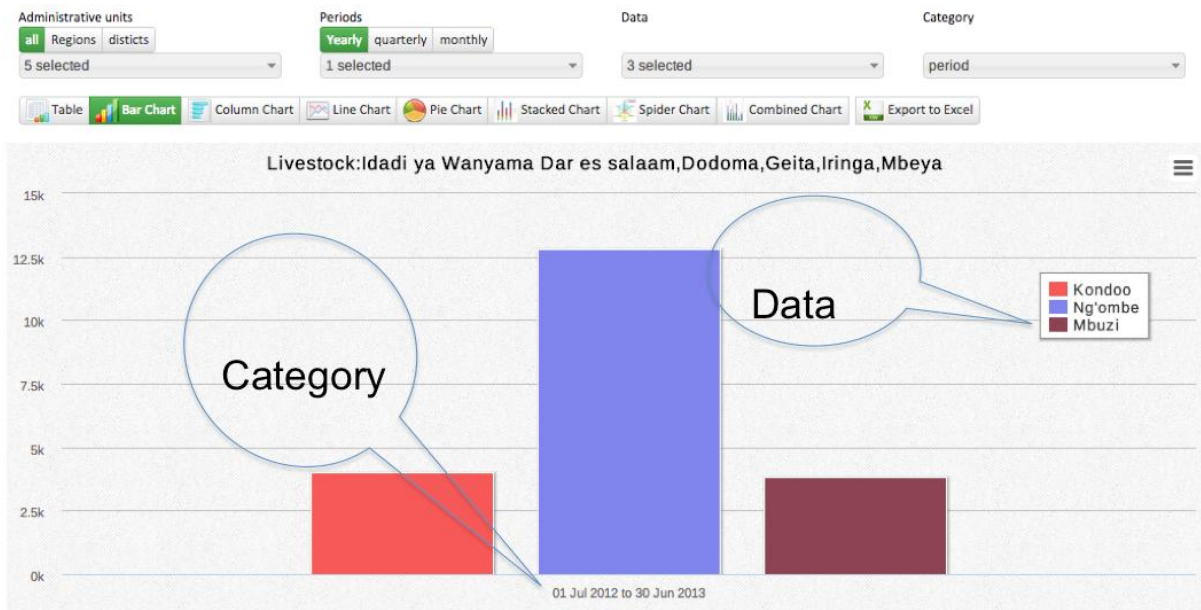
3.8.2 Selecting Administrative Unit, Period, Data and Category

- This section lets you change which dimension of the data you want to appear as series, category and filter.
- Dimension in this regard refers to the elements that describe the data values in the system.
- There are three main dimensions in the system:
 - Data: Includes data elements and Computed Values, describing the phenomena or event of the data.
 - Periods: Describes when the event took place.
 - Administrative units: Describes where the event took place.
- However, Data Analysis allows variation of data and only one of the two categories: Data against period or data against administrative unit. To select the option go to category in the top right, click on the drop down then select administrative unit or period. The following figure provides an illustration.



Note: Selected periods are displayed on the title of the chart

Figure 46: Data and Administrative Unit Category



Note: Selected administrative units are displayed on the title of the chart

Figure 47: Data and Period Category

3.8.3 Selecting Data Dimensions

- Selecting “What” Dimension of Data
 - Selecting Data element or Computed Values. The figure below provides an illustration.

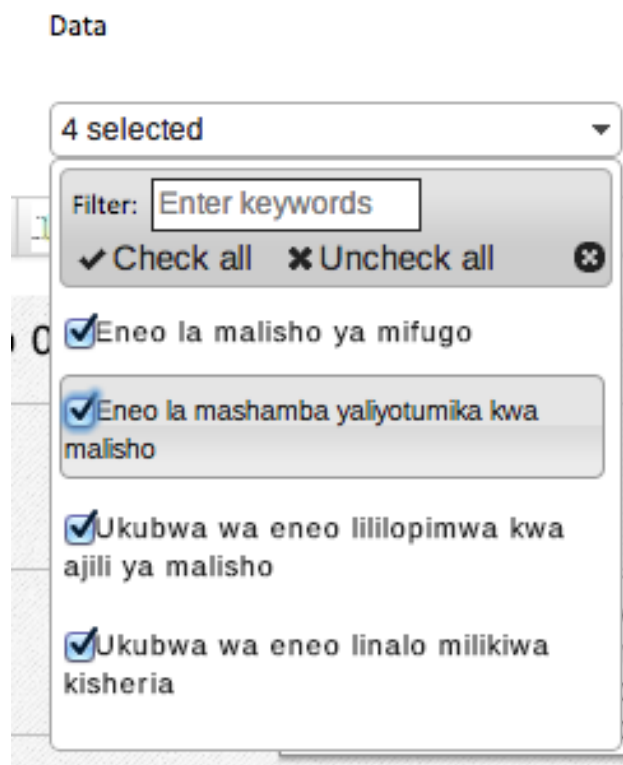


Figure 48: Selecting Data Dimension

- Selecting “Where” Aspect of Data i.e. Administrative unit
 - Choose Selection Mode for Administrative unit
 - All: List all Regions and Districts in the drop down for selection.
 - Region: List only all regions in the drop down for selection
 - District: List only all districts in the drop down for selection
 - For Quick selection a filter can be used to search for specific region or district. Also “Check all” and “uncheck all” can be used. The figure below provides an illustration.

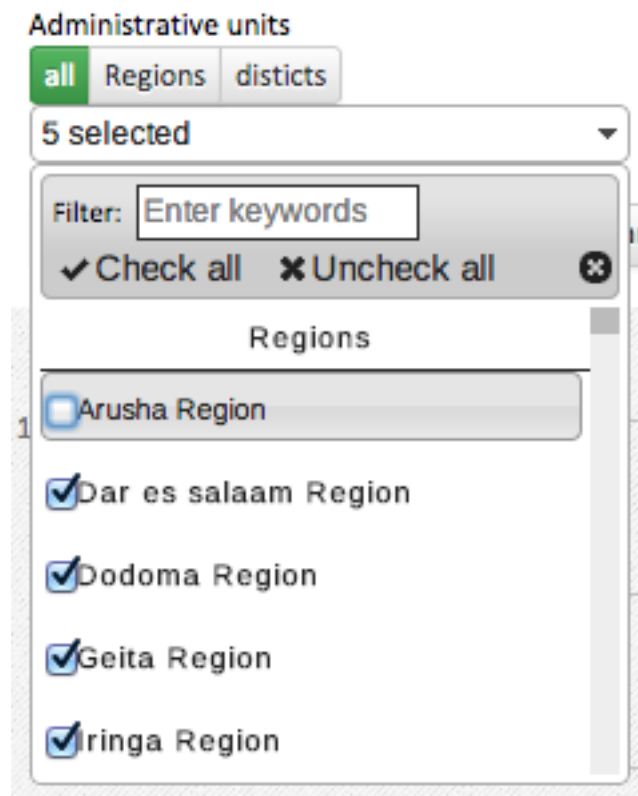


Figure 49: Selecting Administrative Unit

- Selecting “When” Aspect of Data i.e. Period
 - Choose Selection Mode for Period
 - Yearly: List all available financial years in the drop down for selection
 - Quarterly: List all available quarters in the drop down for selection
 - Monthly: List all available Months in the drop down for selection
 - For Quick selection a filter can be used to search for specific period. Also “Check all” and “uncheck all” can be used. The figure below provides an illustration.

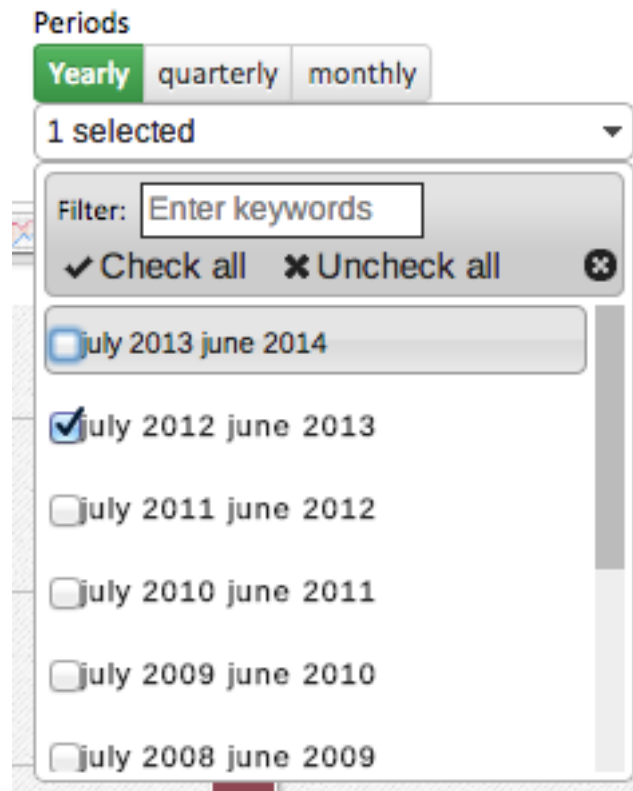


Figure 50: Selecting Period

3.8.4 Selecting a Chart Type and Editing the Chart

- After selecting the dimensions you can produce the chart by selecting type of chart on the top menu.
- After the chart is produced:
 - You can reduce series (data) by selecting and deselecting the series directly on the chart.
 - You can change, add, or remove selected period as explained in the previous slide.
- You may choose to view data in the table by selecting Table menu.
- You can also export selected data to Excel for further manipulation.

3.9 Pivot Table

Pivot Table provides a user with ability to manipulate data in a pivot table.

		2010		2011		Total		
		Ilala	Kinondoni	Ilala	Kinondoni			
(Mbuzi)	Ukubwa wa eneo la kulishia wanyama kijiikata	12	21	33	3	1	4	37
	Ukubwa wa eneo lililopimwa kwa ajili ya malisho	21	32	53	2	2	4	57
	Ukubwa wa eneo linalo milikiwa kisheria	4	32	36	21	2	23	59
		37	85	122	26	5	31	153
(Kondo)	Ukubwa wa eneo la kulishia wanyama kijiikata	21	12	33	4	5	9	42
	Ukubwa wa eneo lililopimwa kwa ajili ya malisho	12	21	33	32	4	36	69
	Ukubwa wa eneo linalo milikiwa kisheria	7	15	22	12	2	14	36
		40	48	88	48	11	59	147
(Ngombe)	Ukubwa wa eneo la kulishia wanyama kijiikata	111	12	123	2	2	4	127
	Ukubwa wa eneo lililopimwa kwa ajili ya malisho	21	21	42	32	1	33	75
	Ukubwa wa eneo linalo milikiwa kisheria	12	56	68	32	3	35	103
		144	89	233	66	6	72	305
Total		221	222	443	140	22	162	605

Figure 51: Report Module

3.9.1 Create a pivot Table

To create a pivot Table you may follow the following simple steps:

- Select items from any of the dimensions in the left menu
- You may click on layout to arrange your dimensions on table rows and columns as you wish
- Click update to create your table

3.9.1.1 Select the dimensions

- Select Computed Values
Double click on available options to select and double click on selected Computed Values to remove selection

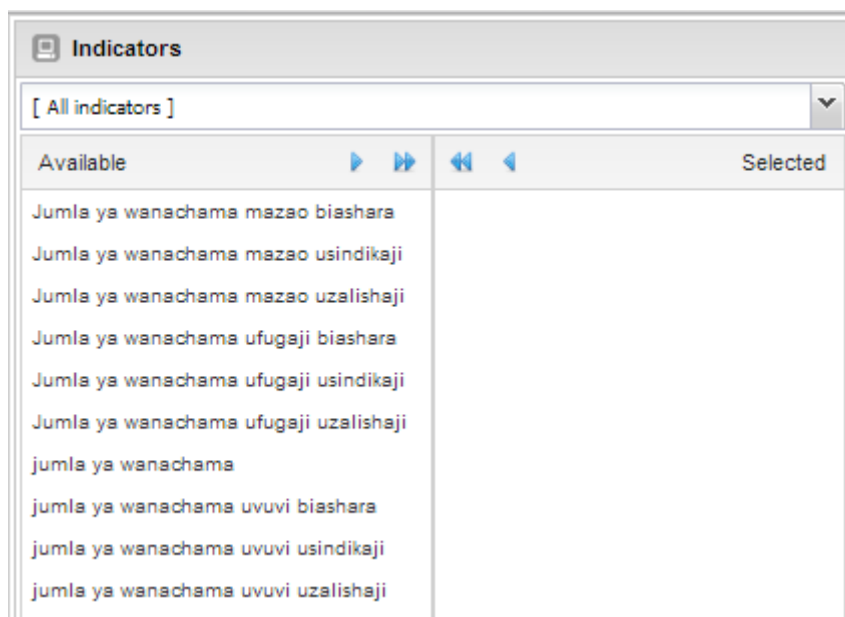


Figure 52: Select Computed Value Menu

- Select Data Elements

Double click on available options to select and double click on selected data elements to remove selection.

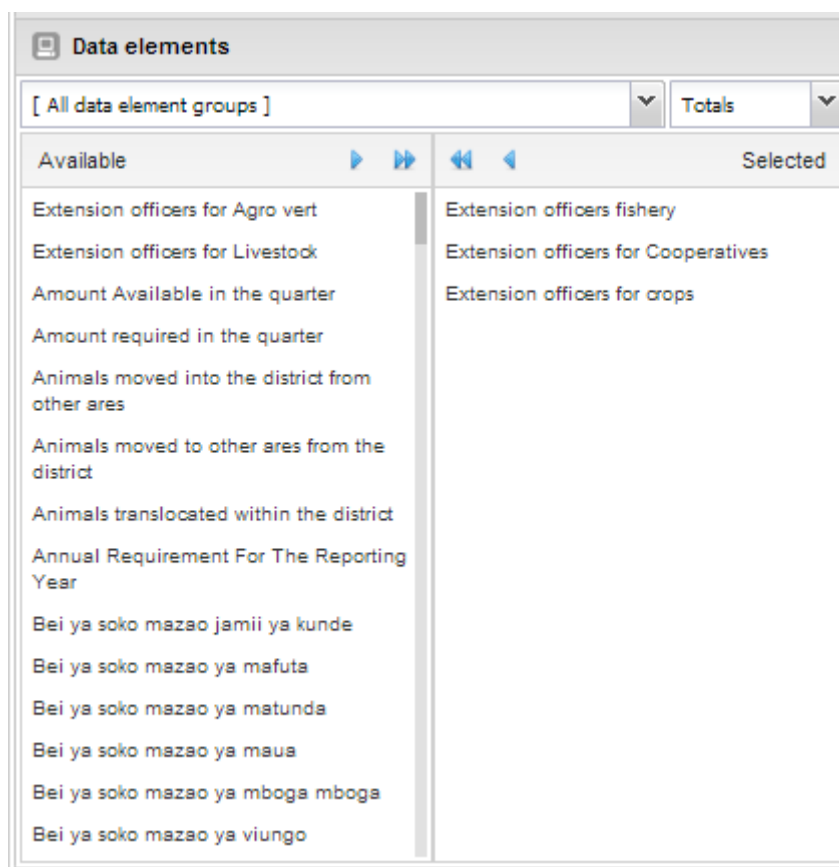


Figure 53: Select Data Element Menu

- Select Reporting Rates
Double click on available options to select and double click on selected reporting rates to remove selection.

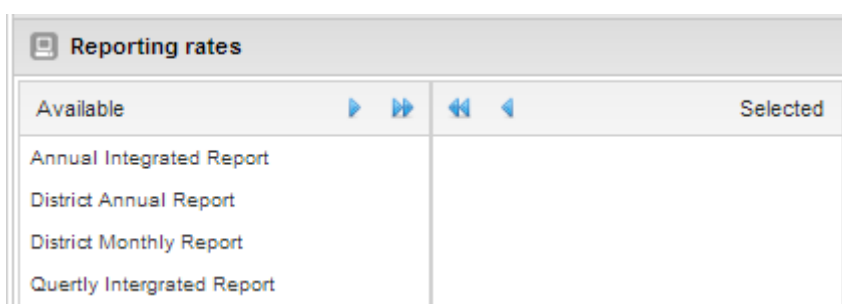


Figure 54: Select Reporting Retes Menu

- Select Periods
Double click on available options to select and double click on selected periods to remove selection or you may select more options as shown below

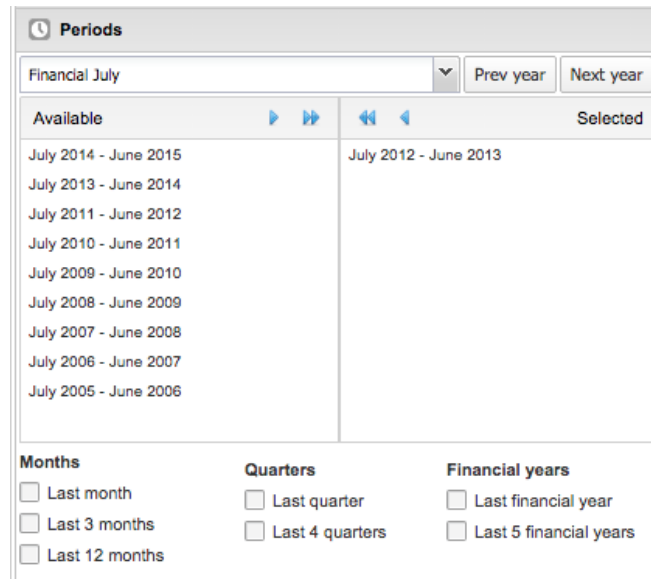


Figure 55: Select Period Menu

- Select Administrative Units

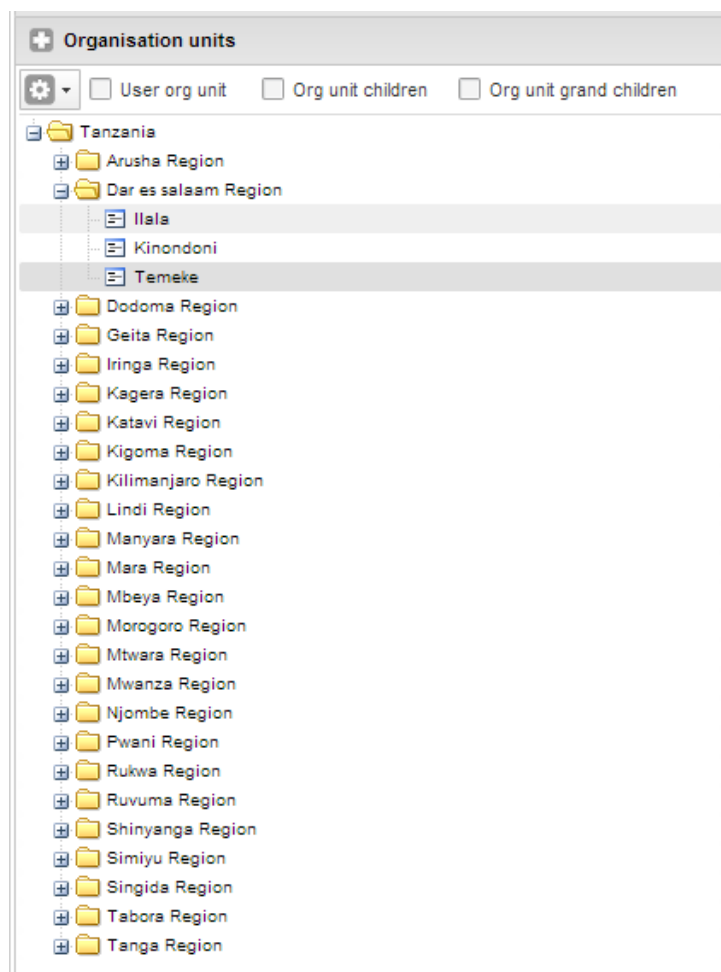


Figure 56: Select Administrative Units Menu

3.9.1.2 Arranging the layout of dimensions on table rows and columns

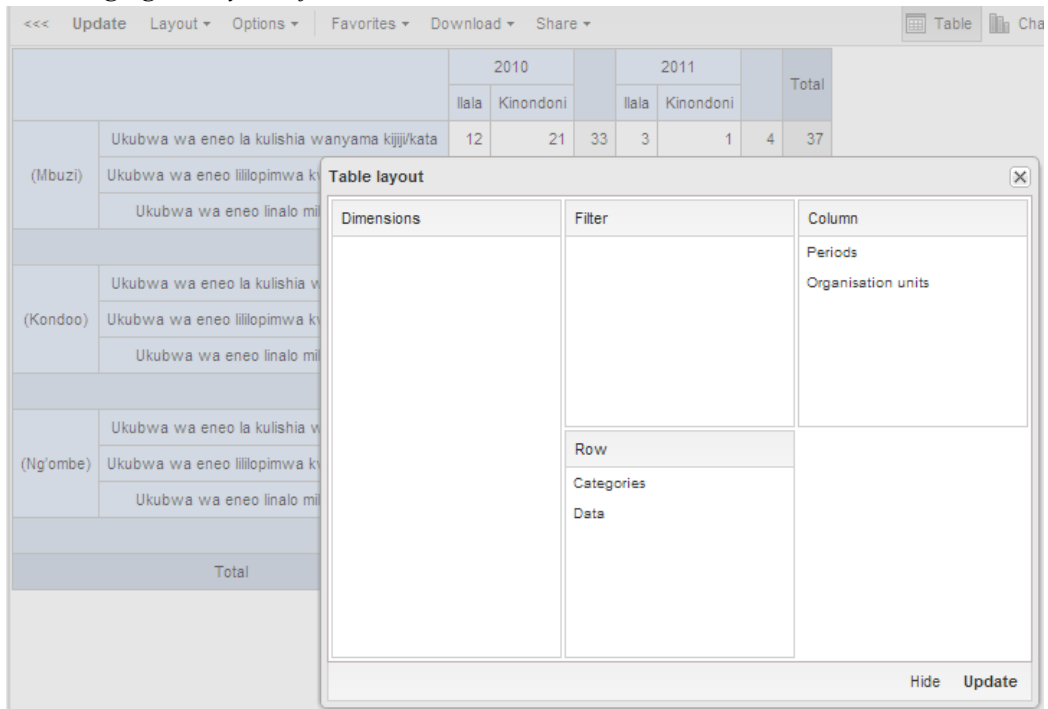


Figure 57: Layout Menu

3.9.2 Working with a pivot table

3.9.2.1 Select More Options

- You may go to options to hide sub-totals or empty rows, adjust font size and more.

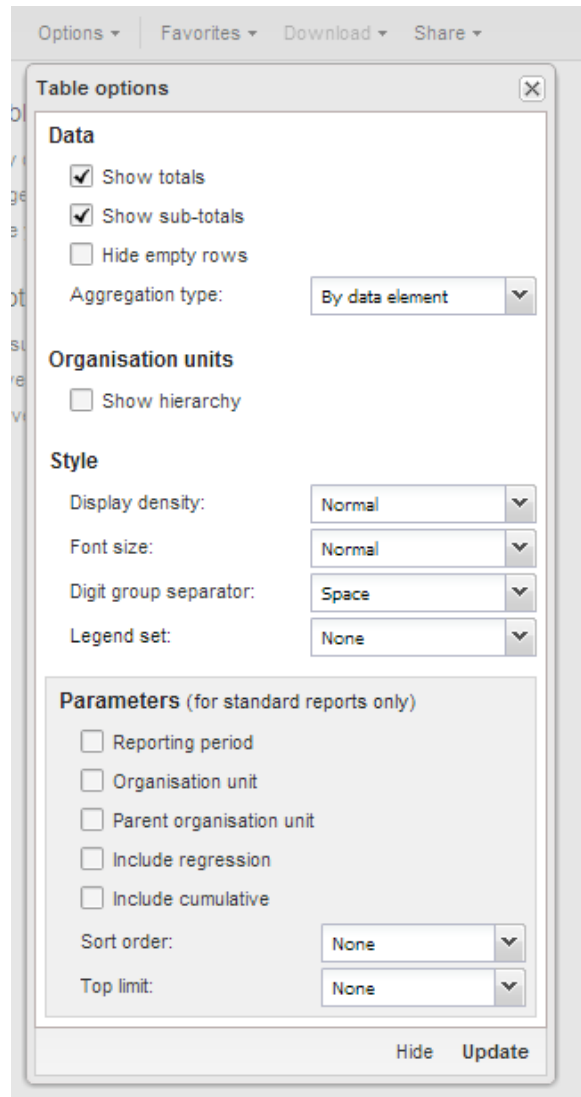


Figure 58: Options Menu

3.9.2.2 *Save as favorites*

- You may click on Favorites and save your table for later uses. For instance to add on the dashboard

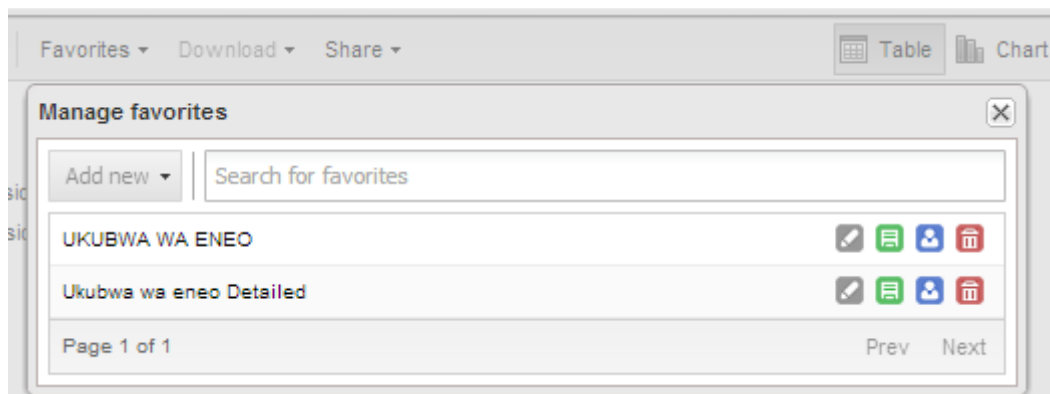


Figure 59: Favorite Menu

- When you have set up a pivot table and you want it to appear and being used in the Data Analysis module by other users, it is important to save it as a favourite using the following naming standards.
 - Select category name from the data analysis to which the data in your current table correspond to: E.g: “Livestock” for data about “Malisho ya mifugo”
 - Then write the full name of your favorite by starting with the category name followed by a colon and then name of your favorite table.
 - E.g: The full name of the example above should be Livestock:Malisho ya mifugo
 - The table will appear in the Data Analysis under the Livestock menu.
 - If your data does not correspond to any of the existing categories in the Data Analysis, you can define a new category name. But this is not recommended unless found necessary since will create a new menu in the data analysis panel.

3.9.2.3 Download table data

- You may click download to save table data in your computer in different formats

		2011		Total	
		Ilala	Kinondoni		
(Mbuzi)	Ukubwa wa eneo la kulishia wanyama kijiji/ka	3	1	4	37
	Ukubwa wa eneo lililopimwa kwa ajili ya malis	2	2	4	57
	Ukubwa wa eneo linalo milikiwa kisheria	21	2	23	59
		26	5	31	153
(Kondoo)	Ukubwa wa eneo la kulishia wanyama kijiji/ka	4	5	9	42
	Ukubwa wa eneo lililopimwa kwa ajili ya malis	32	4	36	69
	Ukubwa wa eneo linalo milikiwa kisheria	12	2	14	36
		48	11	59	147
	Ukubwa wa eneo la kulishia wanyama kijiji/ka	2	2	4	127

Figure 60: Download Menu

3.9.2.4 Other navigation menus

- You may share the table interpretation, switch between the table, chart and Map as well as navigating back to home by clicking on the buttons shown below.

		2010		2011		Total
		Ilala	Kinondoni	Ilala	Kinondoni	
(Mbuzi)	Ukubwa wa eneo la kulishia wanyama kijiji/ka					
	Ukubwa wa eneo lililopimwa kwa ajili ya malis					
	Ukubwa wa eneo linalo milikiwa kisheria					
(Kondoo)	Ukubwa wa eneo la kulishia wanyama kijiji/ka					
	Ukubwa wa eneo lililopimwa kwa ajili ya malis					
	Ukubwa wa eneo linalo milikiwa kisheria					
	Ukubwa wa eneo la kulishia wanyama kijiji/ka					

Figure 61: All other Navigation Menu

3.10 Data Visualizer

The data visualizer module enables users to easily create dynamic data analysis and visualizations through charts and data tables. You can freely select content (like Computed Values, periods and administrative units) for your analysis. This module can be accessed by

going to "Data -> Data Visualizer" in the main menu. The image below shows the viewport of the module. Consists of Left Panel, Top Panel and View Port

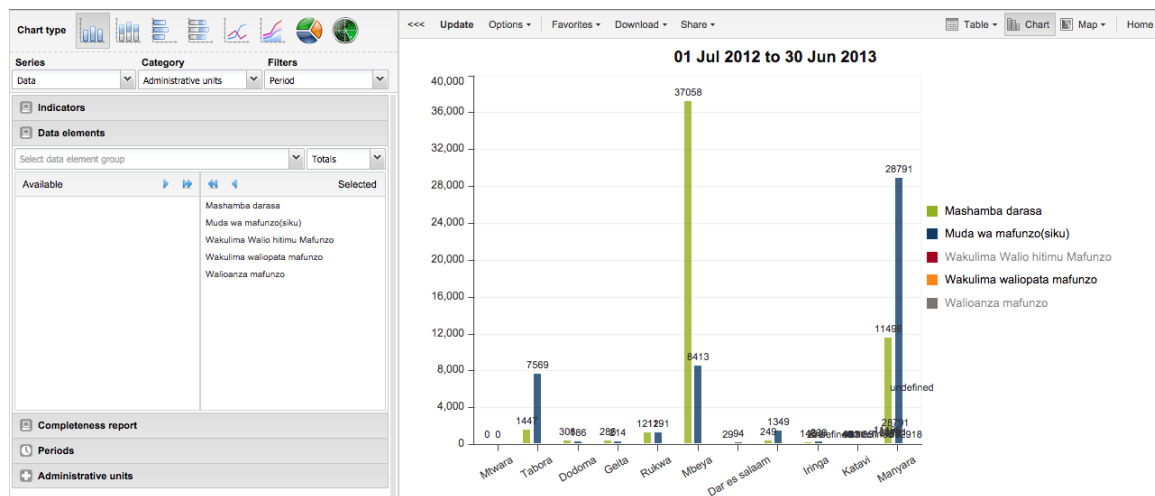


Figure 62: Data Visualizer

The data visualizer is designed firstly to be easy-to-use, you can simply select the Computed Values, data elements, periods and administrative units you want to include and click "Update" to get your visualization. Secondly it is designed to be fast and work well over poor Internet connections, charts are generated in the web browser and very little data is transferred over the Internet.

The Visualizer module provides eight different chart types, each with different characteristics. You can select the type of your chart by clicking on one of the icons in top left bar titled "Chart type". Chart Types consist of:

- Column chart
- Stacked Column Chart
- Bar Chart
- Stacked Bar Chart
- Line Chart
- Area Chart
- Pie Chart
- Radar Chart

3.10.1 Selecting Series, Category and filter

This section lets you define which dimension of the data you want to appear as series, category and filter. Dimension in this regard refers to the elements that describe the data values in the system. There are three main dimensions in the system:

- Data: Includes data elements and Computed Values, describing the phenomena or event of the data.
- Periods: Describes when the event took place.
- Administrative units: Describes where the event took place.

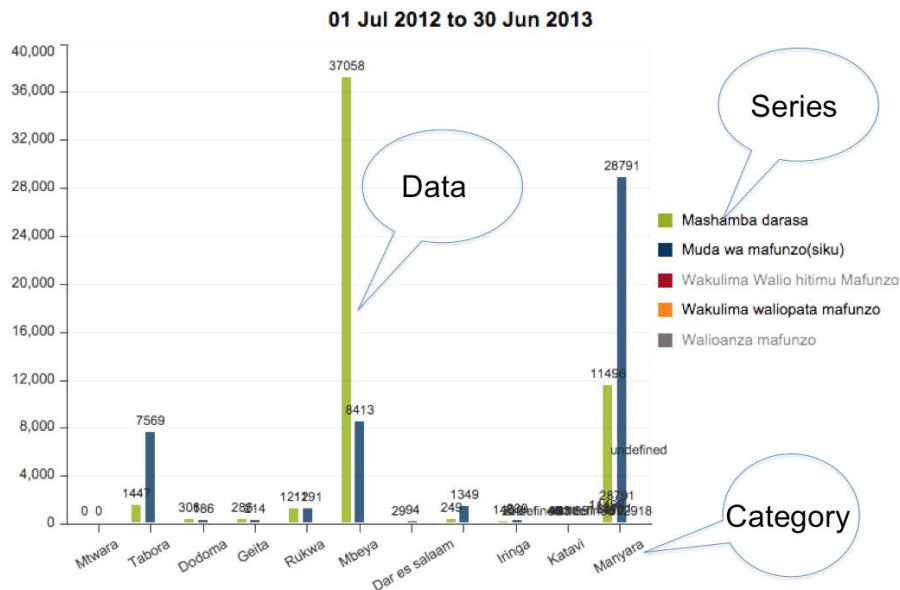


Figure 63: Series, Category and Filter in Data Visualizer

3.10.2 Selecting “What” Dimension of Data.

This is done in a similar way as in pivot table and involves the following:

- Selecting Computed Values
- Selecting Data element
- Selecting Reporting Rate

3.10.3 Selecting “Where” Aspect of Data i.e. Administrative unit

This is done in a similar way as in pivot table and involves the following:

- Choose Selection Mode for Administrative unit
 - By Levels (Select Levels) i.e. National, Regions, and Districts
 - By Groups i.e. if applicable
 - By Multiple selection (Select administrative unit) starts as default. Also, allows relative selection, e.g. User administrative unit or Users children administrative unit or User Grand children administrative unit.

3.10.4 Selecting “When” Aspect of Data i.e. Period

This is done in a similar way as in pivot table and involves the following:

- Choose Fixed Period by starting with “Select Period Type” i.e. Monthly, Quarterly, Annual (Financial July) followed by selecting the available fixed periods i.e. Months, Quarters, or Years
- Choose Relative Periods, i.e. Last 12 Months, last 3 Months, etc.

3.10.5 Selecting chart options

- You can set various chart options by clicking on the "Options" button the chart toolbar. The available options are:
 - Show trend line,
 - Show series data,
 - Target line value/title,
 - Base line value/title,
 - Show values,
 - Hide chart legend,
 - Hide chart title, Chart title,

- Domain axis label and Range axis label

3.10.6 Downloading chart as image or PDF

- After you have rendered a chart you can download it to your local computer as an image or pdf by clicking on "Download" on the top centre menu.
- The file will be automatically downloaded to your computer - for instance can you now embed the image file into a text document as part of a report.
- You can also download the data source behind the chart in json, xml, csv or Microsoft Excel format.

3.10.7 Saving chart as favourite

- Once you have rendered a chart you can save it as a favourite to be able to access it easily at a later point.
- Click on the "Favourites" button on the top menu to open up the favourites window.
- Click "Add new" and in the name field enter the desired name for your chart.
- The chart will be visible only to you.
- For every favourite in the list you have four options to the right.
- You can rename the chart (grey button), overwrite the chart (green button), modify the sharing settings of the chart (blue button) or delete the chart (red button).

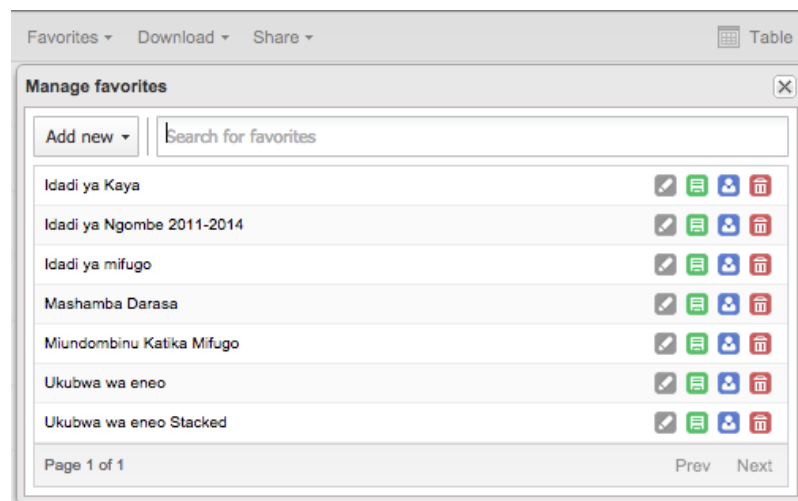


Figure 64: Manage Favorite Charts

- While in Data Visualizer, you may also navigate to pivot table, Map and Home Page through Table, Map and Home menus at the top left respectively.

3.11 GIS Map

Geographical Information System is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical/geospatial data. GIS is made up of spatial and non-spatial data, where as spatial data refers to co-ordinate reference systems (CRS), which specify location of an object, and non-spatial data refers to attributes of that object. GIS allows merging of geographical and statistical information to enforce informed decision making. In ARDS Portal, GIS is used to merge data element and Computed Value statistical reports with geographical/geospatial data that is National, district and regional locations. The following screenshot is an example of geographical map shows “Jumla ya ng’ombe waliosajiliwa” in all Manyara districts from July 2012 to July 2013 on Google Hybrid Map.

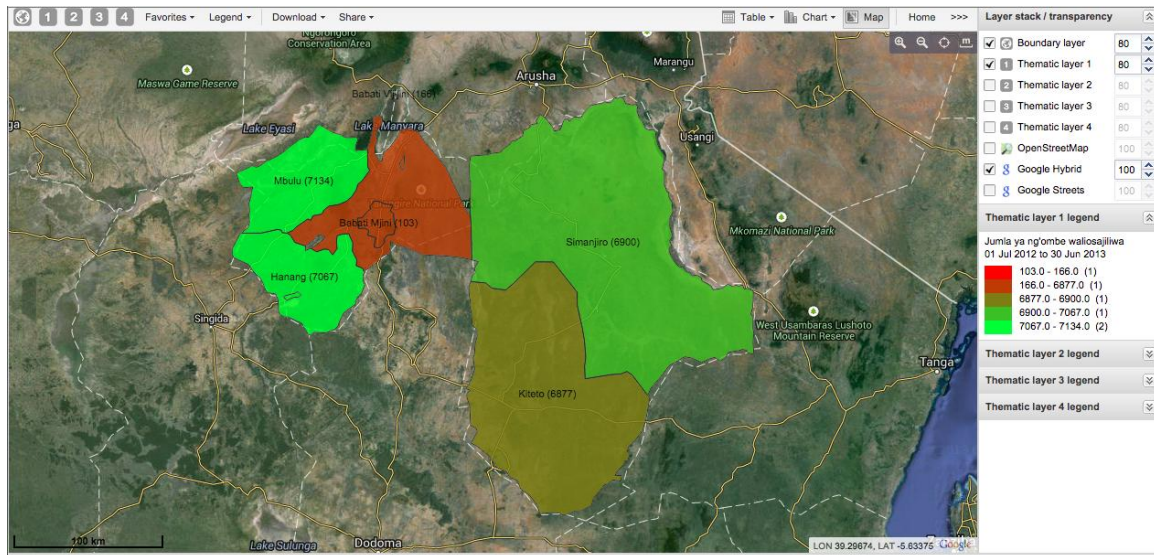


Figure 65: Example of Geographical Map in ARDS Web Portal

3.11.1 Why GIS In ARDS Web Portal?

GIS is applied in modelling of ARDS reports associating it with geospatial/geographical information, among the uses include:

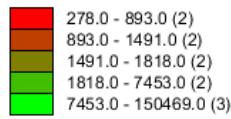
- Visualize distributions of all agricultural data available in the system per district/region/nation
- Visualize periodic reporting of these data, that is
 - Monthly
 - Quarterly
 - Annually
- Identifying geographical barriers by relating data distribution on the map with the actual geographical nature of the area by using Google Hybrid Map, Google Street Map or OpenStreetMap.

3.11.2 Concept of Layers in GIS for reporting

- GIS has been built upon a concept of layers, where each layer can be used to present different set of data all superimposed in one map.
- These layers organize geographical data into a series of thematic layers and tables. Because data in GIS are referenced to geography, they have real world locations and could overlay one another.
- GIS Links the location of objects into layers (such as Crop productions to Districts, Region and etc.)
- In GIS, Collection of geographical features are organized into data elements, Computed Values and Forms
- The example of geographical map below shows “idadi ya ng’ombe” in regions from July 2012 to July 2013

Idadi ya ng'ombe

Ng'ombe
01 Jul 2012 to 30 Jun 2013



200 km

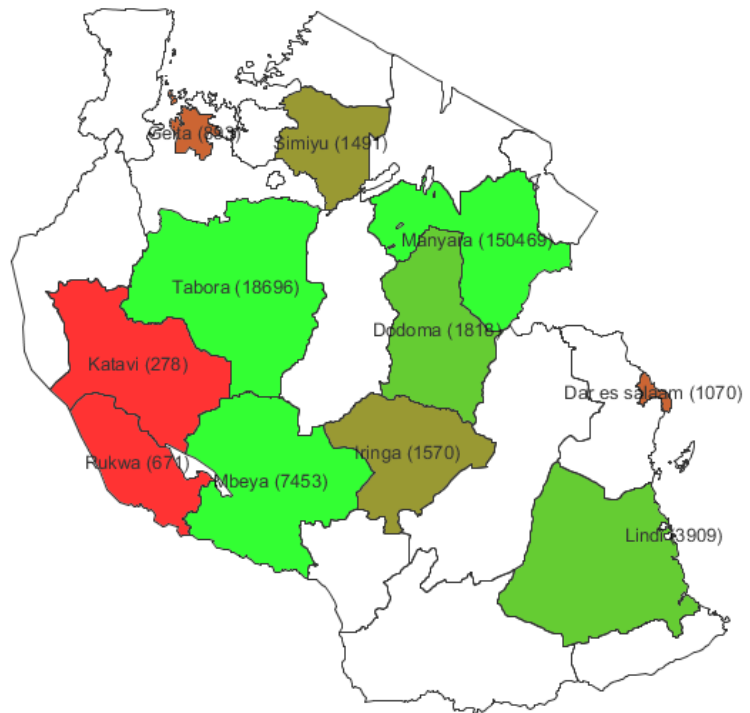


Figure 66: A geographical Showing Number of Cows in each Region of Tanzania from July 2012 to July 2013

3.11.3 Boundary/Borders Layer

- Boundary Layers are used to present borders at different levels of administrative unit structure it can show
 - National Borders
 - Regional Borders
 - District Borders



Boundary Layer showing national borders for Tanzania

Manyara

100 km



Boundary Layer showing district borders for Manyara Region

Figure 67: Examples of Boundary Layer

3.11.4 Thematic/Data Reporting Layers

- Thematic Layers are used in thematic mapping to describe the spatial pattern of a social or physical phenomenon, such as crop production, livestock keeping, agricultural equipments, etc.
- There are four thematic layers in ARDS Portal, These thematic layers lets you use your data for thematic mapping.
- To do so you select your desired Computed Value / data element -> period -> map combination, then administrative unit level and finally parent to define boundary.
- If your database has coordinates for these administrative units will appear on the map.
- For example to create a geographical map with thematic Layer 1 superimposed with Google Street Map layer, showing “Idadi ya ng’ombe waliosajiliwa” for Manyara districts July 2012 to July 2013 will need to follow the following steps:
- Define boundary layer for all Manyara districts
 - Define boundary layer for all Manyara districts. Go to boundary layer then edit the layer by selecting all districts in Manyara region and click update.

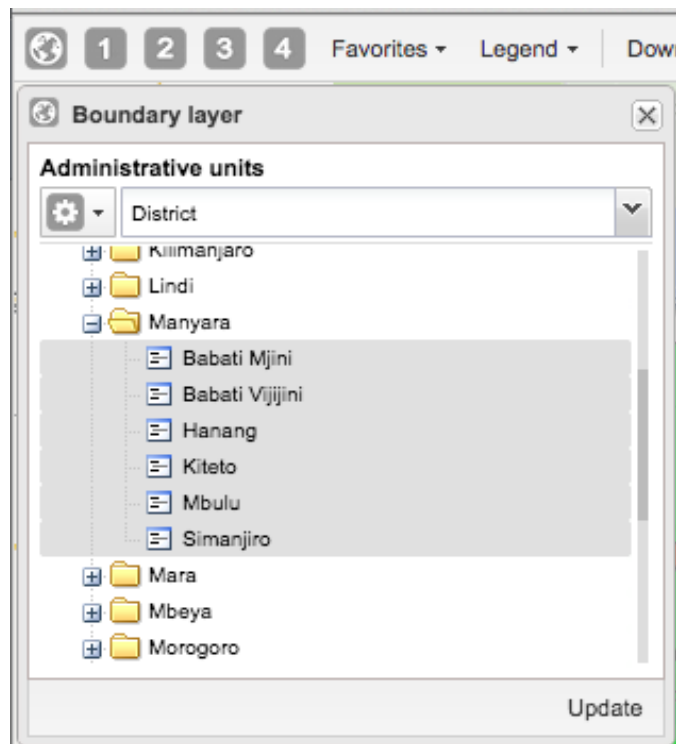


Figure 68: Create Boundary layer for all Districts in Manyara Region

- Define (edit) thematic layer 1 by Selecting Data, period administrative unit and legends options as shown in the figure below.

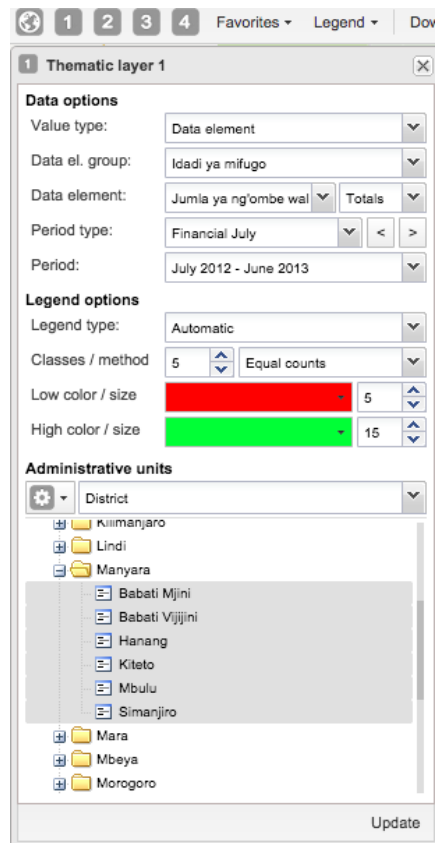


Figure 69: Edit Thematic Layer 1

- On the right panel check Boundary Layer, Thematic Layer 1 and Google Street
- You may chose to show or hide labels, apply filter or search for administrative unit by right clicking on the Thematic Layer 1.
- Once you are done then click update. The following map will be created provided that you chose to show label.

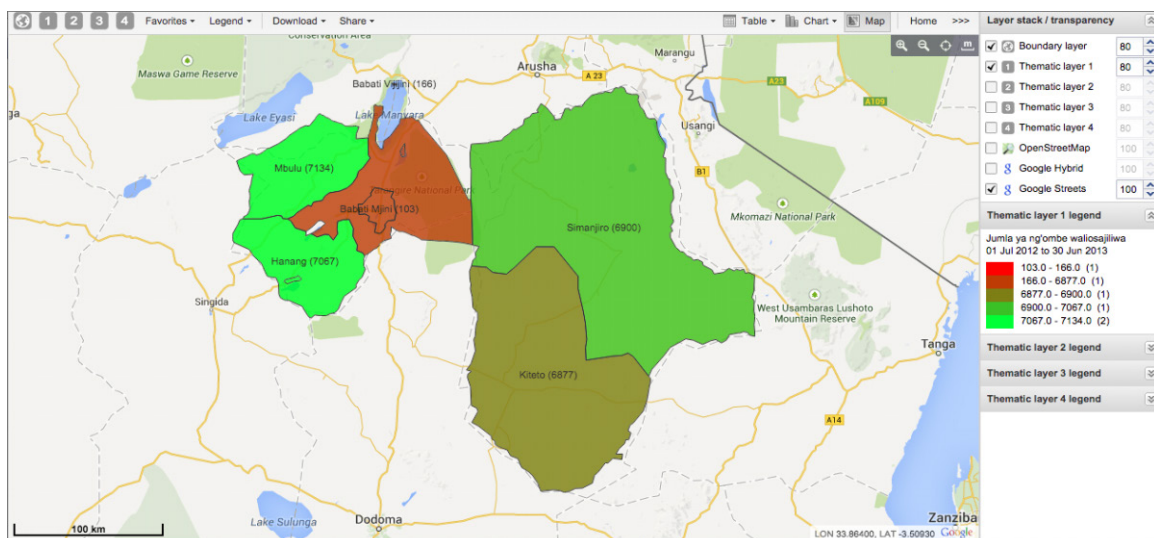


Figure 70: GIS Report with Layers

3.11.5 Automatic Vs. Predefined Legends

- You may select to use automatic legend where you can only specify:
 - Number of classes you wish to have to differentiate data in different range (the maximum number of classes is 7)
 - The low color and its size
 - High color and its size
- Thus the legends auto generates the intermediate range/colors.

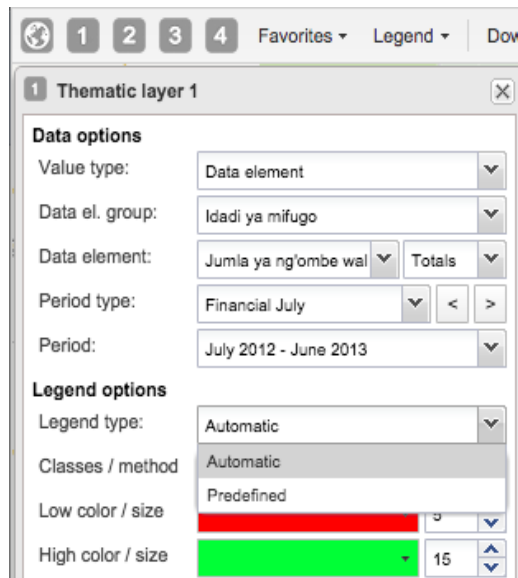


Figure 71: Automatic Legends

- You may define a custom legend then save and use it as predefined legend when defining a thematic layer (Unlimited number of classes)

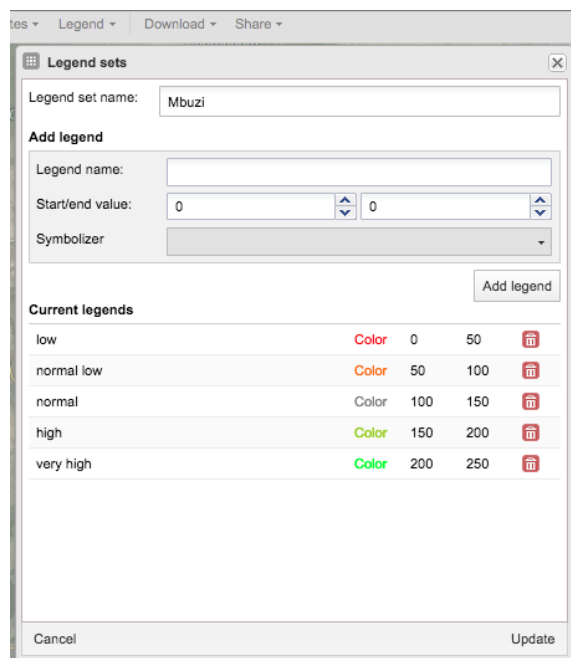


Figure 72: Predefined Legends

3.11.6 Selecting the Layers

- You may use the right panel of the ARDS Portal GIS Map module to:
- Select and deselect Boundary layer and Thematic layers to be displayed.
- Select to include OpenStreetMap or Google Hybrid or Google Street Map or non.
- Change transparency of the layers to improve visibility.
- View legends for each thematic layer with their color/data range.

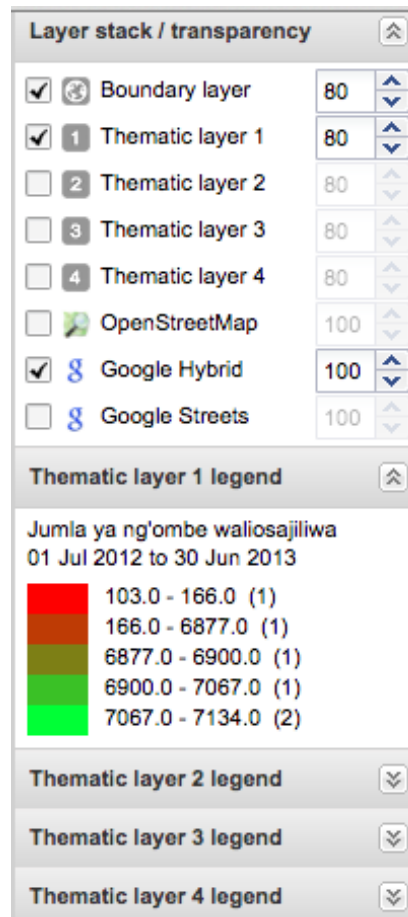


Figure 73: Layer Stack and Transparency

3.11.7 Saving Favorite Map

- To create Favorite Map:
- Click the "Favorite" button on the toolbar to get the Manage Favorites window.
- The first option is "Add new" which opens up a window where you are supposed to type the name of the favorite and create the favorite.
- A list of all available favorites including the one created above appears below the "Add new" menu with additional menu for each favorite to allow a user to rename, overwrite, share and delete the favorite

3.11.8 Download Map as Image & PDF

- To Export map to an image or PDF:

- Click the download button on the map toolbar, the window will open with Download map as PNG (image) selected by default.
- Then enter the map title and click download to export the map to an image.
- You may select PDF from the drop down menu and click download to export the map to PDF instead of image (PNG)
- The map exported to an image or PDF can then be printed for further use

3.11.9 Measuring Distance

- Distance between point to point on the map.
 - For instance, you may want to know the distance between lake Manyara and Kiteto district as compared to Mbulu district in order to assess the difference in a certain production related to water sources
- To measure distance between point to point:
 - Click the “M” icon on the top right map toolbar to enter measuring mode.
 - Now, click your desired start location on the map and a line will follow the cursor toward your destination.
 - Single click to create a line point, double click to finish the line.
 - To exit measuring mode, click the toolbar icon again or close the window.

3.11.10 Output Usage for routine reporting

- The saved GIS Map Image can be re-used in reporting of ARDS data using different Office application suites such as Microsoft Office (PowerPoint, Word, Excel etc.), or other Non Microsoft Suite product like Open Office (Word, Calc, Impress, etc..),
- To re-use the saved Image on Microsoft office
 - Open Microsoft Office Word or Powerpoint
 - Point where you want to place your map
 - Go under insert menu, Select Picture to insert picture from file (Note: GIS Map save the map to the download folder as image nameYouSpecified.png)
 - Browse your image from location you saved
 - Insert the image in your work and it'll appear in your document.
- Then you can send your Report/Presentation with GIS Map.

3.12 Report

ARDS Portal provides a range of reporting alternative. The user can get ARDS-LGMD2 original reports as per administrative unit and ARDS reporting structure (Monthly, Quarterly and Annual). The report generated can be printed or exported to Excel and PDF. Customized reports can be generated as per users requirements where a user can customize look and feel of different reports using jaspersoft iReport tool. Also, user can get submission status report as per administrative unit. Each method gives detailed information, which can be used in analyzing the data you have in the system.

- To generate report left click on the Report Menu of the home page and options to generate ARDS standard reports and custom reports will appear.

Note: Report module also supports Data Approval and Aggregation. If there is new data that have been submitted, aggregation should take place as per schedule or on demand before viewing the report. Details of Aggregation and Data Approval process are explained in the section 3.5.4 and 3.6 respectively.

3.12.1 Standard Report

Gives LGMD2i original reports. Essentially, it is a report of datasets filled with either raw or aggregated data. Only available for the following forms that mimic the LGMD2i original reports: District Monthly Report, District Quarterly Report, District Annual Report, Quarterly, Integrated Report and Annual Integrated Report. To generate standard report use the following steps:

- Select Standard Report to generate ARDS Standard reports and the menus shown below will appear.
- Use the menus to specify the type of standard report you want. For example, if you need District Quarterly Report of Chamwino.
 - On the report select District Quarterly Report so as to use standard forms and table of the District Quarterly Reports.
 - On the report period select Quarterly and choose which quarter for example January-March 2014 in the diagram below.
 - Navigate through the administrative unit’s tree menu: Tanzania → Dodoma → Chamwino.
 - Then left click on Get Report to generate the report

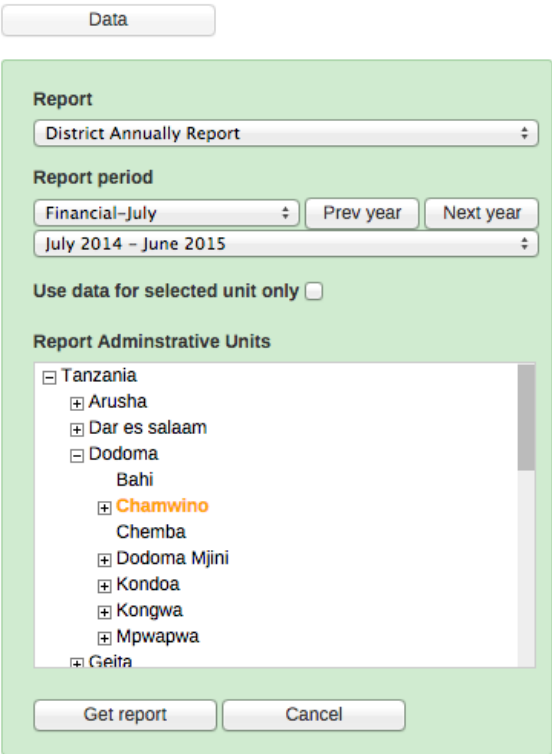


Figure 74: Creating ARDS Standard Report

- The report will then be generated using the standard ARDS format of forms and table as shown below.
- You can then download the report as Excel or PDF format. Also, you can print the report for other uses.

Temeke - Apr to Jun 2014

Write a comment, question or interpretation of this report

Fomu ya Taarifa ya Robo Mwaka ya Mpango wa Maendeleo ya Kilimo wa Kijiji/Kata

1. Hali ya chakula kijijini

	Namba ya Vijiji/Kata
Nzuri	
Wastani	
Mbaya	

Eleza hali ya upatikanaji wa chakula kipindi cha robo mwaka

Idadi ya kaya zisizokuwa na chakula	Idadi ya kaya zenye chakula pungufu	Idadi ya kaya zenye chakula cha kutosha	Idadi ya kaya zenye chakula cha ziada

2. Mikundaji/taarifa wa wakulima

Figure 75: A sample of District Quarterly Report

3.12.2 Custom Report

- Create a New Custom Report
 - You can also create a new Custom Report by left clicking on the Add new button and add in details as shown in the figure below.
 - For example you may select to use Jasper report where as you have to design the report template by using Jasper iReport tool and upload the template as a design file
 - You may also chose report table that you what to be used in your custom report
 - Then save the report which will then be available for the next step outline below.

Create new report

This object will be created with public edit and view rights

Details

Name

Type Jasper report with report table data source ▼

Design file No file chosen

Report Table [None] ▼

Figure 76: Define New Custom Report

- Access Available Custom Report
 - You access the available reports from the main menu, by selecting Reports.
 - In the report select Custom Report. A list of all pre-defined reports will appear in the main window.
 - From a list of all pre-defined reports you create a report you want.
 - You will then see a report parameter window where you must fill in the values needed for administrative units and/or reporting month, depending on what has been defined in the underlying report table(s).
 - Click on "Get Report" when you are ready.
 - The report will appear directly in your browser or be available as a .pdf file for download, depending on your browser settings for handling pdf files.
 - You can save the file and keep it locally on your computer for later use.

The screenshot shows a web interface for displaying custom reports. At the top, there is a search bar labeled "Filter by name" with "Filter" and "Clear" buttons to its right. Further right is an "Add new" button. Below the search bar is a table header with the word "Name" and a small downward-pointing arrow.

Figure 77: Display Existing Custom Reports

3.12.3 Submission Status

Essentially, it shows report submission status. Submission Status Report will show how many forms have been submitted by administrative units according to:

- Set of defined compulsory data elements,
- Total registered data values for a report.

It also shows the timely report submission rate for the administrative unit. The report is accessible through the report menu in the main menu. Select Submission Status.

- Steps:
 - Select the administrative unit from the tree. (Where?)
 - Select one of the completeness methods.
 - Select all or one form (All will give you a report with all forms for the selected administrative unit. One report will give you a report with submission status for all the children of the selected administrative unit.) (What?)
 - Select a period type and a period from the list of available periods for that period type. (When?)
 - Finally click the get report button.
 - You can download as excel, pdf or csv file.

3.13 Managing your account

In order to login to the ARDS Web Portal you need a user name and password. Therefore, if you are the first time user you need to contact the administrator and request a user account for you.

3.13.1 Update account information

It is a good practice to keep your account information up to date. To do so follow the following steps:

- Login to the system
- Go to the top right corner of your screen.
- Click on the drop down menu which is labeled the name of the current user i.e. your user name.
- Select Update Info on the drop down list
- Fill in the Profile Details form accordingly and save

The image shows a web form titled "Profile details". It contains the following fields:

- E-mail: A single-line text input field.
- Mobile phone number: A single-line text input field.
- Introduction: A large multi-line text area with a small icon in the bottom right corner.
- Job title: A single-line text input field.
- Gender: A dropdown menu with "Male" selected.
- Birthday: A single-line text input field.
- Nationality: A single-line text input field.
- Employer: A single-line text input field.
- Education: A large multi-line text area with a small icon in the bottom right corner.
- Interests: A large multi-line text area with a small icon in the bottom right corner.
- Languages: A large multi-line text area with a small icon in the bottom right corner.

Figure 78: Update Account Information Form

3.13.2 Change Password

As a user of the ARDS Web Portal you are directly responsible to protect your password by making sure that it is only known by you. When administrator created an account for you, may use a default password therefore you shall change your password immediately after your first login. Also, as a password security best practice it is recommended that you change your password frequently or whenever you suspect possible disclosure of your password to someone else.

To change password follow the same steps as in section 3.6.1 above but select change password from the drop down list, fill in the requested information and save.

If you forget your password then contact the administrator.

User Account

Details

User name	admin
First name *	admin
Last name *	admin
Old password *	
New password	
Retype new password	
E-mail	
Mobile phone number	

Save

Figure 79: Change Password Form

3.13.3 Logout and exit the portal

For security purpose remember to log out whenever you want to quit the portal and do not leave the portal open on your computer or any other devices when you are not using it. This is to protect ARDS data by ensuring that confidentiality of data is not compromised when someone get access to your computer or other devices. To exit the portal you should follow the following steps:

- Go to the top right corner of your screen.
- Click on the drop down menu which is labeled the name of the current user i.e. your user name.
- Select logout on the drop down list
- If your web browser contains other open tabs close all tabs containing ARDS Web Portal pages or simply close the browser if you do not want to keep any of the existing browser tabs open.

3.14 Onscreen Help

The ARDS Web Portal includes whenever necessary an onscreen help instructions for a user. If you get stuck on how to carry out a particular activity just look around the screen to find a question mark icon as the one shown below. When you left click on the question mark icon a popup panel containing help instruction will appear on the screen.

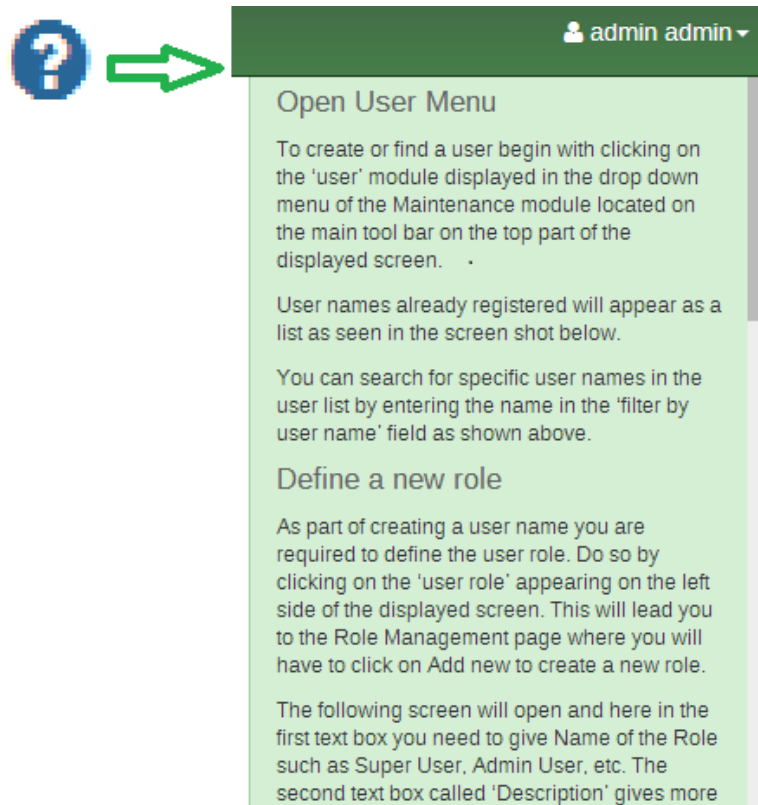


Figure 80: A Sample of Onscreen Help

3.15 Help Center

This is an inbuilt ARDS Web Portal online user manual and it is accessible in any page of ARDS Portal including the ARDS-LGMD2 Web Based Data Entry user interface. To go to the Help Center click the username in the top right menu and select help center and the following screen will appear where you can select appropriate topic based on your need.

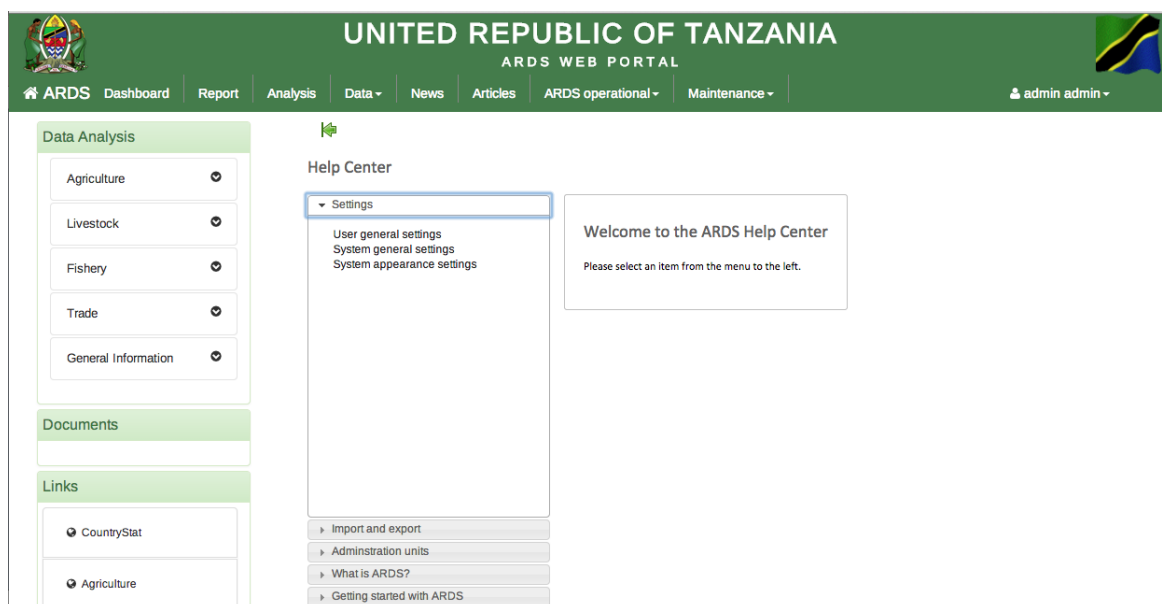


Figure 81: Help Center



AGRICULTURAL ROUTINE DATA SYSTEM WEB APPLICATION DEVELOPMENT PROJECT

Operations and Maintenance Technical Manual (Version 2)

PREPARED AND SUBMITTED BY:
PROJECT TEAM
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
UNIVERSITY OF DAR ES SALAAM
FOR
JICA TECHNICAL COOPERATION PROJECT
FOR CAPACITY DEVELOPMENT FOR THE ASDP MONITORING AND
EVALUATION SYSTEM, PHASE II
MINISTRY OF AGRICULTURE, FOOD SECURITY, AND COOPERATIVES

February 13, 2015



Revision History

Date	Version	Author	Section	Amendment
June 11, 2014	Zero	UDSM	All	n/a
November 24, 2014	First	UDSM	3, 4.1, 4.3 – 4.6, 5, 6	Section 3 has been updated, Some screen shorts in Section 4.1 have been updated, Section 4.3 - 4.6, and 5 are new contents. Section 6 have been removed
February 13, 2015	Version 2	UDSM	1, 2, 4, 5	Section 1&2 have been revised to include A ARDS-LGMD2 Web Based Data Entry that has been integrated to the portal. Section 4.5.8, 4.7, 4.8, 5.2.8 have been added for ARDS administrative unit, synchronization, aggregation and lookup table respectively Also minor changes have been made on other sections too.

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1 General Information

1.1 System Overview

The Agricultural Routine Data System (ARDS) Web Portal was primarily intended to provide functions where ARDS data from the LGMD2/2i database can be uploaded at the portal, viewed, analyzed, and downloaded for further processing. The ARDS Web Portal aims to enable sharing of the ARDS data broadly among all relevant Local Government Authorities (LGAs) and Monitoring & Evaluation Units of Agriculture Sector Leading Ministries (ASLMs). Such that, officers of authorities can easily access and download the data for their specific demands regardless their computer has LGMD2/2i application installed. Currently, the application has been upgraded and integrated as the ARDS-LGMD2 web based data entry module of the ARDS Web Portal.

The ARDS Portal is a web-based application thus accessible through the Internet by a web browser. Users access all functions provided by the portal, including the ARDS-LGMD2 Web Based Data Entry, through friendly and intuitive interactive controls of the graphical user interface.

ARDS Web Portal can be perceived as a platform on several levels. First, the portal's key source of data is the improved ARDS-LGMD2 web based data entry, which serves as a tool for collecting ARDS data. Second, the ARDS Web Portal database is designed ground-up with flexibility in mind. Data structures such as data elements, forms and user roles can be defined completely freely through the application user interface. These make it possible for the portal to incorporate the improved ARDS-LGMD2 web based data entry while offering flexibility to accommodate future changes at the portal user interface.

Third, The ARDS Web Portal architecture and functions is broken up into separate modules. Due to the modular design of portal, it can be extended with additional modules. These modules can live side by side with the core modules of ARDS Web Portal. This is a powerful feature as it makes it possible to extend the portal with extra functionality when needed.

The application delivered in this phase is functional system in that it includes the ARDS-LGMD2 web based data entry, report, pivot table, Data Visualizer, Maps, Data Analysis, dashboard, News and Content Management System (CMS) and other maintenance tools. Functions provided by these tools will be discussed later in this document.

1.2 Authorized Use Permission

This section will provide a warning regarding unauthorized usage of the ARDS Web Portal and making unauthorized copies of data, software, reports, and documents, if applicable.

1.3 Points of Contact

1.3.1 Information

For additional information, UDSM team of ARDS Web Application Development Project can be contacted through Project coordinator: Dr. Honest Kimaro (honest_c@yahoo.com).

1.4 Organization of the Manual

The remaining sections of this manual provide system summary and explanation on how to set up, operate and maintain the ARDS Web Portal. General overview of the system is outlined in section 2 of this document. Section 3 provides an administrator guide on how to install and set up the ARDS Web Portal Server. Section 4 provides a guideline for administrative operation of the portal. System maintenance and troubleshooting guide is discussed in section 5.

1.5 Acronyms and Abbreviations

ARDS	Agricultural Routine Data System
ASLMs	Agricultural Sector Lead Ministries
GIS	Geographical Information System
HTTPS	Hypertext Transfer Protocol Secure
JICA	Japan International Cooperation Agency
LAN	Local Area Network
LGA	Local Government Authority
LGMD	Local Government Monitoring Database
MAFC	Ministry of Agriculture, Food Security and Cooperatives
M&E	Monitoring and Evaluation
MSSQL	Microsoft SQL Server
SDS	Software Design Specification
SRS	Software Requirement Specification
TOR	Terms of Reference
TWG	Thematic Working Group
UDSM	University of Dar es Salaam
URL	Universal Resource Locator
VAEO	Village Agricultural Extension Officer(s)
WAEO	Ward Agricultural Extension Officer(s)

2 System Summary

This section provides a general overview of the system. It outlines the uses of the system in supporting the activities of the user.

2.1 System Configuration

The Diagram below illustrate configuration of the ARDS Web Portal and its integration with the ARDS-LGMD2 web based data entry. A user can use a desktop, laptop, tablet, Personal Data Assistant (PDA), smart phone or any other device, which is running any web browser except Internet Explorer version 7 and below. The device shall be connected to the ARDS Web Portal Server either through the LAN or the Internet. A user will be required to run a web browser and provide URL of the ARDS Web Portal Server. Currently, the web browser communicate with the server using HTTP but later HTTPS will be used to encrypt data transmitted between user’s web browser and the server so as to ensure confidentiality of data, in particular when a user access the server through the Internet.

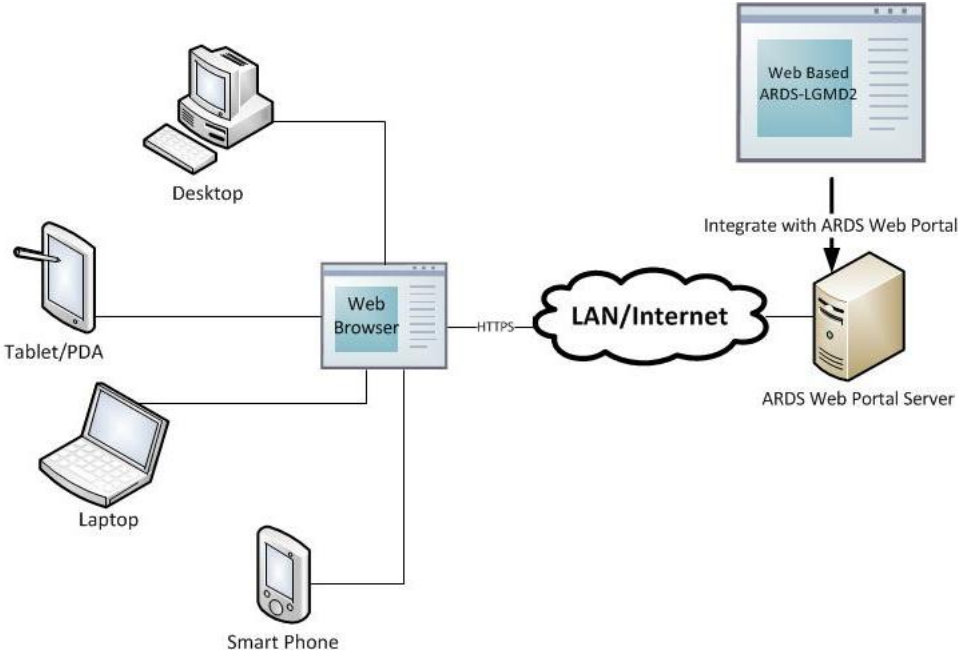


Figure 1: ARDS Web Portal Configuration

2.2 Data Flows

Major data flow in the ARDS Web Portal integrated with the ARDS-LGMD2 web based data entry are as summarized in figure 2 which involves submission of data entry forms by LGAs, checking of the reports to assess submitted data and provide feedback to LGAs when necessary by regional officers, view feedback and resubmit data correction when necessary by LGAs, approve reports when ready by regional officers as well as data utilization by ASLMs.

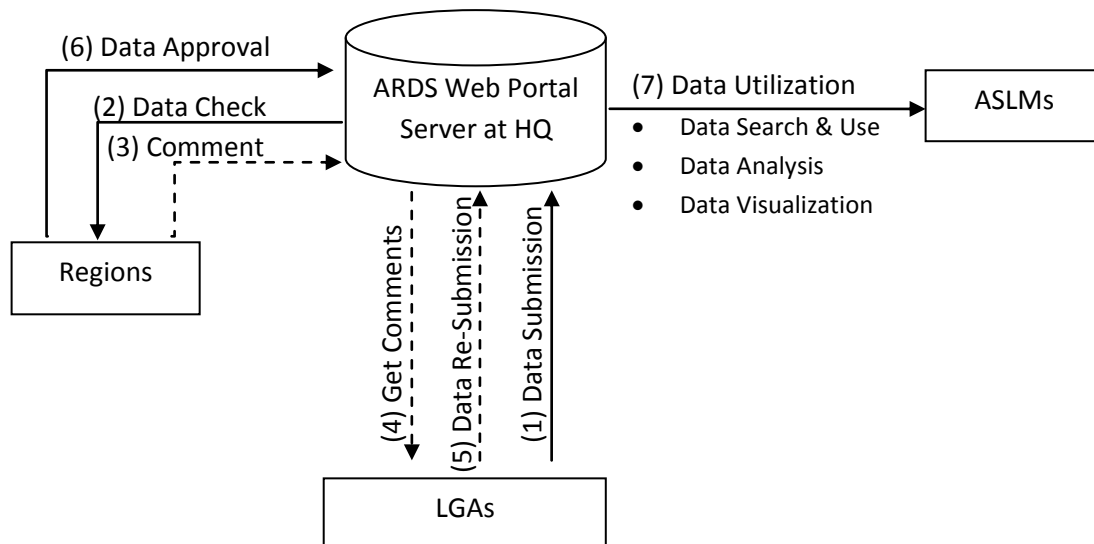


Figure 2: Diagram of Data Flow in ARDS-LGMD2 Integrated with the ARDS Portal

The ARDS data is stored in the central database of the portal so that is accessible and can be manipulated by the system modules. The Modules, which includes the ARDS-LGMD2 web based data entry, Metadata Search & Browse, Pivot Table, Data Visualize & Charting, GIS Framework, Data Analysis, Report, and Dashboard, enable a user to perform the following on the data:

- Enter ward annual target data.
- Enter prior estimate for estimating missing ward data.
- Enter monthly, quarterly, annually ward agricultural sector data from completed data collection forms (VAEO/WAEO format).
- Obtain monthly, quarterly, annual district aggregate data automatically.
- Enter quarterly, annually district agricultural sector data from completed data collection forms.
- Validate the entered data and check for various errors to enforce data quality.
- Estimate missing ward data.
- Upload the entered data, through the Internet, to the central server as they entered, or save them locally when the Internet connection goes down during data entry, and upload them to the server when connection is back.
- Import and export data and-or metadata for transferring of data between different instances of the system. Import GML data to update changes in the administrative unit's geographical coordinates.
- Print forms/reports with the data or blank forms.
- Report generation
 - Monthly, quarter and annually ward report
 - District report for monthly, quarterly and annually
 - District, regional, national integrated report for quarter and annual
- Post comments from the region about unapproved reports and-or approve report.
- View approval status, comment and edit data (if required) for final approval by the

region.

- Use an offline standalone copy in areas with no connectivity at all; export the entered data as a local file for sending to national headquarters, or another area with the Internet connectivity via a USB Key (or any external storage) or by email, so that can be imported to the central server.
- Metadata search and browse using different properties of content available in the database and in predefined categories.
- Represent and manipulate the data in pivot table based on existing dimensions such as what data, from which locality and of which period.
- Represent the data in various types of charts.
- View the data on top of a map along with thermal indicators of presented data for association of captured geographical locality.
- Create and generate various custom reports.
- Create and manage a dashboard that helps users to get an overview of important trends or performance of particular variables in charts, graphs, summary tables, maps and headlines.
- Download data from the portal to PDF, Excel, CSV, and-or XML. Print out information created by the system.

Besides, users of the ARDS Web Portal can get various news and online support through the news and online help modules respectively. Figure 3 illustrate the ARDS-LGMD2 inputs and outputs, which has been improved and integrated as a web based data entry in the ARDS Web Portal.

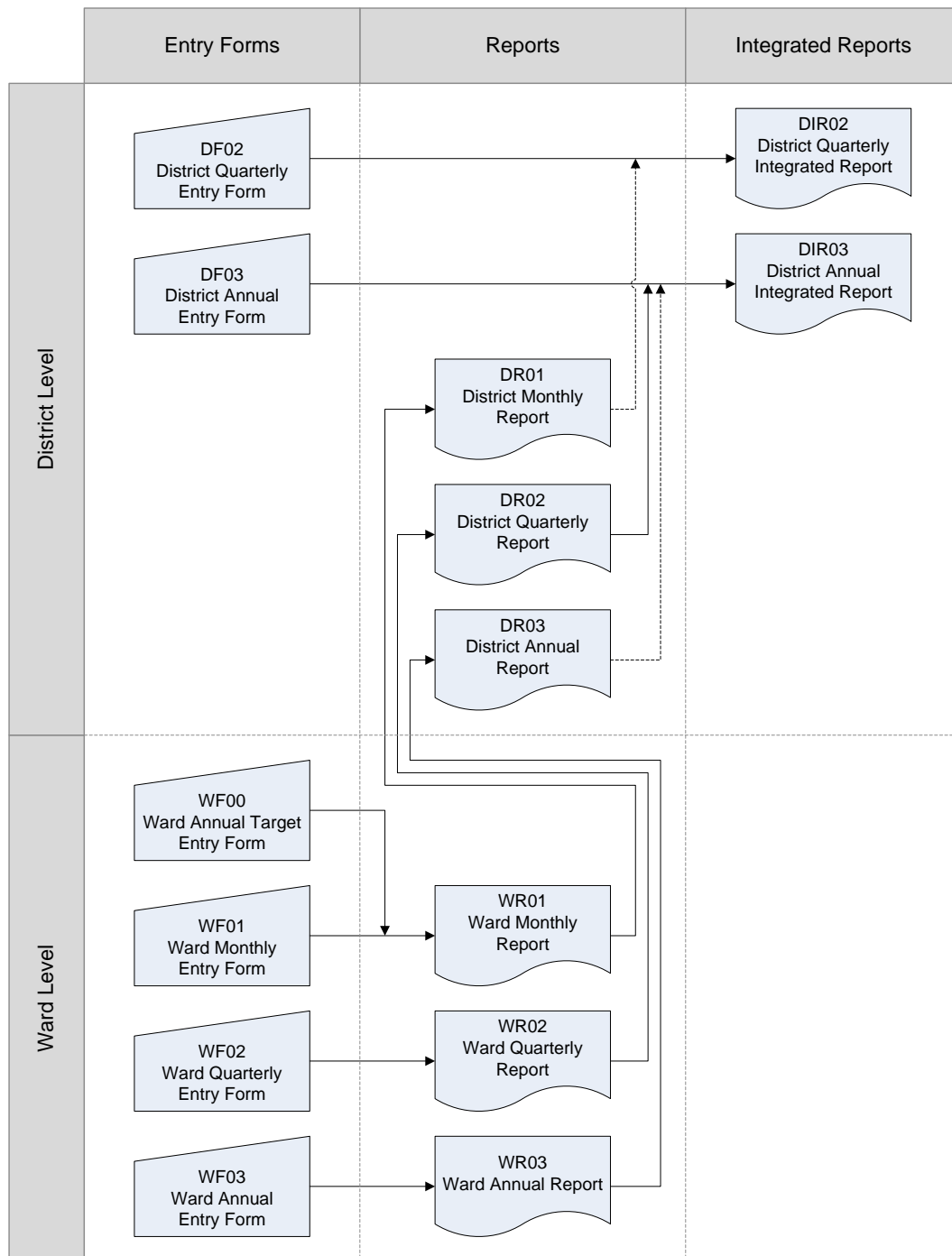


Figure 3: The summary of ARDS-LGMD2 module inputs and outputs

The Regional Integrated Reports (RIR02 and RIR03) are consolidated from the District Integrated Reports (DIR02 and DIR03). The National Integrated Reports (NIR02 and NIR03) are consolidated from the Regional Integrated Reports.

2.3 User Access Levels

Information in the ARDS is confidential. Therefore, when a user opens the portal is required to use name and password to get access to the rest of the features. The portal restricts access privilege based on user roles including administrative and normal users.

The administrative user is a super user and can carry out all activities that are supported by the portal including system maintenance and configuration activities.

The portal restricts normal users based on their information access level. Table 1 shows the current ARDS Web Portal user levels and roles. Any user account shall belong to at least one of the levels identified below and should be assigned to the respective user role(s) in the system.

Table 1: ARDS Web Portal User Level and User Roles

User Level and User Roles					
* When user use Web portal in the first time, we requested to input all information about users, such as contact number and e-mail address to prepare contact list.					
	User Level	User Group	List of <u>NOT Available</u> functions	Data accesibility for Data analysis	Remarks
1	Super User	Administrator	None (All functions are available for Administrators)	All	
2	National	TWG	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	incl. uploading .zip files from LGA
3	National	Min. Agriculture Staff	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
4	National	Min. Livestock	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
5	National	Min. Industry and Trade	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
6	National	PMO-RALG	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
7	National	Others	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	
8	Region	Region	Data entry, User management, update lookup tables, update administrative unit	All	Can see other District/ Region data (can't enter other LGA data)
9	District	District	Data approval, User management, update lookup tables, update administrative unit	Within same Region	Can see other District within same Region and Region level data (not allow to enter other LGA data)
10	Others	Others	Data entry, Data upload, Data approval, User management, update lookup tables, update administrative unit	All	For e.g. JICA Expert team members, JICA, other Donors
11	Others	Trainers	User management, update lookup tables, update administrative unit	All	Functions for both District and Region, this is only for training

3 Setting Up ARDS Web Portal Server

The following section details how to set up ARDS Web Portal Server in Windows Operating Systems.

3.1 Prerequisites

3.1.1 Hardware

Below are the recommended hardware standards. Refer the ARDS Software Design Specification for further details.

Figure 4: Hardware Prerequisites

Hardware	Recommended Standard
Memory	1. At least 1 GB memory per 1 million captured data records per month or per 1000 concurrent users is necessary. 2. Recommended 8 GB
Processor	Quad Core 2 GHz
Hard disk	500 GB
System Type	32 or 64 bit
Operating System (OS)	ARDS Web Portal supports any OS. However, this guideline focuses on Windows Operating Systems.
Network Adapter	Ethernet card or other network specifications.

3.1.2 Software

For the ARDS Web Portal server to work, the following technologies must be installed and properly configured. Refer to the ARDS Software Design Specification for further details of software standards.

JDK 7 (or JRE 7) or higher

Tomcat version 7.0.35 or higher

PostgreSQL 9.2 or higher

Also, the server requires the following Environment Variables to be set

\$path folder is set to **“C:\Program Files\Java\jdk1.6.0_10\bin”**

\$JAVA_HOME folder is set to **“C:\Program Files\Java\jdk1.6.0_10”**

Essentially **JDK** must be installed because **Tomcat** requires Java Platform. Thus Java Platform shall be installed first.

A computer system has to be able to locate where the Java Platform is found. Therefore, its **path** must be defined in the Environment Variable as will be shown below along with setting up **JAVA_HOME** folder.

Tomcat is independent from **postgreSQL**, thus either of the two may be installed first followed by the other. However, the **war** file requires **Tomcat** so Tomcat has to start. The ARDS requires the database, thus **PostgreSQL** must be installed and data base connection parameters including username and password must be set so that ARDS can access the database. These directives are provided through a file called **Hibernate.properties**. The system will read this file from its location which, of course, has to also be defined in the Environmental Variables of your computer.

3.2 Install procedure

In order to successful set up ARDS Web Portal server you just need to follow the following steps.

3.2.1 Step 1: JDK installation

- The latest version of JDK is preferred. You may download the latest version of java platform (JDK) from [www.oracle.com](http://www.oracle.com/technetwork/java/javase/downloads/index.html). In particular, through the following link <http://www.oracle.com/technetwork/java/javase/downloads/index.html>.
- When the download is complete, run the executable file of the JDK and follows the instruction until the installation is complete.

3.2.2 Step 2: Set Up Environment Variable

- After the installation of JDK is complete, browse your computer to locate Java bin folder. In Windows operating system, this is often located in the program files within a folder called Java where Java is installed. For example, **C:\Program Files\Java\jdk1.7.0_45\bin**. Where **jdk1.7.0_45** depends on the JDK version, for instance JDK version 7 was used in this example.
- Copy the path of the bin folder located above
- Right-click **My Computer** and click **Properties**
- Go to **Advanced Settings** and then select **Environmental variables**.
- On the new window as shown figure 4, Select the variable **Path** and then go to the **Edit** button.
- In the Variable string append a semi colon at the end and paste the path you copied. In this case **C:\Program Files\Java\jdk1.7.0_45\bin** will be added in the variable string.
- Then click the OK button to finish setting up the path.
- Go to the folder that java is installed as explained above, this time don't go to the bin folder, just one step before it. Copy the path. For the above example, the path is **C:\Program Files\Java\jdk1.7.0_45**.
- Go to the **Environment Variable** as explained above.

- This time select **new** to create new variable instead of **edit**. Remember, there are **System Variables** (lower section) and **User Variables** (upper section). You shall opt for System Variables for your changes to apply to all users.
- The new window will appear as shown in figure 5.
- On the variable name type **JAVA_HOME**
- On the variable value past the copied path. For instance **C:\Program Files\Java\jdk1.7.0_45** in this example.
- Then click Ok for the New System Variable window and then Ok for the Environment Variable window. And you are done with setting up Environment Variable for Java platform.

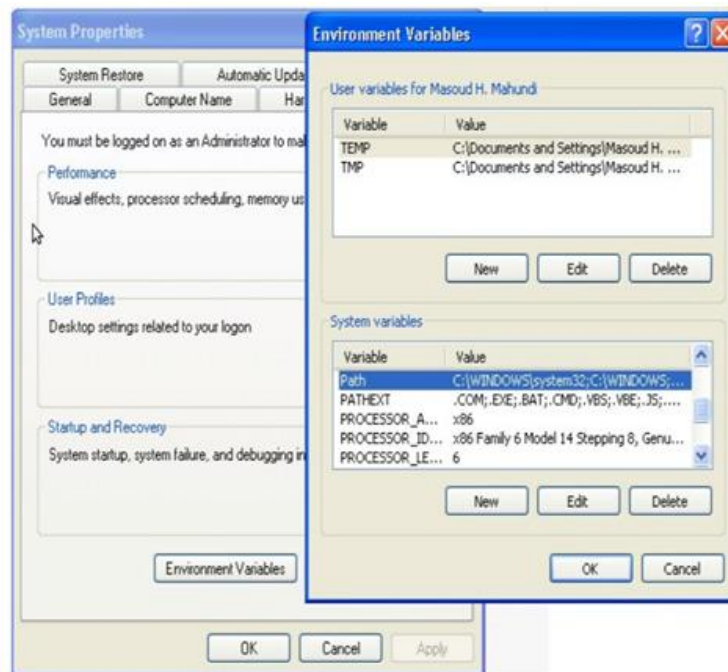


Figure 5: Setting up path for Java

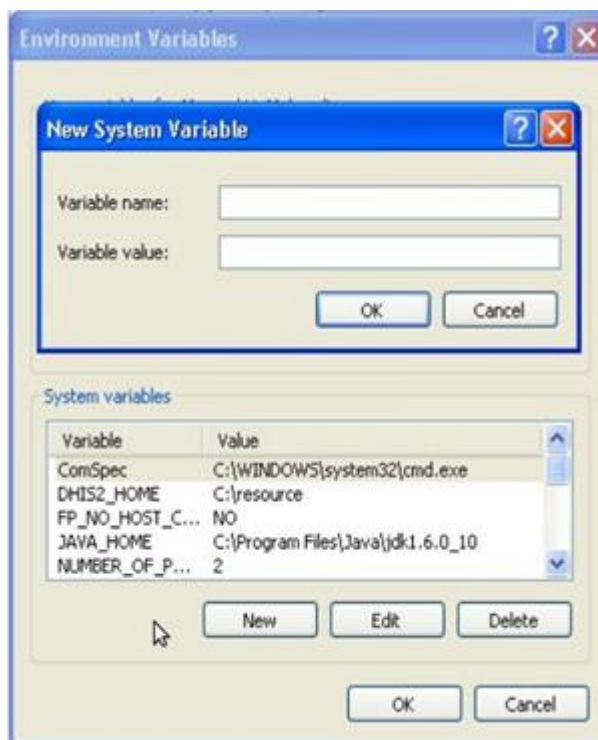


Figure 6: Setting Up New System Variable

3.2.3 Step 3: Install Tomcat

Binary downloads of the **Tomcat** server are available from <http://tomcat.apache.org/>. This manual assumes you are using the most recent release of Tomcat 7.0.35 or later.

Installing Tomcat on Windows can be done easily using the Windows installer. Its interface and functionality is similar to other wizard based installers with only a few items of interest.

- **Installation as a service:** Tomcat is installed as a Windows service. Using the checkbox on the component page sets the service as "auto" startup, so that Tomcat is automatically started when Windows starts. For optimal security, the service should be run as a separate user, with reduced permissions (see the Windows Services administration tool and its documentation).
- **Port Number:** In the course of installing Tomcat, you will be required to choose the port to be used by Tomcat. Provide the port number which is not commonly used by other applications, for instance 8180 is used in this guide. Also you will be prompted to provide username and password for the administrator user.
- **Java location:** The installer will provide a default JRE to use to run the service. The installer uses the registry to determine the base path of a Java 6 or later JRE, including the JRE installed as part of the full JDK. When running on a 64-bit operating system, the installer will first look for a 64-bit JRE and only look for a 32-bit JRE if a 64-bit JRE is not found. It is not mandatory to use the default JRE detected by the installer.

Any installed Java platform may be used. You may select to use the one you set up above.

- The installer will create shortcuts allowing starting and configuring Tomcat. It is important to note that the Tomcat administration web application can only be used when Tomcat is running.
- After installing you can see if tomcat is running through the browser with the URL **localhost:8180** or using the **port number** you selected. Otherwise go to **services management** by right clicking **MyComputer** select **manage**, Under **Services and Applications** click **services** and see if Apache service is running.
- Refer to the Windows Service HOW-TO for information on how to manage Tomcat as a Windows service.

3.2.4 Step 4: Install PostgreSQL

- Download Windows graphical installer for PostgreSQL which includes the PostgreSQL server and pgAdmin III from <http://www.postgresql.org/download/windows/>. pgAdmin III is a graphical tool for managing and developing your databases.
- To installing PostgreSQL on Windows just follows steps of the Windows installer. You will be prompted to enter the password for PostgreSQL user. Provide the password and finish the installation.

3.2.5 Step 5: Create the database and populate it with data restoring function

- After installation of the Windows graphical installer of PostgreSQL explained above you will have the pgAdmin in your programs list.
- Click Start > All Programmes > pgAdmin III.
- Double-click the server appearing in the list. If it is the first time add a new server by clicking File > Add Server.
- Connect to Server Window will appear as shown in the figure below.

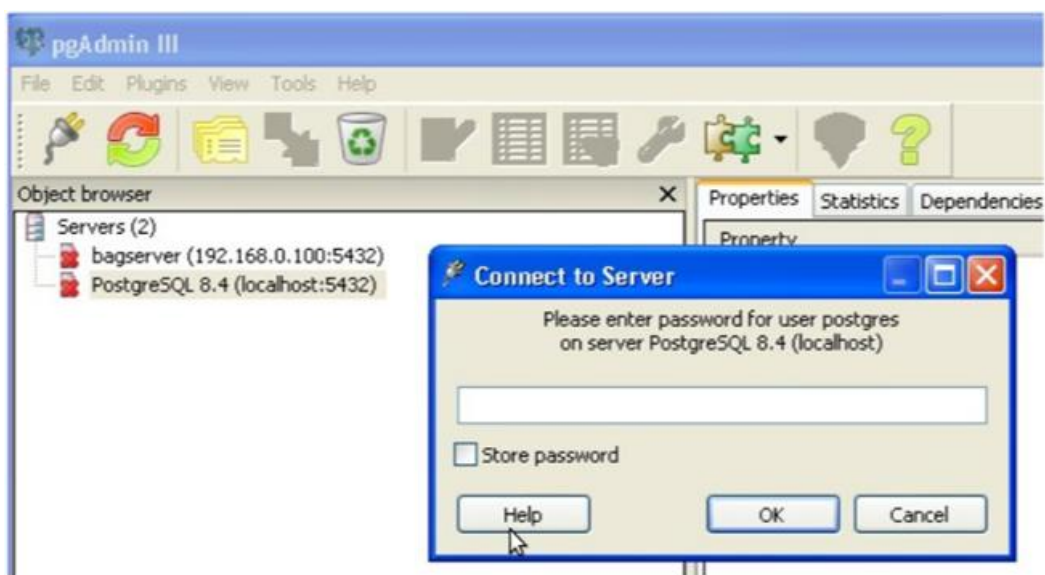


Figure 7: Connect to PostgreSQL Database Server

- Enter the password you entered during the installation and select OK. The window will appear giving you the chance to define a new database. However, you need to create the login role first, kind of a user account that will access the database.
- Right-click the **Login roles** and click **New Login Role**. In the following window, fill in three fields **Role name** and **Passwords fields** (In this guide a role name is **ards**).

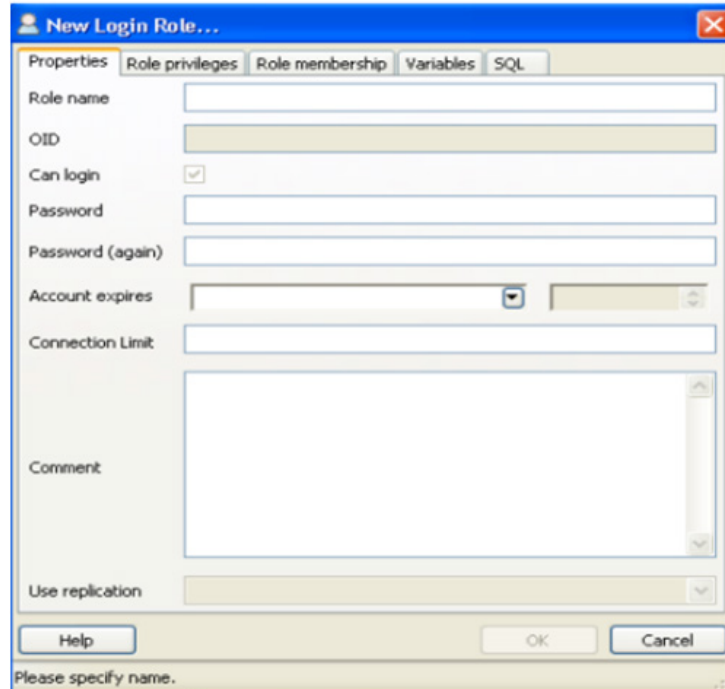


Figure 8: Create New Login Role

- Select **All** in the **Role Privileges** tab to grant all **privileges** to the created role.
- Select OK to finish creating the role
- Then right-click the **Database** and click **New Database** and a window will appear prompting you to enter the name of the database and the owner.
- Provide **Name** for your Database and select form the **Owner list**, the login role you created. Leave other options as they are.
- If you have a back-up database (file with an extension **.backup**) you will need to restore it in the created database. Right-click the database you have created and click **restore**, and then browse for the back-up file in the filename section.



Figure 9: Restore Database

- Leave the verbose option checked so that you see the process of importing data to your database.
- Then Click OK to finish restoring the database.

3.2.6 Step 6: ARDS Connection to the Database

Hibernate.properties file shown below is used to point the database which the **ards** should use. The file contains the configuration details including the database name, username and password for accessing the database. You will need to edit values of some parameters to have the configuration you have set up.

```
hibernate.properties x
1 hibernate.dialect = org.hibernate.dialect.PostgreSQLDialect
2 hibernate.connection.driver_class = org.postgresql.Driver
3 hibernate.connection.url = jdbc:postgresql:ards
4 hibernate.connection.username = ards
5 hibernate.connection.password = ards
```

Figure 10: hibernate.properties configuration file

For PostgreSQL users

- Edit from the **third line**, after the phrase **postgresql:**, append the name of the database you created earlier, for the above file **ards** is the name of the database.
- In the fourth line, write the **username** for accessing your database, for the above file is **ards**.
- In the fifth line write password for the username above, for the above file is **ards**.

For MySQL users

- The Second part is used for users who uses MySQL database. Use harsh sign (#) as shown above to comment the lines and will not be used for configurations.
- Save the **hibernate.properties** file to a folder.

3.2.7 Step 7: Set Up DHIS2_HOME Variable.

- Set this environment variable in your computer to point to where your hibernate.properties file is located.
- Use the normal procedures of defining the new Environment Variables as explained in step 2 when defining JAVA_HOME. But in this case, add the following values

Variable Name: DHIS2_HOME

Variable Value: Add the path where your hibernate.properties is found, Eg.
C:\resource

3.2.8 Step 8: Set up ards.war file in the webapps folder

- First rename the **ards.war** to **ROOT.war** file so that when accessing portal through the browser the url do not appear with **ards** folder as parent folder
- Stop Tomcat application through the services management by right clicking MyComputer > manage.
- Under Services and Applications click services and put the latest ards.war file in the webapps folder.
- If defaults setting were used during installation The path to the webapps folder is C:\Program Files\Apache Software Foundation\Tomcat\6.0\webapps
- Then Start Tomcat from the list of services through the services management by right clicking MyComputer > manage.
- Try to access the ARDS through your browser with the following address **localhost:8180** (If you used same port described in step 3).
- You should be able to view the login page of the ARDS Web Portal. If not, make sure that you have correctly followed the steps explained above.

3.3 Database Auto Backup

Step 1: Create a Backup Folder

Go to Server create a Directory called Drive:\PostgresqlBack or give it any descriptive name.

This folder will contain the backup script and other files

Step 2: Create a folder to contain binaries

Inside Drive:\PostgresqlBack create folder named **bin** to contain binaries, go to **C:Program Files\PostgreSQL\9.0\bin** copy the following contents to the created **bin** folder in

Drive:\PostgresqlBack

```
comerr32.dll
gssapi32.dll
k5sprt32.dll
krb_32.dll
libeay32.dll
libiconv2.dll
libpq.dll
Microsoft.VC80.CRT.manifest
msvc80.dll
msvc80.dll
msvc80.dll
pg_dump.dll
ssleay32.dll
zlib1.dll
```

Step 3: Create Batch File

Create batch file called any descriptive name, example is postgresqlBackup.bat. The file must be located in PostgresqlBack directory not the bin folder.

Open batch file and copy/paste the following

```
@echo off
for /f "tokens=1-4 delims=/ " %%i in ("%date%") do (
  set dow=%%i
  set month=%%j
  set day=%%k
  set year=%%l
)
set datestr=%month%_%day%_%year%
echo datestr is %datestr%

set BACKUP_FILE=<NameOfTheFile>_%datestr%.backup
echo backup file name is %BACKUP_FILE%
SET PGPASSWORD=<PassWord>
echo on
bin\pg_dump -i -h <HostName> -p 5432 -U <UserName> -F c -b -v -f
%BACKUP_FILE% <DATABASENAME>
```

- Change <NameOfTheFile> to your proposed name. One idea is to use the name of the database (make sure there are no spaces after the word BACKUP_FILE any spaces will cause this setting not to work.). Setting is the first part of the file name then followed by the date the file was created with the extension “.backup”

- Change the <PassWord > setting above to the correct password for the backup users (make sure there is no spaces after the word PGPASSWORD any spaces will cause this setting not to work).
- Change <HostName> either to ip address or dns name of the server hosting Postgresql.
- Change <UserName> to backup user make sure this users has access to database for backup purposes
- Change <DATABASENAME> to the database name being backed up.
- Save the File

Step 4: Schedule a Task Using MS Task Scheduler

Using MS Task Scheduler schedule a task to run that batch file,

Once you have chosen the security context the Task in going to run in, it is advised to change the directory security where the backup is run and the files are stored, as a high level user name and password are stored in plain text.

3.4 Rollback or Un-install procedure

To Rollback follow the steps below.

NOTE: You should un-install/remove/delete a program, Environment Variable and-or file only if it was explicitly installed for ARDS Web Portal server setup. This is to avoid affecting other programs that might have been using some of the programs or configurations that were also used in the ARDS Web Portal.

- Make sure you have the recent backup of the database if you want to keep the current **data and system configuration.**
- Remove (delete) the **ROOT.war** file from the webapps folder
- Delete the DHIS2_HOME Environment Variable
- Delete hibernate.properties file from its location.
- Un-install PostgreSQL from the programs using normal Windows program un-installation procedures.
- Un-install Tomcat from the programs using normal Windows program un-installation procedures.
- Delete the JAVA_HOME Environment Variable and remove the java path which was added in step 2.
- Un-install JDK from the programs using normal Windows program un-installation procedures.

4 Administrative ARDS Web Portal Operations

This section provides a guide on how to perform administrative ARDS Web Portal operations. A guide on how to perform other basic operations is provided in the ARDS User Manual.

4.1 Starting ARDS Web Portal

To know that the ARDS Web Portal server set up is complete and the server is up and accessible you must use another computer, which is connected to the server through LAN or Internet and follow the following steps:

- Start → All Programs → Google Chrome (Or any other browser except Internet Explorer 7 and below)
- Enter URL for the ARDS Web Portal Server. For instance <http://41.59.254.77:8180> a URL to the demo server.

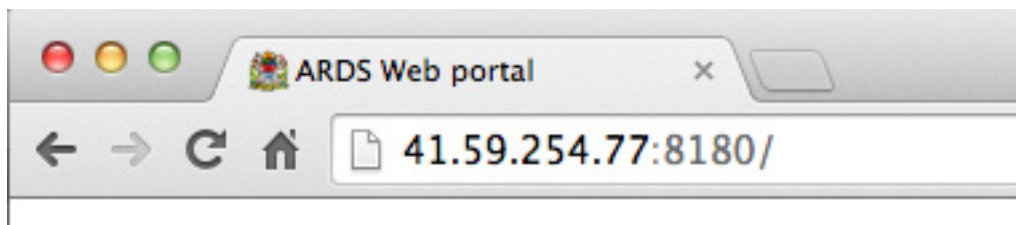


Figure 11: Entering URL to the Web Browser

- Then Press ENTER. The following login screen shall open

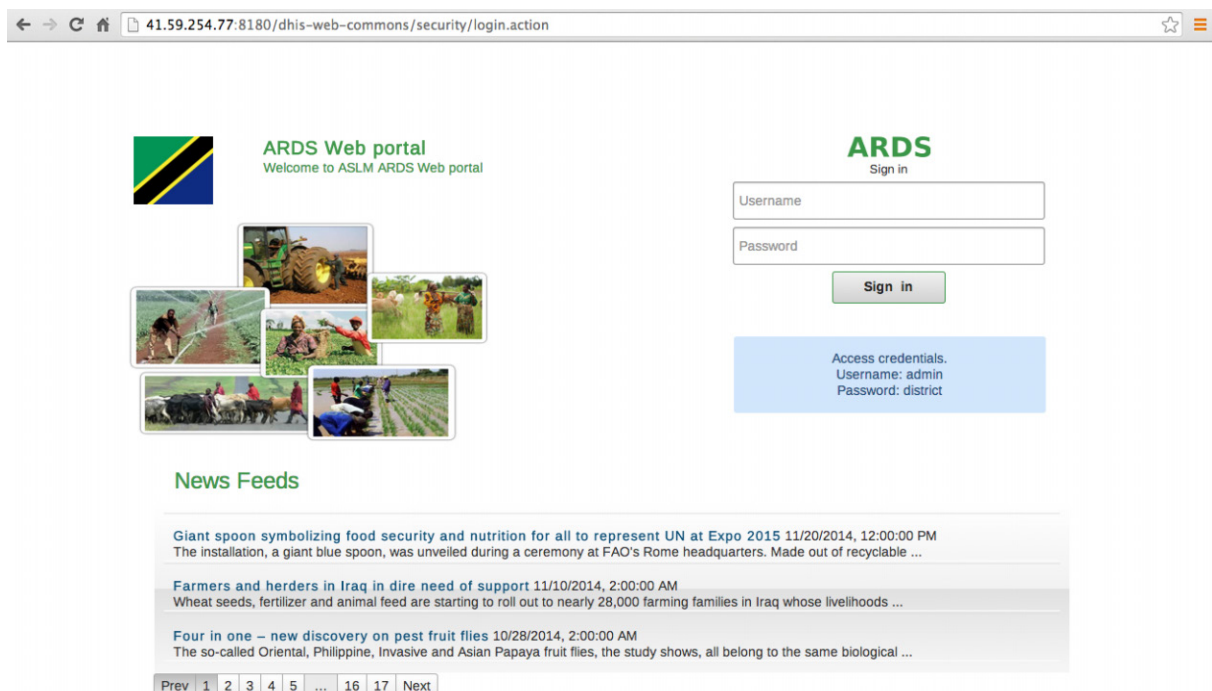


Figure 12: Login Screen

- Type the name of your administrator account and password correctly and click “Sign in”. The default page (Home page) shall open.
- On your first login as an administrator you must update your account information and change the password by following similar steps discussed in the ARDS user manual. Also, must disable any other existing accounts for security purposes. How to view and disable existing account is discussed in the next section of this technical manual.

4.2 Managing Users

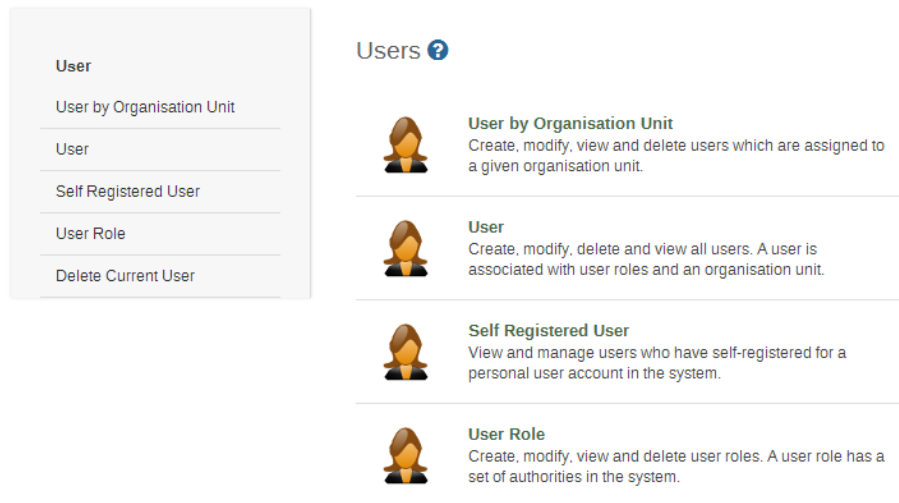


Figure 13: GUI for Managing Users

4.2.1 View Users

- To create or find a user begin with clicking on the ‘user’ module displayed in the drop down menu of the Maintenance module located on the main menu bar on the top part of the displayed screen after login.
- Select User
- User names already registered will appear as a list as seen in the screen shot below.

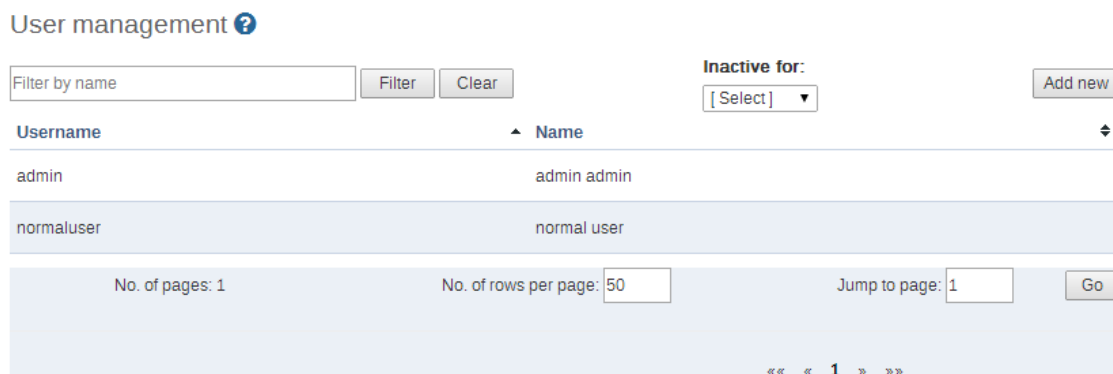


Figure 14: Displaying List of Users

- You can search for specific user names in the user list by entering the name in the ‘filter by user name’ field as shown above.

- You can disable, remove, edit or view details of the existing user by left click on the user in the list.

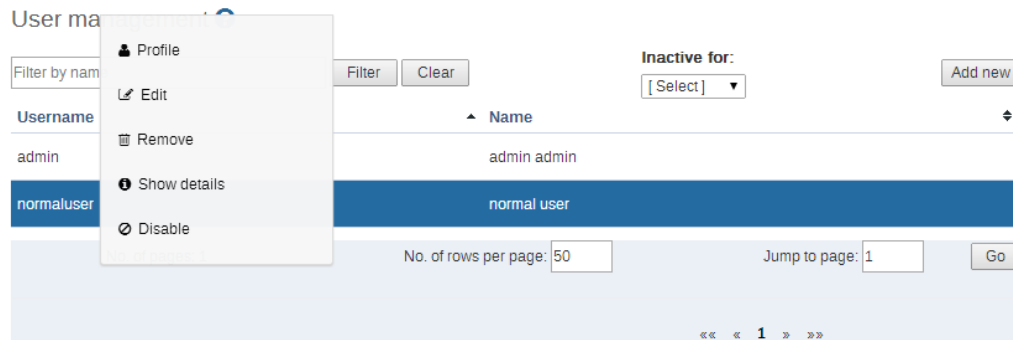


Figure 15: Popup Menu for Managing Existing User

4.2.2 Define a new role

- As part of creating a user name you are required to define the user role. Do so by clicking on the ‘user role’ appearing on the left side of the displayed screen. This will lead you to the Role Management page where you will have to click on Add new to create a new role.
- The following screen will open and here in the first text box you need to give Name of the Role such as Super User, Admin User, etc. The second text box called ‘Description’ gives more information about the type of User Role that is being created for e.g. State Admin User.

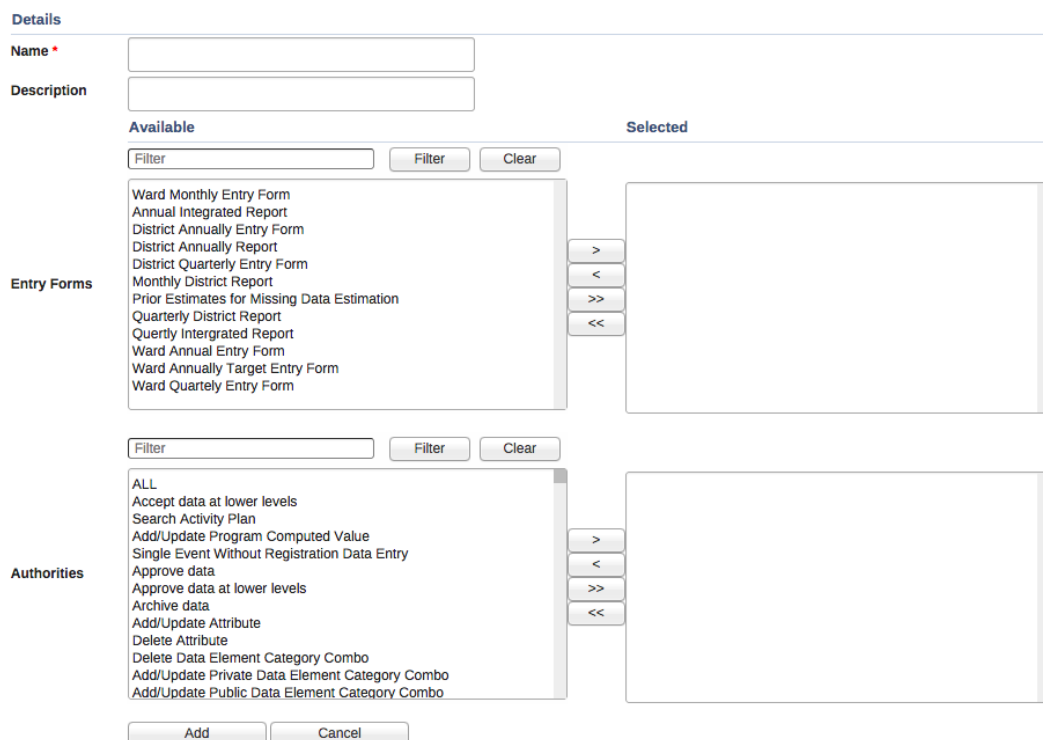


Figure 16: Create a New User Role

- Next you will specify the particular form(s) that are to be made available to the particular role. You will also need to specify the type of ‘authority’ to be given to the particular user. For each of the options namely forms and Authorities user can select multiple options from the scroll down menu provided against each field. A user can choose multiple options either by moving them one-by-one.
- In order for particular users to be able to enter data, you must add them to both an entry form as well as administrative unit level. You can also select multiple forms individually by pressing the Ctrl key on the keyboard and clicking on individual forms.
- Finally when you have entered the required fields click on Save which is located on the lower part of the displayed screen. The desired user role and related authorization will be saved to the database, and can then be assigned to a particular user.

4.2.3 Add New User

Under particular user role there can be more than one user. To add new users go to the User options under the Maintenance module.

To add a new user, just follow these steps:

- Click on the Add New button.
- Enter New User details like User name, Password, Confirm password, Surname, First name and Email in new user’s option tabs.
- Assign user to available role(s) and Administrative Unit(s).
- Click on Add button for confirmation of new user details.
- The recently created new user can be seen in main’ User management Screen
- You can edit (like password, surname....etc) and delete the details of new/old users by selecting corresponding User’s Edit and Delete Buttons.
- Click on Save tab after editing all details of a particular selected user.

4.2.4 User by administrative unit

The "User by administrative unit" function allows you see which users have been assigned to a particular administrative unit. Simply select the administrative unit from the tree on the left, and a list of users that have been assigned to this particular administrative unit will be displayed.

4.3 Managing Data Elements and Computed Values

4.3.1 Data Elements

Data elements define what is actually recorded in system, e.g. number Animals moved to other areas from the district. The actual creation and definition of the data elements themselves will be based on the data in the LGMD2/2i.

To access the data element maintenance module, choose Maintenance -> Data elements and Computed Values -> Data element.

Data element management [?](#)

Filter by name

Name

Amount Available in the quarter

Amount required in the quarter

Animals moved into the district from other ares

Animals moved to other ares from the district

Animals translocated within the district

Annual Requirement For The Reporting Year

Bei ya soko mazao jamii ya kunde

Bei ya soko mazao ya mafuta

Figure 17: Data Element Management Screen

The 'Filter by name' will allow you to filter a range of data elements if you know either the full name of the data element, or just a part of it. Type the name into the search field and any matching data elements are displayed below. You can also choose 'Filter by group/view all' to narrow down a data element search within a particular data element group. In default mode, this field will display all the data elements in the application. The 'Sort' button can be used to sort the data elements into alphabetical order.

To add a new data element, click the 'Add new' button. You can modify or delete data elements already present in the database by left click on the selected data element in the list and select Edit or Remove respectively.

There are various options available to allow the user to modify data elements already present in the database or add new data element. Each of the options is as shown and described below:

Create new data element

This object will be created with public edit and view rights

Details

Name *	<input type="text"/>
Short name	<input type="text"/>
Code	<input type="text"/>
Description	<input type="text"/>
Form name	<input type="text"/>
Domain Type *	Aggregate ▼
Value Type *	Number ▼
Number type	Number ▼
Aggregation operator *	Sum ▼
Store Zero Data Value	No ▼
URL	<input type="text"/>
Combination of categories *	default ▼
Aggregation levels	<input type="checkbox"/>
Option set	[Please select] ▼
Legend set	[Please select] ▼

Figure 18: Create New Data Element

- **Name:** Define the precise name of the data element in this field. Each data element must have a unique name.
- **Short name:** Typically, an abbreviation of the full data element name. This attribute is often used in reports to display the name of the data element, where there is limited space available.
- **Alternative name:** Allows the definition of an alternative name of the data element.
- **Code:** If data elements are assigned a code. The code can be entered in this field.
- **Description:** Allows a full textual description of the data element to be entered. The user should be as precise as possible, and include full information on how the data element is measured and what its meaning is.
- **Active:** Defines whether a given data element is active or not. Data elements marked as inactive will not be displayed in the data entry screens.
- **Domain type:** Defines whether a data element is an aggregate or patient type of data element.
- **Value type:** Defines the type of data this data element will be used to record. Currently there are four options: number, text, yes/no (boolean), and date.

- Number type: In order to increase the robustness of data entry, ARDS Web Portal supports several different number types. During data entry, users will be restricted to enter the defined number types only. Each of the available options is described below.
 - Number: This number type supports any real value with a single decimal point, an optional negative sign, and no thousands separators.
 - Integer: Any whole number (positive and negative), including zero.
 - Positive integer: Any whole number greater than (but not including) zero.
 - Negative integer: Any whole number less than (but not including) zero.
- Aggregation operator: Defines the default aggregation operation that will be used on this data element. Most data elements should have the "SUM" option set. This includes all data elements which should be added together. Other data elements, such as staffing levels, should be set to use the "AVERAGE" operator, when values along the time dimension should not be added together, but rather averaged.
- URL: A URL having an in-depth description of the data element can be entered in the 'URL' field. This could be for instance, a link to a metadata repository or registry that contains detailed technical information about the definition and measurement of the data element.
- Combination of categories: Defines which category combination the data element should have.
- Data element group sets: Click the check box to activate this option then choose which data element group sets this data element should belong to. Available data element group sets are displayed in the upper window. Click the desired data element group set, then the "Add selected" button to add the data element to the group set. To remove a data element from a group set, click the data element group set in the lower list, and then click "Remove selected".
- Calculated: This option is available only when a data element is created.
- Select the data elements that will be used to define the calculated data element, and then click "Add selected" to add them calculated data element composition list. Fill in the correct factor for the data element calculation component (defaults to 1). Component elements of the calculated data element can be removed from the definition by pressing the "Remove" button.
- Aggregation levels: The Aggregation Levels option allows the data element to be aggregated at one or more levels. When the user clicks on the Aggregation levels option, a drop down menu appears which displays available aggregation levels. The desired aggregation level is then selected by clicking the 'Add Selected' button. By default, the aggregation will start at the lowest assigned administrative unit.
- After making the required changes, click 'Save' to institute them. The 'Cancel' button aborts all changes made.

4.3.2 Data Element Group

Data element groups provide a mechanism for classifying related data elements into a common theme. For instance, three data elements "Eneo la malisho ya mifugo", "Eneo la mashamba yaliyotumika kwa malisho", and "Eneo la linalotumika" might be grouped together into a data element group "Eneo la malisho (Grazing land)".

To access the data element group maintenance page, click Maintenance -> Data elements and Computed Values -> Data Element Group.

Similar to the "Data element" maintenance page, data elements groups can be searched with by entering a search string in the "Filter by name" field.

To add a new data element group, click the "Add new" button and the following screen will be displayed.

The screenshot shows a web interface for creating a new data element group. At the top, it says "Create new data element group". Underneath is a "Details" section with three input fields: "Name *", "Short name *", and "Code". Below the details is a section titled "Available data elements" which includes a search filter box, "Filter" and "Clear" buttons, and a scrollable list of data elements. To the right of this list are four buttons: ">", "<", ">>", and "<<". Below the "Available data elements" section are "Add" and "Cancel" buttons. The "Group members" section on the right is currently empty.

Figure 19: Create New Data Element Group

Fill in the "Name" field and then select all data elements that should belong to the group from the left panel. Click the "Move selected" button to add the selected data elements to the data element group. Click the "Remove selected" button to remove all data elements from the group that have been selected in the right panel. Finally, click the "Add" button to save changes, or the "Cancel" button to discard any changes.

4.3.3 Data Element Category

Data element categories can be used to disaggregate data elements into individual atomic components. Data element categories are typically a concept, such as Aina za mazao (crop type). Data elements such as "Eneo lililolimwa (Cultivated Ares)" can be broken into smaller component parts to determine, for instance, "Eneo lililolimwa mpunga", "Eneo lililolimwa mahindi", and etc.

Edit data element category

Details

Name *	<input type="text" value="Aina ya mazao"/>
Use as data dimension	<input type="checkbox"/>
Concept name *	<input type="text" value="default"/>
Dimension type	<input type="text" value="Disaggregation"/>

Available category options

<input type="text" value="Filter"/>	<input type="button" value="Filter"/>	<input type="button" value="Clear"/>
<ul style="list-style-type: none">1st Degree2nd Degree30G19Abnormal odourAcaricidesAgro MechanizationAirtelAlizetiAlphactpermethrinAnaemiaAnimal FeedsAnimal HealthAnimal Production	<input type="button" value=">"/>	<input type="button" value="<"/>

Selected category options

<ul style="list-style-type: none">MpungaMaharageVitunguuMahindi	<input type="button" value="↑"/>	<input type="button" value="↓"/>
--	----------------------------------	----------------------------------

<input type="button" value="Save"/>	<input type="button" value="Cancel"/>
-------------------------------------	---------------------------------------

Figure 20: Example of Edit Data Element Category

Effective use of data element categories greatly simplifies the process of setting up the ARDS Web Portal, as the data element categories can be reused to disaggregate many different data elements. Otherwise, each of the data elements would need to be created separately. Judicious use of data element categories allows for subsequent advanced analysis.

Data element categories are composed of category options. Category options must be defined when a data element category is created for the first time. Subsequent changes to the data element category, i.e. adding or deleting new category options, are not allowed once the data element category has been created.

It is critical that the proper categories and category options are defined in the initial definition step, as further changes to the category and its options will not be possible.

To access the data element category option maintenance module, press "Maintenance -> Data Elements and Computed Values ->Data Element Category Option". The following screen will be displayed:

Data element category option management ?		
<input type="text" value="Filter by name"/>	<input type="button" value="Filter"/>	<input type="button" value="Clear"/>
<input type="button" value="Add new"/>		
Name		
Kahawa		
Kakao		
Karafuu		
Karanga		

Figure 21: Data Element Category Option Management

To access the data element category maintenance module, press "Maintenance -> Data Elements and Computed Values ->Data Element Category". The following screen will be displayed.

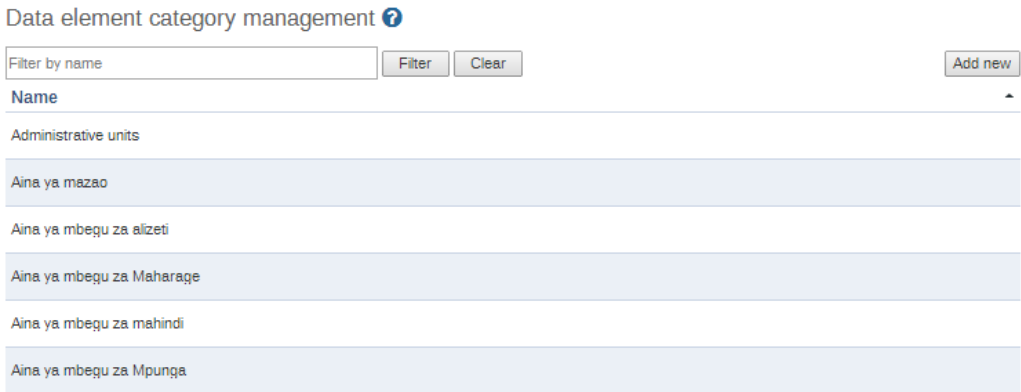


Figure 22: Data Element Category Management

Similar to the other data element maintains modules, data element categories options and data element categories can be filtered by typing the name of the data element category option or the category respectively (or a portion of it) into the "Filter by name" field.

To add a new data element category option, press the "Add new" button of the data element category option management which will then display the following screen.

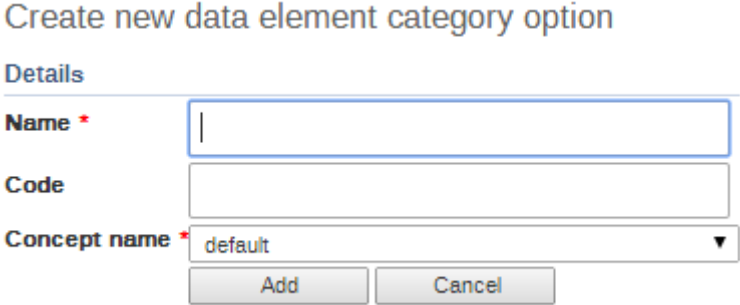


Figure 23: Create New Data Element Category Option

Type the details accordingly, for example Maize for the types of crops and click add.

To add a new data element category, press the "Add new" button which will then display the following screen.

Create new data element category

Details

Name *

Use as data dimension

Concept name *

Dimension type

Available category options Selected category options

Filter

1st Degree	>	
2nd Degree	<	
30G19	>>	
Abnormal odour	<<	
Acaricides		
Agro Mechanization		
Airtel		
Alizeti		
Alphactpermethrin		
Anaemia		
Animal Feeds		
Animal Health		
Animal Production		

Figure 24: Create New Data Element Category

Type the name of the new data element category in the "Name" field in the "Details" region. Category options can be added by typing the name of the category option in the "Category option" region and pressing the "Add category option" button. Category options can be reordered using the "Move Up" and "Move Down" buttons. Categories options can be deleted by selecting the data element category option and pressing the "Delete" button. Once all data element categories options have been added to the data element category, press the "Add" button to save all changes or the "Cancel" button to discard any changes.

All data element category options must be added and defined properly in this step. Subsequent alterations to the data element category (other than reordering of the category options themselves) are not possible.

4.3.4 Data Element Category Combination

Data element category combinations allow multiple data element categories to be combined into a related set. By combining different categories into a data element category combination and assigning the combinations to data elements, the appropriate disaggregation levels can be applied efficiently and quickly to a large number of data elements.

To access the data element category combination maintenance module, select "Maintenance->Data element and Computed Values->Data element category combinations". As with the other maintains modules, you can filter the listed category combinations by entering the name (or portion thereof) of the category combination. Also you can Edit, Delete the data category combination.

To add a new category combination, click the "Add new" button. The following dialogue will be displayed.

Create new data element category combination

Details

Name *

Dimension type

Skip category total in reports

Available categories Selected categories

Filter

Administrative units
 Aina ya mazaao
 Aina ya mbegu za alizeti
 Aina ya mbegu za Maharage
 Aina ya mbegu za mahindi
 Aina ya mbegu za Mpunga
 Aina ya mbegu za ngano
 Aina ya mifugo mingine
 Aina ya Mmomonyoko wa ardhi
 Aina ya Shughuli
 Aina Ya Skimu za Umwagiliaji
 Aina za Kondoo
 Aina za Mbegu

>
<
>>
<<

↑
↓

Figure 25: Create new data element category combination

Type the name of the category combination in the "Name" field, and then select the desired categories from the left panel. Press the "Move right" button to add the selected categories to the category combination. Press "Move left" to remove any categories that should not be part of the category combination.

Categories can only be added to a category combination at this step. Categories can be removed from category combinations later by editing the category combination, however, it is not allowed to add additional categories once the combination has been created. Ensure that the category combination and its respective categories are final before you create the category combination and assign it to a data element.

4.3.5 Data element group editor

The data element group editor provides advanced functionality to the administrator to allow multiple data elements to be added or removed from a group. It is also possible to create new data element groups, rename existing groups, and delete groups entirely. To access the data element group editor, go to "Maintenance -> Data elements and Computed Values -> Data Element Group Editor". The following screen will appear.

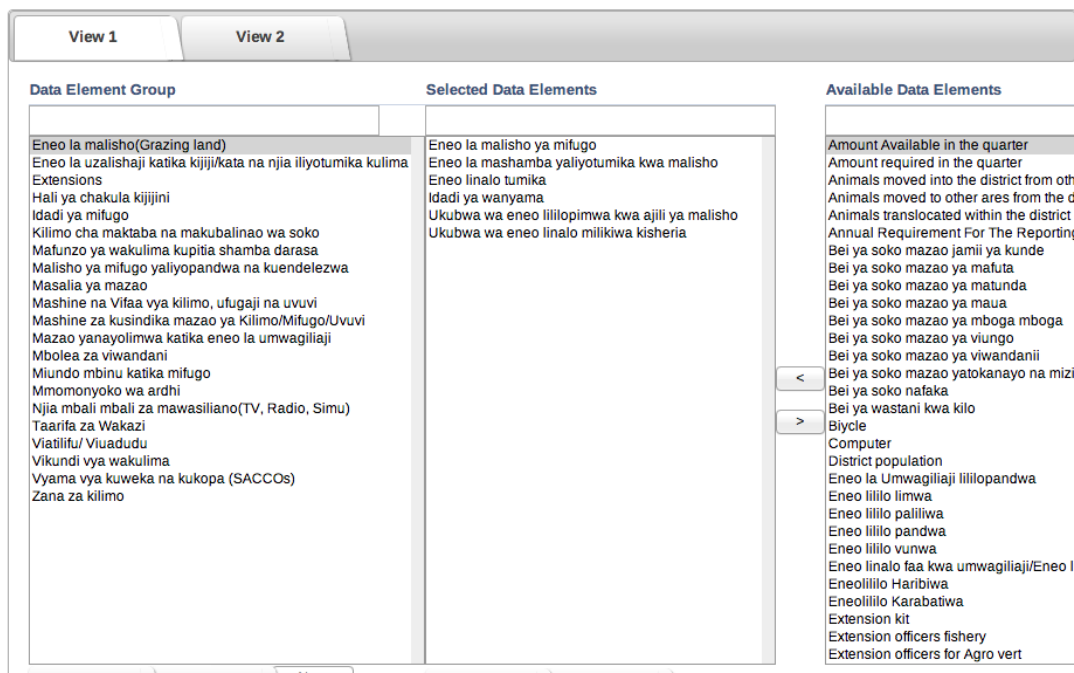


Figure 26: Advanced Data Element Group Management Editor

Data element group area listed alphabetically in the leftmost panel. By clicking on a data element group, the current members of that group (data elements) are listed in the center panel. Available data elements that can be added to the data element group appear are listed alphabetically in the rightmost panel. To remove an existing data element from the group, click the name of the data element in the center panel, and then press the "Move right" button. To add data elements to the group, select them from the leftmost panel, and click the "Move left" button. Press the "Update data element group member" button to save your changes.

4.3.6 Data element group sets

Data element group sets allow multiple data element groups to be categorized into a set. Data element group sets are used during analysis and reporting to combine similar data element groups into a common theme.

To access the data element group set maintenance module, choose "Maintenance -> Data elements and Computed Values -> Data Element Group Set".

Similar to the other data element maintenance modules, new data element group sets can be added by pressing the "Add new button". Other operations include Edit, Translate, Delete and Information, similar to the other modules in this section.

Existing data element group set members can be edited by clicking the "Edit" button of the desired data element group set as seen below.

Update Data Element Group Set

Details

Name *

Description *

Compulsory *

Data Dimension *

Available Data Element Groups **Group members**

Filter

Eneo la uzalishaji katika kijiji/kata na njia iliyotumika kulima
Extensions
Hali ya chakula kijijini
Kilimo cha maktaba na makubalino wa soko
Mafunzo ya wakulima kupitia shamba darasa
Masalia ya mazao
Mashine na Vifaa vya Kilimo, ufugaji na uvuvi
Mashine za kusindika mazao ya Kilimo/Mifugo/Uvuvi
Mazao yanayolimwa katika eneo la umwagiliaji
Mbolea za viwandani
Miundo mbinu katika mifugo
Mmomonoyo wa ardhi
Njia mbali mbali za mawasiliano(TV, Radio, Simu)

Eneo la malisho(Grazing land)
Idadi ya mifugo
Malisho ya mifugo yaliyopandwa na kuendelezwa

Figure 27: Update Data Element Group Set

Available data element groups are displayed in the left panel. They can be moved into the selected data element group set by pressing the "Move right" button.

Data element groups that are currently members of the data element group set are displayed in the right hand panel. They can be removed from the data element group set by clicking the desired data element group and pressing the "Move left" button.

4.3.7 Computed Values

Computed Values are composed of multiple data elements, and typically consist of a numerator and denominator. Computed Values are never entered in ARDS, but are derived from combinations of data elements and factors. Computed Values are used to calculate coverage rates, incidence and other values are a result of data element values that have been entered into the system.

To access the Computed Value maintains page, press Maintenance -> Data Element and Computed Values -> Computed Value from the main ARDS menu. Similar to data elements, you can add, delete, modify and view extra information about the Computed Values in the system.

Computed Values can be filtered by entering the name or a part of the Computed Value name in the "Filter by name" field. Similar to data elements, Computed Values can be added by pressing the "Add new" button. Other operations available from this menu are as follows.

- Existing Computed Values can be edited.
- Translate an existing Computed Value.
- Delete an existing Computed Value.

- Get detailed information about this Computed Value.

To add a new Computed Value, click the "Add new" button. The following screen is displayed.

Create new computed value

This object will be created with public edit and view rights

Details

Name *

Short name *

Code

Description

Annualized

Decimals in data output

Computed Type *

Legend set

URL

Figure 28: Create New Computed Value

Each of the fields marked with an asterisk are compulsory. A description of each field is provided below.

- **Name:** The full name of the Computed Value, such as "Incidence of confirmed cows disease cases per 1000 population"
- **Short name:** An abbreviated name of the Computed Value. The short name must be less than or equal to 25 characters, including spaces.
- **Alternative name:** An additional field for a possible alternative name of the Computed Value.
- **Code:** In many countries, Computed Values are often assigned a particular code. This code can be entered here.
- **Description:** A brief, informative description of the Computed Value and how it is calculated can be entered here.

- **Annualized:** Determines whether or not an annualization factor is applied during the calculation of the Computed Value. Typically, annualized Computed Value's numerator is multiplied by a factor of 12, and the denominator is for instance a yearly population figure. This allows for monthly coverage values to be calculated with yearly population figures.
- **Type:** This field will determine a factor that will automatically be applied during the calculation of the Computed Value. Possible choices are determined by the Computed Value Types (described below). For instance, a "Percent" Computed Value will automatically be multiplied by a factor of 100 when exported to the data mart, so that it will display as a percentage.
- **URL:** Can be used as a link to an Computed Value registry, where a full metadata description of the Computed Value can be made available.
- To define the numerator and denominator, simply press the respective button, and the following dialogue will be displayed.

Essentially, a Computed Value is a formula that can be composed of multiple data elements, constant factors, and mathematical operators. In order to define a new Computed Value proceeds with the following steps.

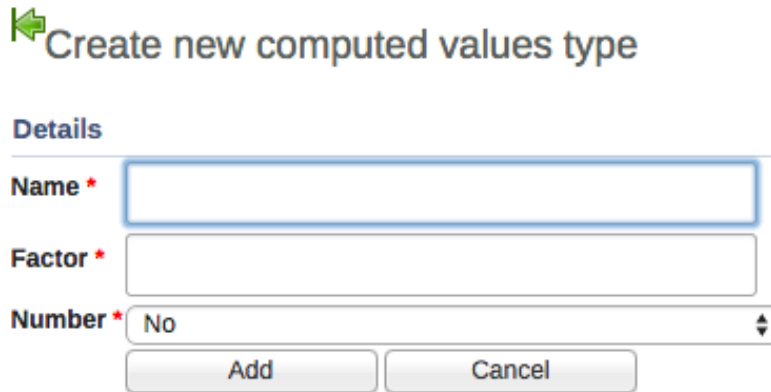
1. Enter at least the required fields (Name and short name) from the Computed Value maintenance screen.
2. Next, press "Edit numerator" from the main Computed Value maintenance screen. This will provide a dialog where you can define the actual formula of the Computed Value's numerator.
3. A description of the numerator/denominator must be provided in the "Description field". This should provide a clear description of
4. Define the formula of the Computed Value by selecting the data elements that should compose the numerator from the "Data elements" field. Simply select the data element, and double click it. It will now appear in the formula. Your formula must be mathematically valid, including the proper use of parentheses when necessary. You can double click on each of the mathematical operator buttons below the Computed Value formula definition to add them to your formula.
5. Click the Save button to save all changes to the numerator. Click cancel to discard any changes that you have made.
6. Follow the same procedure in order to define the denominator.

4.3.8 Computed Value types

Computed Value types simply define a factor that will be applied during aggregation. Computed Value values that are calculated during a data mart export or report table generation process will appear properly formatted, and will therefore not require an additional multiplier (e.g. 100 in the case of percent) for the values to appear correctly formatted.

The Computed Value type maintenance panel has all of the same functions (Add new, Edit, Translate, Delete, and Information) as the Computed Value maintenance section.

There are only two fields that need to be filled-in to create an Computed Value type, Name and Factor, as seen below. Name refers to the Computed Value type (e.g. Per cent, Per thousand, Per ten thousand, etc). The factor is the numeric factor that will be applied during the calculation of the Computed Value.



← Create new computed values type

Details

Name *

Factor *

Number * No

Figure 29: Create new Computed Value type

4.3.9 Computed Value groups

Computed Value group function essentially the same as data element groups. Multiple Computed Values can be assigned to a group for easy filtering and analysis. To assign Computed Values to groups, press Maintenance->Data elements and Computed Values->Computed Value groups. See the section on Data element groups for detailed instructions of how to use this module.

4.3.10 Computed Value group editor

The Computed Value group editor module functions essentially the same as the data element group editor module, except on Computed Values. You can easily rearrange the groups that Computed Values belong to with this module.

To access it, choose to assign Computed Values to groups, simple press Maintenance->Data elements and Computed Values->Computed Value group editor from the main menu. See the section on Data element group editor for further instructions.

4.3.11 Computed Value group sets

Similar to data element group sets, Computed Value group sets serve to create combined groups of similar Computed Values. Computed Value group sets are used during analysis of data to combine similar themes of Computed Values.

To access this module choose Maintenance->Data elements and Computed Values->Computed Value group sets from the main menu.

Supply a name for the Computed Value group set, and then move the desired members from the "Available Computed Value Groups" to the "Group members". Click "Add" to save your

changes and "Cancel" to discard any changes. See the section on Data element group sets for further instructions.

4.4 Managing Forms

Entry forms and reports in ARDS Web Portal are organized through the use of forms. A form is a collection of data elements grouped together for data collection and reporting. Essentially, form in the ARDS Web Portal are forms that mimic the original VAEO/WAEO format as well as ARDS-LGMD2 reports such as District Monthly Report, District Quarterly Report, District Annual Report, Quarterly Integrated Report and Annual Integrated Report. In the ARDS Web Portal the terms form, entry form, report are both regarded as data sets in the system and may be used interchangeably, which depends on the activity to be performed by the user of the system. In this section, the term form will be used.

A Form also has a frequency that controls the data reporting frequency, which can be daily, weekly, monthly, quarterly, six-monthly, or yearly. The ARDS Web Portal in particular has frequencies of monthly, quarterly, and annual. Both which data elements to include in the Form and the frequency is set in the Add/Edit Form window, together with a name, short name, and code. In order to use a form to report data for a specific administrative unit you must assign the administrative unit to the form, and this mechanism controls which administrative units that can use which forms.

The form management function allows you to create new forms and manage existing ones. The dialog can be reached by choosing Maintenance->Entry Forms -> Entry Form. A sample dialog is displayed below. Each of the functions is described below.

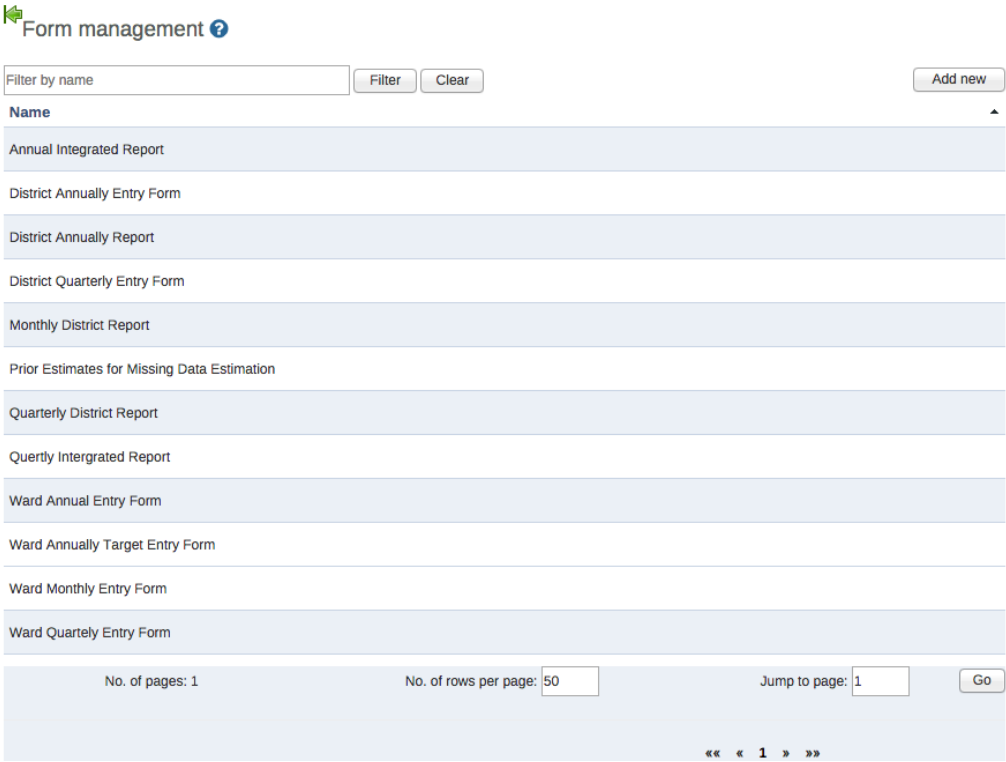


Figure 30: A dialog to View and Change and Add Forms

- Sort: This controls the custom sort order. Depending on the systems settings, users will see the forms ordered in the specific order that you provide.
- You can perform the following functions as shown in the figure below by left click on the selected form in the list.

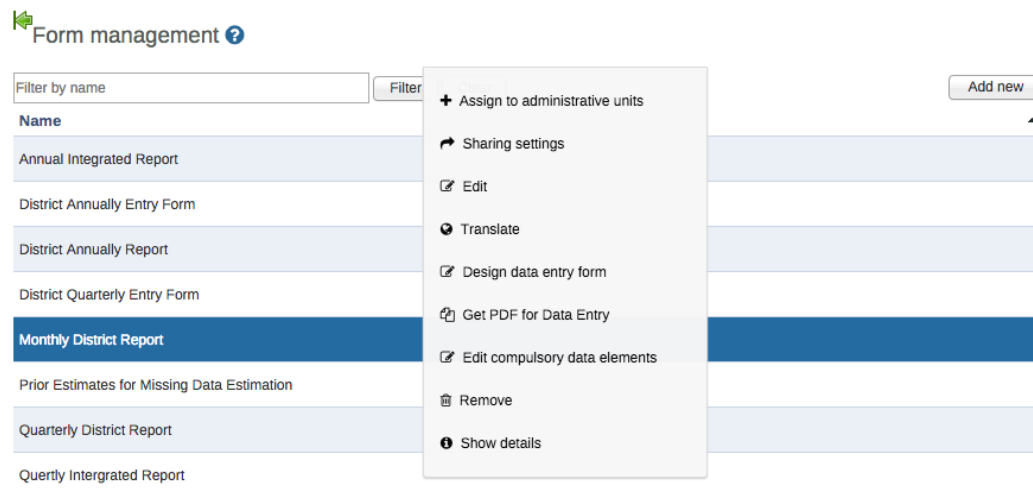


Figure 31: View and Edit Existing Forms

- Add new: Adds a new form. When pressing this button, you can create a new form. You need to provide a name, shortname and frequency. The "Code" attribute is optional. Data elements can be added to the "Selected data element" list by selecting them individually. And pressing the button. Computed Values can also be added to Forms and will be available to be placed in custom data entry forms when they need to be shown along with data elements on the same data entry form. Press "Save" to add the new form.
- Assign administrative units to forms: This function will allow you to assign individual administrative units to a form. Only administrative units, which have been assigned to a form, will be allowed to enter data into the form.
- Edit form: This will allow you to edit existing forms, for instance when you need to add or remove data elements and Computed Values to a given form.
- Translate: Allows you to translate the name of a form to a different language (when the system support multilingual).
- Create or edit a custom data entry form. Refer to for detailed information of how to use this function.
- Edit compulsory data elements: This dialog will allow you to add or remove data elements which are compulsory.
- Delete: Completely removes a form from the system.
- Information: Display some informative information about the form, including the number of data elements, the frequency, and which data entry form has been assigned to the form.
- Design Forms: When the layout of the form changes or you want to design the layout of a new form that have been added then your last option is to use a design form. This takes more time, but gives you full flexibility in terms of the design. ARDS Web Portal uses a built-in HTML editor for the form designer and you can either design the

form in the UI or paste in your HTML directly (using the Source window in the editor). One of the big advantages of forms is that they can be created to mimic existing paper aggregation forms. A complete reference for use of the editor can be found here:

- To design form for a report or data entry then first right click on your form in the list that appear in the Form Management window and select the Design data entry form.
- First provide a Name for the form. There are a few important buttons in the Editor that you must pay special attention to. The green arrow icon is the full screen mode on/off button, which can be very useful. Then there is a Source button that shows the HTML code for your form.
- If you already have the HTML for your form then you should start by pasting it in here. Click on Source again to go back to preview/non-HTML mode. Then there is a floating window (Insert data element, total, Computed Value window) with a list of all available data elements, and Computed Values, and an icon with a + sign on it; you will use this to add to your form the Data Element.
- All the form fields need to have a link to a data element or Computed Value. To add new data elements to the form, select data element in the bottom menus of the insert data elements window then locate the data element and click on the +insert button. You can switch between either data elements or Computed Values by pressing the respective buttons.
- You can do intermediary saving by clicking on the Save button, and this will not close the window. It is recommended to save often to ensure you do not loose your work.
- When you are done or want to test your form in report click on <Save and close>.

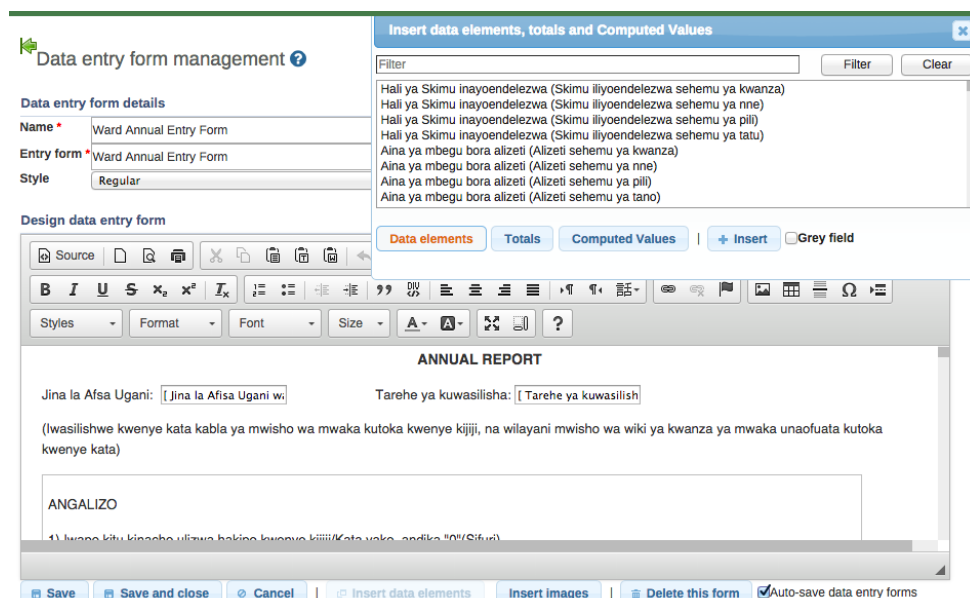


Figure 32: Design data entry form screen

4.4.1 Form Section

Adding a new section form: Section forms are separated by data element category combinations, which produce a spreadsheet like data entry form for each section.

When designing a section form the procedure is as follows:

- Set up your form as described in the previous section
- Open the Form Section window (from right side or left side menu under Forms) and add your sections one by one. To add a new section to a section form, first choose the form from the "Select form" combo box. Then choose the specific category combo and press "Add new". You can now add data elements from the "Available data element" list on the left to the "Selected data elements" list on the right. Be sure to press "Save" once you have finished. You can only use one data element category combination per section.

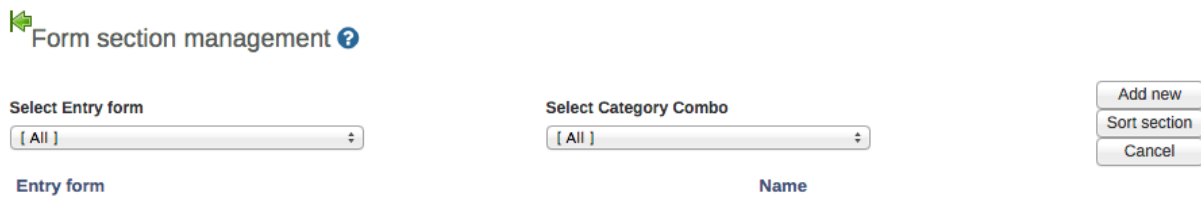


Figure 33: Form section management screen

- You may need to control how the data element sections are displayed on the final form. In Form Section management, select the form from the "Form" drop-down box, and then leave [All] in the "Select Category Combo" drop-down. Click on "Sort section" to sort the order of appearance of your sections in the form.
- You can now start using the Section form (should appear automatically when sections are available for the selected form). Forms that have section forms will automatically display the section form.

Use of section forms in combination with data element categories can drastically reduce the amount of time that is required to create forms.

4.4.2 Form assignment editor

The form assignment editor is a tool for adding and removing many Forms to administrative units in batch style. Start by selecting an administrative unit from the selection tree. In the area below the tree a grid will be displayed showing all Forms as columns and the child administrative units as rows.

From the grid you can now assign or unassign Forms simply by clicking on of the corresponding icons in the grid. If you want to assign or unassign an administrative unit to all Forms you can check or uncheck the checkbox next to the administrative unit. Your changes will automatically be saved.

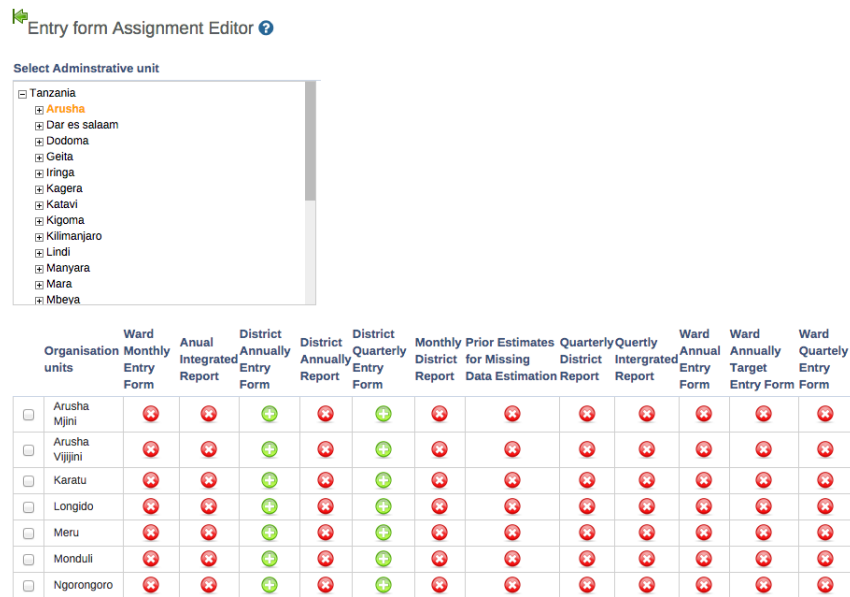


Figure 34: Entry form assignment editor

4.5 Managing Administrative Units

Administrative units are organized in the administrative hierarchy. The administrative hierarchy defines the administration structure of the ARDS instance, such as how the agriculture facilities, administrative areas and other geographical areas are arranged with respect to each other. It is essentially the "where" dimension of ARDS, similar to how periods represent the "when" or time dimension. ARDS is structured so that the administrative unit hierarchy is a geographical hierarchy, and the GIS module depends on this. Non-geographical hierarchies are discouraged, and would better to be represented through the use of administrative unit groups. This dimension to the data is defined as a hierarchy with one root unit (e.g. country) and any number of levels and nodes below. Each node in this hierarchy is called an administrative unit in ARDS.

The design of this hierarchy will determine the geographical units of analysis available to the users as data is collected and aggregated in this structure. There can only be one administrative hierarchy at the same time so its structure needs careful consideration.

Additional hierarchies (e.g. parallel administrative boundaries to the agriculture sector) can be modeled using administrative groups and group sets, but the administrative hierarchy is the main vehicle for data aggregation on the geographical dimension.

The hierarchy is built up of parent-child relations. For instance a country might have twenty regions, and each region again might have a number of districts as their children. Normally the agriculture facilities (from which data is typically collected) will be located at the lowest level, but they can also be located at higher levels, e.g. national or regional, so skewed administrative trees are supported (e.g. a leaf node can be positioned at level 2 while most other leaf nodes are at level 5).

Note that it is quite easy to make changes to the upper levels of the hierarchy at a later stage, the only problem is changing administrative units that collect data (the leaf nodes), e.g.

splitting or merging Districts or Wards. Aggregation up the hierarchy is done based on the current hierarchy at any time and will always reflect the most recent changes to the administrative structure.

4.5.1 Administrative units

This is where you can create administrative units and build up the hierarchy. Administrative units are added one by one as either root unit or a child of a selected unit. The left side menu represents the current administrative hierarchy and if you select a unit you will see its children listed in the main list of administrative units in the middle of the screen.

- When an administrative unit is selected in the left side menu you can also add new child units to it.
- To locate an administrative units in the hierarchy you can either navigate through the tree by expanding the branches (click on the + symbol), or search for it by opening the search field (click the green symbol above the root of the hierarchy).
- In search you can either search for the administrative unit name or its code, both will only show exact matches (case-insensitive).
- To add a new administrative unit first select its parent and then click on the Add new button in the top right corner of the list of administrative units.
- To add new root administrative units make sure no administrative unit is selected in the menu and click on "Add new".

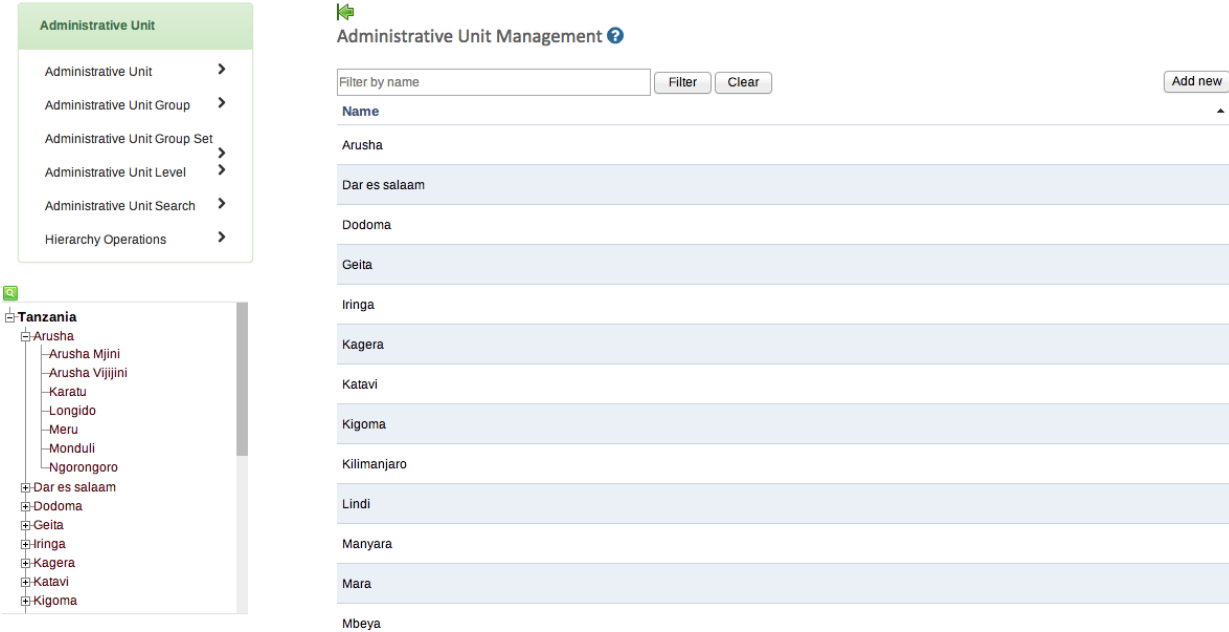


Figure 35: Administrative Unit Management Screen

4.5.2 Editing and Adding New Administrative Units

To add new administrative unit follow procedures outlined in section 4.5.2 and fill in the required information as shown below (same information as when editing an administrative unit). To edit the properties of an existing administrative unit:

- First select its parent (if any) in the left side menu, then
- Locate the administrative unit in the listed administrative units, and
- Finally click on the administrative units that you want to modify and select "Edit"

Edit Administrative Unit ?

Details

Name *

Short name *

Description

Code

Opening date *

Registers data

Comment

URL

Contact information

Contact person

Address

E-mail

Phone number

Data sets

Available data sets

Data sets

- Annual Integrated Report
- District Annual Report
- District Monthly Report
- District Quarterly Report
- Quarterly Intergrated Report

Administrative unit groups

Figure 36: Edit Administrative Unit Dialogue

The following properties can be defined in the Edit (or Add new) window:

- Name: Define the precise name of the administrative unit in this field. Each administrative unit must have a unique name.

- Short name: Typically, an abbreviation of the full name. This attribute is often used in reports to display the name of the administrative units, where there is limited space available.
- Code: In many countries, administrative units are assigned a code. This code can be entered in this field.
- Opening date: Used to control which administrative units that were existing at a point in time, e.g. when analyzing historical data. This attribute is required. The default date for opening of administrative units is 1900-01-01, but can be set to any date (even dates which occur in the future).
- Registers data: This property is used to identify which administrative units that can register data or not. Sometimes administrative units at higher levels in the hierarchy are not supposed to register any data. This can help control the data entry process as only administrative units with this property set to Yes will be available for data entry.
- Comment: Any additional information that you would like to add can be put here.
- Coordinates: This field is used to create the maps in the GIS module. Paste in the coordinates of the administrative units in this field, either a polygon (for administrative units that represent an administrative boundary) or a point (for agriculture facilities). Without this information the GIS module will not work. It might be more efficient to import these coordinates later as a batch job for all administrative units using the import module. See the GIS chapter for more details.
- URL: You can use this field to insert a URL link to an external web site that has additional information about this specific administrative unit.
- Contact information: A contact person, address, email, and phone number can be entered in these fields. This information can be vital for facilitating follow-up.
- Forms: Forms can be assigned to administrative units here. See the chapter on "Forms" for more detailed information on assigning forms to administrative units.
- Administrative unit groups: Assignments to administrative units group sets can be assigned through the individual drop-down boxes which appear for each group set.

4.5.3 Administrative Unit Level

Here you specify a contextual name for each level in the hierarchy, e.g. "Country", "Region", "District", and these names will be used all over the application where levels are referred to. This page will take some time to load if the administrative unit hierarchy is very big.

	Level Name	Operations
1	National	
2	Regional	
3	District	
4	Ward	

Save Cancel

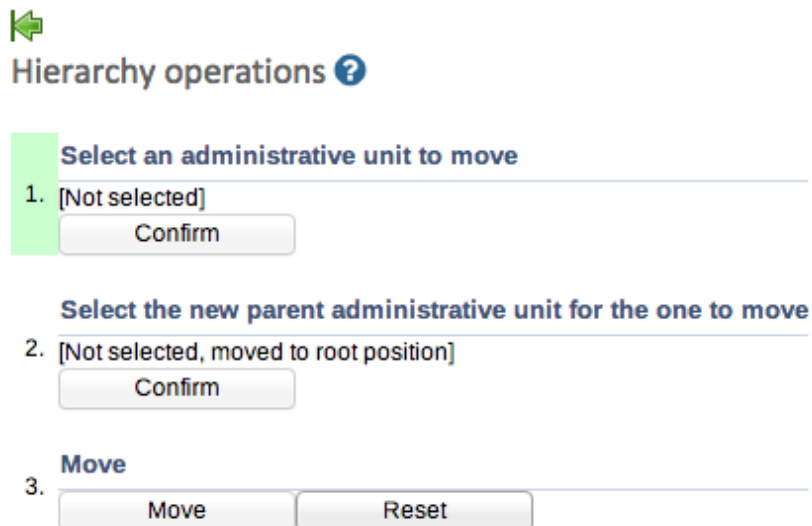
Figure 37: Administrative Unit Level Management

4.5.4 Hierarchy Operations

Here you can move administrative units around in the hierarchy by changing the parent of a selected administrative unit. This process is done in three steps:

1. Select the administrative units you want to move (in the hierarchy in the left side menu) and click "Confirm" under the "Select an administrative unit to move" label.
2. Select the new parent administrative unit (again by using the hierarchy in the left side menu). If no parent is selected then the administrative unit will be moved up to root level (top of the hierarchy). Click on the "Confirm" button under the "Select the new parent administrative unit for the one to move" label.
3. Click on the "Move" button to apply your changes to the hierarchy.

Your changes will be immediately reflected in the left side menu hierarchy. At any time in the process (before hitting the Move button) you can click on the "Reset" button to unselect administrative unit to move and the new parent.



The screenshot shows a web interface titled "Hierarchy operations" with a green left-pointing arrow icon and a help icon. It contains three distinct sections, each with a blue header and a light blue background:

- Section 1:** Header "Select an administrative unit to move". Below it, the text "[Not selected]" is displayed. A "Confirm" button is positioned below the text.
- Section 2:** Header "Select the new parent administrative unit for the one to move". Below it, the text "[Not selected, moved to root position]" is displayed. A "Confirm" button is positioned below the text.
- Section 3:** Header "Move". Below it, two buttons are displayed: "Move" and "Reset".

Figure 38: Administrative Unit Hierarchy Operation

4.5.5 Administrative Unit Search Management

This is used to search for administrative units in case the list is too big or when you are not sure whether a particular administrative unit is available or not in the system.

- It can be accessed by choosing Maintenance -> Administrative units -> Administrative Unit Search from the main menu
- Once searching is done you can use the bottom right button to edit the searched administrative units.



Administrative Unit Search Management

Criteria	Options
Organisation unit	Please select from tree (optional)
Name, code or identifier	dar

Found 1 administrative units

Identifier	Code	Name
jsmCsZqDV8r		Dar es salaam



 

Figure 39: Administrative Unit Search Management

4.5.6 Administrative Unit Groups

This function will allow you to add new and manage existing an Administrative unit groups and their memberships.

- It can be accessed by choosing Maintenance -> Administrative units -> Administrative unit group from the main menu.
- To add a new administrative unit group clicks on the "Add new" button in the top right corner of the list of groups.

To editing administrative unit groups click on the administrative unit group that you want to modify and select edit. The following properties can be defined in the Edit (or Create new) window:

- Name: Provide a precise name for the administrative unit group.
- Administrative unit tree selection: This is where you assign administrative units to the group. The tree supports multiple selection so select all the administrative units that you want to add (the selected ones appear with orange color) and click on "Save". Click on "Cancel" to undo your changes and return to the list of administrative unit groups. Use the "Select at level" button and dropdown if you want to select all administrative units at a specific level in the hierarchy (e.g. all districts).

4.5.7 Administrative Unit Group Sets

Group sets can be understood as a flexible tool to add more categorization to administrative units. Any number of group sets can be added, but as a default start all databases will have the two group sets "Type" and "Ownership". Using these group sets will simplify how reporting is done, and facilitate analysis through the use of tools such as Excel PivotTables.

While a group set like "Type" describes a measure dimension, the actual categories are represented by the groups and the categorization of an administrative unit through the administrative unit's group memberships. This can be understood as a parallel hierarchy of administrative units with the group set as the root ("Type"), the groups at level 2 (e.g.

agriculture facilities), and the actual administrative units at level 3. The group set can as such provide additional information and dimensionality to the data analysis as data is easily filtered, organized, or aggregated by groups within a group set.

For this aggregation to work without any duplication in the data some rules are necessary. A group set is always exclusive, which means that an administrative unit cannot be member of more than one group in a group set. Therefore, when creating new administrative units, you will only be allowed to select a single administrative unit group membership for each group set. Furthermore it is possible to define whether a group set is compulsory or not, which will affect the completeness of the data when analyzing data using group sets. Compulsory means that ALL administrative units must be member of a group in that group set.

We recommend that you approach the administrative unit grouping in the following sequence (and one group set at a time):

1. Define a new group set, such as "Location".
2. Add new groups (such as "Urban", "Rural" and "Peri-urban"). Once all groups have been defined, return to the administrative unit group set and assign each of the desired groups to the group set.
3. Go back to each group, one by one, go to edit mode and assign the administrative units that should be member of the group. Should you follow this route, you can place multiple administrative units at a time in a group. However, you must be careful not to place the same administrative unit in two groups which itself is a member of an administrative unit group set. This will result in a data integrity violation. If you have administrative unit groups, which are not exclusive, they should not be members of a group.
4. A better way to ensure that you do not mistakenly assign an administrative unit to multiple members of a group set is you can use the edit feature of each administrative unit to assign memberships to each group set. You will only be able to assign a single administrative unit at a time however.

It is important to keep in mind when using the "administrative unit group" set function, that unless great care is taken, administrative units can be assigned to multiple groups of a group set. This can be checked through the "Data Integrity" module, which will report which administrative units are not members of a compulsory administrative unit group set, and which administrative units have been assigned to more than one member of a group set.

To editing administrative unit group sets click on the "Edit" button next to the name of the administrative unit group set that you want to modify. The following properties can be defined in the Edit (or Create new) window:

- Name: Provide a precise name for the group set.
- Description: Describe the phenomena the group set is measuring/capturing.
- Compulsory: Indicate whether ALL administrative units need to be member of a group in this group set or not.

- Available groups/Selected groups: Here you assign groups to your group set by using the arrow buttons to move highlighted groups between the two lists (/selected). If no groups appear in the list then you must go to administrative unit groups and create new groups there first. Note that assigning groups that will violate the exclusive rule on group sets is not possible, e.g. adding a group that already has assigned an administrative units that again is already member of a group that has already been selected by this group set, will not be possible since one administrative units will end up with two group memberships in the same group set. To avoid such situations we recommend first adding groups to group sets, and then administrative units to groups.

4.5.8 ARDS Administrative Hierarchy

The current ARDS administrative hierarchy consists of four levels in which National (Tanzania) is the parent with regions as its children. Regional has districts as its children, while wards are children of districts.

National → Regional → District → Ward

The following are the changes that may occur in administrative units, their effect to the administrative hierarchy and the recommended way to apply the changes. Details of how to apply the changes in the system is provided in their respective section:

4.5.8.1 Splitting of an administrative unit

An existing administrative unit may split into more than one. For example, when Shinyanga region is split into Shinyanga and Simiyu region. In order to apply these changes in the system, it is recommended that you do the following:

- Create a new administrative unit and shift the children of the existing administrative unit to the new one as their parent.
- The existing administrative unit will remain the same but will consist of only the children that were originally assigned to it and their parent has not been changed.
- If the name of the existing administrative unit has also changed then rename it accordingly.

4.5.8.2 Merging of administrative units

This may occur when two or more administrative units have been merged to one existing administrative unit or to a new one.

- If they merge to the existing one you are recommended to change the parents of all children of the administrative unit(s), which have been merged and assign them the new parent accordingly.
- If they merge to a new administrative unit with a different name you are supposed create the new administrative unit, assign it the appropriate parent, and then change the parents of all children of the administrative unit(s), which have been merged and assign them the new parent accordingly. Once all children have been shifted, you can

remove unrequired administrative unit by using Administrative Unit Merge tool, which is explained in section 5.2.4 of this manual.

4.5.8.3 Establishment of a new administrative unit

A new administrative unit may occur due to the scenario explained section 4.5.2.1 or when a new administrative level has been added in the hierarchy (e.g. village). In later case it is recommended that you do the following:

- Add the administrative unit level (such as village from the example above) to the ARDS administrative hierarchy accordingly.
- Add the new administrative unit to their respective parents. For example, if you have added village as children of wards and Kiluvya is a village in Kisarawe ward. You should then create a new village called Kiluvya and assign it to Kisarawe as its parent.

4.6 Content Management System (CMS)

A Content Management System is a computer application that allows publishing, editing & modifying content, organizing, deleting as well as maintenance from a central interface. The ARDS Web Portal has been developed with flexibility and customization being highly considered. Therefore, the portal consists of the CMS module that provides a central point for administrative user to manage contents of the portal, in particular home and additional (article) pages. Other modules of the ARDS Web Portal have inbuilt customization ability features.

The CMS module is visible and accessible only by administrative user through Maintenance -> CMS or top right "CMS" menu in the center panel of the home page.

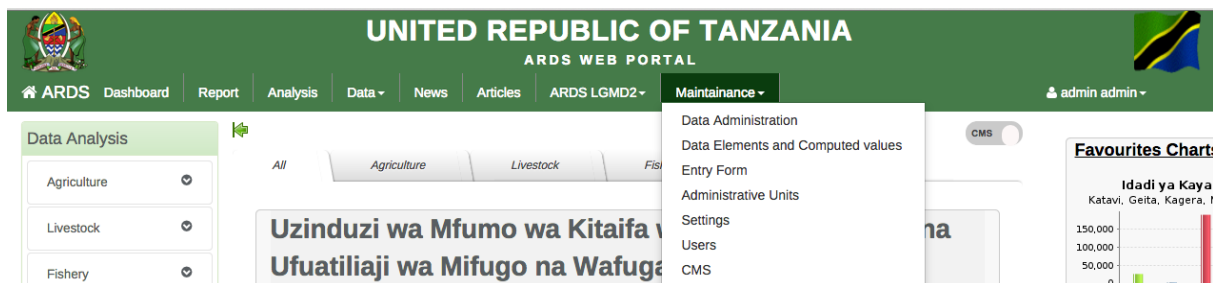


Figure 40: The CMS Module Access Menus

Once you click on any of the two CMS menu the home page will switch into an editable mode (CMS Mode) as shown in the following screenshot. You can then make use of the CMS features to manage the content of the portal.

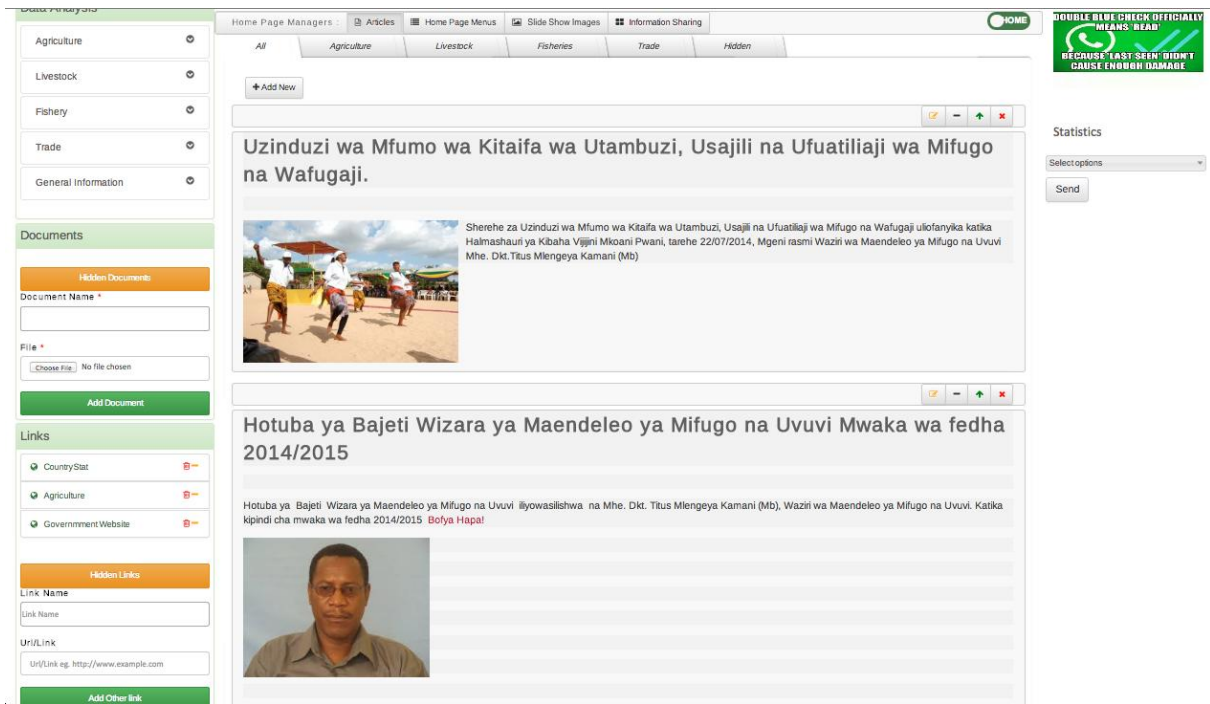


Figure 41: The Home Page in a CMS Mode

The following are features of the CMS module along with the general procedures on how they can be performed by the administrative user. In this context “Hide” means the content will not be visible in the home page but will remain in the database for later use, while “unhide” revert the process. “Delete” means complete removal of the content from the database and will no longer visible in the portal

4.6.1 Managing Documents

Add, Delete, Hide/Unhide Documents: Go to the Document panel in the left panel of the portal.

- You can delete or hide existing document by selecting an appropriate icon located in front of the document name as shown below.
- To add a new document type the document name in the text box and go to choose file to locate and upload the document file.
- To show or delete the hidden documents go to “Hidden Documents”. Hidden documents will be listed. Select an appropriate icon located in front of the document name to delete or unhide the document.

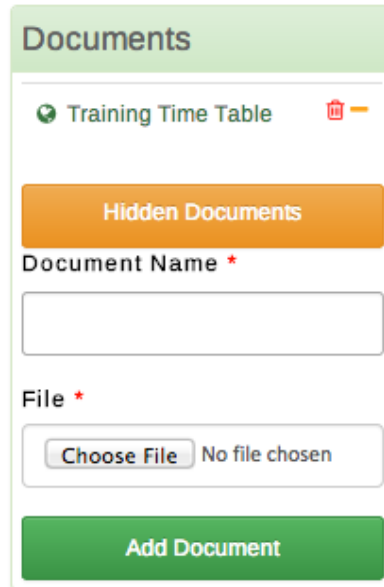


Figure 42: Documents Panel

4.6.2 Managing Links

Add, Delete, Hide/Unhide Links: Go to the Links panel in the left panel of the portal.

- You can delete or hide existing link by selecting an appropriate icon located in front of the link name as shown below.
- To add a new link write the link name and it's URL in the respective text boxes and go to "Add Other Link".
- To show or delete the hidden links go to "Hidden links". Hidden links will be listed. Select an appropriate icon located in front of the link name to delete or unhide the link.

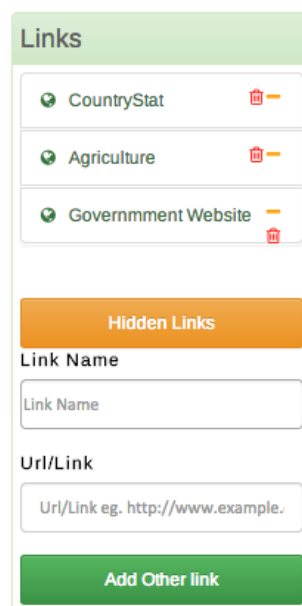


Figure 43: Links Panel

4.6.3 Managing Category of Home Page News

Add, Delete, Edit category menu of the home page news: If you want to change categories of the contents which appears at the center panel of the home page (news managed by administrative user) go to “Home Page Menus”.

- To add a new category writes the name of the category (should be short and descriptive) and click “add menu”
- To Edit or Delete an existing category select appropriate action in front of the particular category name

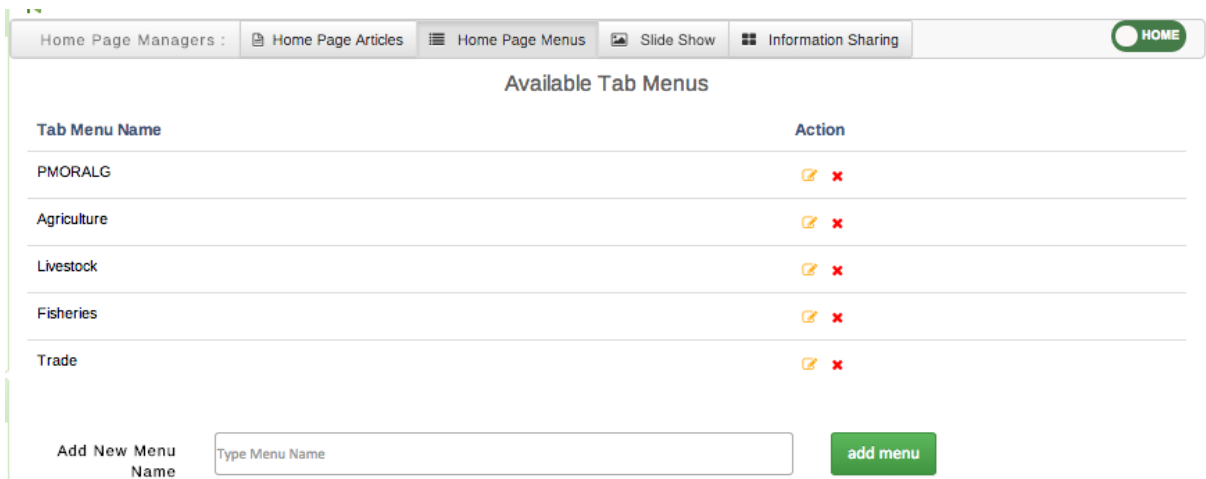


Figure 44: Managing Categories of Contents in the Center Panel of the Home Page

4.6.4 Managing Home Page News

Add, Delete, Edit, Hide/Unhide, and Sort (reorder) home page news: If you want to change the contents, which appears at the center panel of the home page (news managed by administrative user) go to “Home Page Articles”.



Figure 45: Managing Contents in the Center Panel of the Home Page

- To delete, edit, hide or sort an existing content go to the particular content panel in the list the select appropriate action from the top left menu of the specific panel. If you hover the cursor on the icon it will display the name of the action.
- If you select to edit the content will open in HTML editor as shown below where you can use GUI or choose to use HTML source code to edit the content. Once you are done with editing select category and go to edit item then the content will be updated. You may choose the cancel changes if you do no longer want to apply the changes.
- To add a ne content go to “Add New” menu at the top left of the center panel. This will open the same but blank HTML editor as the one used for editing then you can write or paste and edit the contents from external sources. Once you are done with the formatting select category and the go to “Add Item” to add the contents or “Cancel” to remove the changes.

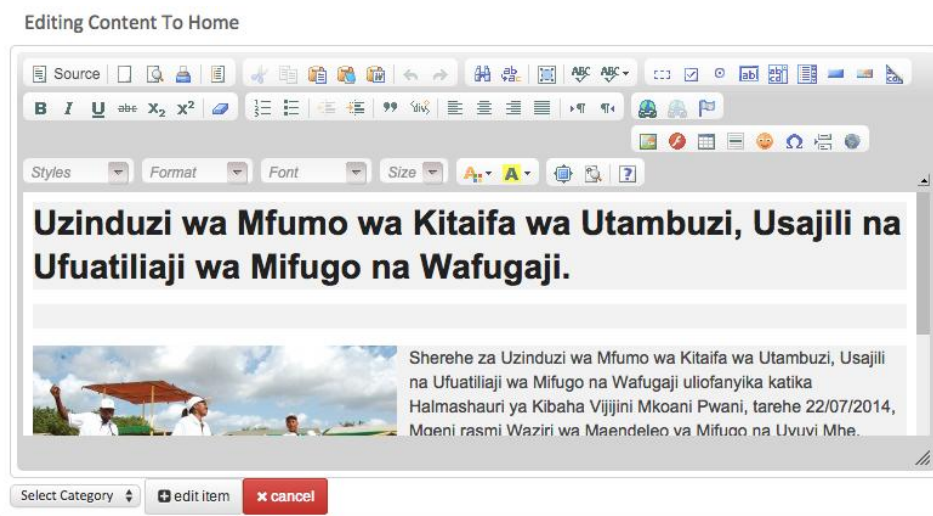


Figure 46: Editing Existing Contents in the Center Panel of The Home Page

- To view the hidden contents go to “Hidden” menu in the top right of the center panel and the go the panel of the content you want and select appropriate action form the menus in the top right of the specific content panel.

4.6.5 Managing Slide Show Images

Upload, Delete, Show/Hide, Preview slide show images: To manage the images to be displayed in the slide show of the home page go to “Slide Show Images” and the screen for managing slide show images will appear as shown below.

- To upload a new image go to Upload Image -> Choose File -> Add Image. The image will be added and displayed.
- To delete, hide or preview an existing image select appropriate action menu located below the particular image.
- If you want to delete all, hide all, unhide all, or view all hidden images select appropriate action menu located at the to right of the image’s display panel

- When you view hidden images you may choose to unhide or perform any of the action explained above.

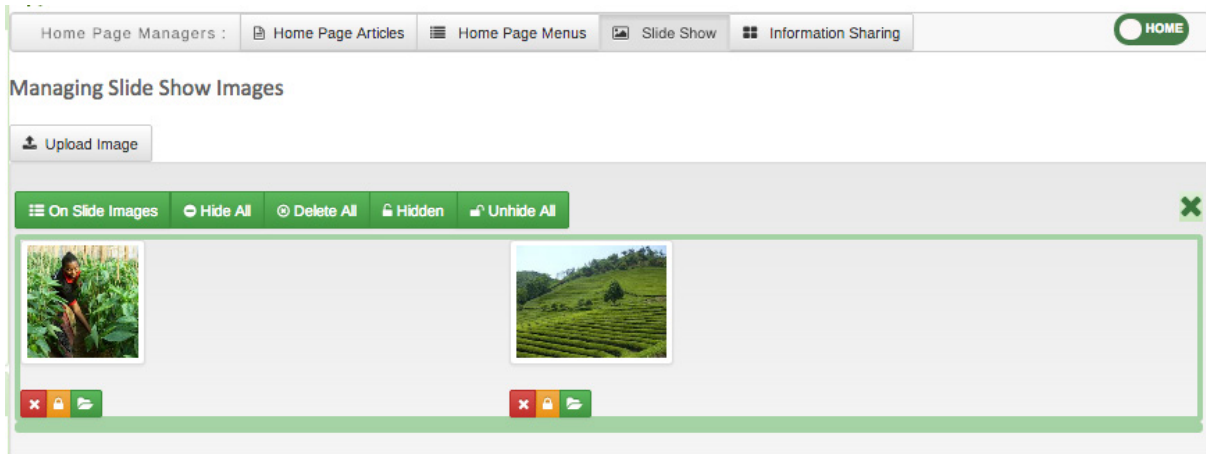


Figure 47: Managing Slide Show Images

4.6.6 Managing Additional Pages

Add, Delete and Edit a new page (article) for sharing information: logically, each article is an additional web page created and managed by a user for the purpose of sharing a specific information in more details. To manage this kind of articles go to “Information Sharing” and the screen will appear as shown below.

- To add new articles go to “Add Page” menu in the top left of the center panel. A new black HTML editor similar to the one in figure 41 will open then follow same procedures to add and edit the contents. Once you are done go to “Add Article” to add the page or Cancel to revert the changes.
- To edit or delete existing article select the particular article. Once the article is open select the appropriate action from the menus located below the article.
- Once you select “Edit” the article will be opened in the HTML editor as for the editing of the contents in the center panel of the home page. Follow same process to apply your changes.

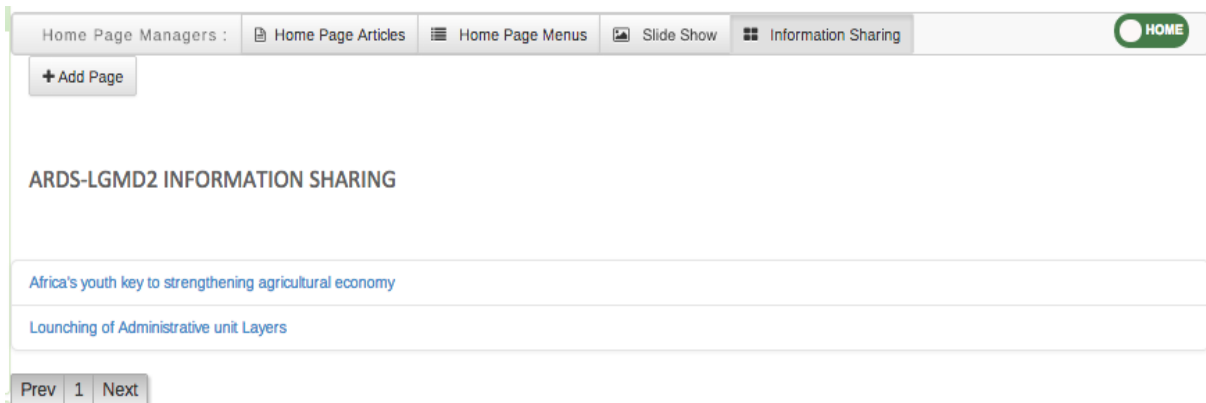


Figure 48: Managing Additional Pages

4.6.7 Changing Statistics that Appear on the Home Page

Change/Select statistics of interest to appear on the home page: The ARDS Home page contains a panel to display top three statistics of most interest depending on the data need in a specific period. These statistics are selected charts, which are created and saved as favorite in the Data visualizer module.

- To change the charts to be displayed in this Statistics go to “Statistics” panel located on the right.
- Click on the “Select Options” and the list of all available saved favorite charts will appear.
- Select only three favorites and click send then the selected favorite charts will appear in the statistics in the home page.

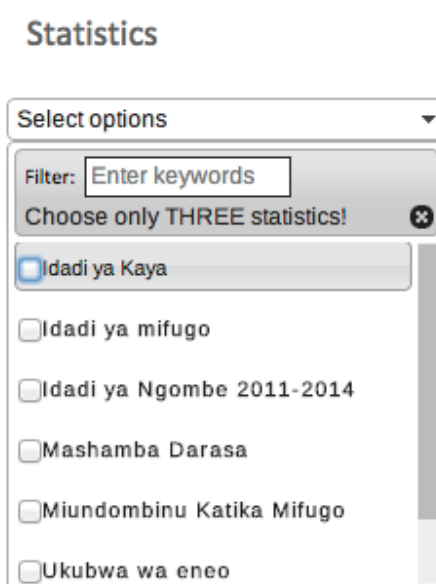


Figure 49: Selecting Charts of interest for the Statistics in the Home Page

4.7 Synchronization

In ARDS, the LGMD2i typically involves a distributed application, where the same application is running in different administrative unit (district, regional, and national). Therefore, the data needs to be synchronized through the Internet in order to have a consolidated database at the national level. However, some of these physical locations do not have stable Internet connectivity, and hence they work offline. For this, it is important to be able to export and import data from a location, which is working offline to national level or to another location where it needs to be imported. The ARDS-LGMD2 Web Based Data Entry uses the online synchronization strategy (online/offline mode), which is more viable in areas with unstable Internet connectivity.

Besides, the ARDS-LGMD2 Web Based Data Entry also provides robust import-export functionality to support areas with unstable Internet connectivity. It allows transferring of data between computers for different purpose.

“For instance, a user at Arusha Vijijini district was entering data, unfortunately he becomes disconnected from the Internet for a long time until he finishes entering data, he may decide to export the data and take it to a near by computer (or district such Arusha Mjini), which has the Internet connection and import the data to the server. Also, if it seems more convenient, a user may send the exported file to the national headquarter technical team to be imported to the server”

This feature helps overcome the dependency on the Internet to some degree, as data updates can be transferred via USB key where there is no connectivity, or through email where there is limited Internet connectivity.

Also, the standalone offline copy can be installed in areas with no Internet connectivity, such that the system is accessed offline and data are always entered offline and uploaded to the server through import-export feature. The standalone copy can be configured to automatically synchronize with the central server in areas with limited connectivity. However, online/offline mode is highly recommended over standalone copy in areas with limited connectivity. It only need to:

- Login when there is connectivity,
- Continues entering data offline and,
- Upload offline data when connectivity is back.

4.7.1 Online/offline data entry

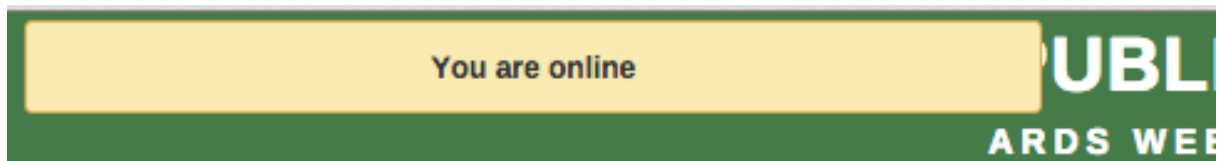
When a user is entering data while online the values are saved immediately:

- Do not require any save/finished/Sync button click.
- A green field indicates that the value has been saved in the system (on the server if the Internet connection is stable or offline when disconnected).
- On a slow connection it might take some time before the values are saved (yellow fields will be changing to green as they are saved successful).
- The data entry module will function even if during data entry the Internet connectivity is not stable.
- In order to utilize this functionality, a user must login to the server while the Internet is functional.

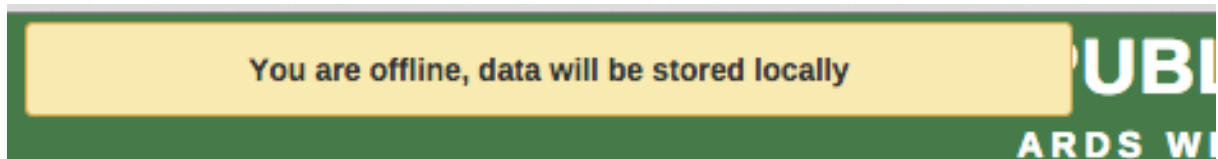
If during data entry, the Internet link becomes unstable, data can still be entered into the data entry form,

- Data are saved to the local computer, and then uploaded to the server once the Internet connectivity has been restored.
- This means that the on-line deployment strategy will be more viable in areas with unstable Internet connectivity.

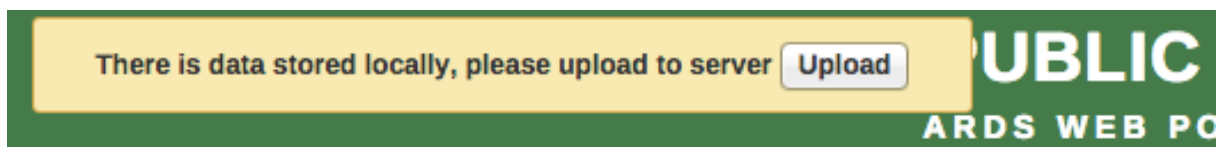
- When the server can be reached through the Internet, a message is displayed at the top of the data entry screen telling that a user is working online.



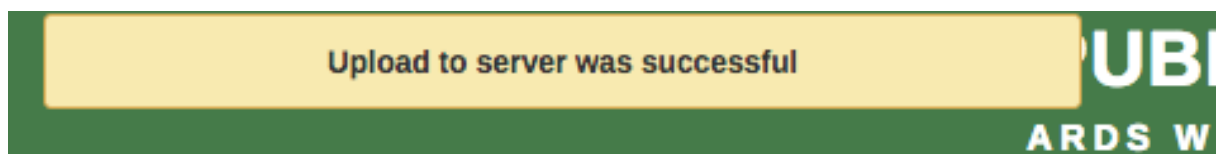
- Any Internet disconnection will be detected by the application, and a user will be informed that s/he is offline and data will be stored locally.



- A user can proceed with data entry as normal.
- Once the application detects that the server is back online. A user will be informed that there is data stored locally, please upload to the server. A user should always click Upload.



- Once the data has successfully synchronized with the server, a user will receive a confirmation message.



More detail about how this work during data entry can be found in the data entry section of the ARDS user manual.

4.7.2 Import-export

To access the main Import-Export module, go to Data Entry menu in the ARDS-LGMD2 Web Based Data Entry or Maintenance menu in the ARDS Portal and select “Import Export”. A number of import export services are available, Data import and export can be done by normal users (e.g. district users) and is described in detail in respective sections below as well as in the ARDS user manual. Metadata, event import and export, GML import and more advanced data import options can only be done by administrative user and are described in detail in respective sections below.

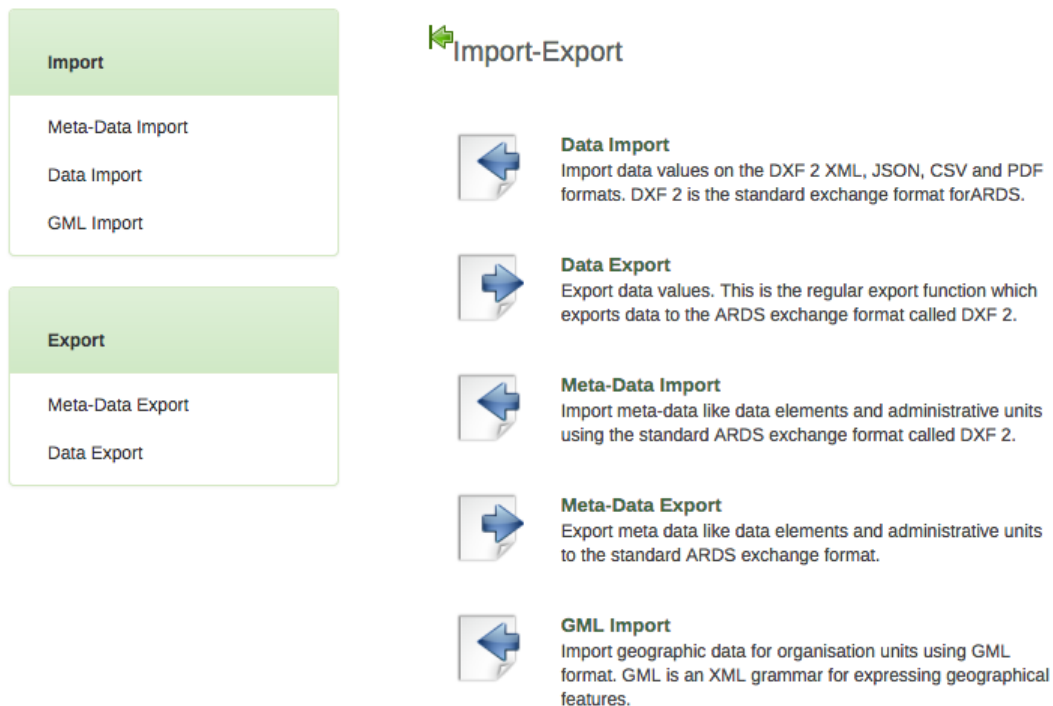


Figure 50: Import – Export module

4.7.2.1 Meta-data import

Meta-data objects can be easily imported by accessing ARDS-LGMD2 → Import Export → Meta-Data import.

- Select the file to import by pressing "Choose File" and choose the file from your local file system.
- When importing XML and JSON files, the system will automatically detect which type of objects which should be imported. When importing CSV metadata, you will need to specify the object type. Consult the corresponding section in this manual on "CSV Metadata import" for more specific information on how the CSV file should be created.

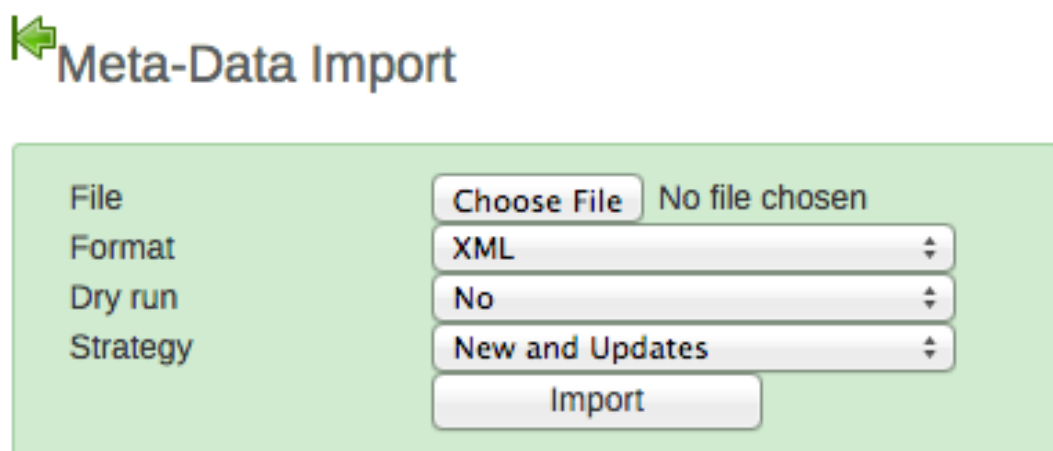


Figure 51: Meta-Data import screen

There are two separate options for importing data.

- **Dry run:** This is similar to the old preview option, it will do a dry run import, and give you information about any errors.
- **Strategy:** There are three options here, "New and Updates", "New only", and "Update only". New and updates tells the importer to expect both new meta-data, and updates to existing ones. New only will only accept fresh meta-data, usually you would use this on a empty database. Updates only will only allow the meta-data to match meta-data that is already there (same identifiers, new name etc.).

Note: It is highly recommended to always use the Dry run option when importing data to make sure you keep control over any changes to your meta-data and databases being out of synch on data elements or administrative unit names.

Dry run will enable you to have a look at how many new, updates, and ignored meta-data there will be. To enable dry run after you have selected your file, set dry run to true, and then click the import button. You will see a short summary of what was contained in your import file. To see further details, please click on the "Display import summary" link.

4.7.2.2 Data import

To import data in XML format, simply choose "Import Export" from Data Entry menu in the ARDS-LGMD2 Web Based Data Entry interface or ARDS-LGMD2 menu in the ARDS Web Portal, and then follow the following steps:

- Select the file to import by pressing "Choose File" and choose the file from your local file system.
- When importing XML and JSON files, the system will automatically detect which format of the file should be imported. When importing CSV data, you will need to specify the format. Consult the corresponding section in this manual on "CSV Metadata import" for more specific information on how the CSV file should be created.

There are two separate options for importing data.

- **Dry run:** This gives a preview option. It will do a dry run import, and give you information about any errors.
 - **Note:** It is recommended always using the Dry run option when importing data to make sure you keep control over any changes to your data.
- **Strategy:** There are three options here, "New and Updates", "New only", and "Update only".
 - New and updates tells the importer to expect both new data, and updates to existing ones.
 - New only will only accept fresh data, usually you would use this on an empty database.
 - Updates only will only allow the data to match data that is already there (same identifiers, new name etc.).

4.7.2.3 GML import

The GML import function can be used to import data prepared in the Geography Markup Language (GML). GML can be used to update the coordinates (both polygons and points). Once you have prepared your GML file based on standard way of importing coordinates, you can load the file with this function.

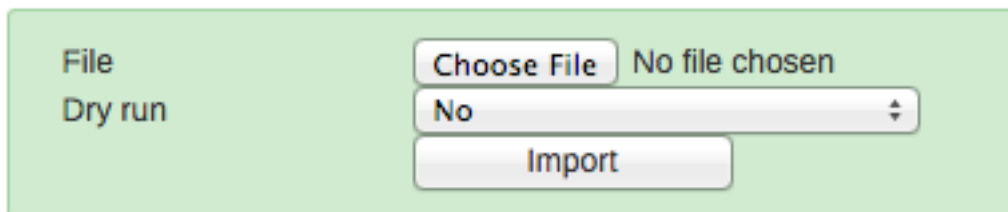
- You cannot import an administrative unit hierarchy with GML. Therefore, you should create the administrative unit hierarchy separately, and then use GML to update the coordinates once the hierarchy has been created.
- Currently, it is only possible to import GML data by matching on the name of the administrative unit itself. Therefore, if you have administrative units with the same name in your administrative unit hierarchy (e.g. two wards with exactly the same name), you will need to distinguish them before importing GML. Otherwise, both administrative units may be updated with the same set of coordinates.

To import GML data simply:

- Login as administrative user,
- Select "Import Export" from the ARDS-LGMD2 menu in the ARDS Web Portal,
- Select GML import
- Select the file to import by pressing "Choose File" and choose the file from your local file system.

GML Import

Note: Only import of GML data for existing administrative units is supported.



File	Choose File	No file chosen
Dry run	No	
Import		

Figure 52: GML import screen

There is one separate option for importing GML data.

- **Dry run:** This gives a preview option. It will do a dry run import, and give you information about any errors. It is recommended always using the Dry run option when importing GML data to make sure you keep control over the changes.

4.7.2.4 Meta-data export

Meta-data is "data about data". In the context of ARDS Web Portal, meta-data consists of definitions of data elements, indicators, the structure and names contained in the administrative hierarchy, and other options.

Click on the "Meta-data export" link from the main "Data export" screen in order to access this. Just select the features, format (XML or JSON), and the compression (zipped, gzipped or uncompressed) that you want and click "Export". This metadata file can then be transmitted just like a data file, except it will contain information on the definitions of the various features, as opposed to the values of the data themselves.

← Meta-Data Export

<input checked="" type="checkbox"/> Attribute	<input checked="" type="checkbox"/> Category	<input checked="" type="checkbox"/> Category Combo
<input checked="" type="checkbox"/> Category Option	<input checked="" type="checkbox"/> Category Option Combo	<input checked="" type="checkbox"/> Category Option Group
<input checked="" type="checkbox"/> Category Option Group Set	<input checked="" type="checkbox"/> Chart	<input checked="" type="checkbox"/> Constant
<input checked="" type="checkbox"/> Dashboard	<input checked="" type="checkbox"/> Dashboard Item	<input checked="" type="checkbox"/> Data Approval Level
<input checked="" type="checkbox"/> Data Element	<input checked="" type="checkbox"/> Data Element Group	<input checked="" type="checkbox"/> Data Element Group Set
<input checked="" type="checkbox"/> Entry Form	<input checked="" type="checkbox"/> Document	<input checked="" type="checkbox"/> Event Chart
<input checked="" type="checkbox"/> Event Report	<input checked="" type="checkbox"/> Computed Values	<input checked="" type="checkbox"/> Computed Values Group
<input checked="" type="checkbox"/> Computed Values Group Set	<input checked="" type="checkbox"/> Computed Values Type	<input checked="" type="checkbox"/> Map
<input checked="" type="checkbox"/> Map Layer	<input checked="" type="checkbox"/> Map Legend	<input checked="" type="checkbox"/> Map Legend Set
<input checked="" type="checkbox"/> Map View	<input checked="" type="checkbox"/> Meta Data Filter	<input checked="" type="checkbox"/> Option
<input checked="" type="checkbox"/> Lookup Table	<input checked="" type="checkbox"/> Administrative Unit	<input checked="" type="checkbox"/> Administrative Unit Group
<input checked="" type="checkbox"/> Administrative Unit Group Set	<input checked="" type="checkbox"/> Administrative Unit Level	<input checked="" type="checkbox"/> Program
<input checked="" type="checkbox"/> Program Stage	<input checked="" type="checkbox"/> Program Stage Section	<input checked="" type="checkbox"/> Program Validation
<input checked="" type="checkbox"/> Relationship Type	<input checked="" type="checkbox"/> Report	<input checked="" type="checkbox"/> Report Table
<input checked="" type="checkbox"/> Section	<input checked="" type="checkbox"/> Sql View	<input checked="" type="checkbox"/> Tracked Entity
<input checked="" type="checkbox"/> Tracked Entity Attribute	<input checked="" type="checkbox"/> Tracked Entity Attribute Group	<input checked="" type="checkbox"/> User
<input checked="" type="checkbox"/> User Credentials	<input checked="" type="checkbox"/> User Group	<input checked="" type="checkbox"/> User Role
<input checked="" type="checkbox"/> Validation Criteria	<input checked="" type="checkbox"/> Validation Rule	<input checked="" type="checkbox"/> Validation Rule Group

XML

Zipped

Figure 53: Meta-Data export screen

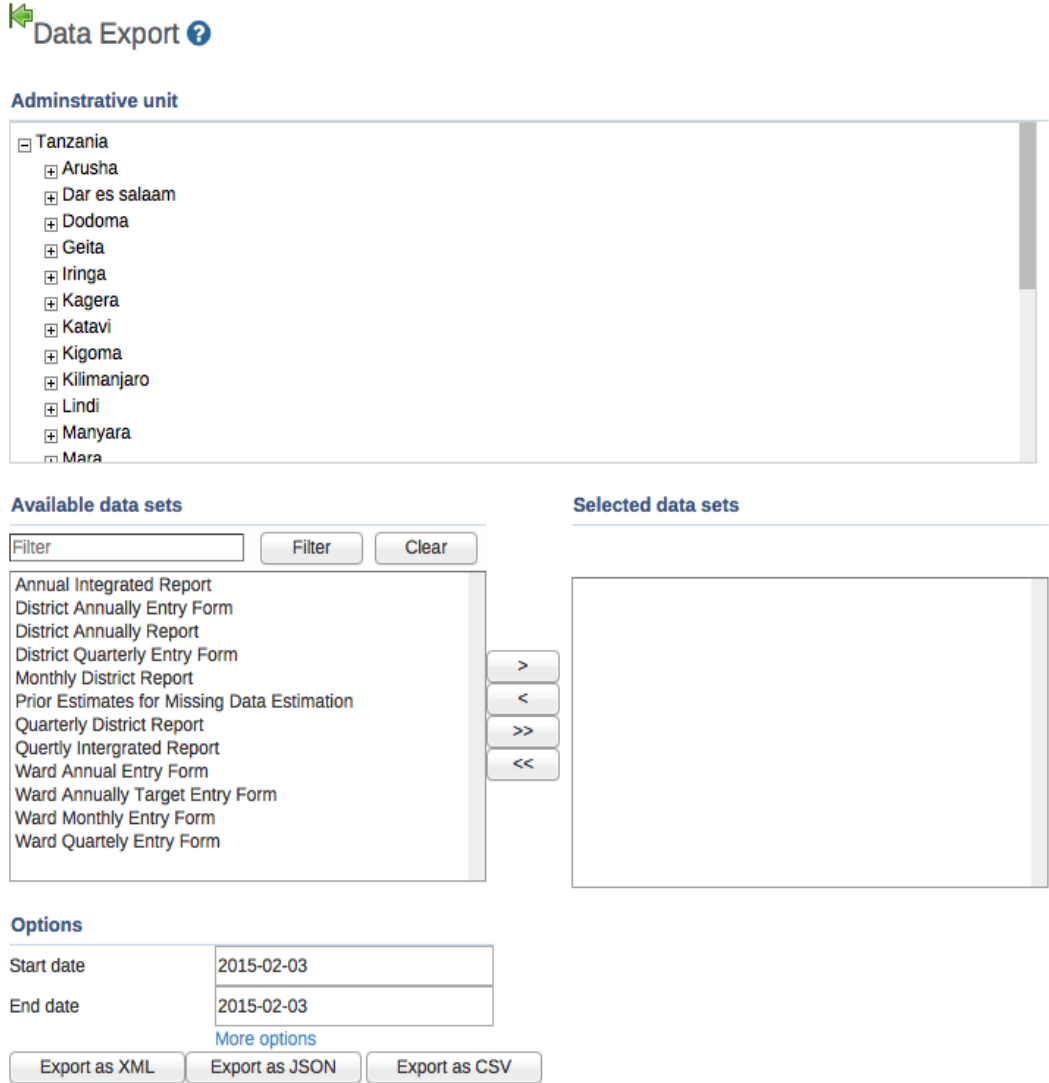
Simply choose the objects, which you would like to export, and click "Export".

4.7.2.5 Data export

To export raw data from the system, choose "Import Export" from Data Entry menu in the ARDS-LGMD2 Web Based Data Entry or ARDS-LGMD2 menu in the ARDS Portal, and then follow the following steps:

- Click on Data Export,
- Select the administrative unit(s),
- Select Entry Form(s) and-or Report(s) for which data export should be selected,
- Select the start and end date for which data export should be selected,
- Once you have specified all options as required, press "Export as XML".

You can also select which types of identifiers which will be exported by pressing "More options" and then selecting either UID, Code, or Name for data elements, administrative units and category options. Also, you can go to more option when you would like to export the data as JSON or CSV.



Standalone offline copy Figure 54: Data export screen

4.7.2.6 Importing CSV data

ARDS Web Portal supports import of data in the CSV (Comma Separated Values) format. This can be used to import exchange file produced by the portal itself. It also comes in handy when you want to import data from a third-party system as CSV is widely supported in applications and is easy to produce manually.

To import a CSV data file navigate to the Data Import item. Select CSV as a format and click Import. The following section describes the CSV format used in ARDS Web Portal. The first row is assumed to be a header row and will be ignored during import.

Table 2: CSV Data format of ARDS Web Portal

Column	Required	Description
Data element	Yes	Refers to ID by default, can also be name and code based on selected id scheme
Period	Yes	In ISO format
Org unit	Yes	Refers to ID by default, can also be name and code based on selected id scheme
Category option combo	No	Refers to ID
Attribute option combo	No	Refers to ID (from version 2.16)
Value	No	Data value
Stored by	No	Refers to username of user who entered the value
Last updated	No	Date in ISO format
Comment	No	Free text comment
Follow up	No	true or false

The following is an example CSV file that can be imported into ARDS Web Portal. It can be imported either as plain text file or as compressed ZIP file archive.

```
"dataelement","period","orgunit","categoryoptioncombo","attributeoptioncombo","value","storedby","timestamp","comment","followup"
"DUSpd8Jq3M7","201202","gP6hn503KUX","Pr1t0C1RF0s",,"7","bombali","2010-04-17",,"false"
"DUSpd8Jq3M7","201202","gP6hn503KUX","V6L425pT3A0",,"10","bombali","2010-04-17",,"false"
"DUSpd8Jq3M7","201202","OjTS752GbZE","V6L425pT3A0",,"9","bombali","2010-04-06",,"false"
```

4.7.2.7 Importing CSV meta-data

ARDS Web Portal supports import of meta-data in the CSV format. Columns that are not required can be omitted in the CSV file, but the order will be affected. If you would like to specify columns which appear late in the order but not specify columns which appear early in the order you can include empty columns ("") for them.

To import CV meta-data go to import-export module and select CSV Meta-Data Import form the left side menu. You must select the object type which your CSV file contains. You can only upload one type of objects at the time. Upload your file and click update. The following object types are supported:

- Data elements
- Data element groups
- Category options
- Category option groups
- Administrative units
- Administrative unit groups
- Validation rules
- Option sets

The formats for the currently supported object types for CSV import are listed below.

Table 3: Data Element CVS Format

Column	Required	Value (default first)	Description
Name	Yes		Name. Max 230 char. Unique.
UID	No	UID	Stable identifier. Max 11 char. Will be generated by system if not specified.
Code	No		Stable code. Max 50 char.
Short name	No	50 first char of name	Will fall back to first 50 characters of name if unspecified. Max 50 char. Unique.
Description	No		Free text description.
Form name	No		Max 230 char.
Domain type	No	aggregate tracker	Domain type for data element, can be aggregate or tracker. Max 16 char.
Value type	No	int string bool trueOnly date unitInterval	Value type. Max 16 char.
Number type	No	int posInt negInt number zeroPositiveInt	Only relevant if type is int. Max 16 char.
Text type	No	text longText	Only relevant if type is string. Max 16 char.
Aggregation operator	No	sum average count stddev variance	Operator indicating how to aggregate data in the time dimension. Max 16 char.
Category combination UID	No	UID	UID of category combination. Will default to default category combination if not specified.
Url	No		URL to data element resource. Max 255 char.
Zero is significant	No	false true	Indicates whether zero values will be stored for this data element.
Option set	No	UID	UID of option set to use for data.
Comment option set	No	UID	UID of option set to use for comments.

Table 4: Administrative Unit CSV Format

Column	Required	Value (default first)	Description
Name	Yes		Name. Max 230 characters. Unique.
UID	No	UID	Stable identifier. Max 11 char. Will be generated by system if not specified.
Code	No		Stable code. Max 50 char.
Parent UID	No	UID	UID of parent organisation unit.
Short name	No	50 first char of name	Will fall back to first 50 characters of name if unspecified. Max 50 characters. Unique.
Description	No		Free text description.
UUID	No		UUID. Max 36 char.
Opening date	No	1970-01-01	Opening date of organisation unit in YYYY-MM-DD format.
Closed date	No		Closed date of organisation unit in YYYY-MM-DD format, skip if currently open.
Comment	No		Free text comment for organisation unit.
Feature type	No		Can be Point, Polygon, MultiPolygon. Max 50 char.
Coordinates	No		Coordinates used for geospatial analysis in Geo JSON format.
URL	No		URL to organisation unit resource. Max 255 char.
Contact person	No		Contact person for organisation unit. Max 255 char.
Address	No		Address for organisation unit. Max 255 char.
Email	No		Email for organisation unit. Max 150 char.
Phone number	No		Phone number for organisation unit. Max 150 char.

Table 5: Validation Rule CSV Format

Column	Required	Value (default first)	Description
Name	Yes		Name. Max 230 characters. Unique.
UID	No	UID	Stable identifier. Max 11 char. Will be generated by system if not specified.
Code	No		Stable code. Max 50
Description	No		Free text description.
Instruction	No		Free text instruction.
Importance	No	medium high low	
Rule type	No	validation surveillance	
Operator	No	equal_to not_equal_to greater_than greater_than_or_equal_to less_than less_than_or_equal_to compulsory_pair	
Period type	No	Monthly Daily Weekly Quarterly SixMontly Yearly	
Left side expression	Yes		Mathematical formula based on data element and option combo UIDs.
Left side expression description	Yes		Free text.
Left side null if blank	No	false true	Boolean.
Right side expression	Yes		Mathematical formula based on data element and option combo UIDs.
Right side expression description	Yes		Free text.
Right side null if blank	No	false true	Boolean.

Table 6: Option Set (Look Up) CSV Format

Column	Required	Value (default first)	Description
Name	Yes		Name. Max 230 characters. Unique. The option set values should be repeated for each option.
UID	No	UID	Stable identifier. Max 11 char. Will be generated by system if not specified.
Code	No		Stable code. Max 50 char.
Option	Yes		Option. Free text. The option set values should be repeated for each option.

Table 7: Data Element Group, Category Option, Category Option Group, and Administrative Unit Group CSV Forma

Column	Required	Value (default first)	Description
Name	Yes		Name. Max 230 characters. Unique.
UID	No	UID	Stable identifier. Max 11 char. Will be generated by system if not specified.
Code	No		Stable code. Max 50 char.

An example of a CSV file for data elements can be seen below. The first row will always be ignored. Notice how you can skip columns and rely on default values or simply leave columns blank:

```
name,uid,code,shortname,description,formname,domain, type, numbertype, texttype, aggregationoperator, categorycombo, url, zero
"Women participated in skill development training",,"D0001","Women participated development training"
"Women participated in community organizations",,"D0002","Women participated community organizations"
```

A minimal example for importing administrative units with a parent unit looks like this:

```
name,uid,code,parent
"West province",,"WESTP","ImspTQPwCqd"
"East province",,"EASTP","ImspTQPwCqd"
```

The format for option sets (Look Up) is special. One record represents an option, and the three first values representing the option set should be repeated for each option (record):

```
name,uid,code,option
"Color",,"Blue"
"Color",,"Green"
"Gender",,"Female"
"Gender",,"Male"
```

4.7.3 Standalone copy

This feature helps overcome the dependency on the Internet, as data updates can be transferred via USB key (or other external storage) through export and imported to the server through a computer connected to the Internet as introduced earlier in section 4.7. To set up standalone copy:

- Requires installing an offline instance of the system to a computer in the location where there is no Internet connectivity.
- Installation of the local copy follows same steps as installing the server (see section 3 of this manual).
- Make use of import-export functionality as described in the previous section 4.7.2 to synchronize data to the central server.

Note: Set up of the standalone offline copy should be done by administrative user (technical personnel), other users will then continue working with the offline copy and use import-export to sync with the server.

Also, in areas with limited connectivity, administrative user can configure the standalone copy to synchronize with the central server at a specified time. Simply follow the following steps in the standalone copy of the ARDS Web Portal after the installation is completed:

- Login as an administrative user
- Go to Maintenance
- Select Settings
- Select Synchronization
- Fill in the required information
 - URL, username and password of the central server
- Test the setting and save if the test is successfully

Figure 55: Setting Up Data Synchronization to Central Server

Data synchronization processes in a standalone copy can be scheduled as regular tasks in the data administration module. Run at a pre-determined time (always at midnight based on the server time). To do so:

- Go to Maintenance
- Select Data Administration
- Select Scheduling
- Click stop if scheduling is active
- Select Set Data Synchronization Strategy to “Enabled”
- Click start to the activate scheduling.

Figure 66 in the scheduling section illustrates scheduling management.

However: If the problem is limited connectivity, consider using online/offline mode first. Standalone offline copy is suitable when the Internet connection is a serious problem or no Internet connection at all.

4.8 Aggregation

Aggregation allows a user to control the process of converting collected data into aggregated and write them to the resource and analytic tables. This process improves performance of the system by speeding up response to the user when requesting a report or performing analysis on the data.

Note: In order to see any new data submitted to the server, aggregation process should run between the time data was submitted and before a user view the reports.

Aggregation process can be scheduled to run periodically at a certain time, or a user may choose to run it when s/he want to view report immediately after the data was entered. However, the process might take a long time and heavily utilize the resources of the server, so make sure such processes is started at a feasible time in production environments.

4.8.1 Scheduled aggregation

Aggregation processes is scheduled as regular tasks in the data administration module. Run at a pre-determined time (always at midnight based on the server time). Administrative user can disable (stop) or start scheduling. To do so:

- Go to Maintenance
- Select Data Administration
- Select Scheduling
- Click stop if scheduling is active
- Select Resource Tables & Analytic Tables task strategy to run “All daily”
- Click start to the activate scheduling.

Figure 66 in the scheduling section illustrates scheduling management.

4.8.2 On demand aggregation

If a user completed data entry and would like to view the changes in the reports immediately, should run on demand aggregation. Follow the following simple steps.

- Go to Report from the main menu
- Select Aggregation
- Click on start aggregation
- The steps above will aggregate all data to make them ready for report.

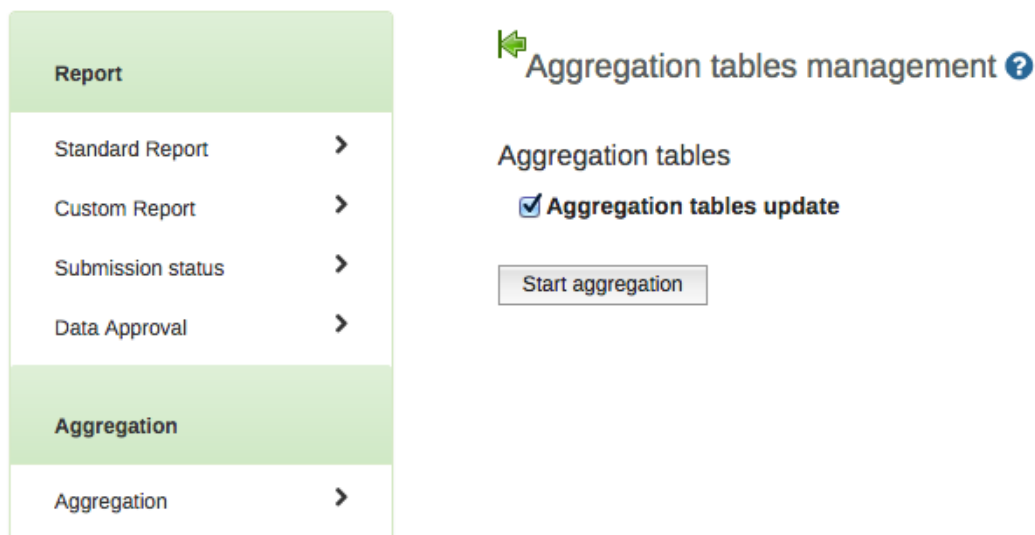


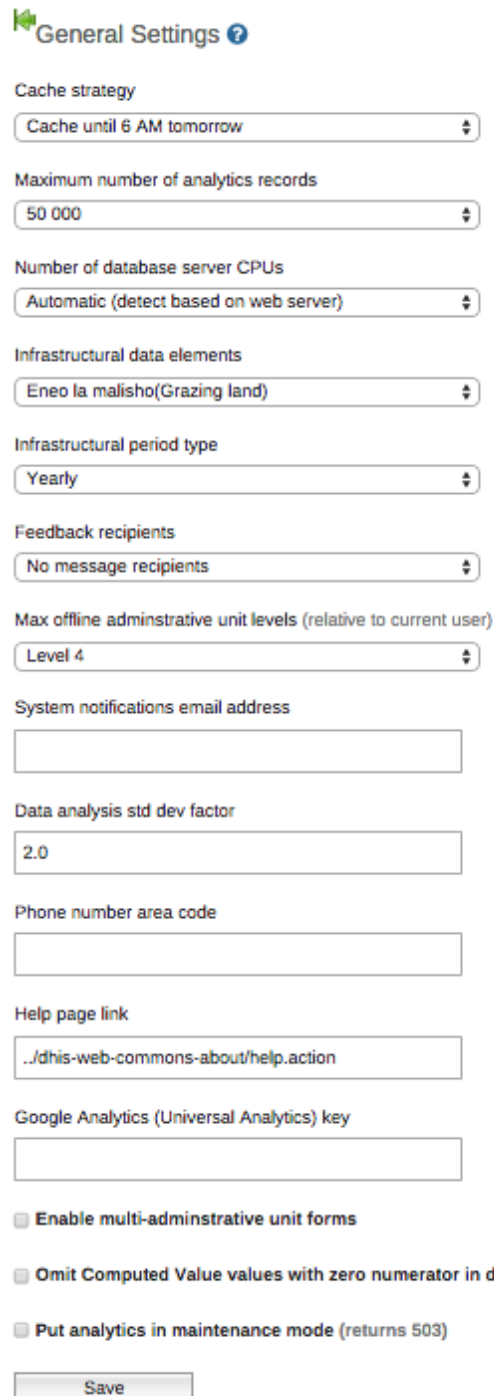
Figure 56: On demand aggregation management screen

5 Maintenance

5.1 Change System Settings

5.1.1 Changing General Setting of the Portal

To change general settings of the ARDS Web Portal, go to Maintenance drop down menu and select settings then select System General Settings and the following screen will appear.



General Settings ?

Cache strategy
Cache until 6 AM tomorrow

Maximum number of analytics records
50 000

Number of database server CPUs
Automatic (detect based on web server)

Infrastructural data elements
Eneo la malisho(Grazing land)

Infrastructural period type
Yearly

Feedback recipients
No message recipients

Max offline administrative unit levels (relative to current user)
Level 4

System notifications email address

Data analysis std dev factor
2.0

Phone number area code

Help page link
../dhis-web-commons-about/help.action

Google Analytics (Universal Analytics) key

Enable multi-administrative unit forms

Omit Computed Value values with zero numerator in data mart

Put analytics in maintenance mode (returns 503)

Save

Figure 57: Change General System Settings

- **Cache Strategy:** This setting allows an administrator to specify cache strategy to be either daily or for two weeks. It is recommended to be daily so as to increase performance of the system when visualizing data, while reducing a risk of viewing obsolete data, which may result when cache is set for two weeks.
- **Maximum number of analytic record:** This setting allows administrator to limit number of analytic records to be kept in the system.
- **Number of database server CPUs:** This setting allows administrator to specify number of CPU to be dedicated for the system based on the number of CPU available in the Server.
- **Infrastructural data elements:** This setting defines a data element group where the member data elements should describe data about the infrastructure of administrative units. Examples of such infrastructural data elements could be population, doctors, beds, Internet connectivity and climate. This infrastructural data can currently be viewed in the GIS module in the facility information sheet.
- **Infrastructural period type:** Sets the frequency for which the data elements in the infrastructural data elements group are captured. This will typically be yearly. When viewing the infrastructural data you will be able to select the time period of the data source.
- **Feedback recipients:** This setting defines a user group where the members will receive all messages being sent through the function for writing feedback in the dashboard module. This will typically be members of the super user team who are able to support and answer questions coming from end-users.
- **Completeness notification recipients:** This setting defines a user group where the members will receive messages as notifications when a form has been marked as complete. A typical use of this is when the forms are considered to be an order of some commodity and a group of users want to be notified when such orders are placed.
- **Omit Computed Value values with zero numerator value in data mart:** Defines whether aggregated Computed Value values with zero as the numerator value should be written to the Computed Value data mart table. Having such values written is required for instance when connecting Excel pivot tables to the data mart as Excel will need the numerator data to correctly aggregate up in the administrative unit hierarchy. If third-party tools like Excel are not used with the application this will reduce the total number of values written to the data mart (which again will improve performance) and could safely be set to omit.
- **Disable data entry when form completed:** This setting defines whether the data entry forms should be disabled and prevent from further entry after they have been marked as complete.
- **Data analysis std dev factor:** Sets the number of standard deviations for use in the outlier analysis performed on the captured data in the data entry module. The default value is 2; a high value will catch less outlier values than a low value.

5.1.2 Changing Appearance

To change appearance settings of the ARDS Web Portal go to Maintenance drop down menu and select settings then select System Appearance Settings and the following screen will appear.

Appearance settings [?](#)

Application title
ARDS Web portal

Application introduction (allows HTML)
Welcome to ASLM ARDS Web portal

Application notification (allows HTML)
Access credentials.

Username: admin

Password: district

Application footer (allows HTML)

Style
Light Blue

Flag
Tanzania

Start page
Dashboard

Figure 58: Changing System Appearance Settings

- Application title: Sets the application title to the left on the top menu.
- Style: Sets the style / look-and-feel of the system. The corresponding user style setting overrides this.
- Flag: Sets the flag that is displayed in the left menu of the dashboard module.
- Start page: Sets page / module which the user will be redirected to after logging in. The dashboard module is the recommended start module.

5.2 Data Administration

Data administration module provides various services for administrative user to manage/maintain the database as shown in the figure below.

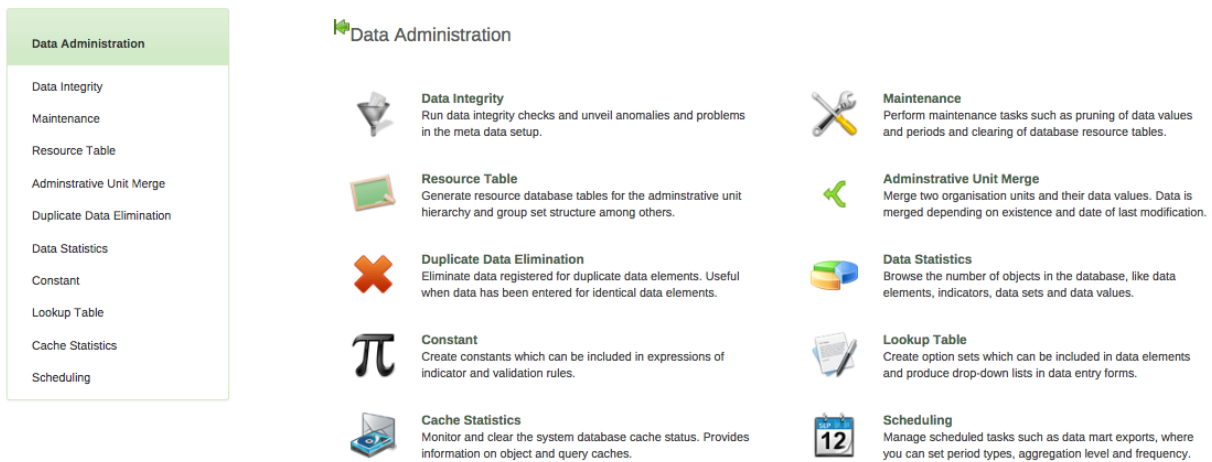


Figure 59: Data administration module

5.2.1 Data integrity

ARDS Web Portal can perform a wide range of data integrity checks on the data contained in the database. Identifying and correcting data integrity issues is extremely important for ensuring that the data used for analysis purposes is valid. Each of the data integrity checks that are performed by the system will be described, along with general procedures that can be performed to resolve these issues.

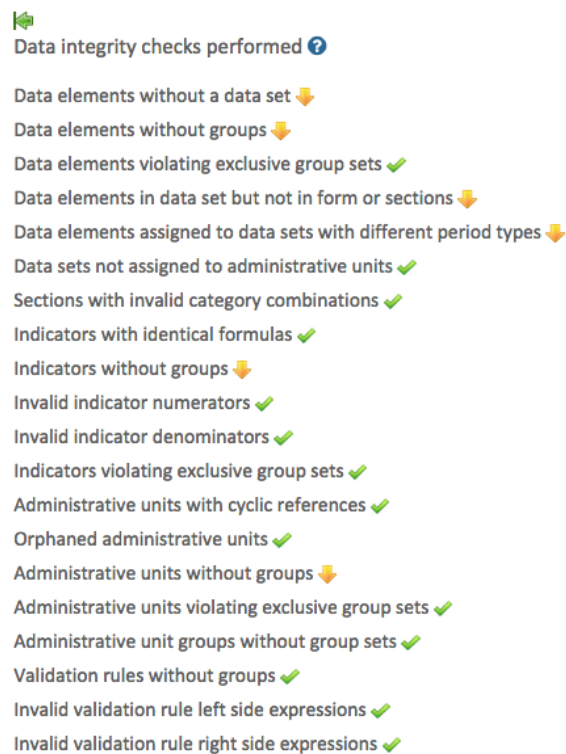


Figure 60: Data Integrity Checks Performed

- Data elements without a form: Each data element must be assigned to a form. Values for data elements will not be able to be entered/reported in the system if a data element is not assigned to a form. Choose Maintenance->Entry Form-> Entry Form -> click on the form and select Edit then add the "orphaned" data element to the selected form.
- Data elements without groups: Some Data Elements have been allocated to several Data Element Groups. This is currently not allowed, because it will result in duplication of linked data records in the Pivot Source record sets that `feed` the pivot tables. Go to Maintenance -> Data Element Groups to review each Data Element identified and remove the incorrect Group allocations.
- Data elements violating exclusive group sets: Some data elements have been allocated to several data element groups that are members of the same data element group set. All group sets in ARDS Web Portal are defined as exclusive, which means that a data element can only be allocated to one data element group within that group set. Go to Maintenance -> Data elements and Computed Values ->Data element groups to review each data element identified in the integrity check. Either remove the data element from all groups except the one that it should be allocated to, or see if one of the groups should be placed in a different group set.
- Data elements assigned to Forms with different period types: Data Elements should not be assigned to two separate Forms whose period types differ. The recommended approach would be to create two separate data elements (for instance a monthly and yearly data element) and assign these to respective forms.
- Forms not assigned to administrative units: All Forms should be assigned to at least one administrative unit.
- Computed Values with identical formulas: Although this rule will not affect data quality, it generally does not make sense to have two Computed Values with the exact same definition. Review the identified Computed Values and their formulas and delete or modify any Computed Value that appears to be the duplicate.
- Computed Values without groups: All Data Elements and Computed Values must be assigned to at least one group, so these Computed Values need to be allocated to their correct Data Element and Computed Value Group. Go to Maintenance -> Computed Value Groups, and allocate each of the `Orphaned` Computed Values to its correct group.
- Invalid Computed Value numerators: Violations of this rule may be caused by an incorrect reference to a deleted or modified data element. Review the Computed Value and make corrections to the numerator definition.
- Invalid Computed Value denominators: Violations of this rule may be caused by an incorrect reference to a deleted or modified data element. Review the Computed Value and make corrections to the denominator definition.
- Computed Values violating exclusive group sets: Some Computed Values have been allocated to several Computed Value groups that are members of the same Computed Value group set. All group sets in ARDS Web Portal are defined as exclusive, which means that an Computed Value can only be allocated to one Computed Value group within that group set. Go to Maintenance -> Data elements and Computed Values -

>Computed Value groups to review each Computed Value identified in the integrity check. Either remove the Computed Value from all groups except the one that it should be allocated to, or see if one of the groups should be placed in a different group set.

- Administrative units with cyclic references: Administrative units cannot be both parent and children of each other, directly nor indirectly.
- Orphaned administrative units: All administrative units must exist within the administrative unit hierarchy. Go to administrative->Hierarchy Operations and move the offending administrative unit into the proper position in the hierarchy.
- Administrative units without groups: All administrative units must be allocated to at least one group. The problem might either be that you have not defined any `compulsory` Administrative Group Set at all, or that there are violations of the `compulsory` rule for some Administrative Units. NOTE: If you have defined no `compulsory` Administrative Unit Group Sets, then you must first define them by going to Maintenance -> administrative units->administrative unit group sets and define at least one `compulsory` Group Set (the group set `Administrative Unit Type` are nearly universally relevant). If you have the relevant group sets, go to Maintenance ->Administrative Unit Groups to review each Administrative Unit identified and add the relevant Group allocation.
- Administrative units violating compulsory group sets: These administrative units have not been assigned to the any administrative unit group within one of the compulsory administrative unit group sets. When a group set is defined as `compulsory`, it means that an administrative unit must be allocated to at least one administrative unit group within that group set. For instance, all administrative units must belong to one of the groups in the `Administrative Unit Type` group set. It might belong to any other `type` group - but it must belong to exactly one of them. Go to Maintenance -> administrative unit->administrative unit groups to review each administrative unit identified in the integrity check. Allocate all administrative units to exactly one group.
- Administrative units violating exclusive group sets: Some administrative units have been allocated to several administrative unit groups that are members of the same administrative unit group set. All group sets in ARDS Web Portal are defined as exclusive, which means that an administrative unit can only be allocated to one administrative unit group within that Group Set. For instance, one administrative unit cannot normally belong to the both the 'Hospital' and 'Clinic' groups, but rather to only to one of them. Go to Maintenance -> administrative unit->administrative unit groups to review each administrative unit identified in the integrity check. Remove the administrative unit from all groups except the one that it should be allocated to.
- Administrative unit groups without group sets: The administrative unit groups listed here have not been allocated to a group set. Go to Maintenance->administrative unit->administrative unit group sets and allocate the administrative unit group to the appropriate group set.

- Validation rules without groups: All validation rules must be assigned to a group. Go to Services->Data quality->Validation rule group and assign the offending validation rule to a group.
- Invalid validation rule left side expressions: An error exists in the left-side validation rule definition. Go to Services->Data quality->Validation rule and click the "Edit" icon on the offending rule. Press "Edit left side" and make the corrections that are required.
- Invalid validation rule right side expressions: An error exists in the left-side validation rule definition. Go to Services->Data quality->Validation rule and click the "Edit" icon on the offending rule. Press "Edit right side" and make the corrections that are required.

5.2.2 Maintenance

The data maintenance module has five options, each described below.

- Clear aggregation (aggregated datavalues): The aggregation is where ARDS portal stores aggregated data produced during the export to aggregation process. This function clears the database table, which contains aggregated data element values.
- Clear aggregation (aggregated computed values): The aggregation is where ARDS portal stores aggregated data produced during the export to aggregation process. This function clears the database table, which contains aggregated computed values.
- Clear zero values: This function removes zero data values from the database. Values registered for data elements with aggregation operator average is not removed, as such values will be significant when aggregating the data, contrary to values registered for data elements with aggregation operator sum. Reducing the number of data values will improve system performance.
- Clear entry forms completeness: This function removes aggregated entry form completeness values. This data is produced and used by report tables.
- Prune periods: This function removes all periods, which have no registered data values. Reducing the number of periods will improve system performance.

5.2.3 Resource Table

Resource Tables are supporting tables that are used during analysis of data. One would typically join the contents of these tables with the data value table when doing queries from third-party applications like Microsoft Excel. Simply select the tables that should be regenerated and press "Generate tables". Regeneration of the resource tables should only be done once all data integrity issues are resolved.

- Administrative unit structure: This table should be regenerated any time there have been any changes made to the administrative unit hierarchy. This table provides information about the administrative unit hierarchy. It has one row for each administrative unit, one column for each administrative unit level and the administrative unit identifiers for all parents in the lineage as values.

- Exclusive administrative unit group set structure normalized: This table provides information about the administrative units, which are member of the administrative unit group sets.
- Data element group set structure: This table provides information about which data elements are members of which data element group sets. The table has one row for each data element, one column for each data element group set and the names of the data element group as values.
- Computed values group set structure: This table provides information about which computed values are members of which computed values group sets. The table has one row for each computed value, one column for each computed value group set and the names of the computed value group as values.
- Administrative unit group set structure: This table provides information about which administrative units are members of which administrative unit group sets. The table has one row for each administrative unit, one column for each administrative unit group set and the names of the administrative unit groups as values.
- Category structure: This table provides information about which data elements are members of which categories. The table has one row for each data element, one column for each category and the names of the category options as values.
- Data element category option combo name: This table should be regenerated any time there have been changes made to the category combination names. It contains readable names for the various combinations of categories.

5.2.4 Administrative unit merge

This function is useful when two administrative units need to be merged, e.g. it is decided that one two wards will be served by one WAEO and thus data collected in both will be considered as data for only one wards.

- Start by selecting the administrative unit to eliminate from the tree and click confirm. Then select the administrative unit to keep and click confirm again. Finally, verify the selection and click merge.
- In the situation where data exist for the administrative unit to eliminate and not for the one to keep, the data will be moved to the one to keep. When data exists for both administrative units, the data will be summed and moved to the one to keep. When data exists only for the one to keep, no action is taken. The administrative unit to eliminate will eventually be deleted.

5.2.5 Duplicate data elimination

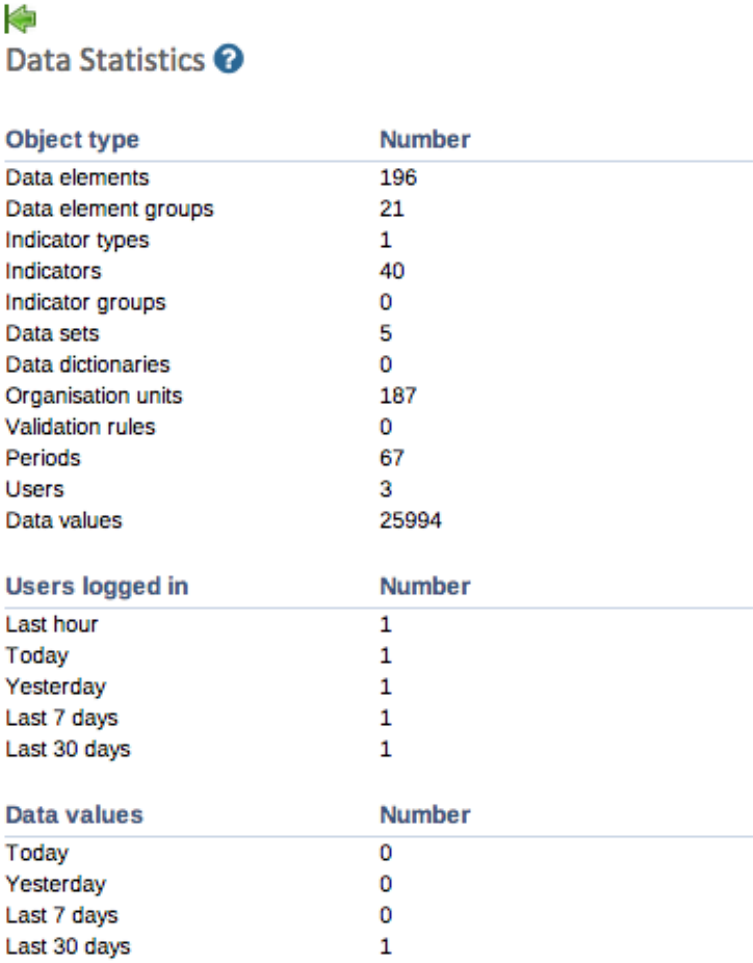
This function is useful when data has been entered mistakenly for two data elements that represent the same phenomena.

Start by selecting the data element to eliminate from the list and click confirm. Then select the data element to keep and click confirm again. Finally, verify the selection and click merge.

In the situation where data exists for the data element to eliminate and not for the one to keep, the data will be moved to the one to keep. When data exists for both data elements, the data, which was updated last will be used. When data exists only for the one to keep, no action will be taken. The data element to eliminate will eventually be deleted, except when it is a multidimensional data element and has other data registered.

5.2.6 Data statistics

The data statistics module provides an overview of the number of objects stored in the ARDS database. The total number of each type of object is presented in a table.



Data Statistics ?

Object type	Number
Data elements	196
Data element groups	21
Indicator types	1
Indicators	40
Indicator groups	0
Data sets	5
Data dictionaries	0
Organisation units	187
Validation rules	0
Periods	67
Users	3
Data values	25994

Users logged in	Number
Last hour	1
Today	1
Yesterday	1
Last 7 days	1
Last 30 days	1

Data values	Number
Today	0
Yesterday	0
Last 7 days	0
Last 30 days	1

Figure 61: Data Statistics Summary

5.2.7 Constant

Constants are static values, which can be made available to users for use in data elements and computed values. Some computed values, such as "number of animal in livestock unit" depend on factors (constants), which usually do not change over time. Simply press "Add" and provide a name in the "Name" field and define its value in the "Value" field. Press "Add". The constant will now be available to users for use in their expressions.

5.2.8 Lookup table

Lookup Table is option group that can be associated with data elements in the add/update data element interface for name-based data elements. You can define any kind of lookup table, for instance an option group called "Aina ya Mifugo" where "Ng'ombe", "Mbuzi", "Kondoo", "Nguruwe" and "Kuku" would be the options. This lookup table can later be associated with any number of data elements. When doing data entry in name-based records, those options will then appear in the form as drop-down lists with auto-completion support. To update Lookup Table:

- Login as administrative user
- Go to Maintenance Menu from the main menus
- Select Data Administration from the drop down list
- Select **Lookup Table** from the list on the left or at the center
- Lookup Table Management page will be displayed, listing all available lookup tables

Lookup Table management ?

Filter by name Filter Clear

Name ▲

Aina ya mifugo(i)

Aina ya mmomonyoko

Aina ya ugonjwa/hali

Aina za mbegu[Ward annual entry form (Table 6.3)]

Chanjo iliyotumika

Dawa iliyotumika (vi)

Hali ya chakula[Ward quarterly entry form(Table 1)]

Hali ya hewa[Ward monthly entry form(Table 1.1)]

Hali ya skimu[Ward annually entry form(Table 3.1)]

Jina la ugonjwa / kisumbufu (i)

Kiasi cha uharibifu (Kidogo ,Wastan,Kubwai)

Kipimo(Kg/Litre)[Ward annual entry form(Table 6.2)]

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« « 1 2 » »

Figure 62: Lookup table management screen

You can add new, edit or remove an existing lookup table but this will require data entry form design to be updated accordingly. Consult the corresponding section (Managing Forms) on this manual to know how to add new, edit or remove a data element in the data entry form, in order to apply the changes of a lookup table.

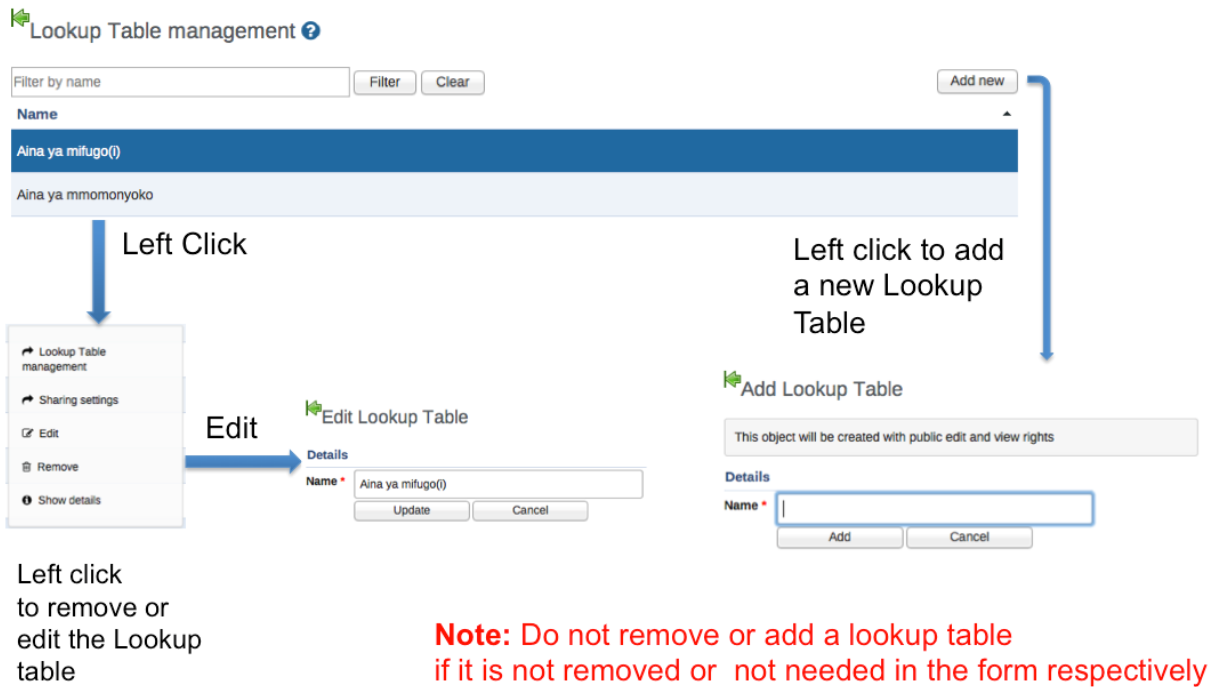


Figure 63: A procedure to add, edit & remove a lookup table

Also you can add new option, edit or remove existing options for a particular lookup table. In this case there is no need to update data entry form design. Changes will be seen in the corresponding drop down list.

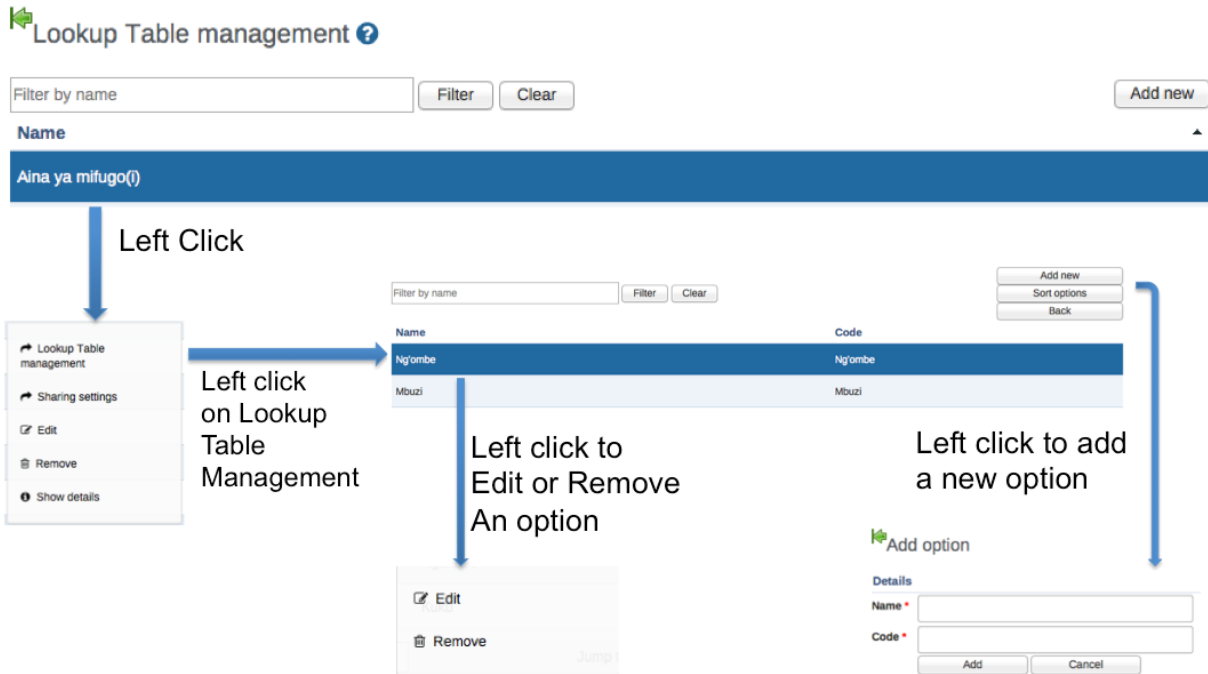


Figure 64: A procedure to add, edit & remove an option of a lookup table

5.2.9 Cache statistics

This option is for system administrators only to use. The cache statistics shows the status of the application level cache. The application level cache refers to the objects and query results

that the application is caching in order to speed up performance. If the database has been modified directly the application cache needs to be cleared for it to take effect.

5.2.10 Scheduling

Resource tables, aggregation tables tasks and data synchronization strategy can be automatically scheduled to run on regular intervals.

- Resource and Aggregation Tables Task Strategy: This setting defines how the system generates and provides aggregated data to the output tools. All output tools like reports, charts and maps will read aggregate data from pre-built data tables in the database. This strategy provides the best performance and inflicts less load on the application since data retrieval only implies reading from one or a few database tables using a simple query. This strategy requires that those resource and aggregation tables be populated with the relevant data before the reports are requested. This can preferably be done using nightly scheduled jobs or manually through the aggregation user interface in the report module. A potential downside is that users will have to wait to the next day to view their reports after uploading the data to the portal database or should run it manually.
- Data synchronization strategy: This setting defines how a standalone copy of ARDS Web Portal can synchronize with the central server as described in its corresponding section (standalone copy).

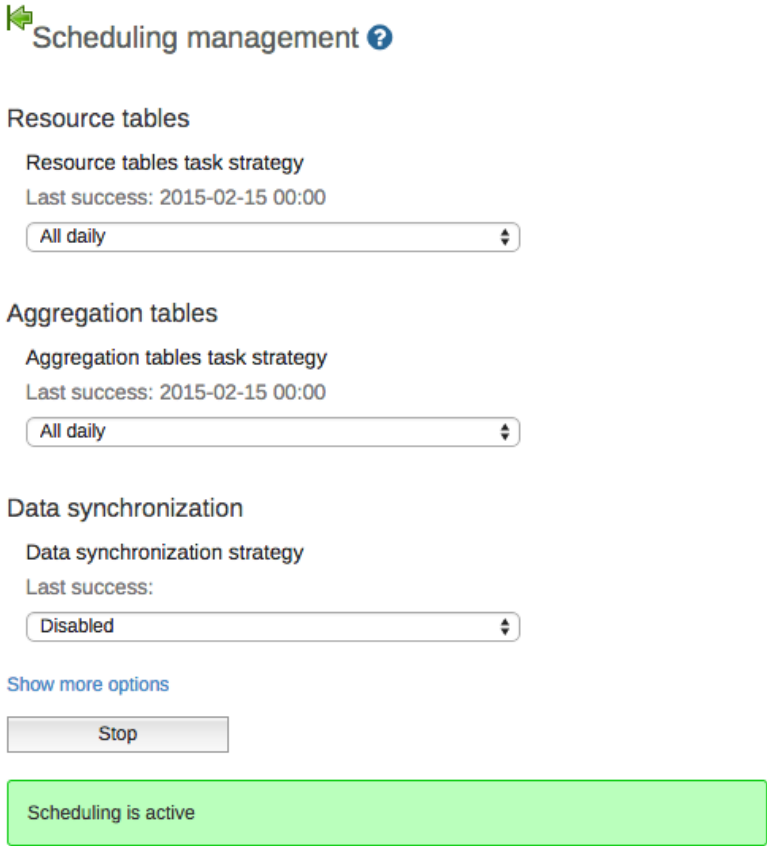


Figure 65: Scheduling Management Dialogue