

(Annex 2-3)

3. The Marshlands in Kayonza

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(1) Geographical location of the District

Kayonza District is one of the seven districts constituting the Eastern Province of the Republic of Rwanda. It is located in the East of the Province and borders with Gatsibo District in the North, Rwamagana in the East, Ngoma in the South–West, Kirehe in the South-East and the Republic of Tanzania in the East.

(2) Topography of the district

Kayonza District covers the average area of 1,954 km². The relief of Kayonza District is made of many hills and slopes whose altitude varies between 1400 and 1600 m. The relief is characterized by the plates at broad tops and the hills with soft slopes except in the East where one finds some slopes stiff and stony.

(3) Climate of the District

Kayonza district is situated in the wet tropical climate area with an alternation of two wet seasons and two dry seasons. The recorded annual average temperature lies between 18°C and 26°C. The annual average pluviometer varies generally between 1000 mm and 1200 mm, with March and April receiving more precipitation.

(4) Hydrograph, fauna & Flora

The hydrographic network of the District is relatively dense and is primarily made by a multitude of small interior lakes (Ihema, Rwibishuhe, Kabigabiro and Cyabatanzi, Kibare, Shakani) and the lake Muhazi that divides Kayonza with the close Districts. In addition to these lakes, Kayonza has moreover many vast swamps. The District contains a half of Akagera National Park where a vast number of Wild life including buffalo, antelopes and more other ruminants are living. The District also accommodates a huge variety of birds such as birds of prey, guinea-fowl, partridges, heroes and so forth. The hares, Wild boars, monkeys and more other small beasts of the rodent family are rarely found in the wooden savanna and in the natural vegetation. This implicates the potentials for tourism and related economic activities to the district.

The Flora in Kayonza is generally made of afforested savanna vegetation and some forestry gallery. The latter constitutes a very precious reserve

which should be rationally exploited.

(5) Soils

Kayonza district has very fertile soils almost in all its sectors. Most of the soils are loamy and few others are sandy with loam mixture. In some boggy areas, clay soil may be found. The soils permit growth of most types of foods such as: Bananas, Maize, Cassava, Beans, Coffee, Pineapples and Rice to mention but a few.

(6) Population of the district

The population size ranges to 346, 751 people, living in 12 sectors, 50 cells and 421 villages (mudugudu). With population change of 65.3, average growth rate of 5.2% and population density of 179/km² as shown in the table below.

No	Sectors	Populati on 2002	population 2012			Sex ratio	Populati on change(2 002- 2012) %	Average annual Growth rate (2002- 2012) %	Populatio n Density (pop/km ²)
			Male	Female	Total				
01	Gahini	21,676	16,949	17,881	34,830	95	60.7	4.9	173
02	Kabare	25,896	16,775	18,098	34,873	93	34.7	3	315
03	Kabarondo	19,418	14,764	15,673	30,437	94	56.7	4.6	559
04	Mukarange	19,538	19,861	21,348	41,209	93	100.9	7.7	766
05	Murama	14,105	10,378	10,379	20,757	100	41.7	3.5	289
06	Murundi	17,640	18,331	18,331	36,662	100	104.5	7.4	73
07	Mwiri	10,800	11,352	11,887	23,239	95	115.2	8	45
08	Ndego	9,071	9,286	9,642	18,928	96	108.7	7.6	108
09	Nyamirama	19,359	14,556	16,006	30,562	91	57.9	4.7	500
10	Rukara	23,204	15,015	16,268	31,283	92	34.8	3	486
11	Ruramira	11,399	7,950	8,990	16,940	88	48.6	4	408
12	Rwinkwavu	17,617	13,919	14,481	28,400	96	61.2	4.9	308
13	Kayonza District	209,723	167,767	178,984	346751	94	65.3	5.2	179

Source: NISR 2012 Census

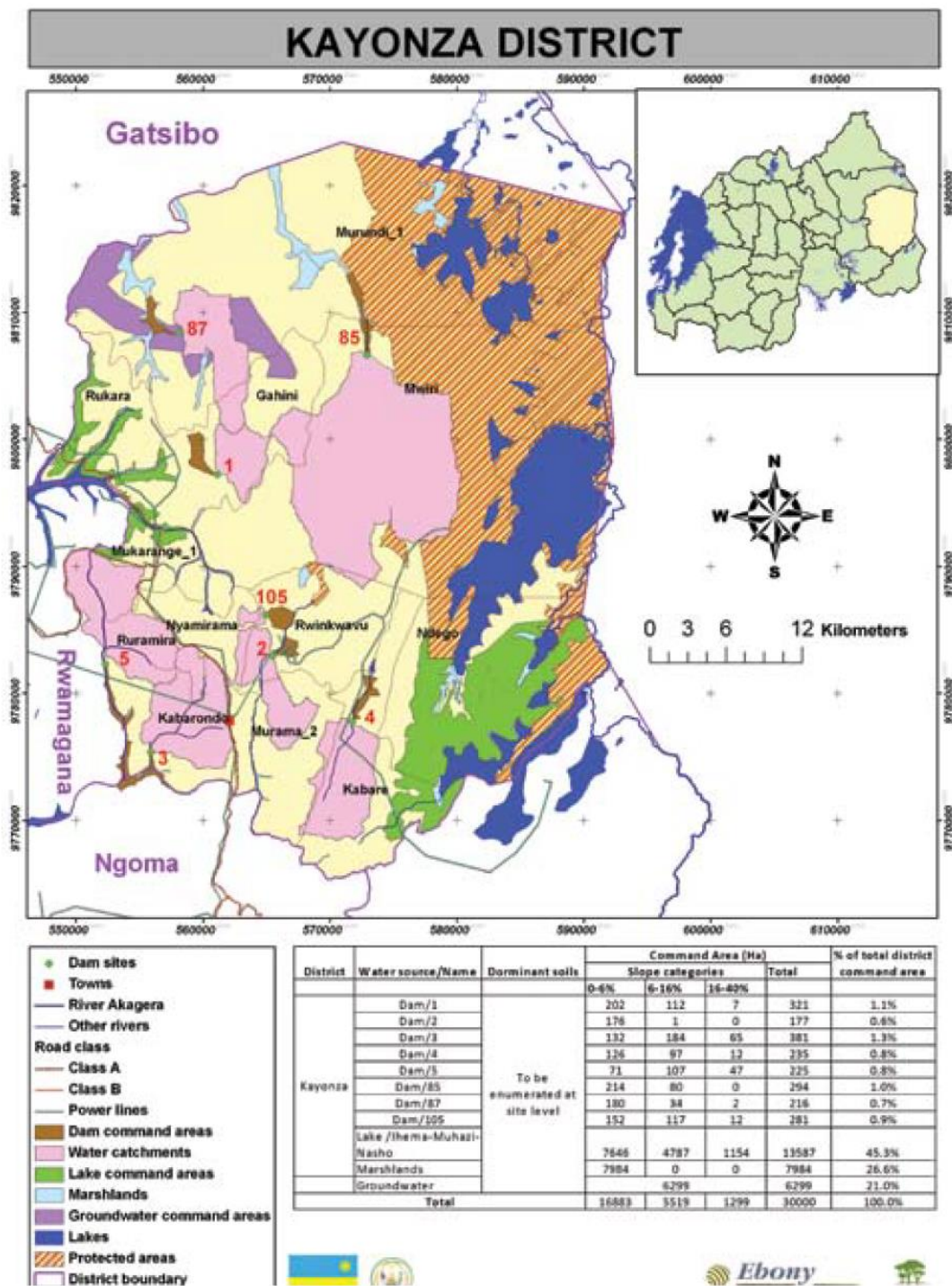
2. Kayonza District Irrigation Plan

Kayonza district has command areas represented in groundwater, lake, marshlands and dam domains. A total of 30 000 ha has good potential for irrigation. Of these, the lake domain constitutes the largest area with 13 587 ha (45.3%), followed by the marshlands with 7 984 ha (26.6%) and groundwater with 6 299 ha (21%). The rest of the command areas belong to the dam domain constituting 2130 (7.1%) of the total irrigation potential for the district. The total irrigation water requirement for Kayonza is about 245 Mm³ partitioned into 80 Mm³ for marshlands and 165 Mm³ for the rest of the command areas. Access to road and electrical power grid to these sites is good.

(Table 1: The Potential Irrigable areas in Kayonza)

	Area(ha)	Ratio(%)
Dam	2, 1 3 0	7 . 1 %
Lake	1 3, 5 8 7	4 5 . 2 %
River	0	
Ground Water	6, 2 9 9	2 0 . 9 %
Marshland	7, 9 8 4	2 6 . 6 %
Total	3 0, 0 0 0	1 0 0 %

The total area of Marshlands in Kayonza is **1,940 ha** which is **24.3%** of the Potential area of marshland.

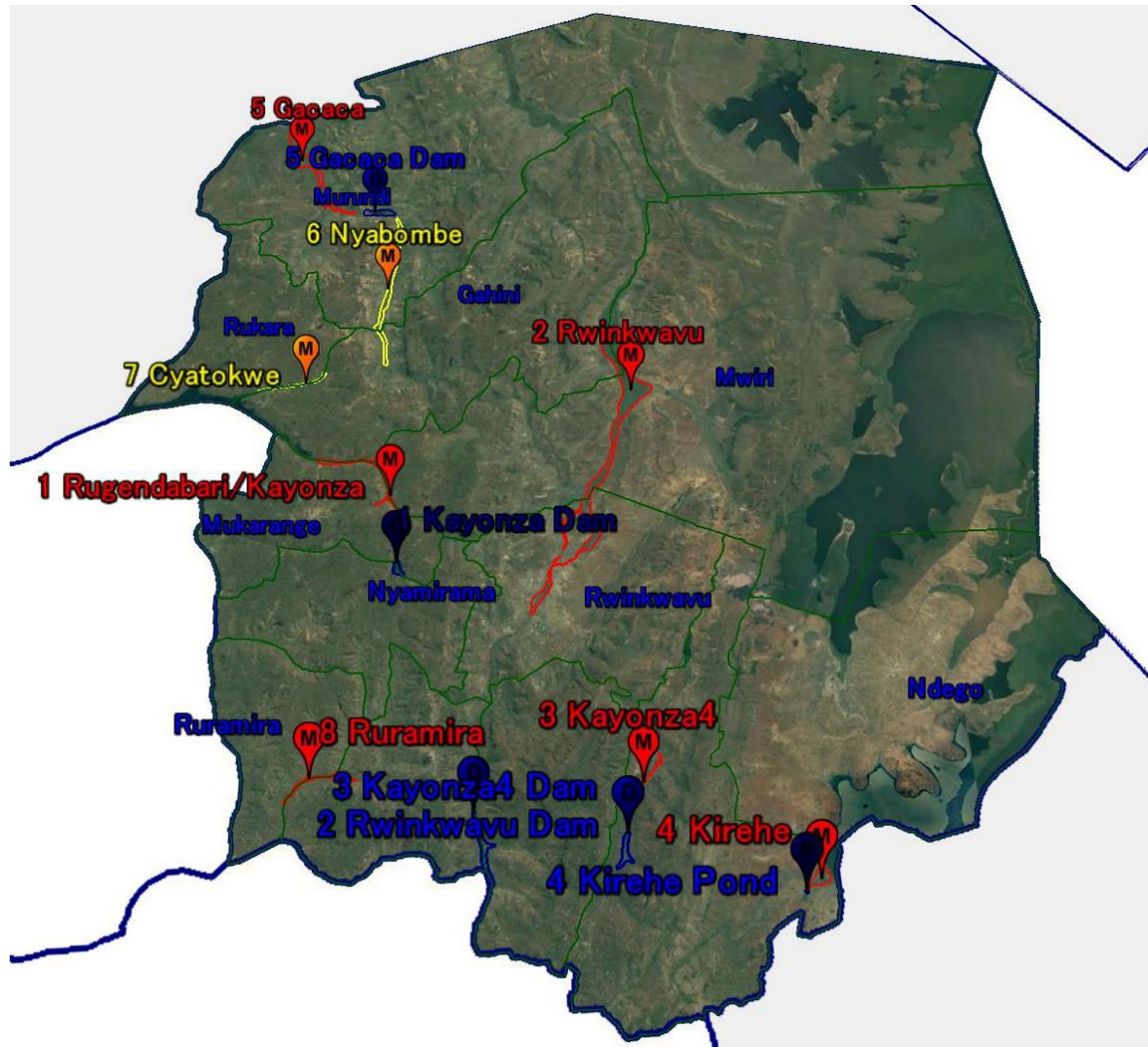


(Figure 1 :The Potential Irrigable areas in Kayonza)

3 The Outline of the Marshlands in Kayonza

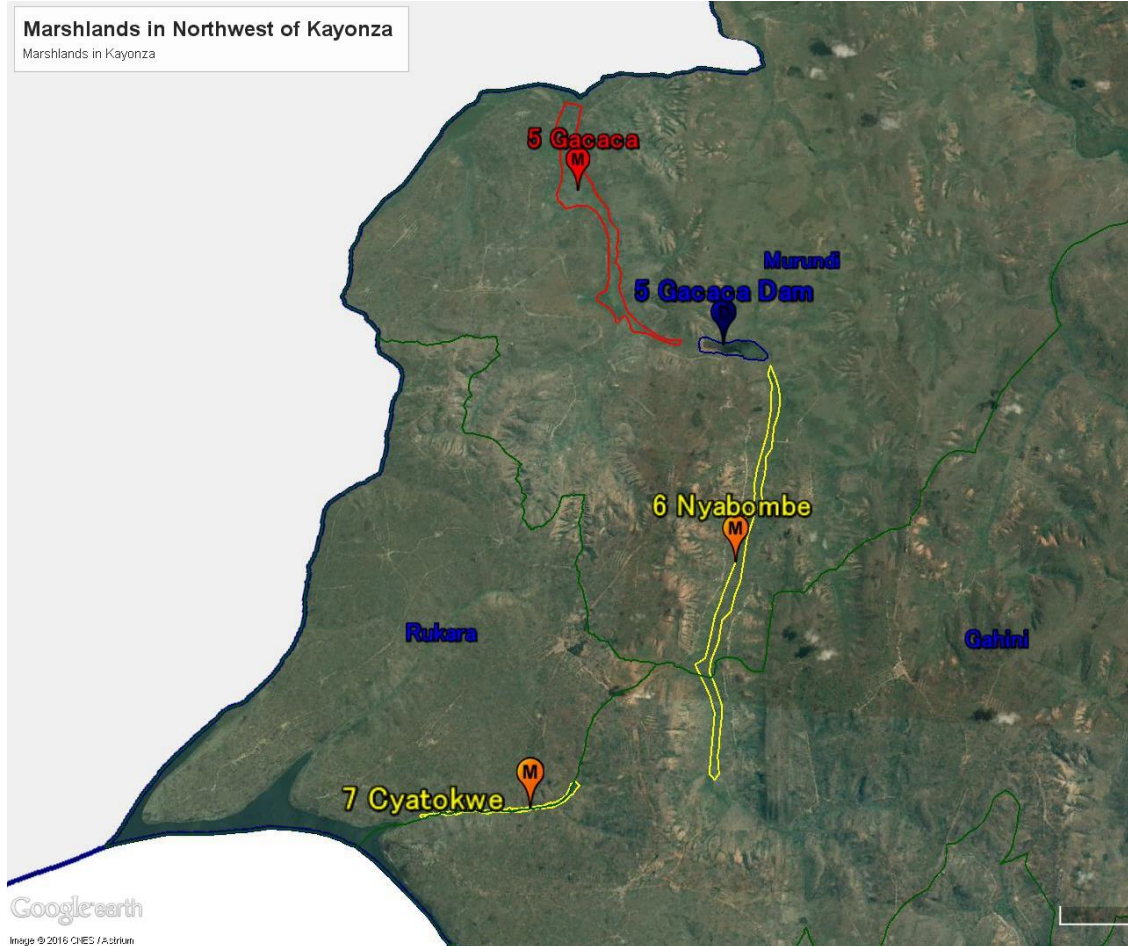
(1) The Outline of the Marshlands in Kayonza

Kayonza District has Eight (8) Marshlands, 1,940ha. They are Six(6) Developed Marshlands,1,880ha, and Two(2) Non-Developed Marshlands,60ha.



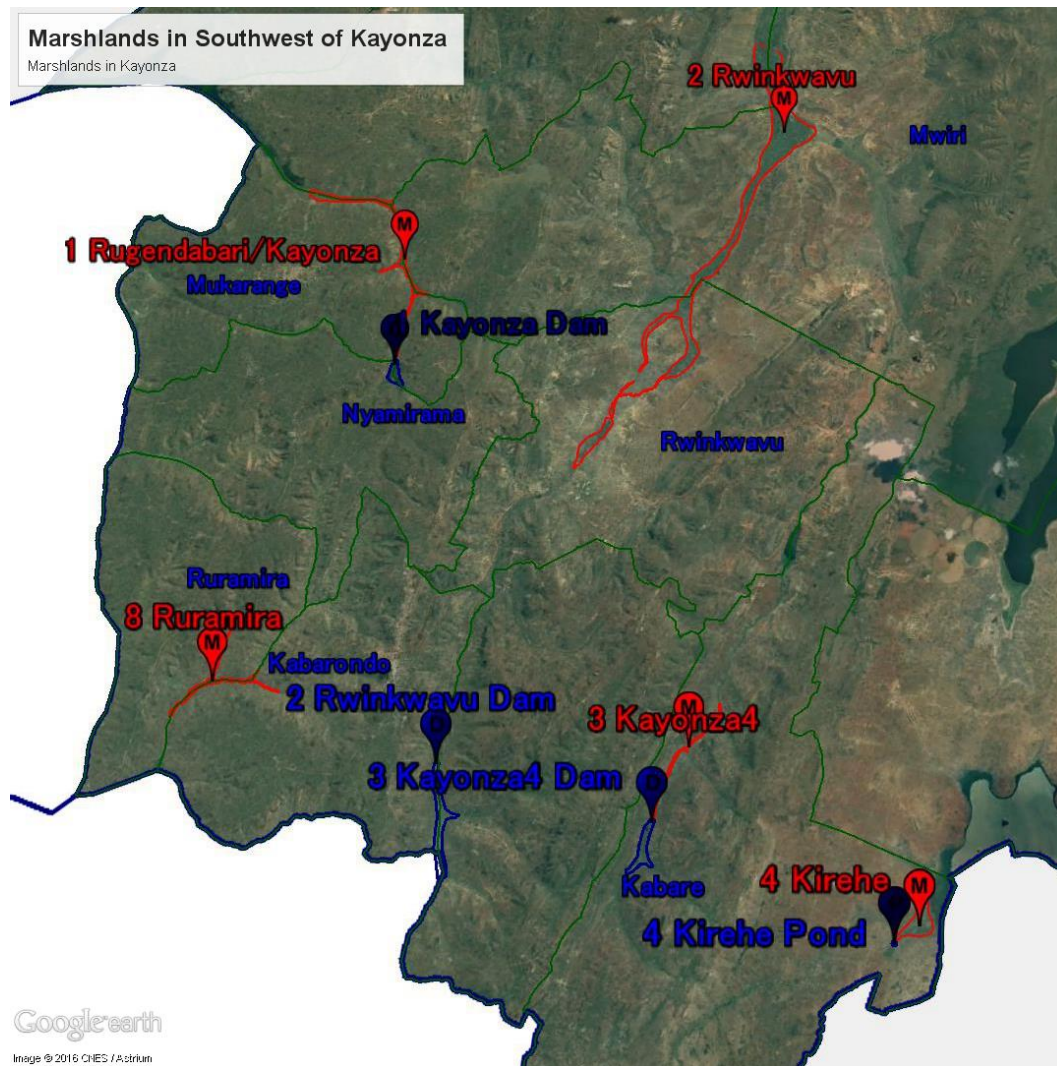
(Figure2 Marshlands in Kayonza District)

In the northwest of Kayonza, there are Three(3) Marshlands, 5)Gacaca, 6)Nyabombe, 7)Cyatokwe. Except for the 5)Gacaca, the Marshlands in the northwest of Kayonza have not been developed.



(Figure3 Marshlands in the Northwest area of Kayonza)

In the southeast area of Kayonza, there are Five (5) Marshlands, which are 1)Rugendabari/Kayonza, 2)Rwinkwavu,3)Kayonza4,4)Kirehe, 8)Ruramira. All of the Marshland in this area were developed. Except for 8)Ruramira, they have Dams or Pond.



(Figure 4 :Southeast area of Kayonza)

(2) Comments for Marshlands in the Kayonza District

We can make a classification of the Marshlands in the Kayonza District for the Three(3) types below.

a) The Developed Marshlands by Chinese and other NGOs.

1)Rugendabari/Kayonza, 4)Kirehe,8)Ruramira

These Three (3) Marshlands were developed by Chinese or other NGOs. However, the situation of these facilities, a pond, canals, drainages, roads are not good, especially farmers suffer from the problem of the water distribution. They should be rehabilitated soon.

b) The Non-Developed Marshlands in the Northwest area

6)Nyabombe, 7)Cyatokwe

The Non-Developed Marshlands in the Northwest area are consisting of Two (2) Marshlands. Especially, regarding the Cyatokwe Marshland, there is a problem of the water distribution. The development of these Marshlands should be required.

c) The Developed Marshland by RSSP and LWH

2)Rwinkwavu,3)Kayonza4, 5)Gacaca

The Developed Marshland by RSSP and LWH are consisting of Three (3) Marshlands, 2)Rwinkwavu and 5)Gacaca which were developed by RSSP and 3)Kayonza4 which was developed by LWH. They were developed with Dams in 2014 or 2015.

(3) The record of the field visit

The field visits of Marshland survey in were conducted on the schedule below. On the field, we conducted the interview to Sector Agronomists or farmers about the situation of the Marshlands, and picked up the contact persons' phone number of the Cooperative or IWUOs on the field. After coming back to Kigali, we conducted the interview for those persons.

Date	Marshlands	Notes
16 th March,2016	1)Rugendabari/Kayonza, 2)Rwinkwavu,	
22 nd March,2016	3)Kayonza4, 4)Kirehe, 2)Rwinkwavu	
23 rd March,2016	5)Gacaca, 6)Nyabombe,7)Cyatokwe	
19 th April,2016	8)Ruramira	



4. The individual data of the marshlands in Kayonza

(1) Rugendabari/Kayonza

1)Sector: Mwiri,Mukarange

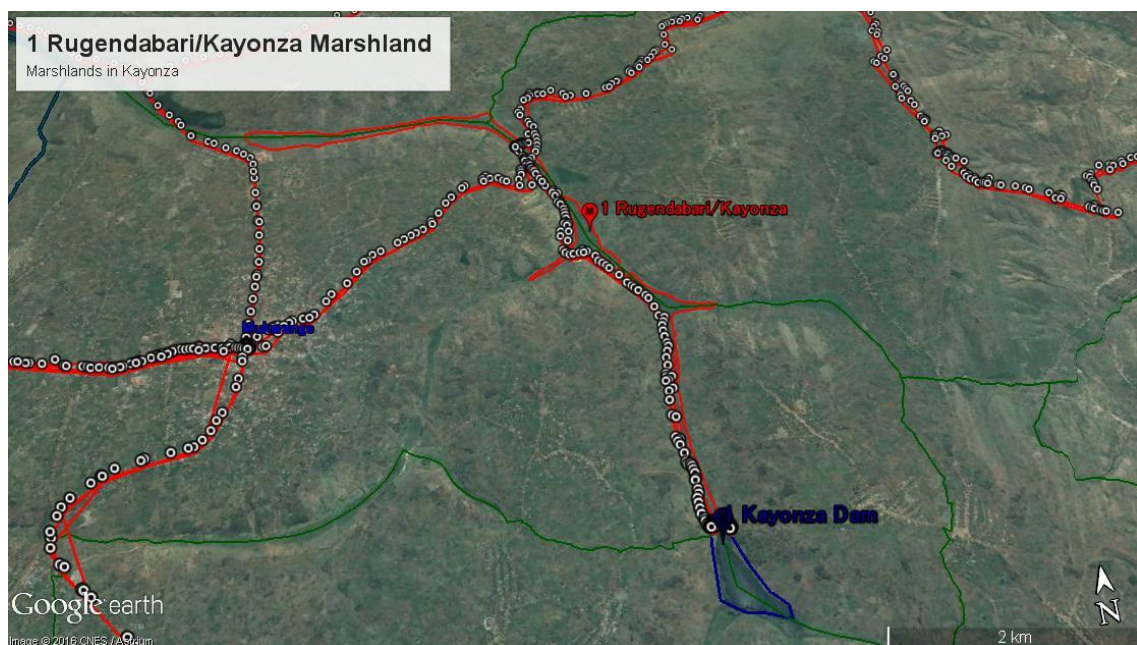
2)Size: 138ha

3)Status & Challenges :This marshland was developed by Chinese in 1970-1980s. However, the facilities including Dam is not good. The Cooperative president said that Paddy field occupy 43.3ha but can increase to 78ha if rehabilitated.

4)Main crop: Rice

5)Comments: It is necessary to rehabilitate the facilities and to protect the erosion from hillside.

6)Field visit date; 16th March,2016



They are cultivating rice.



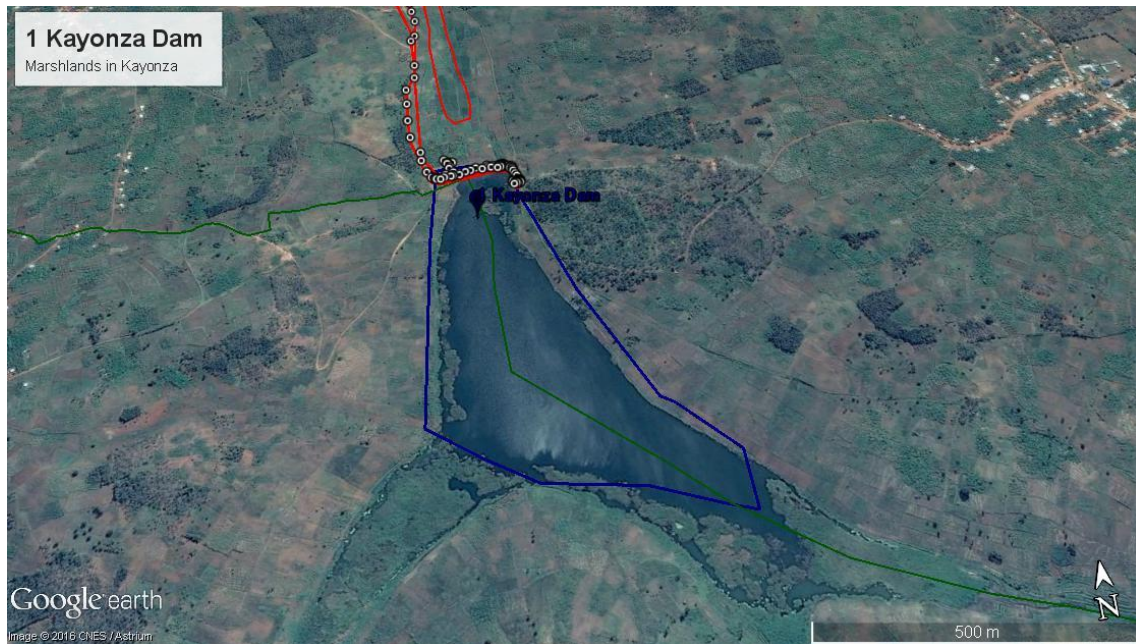
The drainage and canals' situation is not so bad.



This is the command area in the downstream area of the Dam.



(1-2) Kayonza Dam



The Dam's riprap is working, but the facilities of Dam like the spillway are not working well. They should be rehabilitated.



The Dam was constructed by Chinese in 1982.



The spillway is working, but the situation of it was not good.



The gate of the intake should be rehabilitated.



(2) Rwinkwavu Marshland

1)Sector : Mwiri,Gahini,Rwinkwavu

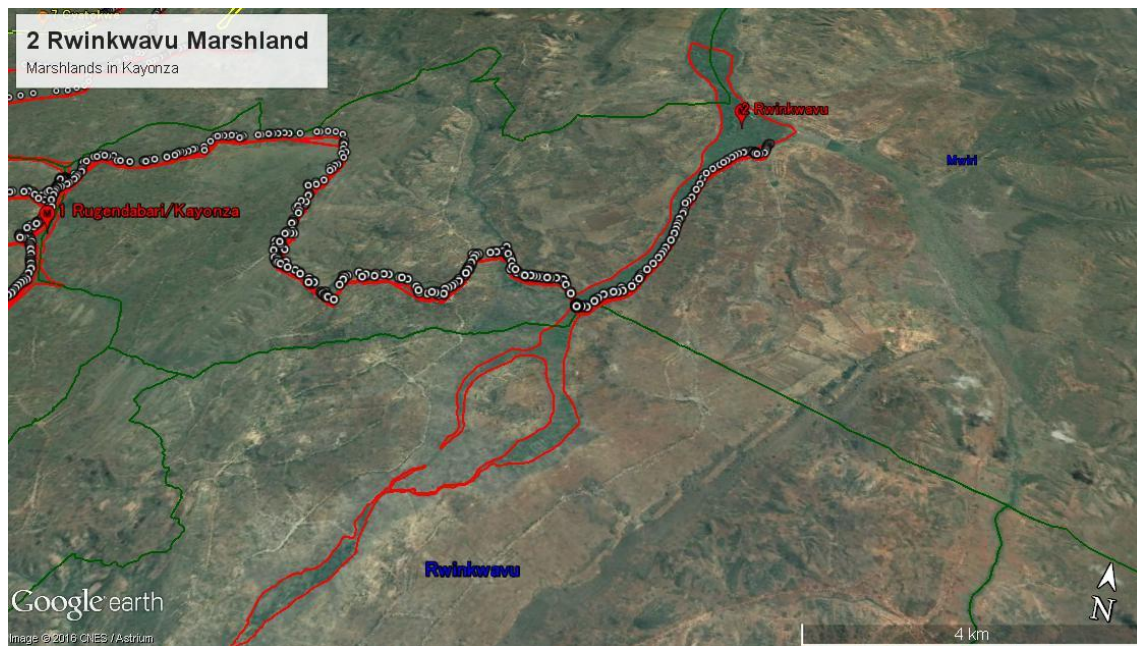
2)Size: 1,100ha

3)Status & Challenges: Newly developed by RSSP in 2015. Some farmers are trying to make paddy block, but they are waiting for the dam water.

4)Main crop: Different crops

5)Comments: Rwinkwavu is a big marshland covering three Sectors. Now they are filling the dam and they want to cultivate rice.

6)Field visit date; 16th March,22nd March,2016



The command area hasn't been cultivated because they haven't been irrigated yet by the Dam.



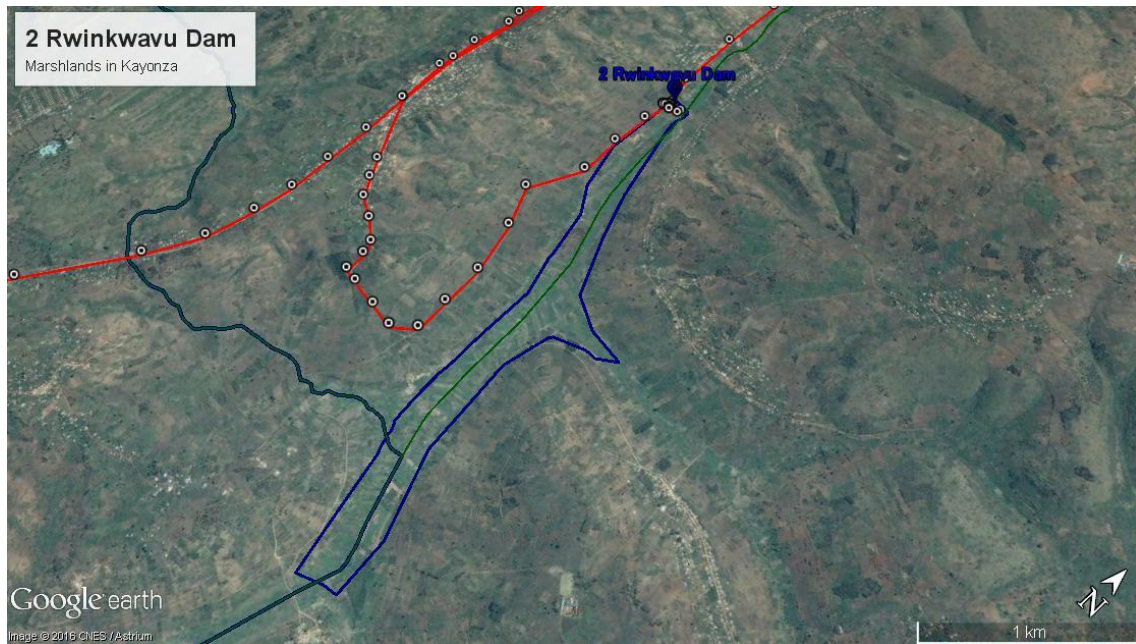
The agronomist of the Mwiri Sector explained the situation of this marshland.



The dam constructed by RSSP is far from this command area.



(2-2) Rwinkwavu Dam



We visited the Rwinkwavu dam constructed by RSSP on 22th March..



This dam is new, but they are filling water now.



(3) Kayonza4 Marshland

1)Sector:Kabare

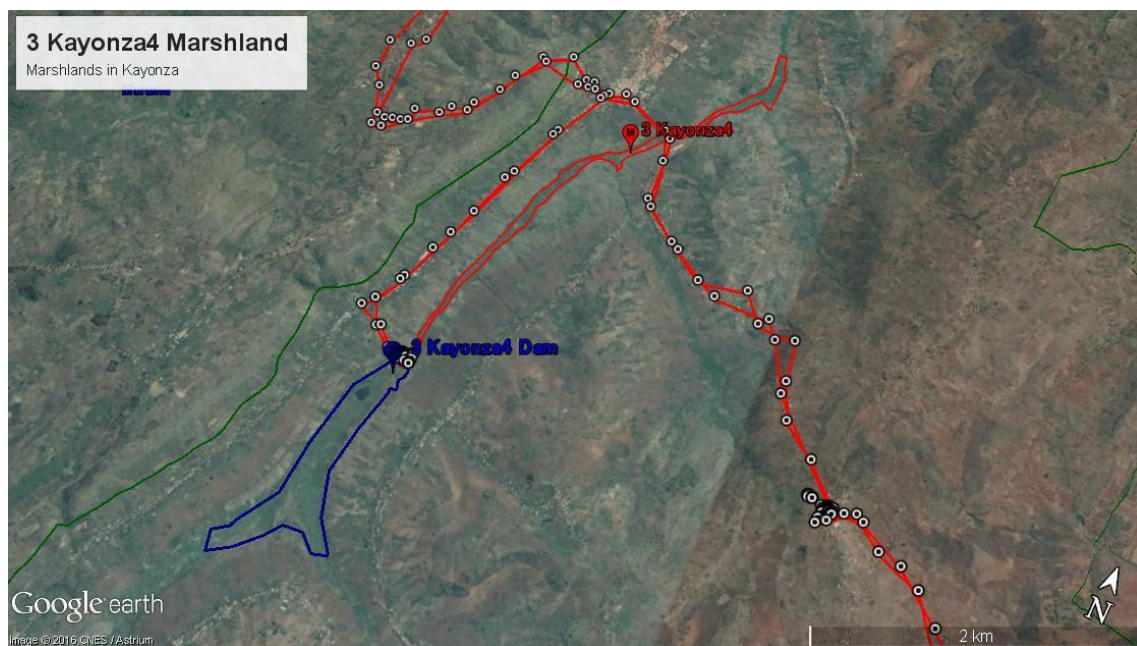
2)Size:124ha

3)Status & Challenges: This marshland was developed by LWH in 2015 mainly for hillside irrigation.

4)Main crop: Maize, Beans

5)Comments: The marshland is long and narrow. LWH is planning to give the marshland to the investor who grows vegetables.

6)Field visit date;22nd March,2016



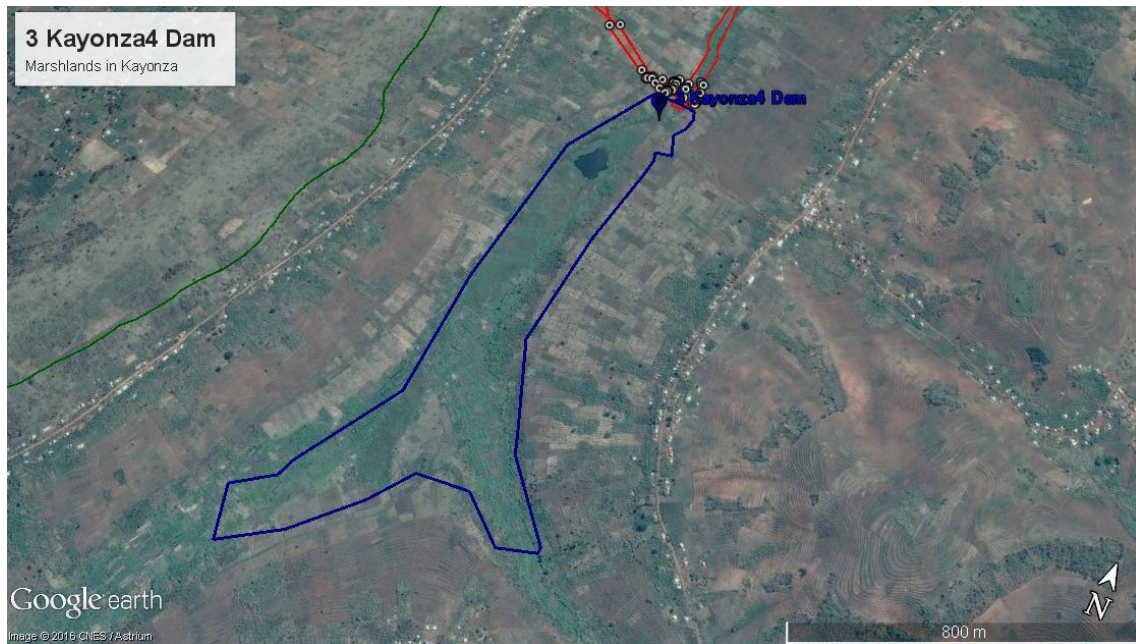
This is the view of the command area from the Kayonza4 dam site.



The target of the LWH project is hillside irrigation, but they irrigate the marshland here also.



(3-2) Kayonza4 Dam



This dam was constructed by LWH in 2015. They are filling the water for irrigation.



This is the measurement tool of the seepage of the dam.



(4) Kirehe Marshland

1)Sector: Kabre

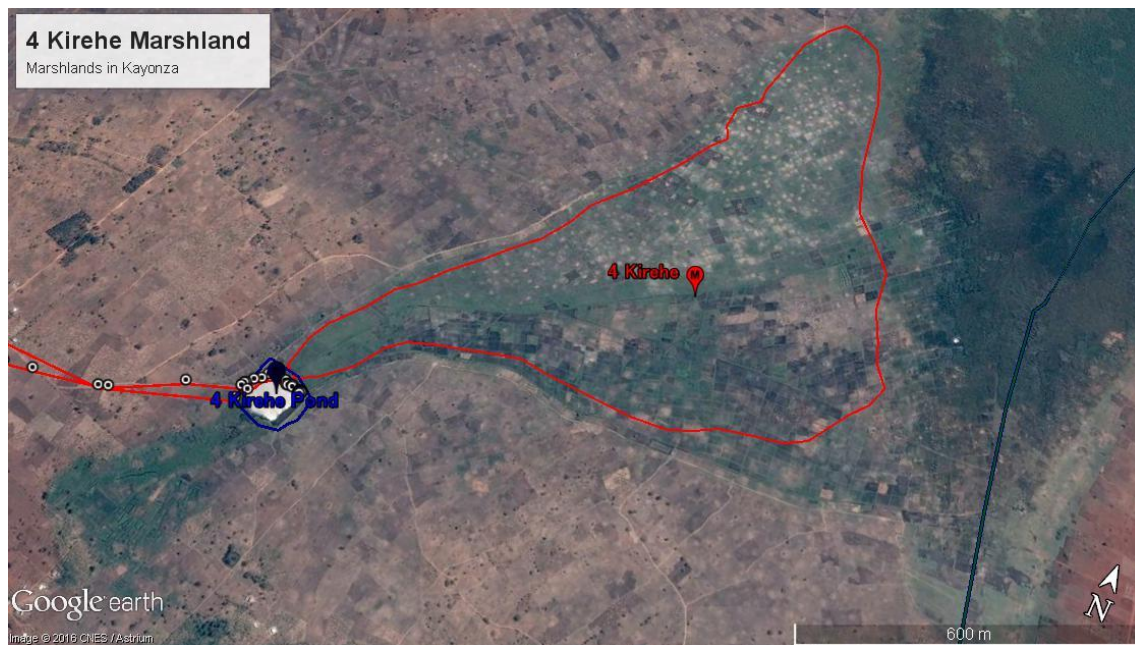
2)Size: 86ha

3)Status & Challenges: This Marshland was constructed by farmers with a support of LWF(Lutheran World Federation)((Religious NGO)in 2007

4)Main crop: Rice

5)Comments: The Marshland is located at the upstream area of the Nasho Lake. The pond was constructed by farmers and LWF paid the money for manpower with food.

6)Field visit date;22nd March,2016



They cultivate rice, but it is necessary to train farmers about the technic of cultivating.



This is the drainage of the command area.



There are many weeds in the command area.



(4-2) Kirehe Pond



The Kirehe pond was constructed by farmers. However, they said that they are annoyed by the shortage of water.



(5) Gacaca Marshland

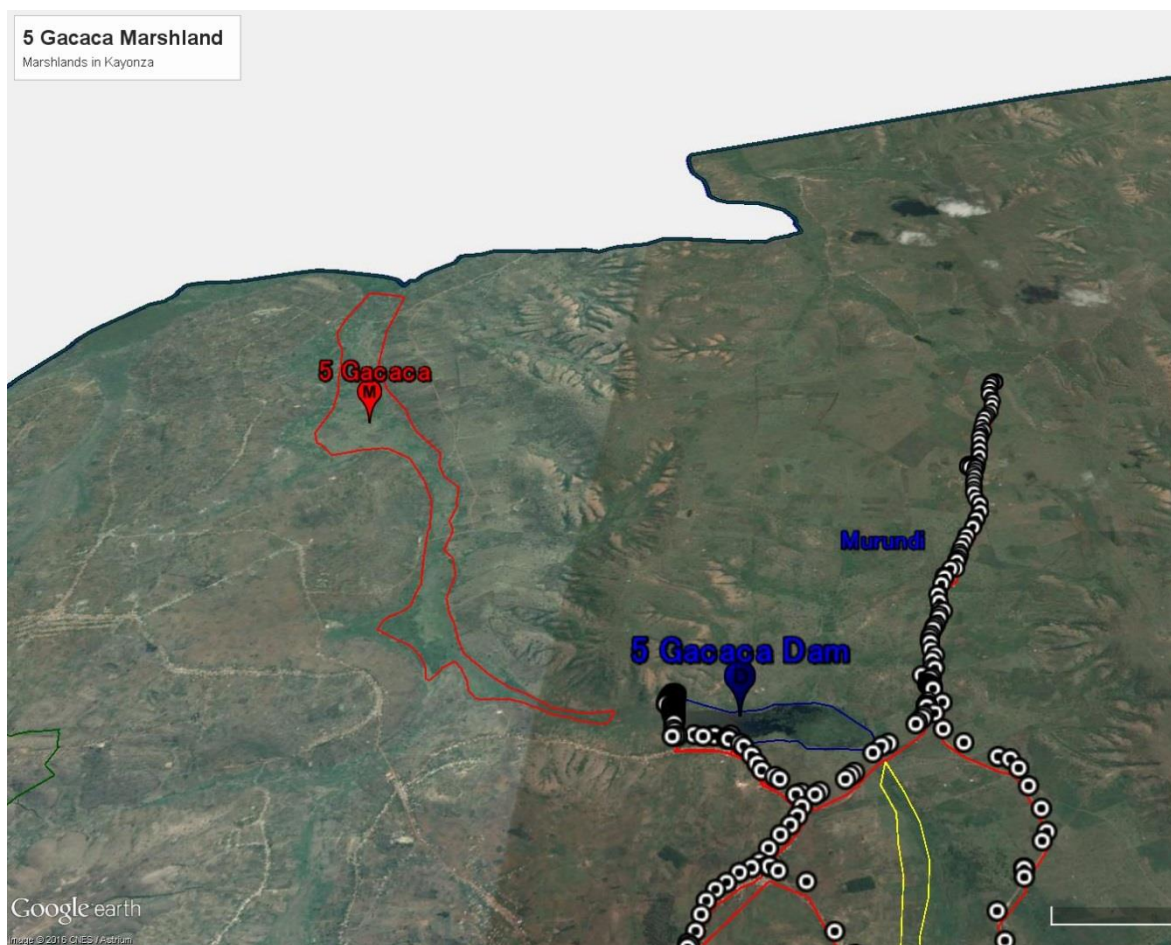
1)Sector:Murundi,Rukara

2)Size:400ha

3)Status & Challenges: This marshland was developed by RSSP in 2014, In the downstream area of this marshland, farmers are cultivating rice. IN a large part of the upstream area, farmers are cultivating different crops, mainly Maize, Soya beans and vegetables.

4)Main crop: Maize, Soy beans, Vegetables

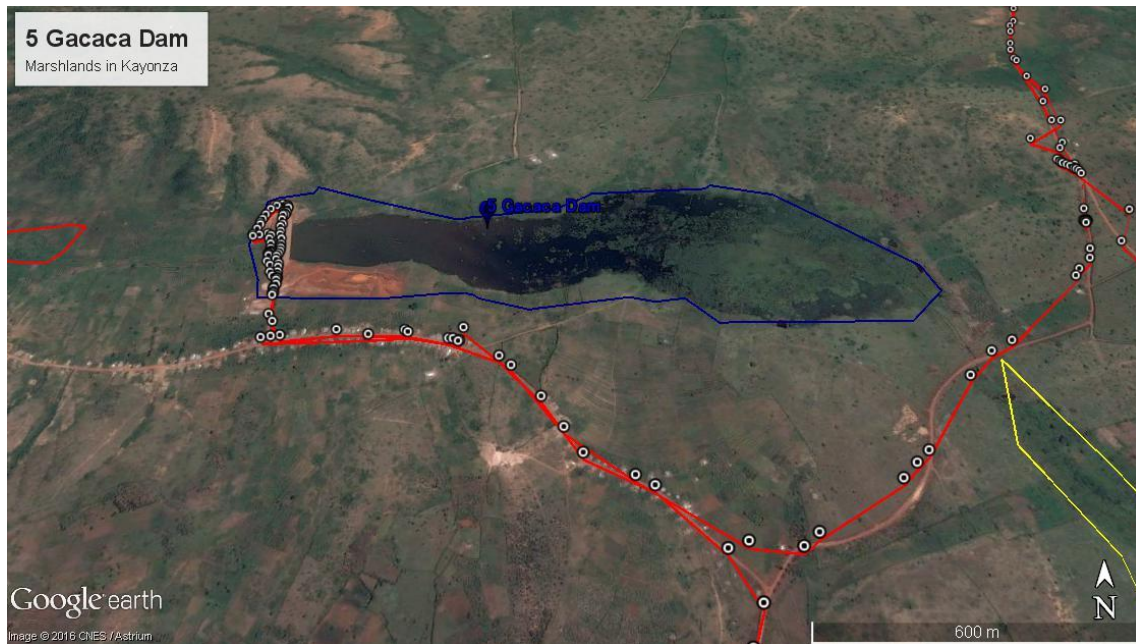
5)Field visit date;23rd March,2016



This is the view of the command area from the dam site.



(5-2) Gacaca Dam



The RSSP Project constructed this Dam in 2014.



This is the view of Dam from the downstream area.



(6) Nyabombe Marshland

1)Sector : Murundi, Gahini

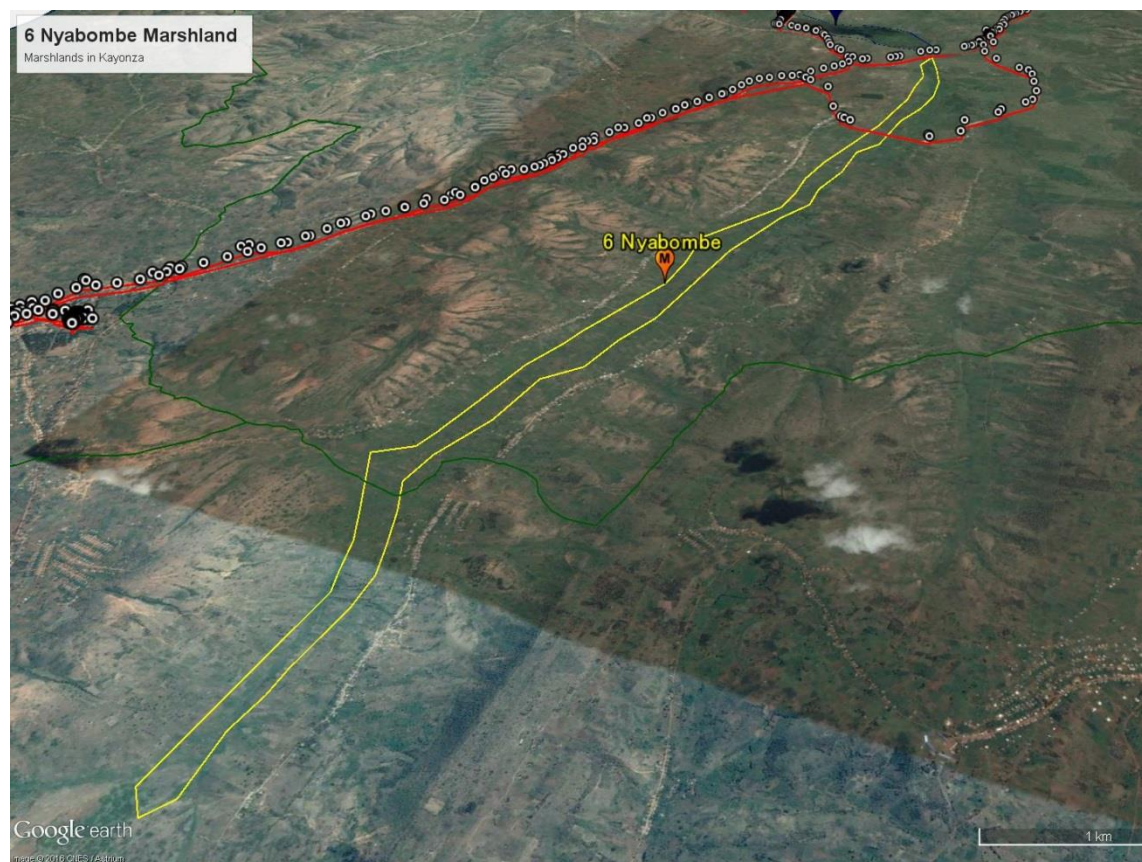
2)Size:40ha

3)Status & Challenges: Nyabombe marshland is a small marshland in the upstream of Gacaca Marshland. It has a small permanent stream but the marshland is long and very narrow.

4)Main crop: Maize, Beans, Soy beans

5)Comments: This marshland can be developed under QWMD

6)Field visit date;23rd March,2016



The agronomist of the Gahini Sector showed us around.



There is a permanent stream.



(7) Cyatokwe Marshland

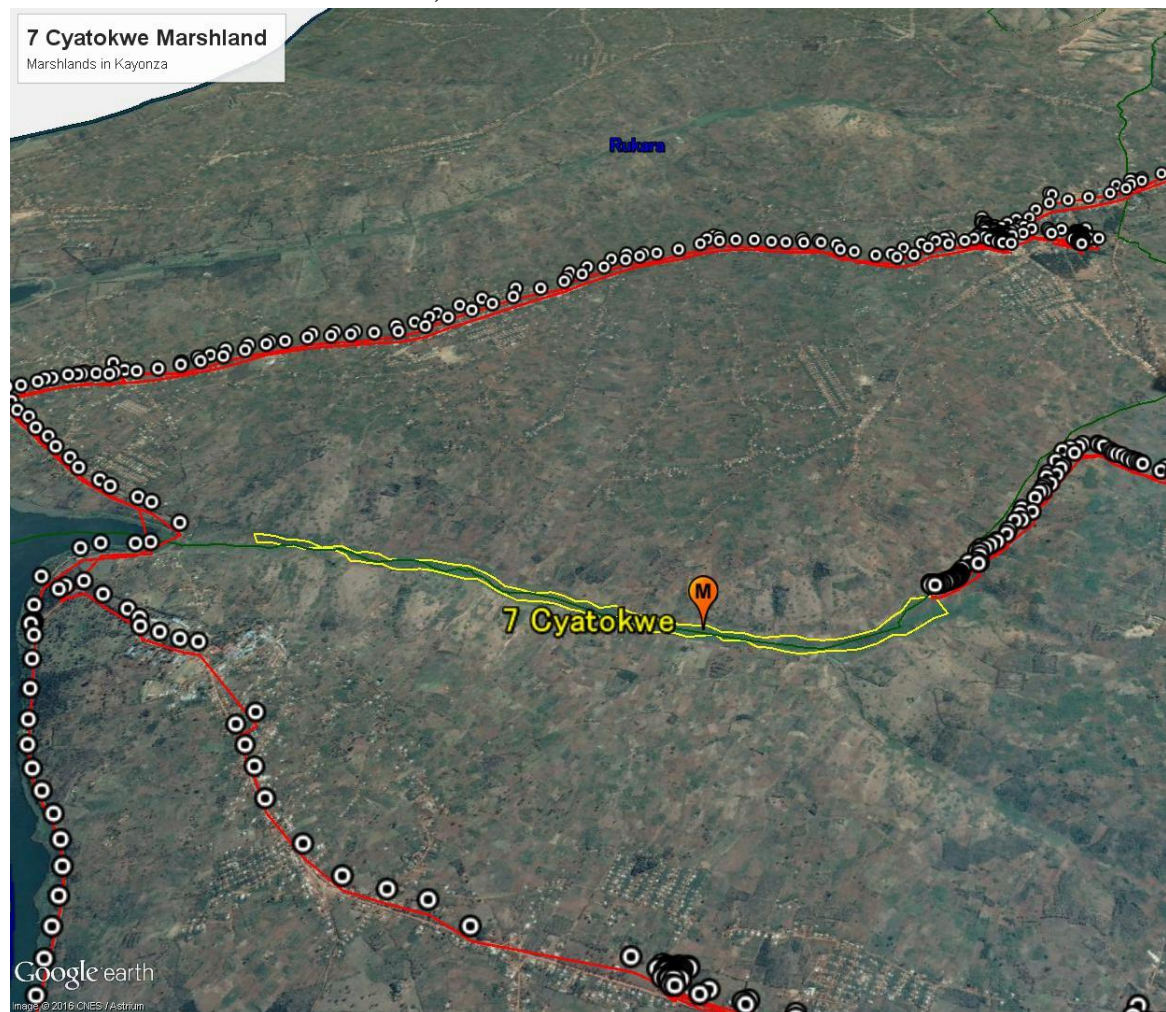
1)Sector:Gahini,Rukara

2)Size: 20ha

3)Status & Challenges: This marshland is located in the upstream area of Muhazi Lake. It has a big spring providing water to domestic water pumping station. It has a perennial stream. In the big downstream part they don't cultivate due to undrained water.

4)Main crop: Vegetables, Maize, Beans, Soy beans

5)Field visit date;23rd March,2016



In this marshland, they don't cultivate rice.



They cultivate maize.



(8) Ruramira Marshland

1)Sector:Ruramira,Kabarondo

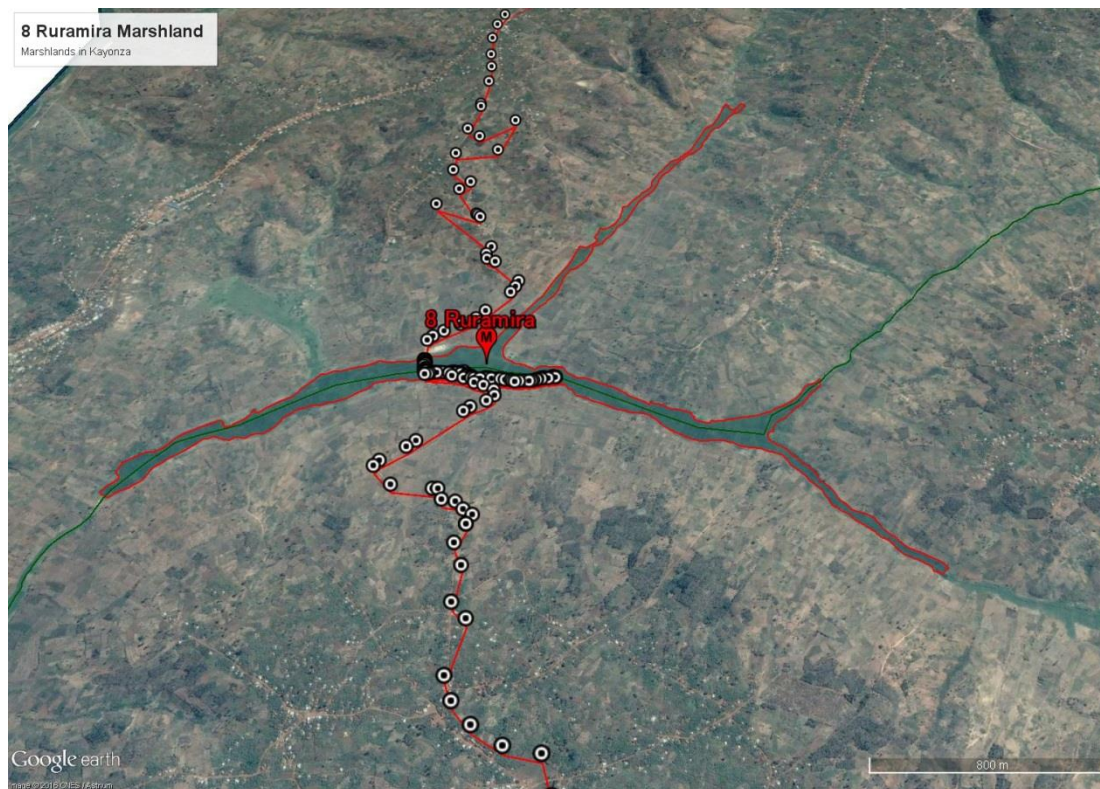
2)Size: 32ha

3)Status & Challenges: This Marshland was developed by Micro-Realization(NGO). In this Marshland, farmers are cultivating rice two seasons per year but facilities are not functional. Irrigation canal cannot convey water and the deviation weir is old. The drying area is only one.

4)Main crop: Rice

5)Comments: The construction of intake and rehabilitation of canals is needed. Establishment and training of IWUO is important for the good water distribution management.

6)Field visit date:19th April,2016



The Marshland is covered by rice.



There are no Dams in this Marshland.



Their facilities are not well.



They cultivate Vegetables also.



(The end)