

## Delimitation of Administrative Boundaries, History, Importance and using Geographic Information System for Improved Delimitation of Administrative Boundaries

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**Abstract**– Survey professionals always dealing with boundaries of lands and are generally familiar with the use of the term “delimitation” and/or “demarcation”. Boundary delimitation (or simply delimitation) is the drawing of boundaries, particularly of electoral districts, provinces, administrative districts, municipalities etc. In the context of elections, delimitation can be called redistribution and is used to prevent unbalance of population across electoral districts. Demarcation is to mark the boundary on ground, which usually occurs after delimitation is completed and more technical process.

The Delimitation Commissions are appointed for the purposes of delimitation of boundaries within the country for Administrative and Electoral purposes which are very crucial, when it is done in a country or region with community of multi ethnic, multi religion, multi-cultural with different political ramifications, as the outcome of an any election profound effects on the composition of a Parliament, Provincial Councils and Local Councils, etc .,

This study focusses on the “Delimitation process in Hambantota District” in Sri Lanka which is being finished by the Delimitation Commission of Sri Lanka (DCSL) for identifying grey areas of the boundaries of District Electorate (DE) and Divisional Secretariats (DS).

The delimitation of Hambantota district is published in the Administrative District Act which known as the act No 22 of 1955 published in 14<sup>th</sup> April 1955. The first schedule of the act contains bounds of each district in North, South, East & West directions which are

described in words. These boundaries were obtained from the district boundaries marked on one inch to a one-mile maps (one-inch sheets) published by the Survey Department of Sri Lanka. Aim of this study is to analyse and identify the best possible approach for delimitation of administrative boundaries of Districts. How the delimited boundaries could be portrayed using new technologies such as Geographic Information Systems (GIS) and web-based imagery and mapping tools such as Google maps, Google images Open street maps etc., It is also aimed to identify the difference standards and guidelines followed by the delimitation commissions in international arena.

As all district and DS boundaries were defined in words extracted from one-inch sheets, all one inch-sheets covering Hambantota district were scanned and geo-referenced to form a one single composite image. Then District boundary was digitised on the composite image and compared with the gazetted boundaries. DS boundaries were marked on composite one-inch sheet using gazetted boundaries. Coordinates of all boundaries extracted and converted to Keyhole Mark-up Language (KML/KMZ) so the boundaries could be directly portrayed on any web-based mapping or imagery services such as Google earth. Places of intersecting, overlapping and gaps of different level administrative boundaries, public institutes, historical places, city limits, economically valuable natural resources intersection of administrative boundaries with rivers, streams, roads are identified by observation. Places that can be demarcated with the Google earth are marked on the map. This visualisation will help build

capacities at the cross-roads among elections, violence and conflict management in Sri Lanka.

**Key Words: Demarcation, Delimitation, Administrative Boundaries**

## 1. INTRODUCTION

Knowledge of the boundaries of a country is a pre-requisite both in administration and in the maintenance of social relationship. Historical evidence relating to the tradition of setting up of boundaries of villages, of provinces and of the kingdom, the revision of such boundaries and the observance of such in administration from the time of the earliest settlements dating from the pre-Christian era is available in epigraphical sources (Abeywardana H.A.P, 1978). According to him, practice of recording boundaries in books came in to being only during the mediaeval period. The oldest available record is referred to as the *Sri Lankdvipaye Kadaim* the boundary book of Sri Lanka in the copies of Ola manuscripts (Abeywardana H.A.P, 1978). It is referred to deal with the boundaries of the territorial division of our country during the Gampola period.

It reveals that the fixing of territorial boundaries and the delimitation of such divisions were functions attended to by royal command and the *Matale Kadaim* (the boundary book of Matale) is cited as one such significant example (Abeywardana H.A.P, 1978). This *Matale Kadaim* has dealt with re-demarcation of the boundaries of "Disawa of Matale" consequent to the recapturing of the fort of Trincomalee by the Sinhalese in 1639.

The boundary book of Tri Simhale *Kadaim* has been written during the Kandyan period (1591-1815 AD) and it reveals the boundaries of Maya, Pihiti and Ruhunu the three main division of the country. In the *Kadaim*, these divisions are called variously *rata*, *rajja* and inscriptions refer to them as *rajaya* or *danav*

(*Epigraphia Zeilanica*, vol ii,132). The boundaries of Tri Simhale were defined by the course of Mahaweli river, beginning from Samanola hill and Pinga Oya. These Maya, Pihiti and Ruhunu further subdivided into 114 *ratas* (Abeywardana H.A.P, 1978).

During this period Sri Lanka was administrated under strong kingdoms such as Anuradhapura and Polonnaruwa, transitional local kingdoms such as Dambadeniya, Gampola, Sitawaka and Kandy. Later Sri Lanka was invaded and partially colonised by Portuguese in 1505, Dutch in 1638 and British in 1796. In 1815 the last kingdom of Kandy was occupied by British in the second Kandyan war, ending Sri Lankan independence and became a British colony. The western scholars during the British administration, had shown a keen interest in this boundary books and have made use of these *Kadaim* for delimitations. (Abeywardana H.A.P, 1978).

During the colonial period delimitation of administrative boundaries such as provinces, districts and smaller administrative units considered as an important and vital task in managing civil administration in any country. British introduced a provincial delimitation system upon the recommendations of the Colebrook-Cameron Commission. Five provinces were proclaimed as Northern, Southern, Eastern, Western and Central on proclamation made on 1<sup>st</sup> October 1833. These five provinces were administratively divided into 23 districts. British administration further introduced four new provinces by proclaiming North Central, North Western, Uva and Sabaragamuwa and there were nine provinces by 1899.

The present system of administrative delimitation that has been used in Sri Lanka today is a gradual development of the British system mentioned above. District boundaries

have been undergone frequent changes and finally coming up with 25 districts as of today. It is important to distinguish terms delimitation and demarcation. Delimitation is to mark boundaries on a map or define the boundary in words usually north, south east and west bounds of an entity. The demarcation is to mark the boundary on ground physically. Delimitation of boundaries of provinces and administrative districts are clearly stated in the Constitution of Sri Lanka and / or Act No 22 of 1955 Administrative District. The boundary limits of an administrative district or a province may be altered / amended only by a resolution passed by parliament and/or amendments to the constitution. The administrative districts were further divided into Divisional Secretaries Divisions (DSD) through Transfer of Powers (Divisional Secretaries) Act No. 58 of 1992. The boundaries of Grama Niladhari Divisions (GND) were created as the smallest administrative unit under administrative supervision of DSD. With a view to ensure an administrative Boundaries at rural level on par with public policies, Grama Niladhari Division which is under Home Affairs Division of the Ministry of Public Administration and Home Affairs implements all administrative functions of Grama Niladhari, performing their duties in 14,022 GN Divisions within the 331 Divisional Secretary's Divisions (DSD's) all over the island. In parallel, for purposes of elected representation, the Parliamentary Government system has 22 electoral divisions, the Provincial Government system provides for 437 elected representatives in 9 Provincial Councils, while the Local Government system provides for 8,325 elected representatives in 341 Local Government Authorities. For service delivery in key areas, there are 340 Medical Officer of Health (MOH) areas, 311 Educational Divisions and 439 Police areas in the country, to mention a few. The revisions to DS and GND administrative boundaries, as well as provincial and local

government electoral boundaries have been assigned in the past to different Delimitation Committees appointed by different authorities for such specific tasks from time to time. Delimitation of geographical boundaries for any service delivery (e.g. education, health, etc.) is undertaken by the relevant service authority.

All local authorities are spatially defined by collection of the GN Divisions which are the smallest administrative units. GN division is a subunit of DS's division. Its boundaries are not well defined and not still gazetted because these GN divisions are created for census and smallest administrative unit depending on number of families or households, just known by the GN's and not been officially. The GN's boundaries are passed down from GN to GN from word. So it is not that important in the delimitation of GN's boundaries.

The most important administrative unit is the DSD because it has relatively stable boundary and it contains few GND's encompassing each DSD. Most importantly all ground level administration of state land and other civil administration powers have been decentralized to the divisional secretary of each DSD. It is important that DSD boundary are to be known on the ground or to be demarcated that have been defined by text on the gazette No 58 in 1992.

Next higher level of administrative boundary unit is the District. Each district contains few DSD's and the boundary of districts can be considered as permanent because they are not prone to change. All the district boundaries have been defined by text on the act No 22 of 1955. All district boundaries are marked on topographical maps published by the Survey Department and some of those boundaries are demarcated on ground. Many boundaries are defined to follow a well-defined topographical

feature such as river, stream or coastal lines need not to be demarcated. Main objective of this research is to find a more scientific and well defined methodology to delimitation of the boundaries with aim of the easy demarcation those boundaries on ground at later stage.

## 2. LITERATURE REVIEW

Delimitation and / or demarcation of the administrative boundaries is an important process in the perspective of the civil administration. This process does not limit for a one nation or a one country. Thus, that is worldwide globally important task where the origins of this process run back to number of years back. In old times, before the rules and regulations are formed for the civilization, the people lived in the areas that allocated from themselves. But with the socio-economic changes in the society a requirement of proper mechanism for delimitation of the administrative boundaries was much needed. Different countries have used diverse methodologies for delimitation of the administrative boundaries. In this process, most common words that frequently come to the stage is Delimitation and the Demarcation. At the end of the nineteenth century the two terms were used indiscriminately to describe the stages in boundary making, together with other words such as fixation, delineation and definition.

Delimitation can be defined as the process of the preparatory work and the boundary definitions treaty either by words or marked on the maps where the demarcation can be defined as the process of represent the lying down of the boundary on ground after the treaty has been signed (SREBRO & SHOSHANY, 2006). Furthermore, there are several definitions regarding the delimitations and the demarcation. As Dennis discuss in his article, although the boundary workers are known about those generic terms others are not much

aware of these technical specific terms. Colonel Winterbothem states that it is a difficult task to separate delimitation and the demarcation separately (Rushworth, 1997). At the Sierra Leone boundary definition, the first attempt to separate the two stages was made by Captain A. H. McMahon (later Sir Henry) at a meeting of the Royal Artillery Institution in 1896.

According to McMahon, delimitation means the laying down, not the laying down on the ground, but the definition on paper, either in words or on a map of the limits of a country. Delimitation covers all the preliminary processes and procedure involved before a boundary is laid down on the ground, and then the process ceases to be delimitation and becomes demarcation (Trotter, 1897).

The 1902 award in the Argentine-Chile Case, diplomatic agents and documents habitually confound the meaning of the two words 'delimitation' and 'demarcation', using them as if they were interchangeable terms. This is not the case. Delimitation signifies all the earlier processes for determining a boundary, down to and including its embodiment in a Treaty or Convention, (Curzon, 1907). Curzon was clear that delimitation required the arts of diplomacy while demarcation was a much more mechanical process.

Similarly, Victor Prescott (Prescott, 1979) refers to "allocation, delimitation and demarcation" stages.

Some international election standards have been proposed by regional and nongovernmental organizations to guide the delimitation process. These organizations include the Organization for Security and Co-operation in Europe (OSCE), the European Commission for Democracy through Law, the

Commonwealth Secretariat, and the Electoral Institute of Southern Africa (EISA)

However, In the next few paragraphs of the literature review discuss about the phenomena of the delimitation and the demarcation.

Dr. Lisa in his preliminary studies on the "Challenging the Norms and Standards on the Land Administration" has done a remarkable review on the standards use for the boundary delimitation. As he discusses most of the underlying standards are based on the several core principles as Representativeness, Impartiality, Equality, Non-discrimination as well as the transparency. (Handley, 2007) .

As Dr. Lisa reveals, the impartial boundary delimitation should be carried out by the impartial boundary authority. In nineteenth century, the district boundary drawings were a responsibility of the legislature but with the time being, currently in United States, the electoral boundaries are drawn by the politicians. But the Commonwealth Countries have reformed delimitation process with granting to the Natural Boundary Commission. Most of the countries such as Canada, Australia, New Zealand as well as the many Caribbean's are practising the same regulatory practices. Equality of voting strength is another main underground principle. The proposed standard for this is as mentioned, the constituency population should equal as possible to ensure the same weight carry out of the all votes (Handley, 2007) . Simply what this means is all the voters should grant equal weight of grant in the election of the representatives. The based requirement of this is the requirement of equal populations across the single member constituencies and same voter ratios to be selected in multimember constituencies. The important point of here is that a most popular way for measure the

equity is the use of population data. Malapportioned constituencies characterized by an inequitable or unsuitable allocating of representatives to a legislative body is one of the fact the violate the principles of equally weighted votes. So, this active malapportionment occurs when boundary authority gets conscious decisions to draw the constituencies that dramatically vary in the population. He concludes his research findings with stating that there is no one well defined precise best single model for the delimiting of the boundaries. But it is very important to establish precise rules for the process which are flexible for both mature and transitional democracies.

Rokas Stabingis, A member of Central Electoral Commission of the Republic of Lithuania has discussed about the boundary delimitation and the equal voting power in context to the Lithuania. In his presentation, he firstly emphasizes about the purpose of having clear cut of the boundary delimitation. As he reveals, for the presidential elections, municipality elections and elections to the European parliament, it is not required the boundary delimitation. But for the parliamentary elections "Yes" that is true that it requires the delimitation of the boundaries (Stabingis, 2015). As the document discuss brief about the process of Boundary delimitation a separately allocated person who employs a geographer to use graphical tools to display the maps of the boundaries of the constituencies. Then there is a separate information system which holds the information about the administrative boundaries for the particular polling stations. Therefor this information is used to administer of the boundaries for the particular polling station and show it on the map when requires. He concludes with several factors aroused in the delimitation process such as whether international boundary delimitation is

applicable only for the unitary states and why it is not for the federations. And as he mentioned it required a proper selected methodology for the calculating of the number of voters. He emphasizes that still it is difficult to reach absolute equity between single member constituencies.

Srebero and Maximum discuss about theory of boundary making with a process driven model for the methodological model. According to the author, the political and administrative framework includes three stages with regard to the boundary as negotiations which includes the allocation of the boundary lines, ongoing frontier administration including the boundary maintenance as well as a treaty or agreement which include the delimitation of the boundary lines. One of the boundaries making model the author discuss is the linear and nonlinear model for the boundary making. (SREBRO & SHOSHANY, 2006). The non-liner process had been mainly used in the past mostly during the colonial periods where it is considered that the knowledge on the boundary delimitations were very poor. This actually made demarcation process to a very complex in both political and technical tasks. But in now a days it has become a common of the linear process. The linear process includes the all major modules for delimitation, allocation, demarcations, Boundary agreements boundary maintenance as well as the documentation. The liner process based on the activities accompanied by the technical experts as well as the politicians. In this the allocation is responsible for the statesmen but the process is strongly influenced by the technical experts. The Author state that, demarcation process sometimes delayed in very long periods of times. Using this process in the 20<sup>th</sup> century, only few of the boundaries have been demarcated in the Israel.

Previous paragraphs discussed how those administration processes are occurred globally. In the case of Sri Lanka the delimitation and the demarcation process roots go back to the years of the past like 1955. The Sri Lankan government has imposed the Administrative District Act which known as the No 22 of 1955 in April 14 of the 1955. In this documentation, it reveals the information related to the Land administration of the Sri Lanka. Under the first schedule of the Act, it has been discussed about the classifications of the administrative districts and their limits. According to the Act, there have been 20 numbers of Administrative districts in the Sri Lanka in year 1955. (Ceylon, 1955)

Apart from the government acts, Riza has discussed about the influence of delimitations and its effects on the minorities in context to Sri Lanka. According to the article "The Constitution of 1978 had made a drastic change in the representation of electoral method of encased in the 1948 and 1972 constitutions. The Proportional Representation (PR) System together with the original 12.5% cut off point and the concept of district bonus seat went against the very spirit of the concept of representation according to the proportion of votes. Thus, The 1976 Delimitation Commission did not pay adequate attention to create smaller electorates, to ensure the parliamentary representation of a substantial concentration of persons united by a community of interest; racial, religious or otherwise, but differing in one or more of these respects from the majority of the inhabitants of that area. (Riza, 2015). Under his topic of the 1982 delimitation he discusses about how the structure for 225 parliaments members were constructed and he argues that with the 1982 delimitation, for the electoral process, it was eliminated the representatives from the minority communities outside the Northern and Eastern Provinces from the

Legislature and this is a violation of the human rights.

In context to delimitation and demarcation in Sri Lanka, it seems to be number of areas where there are negative consequences of the process and requirement of a proper precise mechanism for the delimitation and demarcation process with the new technology enables environment.

### 3. METHODOLOGY

The first schedule of the administrative district act no 22 of 1955 contains boundaries of each district described in words. These boundaries were obtained from the district boundaries marked on one inch to a one-mile maps (one-inch sheets) published by the Survey Department of Sri Lanka.

The research area is limited to study of delimitation of boundaries of Hambantota district. Hambantota district depicted in nine one-inch sheets namely Rakwana, Matara, Hambantota, Morawaka, Kataragama, Yala, Tissamaharama, Timbolkatiya and Panama. Hambantota district is sharing common district boundary with Matara district to the west and sharing provincial boundaries with Sabaragamuwa province and Uva province to the north, and Eastern province to the East and surrounded by Matara, Ratnapura, Monaragala and Ampara districts.

Hard copies of those nine one-inch sheets were scanned using a digital flatbed scanner to obtain raster images. One-inch sheets were in imperial units (chains) and grid reference coordinates are based on Pidurutalagala origin. Metric coordinates of well distributed eight reference points on each one-inch sheet was computed. These coordinates were based on Pidurutalagala with false origin 200,000 meters to the north and 200,000 meters to the east. Then raster images of nine one-inch sheets were added as layers to ESRI arc map

software and geo-referenced using coordinates of reference points. This process shifts all nine one-inch sheets to their correct spatial locations resulting one composite raster image depicting entire Hambantota district. Next step is to assign coordinate system to each layer. The coordinate system comprises of the geodetic datum which is the Everest 1830 ellipsoid and the parameters of Transverse Mercator's Projection to define local grid. Assigning of correct coordinate system is essential for transformation of coordinates to different datum such as WGS84 to portray details correctly on web based applications such as Google earth.

Then the boundary of the Hambantota district was created as a polyline using on screen digitizing tools guided by the boundary marked on one-inch sheets and the first schedule of the act No 22 of 1955 which describes the boundary of the Hambantota district in text. The digitised Hambantota district boundary formed as poly line shape file was assigned same coordinate system used for raster images. This poly line shape file was converted to point shape file using "feature to point" tool available in the arc tool box. Then coordinates of each point was added to the attribute table using add XY coordinate tool. The attribute table can be saved as an ASCII text file which containing the coordinates of all vertexes along the boundary. This coordinate listing which defines the district boundary unambiguously can be published in any legal document which is the best scientific method of delimitation of any administration boundary. The poly line layer containing district boundary can be readily converted to KML file using "feature to KML" tool. This KML file can be directly imported to any web-based location service such as Google earth for viewing the boundary on a satellite image or web base map.

Then the boundaries of four DSD's namely Hambantota, Sooriyawewa, Lunugamwehera and Tissamaharama were created using onscreen digitizing. The problem was that one-inch sheet did not contain the DSD boundaries. In order to create DSD's the gazette No 58 in 1992 which described the DSD's boundaries in text was used with the help of distances/cardinal direction and identifying land marks described in gazette on Google earth. Later for comparison DSD boundary layer published by the Survey Department of Sri Lanka was used. It is interesting to note that DSD divisions in Hambantota district were declared by three Gazettes. Nine DSD's namely Hambantota, Tangalla, Ambalanthota, Weeraketiya, Thissamaharama, Katuwana, Beliaththa Angunakolapelessa, and Lunugamwehera were declared by gazette no 747/13 on 13<sup>th</sup> December 1992. Okewela and Sooriyawewa DSD's were declared by gazette no 1178/8 on 20<sup>th</sup> February 2001. Walasmulla DSD was declared by gazette no 1462/16 on 13<sup>th</sup> September 2006.

Then all digitized boundaries were converted in to KML/KMZ files based on WGS-84 reference ellipsoid, so that newly created boundaries can be up loaded directly in to any internet-based location service like Google earth.

Once boundaries are converted to corresponding KML files, boundaries can be visualised in the background of satellite images of the Google Earth. As Google earth has street view tool providing 360° panoramic photos are available across boundaries in all major road cuttings. Hence a novel concept "the virtual demarcation" of administrative boundaries is possible without actual field visit.

#### 4. RESULTS

By using GIS software, a coordinate listing close to 4000 points depicting entire Hambantota district was completed in very short time period. Therefore it is possible to

demarcate boundaries on the ground by setting out those coordinates and coordinates can be replaced word descriptions published in the gazette for rigours boundary delimitation.



Figure 1(Hambantota District Boundary)

Number of buildings or individual allotments divided by district boundary can also be visually inspected when the boundary is plotted with satellite images in the background. It was counted that fifty-five houses split by Matara-Hambantota district boundary, fifteen houses split by Sabaragamuwa-Southern provincial boundary and thirty houses split by Uva-Southern provincial boundary.



Figure 2(School was divided by Uva-Southern Provincial Boundary)

Four DSD boundaries namely Hambantota, Sooriyawewa, Lunugamwehera and Tissamaharama were digitised and coordinates lists were computed in the pilot project and this system can be implemented for the delimitation and the virtual demarcation of any DSD division in Sri Lanka.





Figure 3(DSD's Delimited)

By using the internet-based location systems we were able to get all the coordinates of the road cuttings and other spatial features that can be used to demark the boundary on the ground.



Figure 4(Hambantota District Boundary On Sat Image)

#### Google street view images of District Boundary Road Cuttings



Figure 5(Dikwella-Beloatta Road Cutting)



Figure 6 (Dikwella-Beloatta Road Cutting)



Figure 7 (Tangalle Road Cutting)



Figure 8 (Kiriebanara-Sooriyaweaw Road Cutting)

Finally, the GND shape file published by the Survey Department was compared visually with Hambantota district boundary created under this research. It was revealed that those boundaries are matching within expected tolerance with two exceptions. Three GN divisions, Seenigama, Lunugamvehera new town and Padavigama are outspreading into Uva province by nearly one kilometre. This is not possible as the district boundary in the area concern is the centre line of Kirindi Oya. On Second exception Hatporuwa GND is ending about 750 meters to the Matara-Hambantota boundary leaving a gap.



Figure 9 (GND's outspreading to Uva Province)



Figure 10 (GND creating a gap with District boundary)

## 5. DISCUSSION

Scope of the delimitation is to demarcate electorates in the administrative districts according to population numbers of the Census of Population and Housing - 2012 to elect half of the number of members from each administrative district.

According to the Provincial Councils Elections (Amendment) Act, No.17 of 2017 The committee has taken action to demarcate electorates to elect 222 members out of a total number of 437 members for the nine Provincial Councils from the 25 administrative districts.

As well as, according to the Local Authorities Elections (Amendment) Act No. 22 of 2012, Sixty percent (60%) of the members of a local authority are to be elected on the basis of representative areas through simple majority and 40% of members are to be elected on the basis of proportional representation.

The Delimitation Committee established Sub Committees under the Chairmanship of the

District Secretary, with the Senior Superintendent of Surveys and the Assistant Commissioner of Elections of each district as the other members. The Committee did not have any authority to balance the population numbers in the electorates outside those boundaries. Members of the Committee visited all 25 districts to obtain views and suggestions from the public as well as religious leaders, to prepare the report.

A paper notice on the delimitation procedure was published on October 13, 2017 for the information of political parties, civil organisations, the Members of Parliament, Secretaries of recognised political parties and members of Provincial Councils were also invited to forward their proposals before November 2, 2017.

There are several categories of administrative units within the administrative districts- Grama Niladhari Divisions (GNDs), Divisional Secretariats (DSs), etc

Delimitation and demarcation of district and DSD boundaries are really important for the purpose of civil administration. Most of the delimitation was compiled by the Delimitation commission in 1955 using one-inch sheets. But extensive delimitation and demarcation process was never completed for all districts in Sri Lanka.

As a pilot project this research focuses to delimit the Hambantota district boundary using the digitized maps, GIS technologies and internet-based positioning and imagery services and extract the relevant coordinates for a demarcation of the Hambantota district boundary. A novel concept of using virtual demarcation on the Google earth web-based application also tested and can be used before moving on to the real ground. All information that was created relevant to the Hambantota district boundary is digitally available and ground demarcation can be completed if necessary.

The most important boundary for civil administration and especially for the government land administration today is the DSD's boundaries. But it is only defined very loosely in the gazette under the decentralisation of power in 1992. But it was not demarcated on the ground. The Survey Department had created the DSD's boundaries that are in use today by using the GN's boundaries. It is imprecise because the GN's boundaries are not gazetted or recoded and they are prone to change. If GN's change boundary created for the DSD's using the GN's boundaries would change. But the DSD's boundaries are gazetted so it can't be prone to change.

Hambantota DSD is sub divided in to three new DSD's called Sooriyawewa, Lunugamwehera and Hambantota. Boundaries of Sooriyawewa and Lunugamwehera DSD's which were inside the old Hambantota DSD were declared in the gazette. But the new boundaries of the Hambantota district were not updated the gazette. Therefore, current Hambantota DSD boundary is not matching with the declared boundary on the gazette. It is recommended to de-gazette the old boundary and publish new boundary when a change occur in DSD or a District to avoid such confusions. A much better way is to publish boundaries and coordinates of the boundaries.

## 6. CONCLUSION

- Delimitation need to be carried out taking their boundaries into careful consideration because the areas of authority in such units are legally established, mapped and the Census is conducted based on those boundaries.
- Concentration of persons united by a community of interest, whether racial, religious or otherwise, but differing in one or more of these respects from the

majority of the inhabitants of that area, the Committee may make such division of the administrative districts

into electorates; reducing to the minimum the disproportion in the number of persons resident in an electorate and geographical and physical features of the electorate are the main factors of delimitation.

- District boundary of the Hambantota district have been demarcated during the British period but not visible at the prominent places like major road cuttings, at the division of villages, cities and Towns etc.
- There are several categories of administrative units within the administrative districts - Grama Niladhari Divisions (GNDs), Divisional Secretariats (DSs), etc.
- DSS boundaries have been delineated on the maps but not demarcated at the field. Therefore, GND boundaries abutting to DSS boundaries are ambiguous.
- There are some places, when demarcated GND boundaries, there is a gap in between two GND boundaries. Therefore, Land administration within these DSS boundaries are controversial.
- Due to the demarcation, electorates with ancient historically significant names were abolished and new names created. This matter is very sensitive with religion background.
- there is a tendency in the country of thinking in terms of ethnicity when demarcating a particular area to represent a particular community of an administrative district. Proportional representative system has been widely accepted and it has contributed more towards communal

harmony than the area-based elections system.

- As for the conclusion main objective of this research was find out a better way to delimit and demark the boundary of a district or DSD in Sri Lanka. Those objectives were achieved by considering Hambantota district as study area and successfully providing all the data required to demark the boundary of the Hambantota District and four of its DSD's as the pilot project.
- All most all the districts and DSD's in Sri Lanka can be delimited and demarked similar technology.

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