

Free Grazing Effects on Soil Physical Properties in Raumoco Watershed in Municipalities of Lautem, Timor-Leste



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Orchard Hotel, Singapore, 30 March 2017

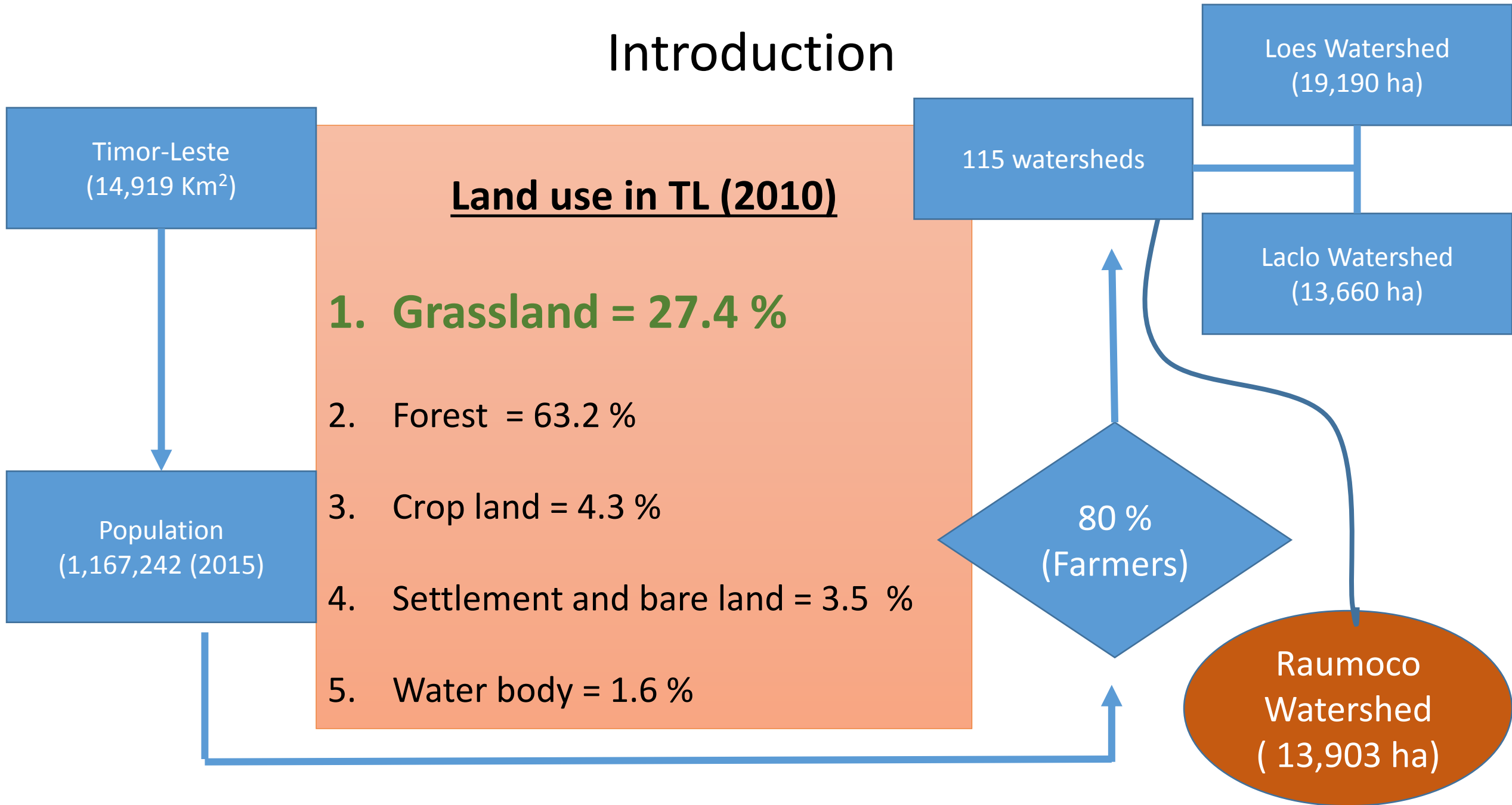


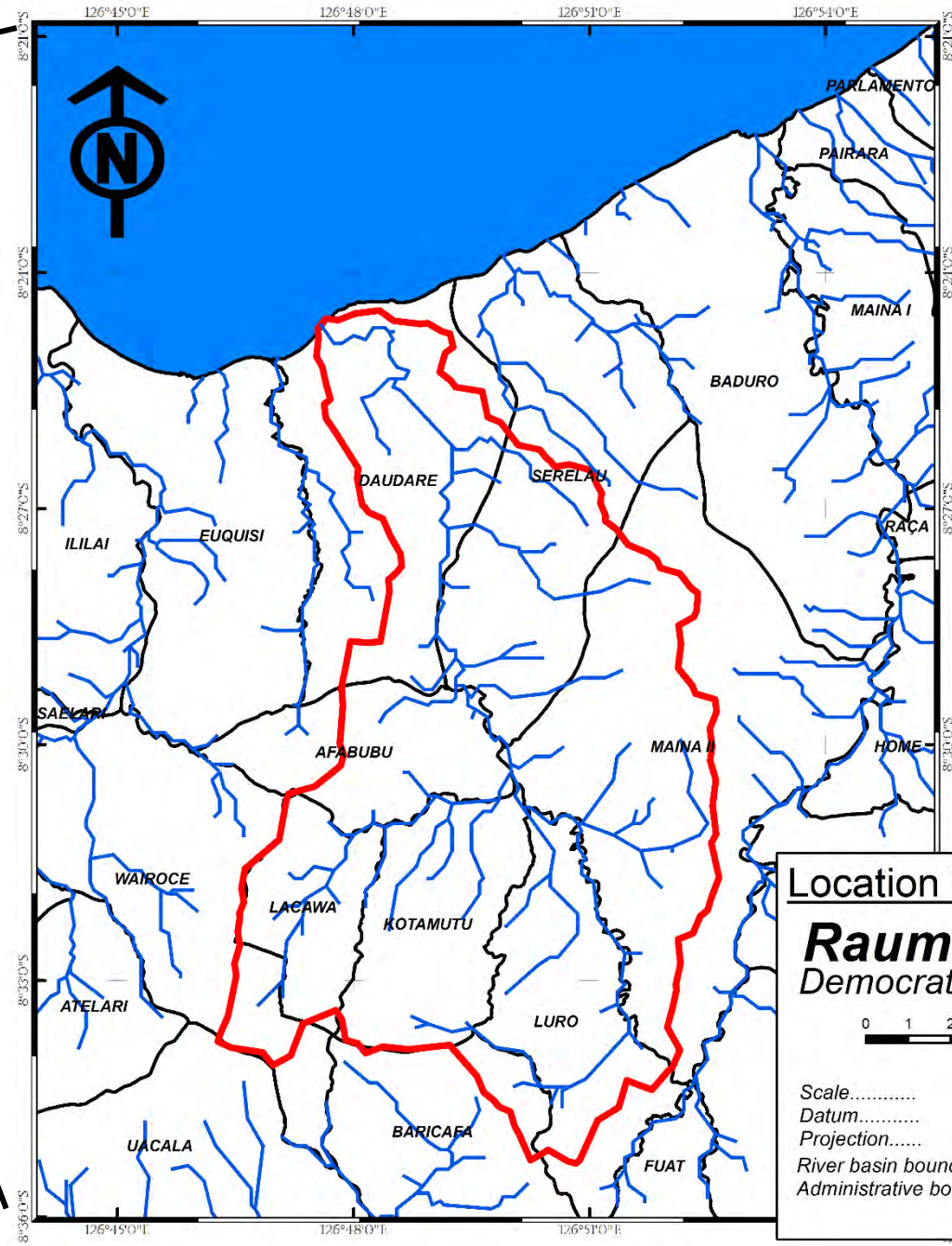
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Department of Agronomy**

Introduction



Introduction





Legend

- River
- ▭ Raumoco Watershed Boundary
- ▭ Administrative Boundaries

Raumoco watershed is located in eastern part of Timor-Leste

Location Map:

Raumoco River Basin
Democratic Republic of Timor-Leste

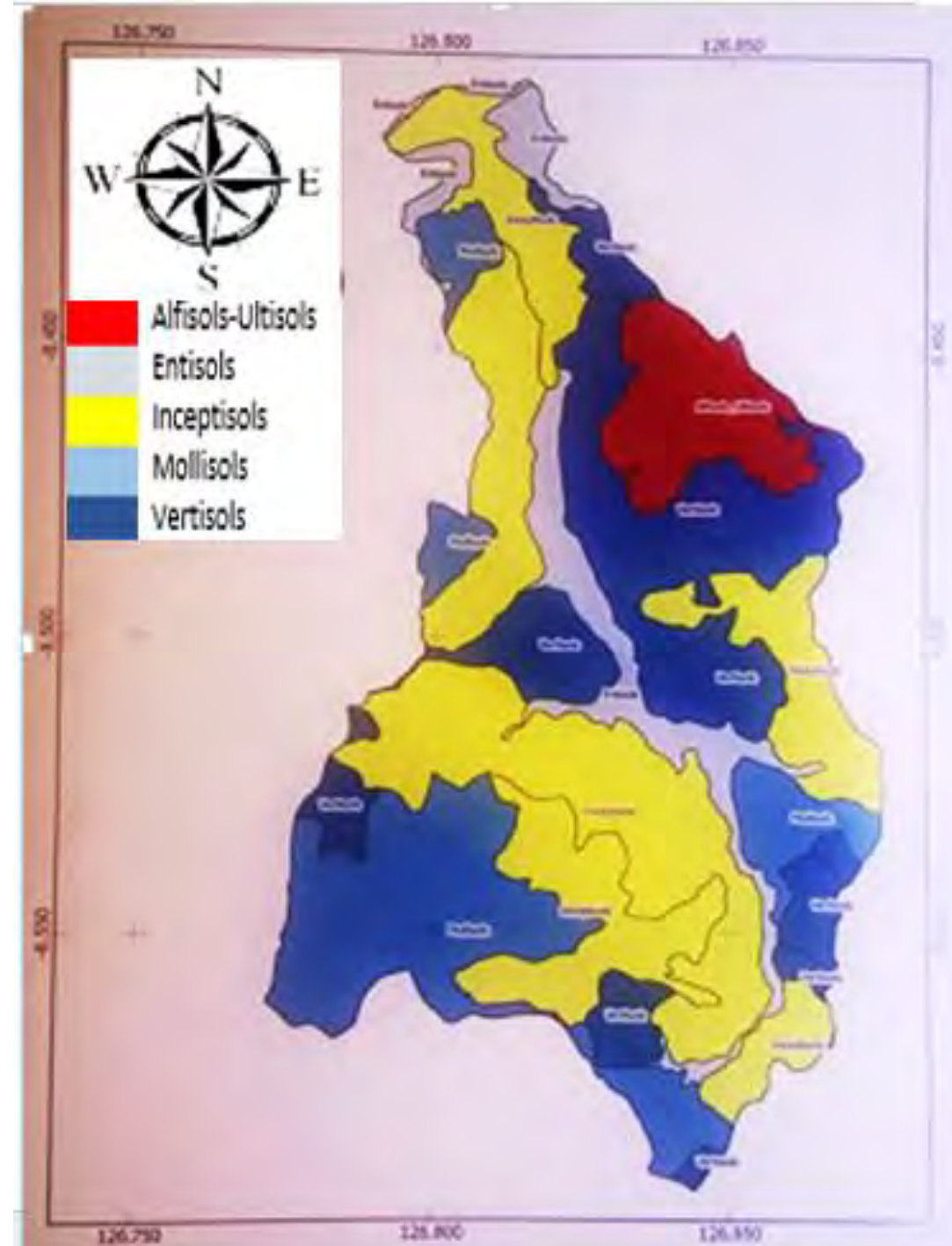
0 1 2 4 6 8
Kilometers

Scale..... 1:150,000
Datum..... WGS 1984
Projection..... GCS WGS 1984
River basin boundary generated from SRTM 90
Administrative boundary from <http://www.gadm.org/>

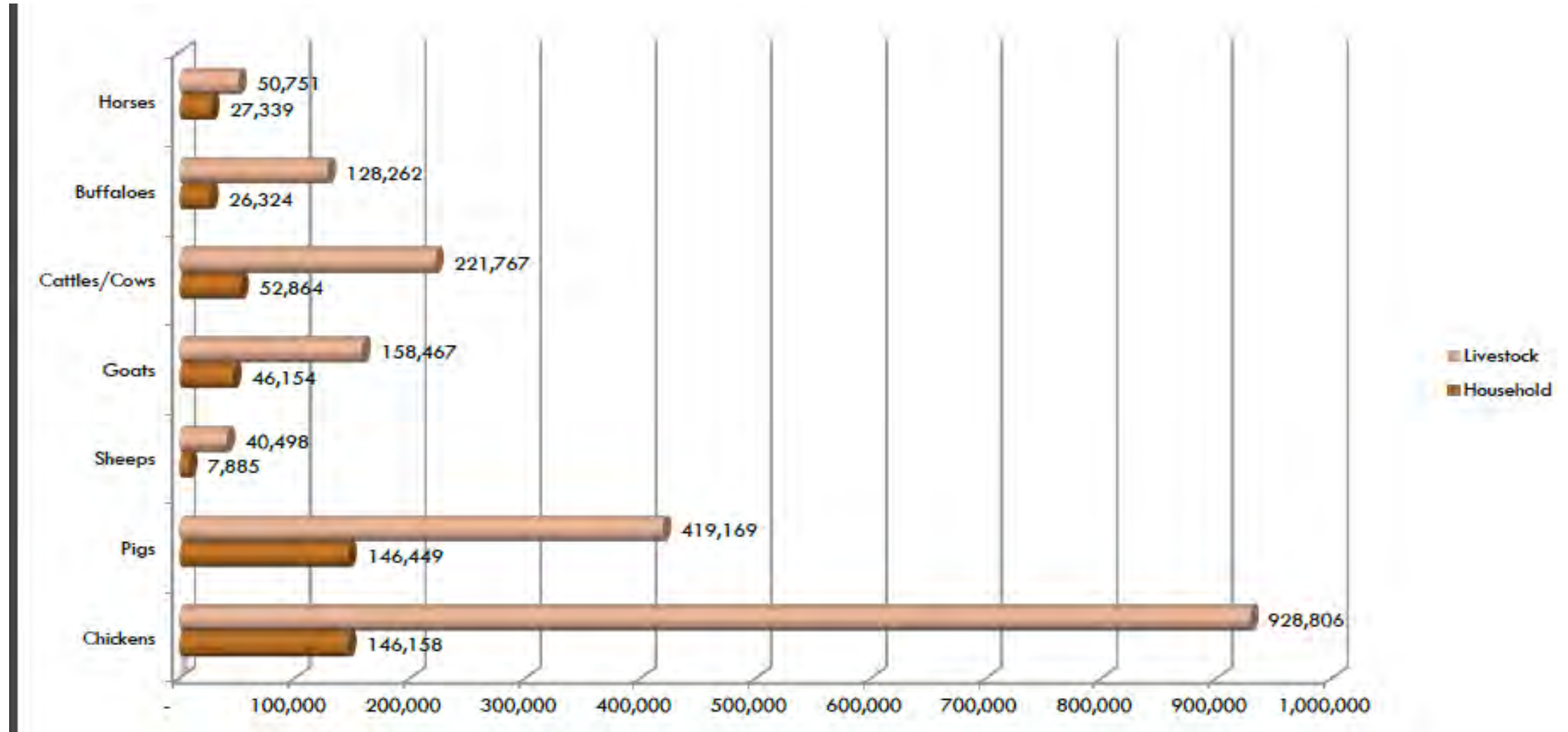
Create by: DALuna on 02/23/16

Climate pattern and Soil Type in Raumoco Watershed

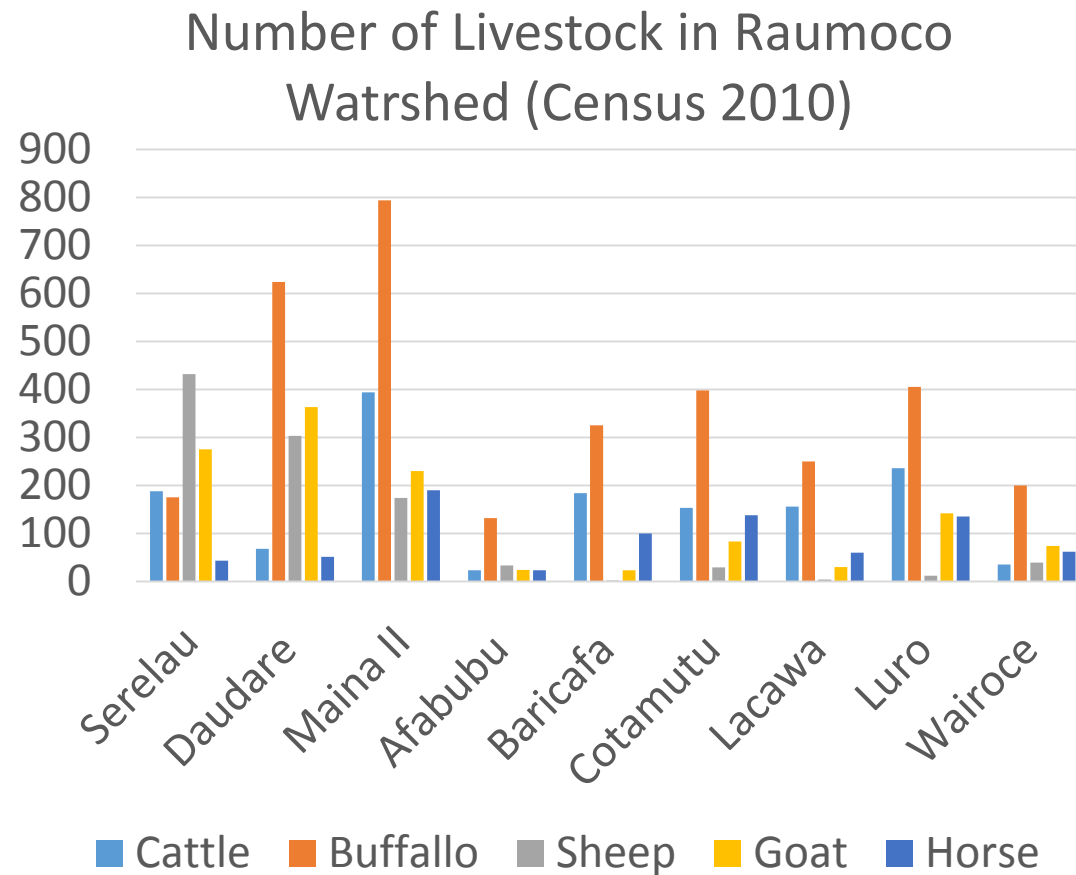
- **Agro climate Zone C (5-6 wet months) from end of November until end of April)**
- **Temperature ranges from 22.1 to 30.9°C**
- **Rainfall of 1,044.7 mm/yr, ranges from 3.6 to 165.5 mm per month**



Number of Livestock in Timor-Leste (Census, 2015)



Number of livestock in Municipality of Lautem and available Grassland areas



- Grassland (13,376.2 hectares)

Land-Use	Area (in hectares)
Ricefields	1,766.6
Coconut	1,170.4
Fallow area	3,076.3
Fallow area with coconut	161.7
Mangrove	16.5
Grassland	9,162.9
Grassland with trees	4,213.3
Secondary forest	9,996.6
Primary forest	644.0
White sand	102.3
Rock hills	13.1
Lake	26.6
River	39.1
Landslide	115.4
Total:	30,504.8

Land use in Raumoco Watershed

What is the Problem ?

- *Less available of grasses for livestock*
- *Watershed is appointed as the critical status due to decreased of water in the river*
- *Sedimentations along the river*

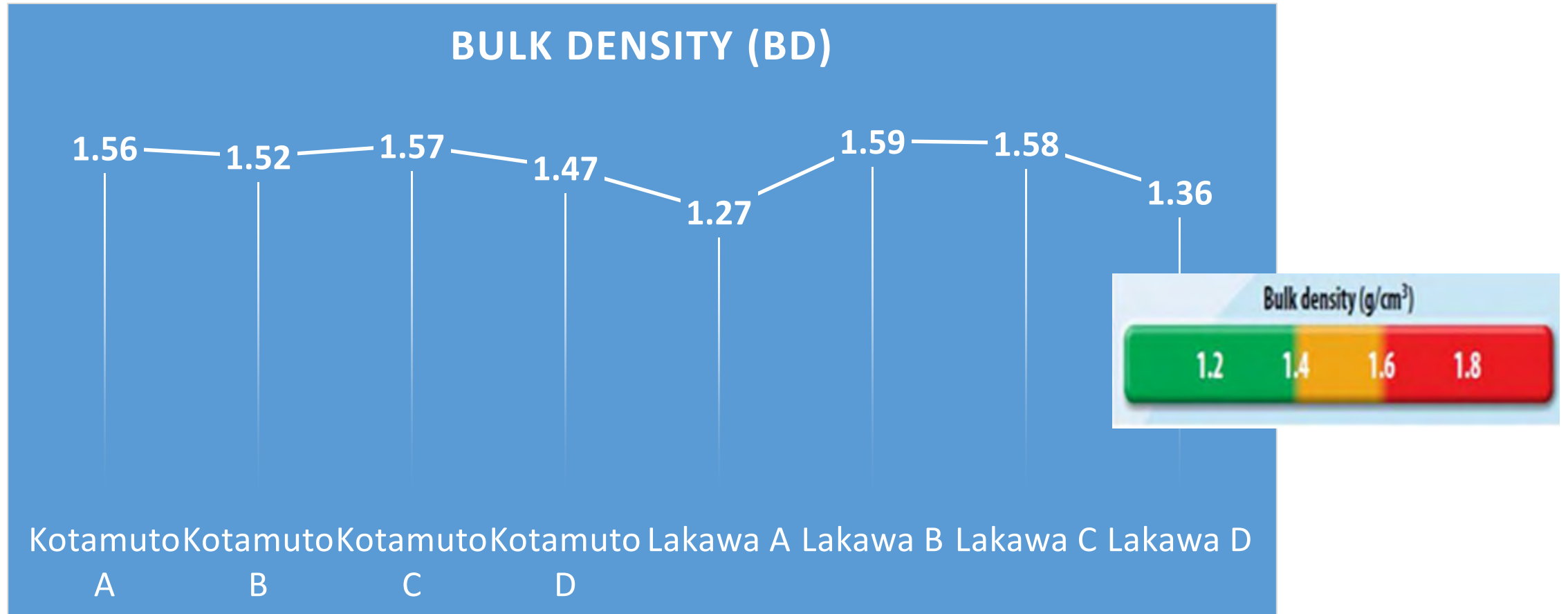


**SOIL
?**

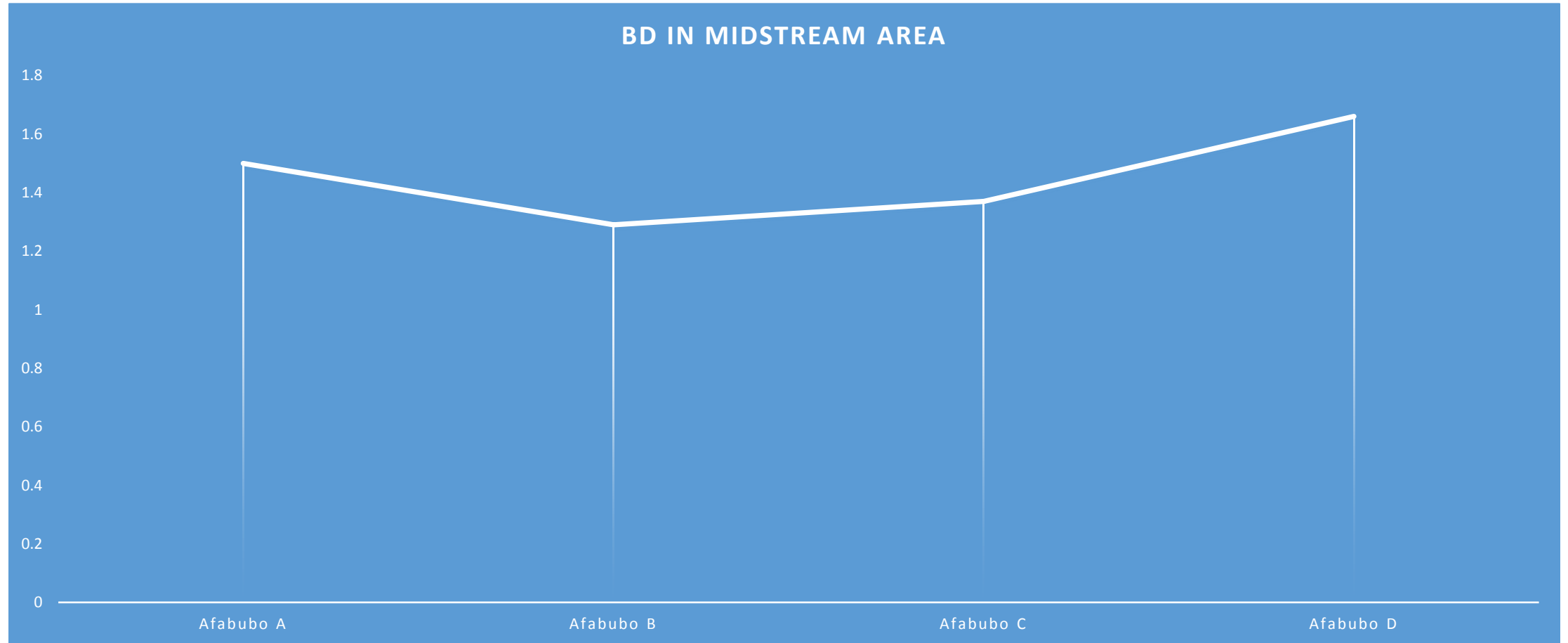
Livestock movements on the ground give pressures to the soil and make it more compacted

SOIL PHYSICAL PROPERTIES FOUND IN THE RAUMOCO WATERSHED AREA

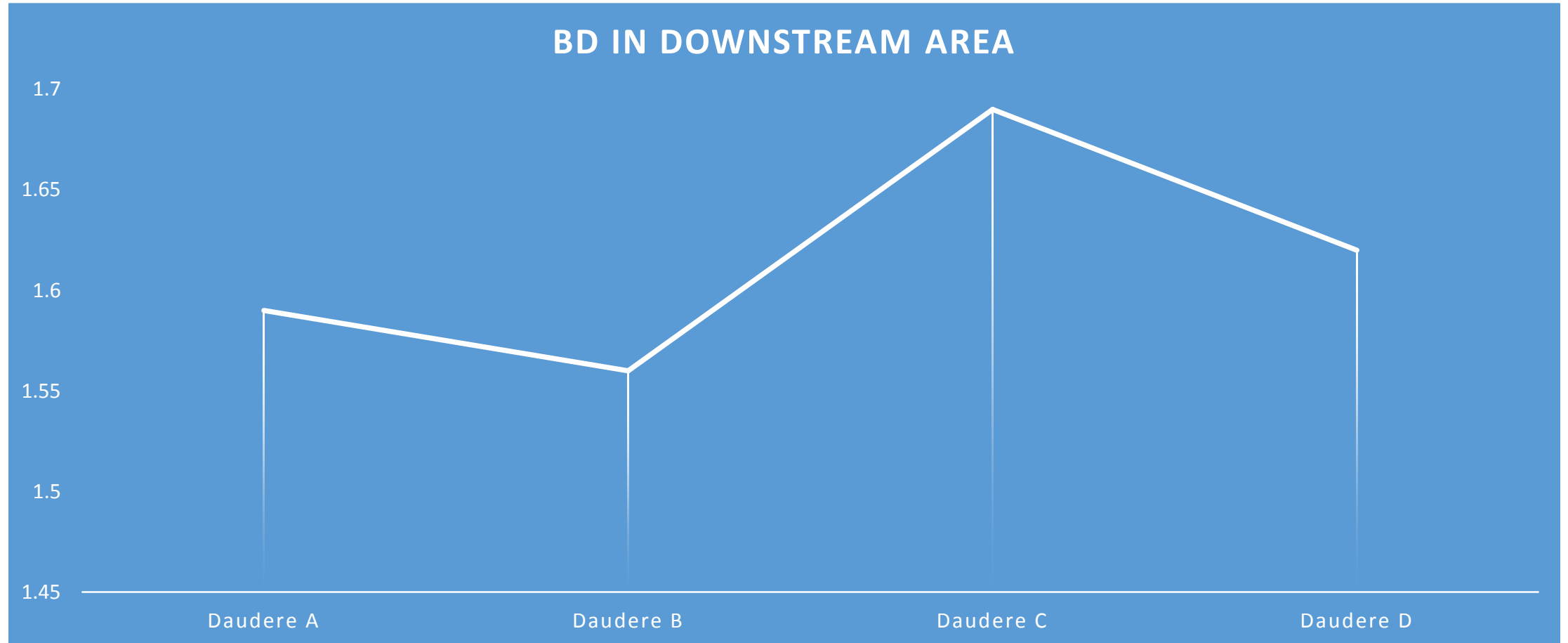
Bulk Density in Upstream Area



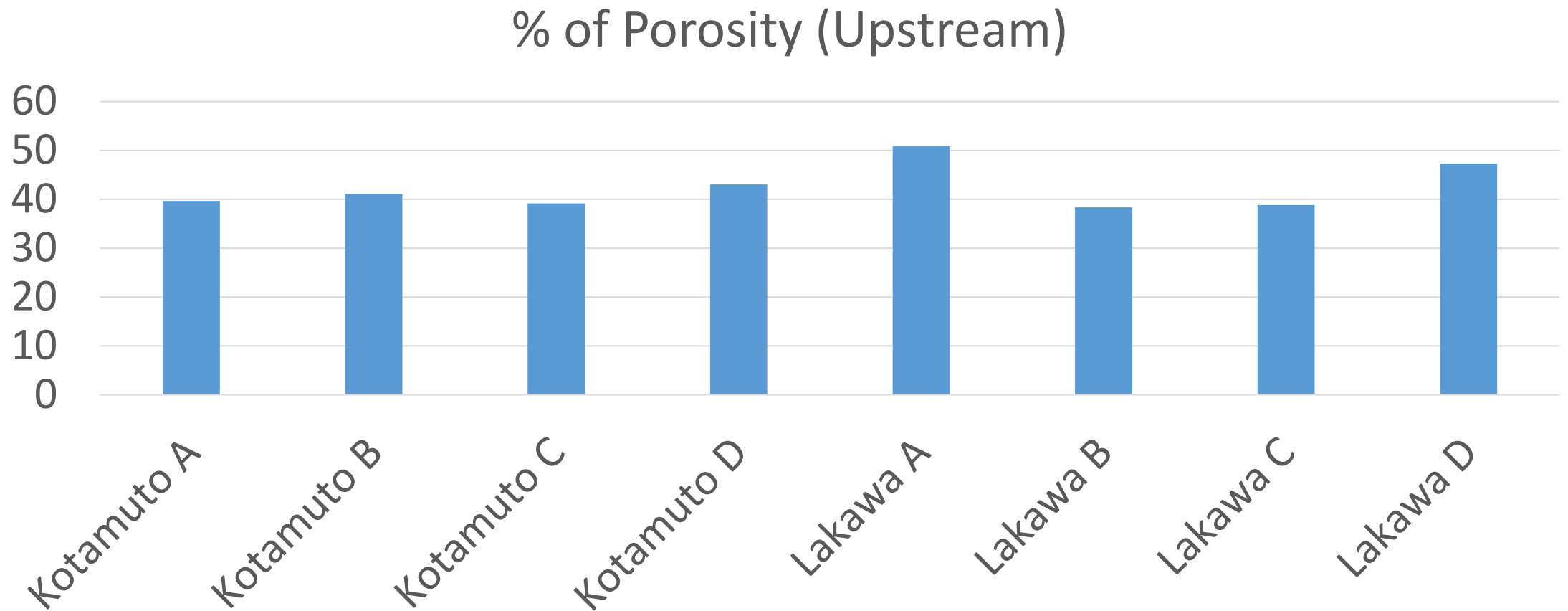
Bulk Density in midstream area



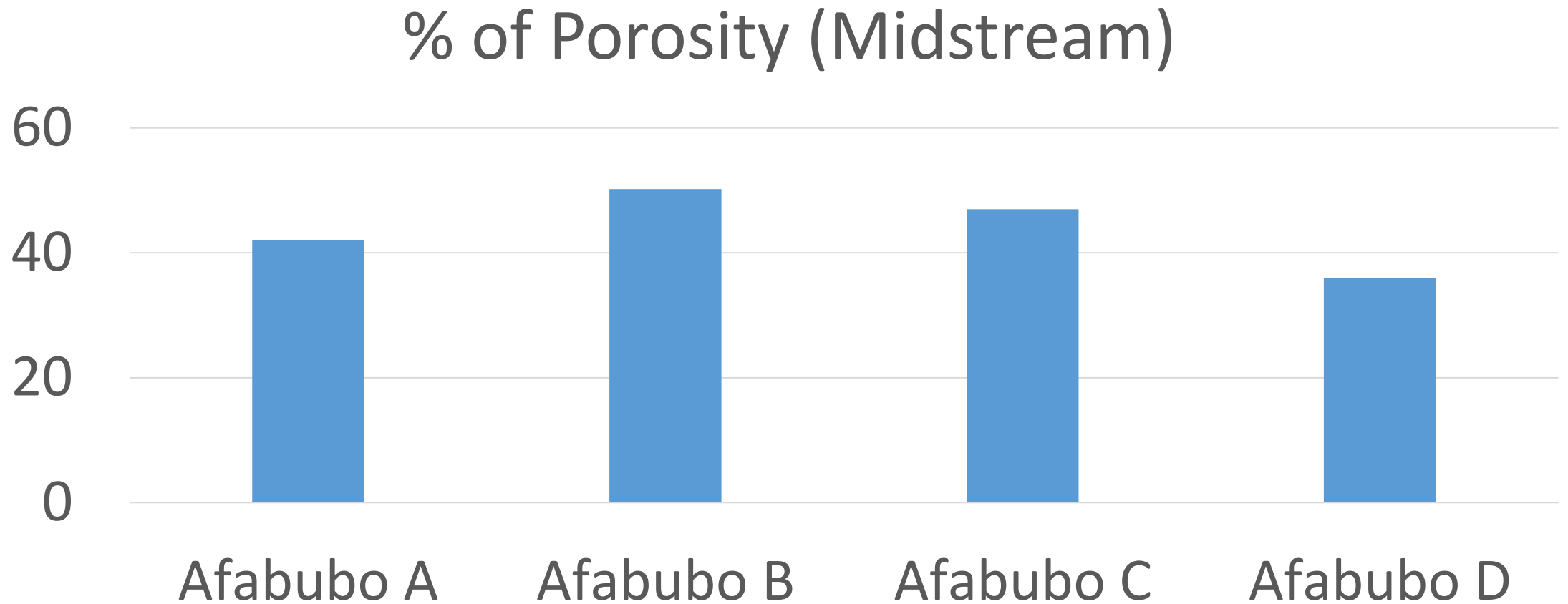
Bulk Density in downstream area



Percentage of soil porosity in upstream area

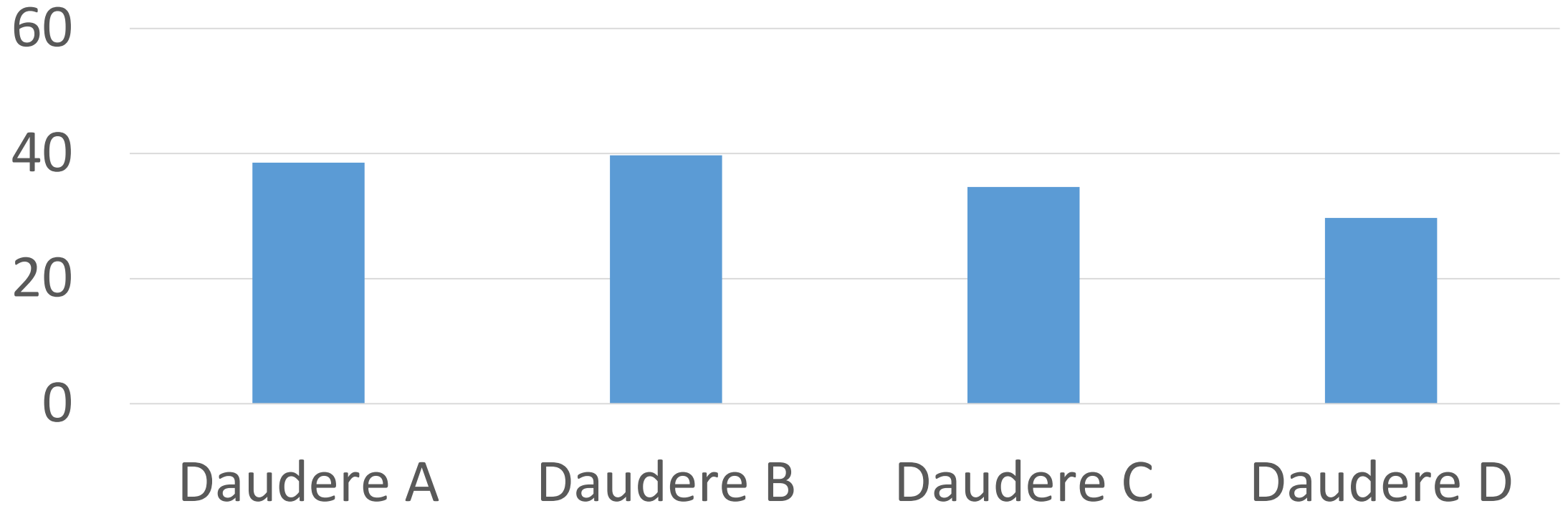


Percentage of soil porosity in midstream area



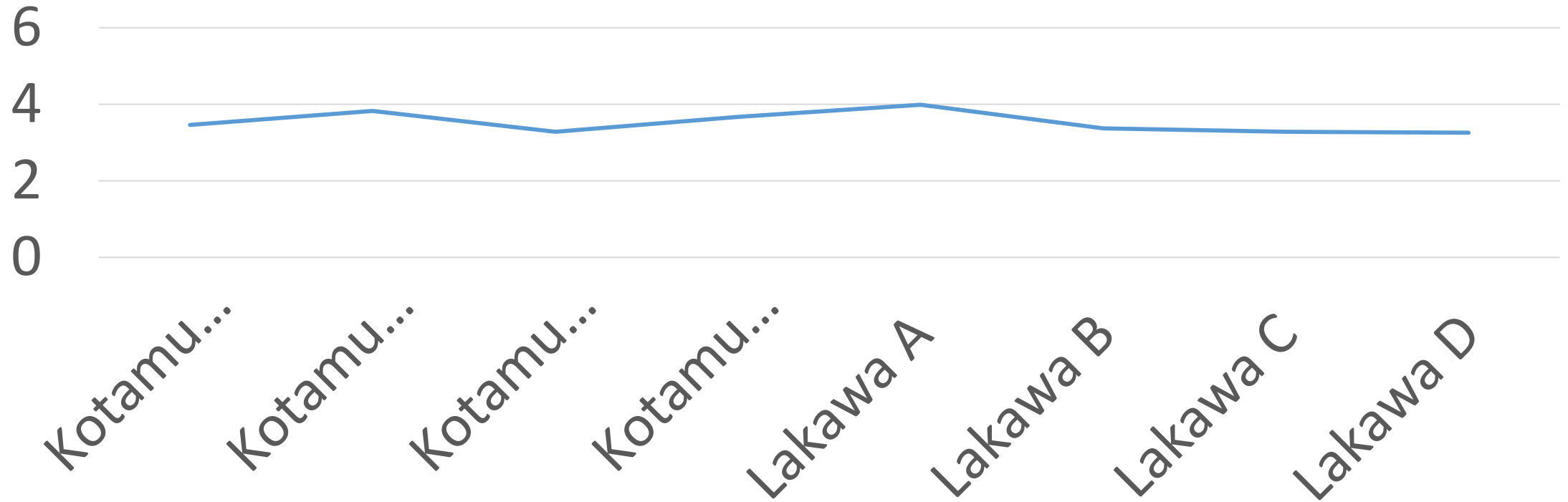
Percentage of soil porosity in downstream area

% of Porosity (Downstream)



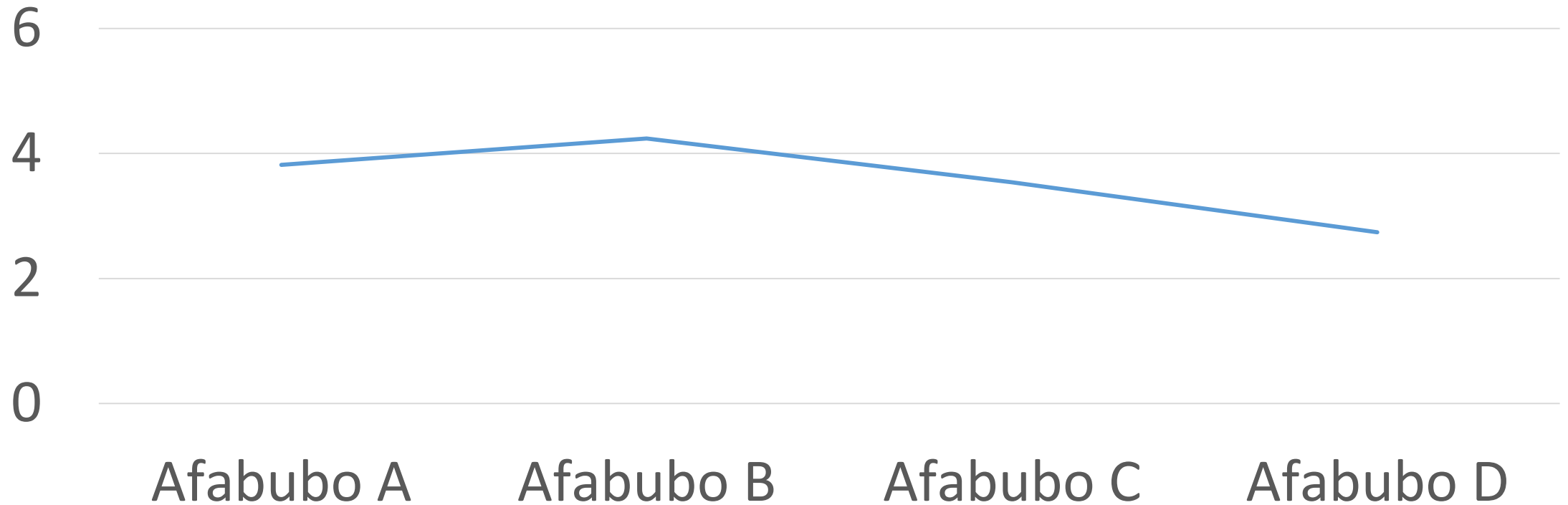
Soil Organic Matter in upstream Area

Soil Organic Matter in Upstream area



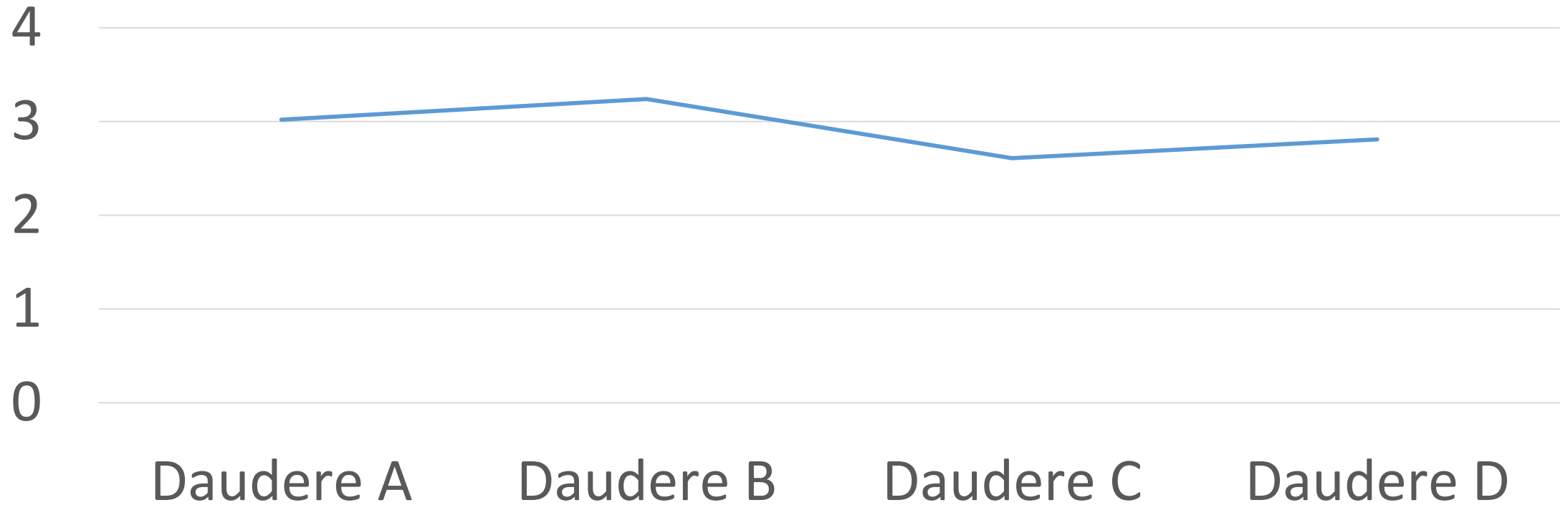
Soil Organic Matter in Midstream Area

Soil Organic Matter in Midstream area



Soil Organic Matter in downstream Area

Soil Organic Matter in Downstream Area



Soil degradation & remedial measures in Timor-Leste

- Historically, soil degradation in Timor-Leste started during colonial times (1718, Timor Portugal), continued during the Indonesian occupation, and persists today.

Some remedial measures:

- **In political level; UNCCD ratification in 2006, on going preparation (NAP to Combat land degradation, strengthening traditional law (Tara Bandu) in 2010.**
- **Agencies & Cooperation projects; SALT (CARE International 2011),** reforestation (WV-TL), Agroforestry project EU, Conservation Agriculture (FAO), CBNRM (JICA) Climate Change Adaptation Project (Hivos) etc.

By looking at soil physical properties in Raumoco Watershed, what will be the next steps to achieve SDGs particularly on objective 15 (Life on Land) in Timor-Leste ?



Thank you for your
attention