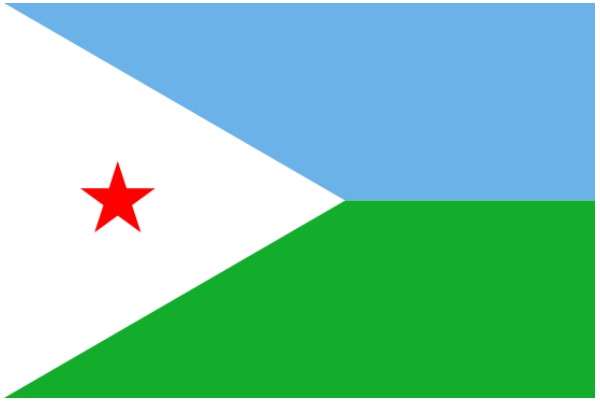


Djibouti

A Profile of Malaria Control and Epidemiology

May 2016

INFORMATION FOR MALARIA

World Health Organization

Regional Office for the Eastern Mediterranean

Introduction & Context

National Malaria Strategy 2006-2010

République de Djibouti

Ministère de la santé

Direction des Programmes Prioritaires de Santé

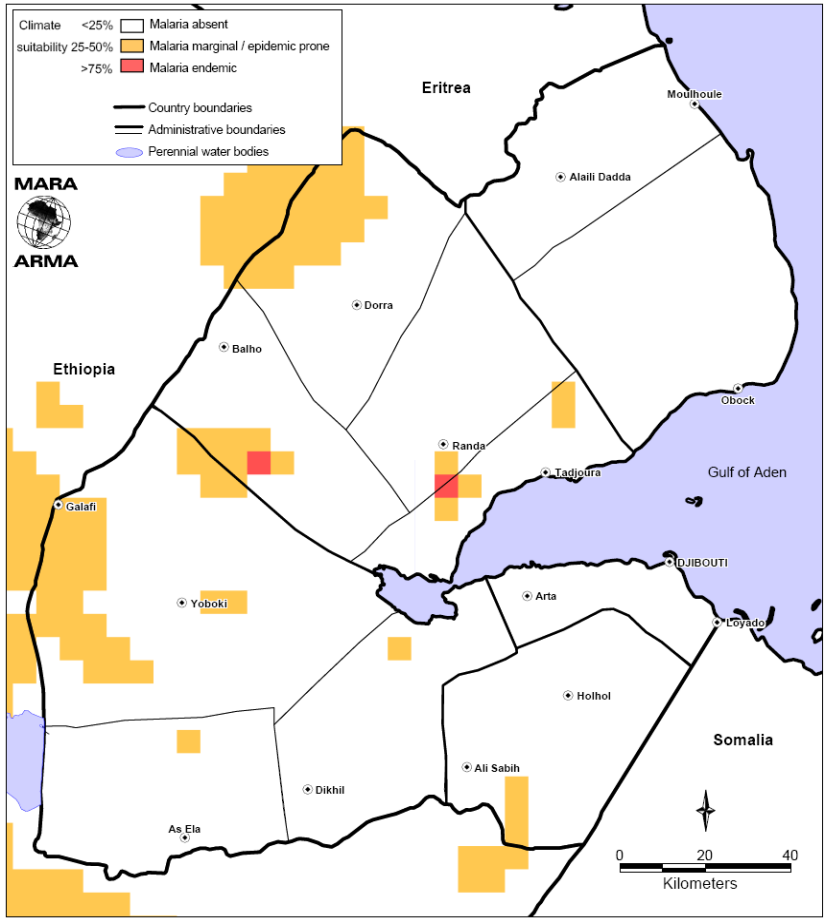
PROGRAMME NATIONAL DE LUTTE CONTRE LE PALUDISME

PLAN STRATEGIQUE POUR LA LUTTE CONTRE LE PALUDISME EN REPUBLIQUE DE DJIBOUTI

2006-2010

(Mis à jour en Janvier 2009)

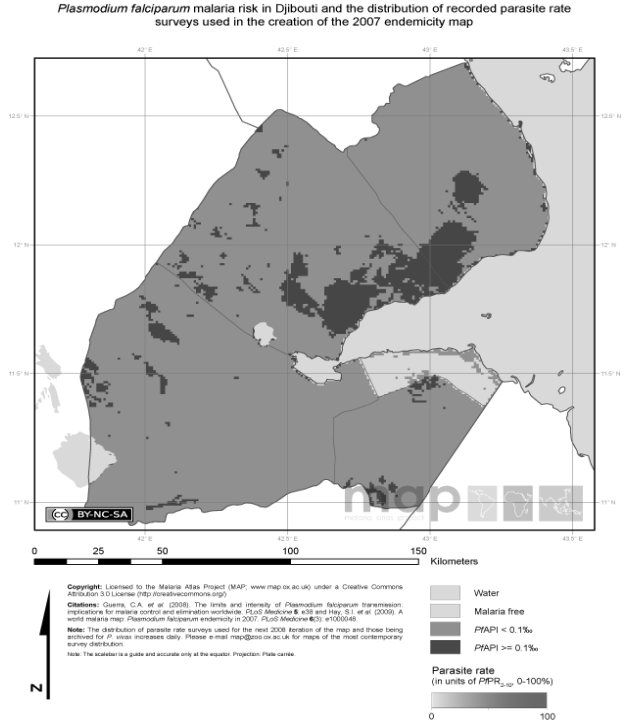
Djibouti: Distribution of Endemic Malaria



This map is a product of the MARA/ARMA collaboration (http://www.mara.org.za). July 2005, Medical Research Council, PO Box 70380, Overport, 4067, Durban, South Africa
CORE FUNDERS of MARA/ARMA: International Development Research Centre, Canada (IDRC); The Wellcome Trust UK; South African Medical Research Council (MRC); Swiss Tropical Institute, Multilateral Initiative on Malaria (MIM) / Special Programme for Research & Training in Tropical Diseases (TDR), Roll Back Malaria (RBM).
Malaria distribution model: Craig, M.H. et al. 1999. Parasitology Today 15: 105-111.
Topographical data: African Data Sampler, WRI, http://www.igc.org/wri/sdis/maps/ads/ads_idx.htm.

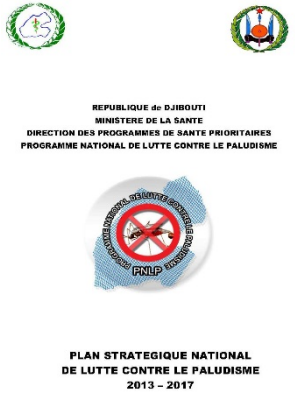
REPUBLIQUE de DJIBOUTI
MINISTERE DE LA SANTE
DIRECTION DES PROGRAMMES DE SANTE PRIORITAIRES
PROGRAMME NATIONAL DE LUTTE CONTRE LE PALUDISME

PLAN STRATEGIQUE NATIONAL
DE LUTTE CONTRE LE PALUDISME
2013 – 2017



National Malaria Strategy 2013-2017

Strates	Critères : Cas de Paludisme pour 1000 habitants	Caractéristiques des strates		
		Nombre de district	Population de la strate	Situation géographique et transmission
Strate 1	< = 1	3	Population sédentaire =	Les 4 districts de Tadjourah, Obock, Arta et la capitale Djibouti Ville Endémicité très faible
Strate 2	1<>5	2	Population sédentaire =	Les 2 districts de Dikhil et Ali Sabieh, Endémicité faible
Strate3	Hétérogène		Nomades transfrontaliers, Réfugiés, Migrants	L'ensemble du territoire Cas importés



In 2013-2017 national strategy, in recognition of pre—elimination ambitions

Objective 2: …100% of malaria cases detected, including cross-border nomadic populations, refugee camps and migrants within 24 hours by the end of 2017

Objective 4: Reinforce in a continuous manner the epidemiological surveillance system, monitoring and evaluation, including active detection of all cases and all transmission foci by the end of 2017

REPUBLIQUE de DJIBOUTI
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PLAN STRATEGIQUE NATIONAL
DE LUTTE CONTRE LE PALUDISME
2013 - 2017

Intervention 4.1. Set up a geo-referenced database in close collaboration with Système National d'Information Sanitaire (SNIS)

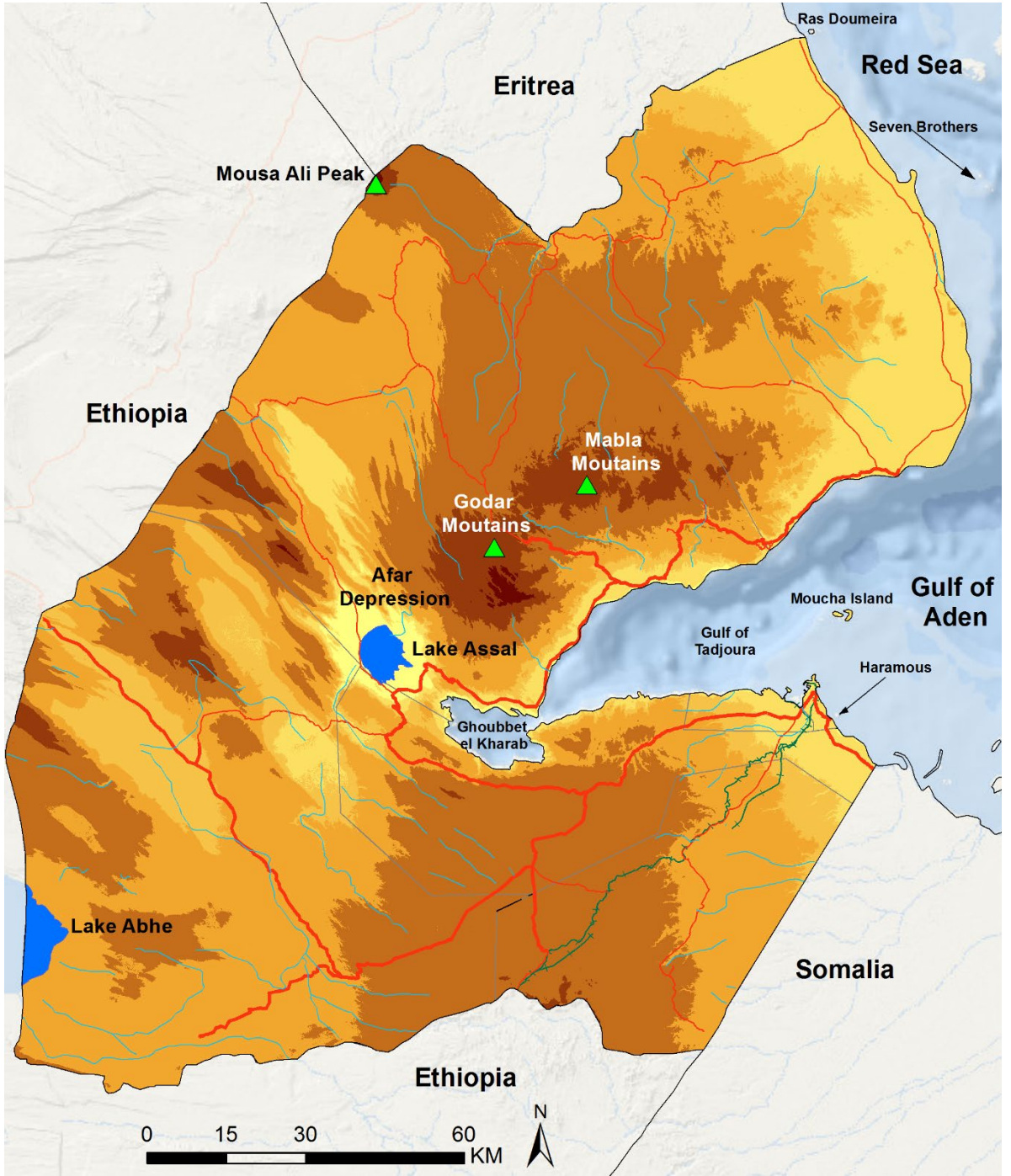
Intervention 4.3. Set up an active case detection and investigation reporting system; reporting within 24 hours, case-investigation within 5 days, mapping foci and active case finding and treatment within 2 km of cases system for the elimination of residual parasites and interruption of transmission

Intervention 4.4. Implement the investigation, classification and mapping of transmission foci using a geographic information system (GIS) and early warning system

Intervention 4.5. Regularly update the epidemiological profile of the country including a sero-prevalence survey to target strategic and operational interventions at program level

Topography & Climate

Topography and location



Primary Road

Secondary Road

Railway Line

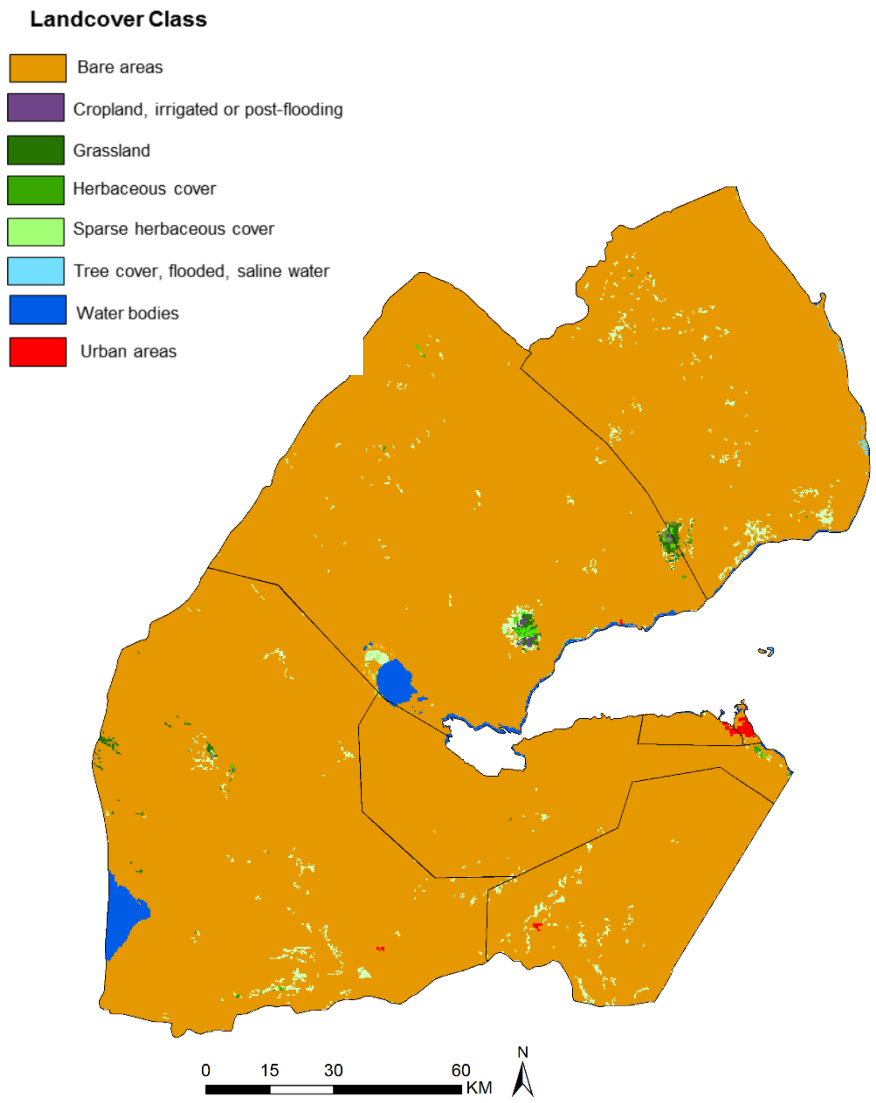
Seasonal River

Lake

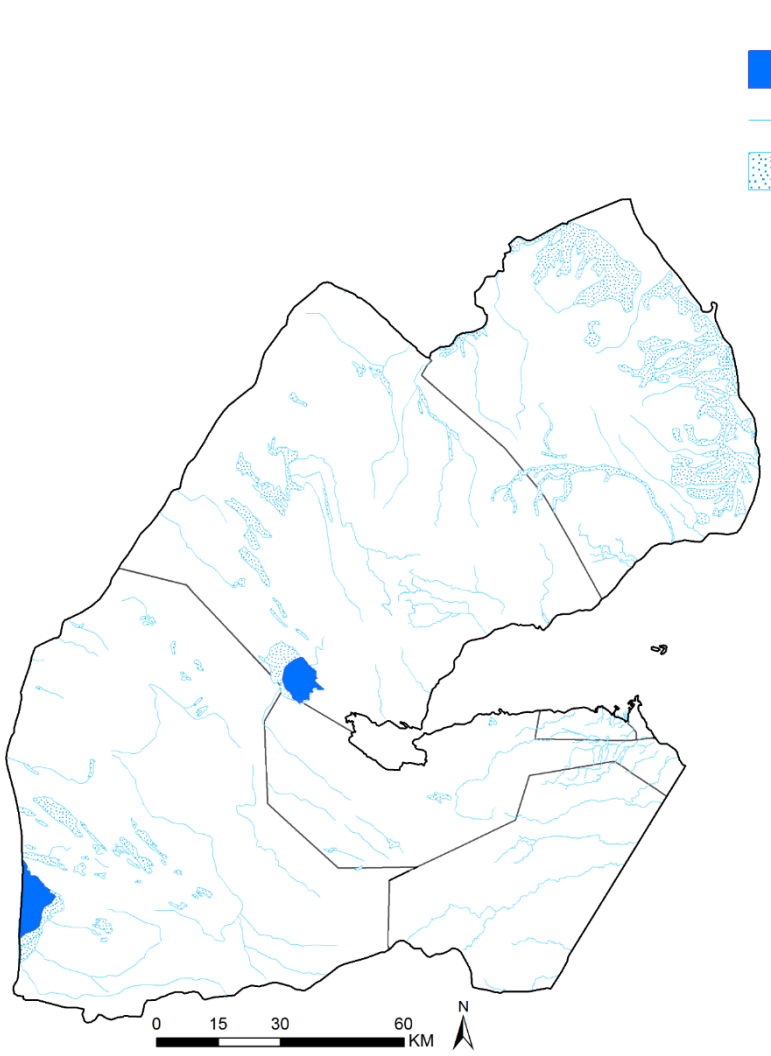
Elevation (m A.S.L)

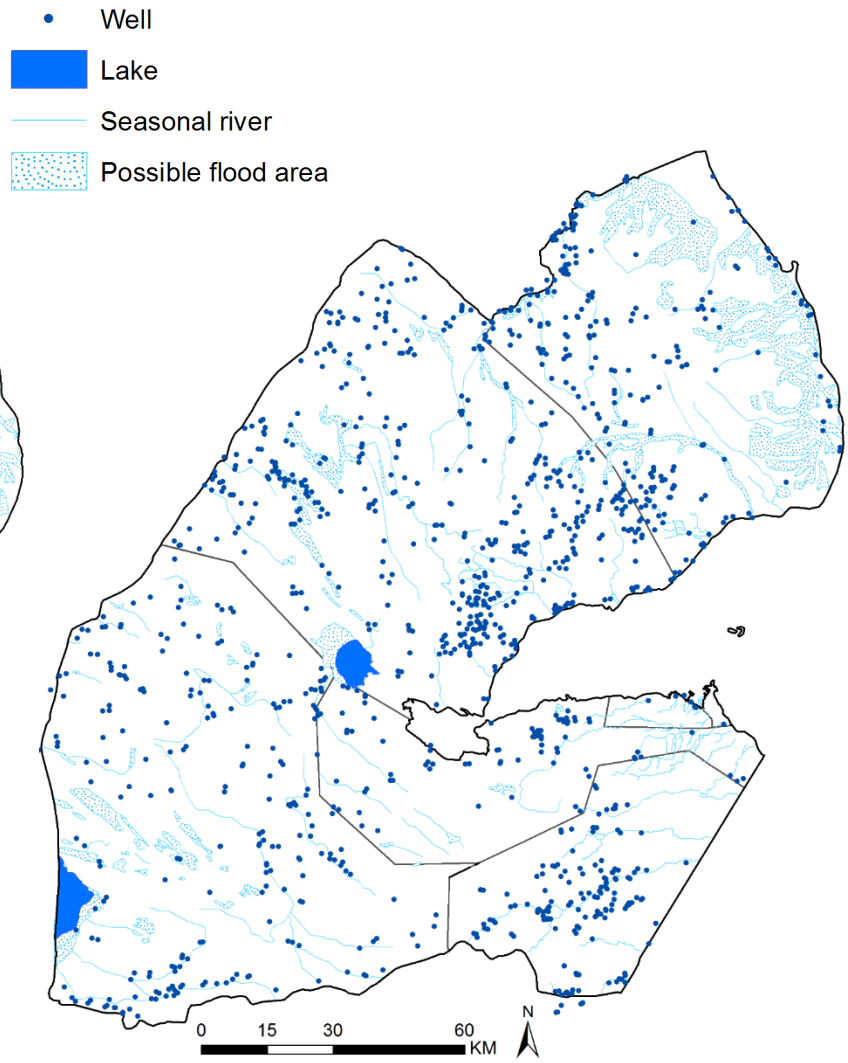
- Below Sea Level
- 0 - 100
- 100 - 200
- 200 - 500
- 500 - 1,000
- 1,000 - 1,500
- > 1,500

Globcover Bare Areas

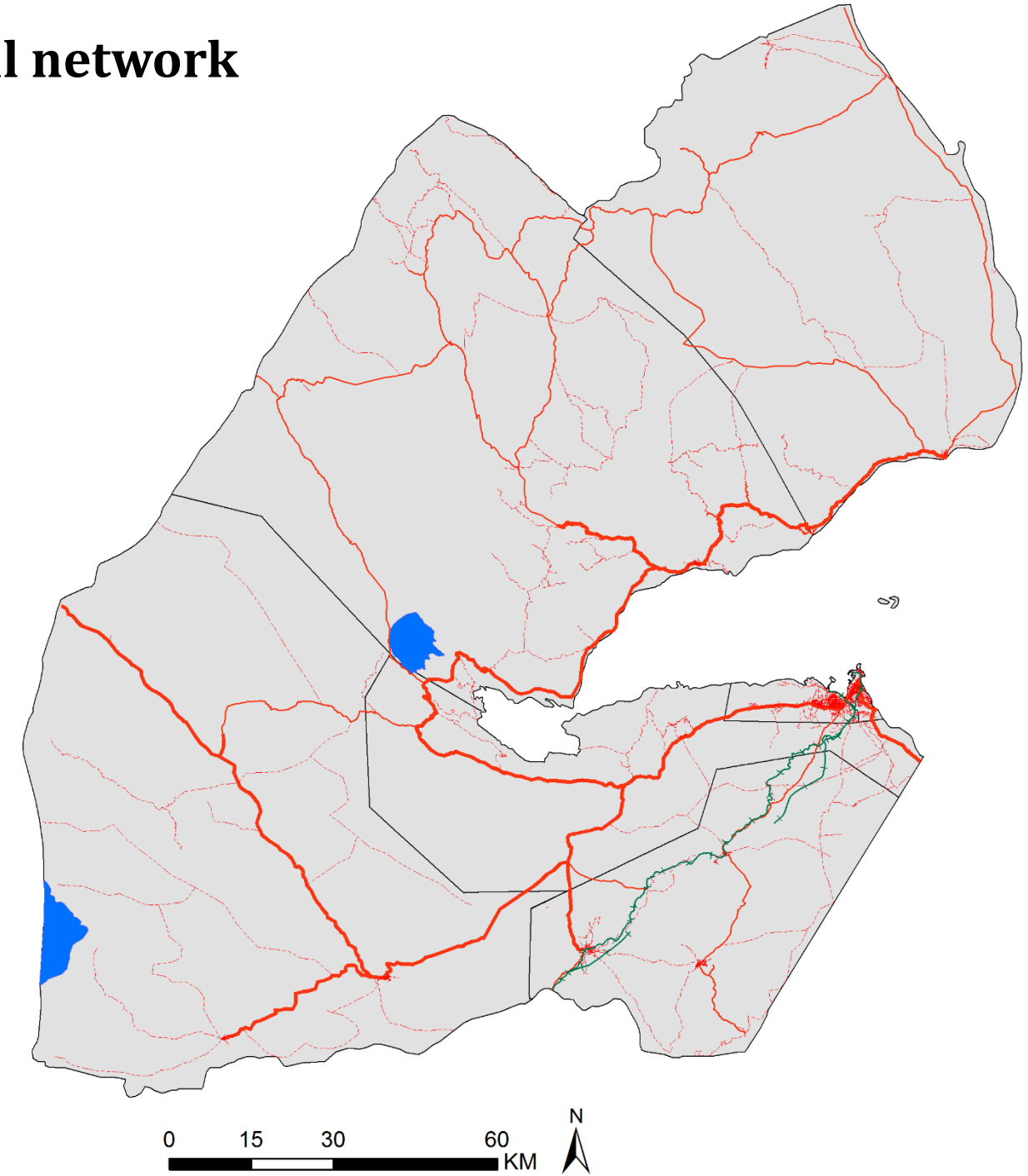


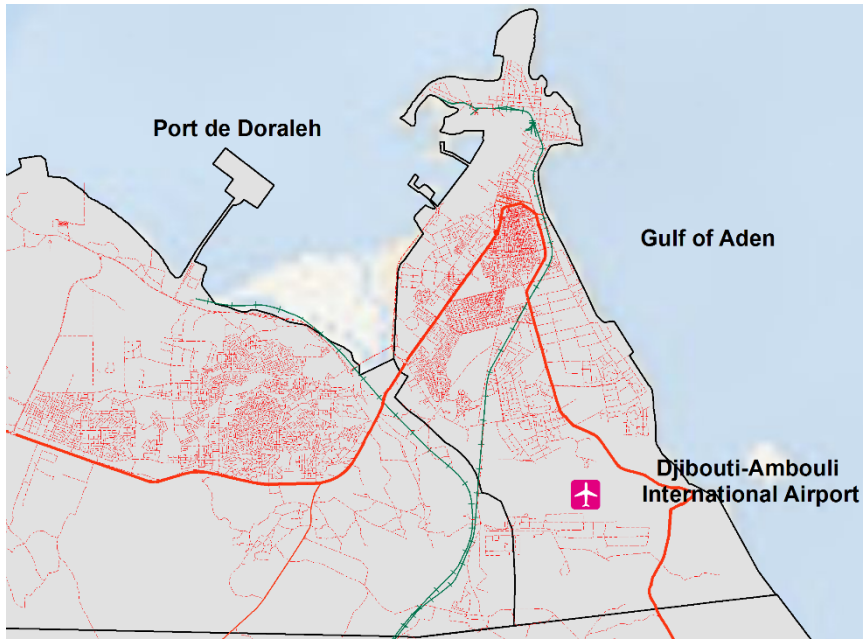
Inland water





Road & Rail network





Primary Road

Secondary Road

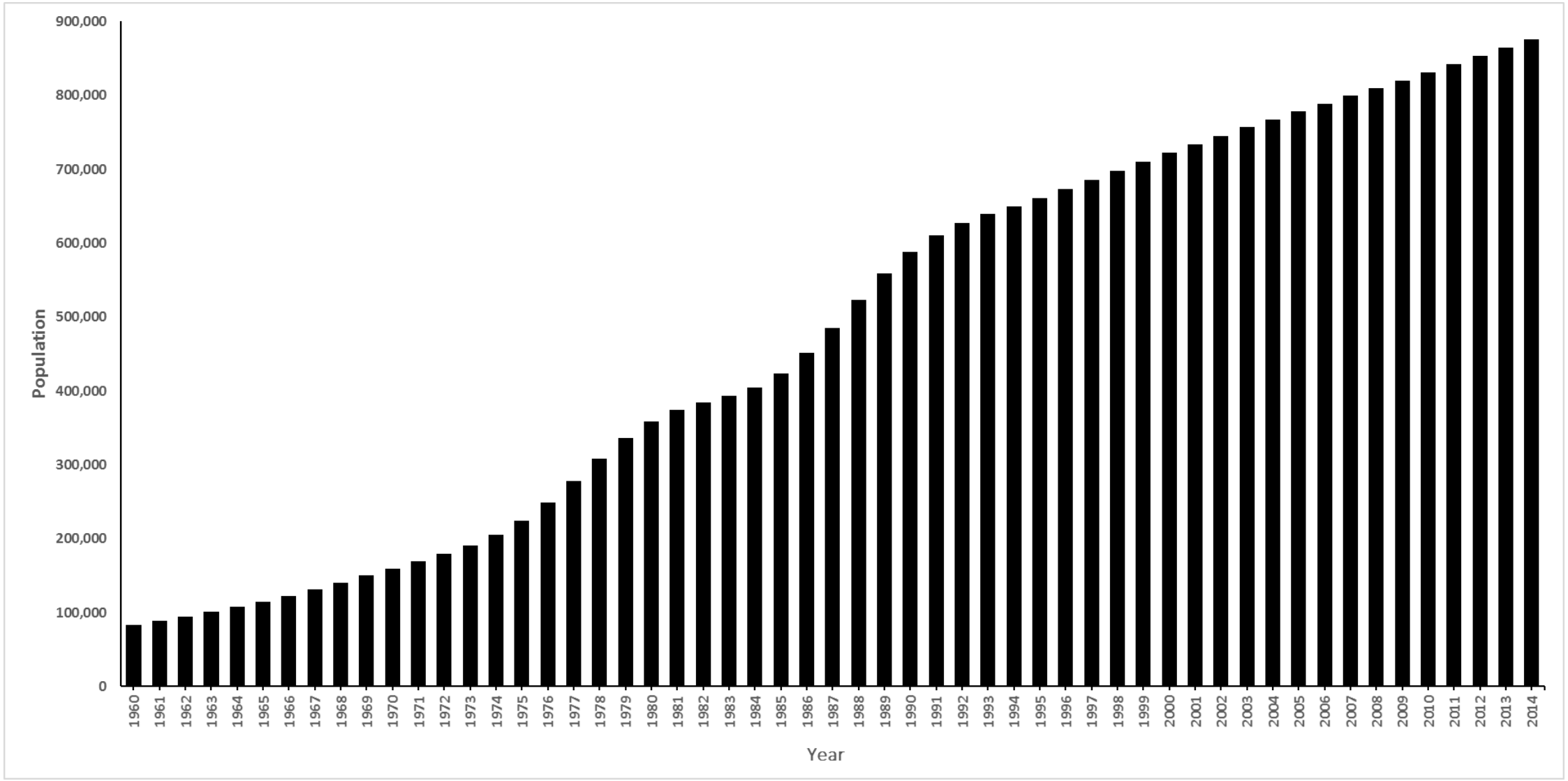
Tertiary Road

Railway Line

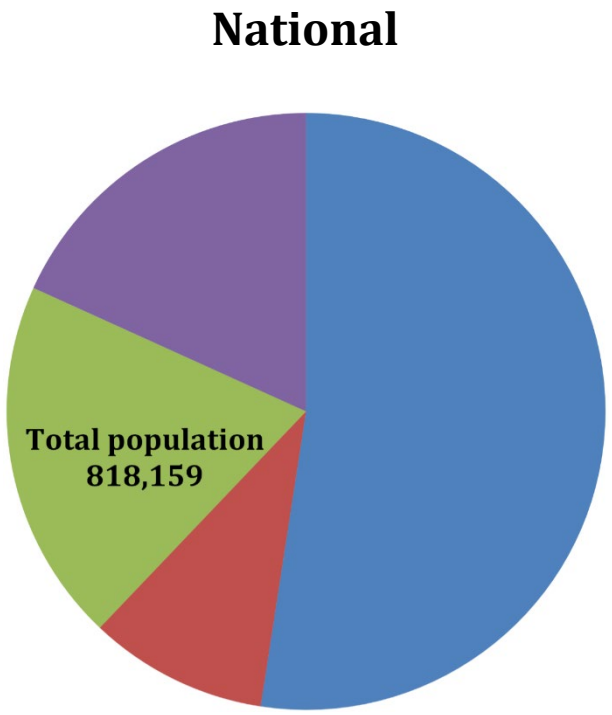
Lake

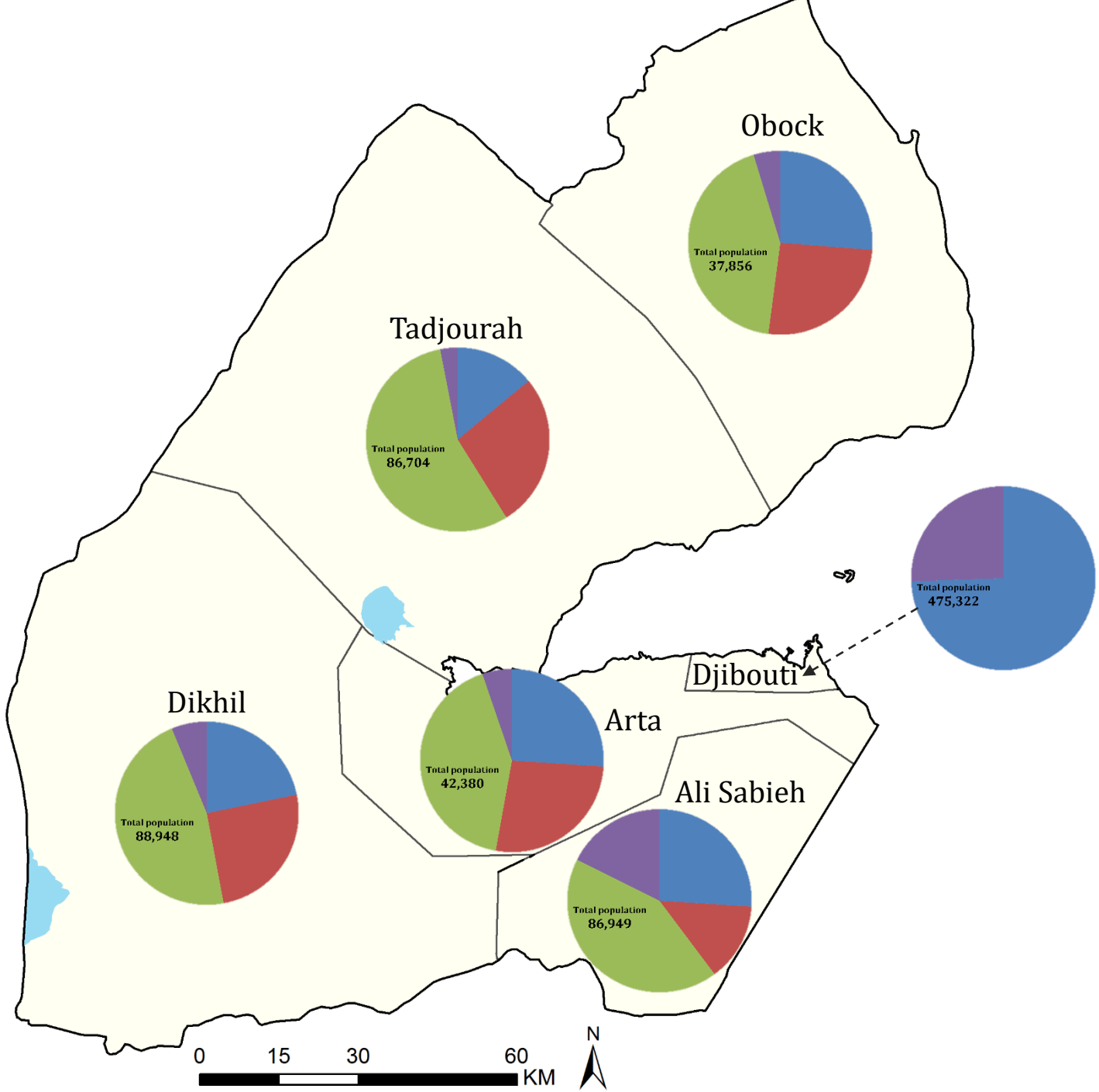
Population & Settlement

Projected population growth 1960-2014



Population settlement categories from 2009 census by region





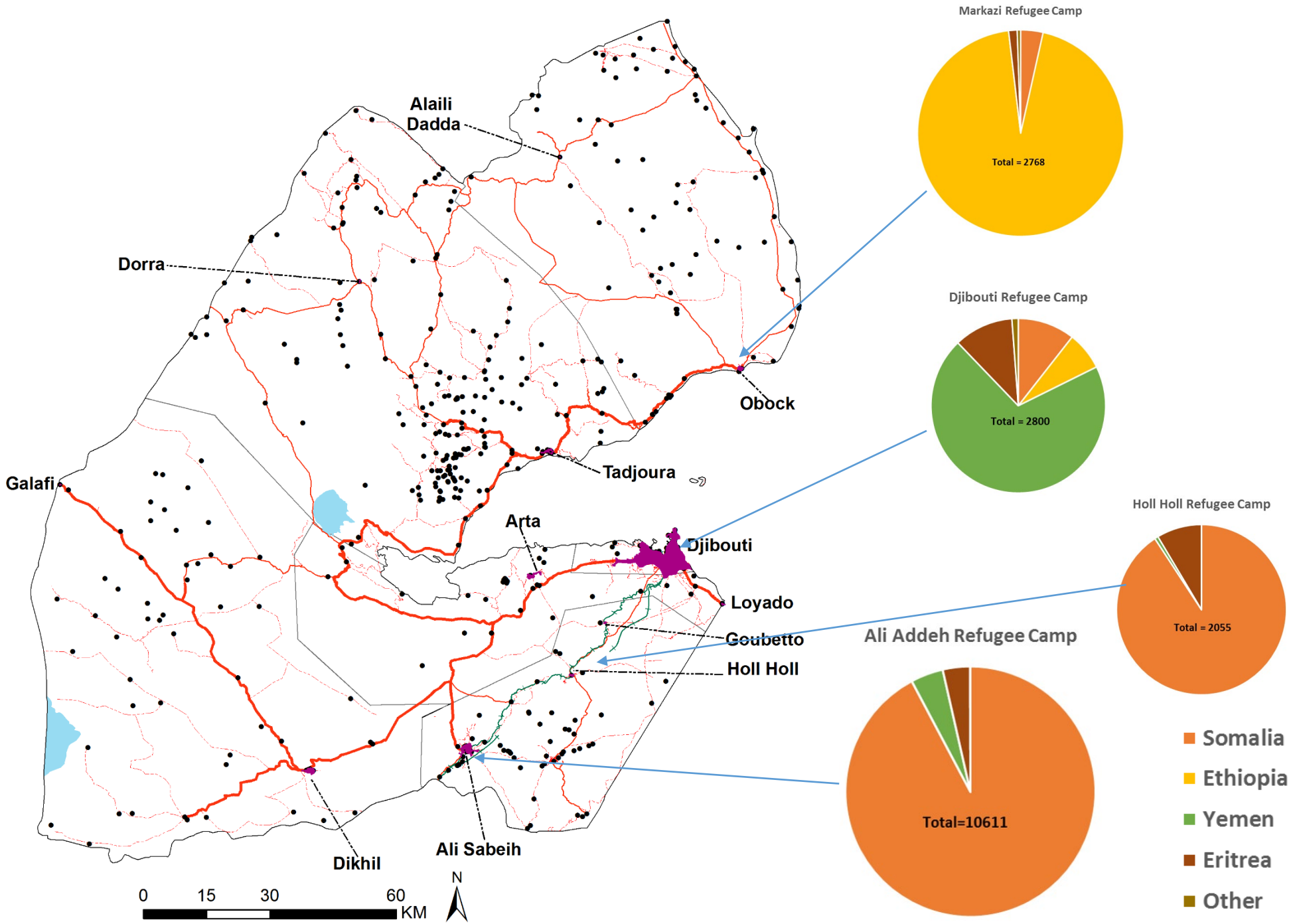
Urban

Rural

Nomadic

Special

Urban areas (purple), refugees (2015) and settlements (dots)

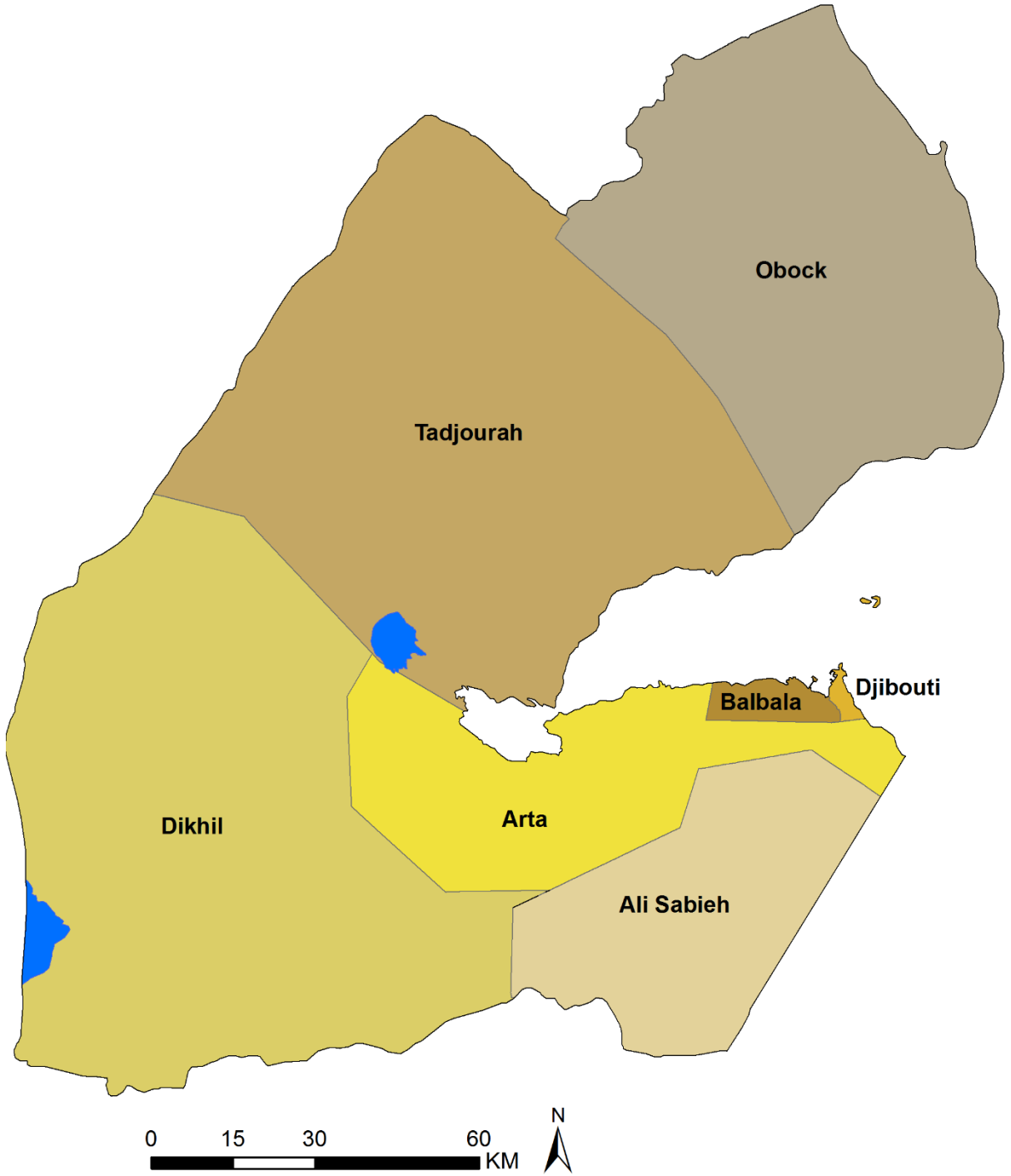


Djiboutiville & suburbs

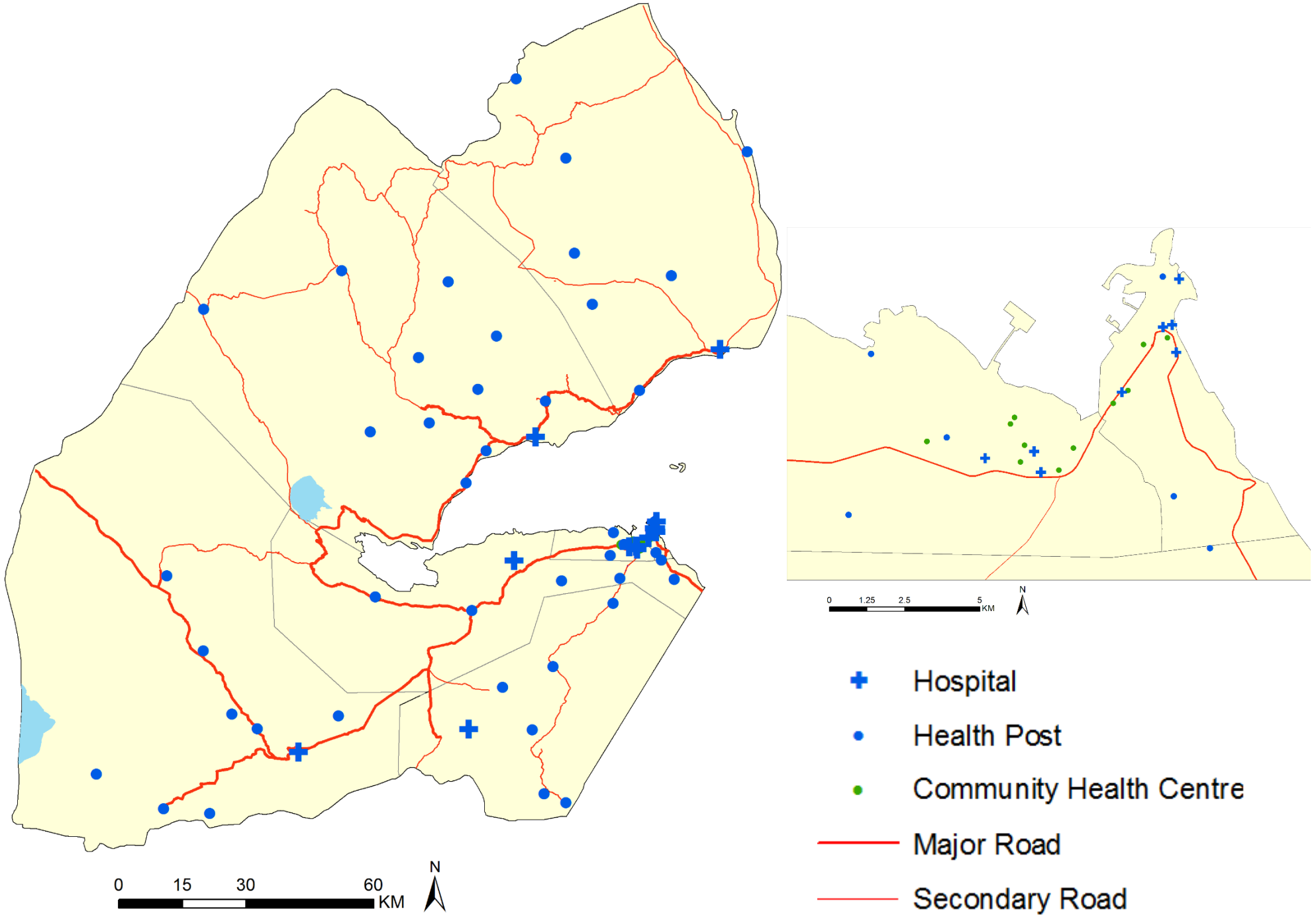
Airport
Cemetery
Millitary Base
Sector
Community Health Centre
Hospital
River
Railway

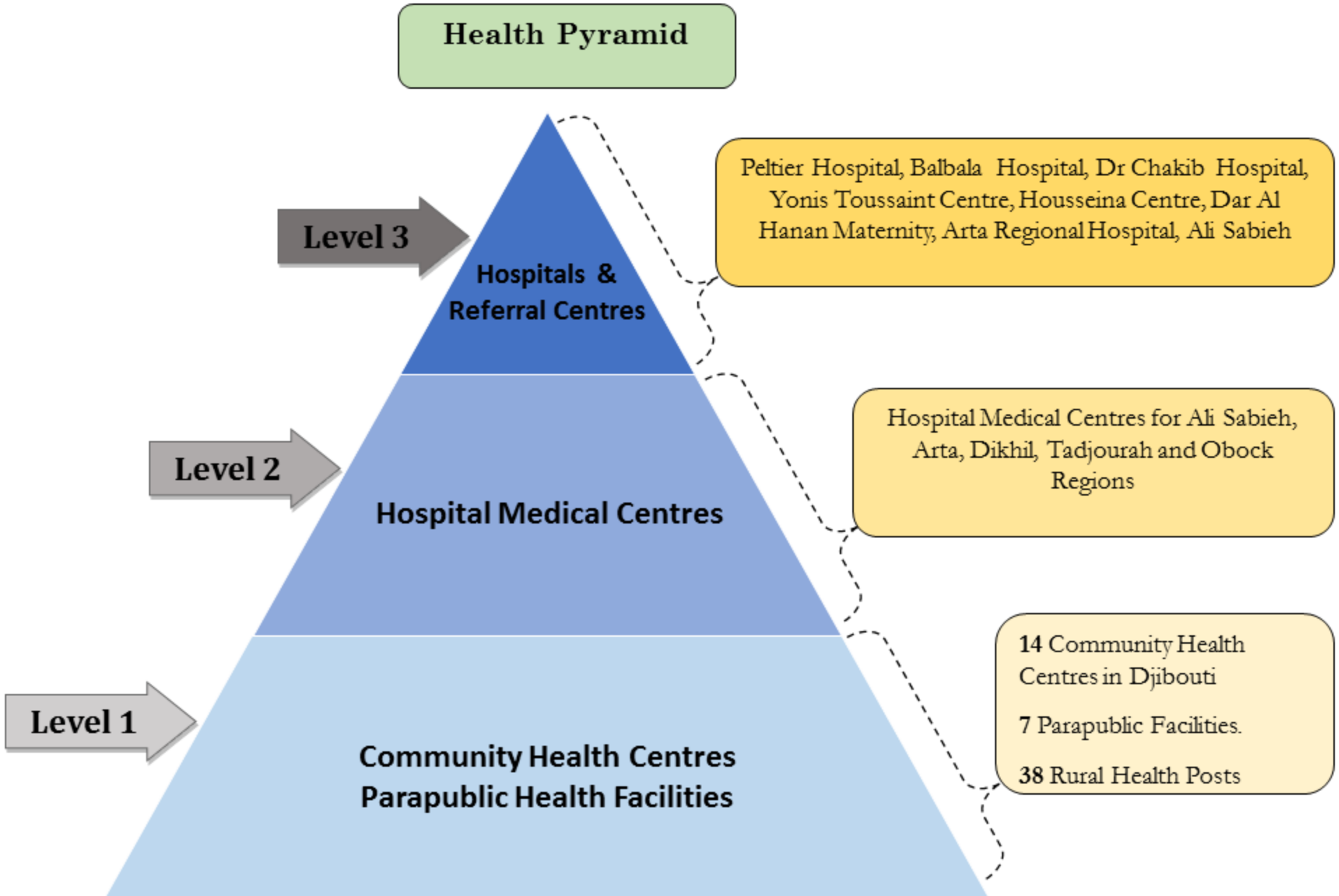
Health Service delivery & Information systems

Health system organisation

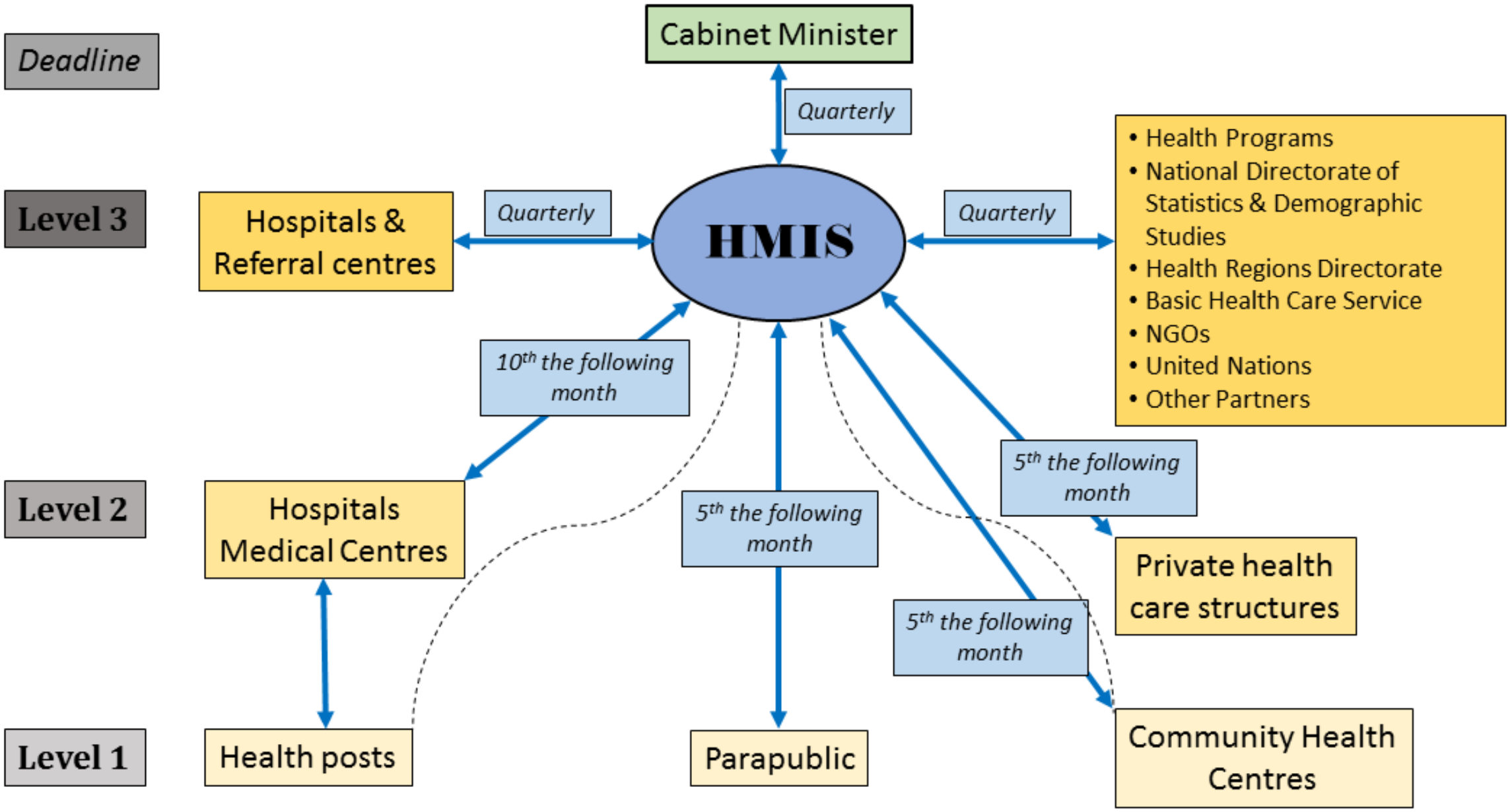


Health service distribution




Health Pyramid
Level 3
Hospitals & Referral Centres
Peltier Hospital, Balbala Hospital, Dr Chakib Hospital, Yonis Toussaint Centre, Housseina Centre, Dar Al Hanan Maternity, Arta Regional Hospital, Ali Sabieh
Level 2
Hospital Medical Centres
Hospital Medical Centres for Ali Sabieh, Arta, Dikhil, Tadjourah and Obock Regions
Level 1
Community Health Centres
Parapublic Health Facilities
14 Community Health Centres in Djibouti
7 Parapublic Facilities.
38 Rural Health Posts

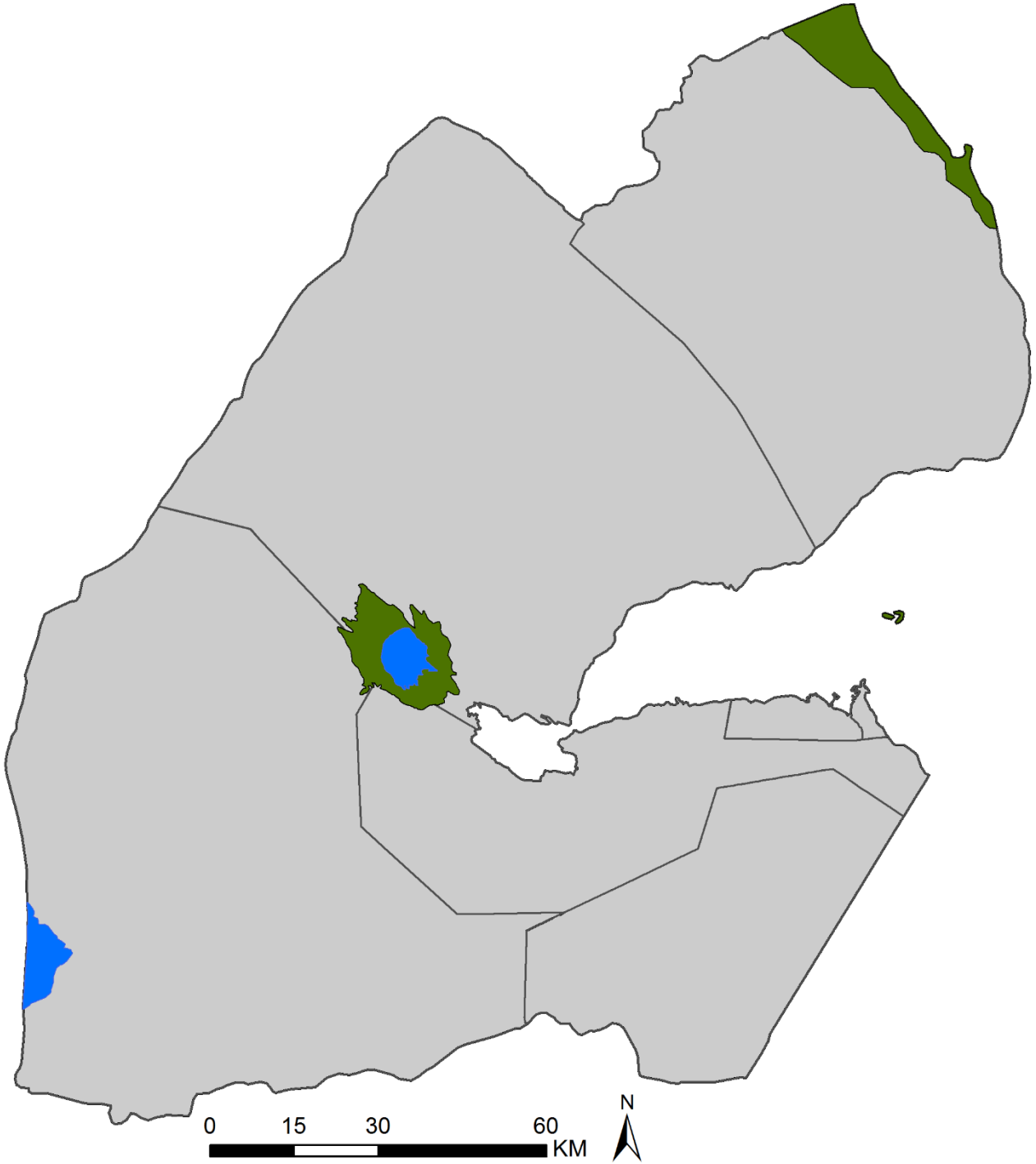
Current situation of the health information system



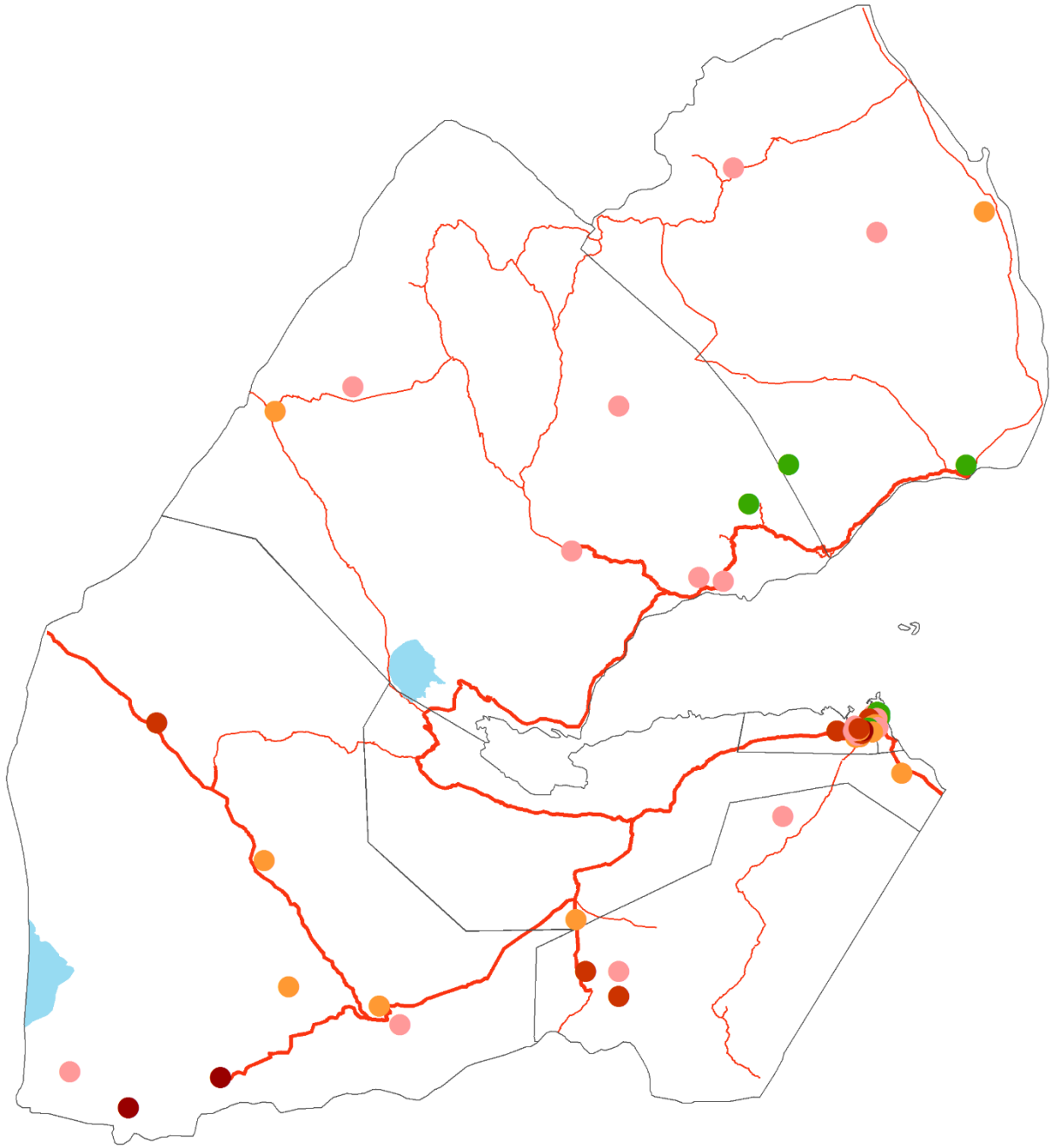
Maps of test positivity 2015-16 if possible from May survey

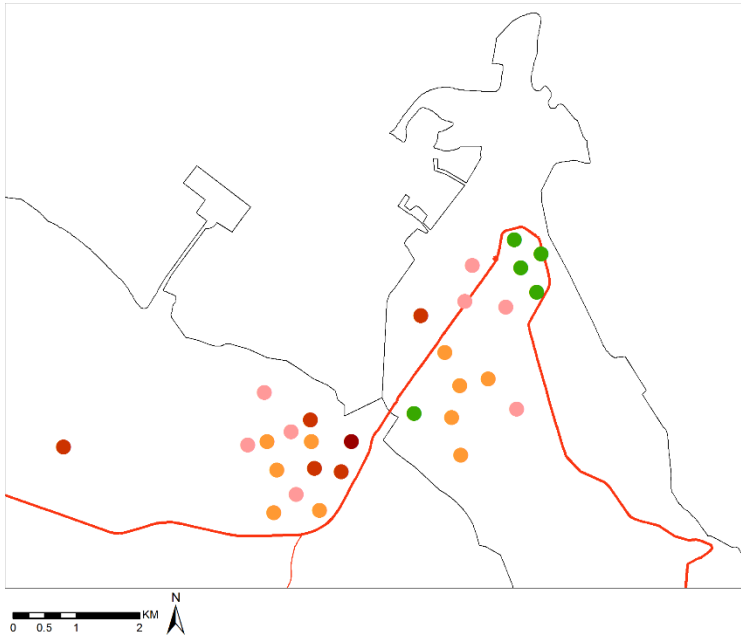
Natural extents of malaria transmission

Natural extents of malaria

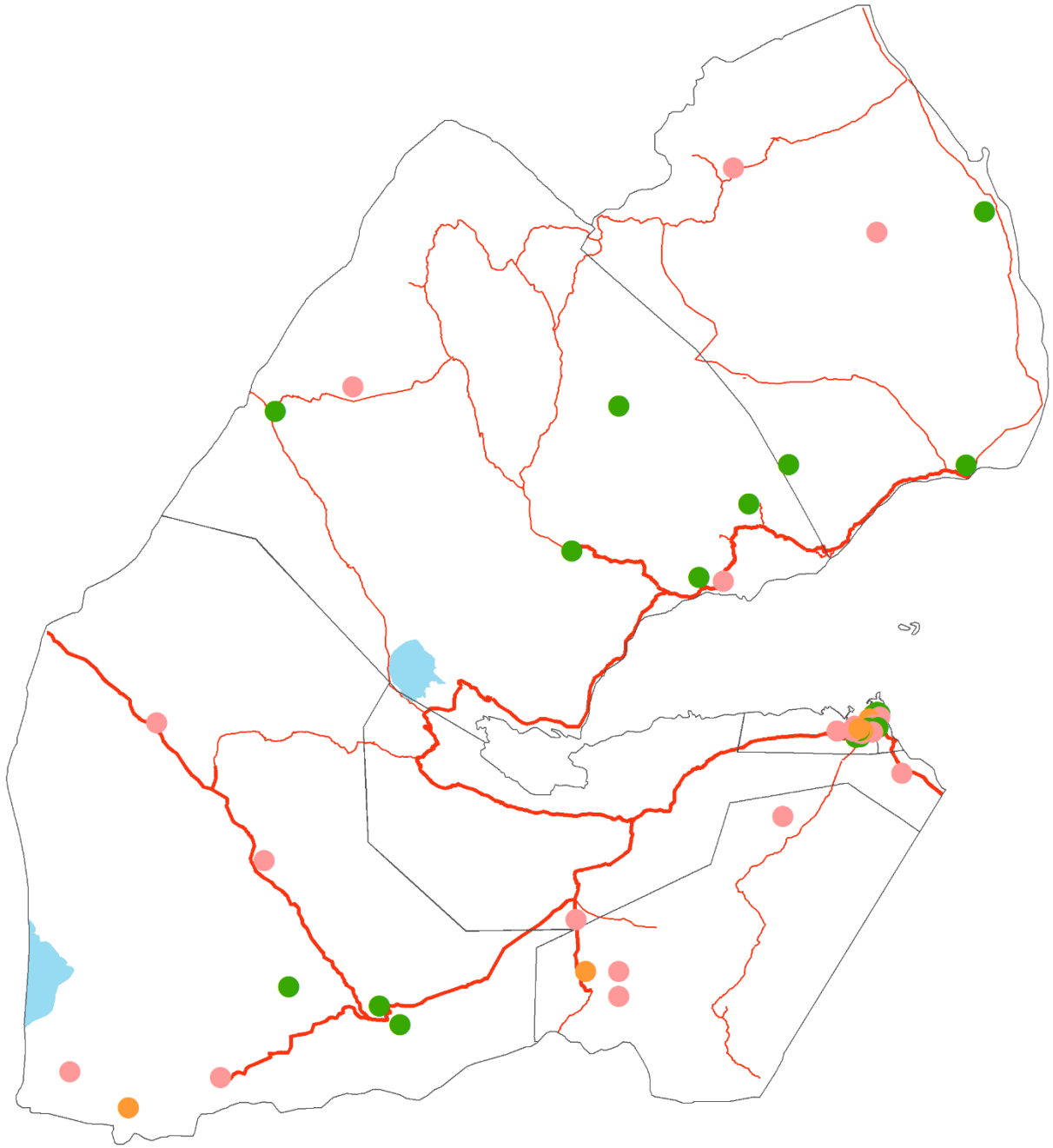


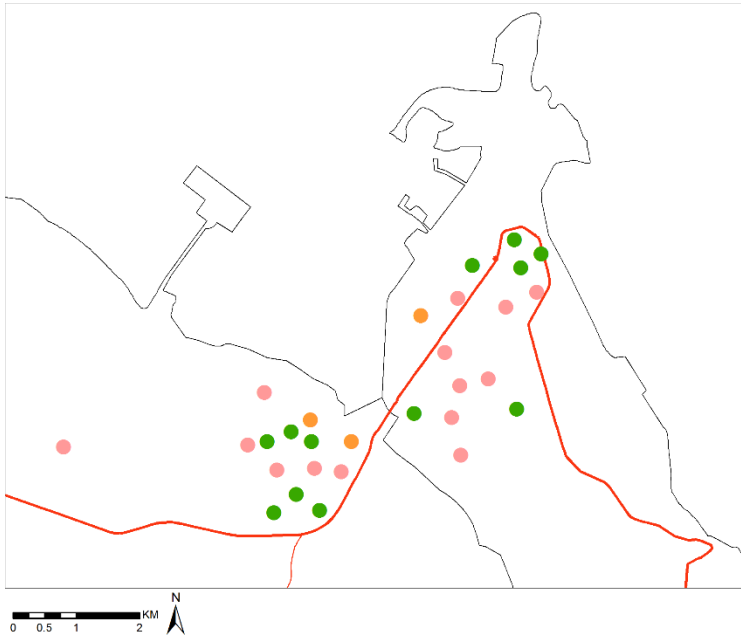
P. falciparum sero-prevalence March 2002



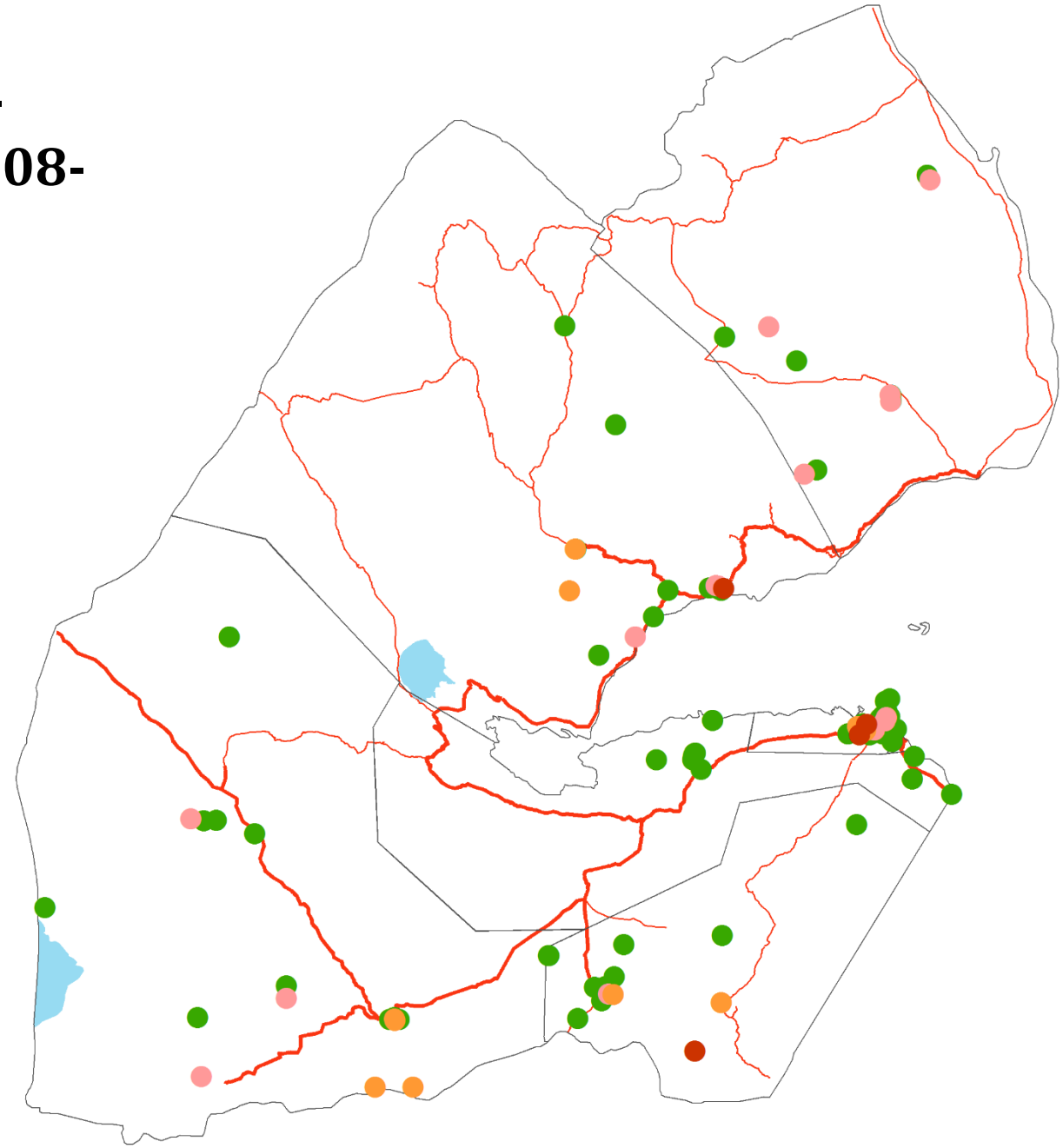


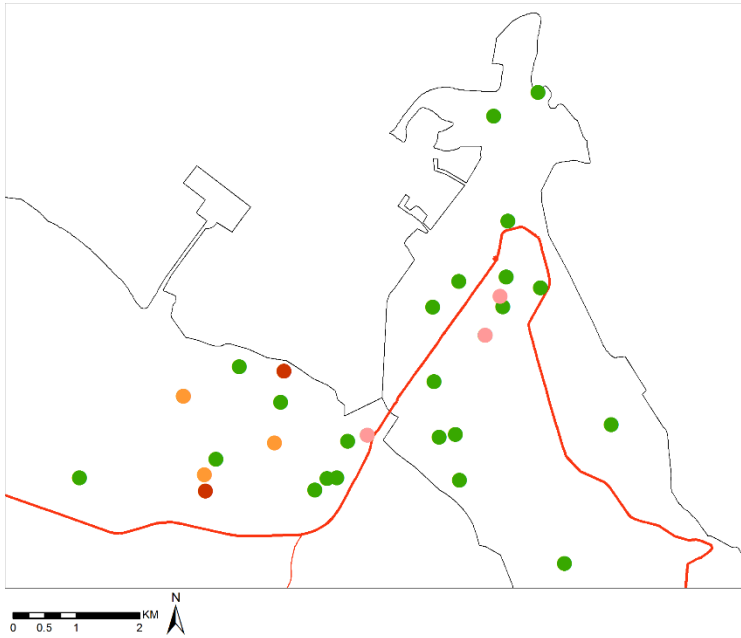
P. vivax sero-prevalence March 2002



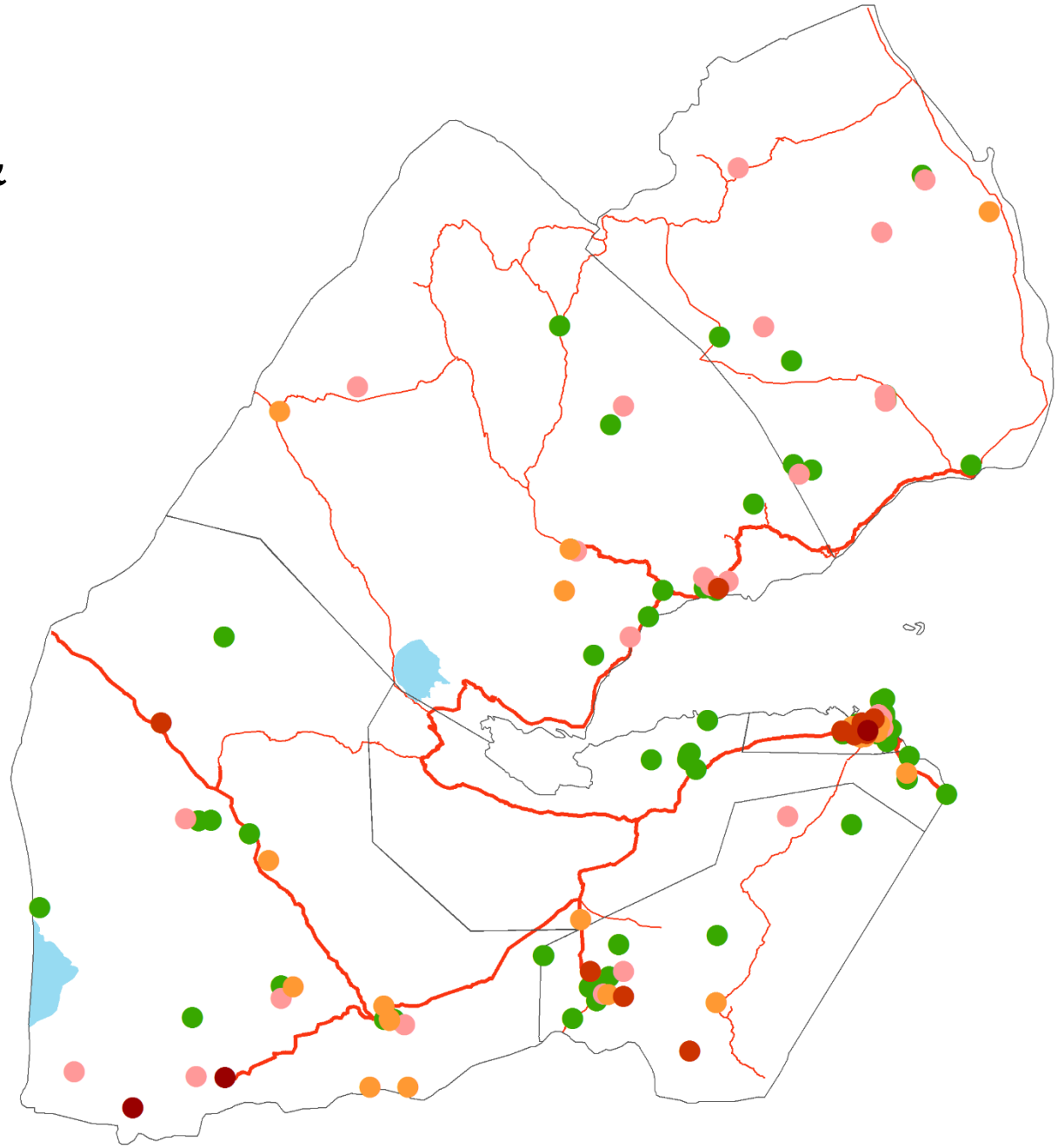


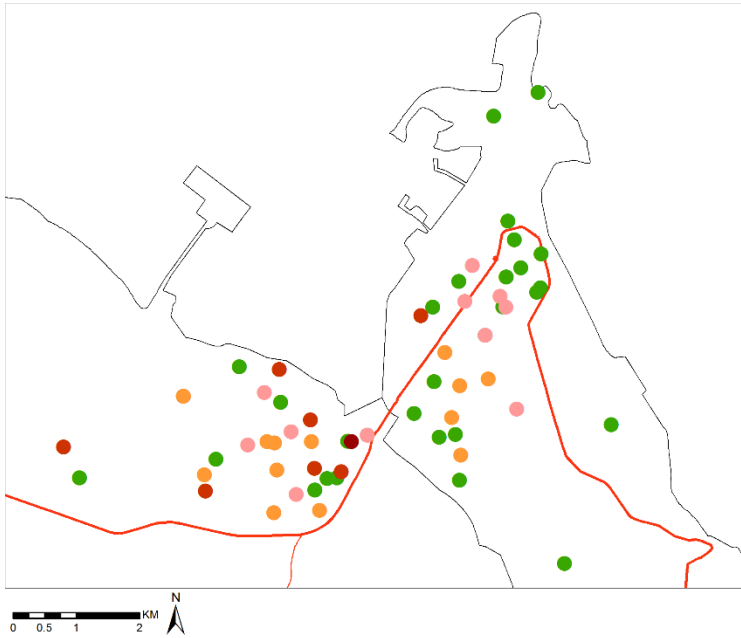
P. falciparum sero-prevalence Nov 2008-Jan 2009



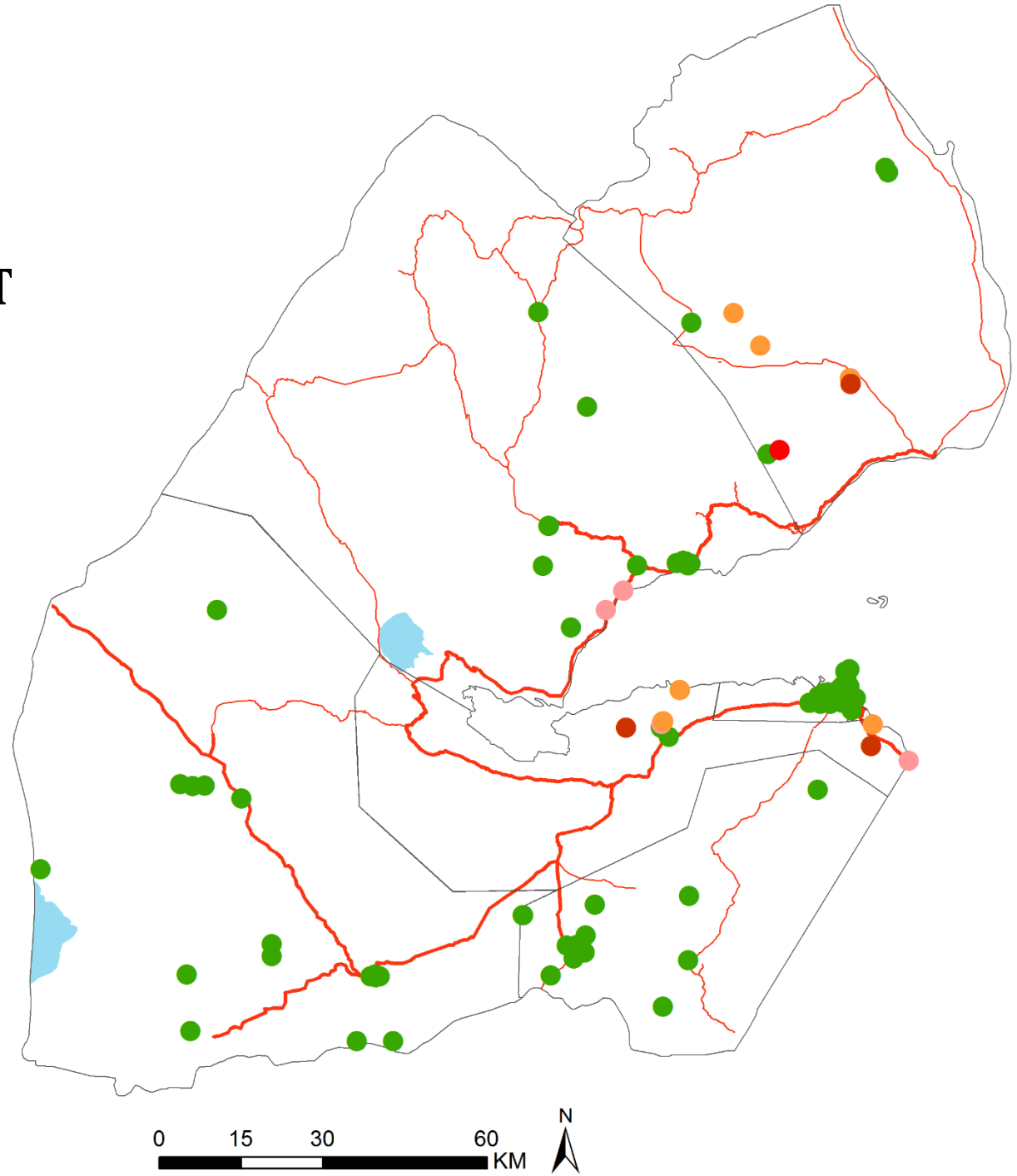


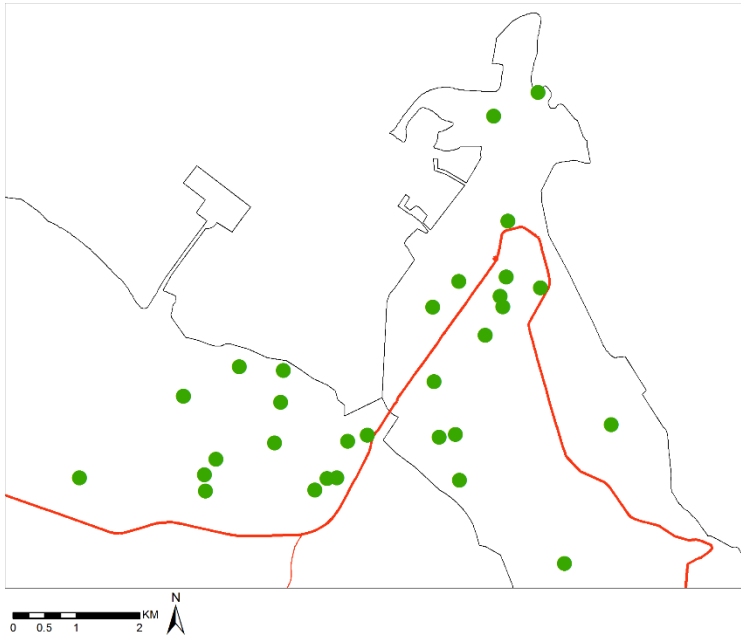
P. falciparum sero-prevalence 2002 & 2008-09



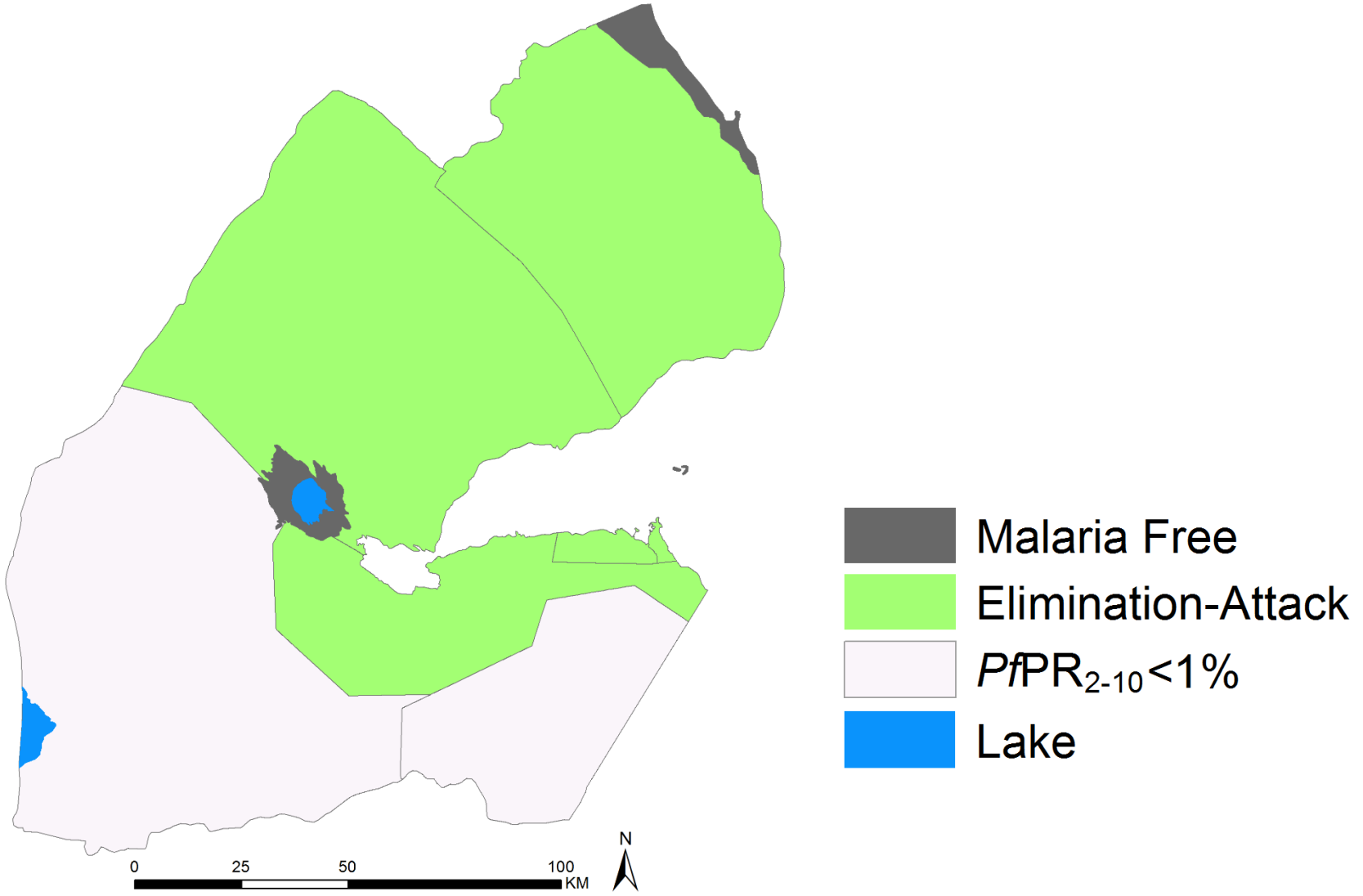


National survey of malaria infection December 2008-January 2009: RDT +PCR results



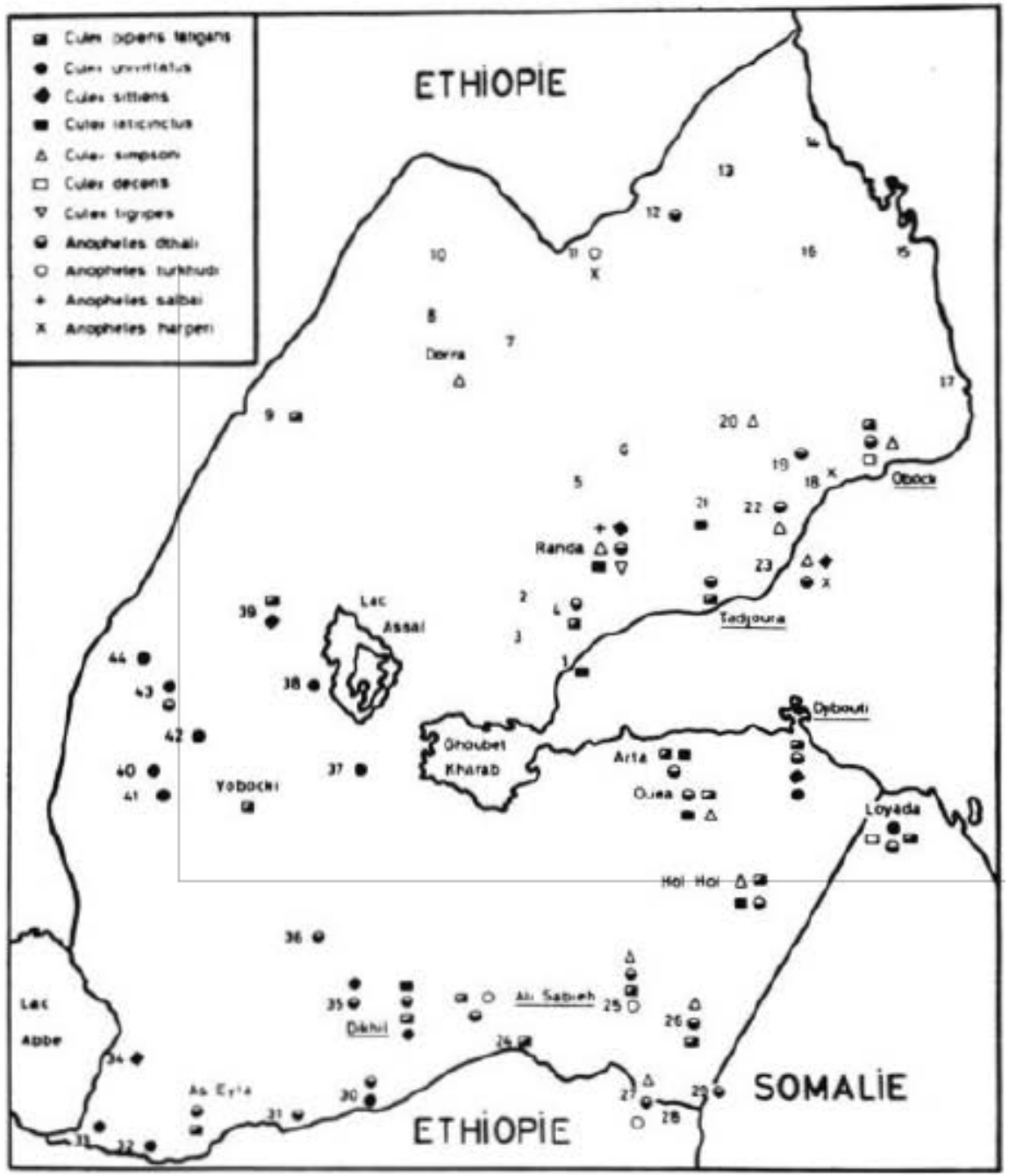


Provisional Malaria Risk map fro Djibouti 2015



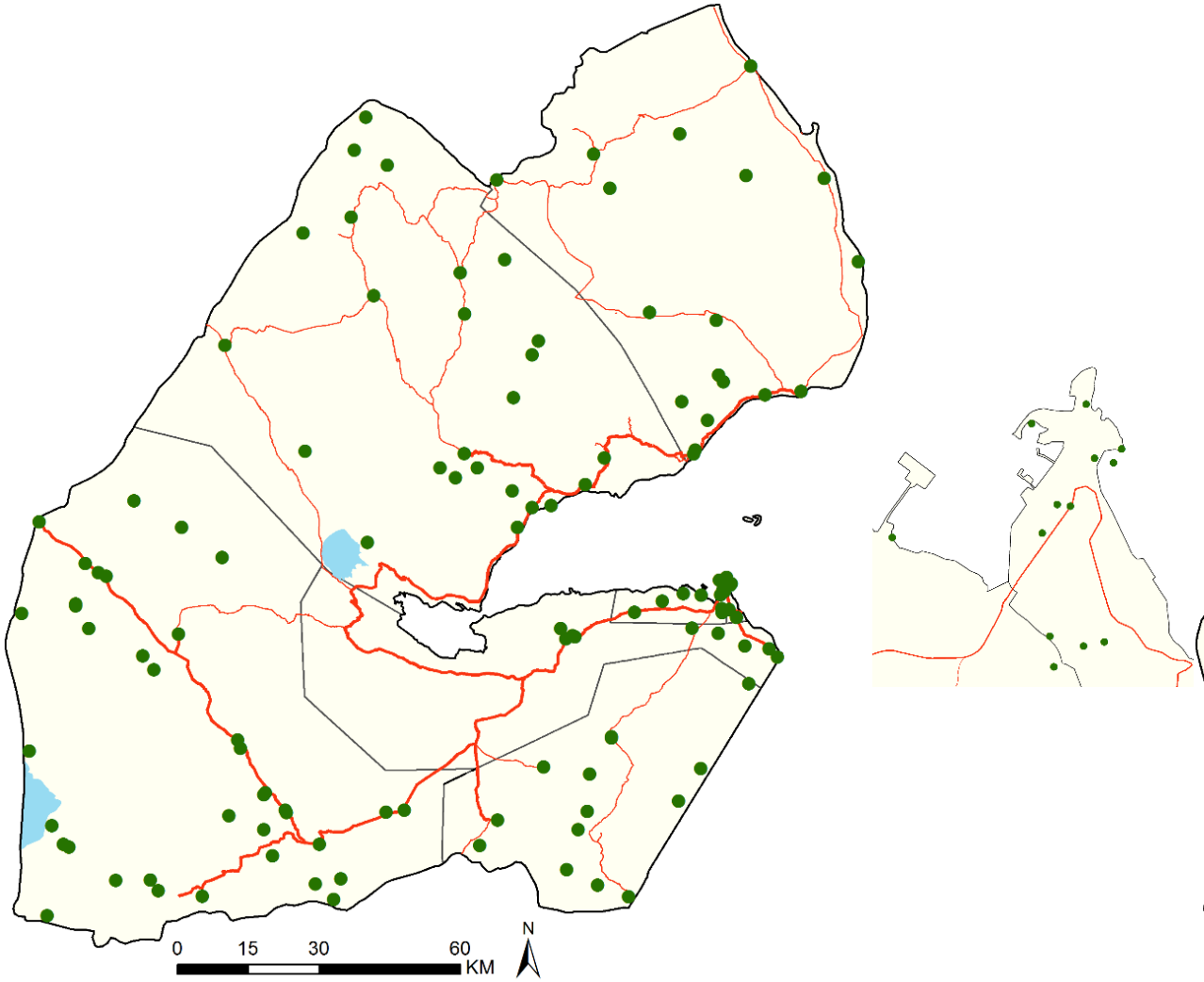
Malaria Vectors

National Vector sampling survey 1969-1970

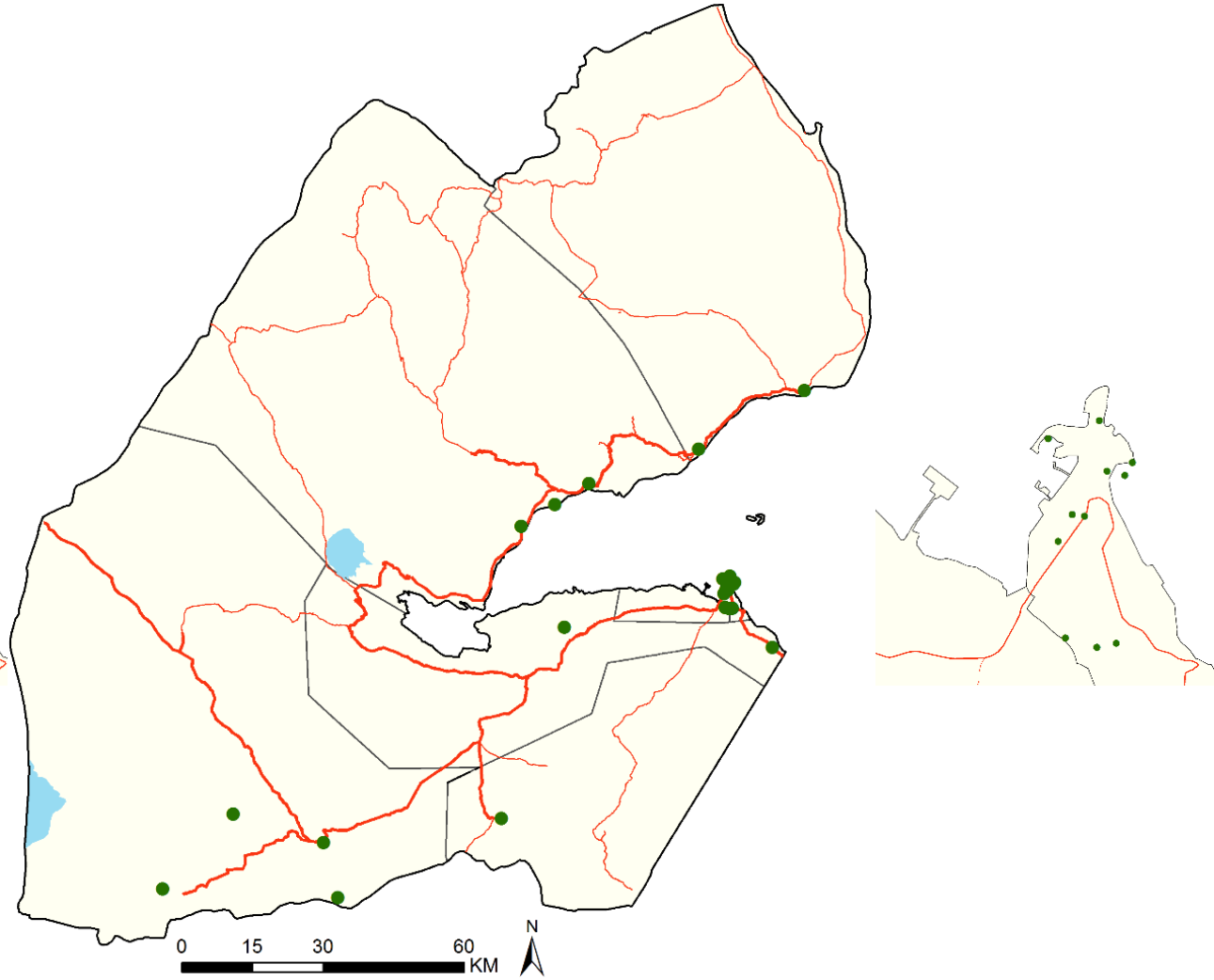


Courtois & Mouchet (1970)

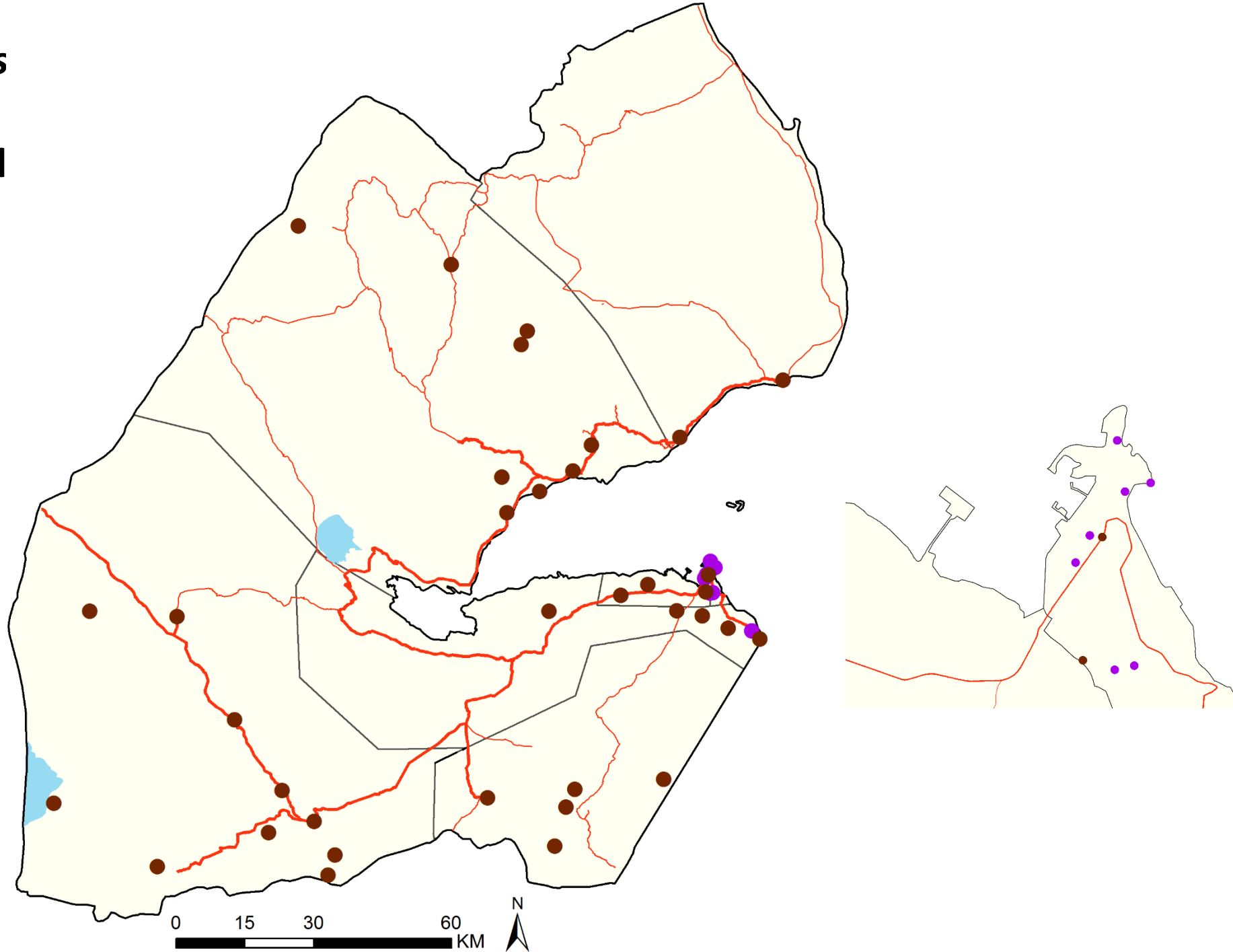
Location of mosquito sampling sites for 121 surveys undertaken between 1910 and 2014



Location of mosquito sampling sites for 23 surveys undertaken since 2005



Recorded *An. arabiensis* & *An. stephensi* identifications across all surveys



- *An. arabiensis*
- *An. stephensi*

Records of other anopheline species, either non-vectors or considered incidental vectors of malaria since 1910

An. azaniae, An. harperi, An. macmahoni, An. pharoensis, An. rhodesiensis, An. salbaii, An. turkhudi, An. d'thali

Initial observations

a. The cartography of malaria risk in the country can not be driven by any further serology or parasite survey data; some risk exists across the entire country except possible in some small areas of completely unfavourable areas around the lake and Obock coast

b. Risk strata within current NMS are based on case-incidence and this is what is required to drive the stratification and possibly finer resolution mapping below region, assuming availability of better population settlement data

c. The sources, fidelity and coverage data are uncertain and those from HMIS are only aggregates and not the raw facility level data that might be available from IDSR

d. There is a need to begin to enumerate and map other special groups defined within the NMS including nomadic pastoralists, refugees etc.

Acknowledgements

We acknowledge all those who have generously provided unpublished parasite and vectors data, helped locate information or the geo-coordinates of data necessary to complete the analysis of malaria risk across Djibouti:

Mouna Osman Aden, Ifrah Ali Ahmed, Jackie Cook, Hawa Guessod, Margaret Mackinnon, Maoulid Mohamed, Cleopatra Mugyenyi, Abdisalan Mohamed Noor, Christophe Rogier

Data assembly and cartography from INFORM programme: Peter Macharia, Joseph Maina and David Kyalo