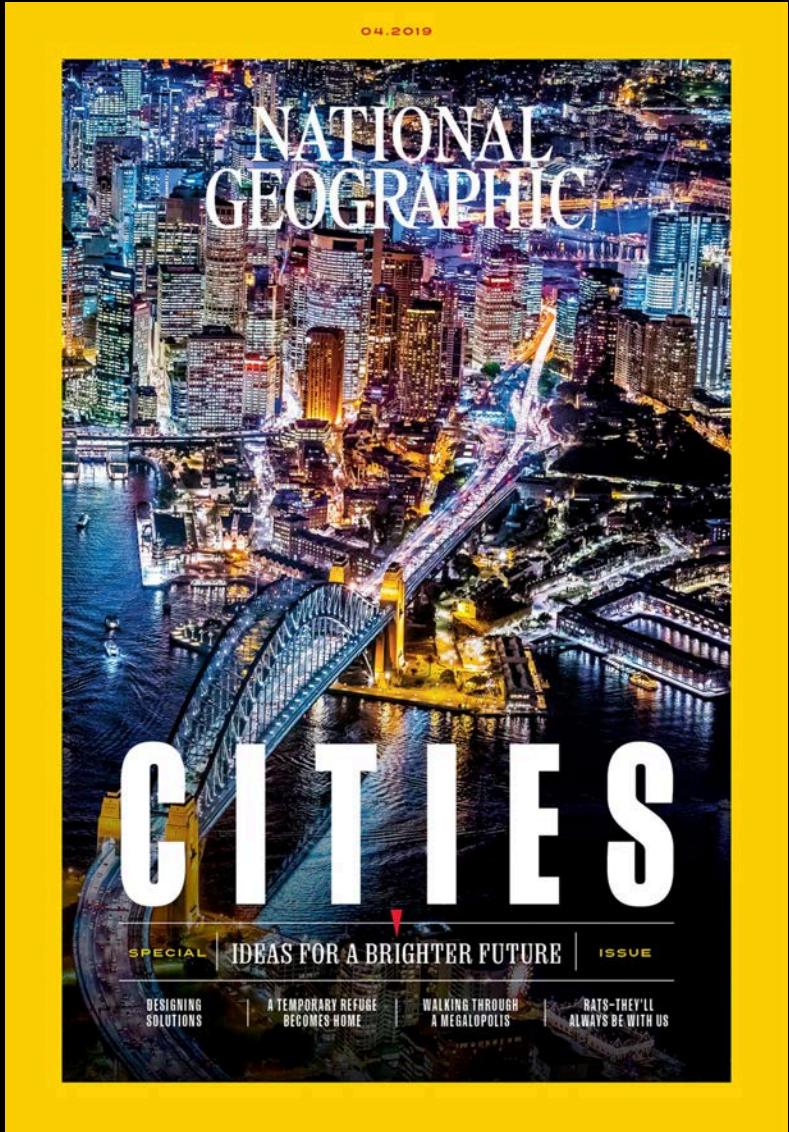


#NACIS2019

Mapping Refugees with Open Data

Riley D. Champine
Graphics Editor
National Geographic

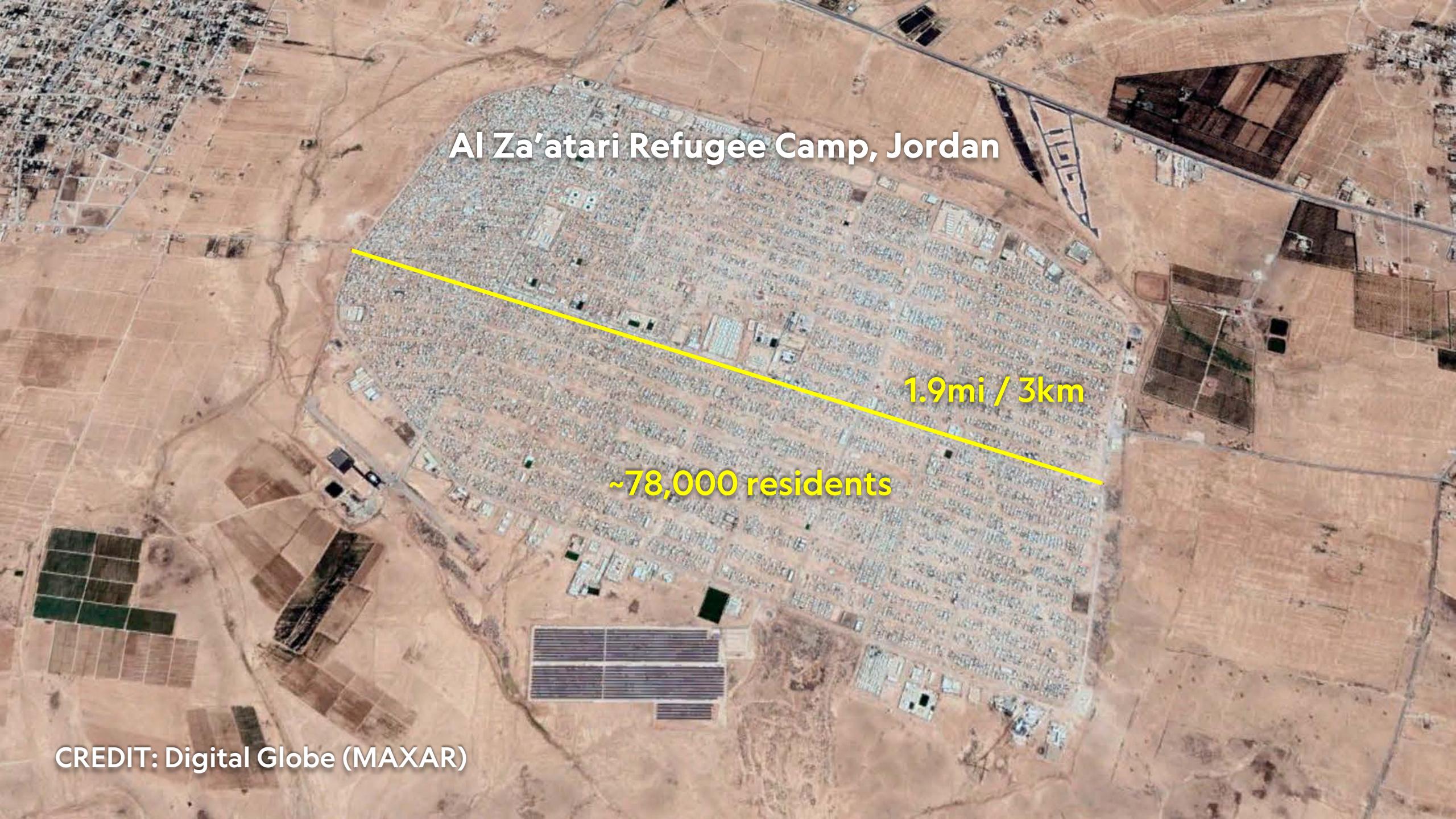




<http://rileydchampine.com/nacis>



CREDIT: U.S. State Department



A satellite photograph of the Al Za'atari Refugee Camp in Jordan. The camp is a large, densely populated area of small, light-colored buildings, roughly rectangular in shape. It is situated in a desert landscape with some agricultural fields and roads visible. A yellow line points from the text '1.9mi / 3km' to the southern edge of the camp. Another yellow line points from the text '~78,000 residents' to the western edge of the camp.

Al Za'atari Refugee Camp, Jordan

1.9mi / 3km

~78,000 residents

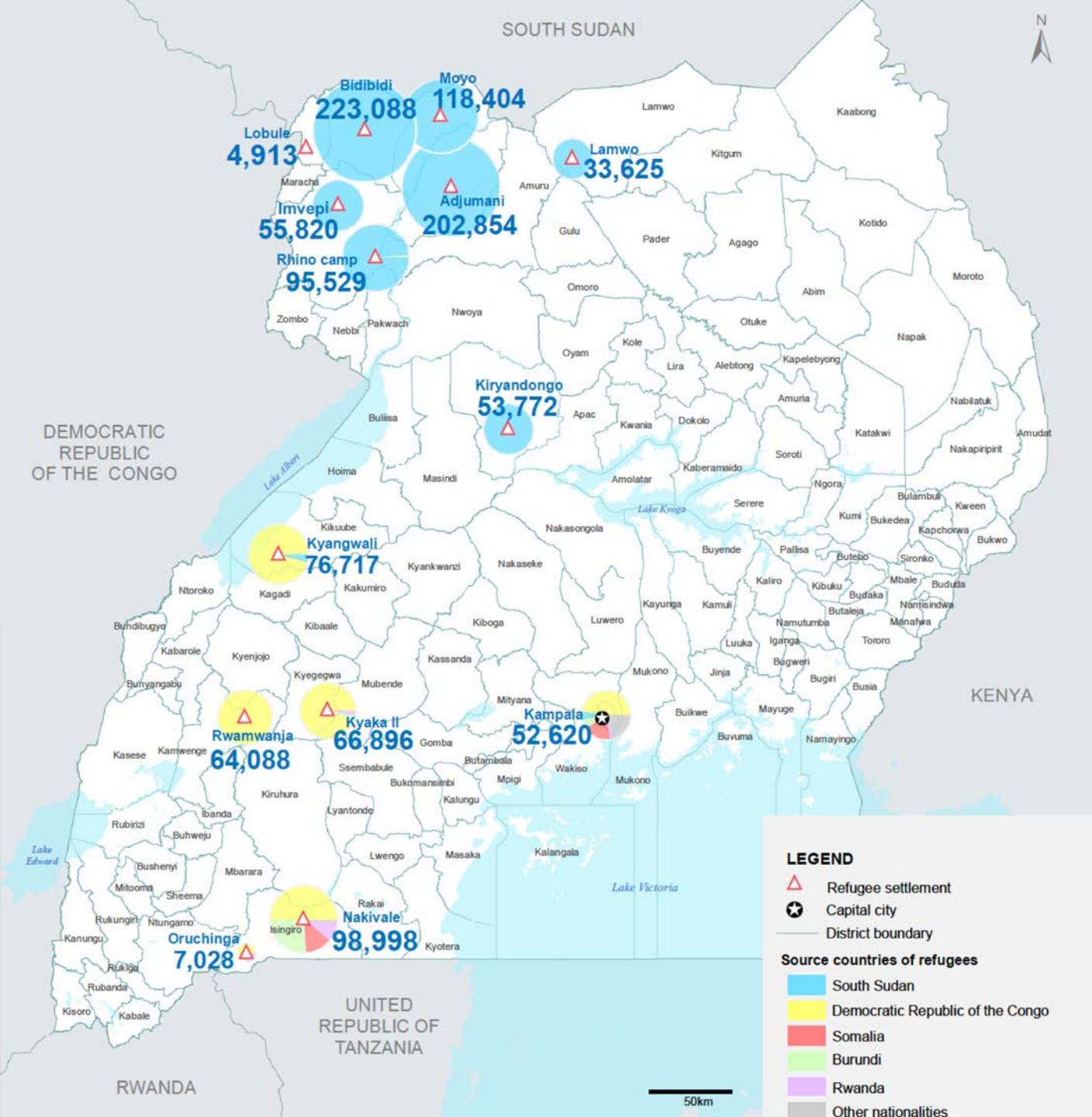
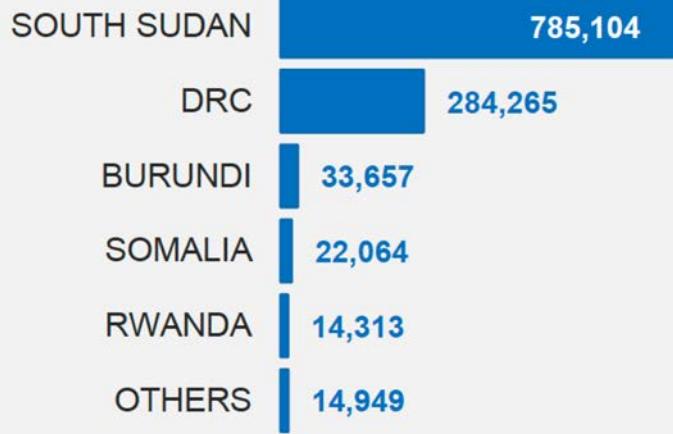




Total refugees and asylum-seekers

1,154,352

COUNTRIES OF ORIGIN





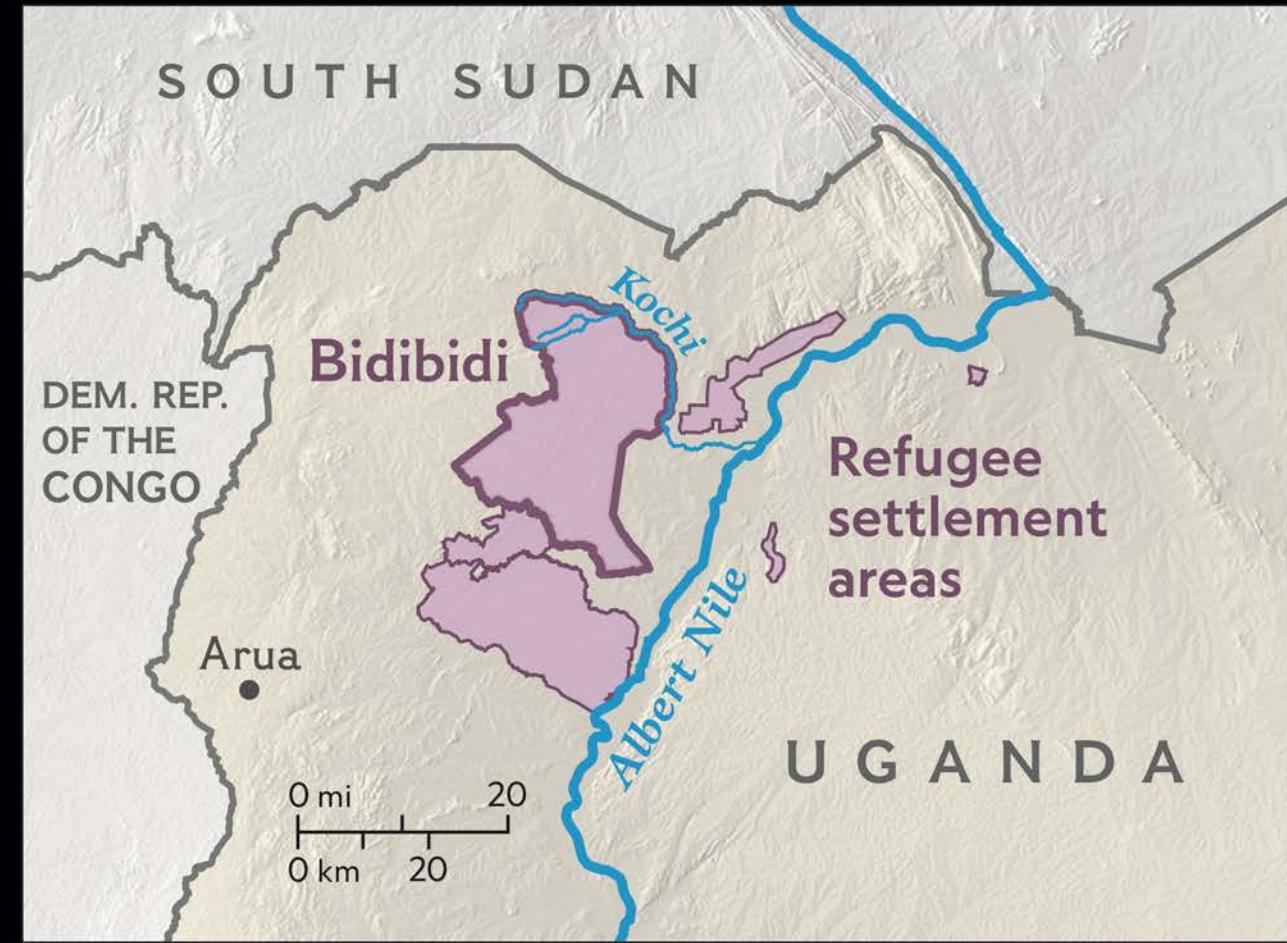
**In Uganda,
refugees can:**

- Move freely
- Lease land
- Work legally

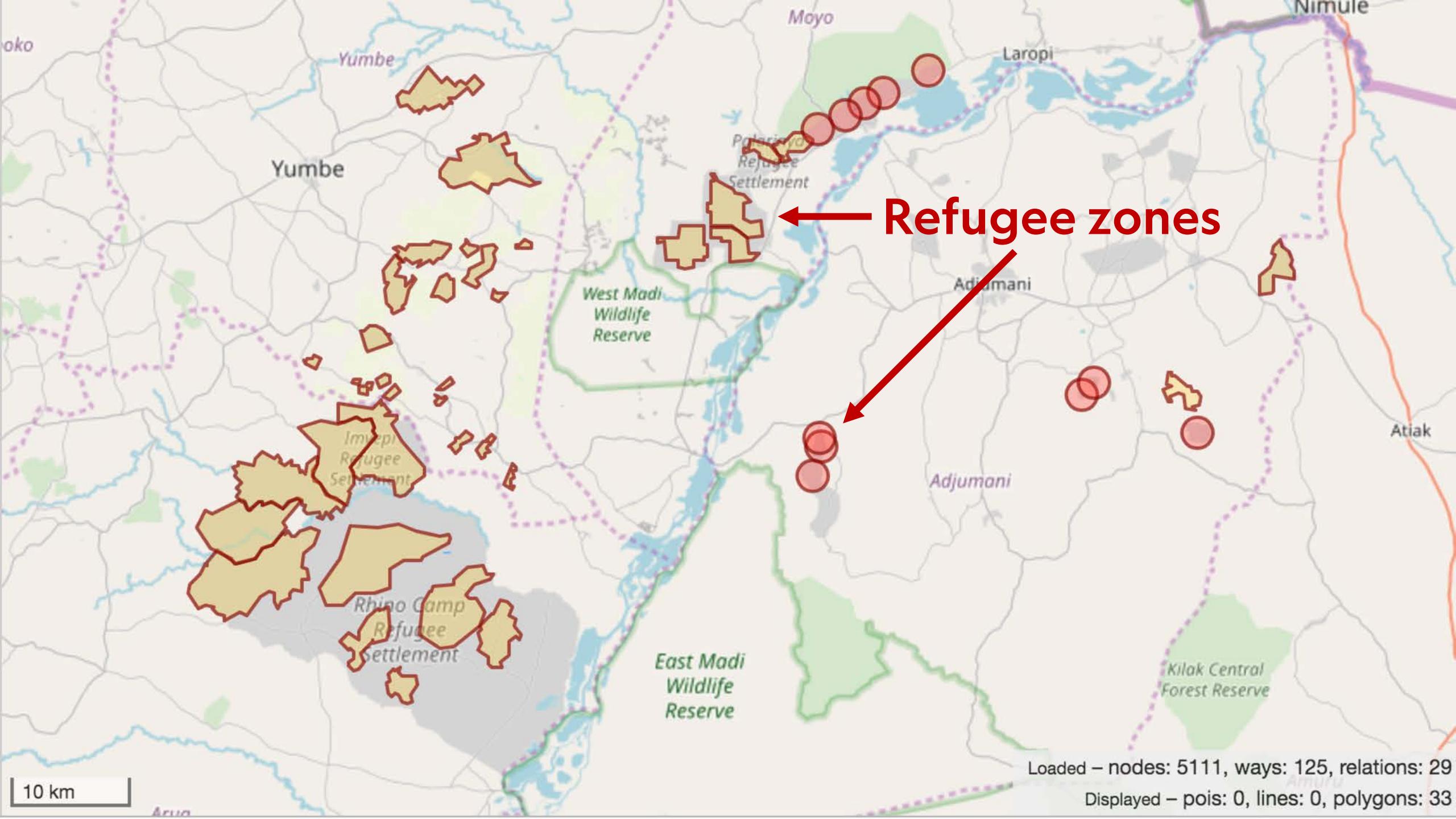
*Refugees stay in exile for
an average of **10 years**.*

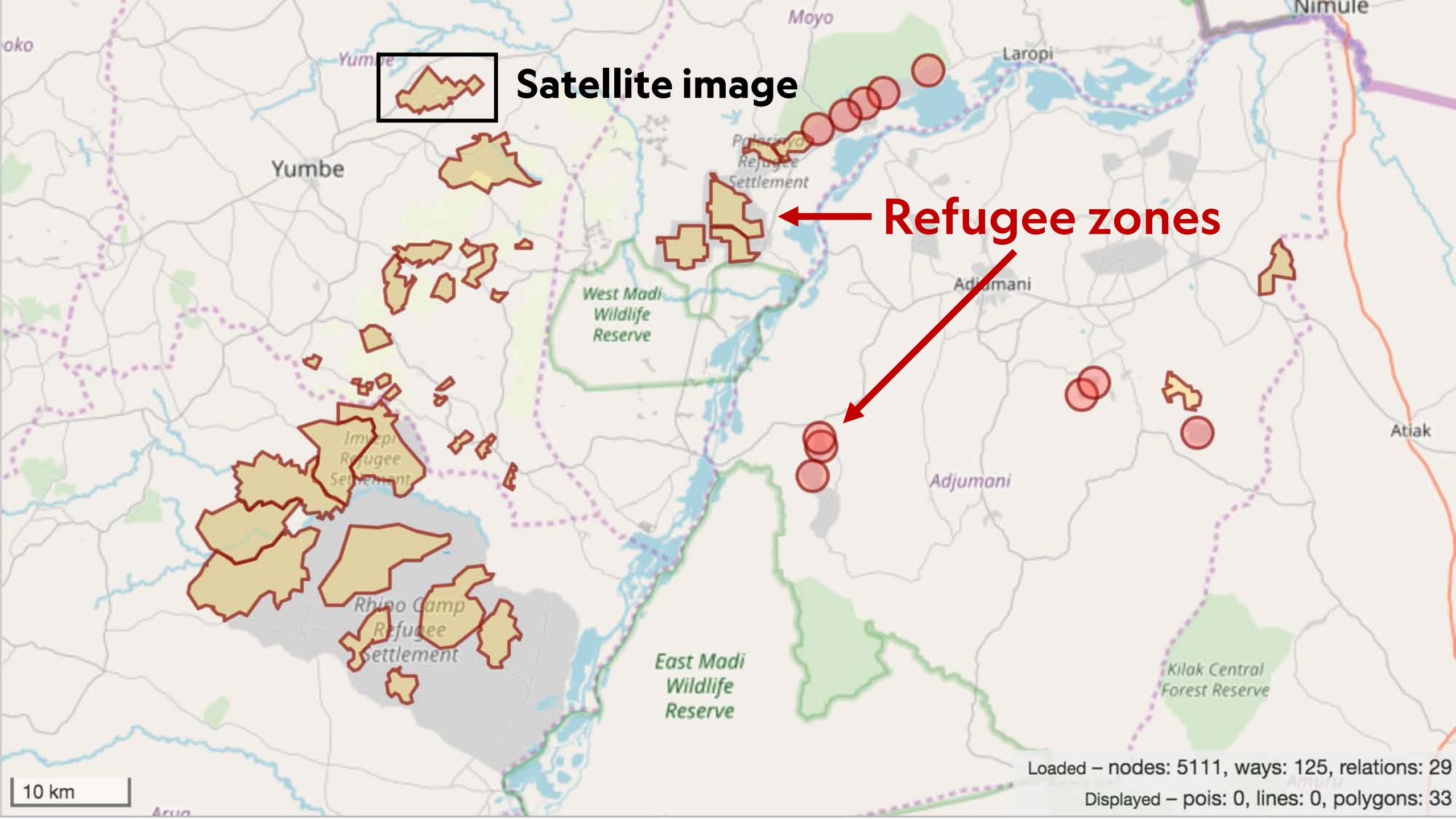
*“The goal: **Build a livable city**
out of a refugee camp, one
that might endure even if the
refugees can return home
someday.”*

-Nina Strochlic
Writer, National Geographic

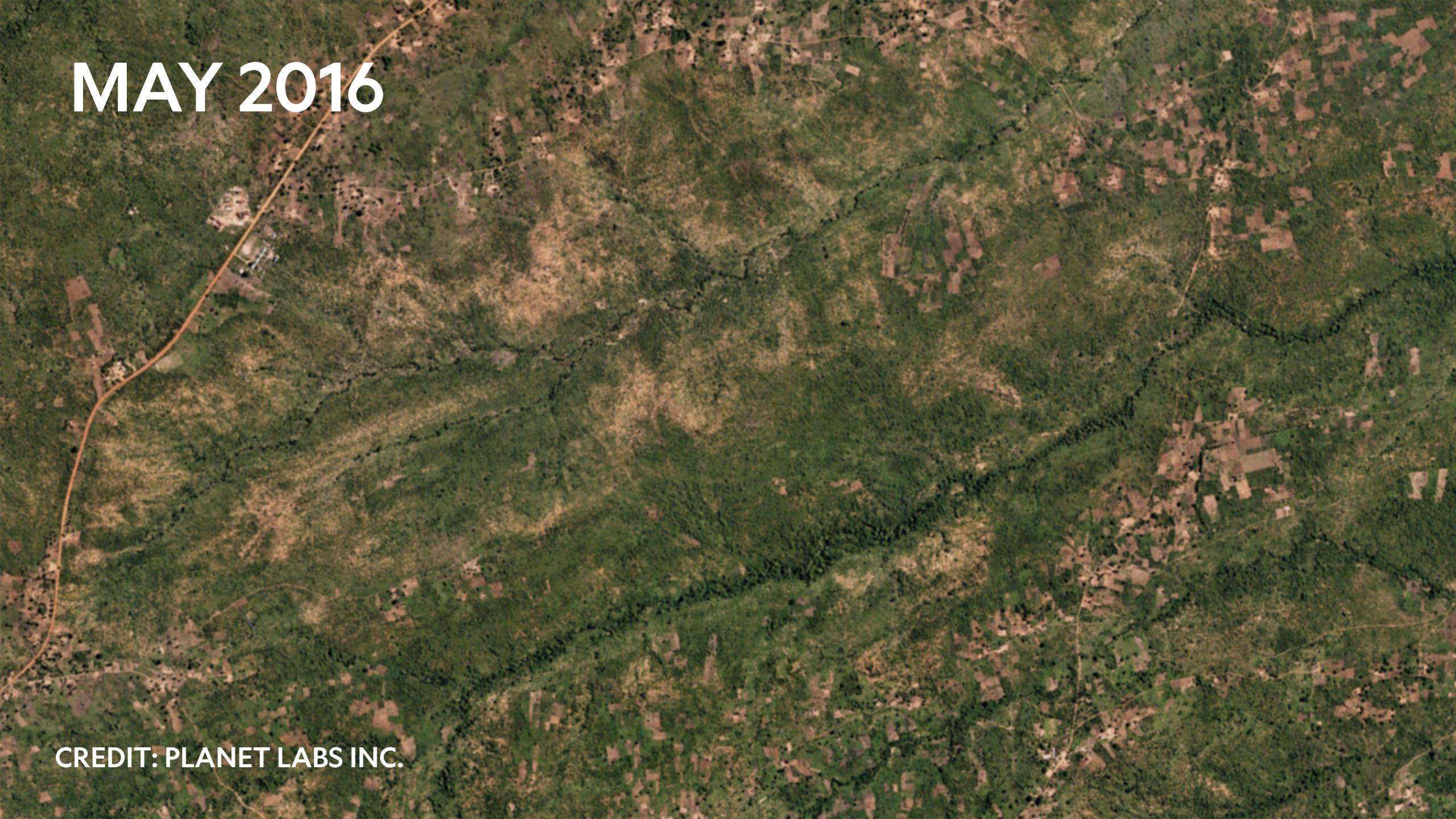


**700,000 South Sudanese refugees live in
Bidibidi and other nearby settlements.**





MAY 2016



CREDIT: PLANET LABS INC.

DECEMBER 2018



CREDIT: PLANET LABS INC.

DECEMBER 2018

Photo

CREDIT: PLANET LABS INC.



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IN KALIWA ZONE 3 WITH THE
SUPPORT OF



Google Maps

Search for "Bidibidi"





airtel
THE SMARTPHONE NETWORK

MAY GOD
BLESS

N Refugee Agency







CALN
12





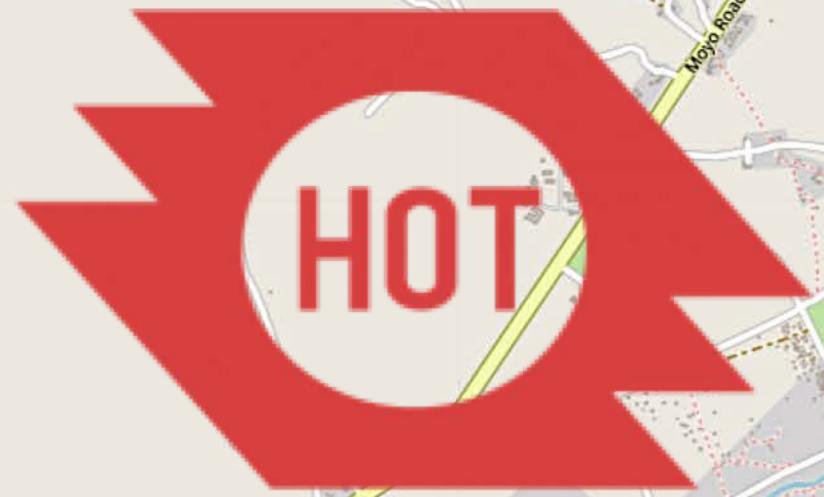
Google Maps

Search for "Bidibidi"



OpenStreetMap





Humanitarian
OpenStreetMap
Team

OpenStreetMap



**AREA
ENLARGED**



Water
Tap

①

Anaku
restaurant

Koro HC
IRC-ACF

Koro Health
Center
III

Drug shop

Drug shop

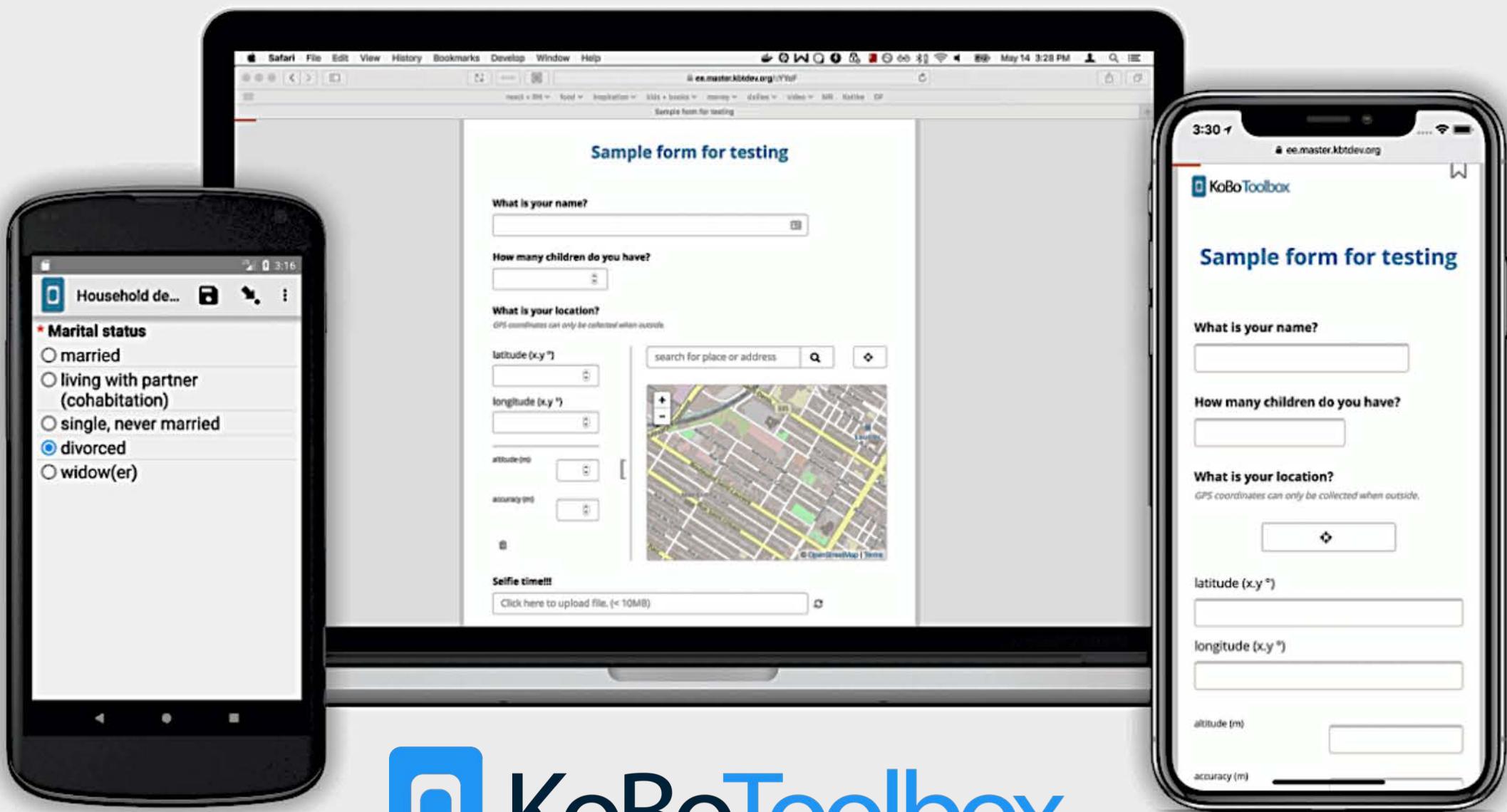




Rupert Allan

*Former HOT Uganda
Coordinator*

CREDIT: HUMANITARIAN OPENSTREETMAP TEAM

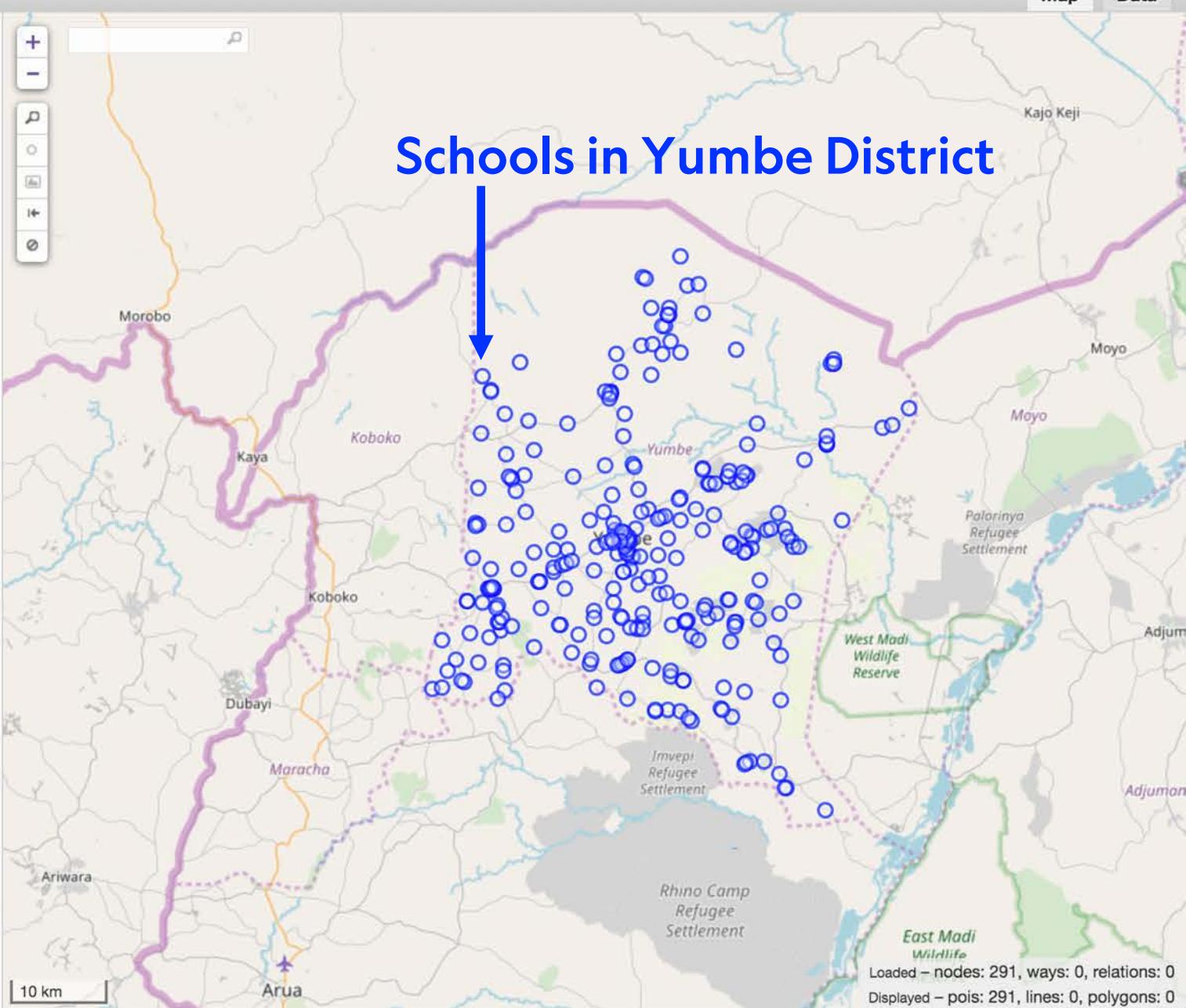


KoBoToolbox



CREDIT: HUMANITARIAN OPENSTREETMAP TEAM

```
1 [out:json][timeout:250];
2 (
3 {{geocodeArea: Yumbe}};
4 )->.searchArea;
5
6 node["amenity"~"school|kindergarten|university|college|childcare"];
7 (area.searchArea);
8
9 {{style:
10
11   node {
12     color: blue;
13     fill-color: white;
14     symbol-size: 5;
15     /*Use this to comment out styles*/
16   }
17
18   way {
19     color: blue;
20     fill-color: blue;
21     /*Use this to comment out styles*/
22   }
23
24   area {
25     color: purple;
26     fill-color: purple;
27     /*Use this to comment out styles*/
28   }
29
30   relation {
31     color: orange;
32     fill-color: orange;
33     /*Use this to comment out styles*/
34   }
35
36 })
37
38 );
39
40 out meta;
41 >;
42 out skel qt;
```



```
1 [out:json][timeout:250];
2 (
3 {{geocodeArea: Yumbe}};
4 )->.searchArea;
5
6
7 node["amenity"~"school|kindergarten|university|college|childcare"]
8 (area.searchArea);
9
10 {{style:
11
12   node {
13     color: blue;
14     fill-color: white;
15     symbol-size: 5;
16     /*Use this to comment out styles*/
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18
19   way {
20     color: blue;
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22     /*Use this to comment out styles*/
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25   area {
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28     /*Use this to comment out styles*/
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30
31   relation {
32     color: orange;
33     fill-color: orange;
34     /*Use this to comment out styles*/
35   }
36
37 });
38
39
40 out meta;
41 >;
42 out skel qt;
```

Map controls: +, -, P, O, D, L, R, Z, X.

Node 5956832510

Tags 17

addr:district=Yumbe
addr:settlement=Bidibidi
addr:zone=Zone 02
amenity=kindergarten
capacity=800
class_blocks_num=8
generator:source=solar
isced:level=0
location=permanent
name=Kinda Child Friendly Space
opening_hours=Mo-Fr 07:00-13:30
operator=UNICEF
source=HOT-Uganda
source:form=Education_Facilities_Form_v4.0.0
staff_count:teachers=25
start_date=2015-11-01
toilets=yes

Meta

timestamp=2018-10-05T09:06:42Z
version=1
changeset=63223363
user=Shamillah
uid=3592184

Coordinates:

[3.520585 / 31.3375967](#) (lat/lon)

500 m

Loaded – nodes: 291, ways: 0, relations: 0
Displayed – pois: 291, lines: 0, polygons: 0

```
1 [out:json][timeout:250];
2 (
3 {{geocodeArea: Yumbe}};
4 )->.searchArea;
5
6
7 node["amenity"~"school|kindergarten|university|college|childcare"]
8 (area.searchArea);
9
10 {{style:
11   node {
12     color: blue;
13     fill-color: white;
14     symbol-size: 5;
15     /*Use this to comment out styles*/
16   }
17
18   way {
19     color: blue;
20     fill-color: blue;
21     /*Use this to comment out styles*/
22   }
23
24   area {
25     color: purple;
26     fill-color: purple;
27     /*Use this to comment out styles*/
28   }
29
30   relation {
31     color: orange;
32     fill-color: orange;
33     /*Use this to comment out styles*/
34   }
35
36 })
37
38 );
39
40 out meta;
41 >;
42 out skel qt;
```

The screenshot shows the Overpass Turbo interface with a map of the Yumbe area. A tooltip is open for a specific node, displaying its details. The node has the ID 5956832510 and is categorized as a 'kindergarten'. It has several tags, including 'amenity=kindergarten' and 'toilets=yes'. The map shows various geographical features like roads and settlements, with some areas labeled as 'Zone 02' and 'Village 07 Cluster 01'. A blue arrow points from the text 'amenity=kindergarten' to the 'amenity' tag in the tooltip, and another blue arrow points from the text 'toilets=yes' to the 'toilets' tag.

Node 5956832510

Tags 17

addr:district=Yumbe
addr:settlement=Bidibidi
addr:zone=Zone 02
amenity=kindergarten
capacity=800
class_blocks_num=8
generator:source=solar
isced:level=0
location=permanent
name=Kinda Child Friendly Space
opening_hours=Mo-Fr 07:00-13:30
operator=UNICEF
source=HOT-Uganda
source:form=Education_Facilities_Form_v4.0.0
staff_count:teachers=25
start_date=2015-11-01
toilets=yes

Meta

timestamp=2018-10-05T09:06:42Z
version=1
changeset=63223363
user=Shamillah
uid=3592184

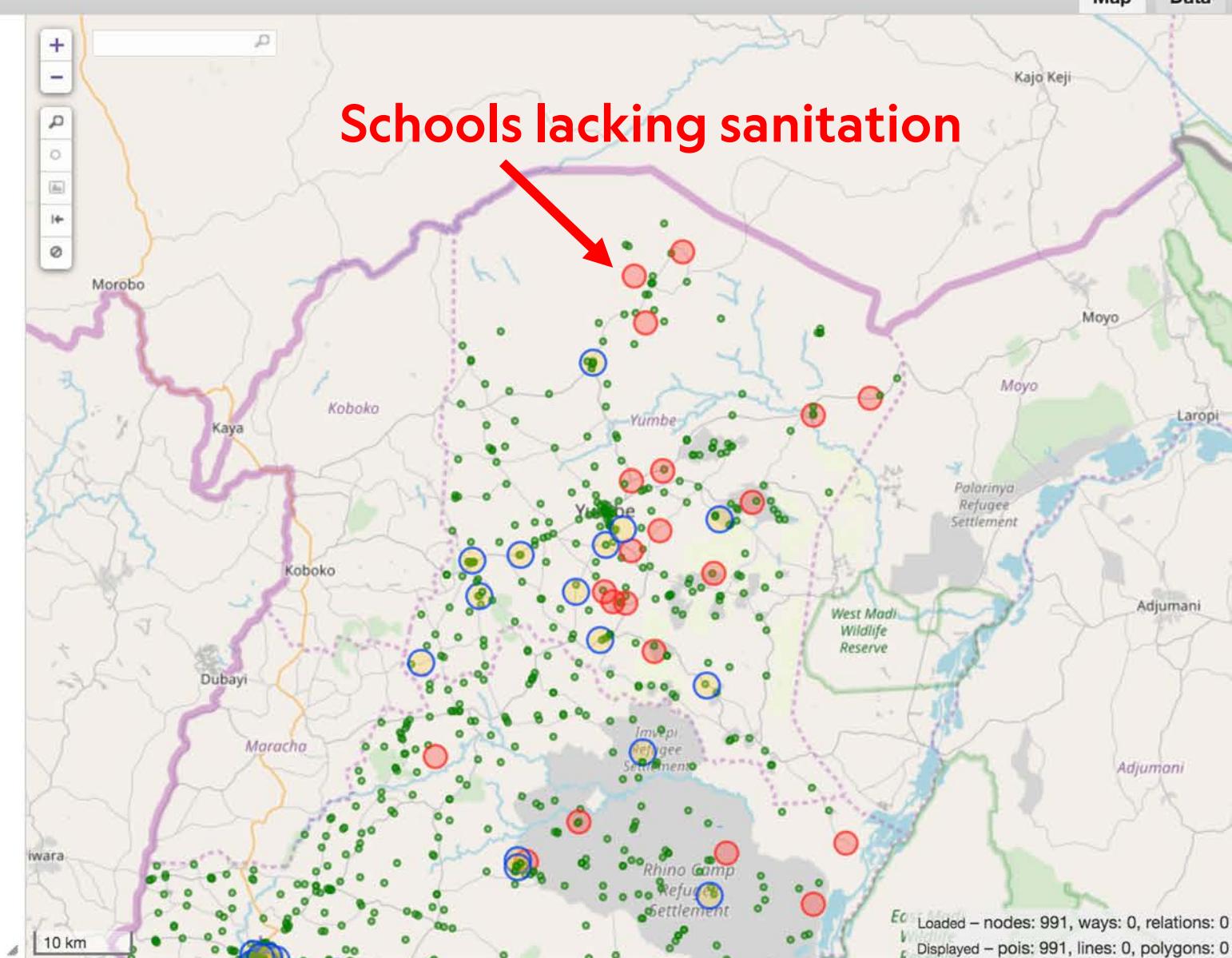
Coordinates:

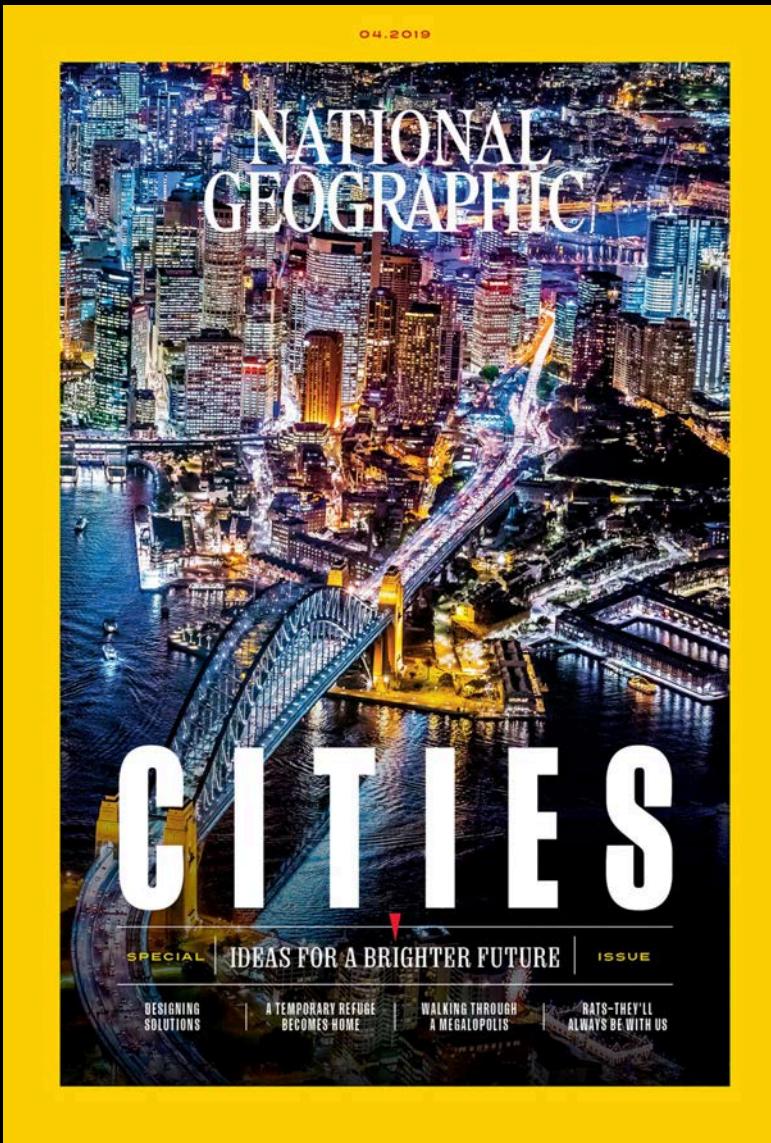
3.520585 / 31.3375967 (lat/lon)

500 m

Loaded – nodes: 291, ways: 0, relations: 0
Displayed – pois: 291, lines: 0, polygons: 0

```
1 [out:xml][timeout:250];
2
3 (
4     {{geocodeArea: Arua}};
5     {{geocodeArea: Yumbe}};
6 )->.searchArea;
7
8 (
9     node["amenity"~"school"](.searchArea);
10    node["amenity"~"kindergarten"](.searchArea);
11    node["amenity"~"university"](.searchArea);
12    node["amenity"~"college"](.searchArea);
13    node["amenity"~"childcare"](.searchArea);
14
15 {{style:
16
17     node[amenity=school][toilets=yes],
18     node[amenity=kindergarten][toilets=yes],
19     node[amenity=university][toilets=yes],
20     node[amenity=college][toilets=yes],
21     node[amenity=childcare][toilets=yes]
22 {
23
24         color: green;
25         fill-color: green;
26         symbol-size: 2;
27     }
28
29
30     node[amenity=school][toilets=no],
31     node[amenity=kindergarten][toilets=no],
32     node[amenity=university][toilets=no],
33     node[amenity=college][toilets=no],
34     node[amenity=childcare][toilets=no] {
35
36         color: red;
37         fill-color: red;
38         symbol-size: 8;
39     }
40
41
42 });
43
```







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IN KALIWA ZONE 3 WITH THE
SUPPORT OF





**Annotated screenshot
with questions
for locals**



CREDIT: DIGITAL GLOBE (MAXAR)

Image © 2018 DigitalGlobe

Google Earth

2011

423 ft

Imagery Date: 12/10/2016 lat 3.520834° lon 31.334150° elev 2848 ft eye alt 4724 ft





CREDIT: DIGITAL GLOBE (MAXAR)



CREDIT: DIGITAL GLOBE (MAXAR)

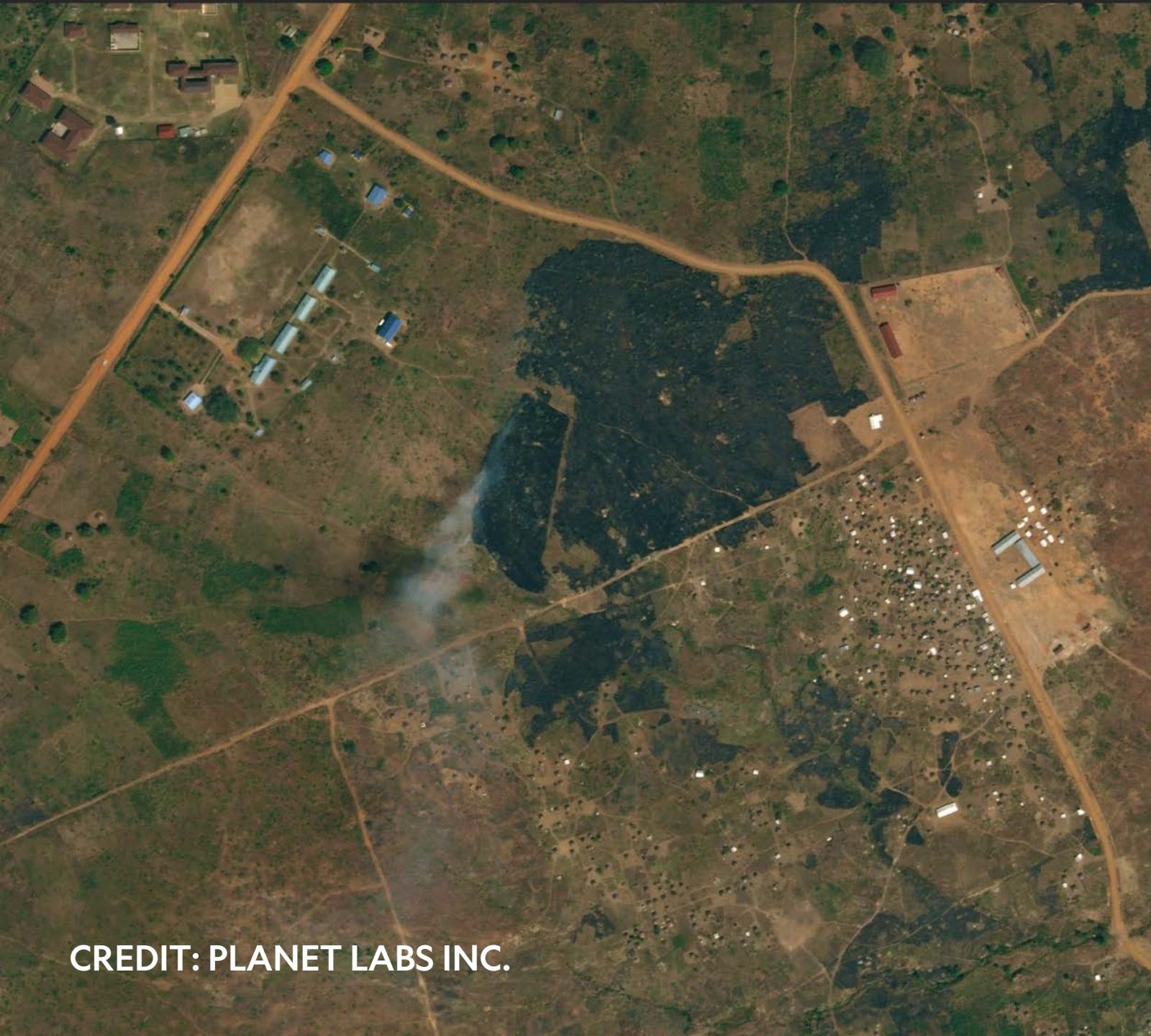


CREDIT: PLANET LABS INC.



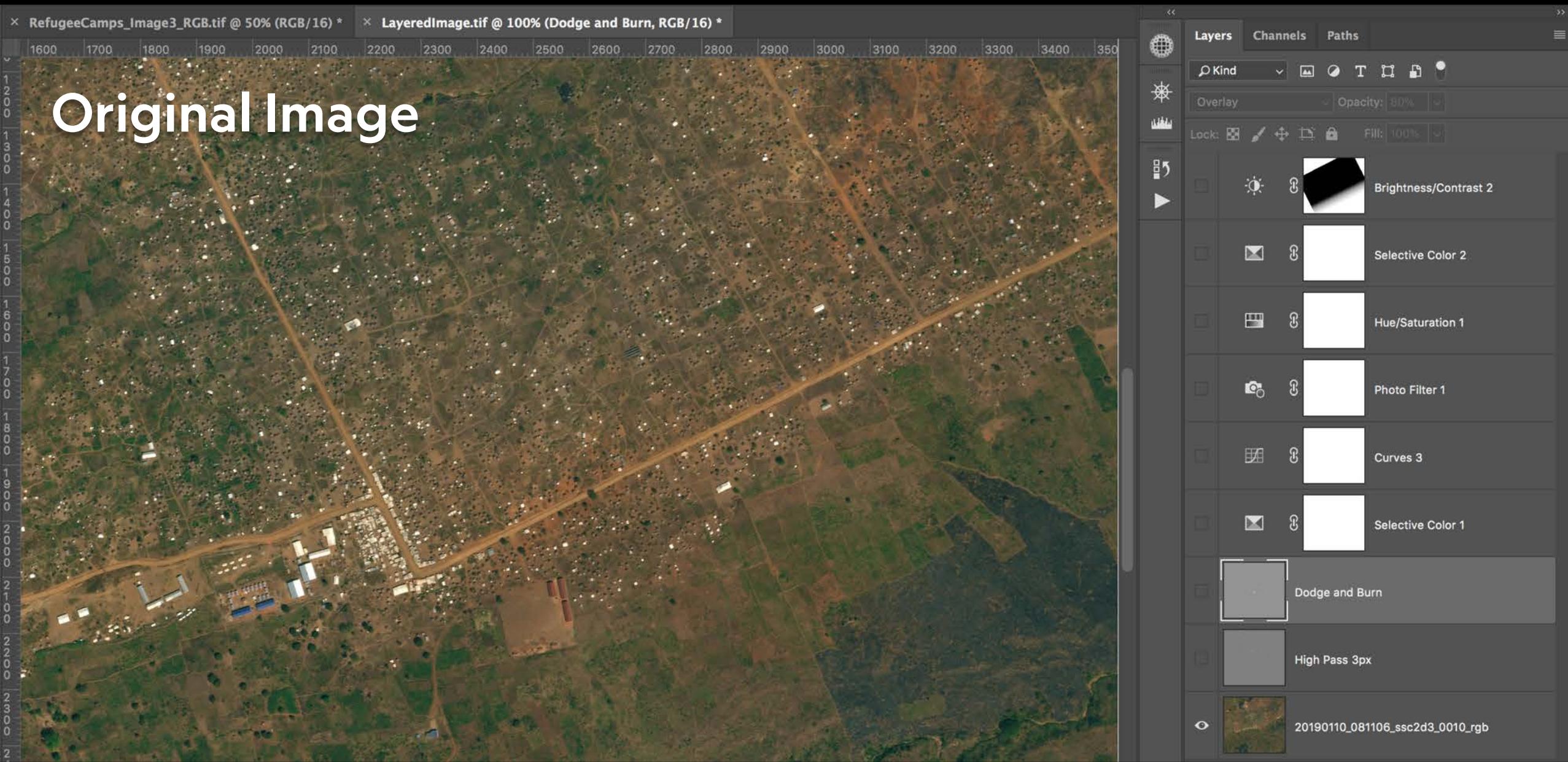
CREDIT: PLANET LABS INC.

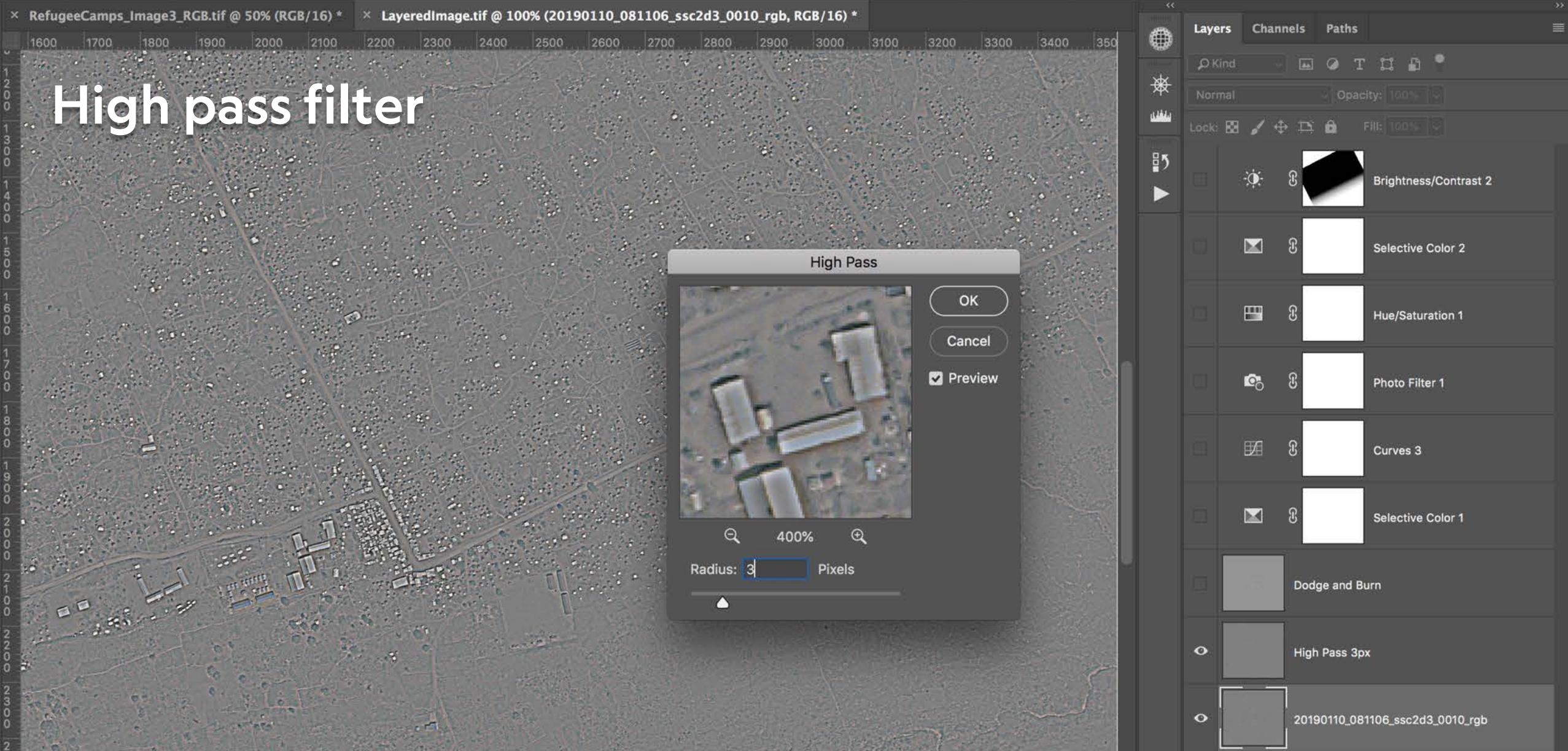
SkySat
Jan 10th 2019
72cm resolution

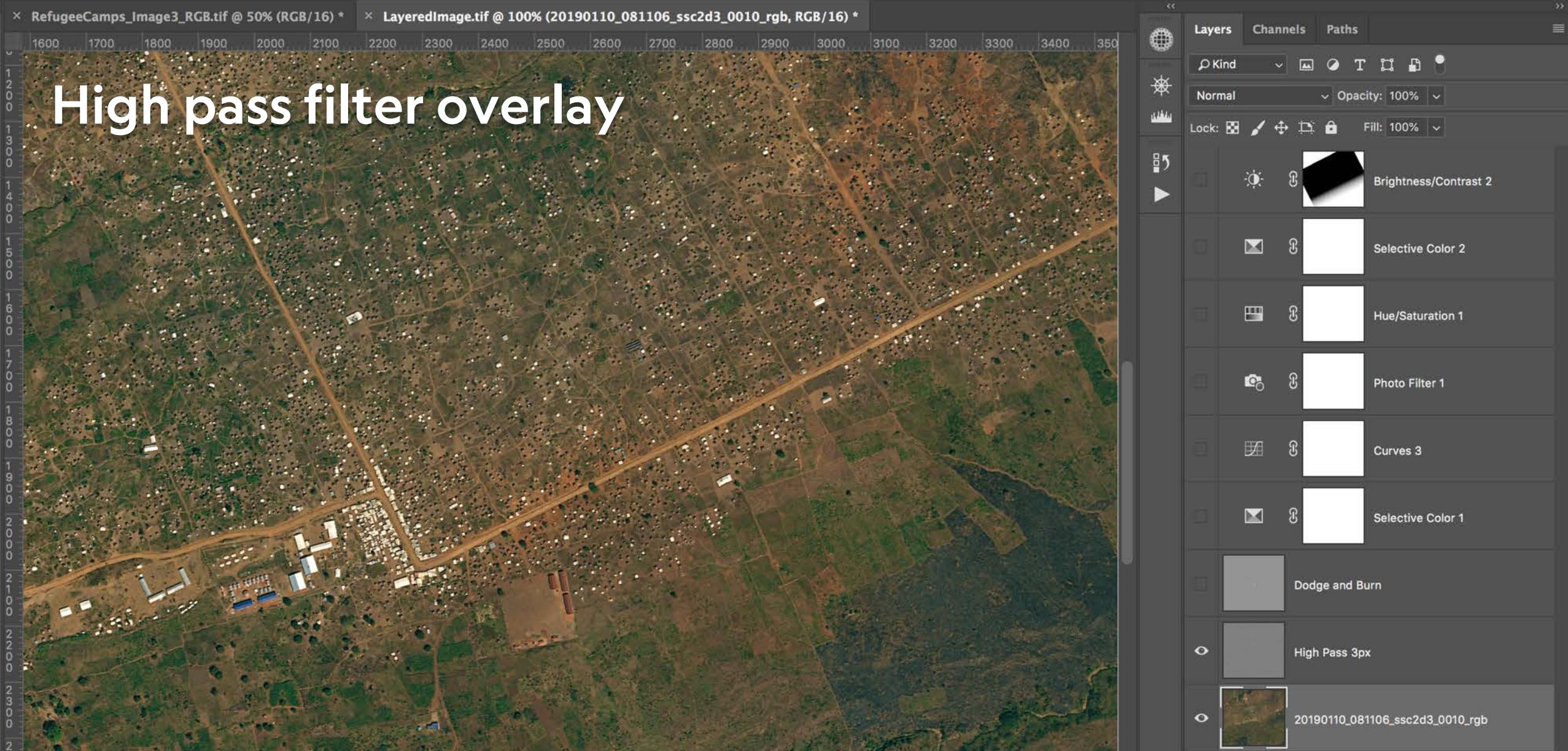


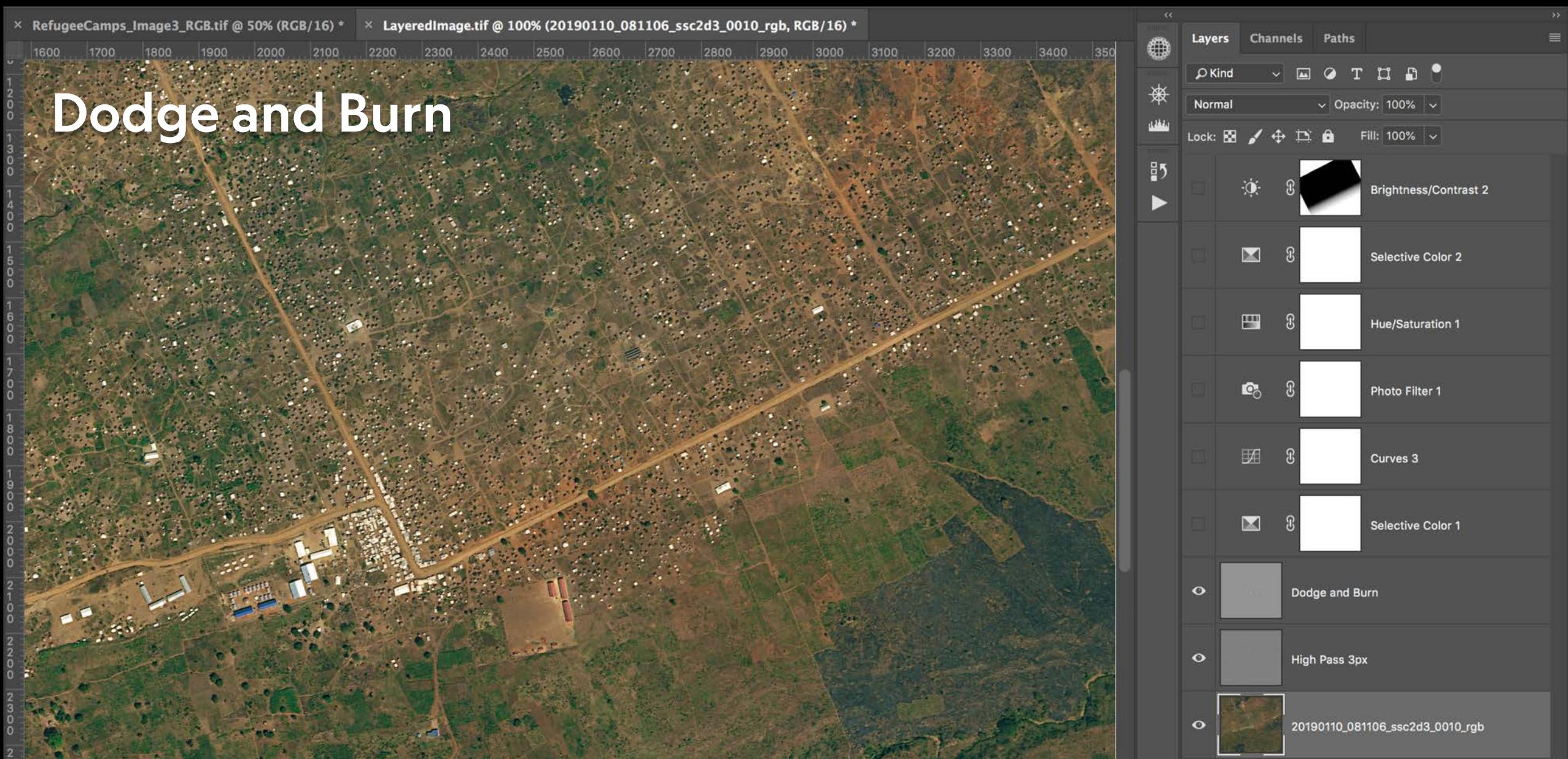
CREDIT: PLANET LABS INC.

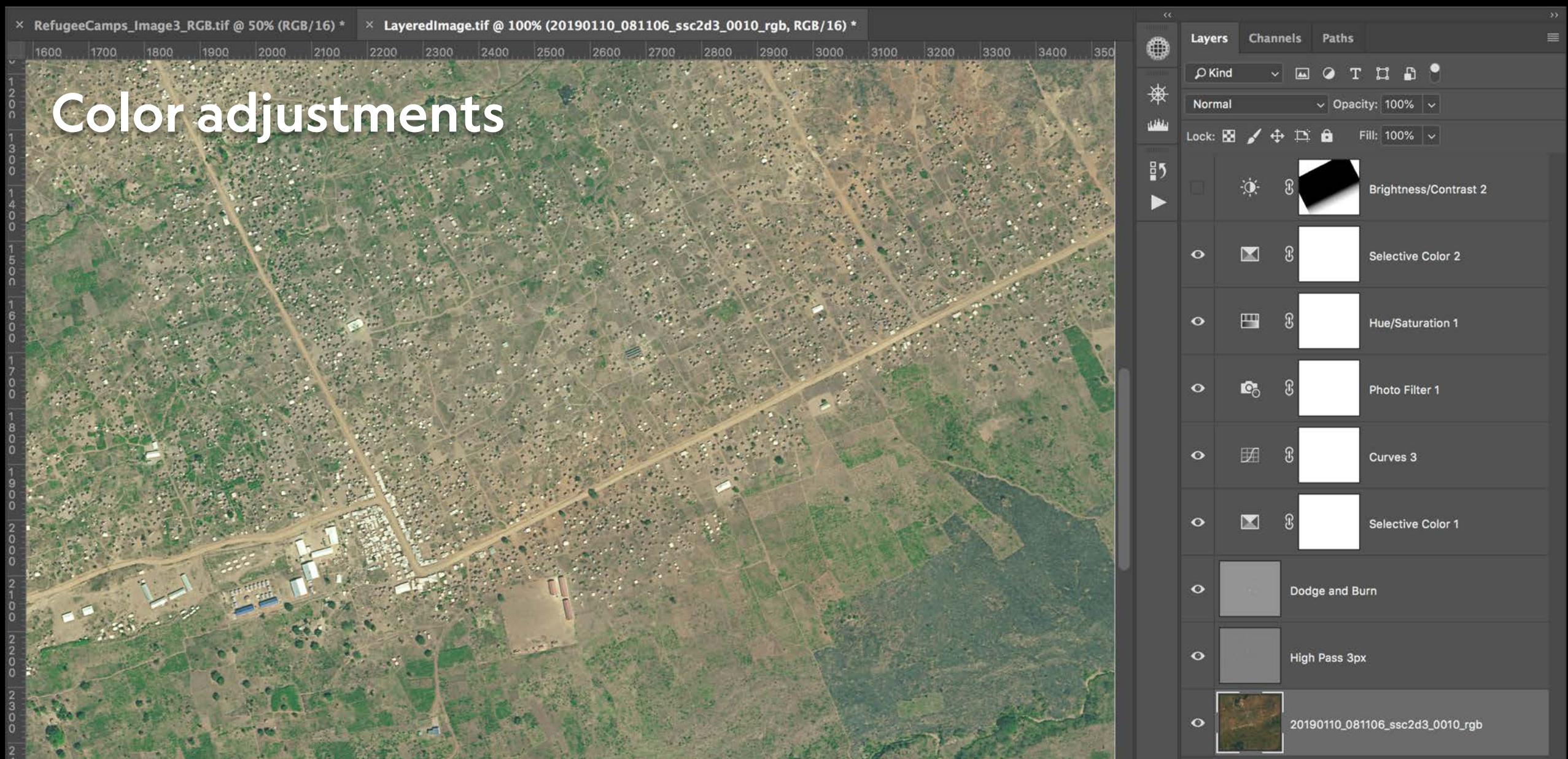
SkySat
Jan 10th 2019
72cm resolution





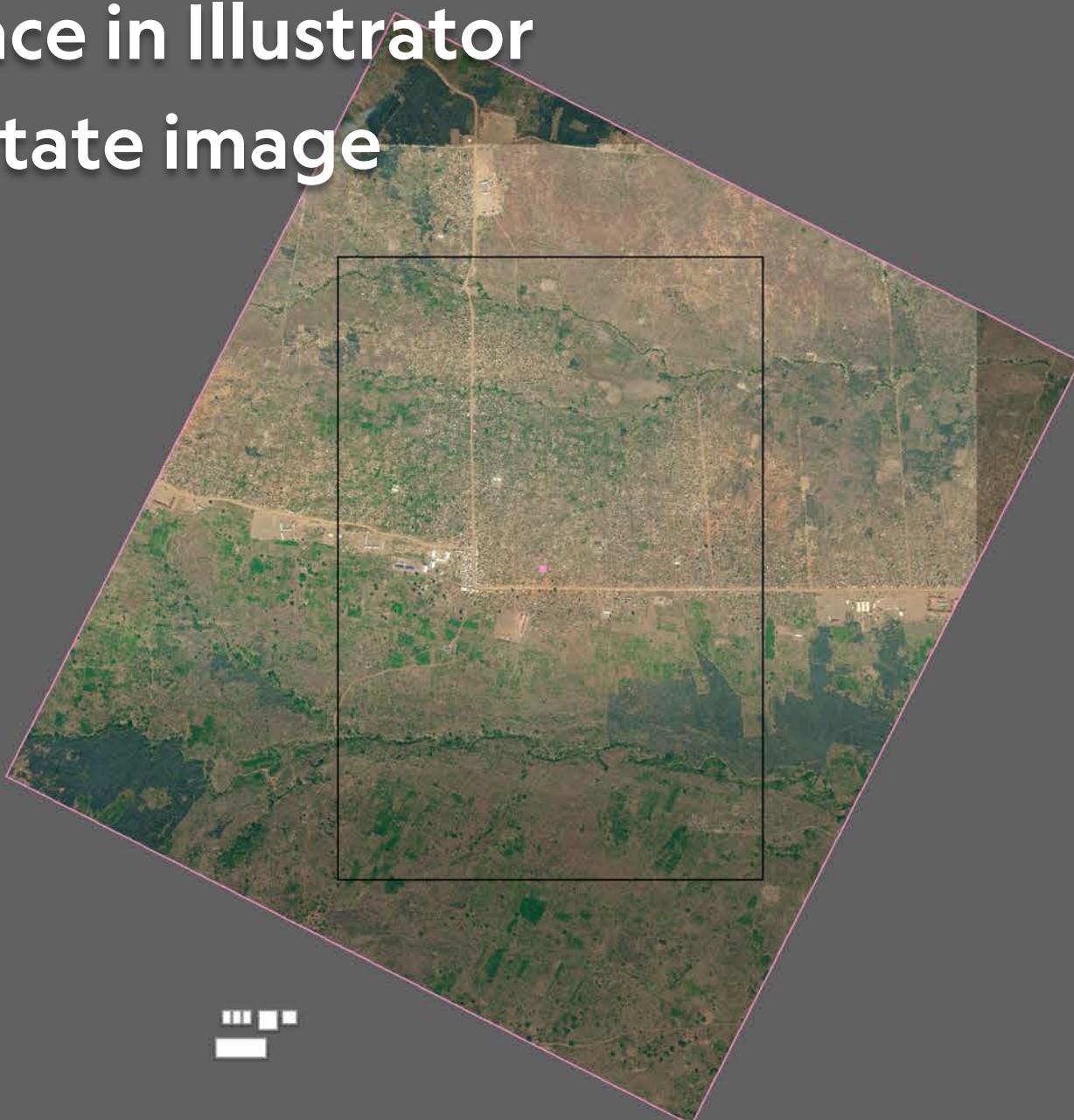






504 432 360 288 216 144 72 0 72 144 216 288 360 432 504 576 648 720 792 864 93

Place in Illustrator Rotate image



Color Color Guide # 00020e

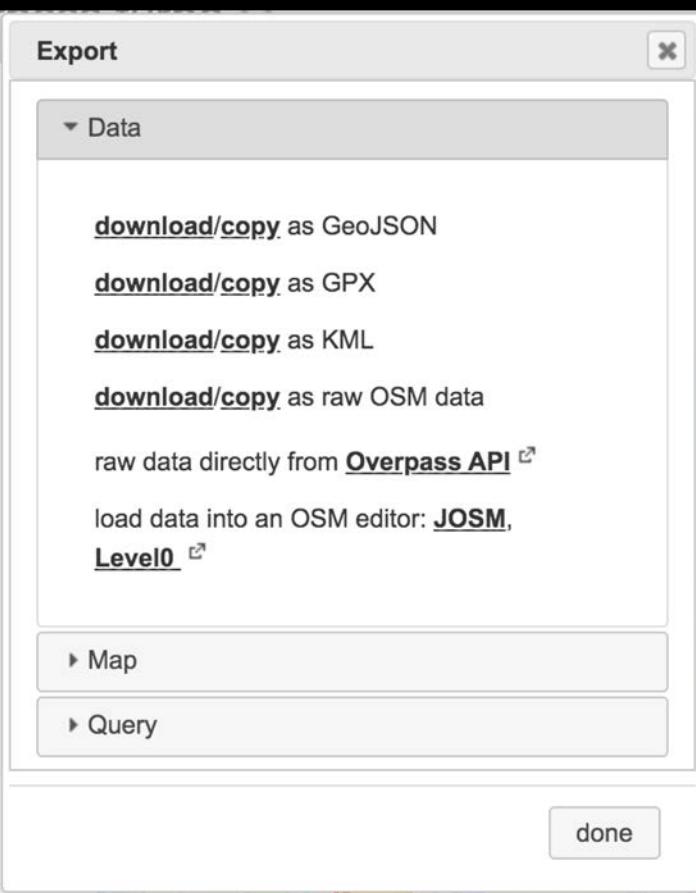
Swatches

Layers MAP Views

- T-TEXT
- L-MAIN SCALE
- L-OSM SCALE
- F-NORTH ARROW
- L-Callouts
- L-Area Enlarged Below
- L-OSM ENLARGEMENT FRAME
- OSM ENLARGEMENT
- F-OSM Enlargement Shadow
- S-Key Symbols
- S-Health Points
- S-School Points
- S-Other Points
- S-Water Points
- S-Unidentified Business
- RASTER-RefugeeCamps_Image
- RefugeeCamps_Aerialamgery_CMYK_FLAT.tif

16 Layers

Properties Libraries



**Export from Overpass
Import into MaPublisher**

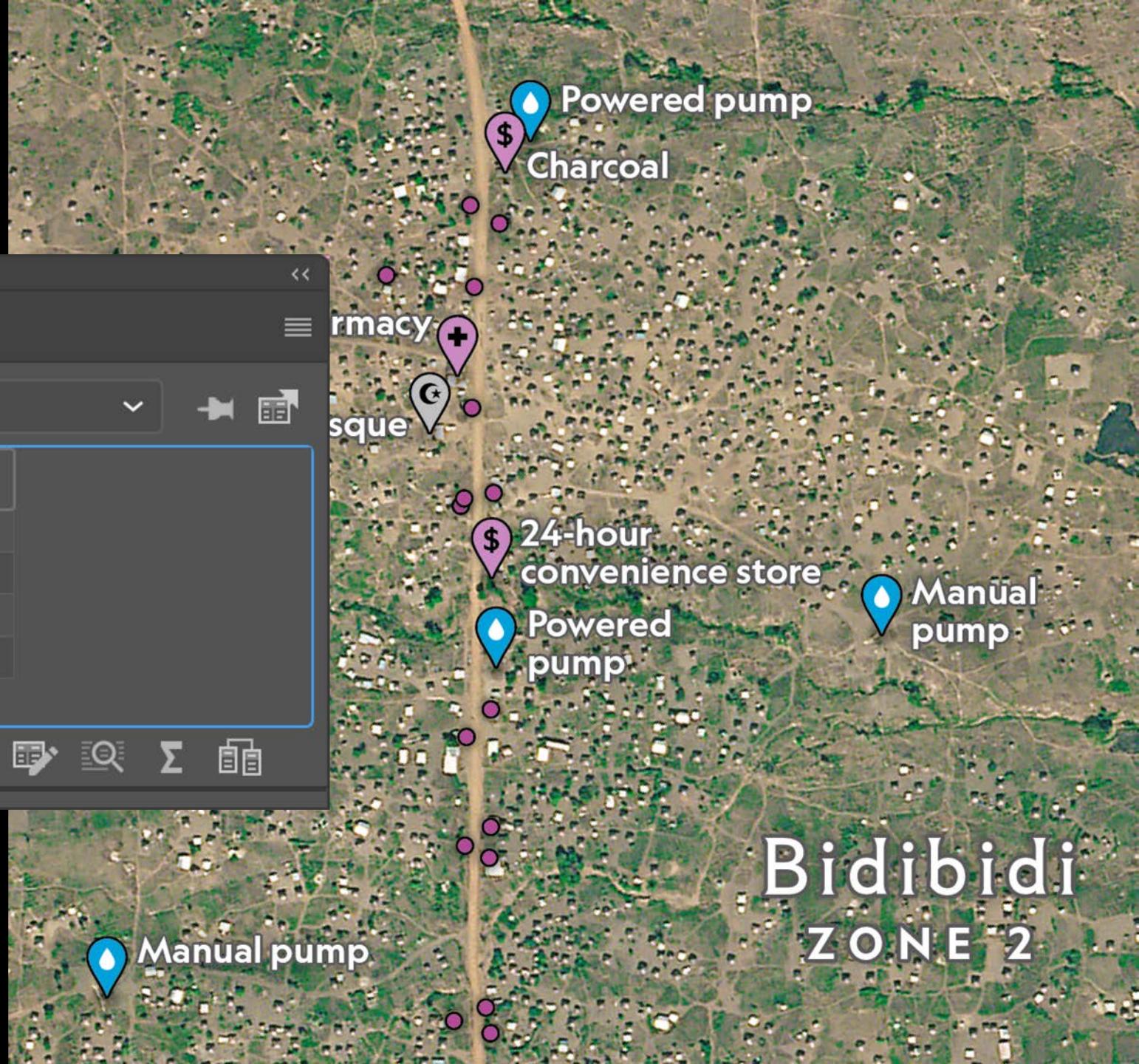
MAP Attributes

Layer: S-Water Points (11 selected)

one	amenity	lit	name
1	drinking_water	no	T 04
2	drinking_water	no	Borehole
3	drinking_water	no	Water Tank
4	drinking_water	yes	
5	drinking_water	no	Water Tank
6	drinking_water	no	
7	drinking_water	yes	Water Tank 55
8	drinking_water	no	Borehole
9	drinking_water	yes	Borehole
10	drinking_water	no	Water Tap
11	drinking_water	yes	Water Tap

11 point(s) selected





X

MAP Attributes

Layer: S-Water Points (4 selected)

	amenity	lit	pump
1	drinking_water	no	powered
2	drinking_water	no	manual
3	drinking_water	no	powered
4	drinking_water	yes	manual

4 point(s) selected

Map tools: zoom in, zoom out, search, summary, edit





KEY FEATURES

Water source

Map data collected by refugees indicate whether a pump is operational and if the area is lit at night, an important safety consideration.

Medical facility

Clinics and health centers are described by how they're constructed and how many doctors and nurses are on staff.

School

Information includes when a facility opened, whether it's permanent, and how many teachers work there.

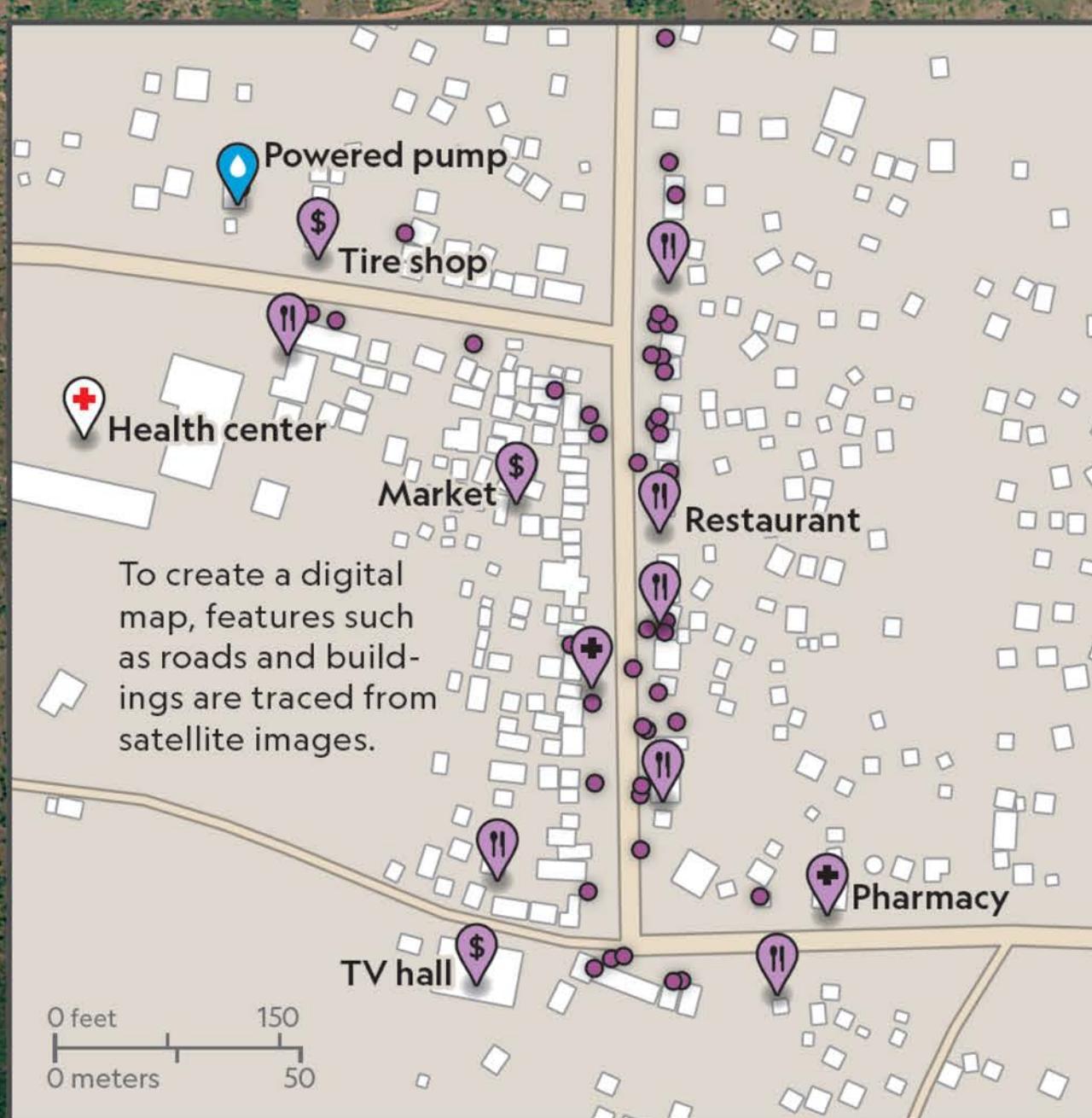
Place of worship

Many churches have been established and mapped in Bidibidi, along with a number of mosques.

Business*

As pharmacies, restaurants, convenience stores, and other shops open, they're added to the map, along with their hours.

*Dots represent unidentified shops.



were carved through head-high grass and over streams to make room for a flood of South Sudanese fleeing war just a few hours north. He and his family built a cluster of mud-brick homes on a plot of land. He got married and had a son. Now, for the nonprofit Humanitarian OpenStreetMap Team, he's documenting Bidibidi's transformation from temporary camp to permanent city.

With a single earbud in, Kwaje crosses the road to one of Bidibidi's five secondary schools. Thick tree limbs are enclosed by plastic tarps with window cutouts flapping in the wind. Kwaje is string bean tall and talkative, with a restless energy. But the day has been long, and as he walks across a rock-strewn courtyard, he's overtaken by a heat-induced apathy—until he catches sight of a young man in a gray dress shirt. "This was my teacher in South Sudan!"

He jogs over for a hug then folds his gangly frame into a chair, pulls out his phone, and drills Soko Khamis, his former high school teacher and now the Bidibidi school's academic director, with a series of questions, each punctuated by a finger snap: When did this school open? (February 2017.) Is this structure temporary? (Yes.) What are the challenges? (The bathrooms are falling apart. The students are hungry. Books are in short supply.)

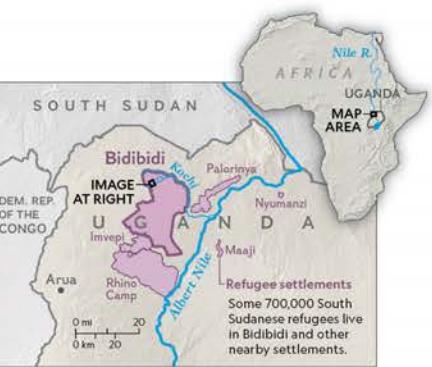
"When are you going back to our school?" he asks.

"Ah," Khamis sighs. "There is still war there."

A GREAT EXPERIMENT is under way in Uganda. An industrial skyline of water and cell towers hovers over sturdy mud huts and small farm plots. Schools and health centers are built from brick, slathered in concrete, and fitted with glass windows. Taps run freshwater, and small solar panels power streetlights, as well as radios blasting music from barbershops, televisions airing soccer matches in community halls, and cell phones snaking from charging stations in shops.

In camps around the world, refugees live crammed in tents, makeshift shelters, or metal dwellings. They're restricted by laws that make work and movement outside the camps impossible. Even in well-planned camps such as Azraq in Jordan's desert, the starkness of life without jobs or a sense of belonging sends refugees back to Syria or forces them to try to earn money in dangerous, under-the-table arrangements.

In Uganda, under one of the world's most progressive policies, those who've fled civil war in South Sudan can live, farm, and work freely.



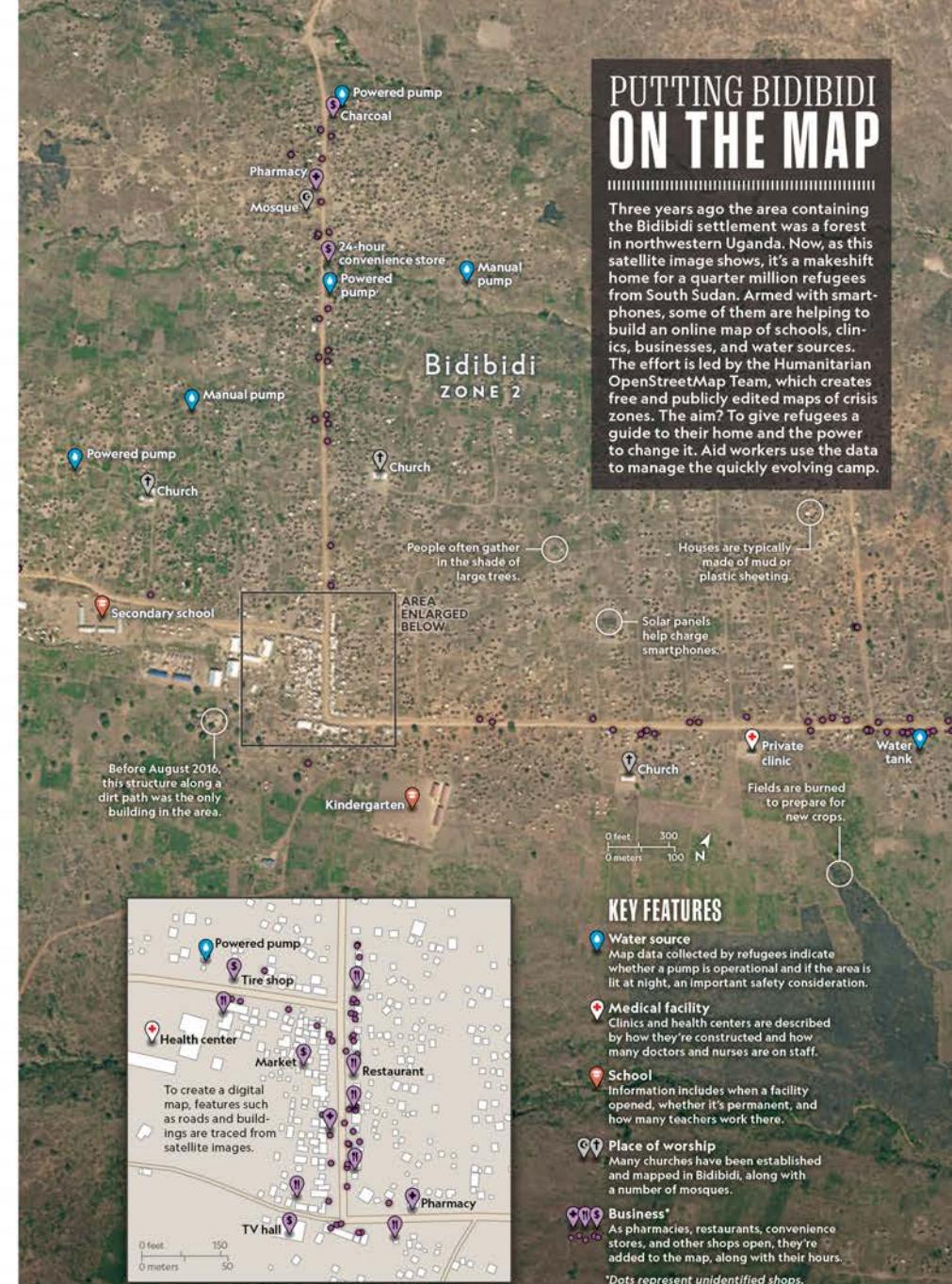
Here, Bidibidi's future is discussed at the highest levels of government and the international community. The goal: To build a livable city out of a refugee camp, one that might endure even if the refugees can return home someday.

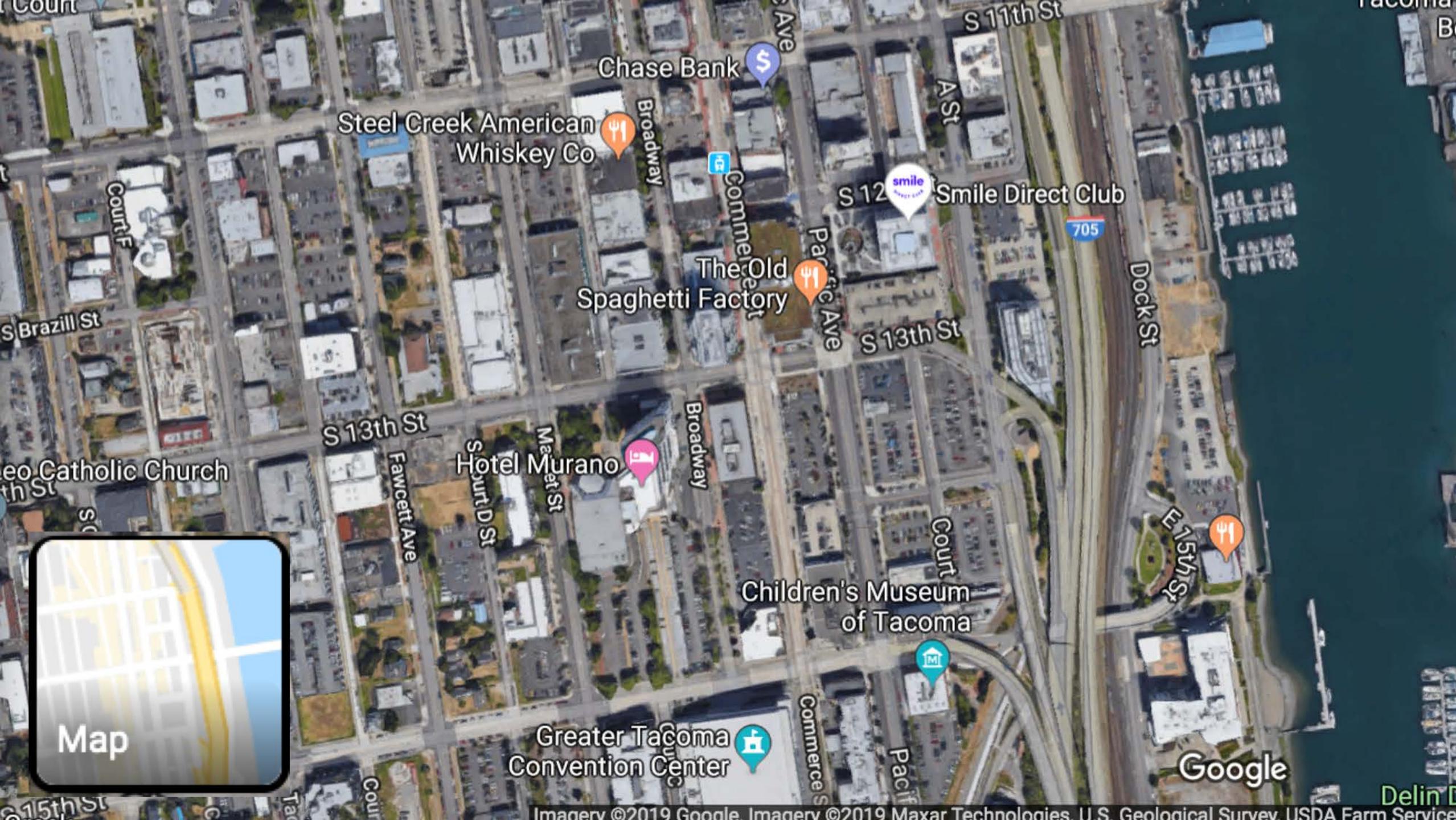
Consider that Venice was founded in the fifth century by refugees fleeing war on the mainland, and Palestinian camps founded 50 years ago are indistinguishable from other neighborhoods in the Middle East, and it seems feasible that a refugee crisis could birth a permanent—perhaps even a beautiful—city. Most camps worldwide are still built as temporary way stations. Speed and survival take priority, and aid groups, host countries, and refugees themselves hope they'll return home soon. The reality is different: Refugees stay in exile for an average of 10 years. As the world grapples with record-breaking displacement, maintaining temporary camps is costing hundreds of millions of dollars a year and suspending the lives of millions of people.

In December 2013, two years after South Sudan gained independence from Sudan, conflict between rival government leaders erupted into civil war. A peace deal paused the fighting, but in July 2016 the agreement crumbled. As indiscriminate killing swept the country, tens of thousands of people escaped to Uganda. Bidibidi opened that August, and almost immediately 6,000 people a day began arriving.

A month later, all 193 United Nations member states pledged to integrate refugees more fully into their societies. Thirteen countries, including Uganda, are piloting this strategy. But it's hardly revolutionary in Uganda, where refugees have been allowed to live and work for a decade. In 2017, Uganda launched an effort to encourage development in refugee-hosting areas.

Uganda has transformed the majority of Bidibidi's schools and clinics into permanent





Map

Delin D



Thank you!

#NACIS2019

rileydchampine.com

[@rileydchampine](https://twitter.com/rileydchampine)