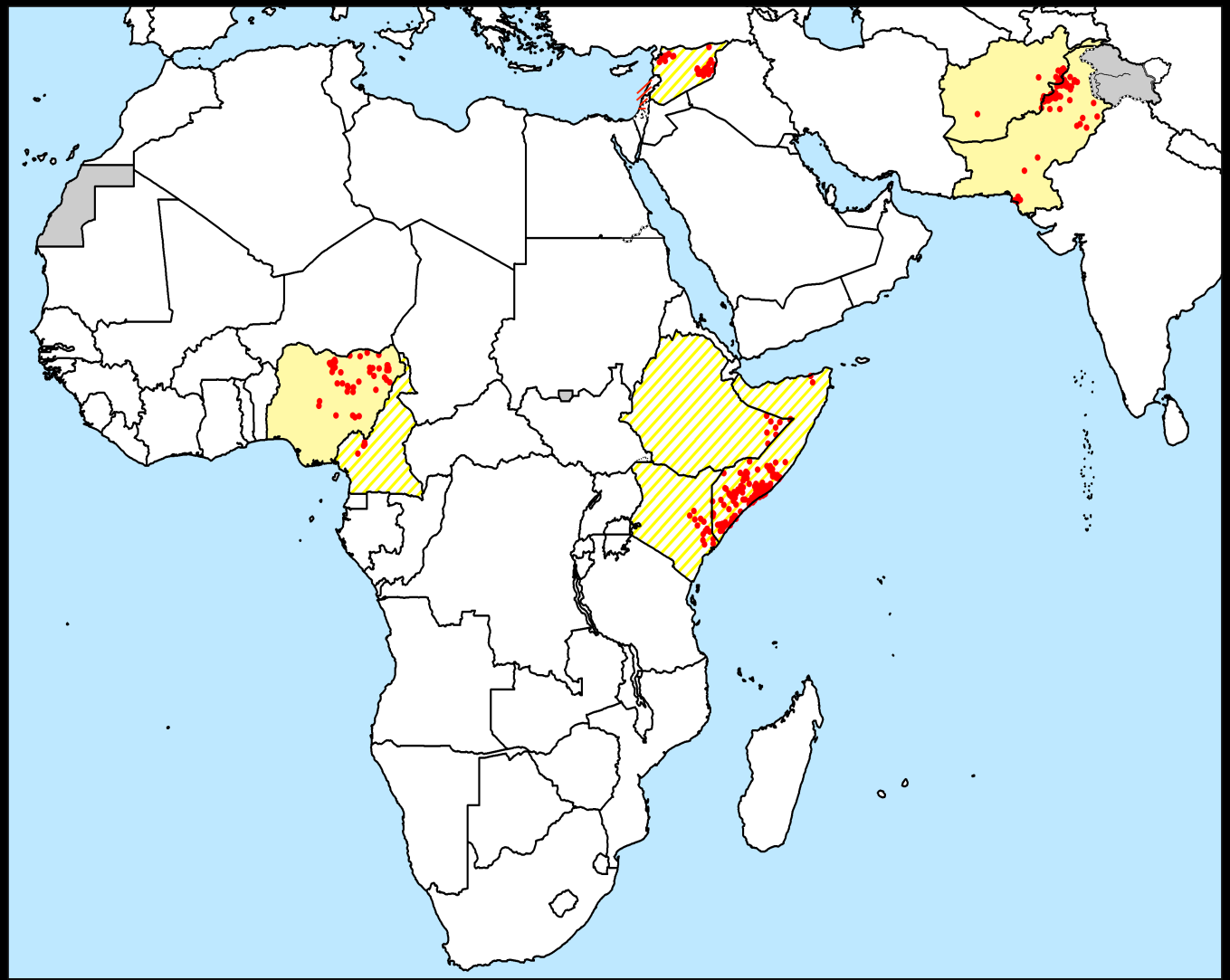
Progress toward interruption of poliovirus transmission

Global Polio Overview
Stopping Persistent cVDPV2
Preventing Emergence of cVDPV2

SAGE, 22 October 2014

Wild Poliovirus type 1 (WPV1) Cases, 2013

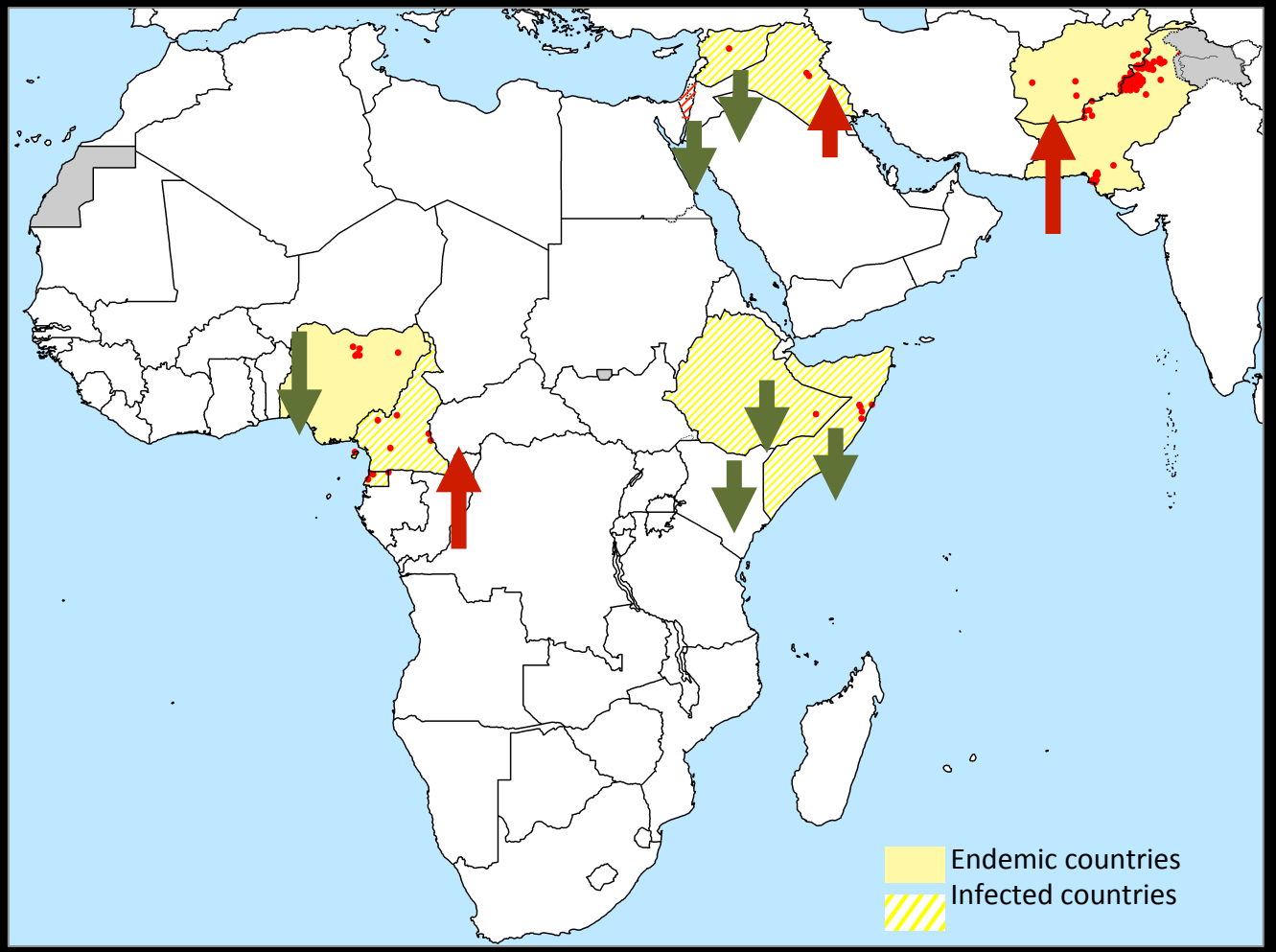


Country	2013
Pakistan	93
Afghanistan	14
Nigeria	53
Somalia	194
Cameroon	4
Equatorial Guinea	0
Iraq	0
Syria	35
Ethiopia	9
Kenya	14
Total	**416**

Israel = Env. positive isolates (2013 – 136)
Gaza = Env. positve isolates (2013 – 7)

Data as of 7 Oct 2014

WPV1 Cases, 2014*

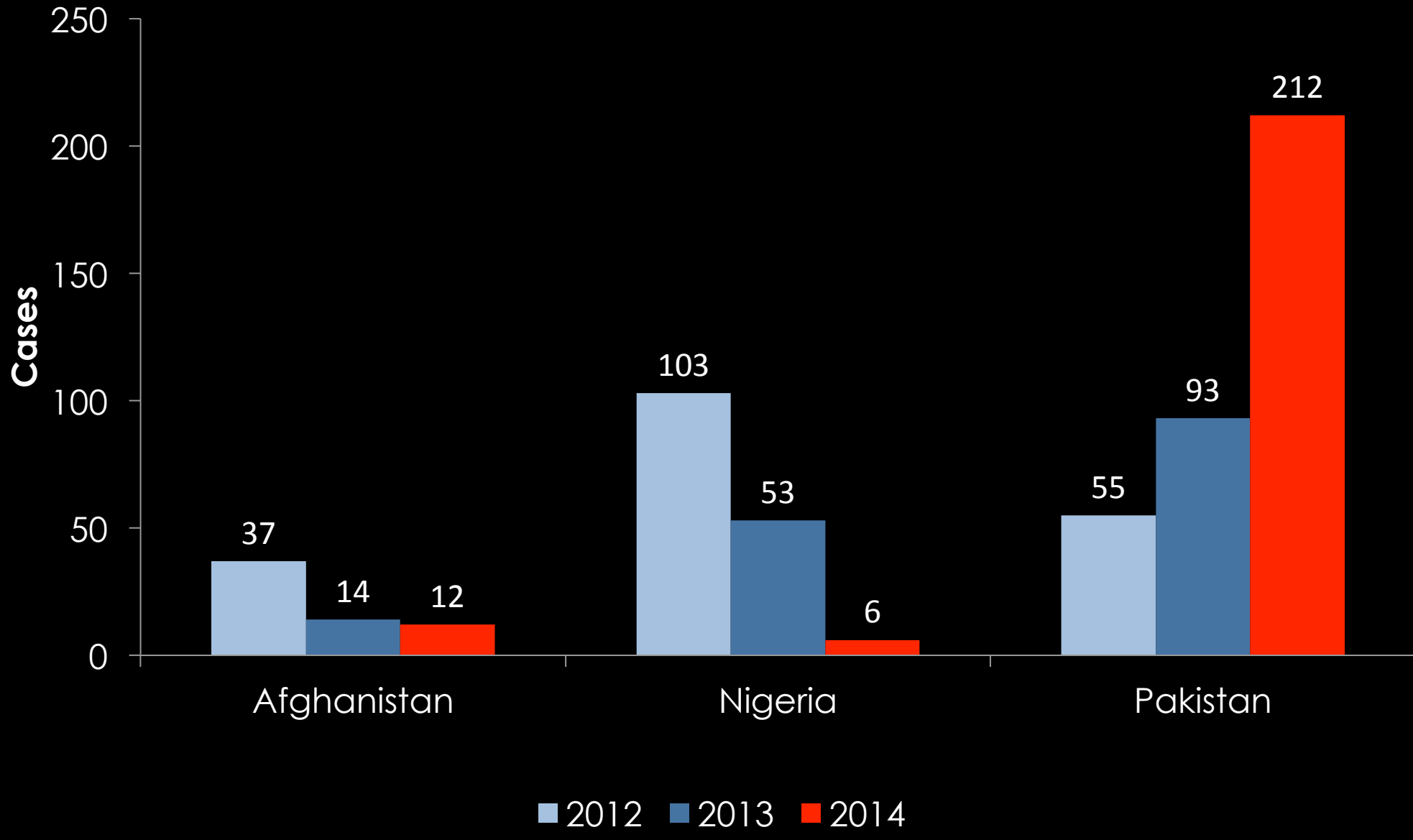


Country	2013 (Full year)	2014*
Pakistan	93	212
Afghanistan	14	12
Nigeria	53	6
Somalia	194	5
Cameroon	4	5
Equatorial Guinea	0	5
Iraq	0	2
Syria	35	1
Ethiopia	9	1
Kenya	14	0
Total	**416**	**249**

Israel = Env. positive isolates (2013 – 136 ; 2014-14 , last 30 Mar 2014)
Gaza = Env. positve isolates (2013 – 7 ; 2014- 1, Jan)

***Data as of 21 Oct 2014 (including advance notifications as of this date)**

WPV1 Cases, Endemic Countries, 2012-14*

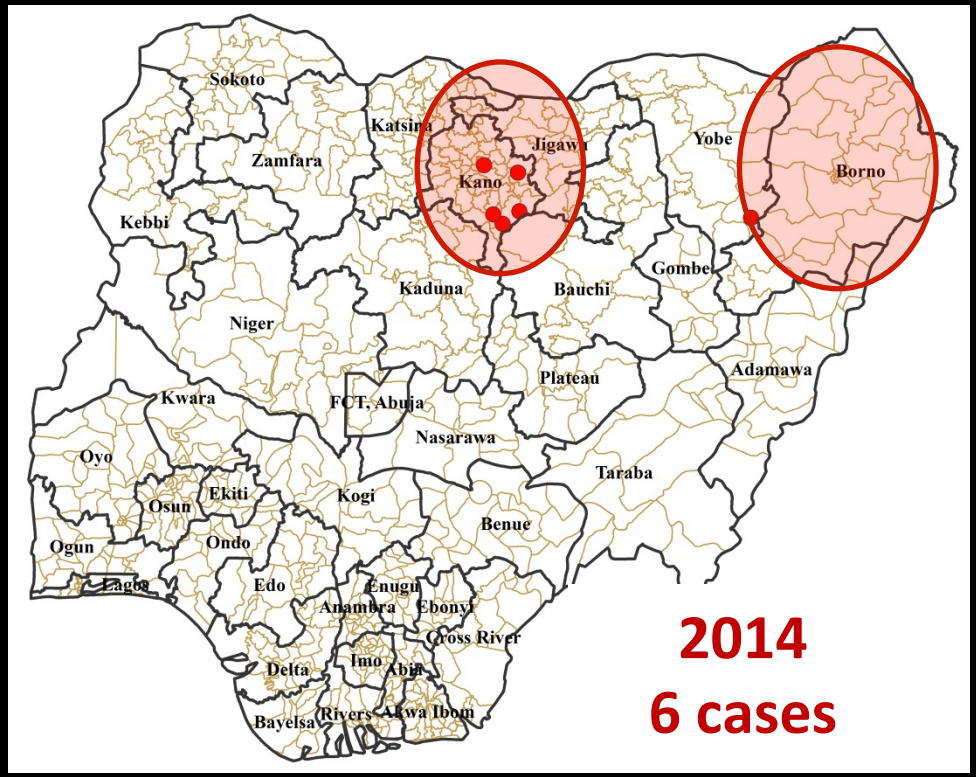


*Data as of 21 Oct 2014 (including advance notifications as of this date)

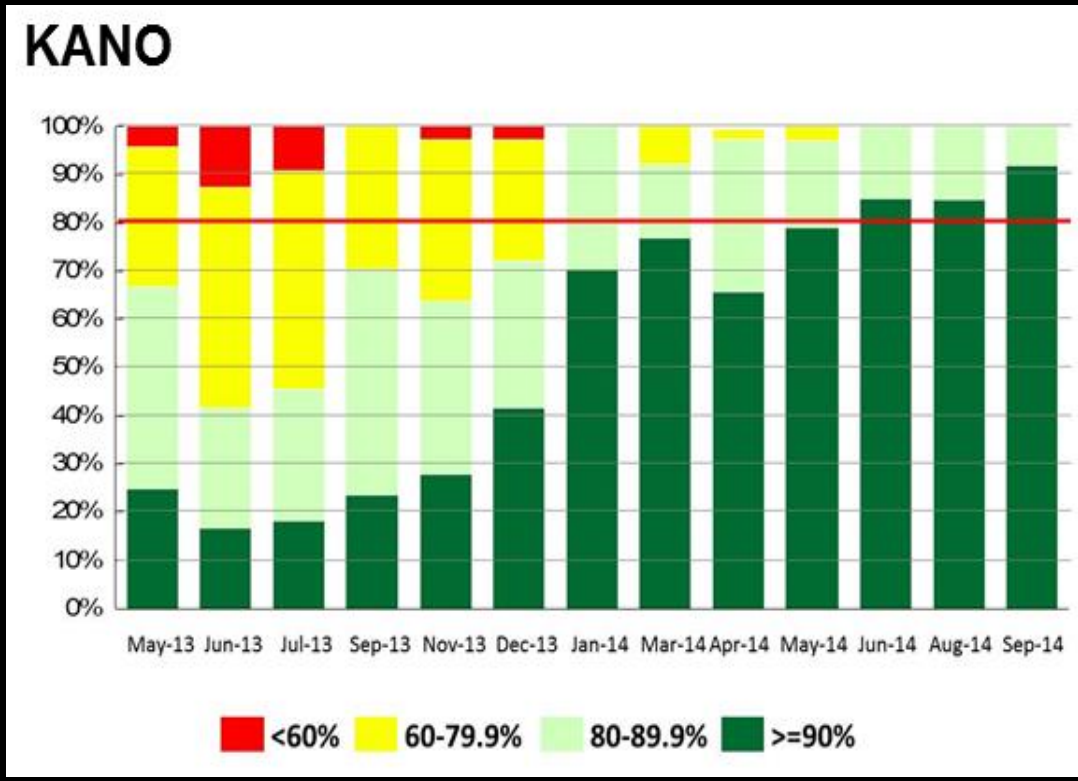
Major Goals 2014

1. Stop WPV in African continent
2. Pakistan/Afghan 'on-track' for 2015
3. Stop outbreaks & International spread

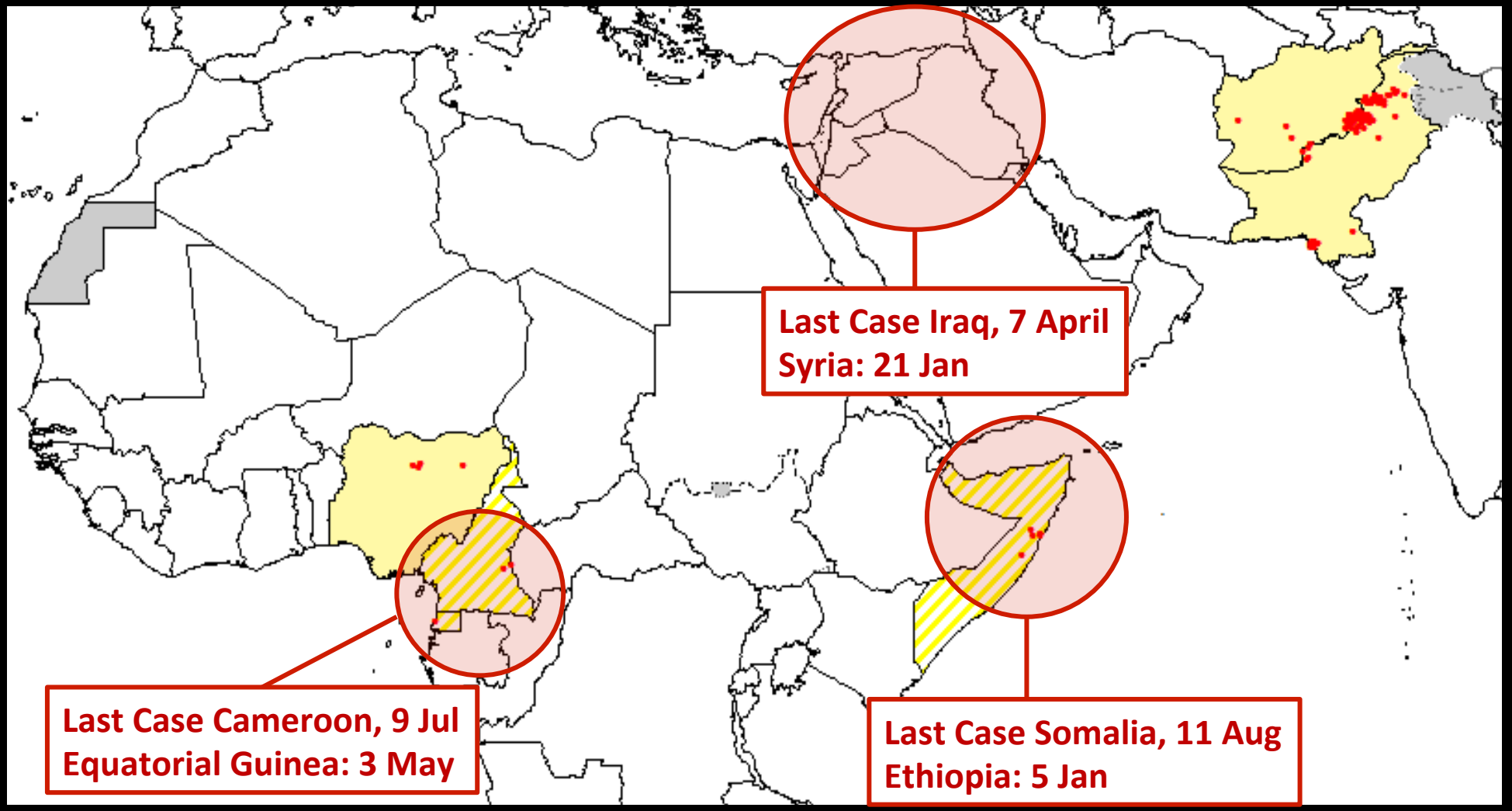
NIGERIA



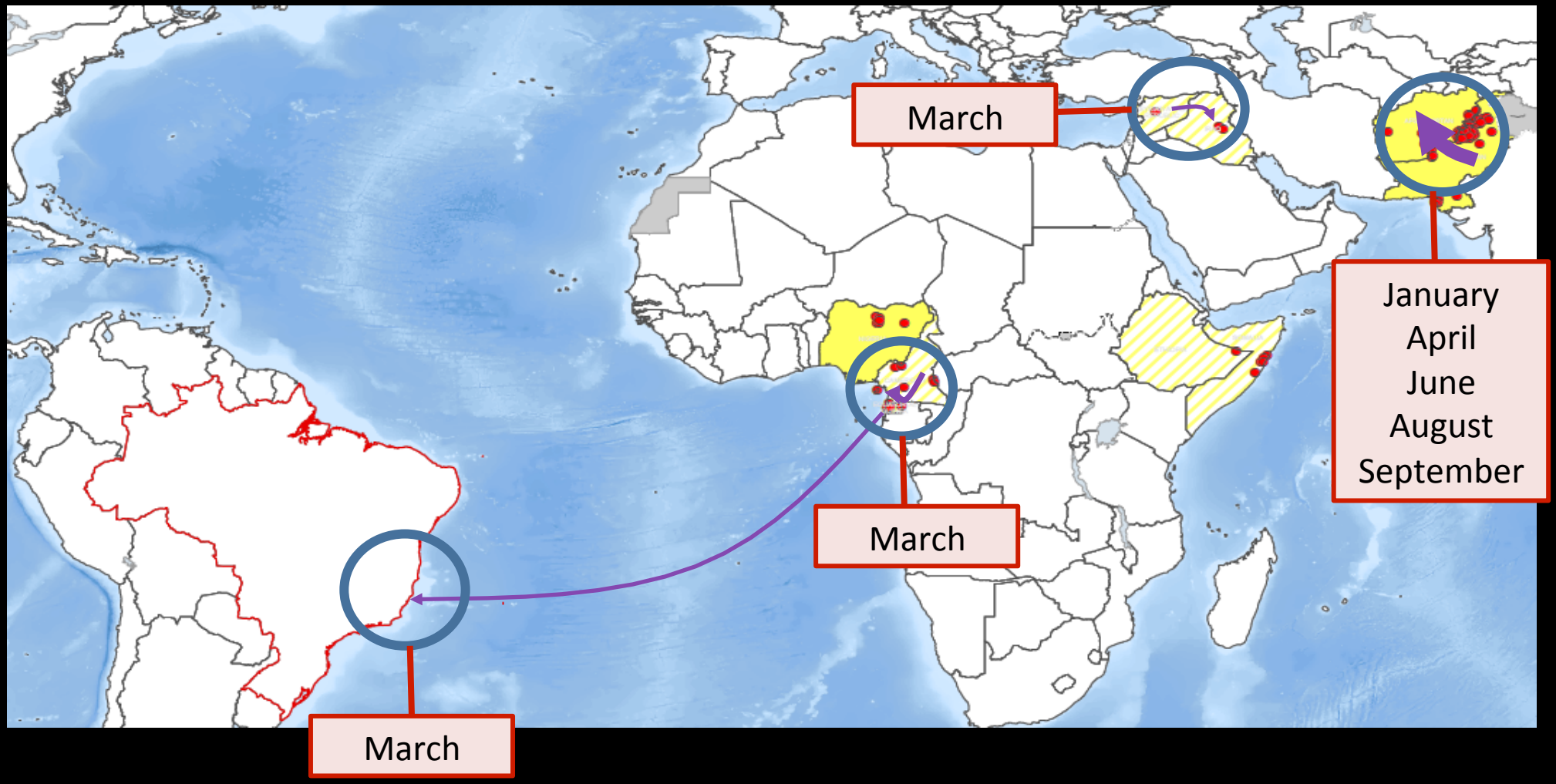
Trends in LQAS results



WPV Cases, Previous 6 Months

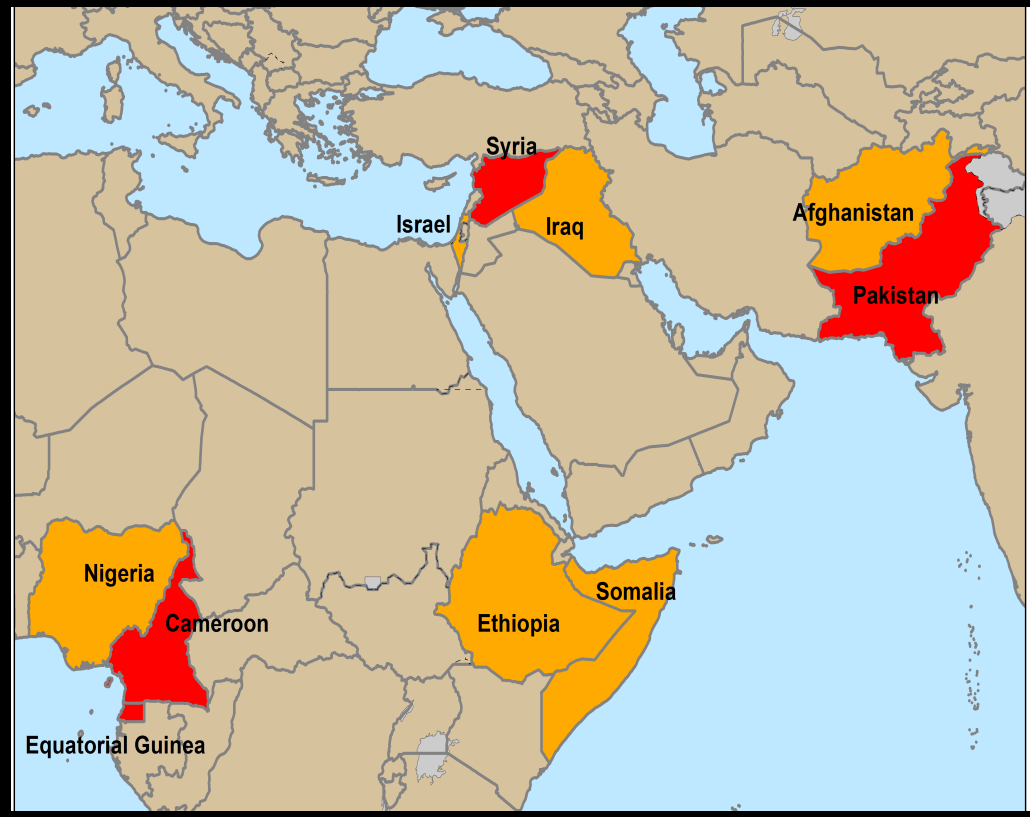


International exportation of poliovirus in 2014



Preventing International spread

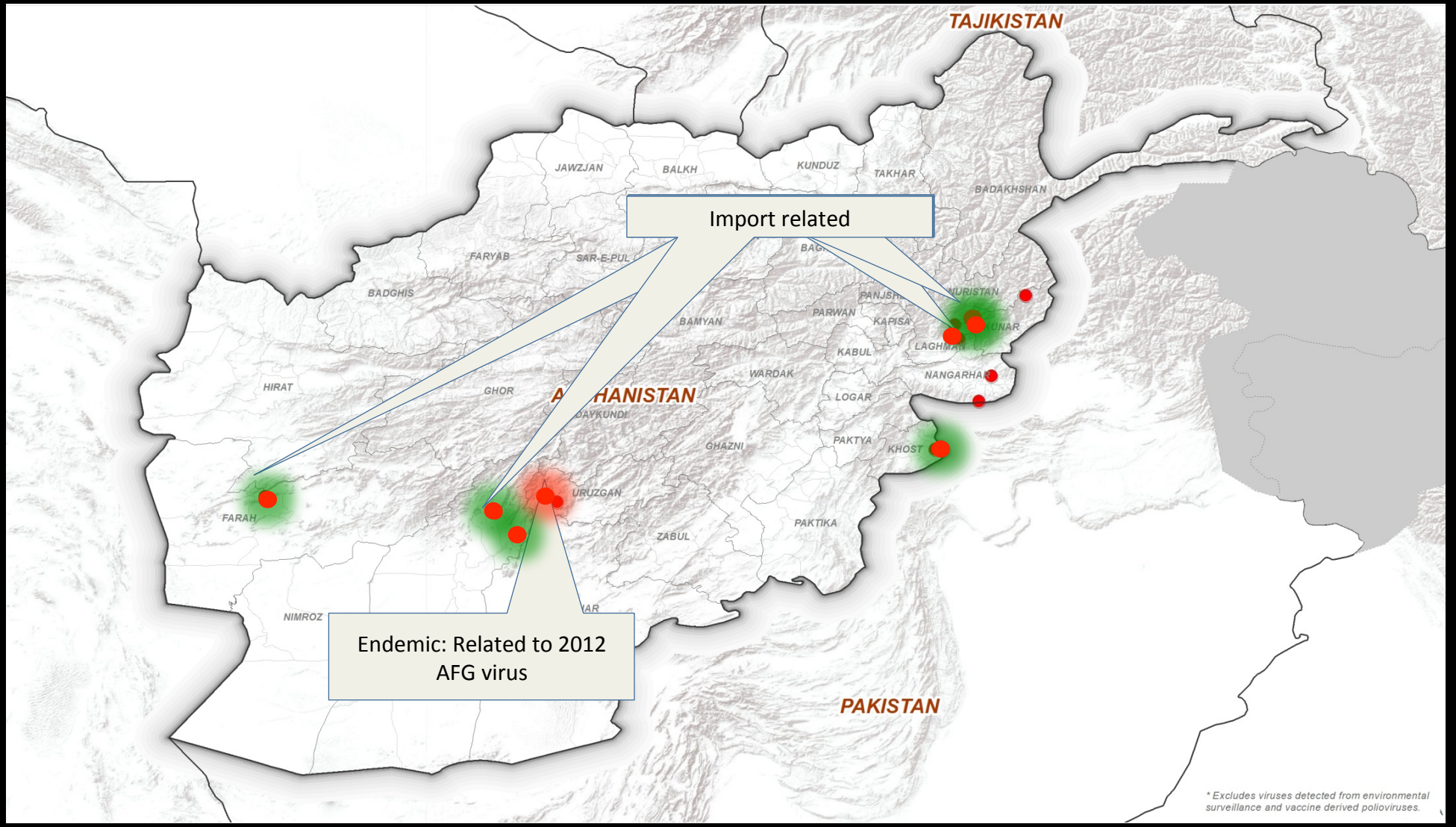
- Public Health Emergency of International Concern (PHEIC) declared by DG, WHO, on 5 May 2014; extended 31 July, 2014
- Risk mitigation in high risk countries
  - –Intensification of mass vaccination campaigns
  - –Additional investment of > $120 million in 2014



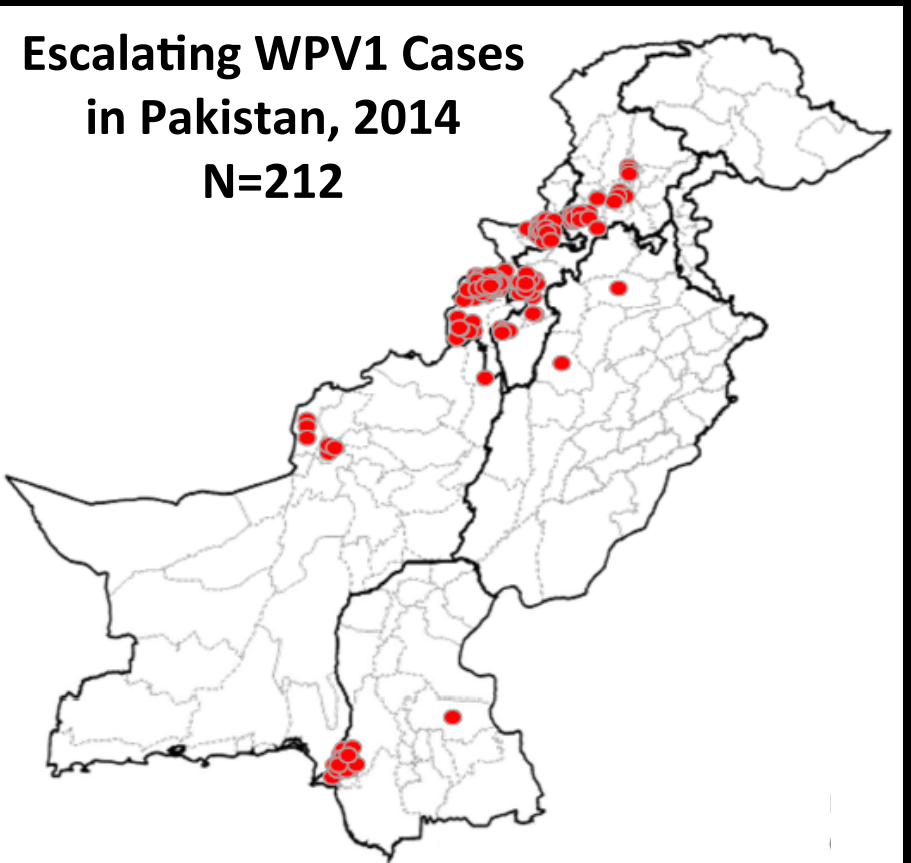
Countries with circulating wild poliovirus, but NOT currently exporting

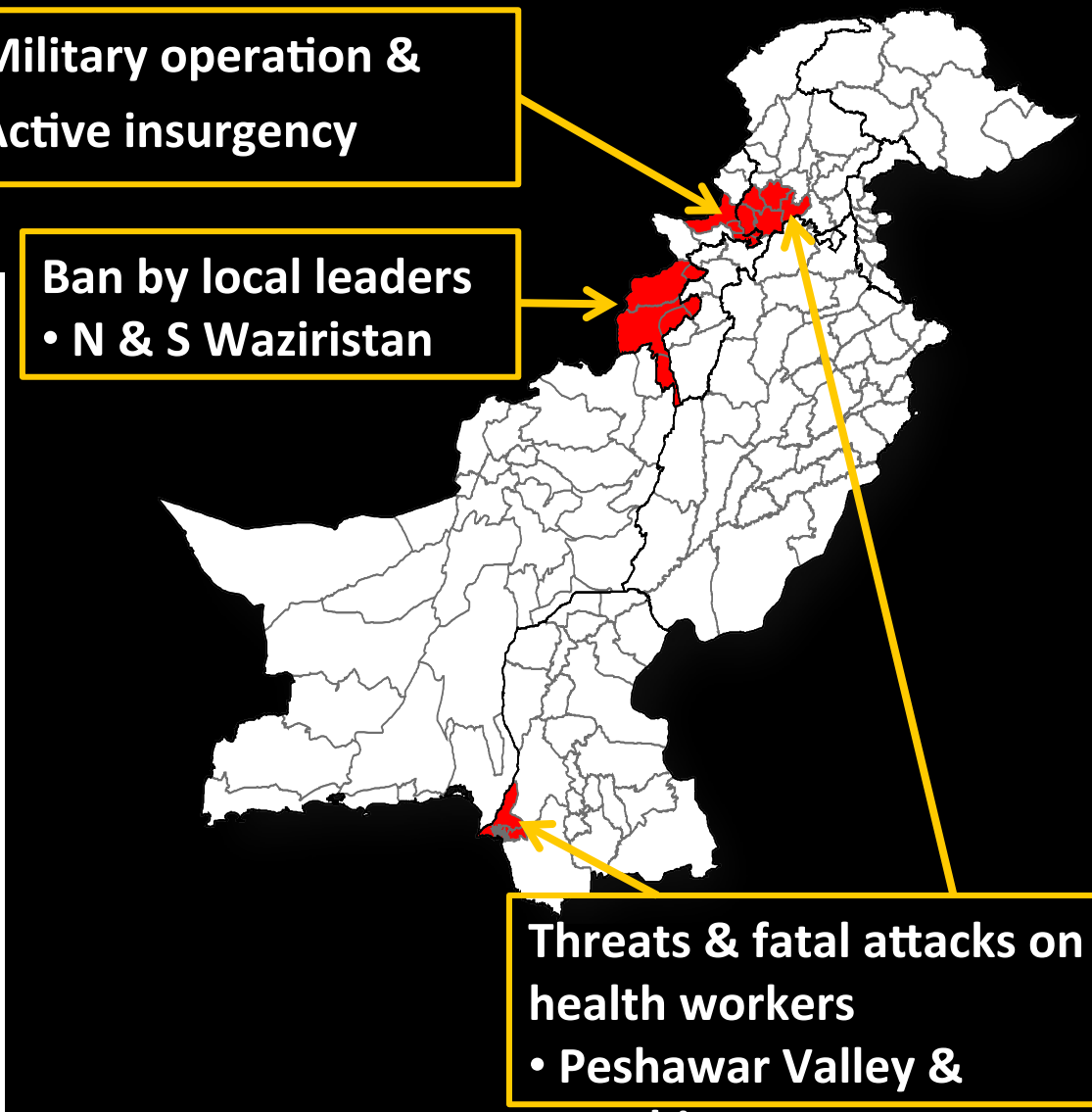
Countries currently exporting wild poliovirus

Endemic & Imported WPV Cases, Afghanistan, 2014



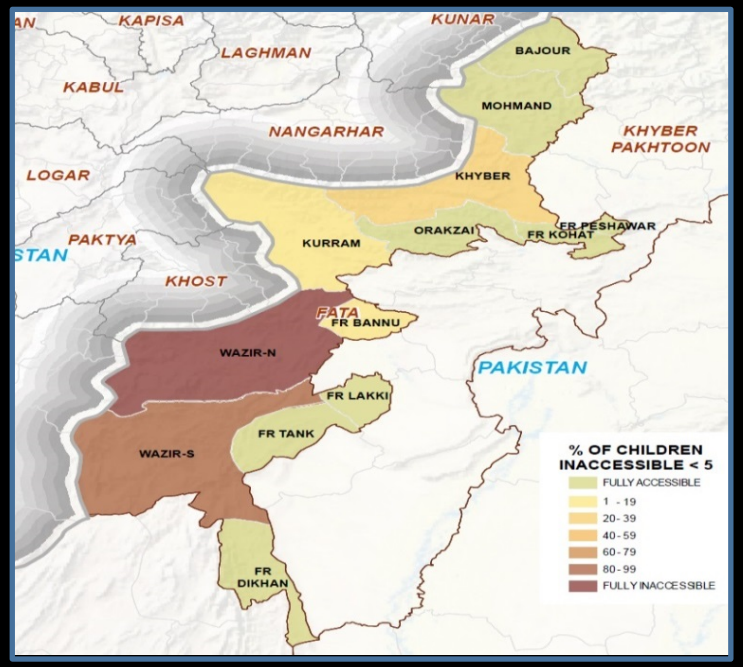
Pakistan: Insecurity & Inaccessibility



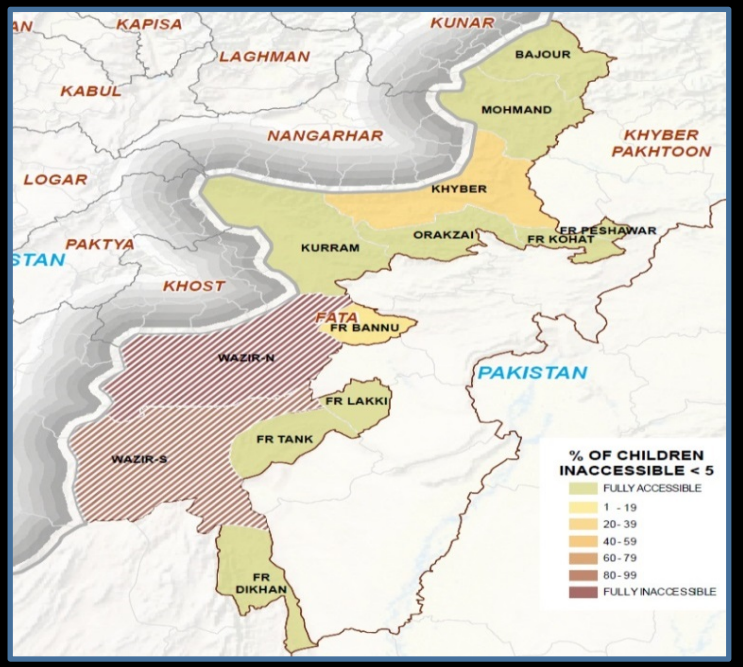


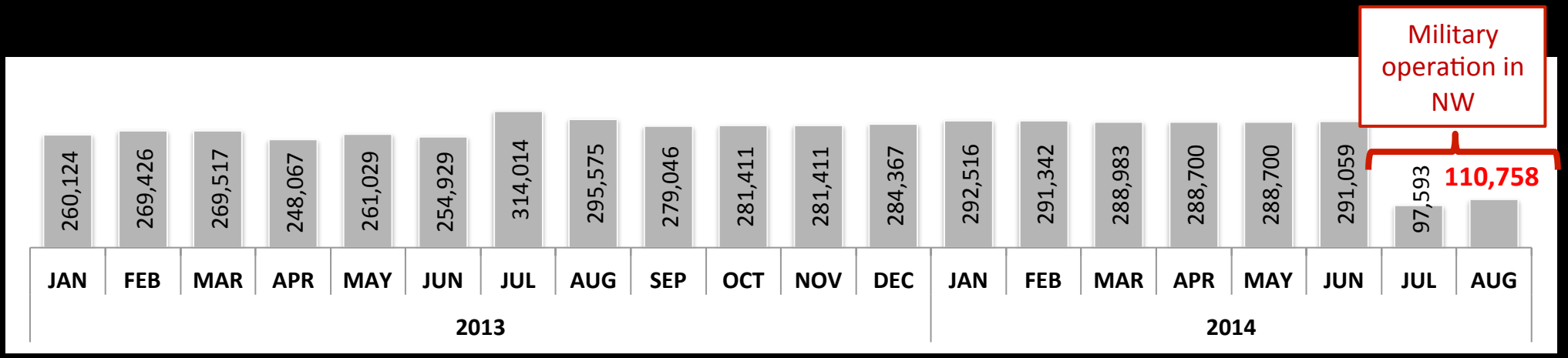
Inaccessibility, FATA, Pakistan

SIAs until June 2014



August 2014 SIA

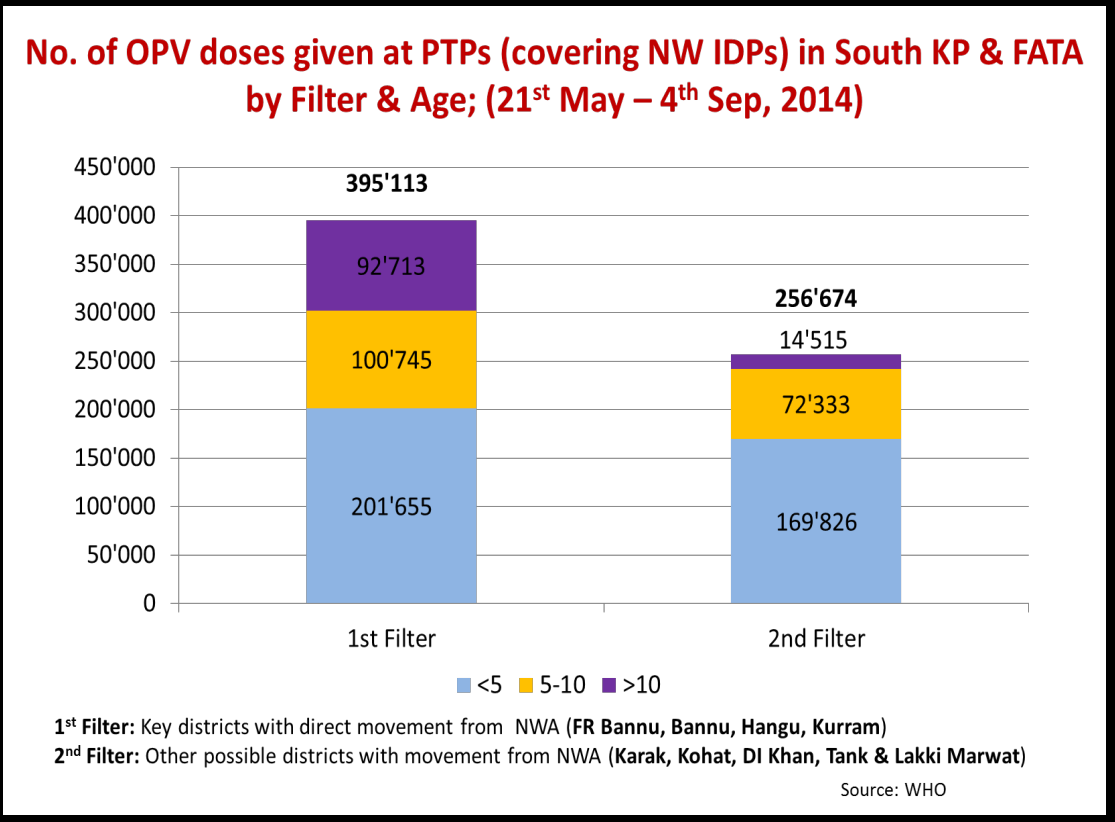


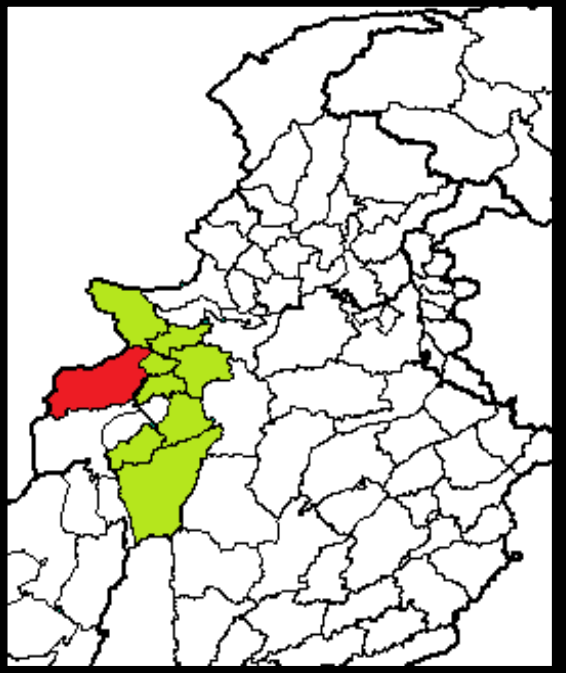


Despite significant population displacement from NW a proportion of population remains inside (NW excluded from Jul and Aug estimates)

Vaccination of Displaced Population from N Waziristan

650,000 IDPs from NW vaccinated in transit





- 4 SIAs targeting IDPs & host communities
- Vaccinated >550,000 children >5 y

Risks

- Head of State commitment
  - Attention/support (Pak, C Africa)
  - Elections (Nigeria)
  - Leadership transition (Afg)
- Insecurity, conflict
- Impact of Ebola outbreak

Getting Pakistan & Afghanistan on Track

Pakistan

- National commitment, including the Military
- Emergency operations & management (EOC)
- 'Low Season' plan with GPEI surge

Afghanistan

- Engagement with new national leadership
- Intensified focus on 'missed' children
- Maintaining dialogue with non-state actors

Innovative strategies to access children

- Community engagement
- Security tailored to local context
- Operational flexibility
- Negotiated access
  - non-state actors, Traditional leaders, Military
- Transit point vaccination, internally displaced
- Use of IPV with OPV in vaccination campaigns

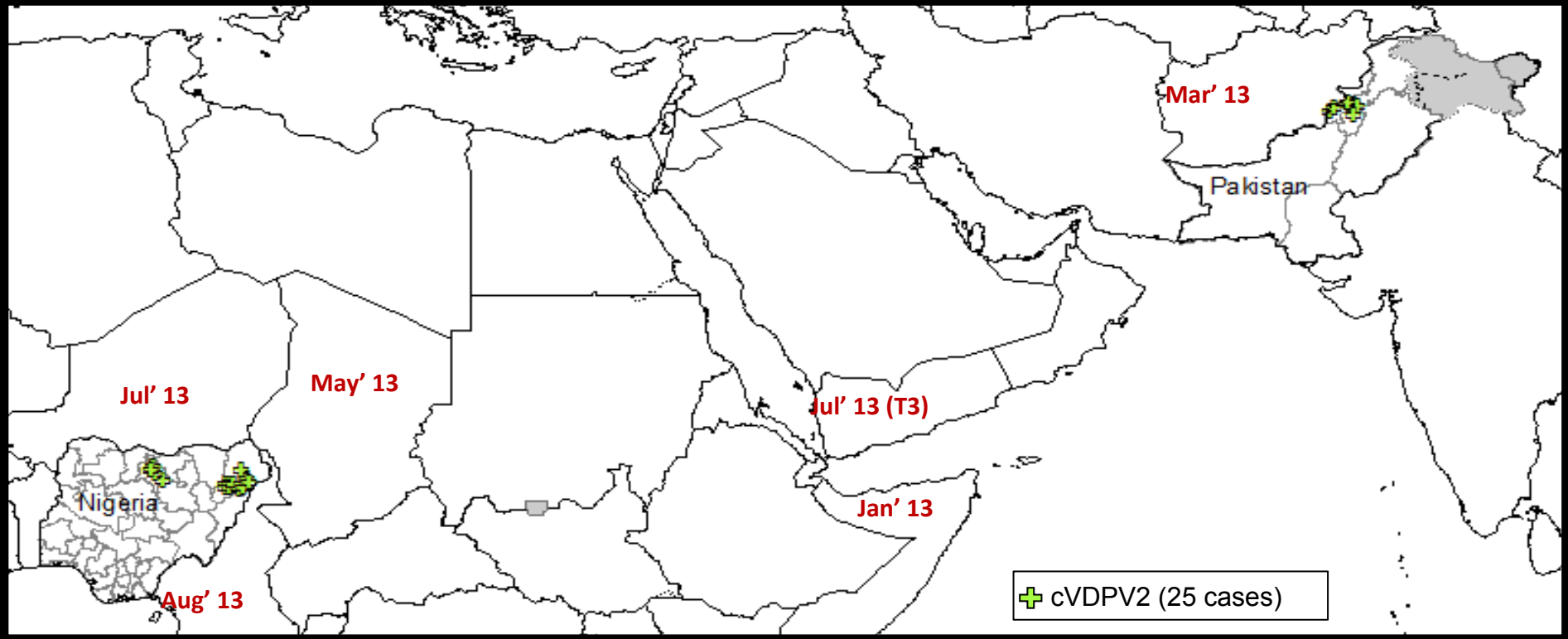
Summary

- Strong progress in Nigeria
- Africa can stop WPV in 2014 – Need HoS commitment in C Africa
- Pakistan program not yet on track, needs strong leadership
- Intense efforts to reduce risk of international spread
  - Pakistan situation, conflict & insecurity still pose risks
- Building trust with communities in key areas a critical priority
- Efforts to mitigate impact of the escalating Ebola outbreak

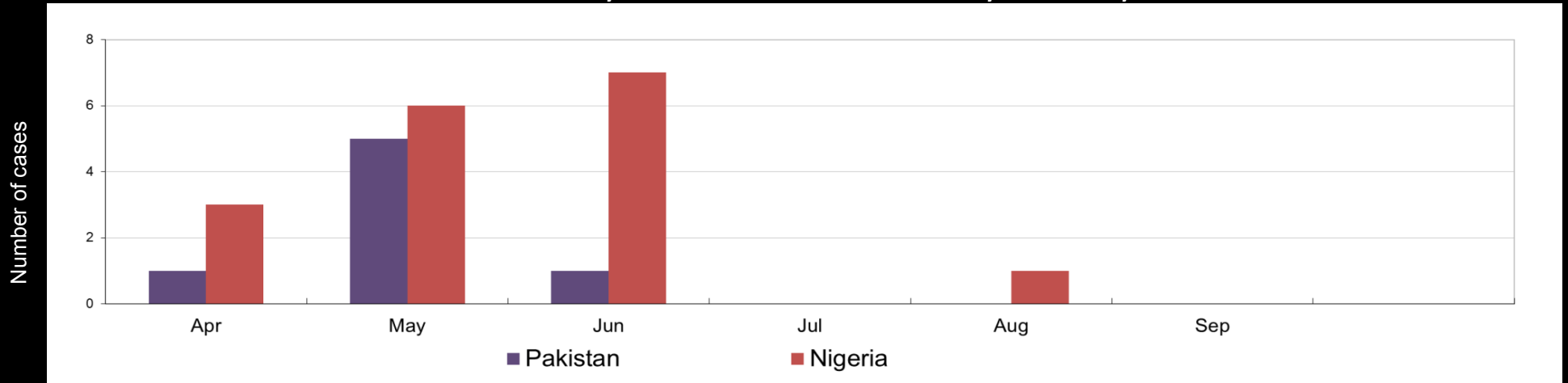
Trigger for tOPV withdrawal:

Elimination of 'persistent cVDPV2s'

Circulating Vaccine-derived Poliovirus Cases, Last 6 Months



Monthly Distribution of Cases by Country



cVDPV2 Transmission & Timeline for OPV2 Withdrawal Cases & Environmental Isolates, 2013-14

Tracking Persistent cVDPV2 Outbreaks with the goal of stopping OPV2 use in April 2016

Report date: 22 October 2014

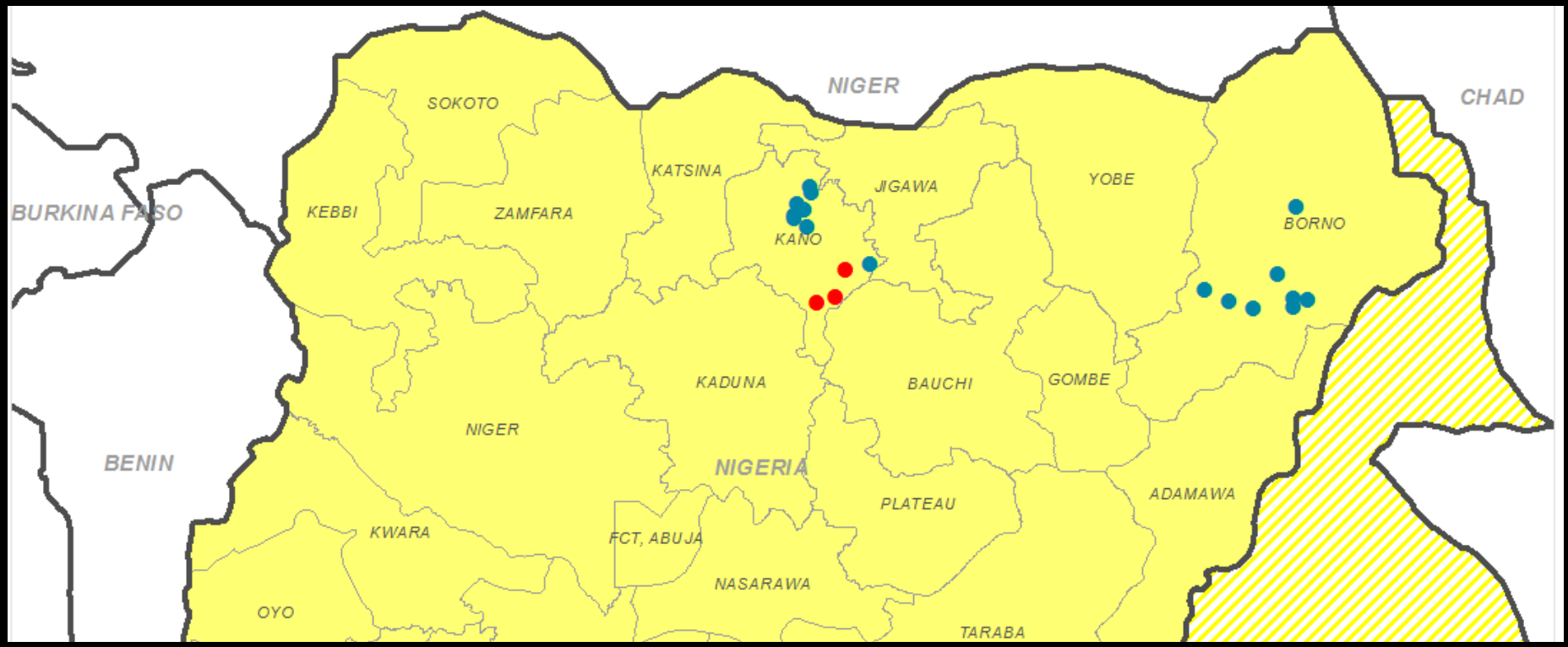
Year / Month

Outbreak, year of emergence	Affected Country	Source	State / Province	2013												2014												2015												2016			
				Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Nigeria, 2005-08	Nigeria	AFP	Borno															X																								
			Kano																	X	X																						
		ENV	Kano																X	X	X	X	X	X																		
			Kaduna																		X		X																				
			Sokoto	X	X							X	X	X	X		X		X	X	X	X	X																				
Chad, 2012	Chad	AFP	Batha				X																																			
			Borkou-Tibesti					X																																			
			Kamen					X																																			
			Salamat		X																																					
	Cameroon	AFP	Ext. Nord					X	X	X	X																															
	Niger	AFP	Diffa							X																																
	Nigeria	AFP	Adamawa											X																												
			Borno						X					X	X		X	X	X	X	X																					
		ENV	Borno										X	X	X	X	X	X	X	X																						
			Kano			X									X				X																								
Pakistan, 2012	Pakistan	AFP	Balochistan	X					X																																		
			FATA				X		X	X	X	X	X	X	X	X		X	X	X																						
			Sindh		X			X		X																																
		ENV	Sindh				X						X																													
	Afghanistan	AFP	Kandahar			X																																				
		ENV																																								
Pakistan, 2013 (two emergences)	Pakistan	AFP	FATA												X	X				X	X		X																		
			KP																X																							
		ENV	Sindh														X	X				X		X																		

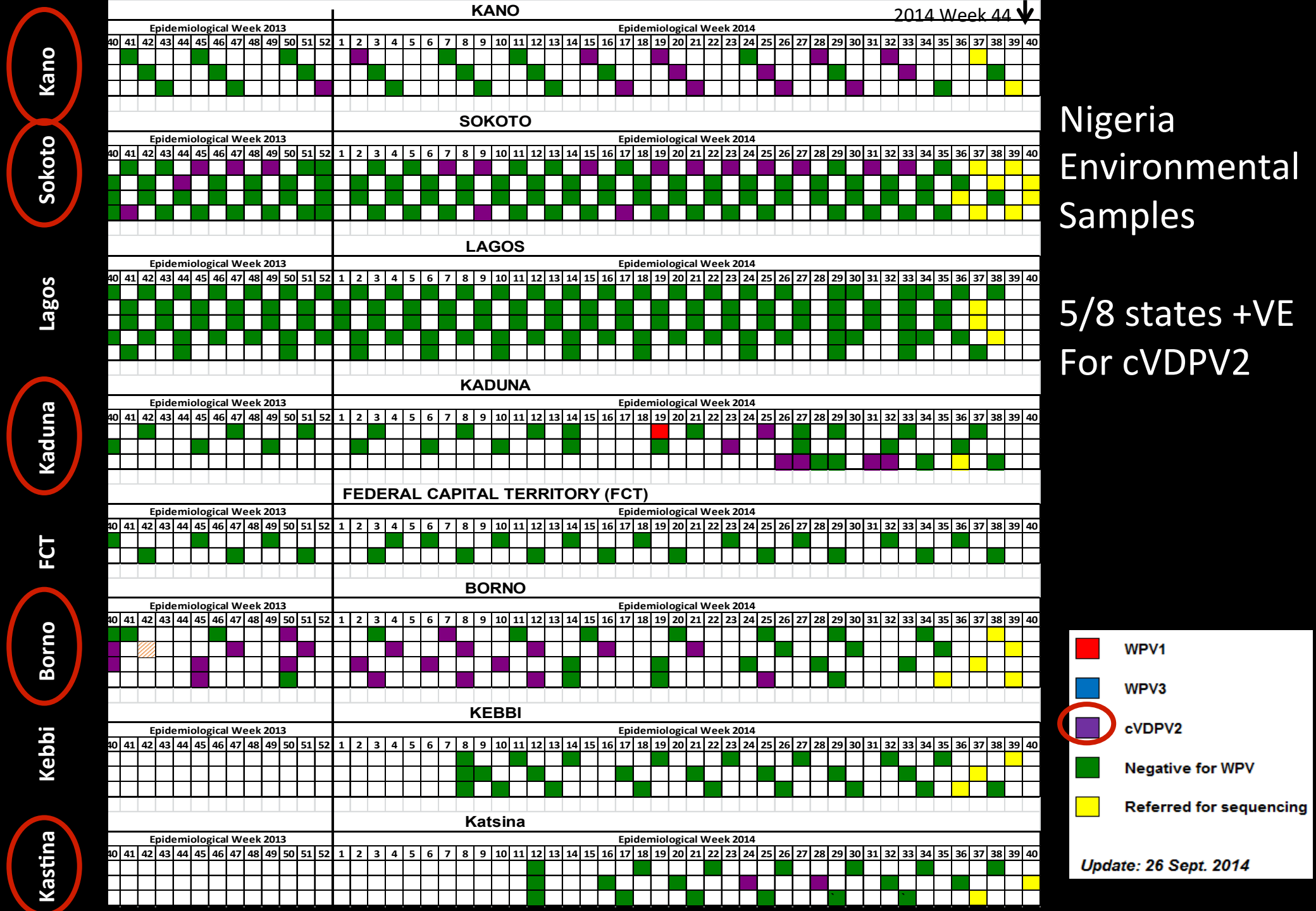
Key dates

X At least one cVDPV2 reported per given month

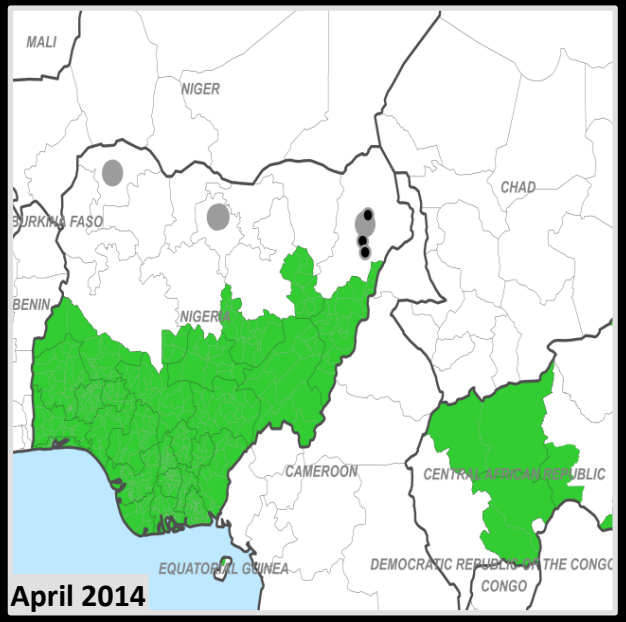
cVDPV2 Cases in Nigeria, 2014

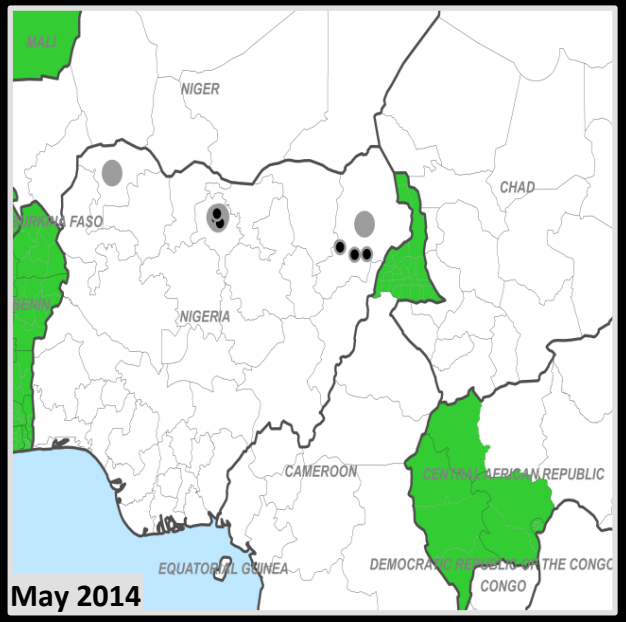


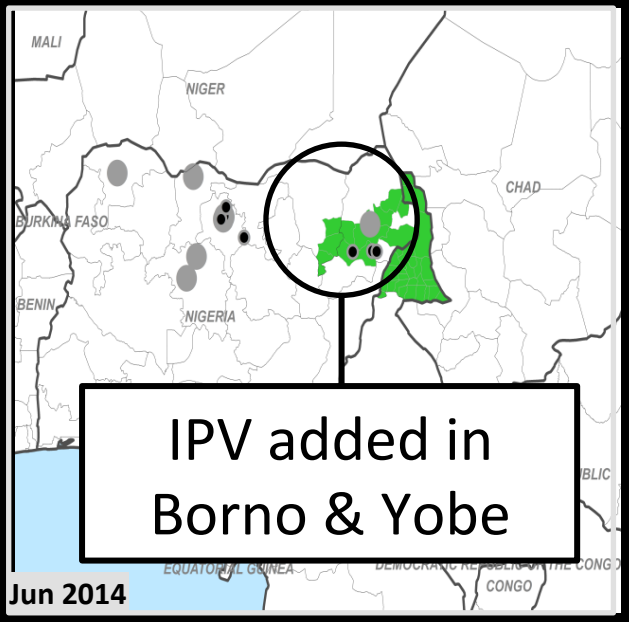
- 29 Separate emergences of cVDPV2 beginning 2005
- Only one dominant emergence has survived and evolved into multiple genetic clusters
- A cVDPV2 strain imported from Chad is circulating in northeast

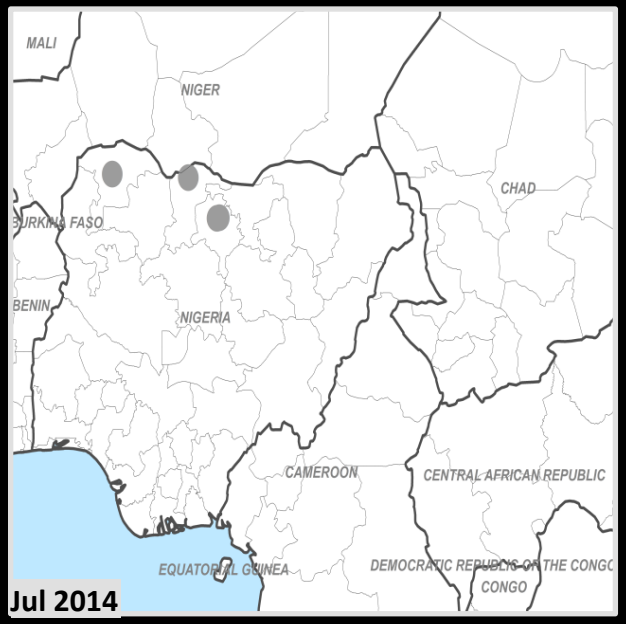

KANO
2014 Week 44
Epidemiological Week 2013
Epidemiological Week 2014
Kano
SOKOTO
Sokoto
LAGOS
Lagos
KADUNA
Kaduna
FEDERAL CAPITAL TERRITORY (FCT)
FCT
BORNO
Borno
KEBBI
Kebbi
Katsina
Kastina
Nigeria Environmental Samples
5/8 states +VE For cVDPV2
WPV1
WPV3
cVDPV2
Negative for WPV
Referred for sequencing
Update: 26 Sept. 2014

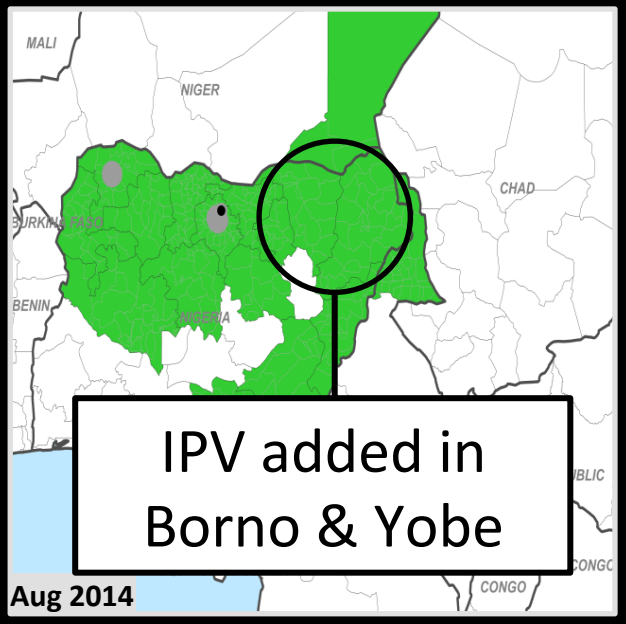
tOPV SIAs conducted in the previous 6 months, Nigeria

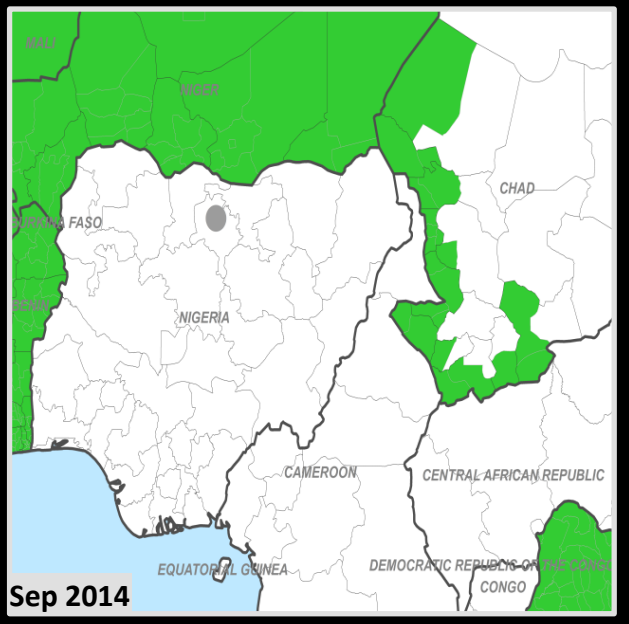








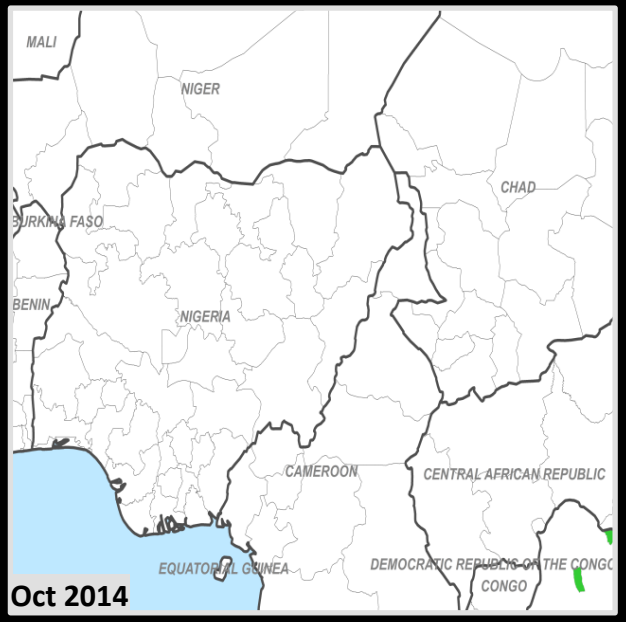


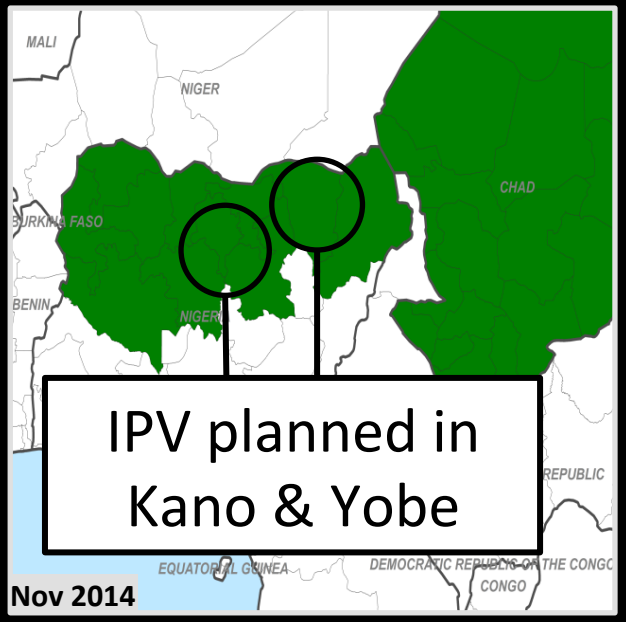


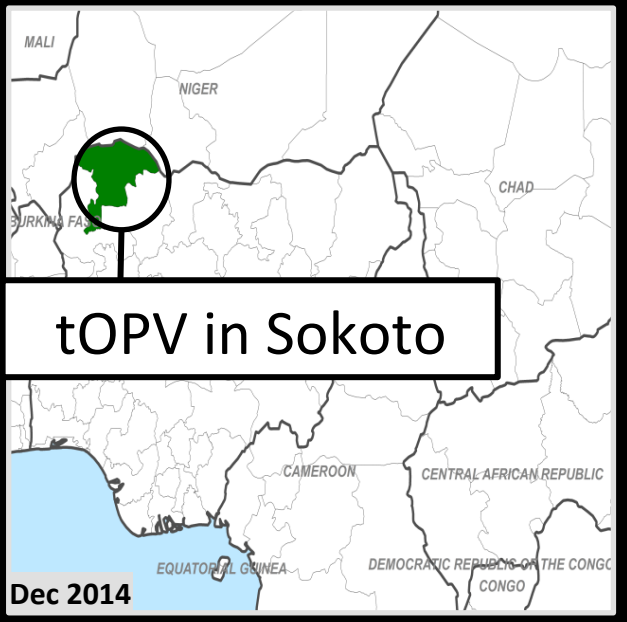
cVDPV2 case cVDPV2 E.S. isolate tOPV conducted

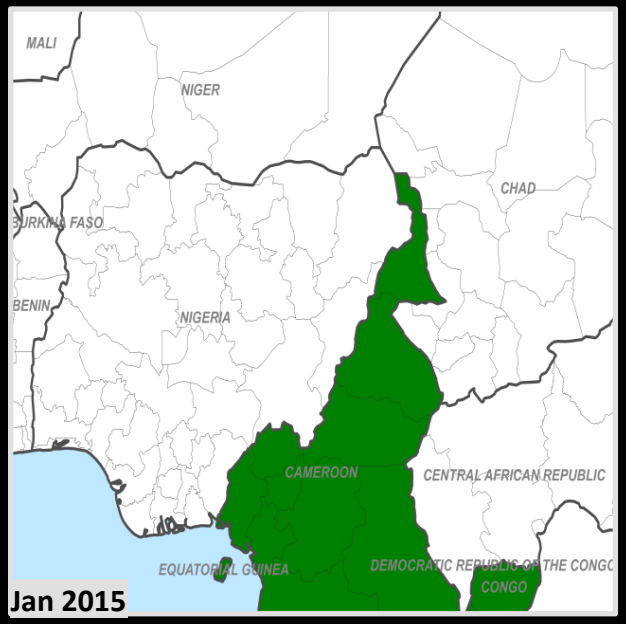
Data in WHO/HQ as of 14 Oct 2014

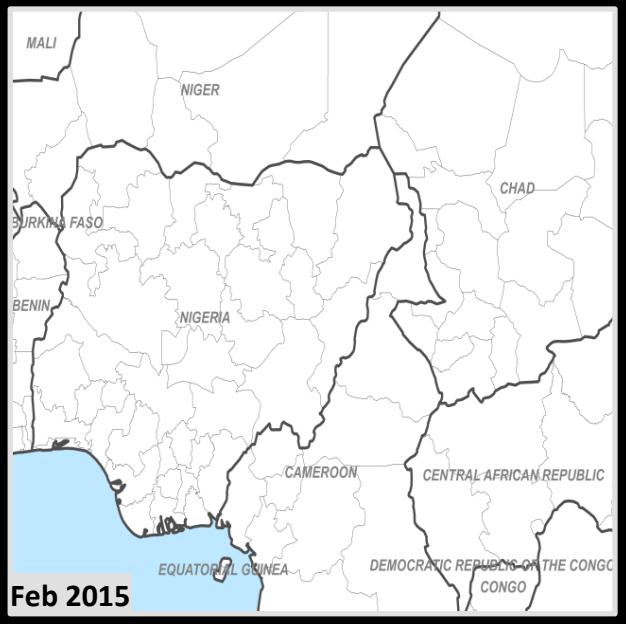
tOPV SIAs planned in the next 6 months, Nigeria

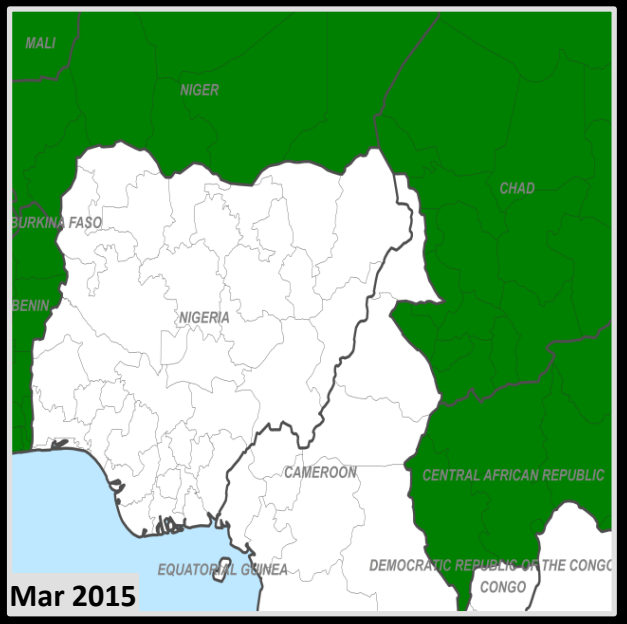












cVDPV2 case

cVDPV2 E.S. isolate

tOPV/IPV planned

Data in WHO/HQ as of 14 Oct 2014

cVDPV2 Cessation in Nigeria

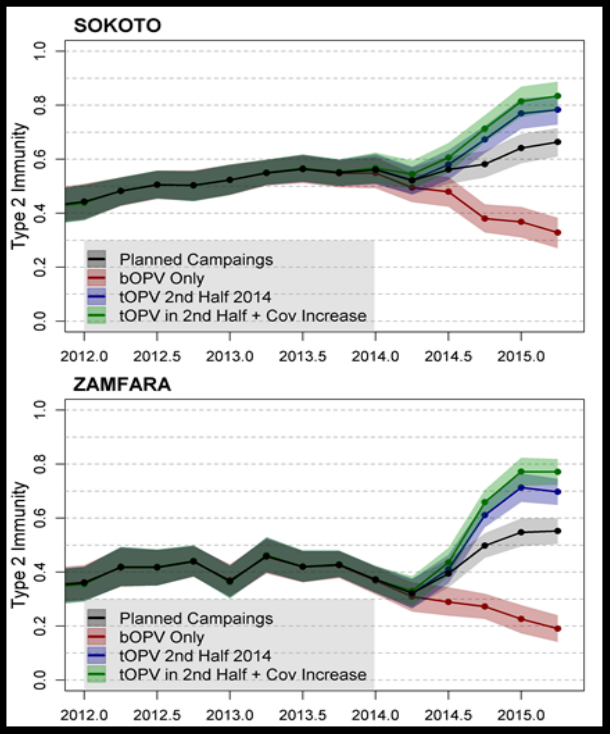
- A large-scale tOPV SNID implemented in August across northern states after a gap of 17 mos
- IPV used in campaigns targeting children 14 wks to 5y in all LGAs of Borno & half of Yobe in Jun & Aug
  - >1.7 million children vaccinated
  - Remaining LGAs of Yobe will be covered in November
- Large-scale tOPV SIAs planned in Nov and Mar
- A bOPV round in early 2015 might be changed to tOPV based on epidemiology (ERC)

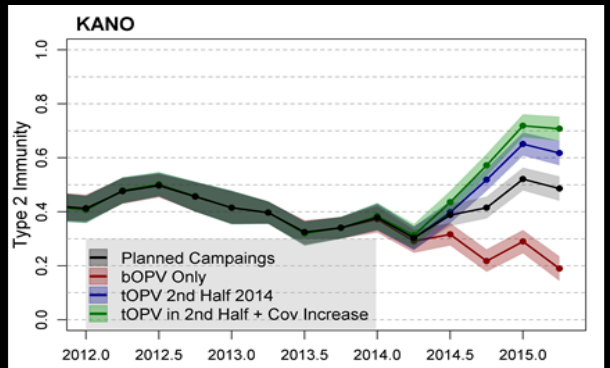
Projection of type 2 in Nigeria (IDM polio team)

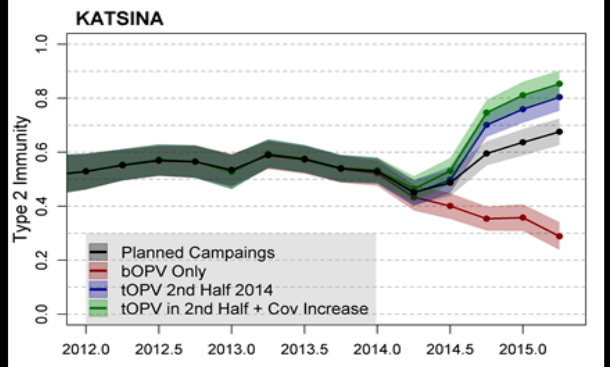
Type 2 Immunity

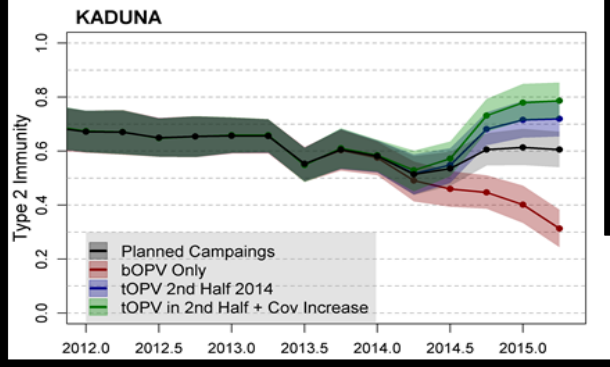
Projection under different Vaccine choices & Cov

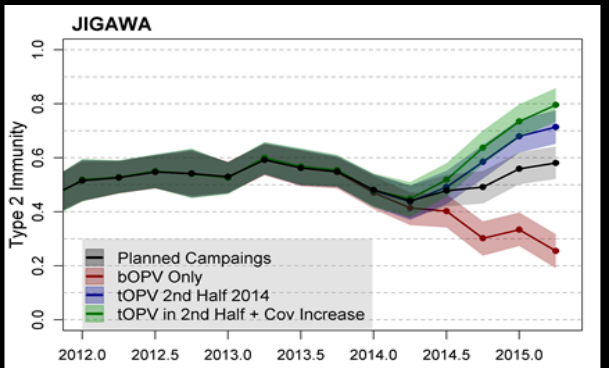
Jan 2012 – June 2015

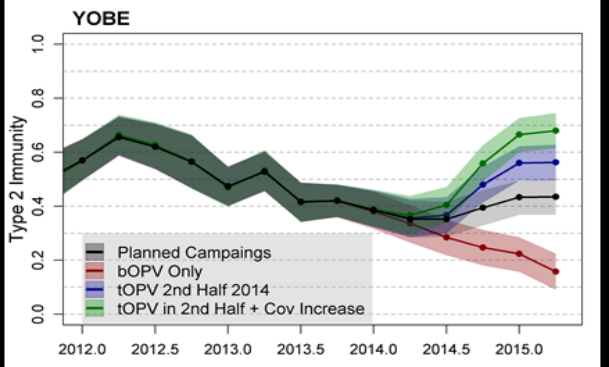


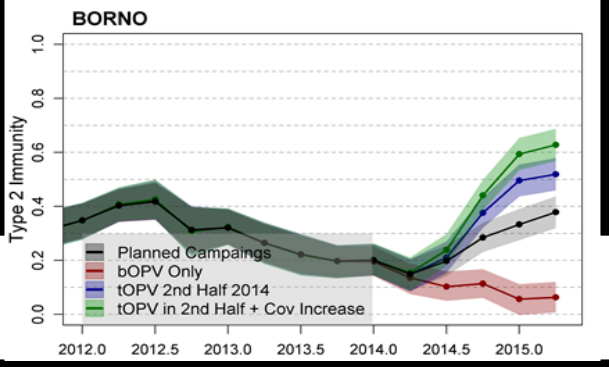












Current SIA plan may not be sufficient to achieve the necessary population immunity against type 2 (55%) in some states in northern Nigeria.

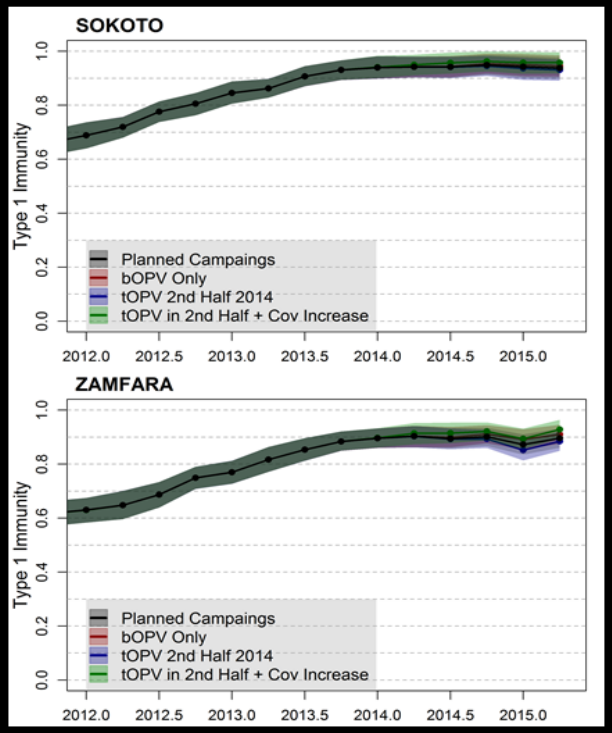
Projection of type 1 in Nigeria (IDM polio team)

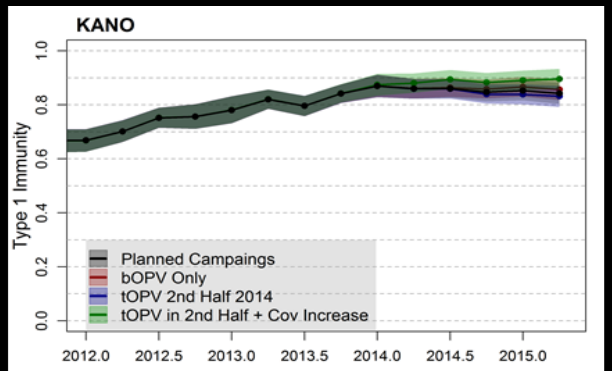
Type 1 Immunity

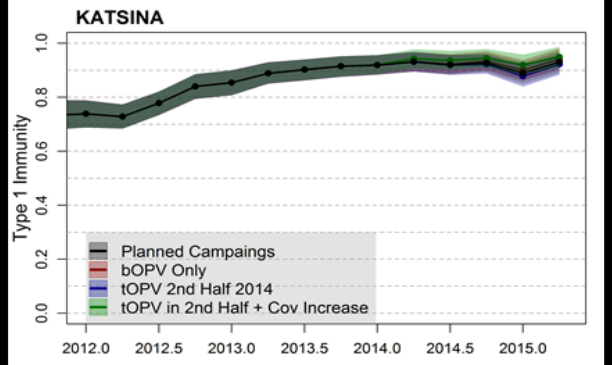
Projection under different

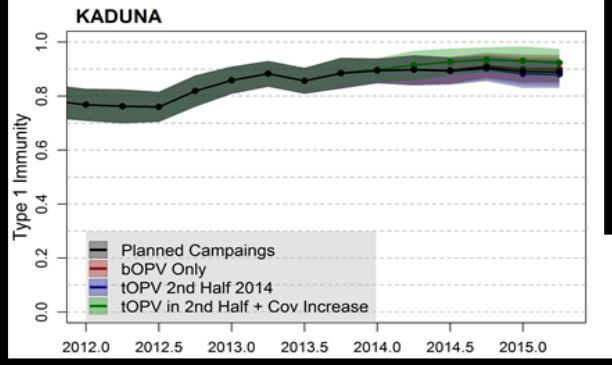
Vaccine choices & Cov

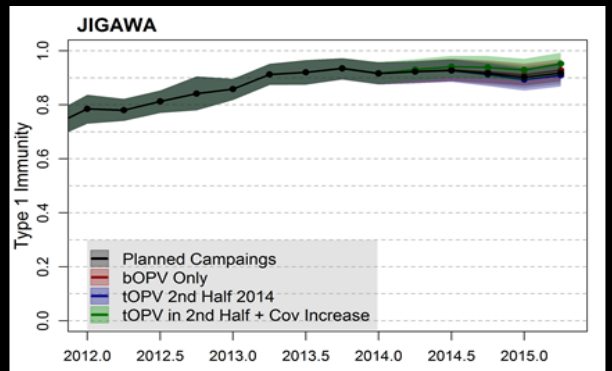
Jan 2012 – June 2015

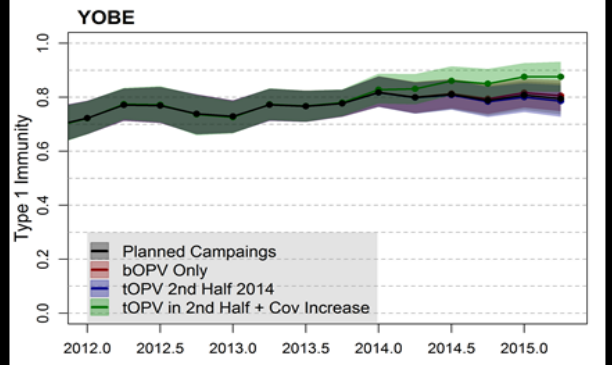


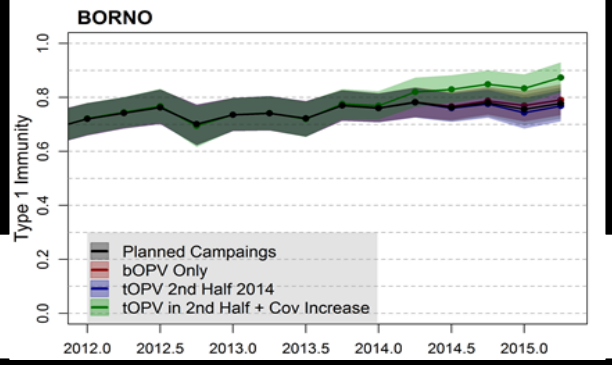








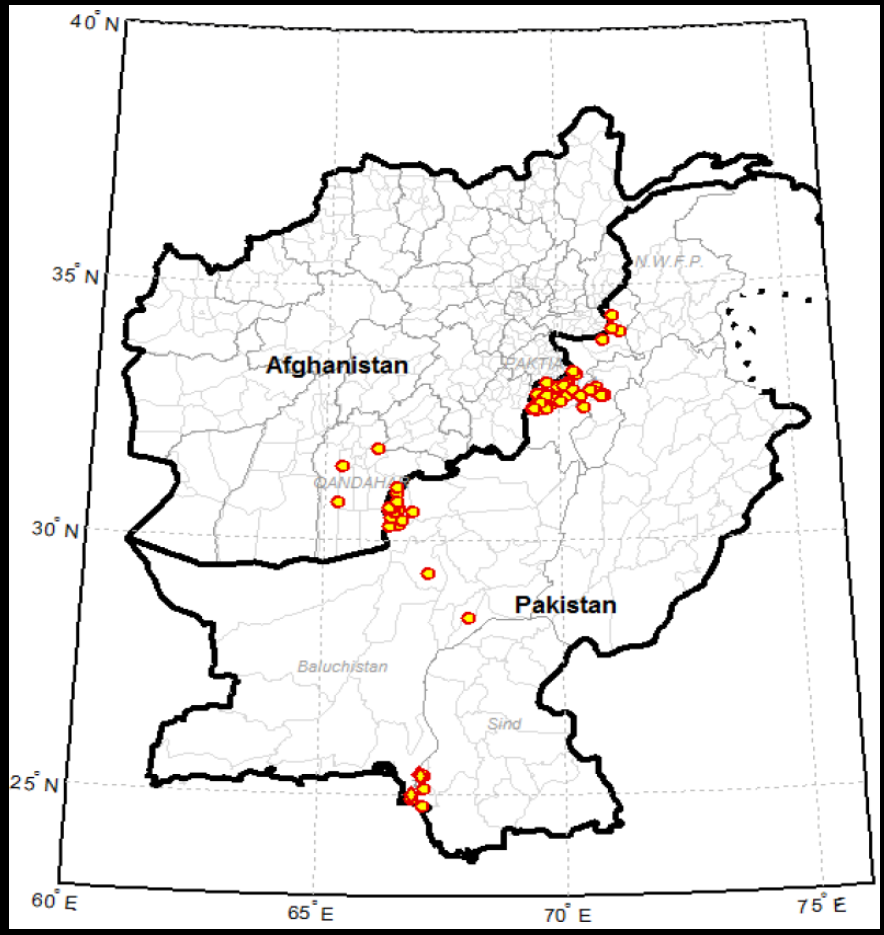




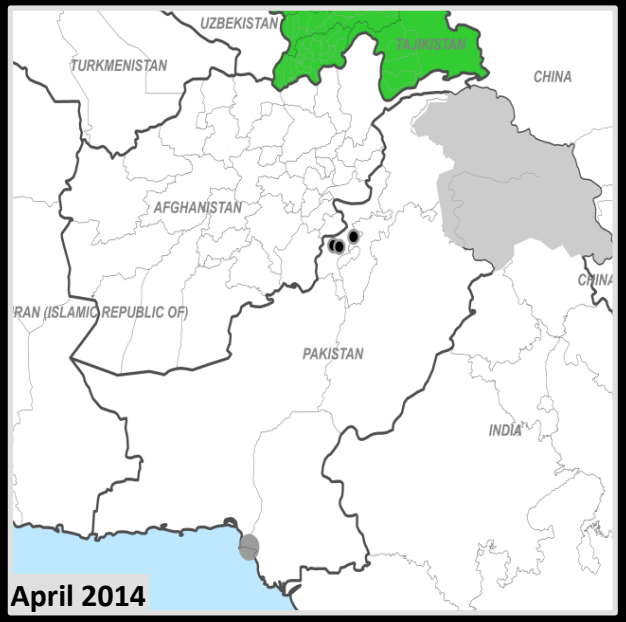
Replacing bOPVs with tOPVs in campaigns in 2014 would not significantly affect estimated type 1 immunity in Northern Nigeria

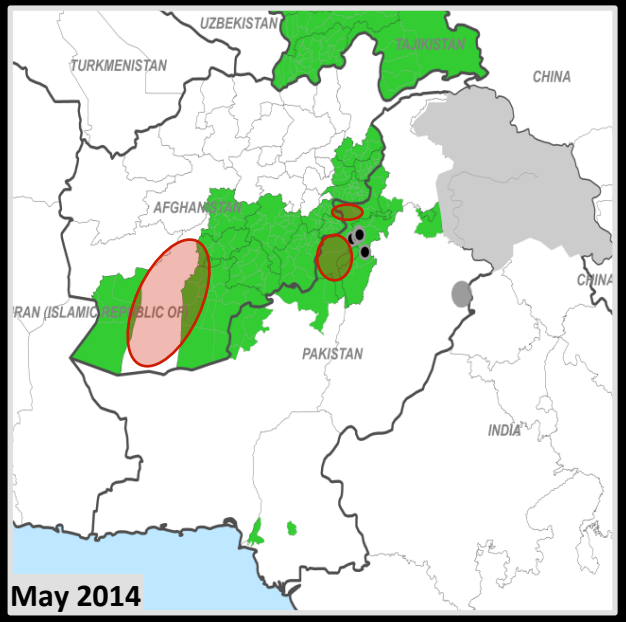
cVDPV2 in Pakistan

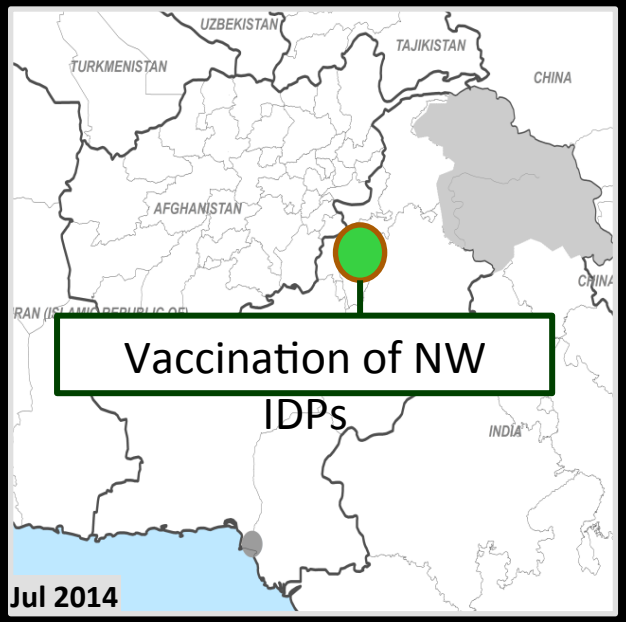
- 5 separate emergences beginning in 2012
- cVDPV2 circulation stopped in mid-2013 in all areas except FATA & KP
- 3 of 5 emergences and persistent circulation in N Waziristan in the setting of no vaccination
- tOPV administered to children among IDPs from NW
- Concurrent cessation of WPV & cVDPV2 by mid-2015 will be a challenge

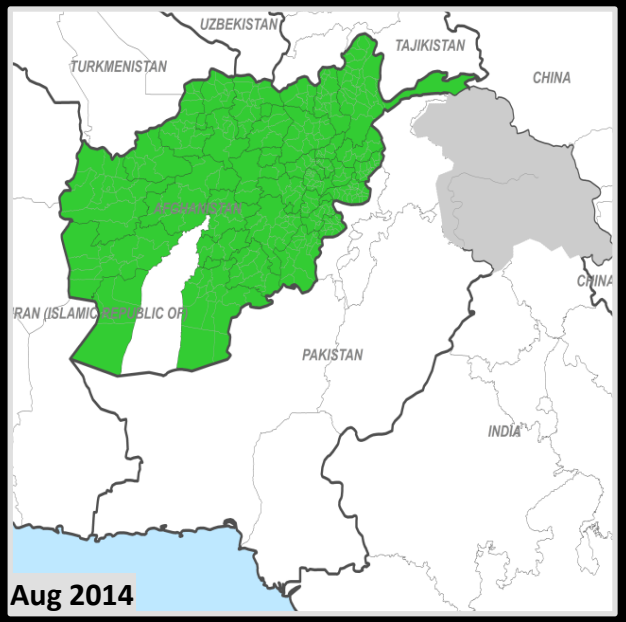


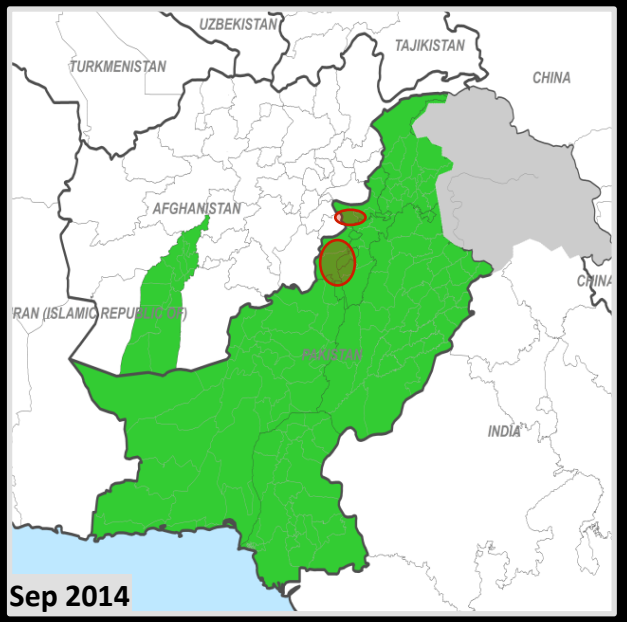
tOPV SIAs conducted in the previous 6 months, AFG/PAK







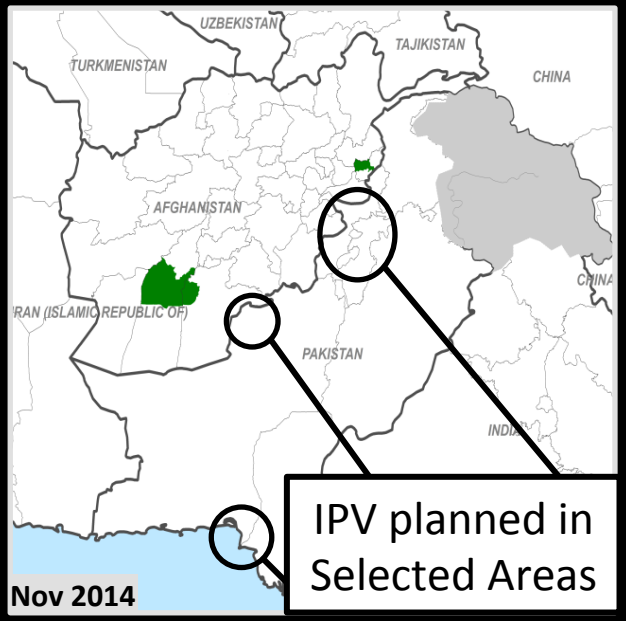


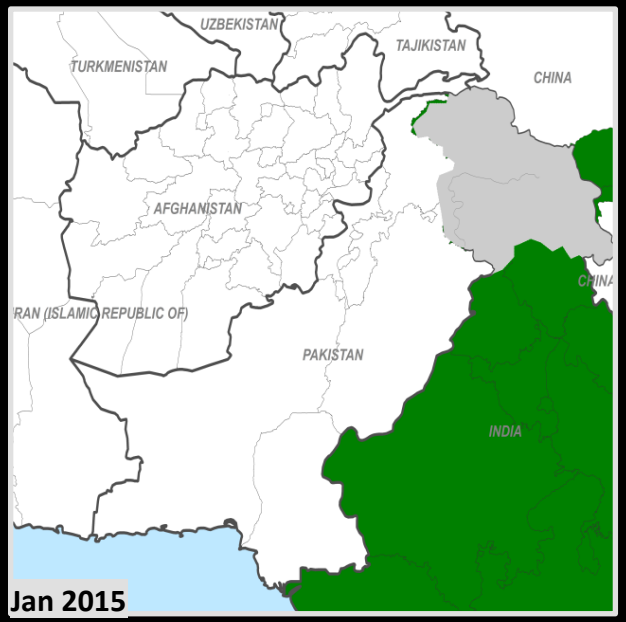


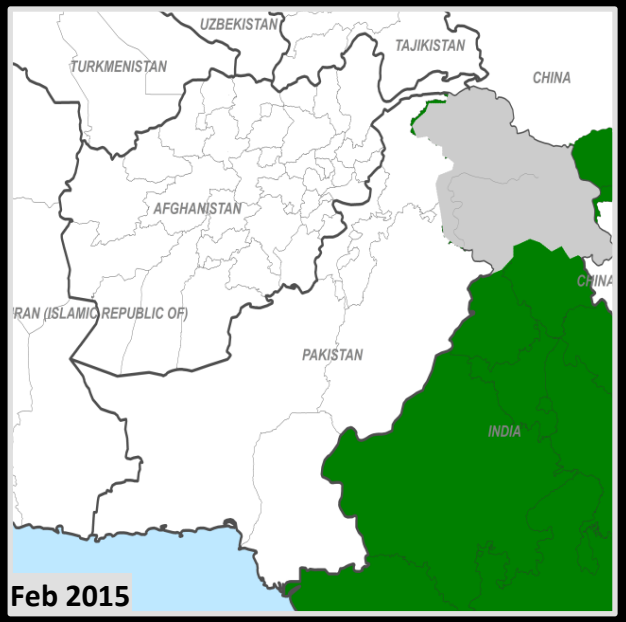
cVDPV2 case | cVDPV2 E.S. isolate | tOPV conducted | Inaccessible

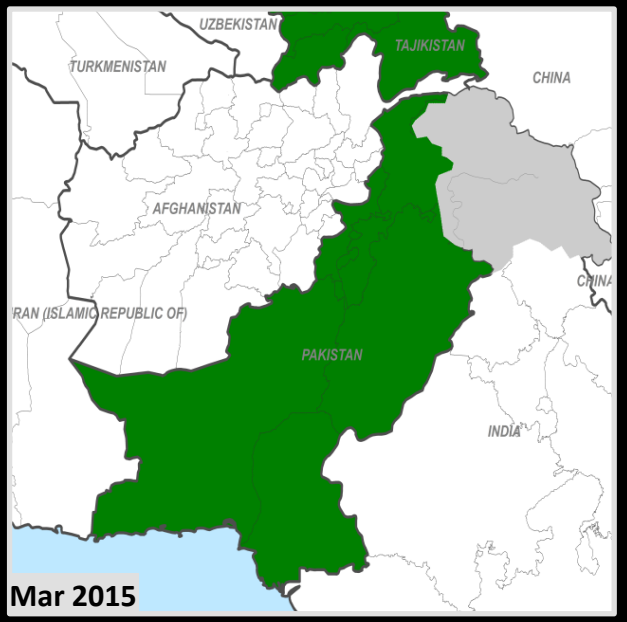
Data in WHO/HQ as of 14 Oct 2014

tOPV SIAs planned in the next 6 months, AFG/PAK









cVDPV2 case

cVDPV2 E.S. isolate

tOPV planned

Data in WHO/HQ as of 14 Oct 2014

Persistent cVDPV2 Cessation, Summary

- Countries have prioritized use of bOPV/mOPV1 in recent and planned SIAs to stop endemic WPV1
- cVDPV2 transmission, however, must stop by end March 2015 to meet the current timeline of tOPV withdrawal
- Nigeria:
  - cVDPV2 transmission has persisted in most areas due to limited use of tOPV
  - Persistent transmission in Borno is mainly in inaccessible LGAs
- Pakistan:
  - cVDPV2 has persisted in FATA and adjoining areas due to inaccessibility
  - Circulation in other areas has been controlled through aggressive case response and planned tOPV SIAs

Request for SAGE to Endorse WG Recommendations

- Nigeria must consider using tOPV in at least 4 large-scale SIAs across the northern states between August 2014 and March 2015, and possibly more in the northwest. Nigeria should also consider the use of IPV (simultaneously with OPV) in SIAs in areas with low type 2 immunity, to the extent possible.
- Pakistan must use the current opportunity and population access in the north-west of the country to stop the persistent cVDPV2 by ensuring that tOPV is used in a sufficient number of the upcoming SIAs targeting children from conflict-affected areas and considering the judicious use of IPV (simultaneously with tOPV).

Plans for tOPV Campaigns Prior to OPV2 Cessation

Objective

To reduce the estimated risk of cVDPV2 emergence post OPV2 cessation by ≥ 90% through
achieving ≥ 80% under-five population immunity in all high risk areas

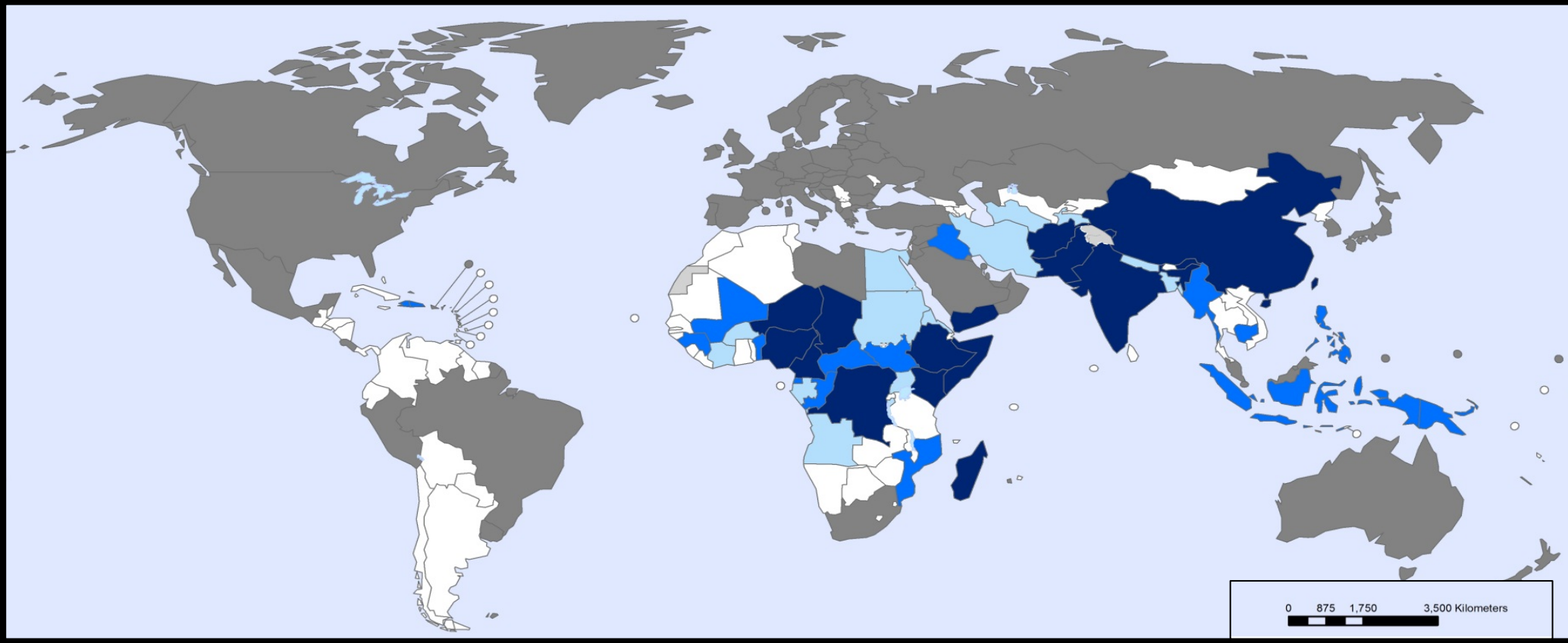
Background

- High population immunity (≥ 80% among children aged less than 5 yrs) is considered to be the most important factor in mitigating the risk of cVDPV2 emergence

- SIAs with tOPV shortly before coordinated OPV2 cessation represent a key risk mitigation strategy in OPV-using areas

Risk Tiering

(Originally to plan IPV introduction)



- Countries that use at least 1 dose IPV in their routine immunization schedule
- Tier 1: WPV endemic countries OR countries that have reported cVDPV2 since 2000
- Tier 2: Countries that have reported cVDPV1/3 since 2000 OR large/medium* sized countries with DTP3 coverage <80% in 2011, 2012, and 2013 (as per WHO/UNICEF estimates)
- Tier 3: Large/medium* sized countries adjacent to tier 1 countries that have reported WPV since 2003 OR bordering countries with current persistent cVDPV2 outbreak (if not already tier 1 or tier 2), OR countries that experienced WPV importation since 2011, including environmental data
- Tier 4: All other OPV only using countries

*Countries with birth cohort >20,000 live births per year as per UNDP estimates for 2015

Methods: Risk Based Approach

Step-wise Strategy:

1. Identification of high risk areas for cVDPV2 emergence
   - All Tier 1 countries
   - High risk areas of Tier 2 countries and other identified areas (High risk defined as >2% risk of emergence of cVDPV post OPV2 based on models by IDM)

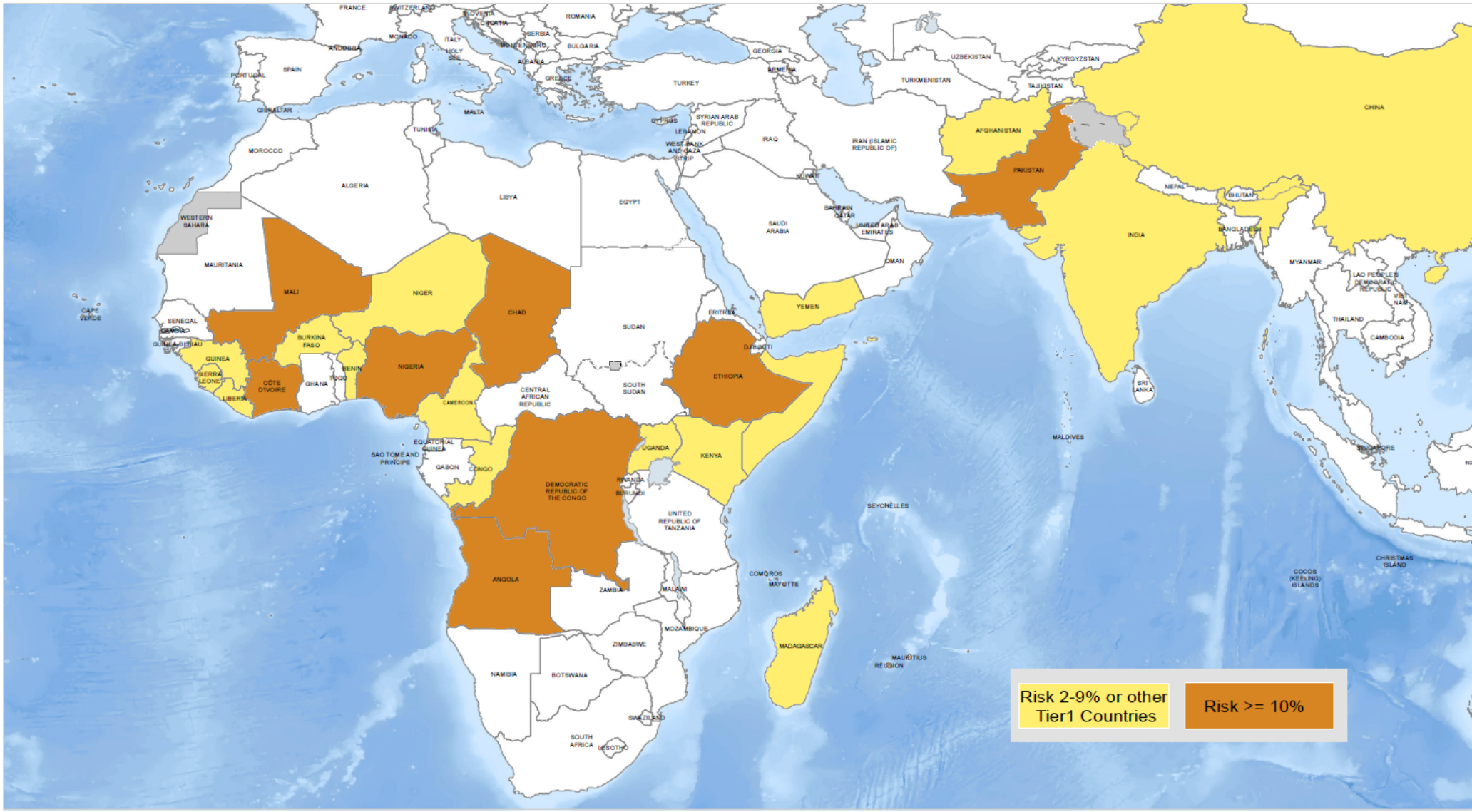
2. Review of existing tOPV SIA plans during 12 months preceding OPV2 cessation

3. Determining if additional SIAs are needed in the high risk areas considering:
   - baseline under-five immunity levels in all high-risk areas
   - Immunity gain from each round of planned tOPV campaigns

Tier 1 Countries and Countries with risk of post switch cVDPV 2 emergence > 2% (assuming no tOPV SIAs in 2015- 2016)

World Health Organization

MAP DATE: 13 October 2014, Versi



Map Scale (A3): 1:40,000,000

1 cm = 400 km

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

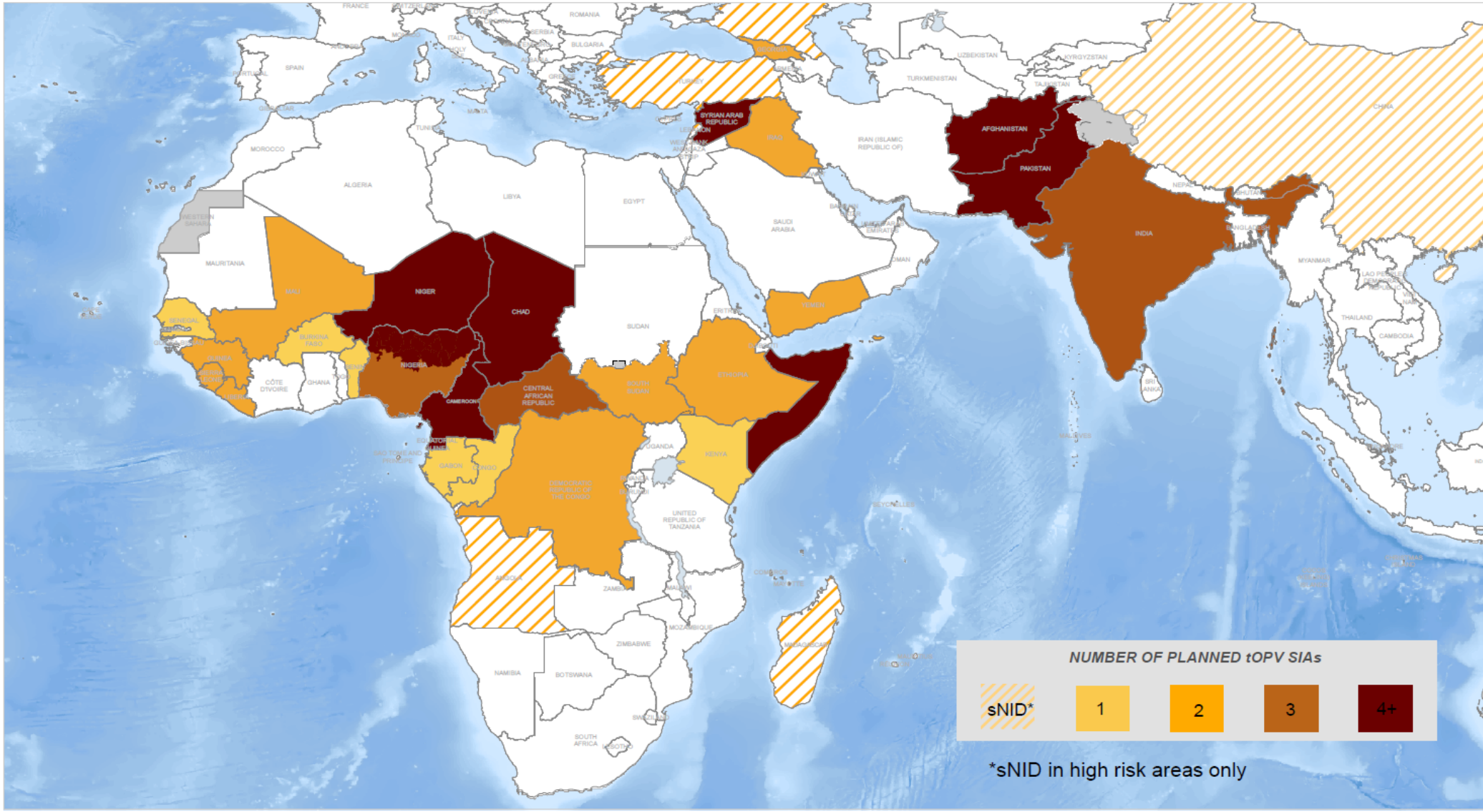
Data Source:

Admin. Boundaries: World Health Organization
Base Map:GEBCO
Map Production: Global Polio Eradication Initiative, World Health Organization

Planned tOPV SIAs 12 months prior to switch (ARP 2015-MAR 2016)

World Health Organization

MAP DATE: 10 October 2014, Versio



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Units: Degree

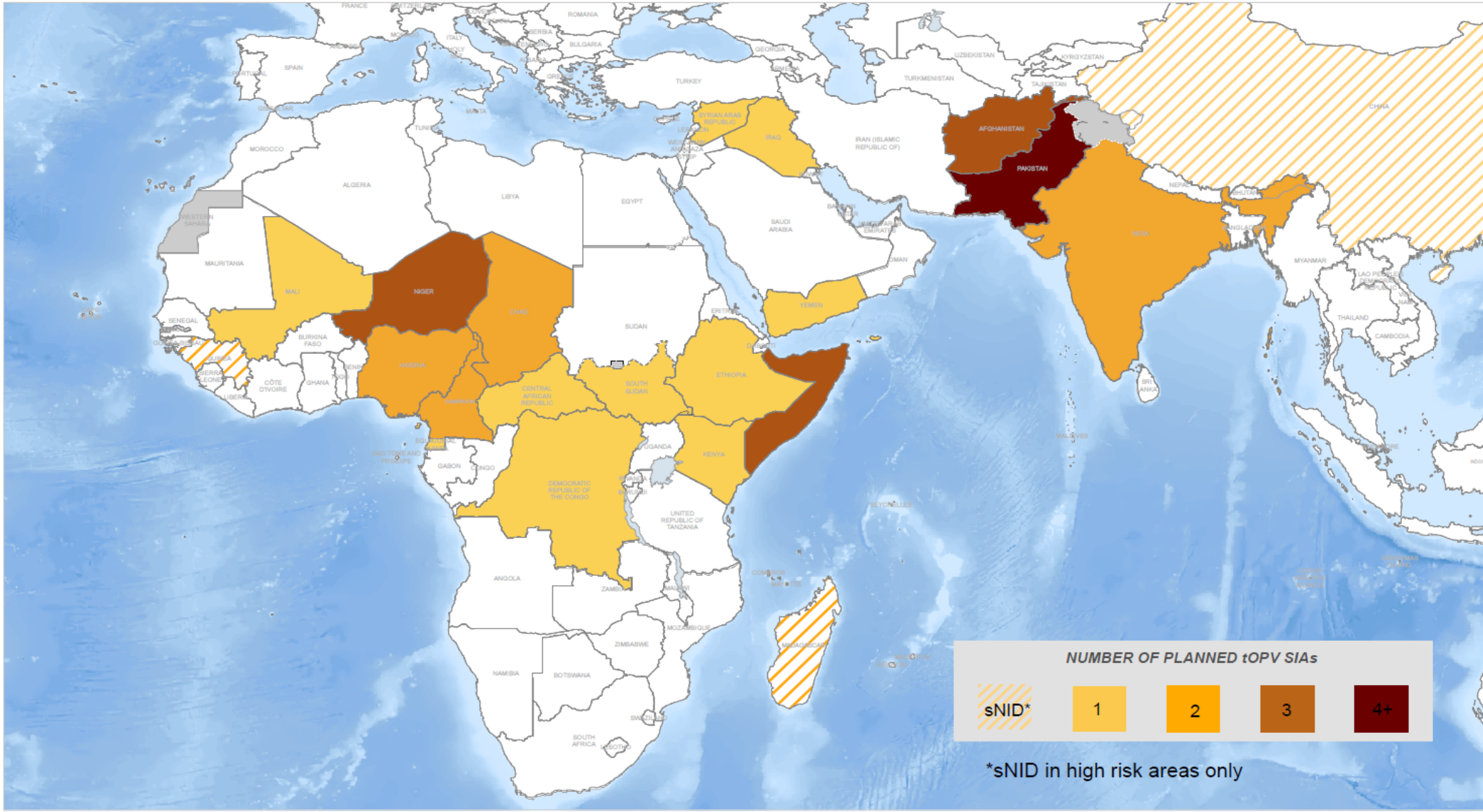
Data Source:

Admin. Boundaries: World Health Organization
Base Map:GEBCO
Map Production: Global Polio Eradication Initiative, World Health Organization

Planned tOPV SIAs 6 months prior to switch (OCT 2015-MAR 2016)

World Health Organization

MAP DATE: 10 October 2014, Version



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1 cm = 400 km

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

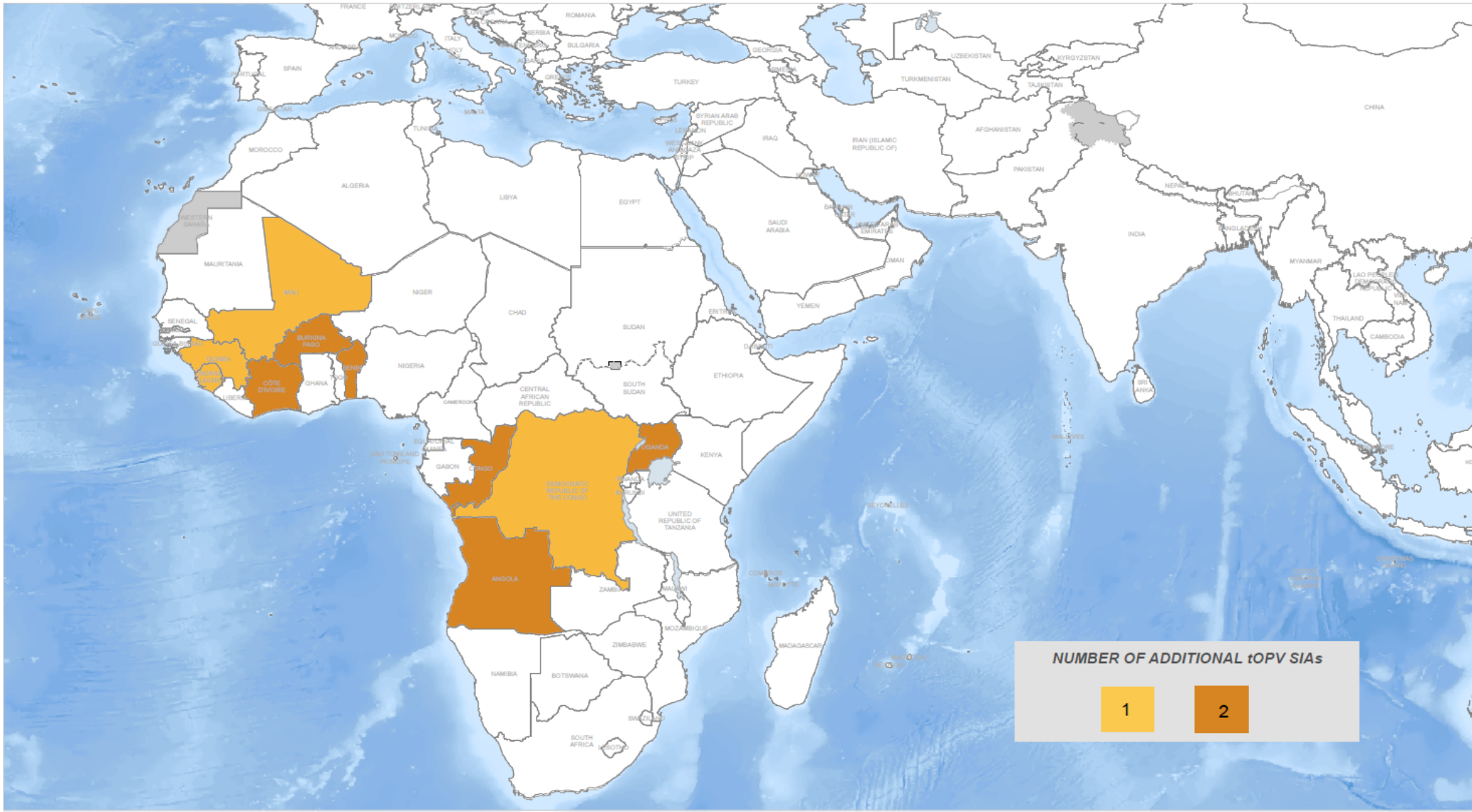
Data Source:

Admin. Boundaries: World Health Organization
Base Map:GEBCO
Map Production: Global Polio Eradication Initiative, World Health Organization

Suggested additional tOPV SIAs 6 months prior to switch (OCT2015 -MAR2016)

World Health Organization

MAP DATE: 10 October 2014, Versio



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Datum: WGS 1984
Units: Degree

Data Source:

Admin. Boundaries: World Health Organization
Base Map:GEBCO
Map Production: Global Polio Eradication Inititative, World Health Organization

Planned and Additional tOPV SIAs

	Country	<5 Population	# tOPV SIAs already planned 12 mo prior to switch	Additional tOPV SIAs needed to achieve 80% immunity in under-fives	tOPV doses needed for additional SIAs (assuming 20% wastage)
Tier 1	Afghanistan	7,516,420	5	0	0
	Nigeria (all country)	34,806,010	2	0	0
	Nigeria (North)	17,500,000	7	0	0
	Pakistan (all country)	23,991,570	3	0	0
	Pakistan (high risk areas)	5,000,000	4	0	0
	Cameroon	3,667,945	4	0	0
	Chad	2,689,955	5	0	0
	Kenya (Garissa, Dadaab)	300,000	3	0	0
	DRC (High risk areas)	15,307,570	1	1	9,184,542
	Ethiopia (High Risk)	13,123,940	3	0	0
	Madagascar (High Risk)	4,051,450	1	0	0
	Niger	4,373,220	5	0	0
	Somalia	2,283,280	6	0	0
	Yemen	5,010,980	2	0	0
	China	78,186,755		0	0
	India	133,556,330	2	0	
				TIER 1	9,184,542

	Country	<5 Population	# tOPV SIAs already planned 12 mo prior to	Additional tOPV SIAs needed to achieve 80% immunity in under-fives	tOPV doses needed for additional SIAs (assuming 20% wastage)
Tier 2	Azerbaijan	903,010	0	0	*0*
	Cambodia	1,555,070	0	0	*0*
	Central African Republic	819,285	3	0	*0*
	Dominican Republic	1,055,160	0	0	*0*
	Equatorial Guinea	139,900	4	0	*0*
	Gabon	220,860	1	0	*0*
	Guinea (high risk areas)	2,065,155	1	1	*1,239,093*
	Haiti	1,321,065	0	0	*0*
	Indonesia	20,796,050	0	0	*0*
	Iraq	6,116,185	3	0	*0*
	Lao	693,990	0	0	*0*
	Mali (high risk areas)	3,909,535	1	1	*2,345,721*
	Mauritania	611,860	0	0	*0*
	Mozambique	4,612,415	0	0	*0*
	Myanmar	3,990,915	0	0	*0*
	Papua New Guinea	1,071,215	0	0	*0*
	Philippines	12,093,045	0	0	*0*
	South Sudan	897,600	2	0	*0*
	Timor-Leste	244,130	0	0	*0*
Other High Risk Countries	*Angola (high risk areas)*	*3,965,000*	*1*	*2*	*4,758,000*
	Benin (high risk areas)	*1,631,000*	*1*	*2*	*1,957,200*
	Burkina Faso (high risk areas)	*2,932,000*	*1*	*2*	*3,518,400*
	Congo (high risk areas)	*722,100*	*1*	*2*	*866,520*
	Cote d'Ivoire (high risk areas)	*3,088,000*	*0*	*2*	*3,705,600*
	Liberia	*677,900*	*2*	*0*	*0*
	Sierra Leone	*928,000*	*2*	*1*	*556,800*
	Uganda n(high risk areas)	*6,939,000*	*0*	*2*	*8,326,800*
				TIER 2 and other High Risk	27,274,134

TOTAL	**36,458,676**

Request for SAGE Endorsement

Is the methodological approach applied adequate to plan tOPV SIAs that would substantially reduce the risk of cVDPV2 emergence in the post OPV2 cessation era?