# MOMENTUM

Routine Immunization Transformation and Equity

# CASE STUDY: **NIGER**

## HOW THE COVID-19 RESPONSE IS STRENGTHENING THE COLD CHAIN


### Summary

USAID's MOMENTUM Routine Immunization Transformation and Equity project works closely with national leaders of Niger's immunization program to support COVID-19 vaccine introduction and supply chain management. Over the past several years, the country has invested a significant amount in its cold chain system, initially on district- and facility-level equipment and training for routine immunization (RI), then with more investment in national and regional cold chain equipment. Cold chain maintenance is critical not only for the immediate need for the COVID-19 vaccine, but also to strengthen the overall system for long-term immunization support.


The MOMENTUM Routine Immunization Transformation and Equity project (the project) aims to strengthen routine immunization programs to overcome entrenched obstacles that contribute to stagnating and declining immunization rates and address barriers to reaching zero-dose and under-immunized children with life-saving vaccines. The project also provides technical support for COVID-19 vaccination and supports countries to mitigate the consequences of the pandemic on immunization services. The project is implemented by JSI Research & Training Institute, Inc. along with PATH, Accenture Development Partnerships, Results for Development, CORE Group, and The Manoff Group.

### Global Challenges in COVID-19 Vaccination

Proper vaccine storage and handling are critical for averting vaccine-preventable diseases. Failure to store, transport, or handle vaccines properly can reduce potency, resulting in poor protection against disease. If patients believe that vaccines are ineffective, they will lose confidence in vaccination and health care providers.

As more vaccines become available, there is an increased need for close monitoring and a proactive maintenance system to ensure that cold chain equipment is available and functioning properly. Typically, vaccines should be kept 2°–8°C during transport and storage. The Pfizer COVID-19 vaccine presents a different challenge, as it requires the ultra-cold chain (UCC) to keep it at –60°C before reaching the service delivery level.

### Background and Context

In light of the COVID-19 pandemic and the disruption of routine immunization (RI) services, the USAID MOMENTUM Routine Immunization Transformation and Equity project supports country immunization programs to fill key gaps and overcome entrenched obstacles to RI and provides technical support for COVID-19 vaccine introduction.

In Niger, the project focuses on reinforcing best practices for supply chain management, introducing technologies and approaches that strengthen the performance of the cold chain, and provides additional temperature monitoring to ensure vaccine potency.

The first case of COVID-19 in Niger was confirmed in March 2020. As of the end of August 2022, there were 9,250 confirmed cases of COVID-19 with 312 reported deaths.[1] Vaccines were introduced in March 2021, and as of the end of July 2022, approximately 4.5 million vaccine doses had been administered. With only 2.9 million people fully vaccinated, about 88 percent of the population remains un- or under-vaccinated.

1 WHO COVID-19 Dashboard, Niger. https://covid19.who.int/region/afro/country/ne.


USAID FROM THE AMERICAN PEOPLE

MOMENTUM A Global Partnership for Health and Resilience

November 2022

## Innovative Response

Over the past several years, Niger has invested substantially in its cold chain system with the provision of new equipment, including walk-in cold rooms (WICR) at national and regional levels, UCC for the Pfizer vaccine at national and regional levels, and standard cold chain equipment for the district and facility levels. To protect this investment, the Ministry of Public Health, Population and Social Affairs has prioritized temperature monitoring and equipment maintenance.

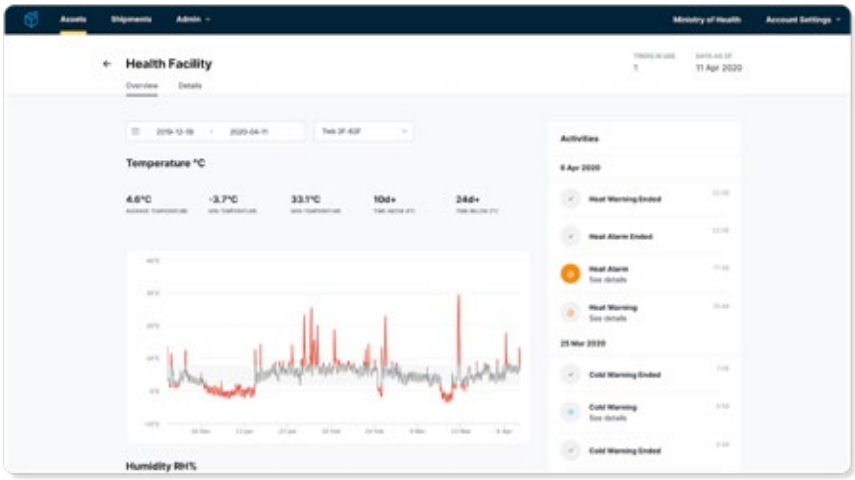
### NEW APPROACHES TO TEMPERATURE MONITORING

Temperature monitoring of the cold chain is typically done using 30-day temperature recorders (30DTR) called FridgeTag, which read temperatures and record the number of alarms during the previous 30 days. The device is located in the cold chain equipment and monitored by the health workers responsible for the equipment and immunization services. The temperature should be recorded twice daily, and a few data points from the 30DTR are included in the facility's monthly reports to the next level. This has been the standard device, in use with paper reporting since the beginning of immunization programs. With new technology, however, immunization programs have the opportunity to have more real-time visibility into cold chain temperatures and avoid temperature readings outside the acceptable range. The project is supporting the introduction and use of three of these new technologies in Niger.

#### PARSYL DEVICES

The Niger Ministry of Public Health, Population and Social Affairs, in collaboration with the project, is partnering with Parsyl, Inc. to pilot remote temperature monitoring devices that capture valuable information about the temperature conditions that vaccines are exposed to during transportation and storage. These World Health Organization (WHO) Performance, Quality, and Safety devices alert the person who is responsible for the cold chain equipment when there is an unacceptable temperature reading for a determined amount of time. This allows an intervention to correct the excursion to avoid vaccine wastage. Additionally, the Parsyl devices send the data to a dashboard managed and viewed by logisticians and technicians at each level of the system, providing real-time information on cold chain equipment performance. The dashboard provides insight into the functioning of the overall cold chain and can inform long-term planning for its needs. The devices are used at the district-level cold stores and during transport, filling an important gap in temperature data that was previously not captured.


**Parsyl Trek smart sensor devices.**

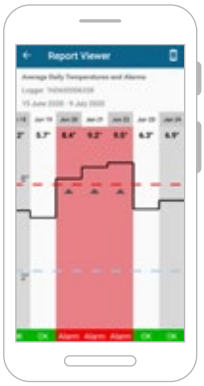



**Parsyl web platform.**

#### VARO APP

The project's regional team introduced the Varo App, which extracts and sends temperature data from FridgeTag to a dashboard so that national-level supervisors can track temperature. The MOMENTUM project team in Niger's Zinder, Maradi, and Tahoua Regions is working with the regional Expanded Program on Immunization (EPI) team to incorporate use of the Varo App into regular supervision visits to district-level vaccine stores. The Varo App allows the data to be sent to a national-level tracking system to provide relatively real-time data to supervisors, contributing to long-term planning for cold chain equipment and a more proactive maintenance response.


**The Varo App enhances the use of FrigeTag data.**




**Report viewer mode on the Varo App.**

### ULTRA-COLD CHAIN REMOTE TEMPERATURE-MONITORING DEVICES (UCC RTMDS)

Niger has received 16 pieces of UCC equipment to use for the Pfizer vaccine at the national- and regional-level stores. These UCC are instrumental in facilitating the management of the special temperature requirements of the Pfizer vaccine. The project procured RTMDs to track the temperatures and send the data to a dashboard that is monitored by the national logistics team. Additionally, the devices send alerts to the cold chain supervisor in the case of any temperature excursions to facilitate immediate action to prevent vaccine quality loss. As UCC is a new technology and requires a lot of electricity, these RTMDs have the added benefit of close monitoring and providing real-time insight into UCC performance as the cold chain team learns how to manage and monitor it.

## FORWARD-LOOKING MAINTENANCE PRACTICES

With proper maintenance, cold chain equipment should perform well for about 10 years. However, maintenance is often under-funded and insufficiently implemented due to lack of spare parts; unavailability of vehicles to respond to facility needs; a lack of cold chain technician knowledge on the equipment; and no insight into the maintenance needs. The forward-looking temperature monitoring will improve maintenance by providing data rapidly to those who can act on it. Additionally, the MOMENTUM team now includes a cold chain technician at the national level to support the logistics team in responding to the most immediate maintenance needs and setting up a proactive maintenance system.

### INVEST IN ADDITIONAL HUMAN RESOURCES FOR COLD CHAIN MAINTENANCE

The project seconded a cold chain technician to support and supervise installation of the new cold chain equipment, particularly the UCC, to maintain the integrity and safety of COVID-19 and routine vaccines. He also conducted corrective maintenance on walk-in cold and freezer rooms at national and regional levels. He also works with regional technicians to reinforce preventive maintenance best practices, such as cleaning and defrosting to extend the life of the equipment.


**Project technician fixing a regional WICR.**


**Project maintenance consultant in Dosso WICR**

**ESTABLISH A PROACTIVE MAINTENANCE SYSTEM**

A priority for the project is to create a data-use culture and link the temperature data that is increasingly available to actual maintenance actions taken, thereby creating a more predictive analytics approach for maintenance. This additional insight should flag when a piece of equipment is expected to fail or when to replace a spare part to prevent failure. With regular review of the temperature data, the logistics team can better understand and take actions to meet the country's cold chain needs.

## Outcomes

This table shows the benefits of Niger's investments in temperature monitoring procurements and maintenance of the cold chain.

| Investment | Benefits |
|---|---|
| **Parsyl devices** | • Provide insight into the temperatures of the vaccine cold trucks, cold boxes, and cold chain equipment.<br>• Facilitate understanding of shipping conditions and risk management when irregularities occur.<br>• Ensure vaccine safety and integrity during transport and storage. |
| **Varo app** | • Allows national supervisors to track temperature data.<br>• Generates temperature data reports to inform EPI decisions. |
| **UCC remote temperature monitoring devices** | • Facilitate management of Pfizer vaccine temperature requirements. |
| **Instilling best practices for maintenance** | • Ensures that vaccines remain in optimal temperature range.<br>• Conducts maintenance to uphold integrity and safety of COVID-19 and routine vaccines.<br>• Creates a data use culture for predictive analytics for cold chain maintenance. |

## Opportunities Beyond the COVID-19 Response

While Niger's recent cold chain innovations are to benefit COVID-19 vaccination efforts, all of the activities are designed to strengthen the country's overall immunization supply chain. This approach positions government actors at the national and regional levels to conduct COVID-19 and RI activities on a stronger footing. As MOMENTUM staff work with logistics officers at the EPI on a daily basis and provide routine supportive supervision, ongoing capacity building and technical assistance opportunities are numerous and have positive implications for future supply chain management in Niger. Additionally, the project's legacy will include standard operating procedures and tools to enable government logistics officers to monitor and maintain an adequate cold chain. Finally, the project will continue to advocate for incorporation of routine cold chain maintenance costs into the Ministry of Public Health, Population and Social Affairs budget to ensure future financing of these critical inputs.

## Lessons Learned

- A strong relationship between the project and the EPI is key to support and sustain appropriate actions over the long term.
- The ability to question the status quo allows countries to introduce new technologies and approaches and shift the conversation to bring about efficiencies in a different way.
- Change does not come easy: with new technologies and approaches, change management needs government support and reinforcement.
- Leveraging COVID-19 cold chain investments can strengthen the overall system.

## Additional Resources

MOMENTUM Routine Immunization Transformation and Equity catalogs more of the challenges and innovative approaches to strengthen cold chain maintenance in *Cold Hard Truth: Revolutionizing Cold Chain Maintenance* (https://usaidmomentum.org/resource/cold-hard-truth-revolutionizing-cold-chain-maintenance/).

MOMENTUM Routine Immunization Transformation and Equity is funded by the U.S. Agency for International Development (USAID) and implemented by JSI Research & Training Institute, Inc. (JSI), along with PATH, Accenture Development Partnerships, Results for Development, Gobee Group, CORE Group, and The Manoff Group under USAID cooperative agreement #7200AA20CA00017. The contents of this fact sheet are the sole responsibility of JSI and do not necessarily reflect the views of USAID or the United States Government.