ALLIANCE FOR
WATER STEWARDSHIP

CASE STUDY
IMPLEMENTING
THE AWS STANDARD

NESTLÉ SHEIKHUPURA

PAKISTAN
SOUTH ASIA

JUNE 2020

LUMS
A Not-for-Profit University

WWF

CONTENTS

Cover photo: A river stream in Rachna Doab, Punjab. WWF-Pakistan.

EXECUTIVE SUMMARY

Nestlé Sheikhupura was the first Nestlé site in the world to achieve Alliance for Water Stewardship (AWS) certification in 2017. The Sheikhupura site is located in Pakistan in the Punjab province, where the catchment scope includes the area between the Rivers Chenab and Ravi, going all the way up to Mirpur and Jammu; to the Southern fringes of Kashmir Valley.

Punjab is the breadbasket of Pakistan, with agriculture being the largest sector of its economy. Punjab is also the country's most industrialized province, with the industrial sector making up 24% of the area's Gross Domestic Product (GDP). Due to exponential population growth, water withdrawals have substantially increased over time, causing the water table to lower in some areas. As well as impacting water availability, this also affects groundwater quality due to saline intrusion. These challenges also exist in Sheikhupura where a growing number of small and large industries, which mainly rely on groundwater resources and whose effluent goes untreated, operate. Water quality and quantity were the major water challenges that drove Nestlé to implement the Alliance for Water Stewardship (AWS) Standard.

The purpose of this case study is to demonstrate how local business uptake of the AWS Standard can push other industries in Pakistan to improve their practices, align and organize their data and improve their understanding with regards to water stewardship. This case study highlights how the AWS Standard can be implemented in a data-deficient developing country context by a Food and Beverage factory. It demonstrates how the AWS Standard provides a framework to innovate and foster different initiatives, in different scenarios, regardless of the sector, size and nature of the organization.

This case study has been written in collaboration with AWS Pakistan, Lahore University of Management Sciences (LUMS) and World Wide Fund for Nature (WWF) Pakistan.

1. INTRODUCTION

This case study maps the implementation of the AWS Standard by Nestlé, a large global food and beverage company, at its Sheikhupura factory in Pakistan. In 2017, the Sheikhupura factory became the first Nestlé site in the world to be AWS certified. In 2018, Nestlé Waters announced it would extend its commitment to water stewardship by certifying all of its sites to the AWS Standard by the end of 2025. Included in this commitment are Nestlé Pakistan's subsequent implementation of the Standard at its Islamabad factory, followed by its Kabirwala and Port Qasim factories.

1.1 TARGET AUDIENCE

This case study is intended for use in AWS training sessions and university courses. It is relevant to a broad audience of sustainability professionals, water users, water and wastewater industry professionals, catchment managers, water policy makers, auditors, students, and academics teaching natural resource management, sustainable business, water management practices, and sustainable development.

1.2 NOTES FOR INSTRUCTORS[1]

Businesses and organizations are increasingly faced with pressure from various stakeholders to act responsibly towards the natural environment, including natural resources, air and ecosystem services. Given the criticality of reputational, physical and compliance-related risk mitigation for companies (regardless of their size and their position in their value chain) companies require means to mitigate these risks while ensuring they meet the needs of their various stakeholders.

This case study narrates the decision and process of implementing the AWS Standard by Nestlé Pakistan (part of Nestlé Global) in line with the multinational's (parent company's) global strategy (https://www.nestle.com/aboutus/strategy) to 'create shared value' through 'the protection of the environment for future generations through the practice of resource stewardship'.

This case study presents a narrative that allows learners to understand the origins of the AWS Standard, its specific components (steps, outcomes, criteria and indicators) the possible motivations that may drive a company towards the implementation of the AWS Standard, the various implementing partners involved in the process and the role of each. Most importantly, this case study is a pedagogical tool allowing a greater understanding of the processes, benefits and challenges associated with AWS Standard implementation.

1.3 CASE STUDY OBJECTIVES

a. To familiarize learners with the various components of the AWS Standard (steps, outcomes, criteria and indicators).
b. To provide case-specific reference for learners to study the AWS Standard and the associated response by organizations aspiring to become AWS-certified.
c. To understand the underlying economic, reputational, social and compliance needs of organizations that compel them to act responsibly towards natural resources and the appreciation of this phenomenon through a risk management lens.
d. To introduce the concept of water stewardship at both site and catchment levels.
e. To allow learners to be able to understand the five-step process through which AWS certification can be achieved, regardless of the size, location and industry sector.
f. To allow learners to contextually understand important managerial decisions regarding the application of the AWS Standard.

[1] The case is written to serve as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. This material may not be quoted, photocopied or reproduced in any form without the prior written consent of Alliance for Water Stewardship (AWS).

2. WATER STEWARDSHIP

Water is vital for economic growth and successful, healthy environments and communities. It is therefore important for business sites to use water responsibly and sustainably. Doing so will contribute to ensuring operational continuity whilst at the same time enhancing business reputation by transparently respecting the needs of external stakeholders such as those within the catchment in which an industry is based.

AWS is a global network of members and partners committed to enabling leadership on freshwater. AWS membership comprises businesses, civil society organisations (CSOs) and the public sector. These members contribute to the sustainability of local water-resources through their adoption and promotion of a universal framework for the sustainable use of water – the International Water Stewardship Standard, or AWS Standard – that drives, recognizes and rewards good water stewardship performance.

The AWS Standard assists organizations in developing processes that enable them to capture data and create responses based on that data which, if followed rigorously, will foster continual improvement in water management practices. The feedback loop designed in the Standard allows for development of new processes and creation of new partnerships with stakeholders that lead to responsible water usage at the catchment level.

AWS defines water stewardship as: 'The use of water that is socially and culturally acceptable, environmentally sustainable and economically beneficial, achieved through a stakeholder inclusive process that involves site and catchment-based actions.'

The purpose of the AWS System is to enable water users to understand and address shared water challenges in a catchment, along with site water risks and opportunities. It asks water using sites to address the challenges in a way that enables them to contribute to five key outcomes across a selected water catchment:

Good Water Governance encompasses all aspects of how water is managed by governments, regulators, suppliers and users. It includes water resource management, protection, allocation, monitoring and quality control, treatment, regulation, policy and distribution. Good water governance ensures responsible sharing of water resources in the interests of users and the natural environment in line with the principles of water stewardship.

Sustainable Water Balance is the condition whereby ongoing water use in the catchment has no long-term negative impact on the natural environment and legitimate water users. It is typically assessed on an annual timescale. For a sustainable balance, total net water abstractions do not exceed natural replenishment of water bodies, while also ensuring water bodies maintain viable flows and water levels to sustain themselves, and the species that depend on them, in a healthy condition. A condition where outflows are consistently larger than inflows is a non-sustainable water balance. Water Balance is an assessment of all water flows and storage volumes of an entity. In the Standard, it is required to be applied to the site, and separately for the catchment.

Good Water Quality: The quality of a natural water body in terms of physical, chemical and biological parameters is referred to as Water Quality. Good Water Quality status is where it meets the requirements of native flora and fauna, and for human needs where applicable. The status is not required to be pristine (i.e. contaminant free) or of drinking water quality (which would be classed as high water quality status).

Important Water-Related Area (IWRA): An area or feature of high value to humans or nature from an environmental, community or cultural perspective. In addition to formally recognized conservation areas, it includes such features as water wells and springs used for drinking water and features of cultural significance. It is similar to the High Conservation Value (HCV) concept, but more specifically focused on water.

Safe Water Sanitation and Hygiene (WASH) for All: A term used in the international development sector to refer to the combined area of efforts to address basic human water needs and rights related to access to safe and sufficient water for drinking, food preparation and washing. It also includes the provision of good washing and toilet facilities and the principal of hygiene education to combat the spread of water-related illnesses and disease.

2.1 UNDERSTANDING LOCAL CONTEXT

Pakistan has a growing population of 200 million[2]. Its cumulative surface water resources account for 147 Million Acre Feet (MAF) of surface water available through irrigation canals, the Indus River system, and an additional storage of 50 MAF available throughout groundwater. This results in a total amount of 197 MAF, equivalent to 243 Billion Cubic Meter (BCM) of water available.

The country is primarily an Agricultural-based economy, with 21.4% share of its GDP coming from the agriculture sector and 45% of labour force employed therein. In addition, a growing manufacturing sector, mostly linked with agricultural supply-chains, such as textiles, food and beverage, and leather industry is also rising. Roughly 90-92% of freshwater in the country is used for irrigation, for a land coverage of 46 million acre or 82% of irrigable area. The remaining 8-10% is distributed between industry and domestic water use[3]. With an increasing rate of urbanization, at an average rate of 0.6 % per annum, pressures on freshwater resources are building[4].

As is true throughout the world, the physical availability of water resources do not in themselves ensure accessibility; in Pakistan the chances that a household level water user can have access to safe and secure water supply remains low. On the Environmental Performance Index, Pakistan ranks 140 out of 180 countries in water and sanitation stating that only 36% of the population have access to safely managed drinking water. This inequality in accessing clean water and sanitation is higher in Pakistan than in other peer countries[5].

Sub-optimal water supply infrastructure also affects many businesses that face water scarcity issues. In Karachi, for instance, companies have to pay approximately Pakistan Rupee (PKR) 187 per cubic meter to transport in tanker water suppliers (additional transportation charges are separate), in order to acquire water for production[6]. In contrast in some cases over-allocation of surface water has led to insufficient environmental flows damaging important habitats and ecosystems in Pakistan. In addition, climate change is already altering the hydrologic cycle, leading to changes in the supply of and demand for water resources[7].

Trends for global water management are shifting from an isolationist mindset to a more collective approach. Traditional water management methods which mainly rely on the three R principle; recycling, reduction and reuse, alongside treatment of water inlets and outlets, are broadening. While these conventional methods are paramount to managing water resources in a certain facility, water issues outside a site's boundaries remain a challenge, provided that these external water issues have a likely impact on the site.

This change reflects a growing realization taking place globally that water is not a confined commodity, rather a shared resource, and unless collective action is taken, the positive impact on water resources will remain minimal. For business water users this means looking at your water risks not just within your fence line, but at a catchment level. AWS supports this by guiding water users to look at a broader perspective to their water resource management options, helping them attune to various associated risks.

2.2 RISKS ADDRESSED BY AWS STANDARD IMPLEMENTATION

Application of the AWS Standard helps to address three risks that typically face each implementing site: physical, regulatory and reputational risks. Financial risks associated with water are a fourth type of risk addressed by AWS, however these are covered in parts under the physical, regulatory and reputational risks.

Application of the AWS Standard provides an opportunity for an implementing site to profile its water resource use, requirements and impacts. This helps implementers understand the level of risk associated with water and take appropriate action in minimizing them, by first developing a water stewardship plan and then by implementing and monitoring its progress. In doing so, a company can improve its operational, regulatory and reputational performance, and minimize unaccounted expenses.

A survey conducted by Harvard Business Review[8] estimated 80% of the business executives believe in a business case for investing in social and environmentally responsible practices, such as water stewardship. Although the amount of financial savings or returns vary greatly between different sectors and regions, it is clear that implementing a stewardship model allows improved understanding and traceability of water risks facing businesses, which allows improvement in the overall business operations and the decision making associated with it.

[2] Government of Pakistan (2017), Population Census, Pakistan Bureau of Statistics (PBS)

[3] Government of Pakistan (2009), Ministry of Finance, http://www.finance.gov.pk/survey/chapter_10/02_Agriculture.pdf

[4] TM Forum (2016), https://www.tmforum.org/wp-content/uploads/2016/09/11.20-SmartCityLatestNew982016.pdf

[5] World Bank (2019), Pakistan@100: Shaping the Future, www.worldbank.org/en/region/sar/publication/pakistan100-shaping-the-future

[6] Karachi Water Sewerage Board (2019), kwsb.gos.pk

[7] Peter Schulte, Jason Morrison, and Peter H. Gleick (2012), Chapter 2: Corporate Water Management, The World's Water, Volume 7, pp. 24

[8] Harvard Business Review (2018), 'Most Executives believe in the Business Case for CSR. So Why don't they invest more in it?'

2.2.1 PHYSICAL RISK

Physical risks associated with water can be classified as catchment specific and company specific. The degree of severity of catchment specific risks are influenced by local water resource management and governance effectiveness in dealing with factors such as: increasing demand and climate variability driven unpredictability, economic challenges and local infrastructure adequacy, the amounts of pollution being disposed into water bodies, and the ensuing quality of water available.

Company specific risks can either be direct risks, such as disruptions in site level operations or supply chains due to water supply issues or poor water quality, or the risks can be indirect for instance non-availability of water services to manage auxiliary operations, such as proper disposal of wastewater through dedicated wastewater drain pipes.

An investigation by freshwater team at WWF-Pakistan revealed that many local industries operating in the River Ravi Basin, particularly near the Hudiara drain, which is one of the natural tributaries of River Ravi, faces challenges due to improper disposal of their wastewater. Many industries located on Hudiara drain do not have or operate a wastewater treatment plant. Those few who do have wastewater treatment plants have no choice but to dispose of their treated wastewater directly into Hudiara drain, which has become highly toxic in recent times. Rise in toxicity is now polluting nearby water supplies which is causing an indirect physical risk to all stakeholders. One of the main underlying factors in this case is non-availability of a dedicated industrial wastewater drain/treatment system.

2.2.2 REGULATORY RISK

With the development of the first ever National Water Policy in April 2019, and the previous Chief Justice taking a strict stance on unregulated abstraction of ground water, the regulations in Pakistan are becoming increasingly stringent. For this very purpose, governments in all four provinces, in collaboration with Federal Ministry for Water Resources have been instructed to improve legal frameworks for effective water management. After the 18th amendment in the constitution of Pakistan in 2012, water became a provincial subject. Hence all four provinces are trying to regulate their available water resources through regulatory tools.

Punjab province, for instance, is in the process of enacting a Punjab Water Act 2019. This law aims to constitute a Punjab Water Council to work as a coordinating body to address matters related to water allocations among various water users in the province. Similarly, discussion is also evolving on pricing water withdrawals for commercial purposes, which is a Supreme Court directive. Price adjustments for canal water use for irrigation purpose has also been under discussion since 2010. A study by the Planning Commission, Government of Pakistan, in 2012 revealed that flat-rate water charges (locally called abiana) collected in each province failed to recover operational expenses incurred by the irrigation department, let alone add value to the overall system[9]. Therefore, exercises are in process to revise water rates to construct new and maintain existing public water infrastructures. Amidst these regulatory developments, it becomes important for businesses to ensure that they are able to meet with existing and new regulations.

The AWS Standard has been designed to equip businesses to develop an understanding about their local water challenges and those of local stakeholders, including understanding and engaging with their local regulatory and governance regimes. This is achieved through standardized data gathering process, including wide stakeholder consultation, that leads to the development of a transparent, and stakeholder-reviewed water stewardship plan. The developed plan must demonstrate that a site is equipped to meet with regulatory compliance pertinent to water and is also being responsive to the needs of the catchment and its stakeholders. A brief comparison between Pakistan's current water regulations and AWS criterion shows how AWS reciprocates complying with Pakistan's water regulations in Table 1.

[9] Government of Pakistan (2012), Planning Commission, Canal Water Pricing for Irrigation in Pakistan

NO.	NATIONAL AND PROVINCIAL ENVIRONMENTAL LAWS APPLICABLE TO INDUSTRIES IN PAKISTAN	DESIGNATED GOVERNMENT AUTHORITY	LINKAGE WITH AWS STANDARD (DETAILED DESCRIPTION OF THE CRITERIA MENTIONED BELOW CAN BE FOUND IN THE AWS STANDARD)
1	National Environmental Quality Standards (NEQS)	Environmental Protection Agency (EPA)	1.3.4; 1.3.5; 1.4.1; 1.5.4; 1.8.3
2	Self-Monitoring and Reporting by Industries Rules, 2001	EPA	Step 2 of AWS Standard (Data Gathering and Understanding)
4	The Pollution Charges for Industries, 2001	EPA	1.3.4; 1.3.5; 1.4.1; 1.5.4; 1.8.3
5	Environmental Sample Rules, 2001	EPA	1.5
6	Draft Hazardous Substances Rules, 2003	Ministry of Climate Change (MoCC)	1.5.4
7	Canal and Drainage Act, Amended 1970	Ministry of Water Resources (MoWR)	1.1; 1.6; 1.7; 1.8
8	The Factories Act, 1934 / Provincial Factory Rules, 1952 (Section 14)	Ministry of Industries and Production	3.4
9	National Environmental Policy, 2005	MoCC	Step 2 (Commit and Plan) Step 3 (Implementation)
10	National Sanitation Policy, 2006	MoCC	1.5; 1.5.7; 1.5.9
11	National Drinking Water Policy, 2009	MoCC	1.5; 1.5.7; 1.5.9
12	Punjab Environmental Protection Act, 2012	Punjab EPA	Step 3 (Implementation) Step 4 (Evaluation)
13	Sindh Environmental Protection Act, 2014	Sindh EPA	Step 3 (Implementation) Step 4 (Evaluation)
14	Balochistan Environmental Protection Act, 2012	Balochistan EPA	Step 3 (Implementation) Step 4 (Evaluation)
15	Khyber Pakhtunkhwa Environmental Protection Act, 2014	KPK EPA	Step 3 (Implementation) Step 4 (Evaluation)
16	Multilateral Environmental Agreements (MEAs) Ratified by Pakistan	MoCC	-

Table 1: Comparison between Pakistan's National and Provincial Water Regulations and the AWS Standard

2.2.3 REPUTATIONAL RISK

Reputational risk refers to the potential for negative publicity, public perception or uncontrollable events which may have an adverse impact on a company's reputation, thereby affecting its regulatory and social licence to operate and ultimately its profitability margins.

In Pakistan's context, reputational risk with reference to water is associated with issues of over abstraction or causing excessive pollution through wastewater dumping to cause a social nuisance and gain negative public response. Pakistan's industrial development, and its use of water for agricultural purposes, does not fully ensure safety of water resources, thereby putting natural water eco-systems at risk.

As a result of the lack of environmental safeguards practiced by some local businesses, it is highly plausible that major water users may attract negative public response. Recent events of cement industries over abstracting public water resources brought great public interest in the matter of water safeguards.

To counter the cumulative effects of negative public reactions, and the perception that 'all business' and not specific individual businesses are at fault, several local and multi-national companies are now interested in how to demonstrate that they act responsibly and ensure good social behaviour. Different initiatives such as installation of filtration plants, provision of WASH facilities, development of capacity building exercises (such as water education) are a few of the many examples of community development underway. Independent third party verification against the AWS Standard is the most robust way to do this, as it demonstrates commitment to and compliance against global best practice.

2.3 AWS STANDARD: A FRAMEWORK FOR CONTINUED IMPROVEMENT

The AWS Standard offers a credible, globally applicable framework for major water users to understand their own water use and impacts, and to work collaboratively and transparently with others for sustainable water management within the wider water catchment context. Implementers follow the steps and guidance in the AWS Standard to achieve good water stewardship practices that improve site water performance and contribute to wider sustainability goals.

The five main steps and the five outcomes can be seen in Figure 1 below;

These five outcomes are an integral part of the "Theory of Change (ToC)" the AWS system has developed with a broader vision and mission it supports.

A ToC clearly enunciates what changes or impacts an organization hopes to achieve and how will it bring about those changes.

The AWS Global AWS Strategy 2019–2021, highlights how it will create this change through its strategic goals:

1. Influence: AWS, our members and partners are a powerful driving force for change and scale in the adoption of water stewardship.
2. Inclusion: AWS water stewardship and its benefits are accessible for all.
3. Impact: AWS water stewardship drives and supports positive systemic change in water stressed catchments.

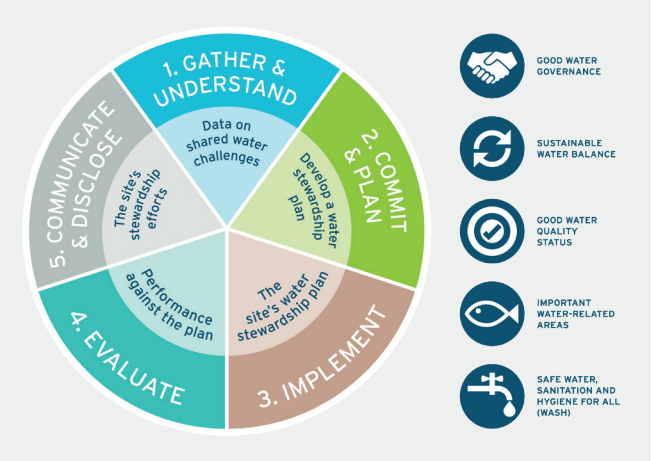

Figure 1: AWS's Five Steps and Five Outcomes

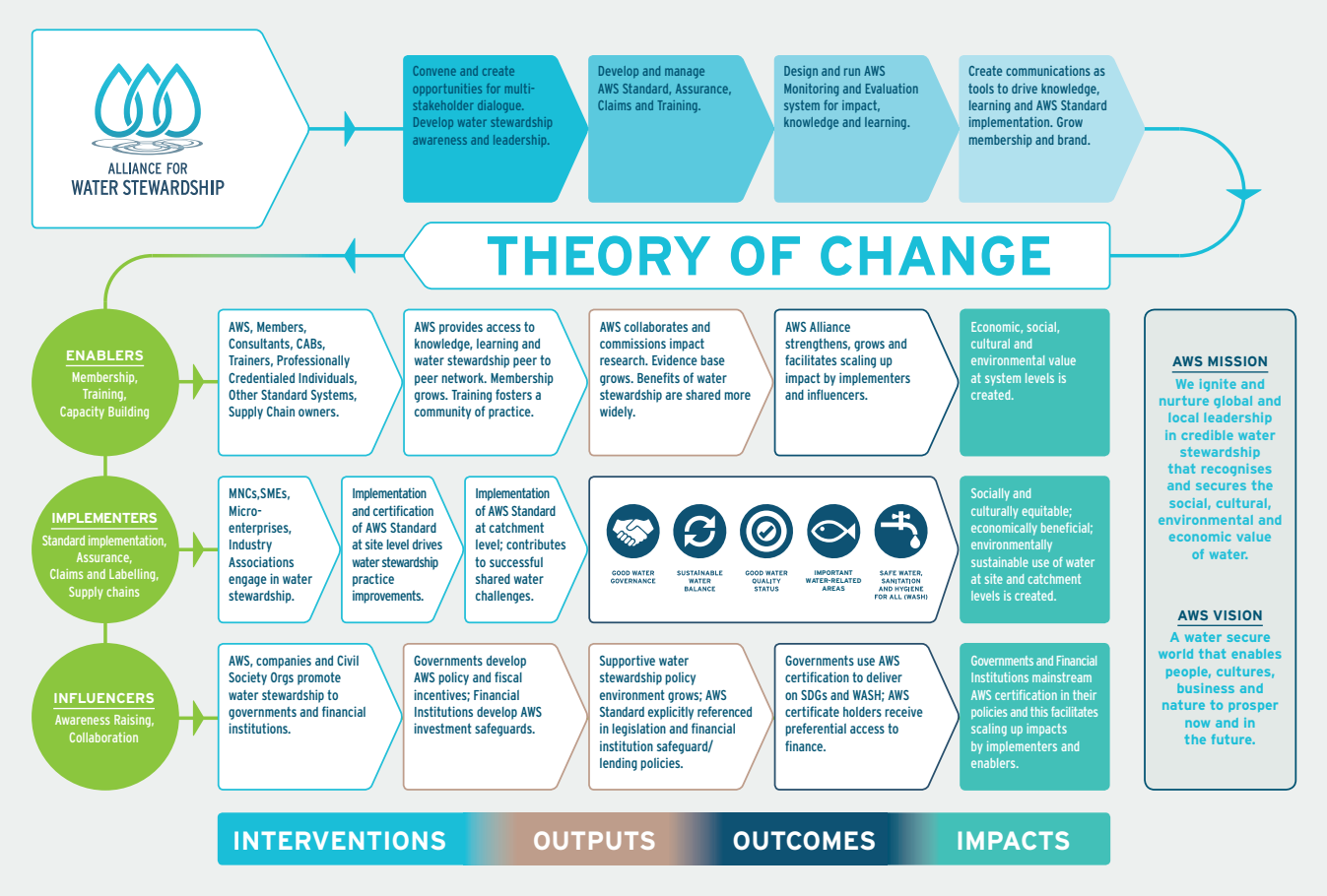

Figure 2: AWS' Theory of Change

In Figure 2, it can be seen that there are mainly three groups of drivers namely the 'Enablers', the 'Implementers' and the 'Influencers'. As each of the group goes about taking different interventions (capacity building and training; implementation of AWS Standard at site and catchment levels; AWS, companies, civil society organizations and government forming public private partnerships to promote water stewardship collaboratively) it creates the desired outputs, outcomes and impacts eventually delivering on AWS' vision and mission.

AWS's vision is: "A water-secure world that enables people, cultures, business and nature to prosper, now and in the future."

And it wants to achieve this through its mission; "To ignite and nurture global and local leadership in credible water stewardship that recognizes and secures the social, cultural, environmental and economic value of freshwater."

3. NESTLÉ PAKISTAN AND AWS

Nestlé Pakistan has pioneered the implementation of the AWS Standard in South Asia. The decision to lead on use of the AWS Standard in Pakistan grew from a company-wide recognition that water stewardship was in line with Nestlé's commitment to achieving responsible use of natural resources and balancing of business growth alongside positive societal impact. Nestlé Pakistan first initiated the AWS implementation process at its Sheikhupura factory in 2016 and the site got certified in 2017.

Through implementation of the AWS Standard Nestlé Pakistan aimed to become part of a globally recognised water stewardship community of practice. Operationally Nestlé Pakistan wanted to be able to record, understand and analyse the water need and use of their production units and their impacts beyond the factory zone within its catchment area.

They particularly hoped to understand where they could reduce their on-site water use, which areas of regulatory compliance they needed to improve performance against and which actions they could and should take beyond the operational fence-line to collectively address shared water challenges in catchments.

3.1 AWS IMPLEMENTATION AT THE SHEIKHPURA PLANT

The city of Sheikhupura, historically referred to as Qila Sheikhupura, is a city in the Pakistani province of Punjab. Founded by the Mughal Emperor Jehangir (and named after his nickname - Sheikhu) in 1607, Sheikhupura is now the 16th largest city in the country and is the headquarters of Sheikhupura Division.

The city boasts of 51 union councils, a population exceeding 473,000 (2017) and has a vibrant and extensive industrial area comprising of major industrial units. Figure 4 shows the location of Sheikhupura in the Punjab province in Pakistan. The Division has fertile soil, with rice, wheat, sugar cane and fruits including grapes, guava and many more extensively grown in the area.

The city is linked with five motorway interchanges and it is also home to a myriad of cultural heritage sites including the famed historical monument Hiran Minar, Tomb of Peer Waris Shah (the famous Punjabi poet and saint), Fort of Sheikhupura, Gurdwara Saca Soda and the famous Janamsthan (birthplace) and Temple of Baba Guru Nanak at Nankana Sahib.

Photo: Nestlé Sheikhupura Factory. Nestlé.

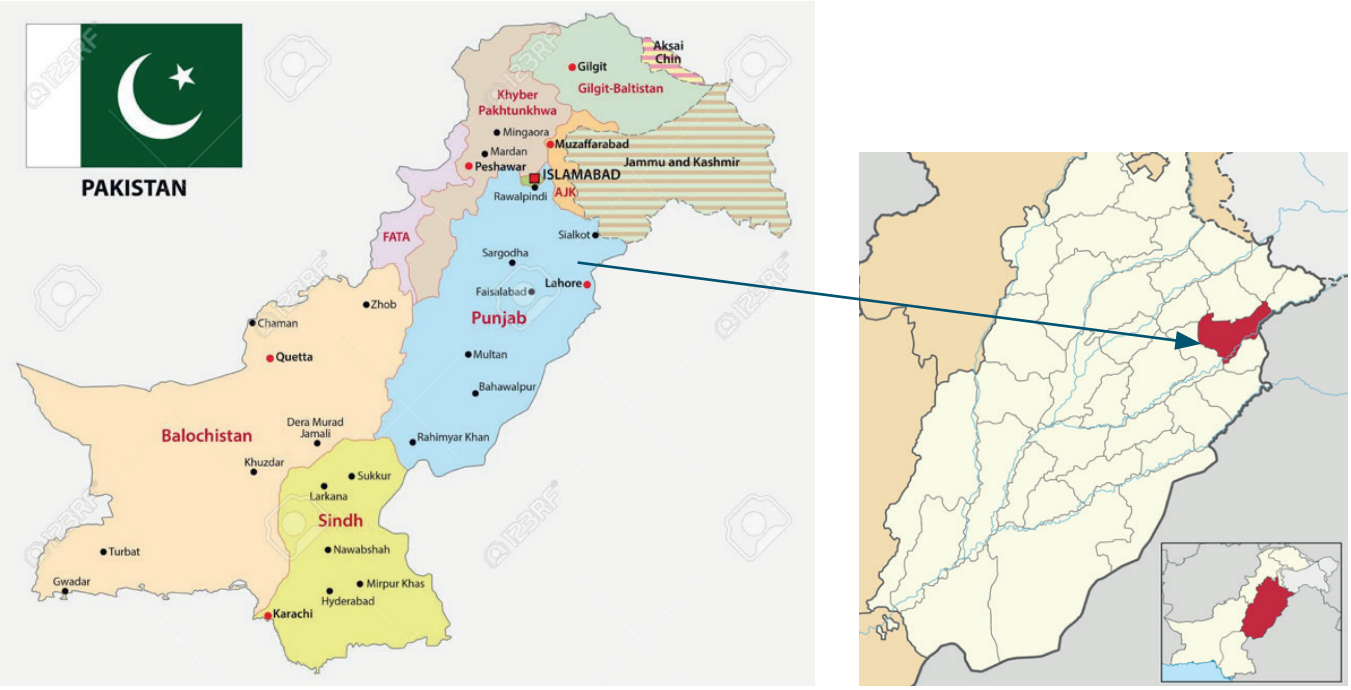

Figure 4: Sheikhupura in Pakistan[10]

3.1.1 NESTLÉ SHEIKHUPURA

Nestlé Sheikhupura is one of the largest facilities within Nestlé's global portfolio of production sites. The Sheikhupura site is a multi-product factory serving a considerable local market of consumers and retailers, producing a wide range of products including infant cereal, infant formula, follow-up formula, full cream milk powder, bottled water (retail and bulk), UHT treated milk, HCLF High Calcium Low Fat milk, cream, dairy tea whiteners, juices as well as yogurt.

The importance of the Sheikhupura site to both Nestlé Pakistan and Global on a business growth level, combined with the high local visibility of the plant, its need for and use of water, and the local water challenges in the catchment, marked the plant out as a high priority site for action on water stewardship by Nestlé following an internal, company-wide evaluation.

The factory is located alongside Lahore-Sheikhupura Road and is home to a large number of other industrial units including Hashim & Company, Olympia Hatchery, Ali Embroidery Mills Unit 2, Eastern Agro Industries, Drug Pharm (Pvt.) and many more. The factory's catchment scope includes the area in the Rachna Doab with a 10 km radius around the site.

The implementation of the AWS Standard at Sheikhupura required staff to understand and learn new approaches so that the company could customise internal processes, mobilize necessary resources, build capacity and develop knowledge partnerships. Being the first company to undertake certification in Pakistan made the process more challenging as there was at that time no local blueprint to follow.

[10] Map sources: Map of Pakistan-123RF.com; Map of Sheikhupura- Wikipedia

3.1.2 BUILDING A TEAM TO IMPLEMENT THE AWS STANDARD

In 2016, Nestlé Sheikhupura's Factory Manager, publicly communicated to the government, civil society and wider stakeholder groups, the business' commitment to implementing the AWS Standard (in version 1.0 of the AWS Standard 'Commitment' was the first required step). Thereafter, the process of identifying and creating the internal AWS team that would lead the AWS implementation was initiated.

WWF, who had also been involved as knowledge partners, played an important role in assisting and facilitating the team in understanding what personnel were required to equip the site in implementing the Standard. The idea was to keep a balance in the team so that it was representative of all departments within the factory and the company, whilst also drawing in relevant external expertise where necessary.

The AWS operationalization team formed over a few months, during which time participants began to configure what contribution was required from each level of management and to identify individuals who had enough ownership of the cause along with adequate amount of social capital among their colleagues to pull off a long-term engagement such as AWS implementation.

As the implementation process was built on the collection of relevant data, including engagement with local stakeholders, and the development of an operational strategy that contributed towards improvement in water usage, the site engaged a local water expert, who adequately understood the technical requirements of the AWS Standard. Similarly, because governance and responsiveness to the regulatory environment was a primary element of the certification process, the team also included the factory's Health, Safety and Environment Compliance Officer.

The lead on implementing the Standard was more often than not taken by the Water Expert. Meetings and engagements within the factory, with the Head Office and with wider stakeholders were jointly carried out with ownership driven by all team members, with assistance from WWF Pakistan. There was frequent communication between this internal team and WWF Pakistan whenever key decisions were discussed, agreed on, validated and implemented. Frequent communication, trust and a high level of ownership within the selected team was an element that remained critical to the success of the AWS implementation process.

The final team that formed not only represented interests from various levels of management and internal stakeholders but also had diverse skill sets. A representative from the company's Corporate Public Affairs department for example had an important role when it came to engagement with external partners and aligning the outcomes with Nestlé Pakistan's overall strategy. The Factory Manager (as process owner) provided local leadership – providing resources and validating decisions.

3.1.3 GATHERING AND UNDERSTANDING WATER-RELATED DATA

The second step within the AWS implementation process (according to Version 1.0 AWS Standard) was, perhaps, the most important and time-intensive one. This step ensures that the site gathers data on its water use within its site and catchment to understand its shared water challenges as well as its water related risks, impacts and opportunities.

Identification and Engagement with Stakeholders

The AWS implementation team sat together to identify types of stakeholders to mark the site's sphere of influence. For this purpose, they used Google Maps, as seen in Figure 5, where the Nestlé Sheikhupura factory has been marked with green lines to form a quadrant, while other industries in the neighbourhood are either marked with green or orange circles. The green circles indicate the stakeholders that when consulted responded with their inputs while the orange circles indicate the stakeholders that did not respond at all. These stakeholders were a mix of different water users including industries, schools, hotels, villages and hospitals in the vicinity.

The AWS implementation team began one-to-one stakeholder engagement comprising consultations with other industrial units, farmers and regulators within its catchment. To guide them they used the Community Relations Process Tool 2.0 (CRP) which has been developed by Nestlé Waters as a tool for engaging with local communities in the vicinity of their factories. CRP provides a model that is embedded in their operations at every single operating facility; driving their dialogue and engagement with local stakeholders. Figure 6 shows a few of these engagement sessions that took place with government stakeholders, residents of Bhatti Dhilwan Village (the village is less than a km away from the Sheikhupura site), general community (in the form of focused group discussion) and other industries (description from top left clockwise).

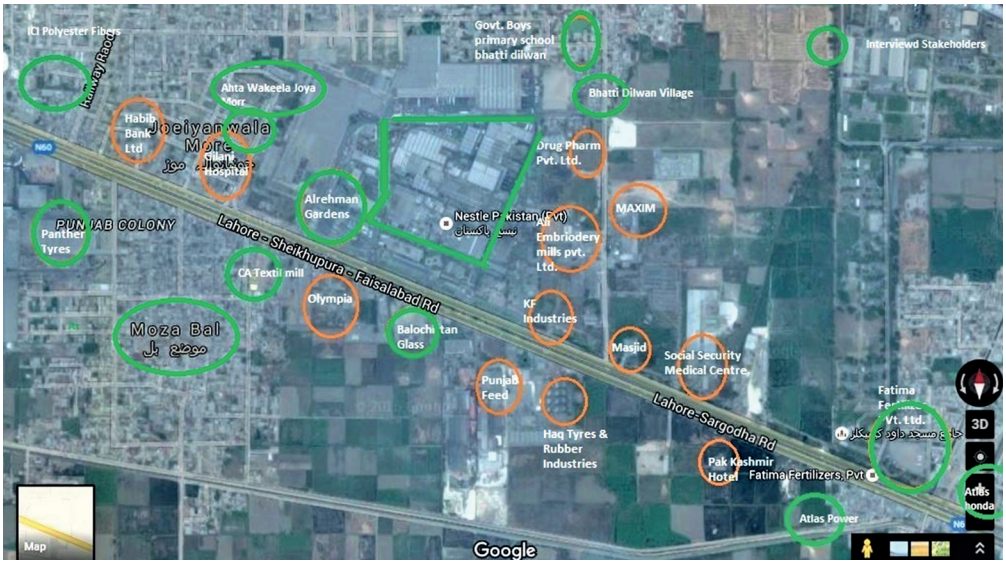

Figure 5: Nestlé Sheikhupura factory's Catchment for Stakeholder Identification using Google Maps

These criteria are important first steps in implementing the AWS Standard because they are necessary building blocks towards improving the factory's understanding of its own water usage within a catchment, rather than just within its own factory limits. Completing this required the factory's operational head to develop collaborations with water users in the area, community, regulatory bodies, the local government and other stakeholders.

Gathering data around water-related risks and understanding current extraction rates within and outside its site boundary allows a company to gather representative data that leads to an understanding of water risks within the site and the catchment. Initial data collection led to an awareness of multitude of physical challenges and questions that Nestlé could build a strategy around.

Photos: (Top Left to Bottom Left – Clockwise) Engagement with Government Stakeholders, Residents, Community and Industries in Sheikhupura. Nestlé.

Water Balance Study

In 2014, National Engineering Services Pakistan (Pvt.) Ltd. (NESPAK) an external consultant, carried out a 'Water Resource Study for Nestlé Sheikhupura' where they narrowed down the project area based on the underlying aquifer to be 10 kilometres radius (315 square kilometres) around the factory. This also satisfied AWS's Standard requirement of physical scoping, when the implementation started in 2016. The purpose of the water resources/ water balance study was the assessment of the exploitation level of local water bodies by all water consumers in the area. An assessment of qualitative and quantitative figures of all industries in the zone, municipalities, domestic and agricultural uses of water (using both surface and groundwater) was collected. The factory was positioned on a map using Google Maps; contamination risks to the aquifer (from where the factory extracted water) were detailed; the depth of bedrock and tapped aquifer was explored and results of pumping tests as well as available water quality data was compiled for the company. The report enabled the company to understand the geophysical status of surface and groundwater resources within its site area. NESPAK utilised secondary data from multiple sources to complete the report.

The water balance study identified several important water-related issues within Nestlé Sheikhupura's project area. The first and foremost one was the considerable increase in number of entities using groundwater for industrial as well as agricultural uses. This put extreme pressure on the water resources available. Another key concern was the municipal and industrial waste disposal, most of which was being dumped without treatment (for example, industrial affluent being thrown into the Deg Nullah- the closest drain) which was an immediate threat to the shallow groundwater resources. Therefore, untreated effluent disposal in the area was a major point of concern not only for the underlying fresh groundwater reserves but also for downstream surface water users.

On further analysis, it was reported that the average depletion rate of the ground water (based on a study published in 2014) appeared to be 0.036 metres per year, and therefore, perhaps not as alarming. Considering agricultural activity in the vicinity this can also be attributed to agriculture wells. Nevertheless, multiple factors may influence groundwater level trends in future (i.e. rainfall pattern evolution and related regional groundwater recharge, and the mushrooming industrial, urban and agricultural development in Sheikhupura). The risk has been addressed in Nestlé's local water stewardship strategy which states:
a) Ensuring a continuous groundwater level monitoring (to anticipate potential negative trends).
b) Permanently engaging with local stakeholders advocating for good water management practices to minimize groundwater overuse and proper irrigation practices.

Water Quality

The condition of local water quality was another area of risk that the report was able to identify. Water quality at shallow depths, due to the aforementioned reasons, was found to be inferior to the quality of deep water. This was confirmed through data on vertical groundwater salinity profiles from previous groundwater investigations. On the basis of the data, the report suggested that Nestlé, as a way forward, could plan to work towards the protection of the aquifer as well as of surface water through engagement with local stakeholders, especially other industrial units in the site area, government departments and agencies (such as the Environmental Protection Agency- EPA) and engage with the wider community to try and achieve better effluent disposal practices within the project area, along with developing projects for provision of clean drinking water and other initiatives that would improve the area's water quality.

3.1.4 UNDERSTANDING WATER-RELATED RISKS AND CHALLENGES - LEADING TO DEVELOPMENT OF A WATER STEWARDSHIP PLAN

Very soon, the team realised that the primary advantage of the AWS Standard itself was actually the ability to have data that 'spoke' of current practice and helped devise future, responsible, practice (as had happened during the course of the processes being undertaken at the time). Through this process, the management were in a position to plan corrective actions, undertake pre-emptive steps as well as answer questions that its global and regional partners, regulators and clients had regarding their processes, water footprint and environmental management practices.

PHYSICAL	REGULATORY	REPUTATIONAL
Quantity - Future use of water - Monitoring - Water Resource vs. Market Business Strategy		**Local** - Local Acceptability a. Issue Mapping b. Factory Location c. Civic Society Enablement
Quality - Water Category - Aquifer Vulnerability - Human Surface Activity - Aquifer Protection	- Licenses - Water Regulation	**Corporate** - Drinking Water Access - Combined Water Stress Index/ Droughts - Important Water Area a. Int'l Brands/ Nestlé Pure Life b. Previous Case c. Poverty Index

Table 2: Water Risks Identified at Nestlé Sheikhupura Factory

The data gathering process led to identification of potential Areas of Focus (AoFs), shown in Table 2, where Nestlé could improve their water resource utilization within their factory and contribute towards the protection of local water bodies in their catchment. These AoFs were defined based on the category of risk (Physical, Regulatory and Reputational), to design a Water Stewardship Plan that met the AWS outcomes. Some of these interventions included: engaging with local media and journalists to disseminate water related information to the public; engaging with other partners to save water in agriculture sector; ensuring access to safe and clean drinking water to the local communities; conducting an indirect water use evaluation; maintaining and improving WASH facilities on and off site; drain restoration project (this may include engaging with local government to propagate cleaning of the drain); raising awareness among local industries on proper disposal of industrial waste water. The idea was to develop a timeframe for the implementation of these interventions (which could be short or long term) so as make this process bear continuous fruit through on-going improvement.

3.1.5 EVALUATING, COMMUNICATING AND DISCLOSING

The outcomes of these initiatives were regularly monitored through physical verifications and internal assessment. The progress was reported by Nestlé's AWS Project team to their senior officials on-site and in the head office for approvals and feedbacks.

In order to ensure public outreach and disclosure of information, Nestlé used their web portal and print and electronic media (where needed). Their sustainability report is released annually to keep all relevant stakeholders informed of the progress of actions taken under the AWS action plan, and to receive feedback on the progress. Key learning outcomes from the AWS action plan were analyzed with WWF-Pakistan's team. A summary of these outcomes is discussed in the next section. A timeline for AWS Implementation in the Nestlé Sheikhupura factory can be seen in Figure 7.

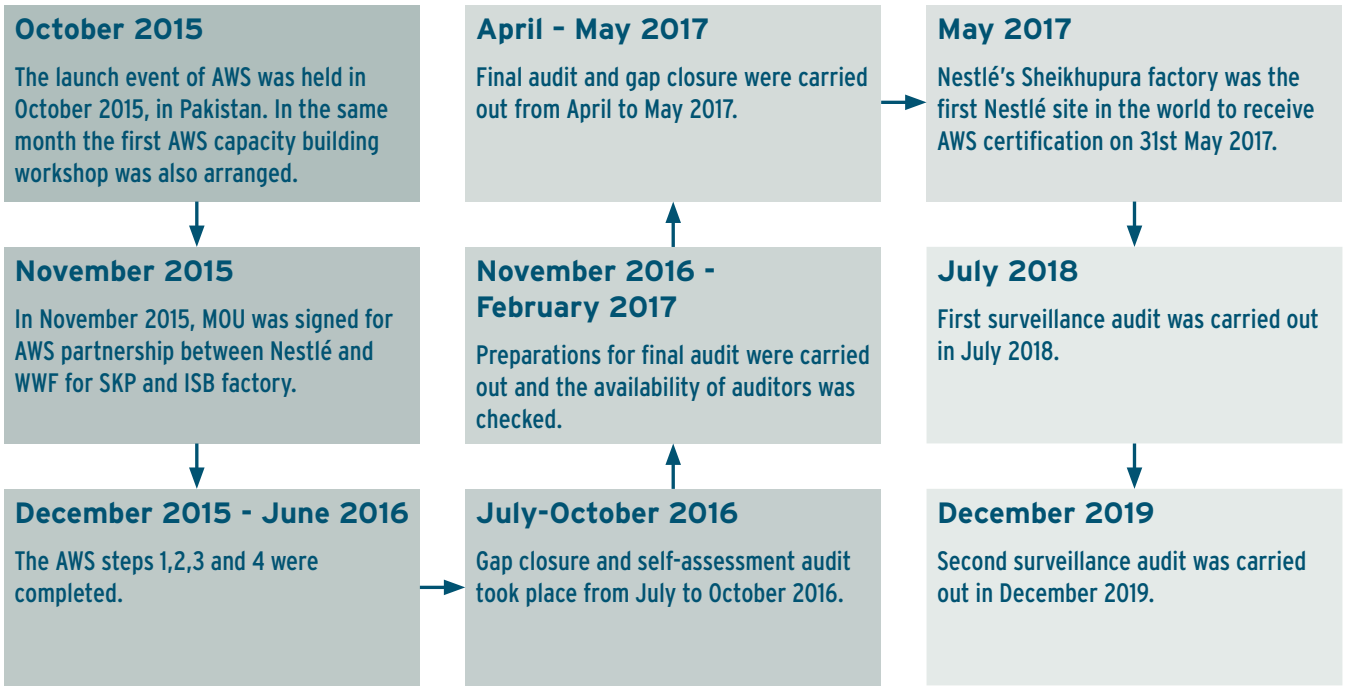

Figure 7: Implementation Timeline of the AWS Certification Journey for Nestlé Sheikhupura (2015-2019)

3.2 KEY LEARNING OUTCOMES

1. Improved Level of Engagement with Catchment Stakeholders:

Initiatives taken towards improving water governance led to improved relations of the site(s) with their catchment stakeholders. Nestlé Sheikhupura, for instance, was able to work closely with the Local Government at Sheikhupura on water challenges, such as cleaning up of the nearby drain. Nestlé continues to be in close coordination with the Irrigation department. Current activities include dialogue to construct a channel to provide its treated industrial effluent which can be utilized for irrigation purposes.

2. Improved Internal Coordination:

The site reported that via implementation of AWS Standard internal water target setting improved which resulted in better communications on water targets between different departments within the organization, particularly onsite departments.

3. Better Understanding of Catchment and Supply Chain Water Risks:

Engagement with local stakeholders also led to the identification of catchment water challenges, essentially leading towards identifying projects of need for the community to resolve their water challenges. For example, Bhatti Dhilwan site was provided with access to clean drinking water through the installation of a filter plant.

Nestlé has also taken various initiatives of partnering with different government departments to encourage local farmers to uptake improved technology. For example, they have partnered with the Punjab Agriculture Department to encourage local farmers to take up drip irrigation in order to work beyond the factory gate and take collective action. As part of this initiative, Nestlé covers 40% of the farmer's cost of putting up equipment for drip irrigation while the Punjab Government covers 60% of the cost. As of 2019, they have applied drip irrigation on 139 acres saving up to 391 million litres of water. They are also exploring other high-efficiency irrigation methods like furrow irrigation and sprinklers based on the farmers' needs. These farmers may or may not be a part of their supply chain.

4. Increase in Contribution towards WASH:

Site's initiatives on WASH helped create awareness among community members about the importance of clean water, health and sanitation. Women and children were especially targeted to create awareness and provide support. By 2017, through Nestlé Water Education for Teachers (WET) initiative 250,000 teachers and students were educated about the importance and responsible usage of water.

5. Better Contextualization of Water Balance Information:

The method to mark a 10 km radius outside the fence line of the factory helped understand the impact of water withdrawal by the site on the catchment and vice versa. This method further strengthened their understanding and practices towards water management. It also provided a broader perspective for the senior management at the factory to analyze the efficiency of their operations. This practice is made consistent for other AWS sites pursuing the Standard in Pakistan.

6. Identification of Data Gaps in Catchment Water Quality:

Understanding water quality outside the fence line remained a challenge for the site and was identified as one of the limitations faced by the site, particularly looking at the surface water quality data. This is due to the non-availability of data on water quality, which remains a challenge at large in various basins across Pakistan. Similarly, understanding the status of important water-related bodies came up as a challenge to the site, since no data other than what was collected by the factory for their site's tube well was available to benchmark their performance.

3.3 LOOKING FORWARD

After certification of the Sheikhupura site in 2017, Nestlé Pakistan began contemplating the implementation of the Standard to its second site which is in Islamabad. The factory is located in Sector I-10, where its primary business is bottled water manufacturing and warehousing. It is geographically in a completely different area, with different challenges and opportunities with regards to water; clearly a very different context overall but the takeaways, learning and knowledge that had been gained from the Sheikhupura site made the AWS implementation far speedier and a smoother process. As of publication of this case study, three out of four Nestlé sites in Pakistan including Sheikhupura, Islamabad and Kabirwala are AWS certified while Port Qasim is next in line.

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