

Zara Iqbal  
Dublin Coffman High School  
Dublin, Ohio, United States  
The Seychelles and Water Scarcity

### **Three-Point Plan to Address Water Scarcity in the Seychelles**

Benjamin Franklin once said, “When the well is dry, we know the worth of water,” and this quote perfectly encapsulates a resource countless people in developed countries often take for granted: reliable, easy access to clean water at all times of day. In many countries throughout the world, this is not a reality, but rather an unachievable dream. One of these countries is the Republic of Seychelles, an island nation located in the Indian Ocean. Though its 1993 Constitution defines access to clean water as a basic human right of all residents of the Seychelles (“Public Health (Water Examination) Regulations (Cap. 196). | UNEP Law and Environment Assistance Platform”), only 60% of the population’s water needs are being adequately met (“Water Quality in Seychelles”) – a crisis recognized by international organizations such as the United Nations and predicted to substantially worsen as its population continues to skyrocket.

The Republic of Seychelles, an archipelago composed of 115 granitic islands located in the western Indian Ocean, is the smallest nation in the African continent. Located approximately 700 miles northeast of Kenya, it has a population of 107,985 as of January 15<sup>th</sup>, 2024 (“Seychelles Population (2020) - Worldometer”), and residents are nearly split perfectly in half in terms of where they live, with 42.5% of aforementioned residents living in rural areas and 57.5% living in urban areas (Sparks). Among those residents, approximately 90% live on the island of Mahé, the largest and most foremost island of the Seychelles archipelago. No larger than nearly half the size of Rhode Island, it is known for its Creole architecture and colorful markets, and is also where the Republic’s capital Victoria is located.

The average household, regardless of location, typically has four family members (United Nations, Department of Economic and Social Affairs, Population Division). Seychellois homes are typically made of stone blocks with iron roofs, or have wood frames and walls (“Housing - Seychelles”), and characteristically have large double doors and windows alongside high-pitched roofs in order to allow natural ventilation and lighting (Lablache). An ordinary diet can be expected to consist of chicken, coconut or fish curry, lentils, fresh fruits, saffron rice, and breadfruit, all of which are representative of the French, Indian, Chinese, and Creole influence on Seychellois culture and cuisine (“Seychelles Traditional Food | Blog | Coral Strand Hotel in Seychelles. 4 Stars Hotel on Beau Vallon Beach, Mahe Island”). In terms of lifestyle, a basic education of 10 years beginning at age six is not only free but required as well (Education Policy

Data Center), and primary healthcare, having significantly improved throughout the past three decades, is provided free of cost to all Seychellois citizens, although facilities are extremely limited and can be virtually inaccessible to many rural citizens (Shamlaye et al.). Furthermore, a mere 20% of the population is connected to the central sewage system, and contamination from municipal wastewater treatment plants and leaking septic tanks plagues the island (Dollar).

Nevertheless, the island nation maintains its status as the ideal vacation destination due to its warm, crystal-clear waters, dense tropical forests, and unique marine life; as such, its successful economy is heavily dependent on its ever-growing tourism and hospitality industries, and due to its island geography, on fisheries as well. In fact, nearly half of the population is employed in one of these two main sectors of the economy (“Status and Trends – Ministry of Agriculture, Climate Change and Environment”), both of which continue to grow exponentially.

However, though life on the islands seems nothing short of paradise on Earth, there is one glaring issue that has faced the country since its inception: the issue of water scarcity. The problem itself is multifaceted, with one of its main areas of concern being inconsistent water quality, especially throughout rural areas. Although the chlorinated tap water meets the World Health Organization’s (WHO) guidelines for water quality, it can be extremely unreliable and as a result, residents and tourists alike are constantly encouraged to drink bottled water (Campbell). This puts rural residents at a heightened disadvantage – considering most bottled water is located in supermarkets, restaurants, and hotels in urban centers, rural residents may be forced to use potentially contaminated water to cook, drink, bathe, and even wash their clothes. This often leads to the spread of waterborne infections such as *E.coli* and cholera, which characteristically produce symptoms such as diarrhea, bloody vomiting, and severe abdominal cramps (CDC), putting the nearly 100,000 residents at risk for oftentimes deadly illnesses. This is especially worrisome for children and the elderly, as they tend to have poor immunity, or for the 4,000 Seychellois families (which make up approximately 32% of the total population) who cannot afford food to eat (Ernesta) or bottled water to drink, let alone afford extensive medical care and the means to travel to hospitals to receive it.

Even more alarmingly, the islands’ natural sources of water are extremely limited. The groundwater aquifer is known to be heavily polluted with seawater or discharge from septic tanks (Dollar), and although the Seychelles receives a plentiful amount of rainfall, 98% cannot be collected as it is lost through run-off and evapotranspiration. Additionally, although Seychelles is surrounded by an ocean of water, the salty seawater must be desalinated before it is safe to consume. Unfortunately, however, there are only four desalination plants in all of Seychelles, all of which are located on the main islands of Mahé, Praslin, and La Digue (“Seychelles”), pointing to yet another issue: an extreme lack of water-related infrastructure, especially throughout rural

areas. Though these desalination plants produce just enough water to allow Seychelles to scrape by during its dry season from May through October (“The Seychelles: When to Visit”), they do not produce nearly enough water to sustain the Seychelles year-round and are yet again, inaccessible to rural populations.

The government of the Seychelles as well as the United Nations is well-aware of the dire nature of the issue of water scarcity and has attempted to implement some solutions of its own; initiatives such as the Rainwater Harvesting Initiative in Schools organized by the United Nations (“Sustainable Education in Seychelles: Rainwater Harvesting in Schools”) and the World Water Children’s Day Conference organized by the Wildlife Club of Seychelles (“WCS Takes on Water Scarcity Challenge”) have aimed to reduce the water-related needs of the population, educate the general public about possible methods for adapting to climate-related water scarcity, and empower the Seychellois youth to advocate for water conservation. Additionally, projects such as the one funded by the European Investment Bank (EIB) aim to implement three-point solutions to the water scarcity issue in Seychelles: according to the International Institute for Sustainable Development, these points include “. . .restoring and extending existing water supply systems on three of the Seychelles islands; upgrading and creating sewage systems; implementing water demand and resource management programmes; and building capacity for operation of facilities” (Hub). However, these solutions are simply not enough as of right now, and with the boom of the tourism sector and steady population growth, the matter will simply continue to worsen if drastic measures are not taken to address it immediately.

As such, I propose a three-point plan: first, the installation of rain gutters/sanitary holding tanks and rain barrels in order to collect clean water that may be used for drinking, cooking, bathing, or washing clothes. The Seychelles receives over 93 inches of potable rainfall per year, which is approximately 60 inches more than the average amount of rainfall throughout the African continent (“Victoria Climate: Weather by Month, Temperature, Rain - Climates to Travel”). If efficiently collected, it would greatly aid in providing for the water-related needs of thousands, and there is the added benefit of there being no advantage for urban residents over rural and vice versa; the rain gutters can be installed on the roofs of all Seychellois residents, and the rain barrels where necessary (such as in rural areas, where due to agricultural use of land animals would be exceedingly likely to disturb holding tanks). Second, the introduction of water purification methods so that the foregoing water collected in holding tanks and rain barrels is safe to drink. Preferred methods would include physical filtration (through non-electric water filters which can be made from household materials, namely recyclable items like plastic, which would not only remove physical contaminants such as sediment but reduce waste in waterways as well) and later solar disinfection (SODIS), which, according to the Center of Disease Control and Prevention, has been proven to disable any bacteria, viruses, or protozoa present in the water with

minimal materials and cost to the user (*Household Water Treatment Options in Developing Countries: CDC Solar Disinfection (SODIS)*). Third, a program run by volunteers (mainly local and willing residents, but as the program expands potentially international volunteers sponsored by aid organizations such as the United Nations) in order to distribute the necessary materials, starting in the most severely impacted areas and working their way throughout all of Seychelles. Once that goal has been achieved, these volunteers would then work to educate the population of Seychelles through methods such as community outreach, initiatives in schools, word-of-mouth, and even working with local water and ecological preservation organizations such as Nature Seychelles on how to not only implement these methods but also proper maintenance and knowing when the water residents are consuming has become contaminated and therefore unsafe to use.

As a precautionary measure, however, existing local mindsets must also be taken into account in order to ensure cooperation and foster the program's success. Especially in rural areas, residents may resist such wide-scale change, and believe that such changes are essentially being forced on them without any tangible benefits. Easily accessible, widespread education on these methods and their effectiveness is crucial in greatly reducing any fears related to such changes and allowing for positive mindsets to take their place instead.

Additionally, this three-point plan may very well have international outreach; global chapters of the third point – the volunteer program – could be opened throughout the world where members are able to not only donate money to the cause but also their time (perhaps they could design an informative website, or organize fundraisers) and materials that are not being used as well (such as barrels for rain collection or even plastic containers for solar disinfection). With a strong international presence, many more people would learn of the efforts to end the water scarcity crisis in Seychelles and the cause would be able to garner the attention of important humanitarian organizations that could raise awareness, powerful businesses that have the means to provide financial support, and even other programs with whom collaborations may be done. Furthermore, the program could provide unique volunteering opportunities to high school or college-level students, where volunteers would travel to the Seychelles (costs would be covered by the program itself) and in turn for their help gain vital problem-solving exposure where they can experience the tangible, real-world benefits of their hard work.

Funding may be provided mainly by the government of the Seychelles, which has expressed its growing concern for the issue of water scarcity and has already contributed millions to the pressing matter. Funding may also be provided by the United Nations, that, according to the Human Rights to Water and Sanitation states that “The right to water entitles everyone to have access to sufficient, safe, acceptable, physically accessible, and affordable water for personal and domestic use,” (United Nations) which, coupled with the fact that the UN has historically taken

significant action in order to combat water scarcity in similar African countries, such as Uganda and Tanzania, makes it feasible that the organization would be open to assist. The program may also be spearheaded by Engineers Without Borders International, an organization which aims to use engineering solutions in order to solve issues plaguing underprivileged communities throughout the world, which would be crucial in terms of implementing this plan and continuously working to improve methods of water purification for years to come.

Water scarcity has plagued the majestic, renowned islands of Seychelles for far too long – and something new and innovative must be done about it. As the population continues to exponentially grow and the issue of water scarcity continues to worsen, efforts in order to combat it must grow alongside it. Although the task may seem impossible, and the hurdles to success insurmountable, there is no doubt in my mind that if there is any group of people that can accomplish this feat, it is the global youth of this day and age, and that by being successful in this undertaking, we will see a thriving Seychelles like the world has never seen before.

(Word count: 2112 words)

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