

Governing from the Future - Leading with Impact

Prospects, policies, and pathways
for Aruba 2040



CENTRALE BANK VAN ARUBA

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- Leading with Impact

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Governing from the future - Leading with Impact. Prospects, policies, and pathways for Aruba 2040.

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J.E. Irausquin Boulevard 8
P.O. Box 18
Oranjestad
Aruba
Telephone (297) 5252-100
Fax (297) 5252-101
Website: www.cbaruba.org

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Foreword

It is no secret that Aruba experienced significant economic growth and prosperity over the past century. What was once a small rural community, gradually evolved into a dense and prime tourism economy in the Caribbean. However, notwithstanding this tremendous change, the island has also faced its share of various economic shocks and crises over the past decades, thus, underscoring the increasing vulnerability of the Aruban economy. More importantly, as previously outlined by the Centrale Bank van Aruba (CBA) in the policy study on Fostering Economic Resilience (2019), this economic vulnerability requires economic resilience to not only bounce back from adverse events, but more importantly, to bounce forward on new productive and prosperous pathways. It is therefore no surprise that the recent hyper quest for economic resilience endures as an imperative for sustainable development and realizing our Sustainable Development Goals (SDGs), especially when considering the rise of *Black Swans* (Taleb, 2007) and the disruptive impacts and existential risks of *unknowable unknowns*.

However, beyond economic shocks, we encounter evolutionary economic processes that smolder. These developments gradually evolve over time, usually accelerating with complexity, interconnectivity, and intensity, as well as escalating beyond direct control. In addition to the *Black Swan* events of, e.g., 911 (2001), the global financial crisis (2009), and the COVID-19 pandemic (2020) that affected Aruba –

note the 10-year pattern –, the island has also experienced profound, albeit gradual, changes and the effects of certain *knowables*. Demographic changes, including population aging and fiscal challenges, such as unsustainable government debt, are by no means new or unknown. Likewise, the rising costs of fossil fuel energy, health care services, and housing are well recognized, as are the risks of overtourism, irresponsible waste management, and the complimentary risks of ocean acidification, mangrove deforestation, beach erosion, and climate change.

Unlike Black Swans, these so-called *Gray Rhinos* are systemic by nature and endure over time. Gray Rhinos are generally more subtle, less shocking – albeit not less disruptive in the long run –, and define a trend that's slow moving and seemingly obvious (Wucker, 2016). Nonetheless, *Gray Rhinos* are oftentimes ignored and disregarded. Consequently, these inconvenient and unravelling realities remain largely unaddressed and unresolved, while the situation endures and deteriorates. Thus, *Gray Rhinos* are not random events, but occur after a series of early signals and increasingly visible evidence come to fore, yet are not prudently and responsibly addressed nor are they structurally resolved. In fact, Gray Rhinos are detrimental to realizing SDGs.

Whereas we have experienced several of these developments for decades, nonetheless, two striking

observations endure: our collective habits of thought and the policy actions that produce and reproduce an unsustainable state of affairs. While there is little doubt that the Aruban economy and community have grown – in terms of, e.g., gross domestic production and population –, the search for *economic development and the wellbeing of Arubans* continues amidst an increasingly volatile, uncertain, complex, and ambiguous environment.

Notwithstanding the importance of economic growth, the impact of economic development is fundamental to economic and financial wellbeing. Governing from the future and leading with impact emphasize the need to develop our fragile economy into one that is inclusive, resilient, and sustainable. The key hereto is a deep understanding of the intended and unintended consequences of our past and present policy choices and decisions. It requires a profound commitment to the next generation to deliver shared wealth and prosperity to safeguard security, as well as to provide equal and equitable opportunities, and to restore and regenerate our natural habitats and the environment.

How then do we manage the economy as if the future really matters? This report addresses our Aruban *Gray Rhinos* and how policy makers (still) have a chance to – and should – make responsible evidence-based policy choices to safeguard inclusive economic opportunities for future generations and lead with impact.

In utilizing a policy framework for measuring economic wellbeing and applying the concept of Futures Thinking, this report **presents three (3) policy scenarios for Aruba in 2040** (see Chapter 1).

The alternative futures describe a **(i) policy as usual scenario** in which traditional ways of governance and policy making persist at the cost of the environment and increased poverty. Thus, there is limited adaptation and innovation in policy decisions and implementation.

In the second policy scenario, **(ii) structural policy reforms** are introduced to remediate long-standing institutional failures and boost market-driven economic growth. Yet, the subsequent risks of market failures and the externalization of costs, including persistent intergenerational inequity, endure.

The third policy scenario emphasizes a **(iii) fundamental policy shift** towards strengthening productivity, innovation, and institutional capabilities, as well as fostering inclusion, healthy social ecologies, and intergenerational equity. Rather than reform the present, a policy shift emphasizes transforming from the future in an impactful manner.

The remainder of this report is structured as follows. In Chapter 1, we lay the **policy framework of this study**, underscoring the importance of sustainable economic

development – emphasizing the Sustainable Development Goals (SDGs) – for safeguarding economic wellbeing.

Based on an extensive study of Aruba’s **social and economic demographics** (linked to SDGs 11 and 12), profound and structural changes, including population growth, immigration trends, and accelerated aging, are identified and discussed in Chapter 2. These demographic trends and developments provide the foundation for the remainder of this report.

The historical and anticipated **economic growth and development of Aruba** are reviewed in Chapter 3, in which the fundamental differences between growth and development are discussed. Based on the alternative future scenarios, different pathways are projected for 2040. The limits and vulnerability of Aruba’s economic growth model are discussed, and several recommendations – in line with SDGs 5, 8, and 10 – are provided for strengthening inclusion, equality, and intergenerational equity, as well as fostering an educated 21st century work force.

Chapter 4 addresses the **future of our social security system** and concludes that our current policies are unsustainable. Consistent with SDGs 1, 3, and 10, the need for shifting social security policies and practices is highlighted by emphasizing a citizen-centric model of health and social security.

Along similar lines, the relevance of **climate and energy security** is presented in Chapter 5. The urgency of mitigating and adapting to adverse climate risks is underscored (SDG 13), as well as the required policies and programs for nature conservation and restoration (SDGs 14 and 15), in addition to financing an inclusive renewable energy transition (SDG 7) toward climate change readiness and resilience in order to safeguard financial stability.

Thereto, **strengthening financial capabilities** – in line with SDGs 4, 8, and 9 – is axiomatic and hence the need to foster financial literacy, financial inclusion, and financial wellbeing (see Chapter 6).

Considering the systemic challenges and changes required to govern from the future, this report concludes in Chapter 7 with a discussion on the **requisite innovation capabilities in public sector governance**, in particular the fundamental role and responsibility of government and regulatory innovation for realizing SDGs 9, 16, and 17. It is indeed our collective responsibility to govern from the future, lead with impact, and safeguard the future for current and next generations.

Jeanette R. Semeleer
President
Aruba, February 2022

List of key terms and definitions

Carbon intensity: the amount of carbon by weight emitted per unit of energy consumed (CO₂/energy or CO₂/Btu). A common measure of carbon intensity is weight of carbon per Btu of energy (Source: www.eia.gov).

Climate change adaptation: deliberate adjustments in ecological, social, and economic systems to moderate adverse impacts of climate change and harness any beneficial opportunities (Agrawala and others, 2011). Adaptation consists of “hard” policy measures (e.g., adapting infrastructure) and “soft” measures (e.g., building codes, insurance).

Climate change mitigation: efforts to reduce or prevent emission of greenhouse gases. Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, or changing management practices or consumer behavior (Source: United Nations Environment Programme).

Economic growth: defined as an increase in aggregate output over a period of time (Feldman et al., 2014).

Economic development: the sustained and inclusive economic gains that lead to the achievement of higher quality of life, increased standards of living, provision of adequate shelter, and secure employment for all (including elimination of income inequality), preservation of the integrity of the environment, and the empowerment and full participation of women in all spheres of society (United Nations, 1997).

Economic prosperity: the joy of everyday life and the prospect of being able to build an even better life in the future (Legatum, 2015).

Economic wellbeing: a virtuous circle in which a society's wellbeing is strengthened by resilience and productive development, (ii) social inclusion and equality, and intergenerational equity and sustainability (OECD, 2019).

Feebates: explicit fees imposed or rebates provided if firms or products fall short or exceed the energy efficiency or emission rate standard (Source: IMF discussion note: After Paris: Fiscal, Macroeconomic, and Financial Implications of Climate Change (2016)).

Financial capabilities: the knowledge, attitudes, skills, and behaviors of consumers with regard to managing their financial resources and understanding, selecting, and making use of financial services in a responsible manner that fit their needs (World Bank).

Financial development: a combination of depth (size and liquidity of markets), access (ability of individuals and companies to access financial services), efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets) (Svirydzenka, 2016).

Financial inclusion: access to and use of formal financial services by individuals, based upon the definition used by Sahay et al., 2015.

Financial literacy: a combination of awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions and, ultimately, achieve individual financial wellbeing (OECD, 2011).

Financial Development Index: a number of indices that summarize how developed financial institutions and financial markets are in terms of their depth, access, and efficiency, culminating in the final index of financial development (Svirydzenka, 2016).

Financial deepening: The increased provision of financial services with a wider choice of services geared to all levels of society (UNSCWA, n.d.).

Financial sustainability: The ability of current policies to continue now and in the future without causing the debt level to rise continuously (Rodríguez Bolívar, 2016).

Innovation: The ability to use knowledge to develop and apply new ideas that result in changes in the production and structure of an organization. As such, innovation is not only about invention, it also about absorption (Cirera & Maloney, 2017).

Innovation complementarities: The set of institutions, laws, incentives and customs needed for innovation (Mohnen, 2005).

Institutions: institutions establish and enforce the 'rules of the game' in

society (North, 1990), and embody generally accepted ways of thinking and behaving – dominant belief systems – that are developed and reinforced over time (Nelson & Winter, 1982).

Managerial capabilities: The set of skills needed to create, extend and modify the ways in which organization operate (Helfat & Martin, 2015).

Social security: The protection that a society provides to individuals and households to ensure access to health care and to guarantee income security, particularly in cases of old age, unemployment, sickness, invalidity, work injury, maternity or loss of a breadwinner (ILO, n.d.).

Sustainable development (a): meeting current needs without compromising the ability of future generations to meet their own needs (Brundtland Commission, 1987)

Sustainable development (b): meeting the needs of future generations while adapting responsibly to current requirements and conditions.

United Nations Sustainable Development Goals (UNSDGs): The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The SDGs recognize that action in one area will affect outcomes in others, and that development must balance social, economic, and environmental sustainability.



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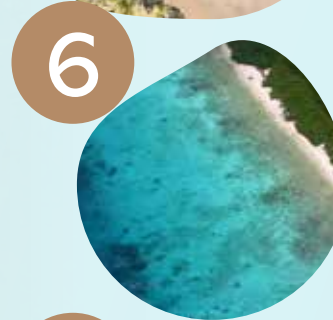
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1. **Governing from the future, leading with impact**

By Ryan R. Peterson

1.1 Introduction

Governing from the future or alternatively governing with foresight requires policy (decision) makers to sharpen their focus, unlearn from the past, and dare to lean into the future.

Metaphorically, a deeper awareness and conscious choice to foster economic wellbeing by looking ahead, rather than steering from the rear. The ability to shift from reacting to the present and reproducing the past – oftentimes with unintended consequences –, to leading from an emerging future is probably the single most important institutional capability (Scharmer & Kaufer, 2013). The more profound and enduring the changes in our society, the less our social, political and economic institutions need to rely on past paradigms and policies, and consequently, the more we tap into emerging opportunities to safeguard future economic wellbeing.

In general, economic wellbeing is defined as a virtuous circle in which a society’s wellbeing is strengthened by (i) resilience and productive development, (ii) social inclusion and equality, and (iii) intergenerational equity and sustainability (OECD, 2019). According to the World Economic Forum (2017), these elements are the main policy domains that represent an ecosystem for fostering economic wellbeing. The resulting policy framework underpins different policy measures, indicators, and impacts that underscore a multifaceted model for governing from the future in an impactful manner (see Figure 1.1).

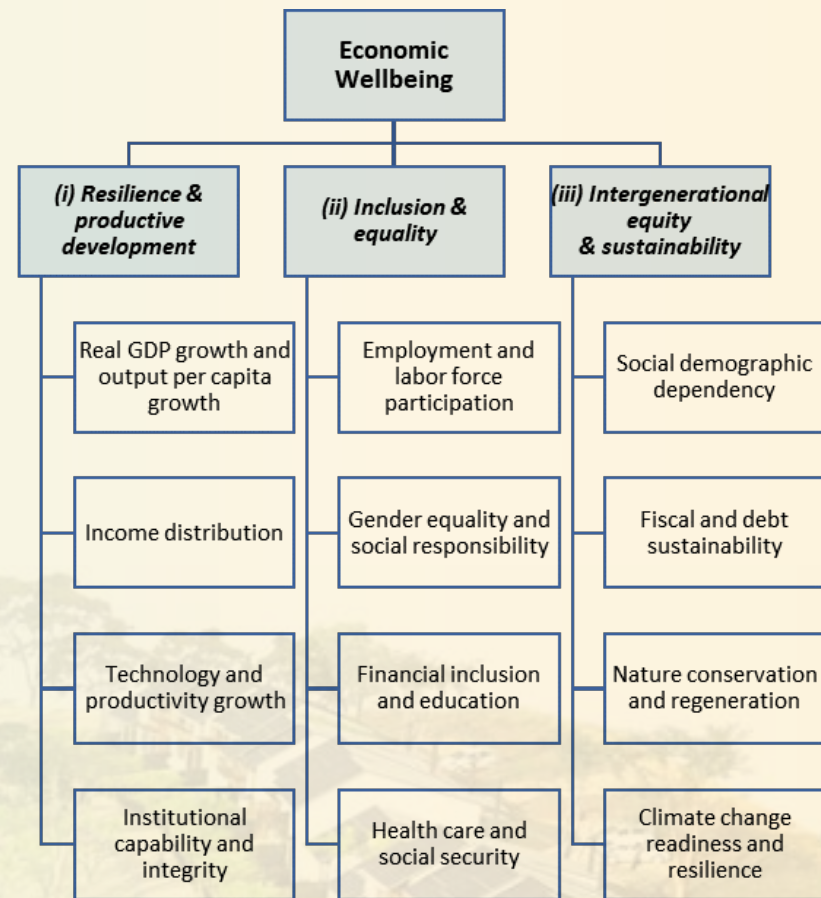


Figure 1.1. Economic wellbeing impact policy framework (adapted from the WEF, 2017; OECD, 2019).

More specifically, **(i) resilience and productive development** describes and measures the real GDP growth per capita, the distribution of income, technology adoption and productivity growth, and the requisite institutional capabilities. **(ii) Inclusion and equality emphasize** the importance of human capital by delineating employment and labor force participation, gender equality, corporate social responsibility, financial inclusion and education, the quality of health care, and the sustainability of social security. Underscoring the importance of our collective responsibility toward future generations, **(iii) intergenerational equity and sustainability** underpin social demographic changes, intergenerational (age) dependency, fiscal and debt sustainability, as well as the conservation and regeneration of nature and natural (land and sea) habitats, in addition to the requisite public and private investments in the mitigation of and adaptation to climate change.

1.2 In pursuit of economic wellbeing: the role of institutions

Economic wellbeing is at the heart of sustainable development. In line with the United Nation Sustainable Development Goals (SDGs), economic wellbeing is driven by resilient, inclusive and sustainable economic development, equitable and productive employment, and nurtured by a healthy social ecology (UNSDG, 2018). According to ‘doughnut

economics’ (Raworth, 2017), when social foundations and ecological ceilings are respected and regenerated, economic wellbeing flourishes. Thus, beyond economic growth, the wellbeing of an economy constitutes the synergy of multiple dimensions and conditions that shape a society’s quality of life, prosperity, as well as aspirations and future opportunities, which collectively and holistically describe a society’s economic wellbeing (Fox, 2012; OECD, 2019; Peterson, 2020).

The pursuit of economic wellbeing and prosperity has generally relied on the fundamental rules that shape the functioning of societies (Acemoglu & Robinson, 2012; North, 1990). These rules and codes of political economic behavior that serve to nurture society are known as institutions (Beuermann & Schwartz, 2018). It is well recognized that political economic institutions are pivotal to fostering economic resilience and nurturing social development, as well as strengthening natural ecosystems against the adverse effects of natural disasters and environmental decay (Acemoglu & Robinson, 2012; Clague et al., 1997; Knack & Keefer, 1995; North, 1990; Peterson, 2020).

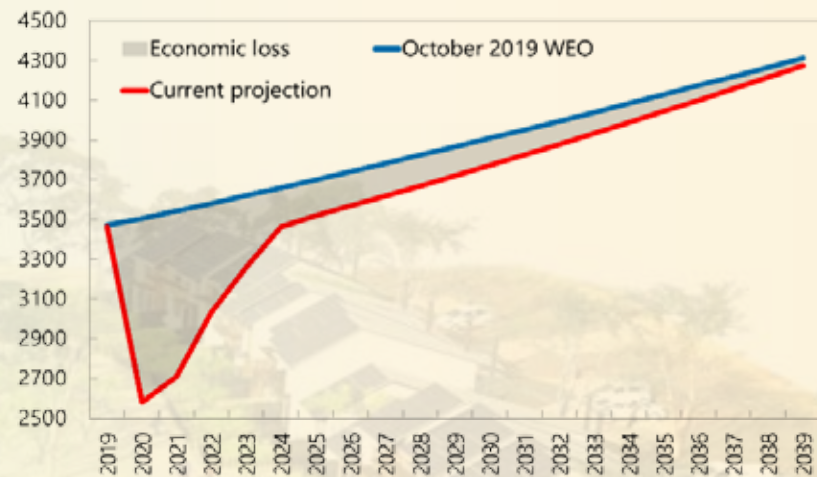
Generally, institutions reflect a society’s dominant belief systems. Beyond establishing and enforcing the ‘rules of the game’ in society (North, 1990), institutions also embody generally accepted – oftentimes traditional – ways of thinking and

behaving that are developed and reinforced over time (Nelson & Winter, 1982). Institutions entail structural patterns of internal norms, values, and behaviors that influence present actions and mold future preferences. Hence, unless structural reforms address these institutional belief systems and informal rules, they are unlikely to produce the desired results and business as usual endures (Acemoglu & Robinson, 2012; North, 1990). In the absence of institutional capabilities, economies often stagnate resulting in diminished capacity for the economy to foster and sustain economic development in the longer term (Beuermann & Schwartz, 2018; Rodrik, 2013; Rodrik et al., 2004).

Why do these institutional habits matter for economic development? Scharmer & Kaufer (2013) contend that institutional habits of thought, and the resulting policy (in) actions, too often produce and reproduce unsustainable growth, especially in the aftermath of economic crises when economies run the risk of economic hysteresis, i.e., getting locked into a lower and diminished growth path after experiencing a significant shock, without the capacity to respond and recover appropriately (CBA, 2019). The case in point is illustrated by the projections of the International Monetary Fund (IMF, 2021) for the real output losses in Aruba from the COVID-19 pandemic (see Figure 2.1). In assuming no significant shocks in the long-run – which is highly improbable –, the IMF (2021) estimates that under

a business as usual scenario, the net present value of output losses would amount to at least 135 percent of 2019 real GDP, thereby closing the output gap not until after 2039. Likewise, the IMF (2021) projects government debt levels won't reach sustainable levels – below a debt-to-GDP ratio of 70 percent – until after 2039. The IMF (2021) concludes that the real output losses and debt unsustainability are largely attributed to the low level of productivity, in addition to structural impediments to growth, as well as Aruba's specific economic model.

Real Output Losses in Aruba from COVID-19 pandemic
(in millions USD)



Sources: IMF Staff calculations

Figure 1.2 Projected real output losses in Aruba from the COVID-19 pandemic (IMF, 2021).

In sum, societies that experience economic stagnation – low productivity growth, high inequality, and low intergenerational equity – generally are the result of institutional beliefs and behaviors that fail to acknowledge, confront, and resolve enduring problems of social complexity (Acemoglu & Robinson, 2012; North, 1990).

While an in-depth discussion of belief systems and cognitive dissonance is beyond the scope of this study, the importance of mental models and mindsets in policy procrastination, and hence propelling an unsustainable status quo, is well recognized (Kahneman, 2012). However, and more importantly, it does pivot the requisite institutional capabilities toward the future.

1.3 Futures thinking for Aruba 2040

To expand and enrich institutional mental models and encourage a breakthrough mind shift, Futures Thinking is used as a policy tool for rethinking, reframing and redesigning institutional modus operandi and policy alternatives. The principle notion of Futures Thinking is based on divergent modelling and evaluating what alternative futures are possible and preferable (Miller, 2018; Schreiber & Berge, 2019). Futures Thinking is an approach to consider potential futures through the exploration of long-term trends and structural drivers for change that may lead to different future scenarios.

Futures Thinking is not about predicting the future, but rather critically considering alternative future states, in order to rethinking institutional policies and actions in the present. The emphasis isn't on what will happen, but on what could happen, given various observed drivers and impactful policy choices.

Following Futures Thinking and leveraging on previous policy studies, three (3) scenarios are developed for Aruba in 2040. Based on the IMF's (2021) long-run economic projections for 2040, as well as the Aruba SDG 2030 and Net Zero 2050 ambitions, a long-term time horizon – focusing on the next Generation Beta (2025-2040) – is adopted to develop breakthrough policies for systemic challenges that span multiple political economic cycles and mitigate the risks of institutional inertia, short-term decision making, and policy shortsightedness.



Figure 1.3 Main policy themes and SDGs addressed in this policy scenario study.

The three scenarios emphasize relative differences in (see Table 1.1):

- (i) the extent of policy innovation, describing the breadth and depth of innovative policy actions that range from limited (i.e., a continuation of existing policies) to structural reforms, in addition to a systemic transformation and policy shift to new fundamentals;
- (ii) the role of institutions and policy actors, including the role of government, the private sector, and the community, as well as the centrality of institutions, markets, and community networks;
- (iii) the key design principles, setting out the extent of (technological) innovation (industrial revolution) and the dominant economic paradigm;
- (iv) the associated policy risks depicting the nature of risks, potential failures, and (indirect) costs.

	Policy as usual	Policy reform	Policy shift
<i>Policy innovation</i>	Limited	Structural	Systemic
<i>Main actor(s)</i>	State based, Big government	Market driven, Private sector	Citizen centric, Citizen platforms, and community networks
<i>Design principle(s)</i>	Third industrial revolution, Neo-Keynesian	Fourth industrial revolution, Neo-liberal	Fifth industrial revolution, Neo-ecological
<i>Risk(s)</i>	Institutional failures, Path dependency	Market failures, Cost externalization	Transition failures, Path breakthrough
<i>Example of information and evidence base</i>	Previous government and public sector department policy reports (prior to 2020)	IMF technical assistance and consultation mission reports, Dutch Landspakket, Masterplan 2020	UNSDGs, Doughnut economics, Future of Government 3.0

Table 1.1. Stylized elements of three policy scenarios for Aruba 2040.

Whereas policy reform and policy shift contrast significantly from a policy as usual scenario (see Box 1.1), there are several degrees of deviation between the policy reform scenario and the policy shift scenario. A policy reform scenario (see Box 1.2) is generally concerned with the present and what is known. It takes the present as a starting point and structural reforms expand and extend on existing institutional (belief) systems. From an economic perspective, structural reforms tackle obstacles to the drivers of economic growth by, e.g., liberalizing labor markets, diversifying product markets, and deepening (financial) service markets, thereby encouraging job creation and (private) investment, as well as improving economic productivity (Beuermann & Schwartz, 2018).

Box 1.1. Synopsis and stylized facts of the policy as usual scenario.

Imagine it's 2040 – Policy as usual

The Aruban economy recovered with double-digit economic growth in the years following the great covid pandemic (GCP) of 2020. The phenomenal rebound of tourism spilled over into exuberance and tourism boon. Foreign direct investments in tourism and real-estate investments surged between 2022 and 2029. The country expanded its accommodation capacity (+5,000 rooms), with an estimated 3.5 million visitors by 2040.

Due to crowding and encroachment - partially due to the loss of land resulting from sea level rise and coastal erosion, in addition to the global oil crisis of 2033 - the government of Aruba decided to re-allocate almost 40% of the national park for windmill energy generation - after depending on fossil fuels in the past decade - and residential construction for at least 143,000 residents. It was a tough choice to make, but in a human-centered economy we needed to build forward with nature.

Real GDP growth has averaged 0.1 percent since 2027, and the poverty gap has expanded substantially. Government spending on social services, health, education, and infrastructure is limited, largely due to a significant debt burden (inherited from the GCP). By financing parts of the government investment programs and infrastructure (e.g., energy and waste management), select private companies receive preferential regulatory and fiscal treatment. Wealth is largely concentrated in a select few monopolies.

Policy reforms are mainly designed to boost an economy's competitiveness, growth potential, and adjustment capacity.

Thus, the policy reform scenario describes the domestic policies and institutions that affect the operation of markets, and the capacity of (international) businesses to access those markets and operate efficiently.

Box 1.2. Synopsis and stylized factors of a policy reform scenario.

Imagine it's 2040 – Policy reform

After the GCP of 2020, several tax and labor reforms were introduced between 2023 and 2030, leading to significant real economic growth over the past decade. Labor market and tax reforms were introduced in 2023, followed by the dollarization of the economy. On the heels of the oil crisis in 2031, the economy experienced double-digit inflation in the subsequent years.

Aruba's ports as well as health care services are now mainly privatized and managed by foreign (multi)nationals. Likewise, several educational institutions were privatized (funded by the EU), although some public schools are still available for those who can't afford private education. English is the main instruction language.

Several high-end, energy self-sufficient residential areas were established across the island, although mostly concentrated in the residential located on the outskirts of Santa Cruz, the new capital and the new center of government. Energy generation is largely produced through wind and wave power. The latter is integrated in the coastal reinforcement of so-called 'energy dikes'.

Largely digitized and augmented with AI, today a lean government focuses on providing essential public services. Although some bureaucracy still exists, efficiency has improved significantly. Strict EU fiscal rules are followed, after a substantial part of the government debt was forgiven in 2023. In 2034, what was previously known as Oranjestad and San Nicolas became privatized as trade districts. Niche tourism led to an expansion of specialized tourism marine services. Today, the island attracts an estimated 3.1 million visitors annually.

Since 2033, real GDP growth averages 2.7%, yet most of the wealth and income are concentrated in an estimated 17% of the population (counting approx. 141,000 residents). More than 60% of the population earn less than half of the median monthly income (\$8,000), usually working as 'click, cloud, and crowd' workers in a freelance contractual fashion. Social capital is low, and there is scarcely any sense of national identity, especially since 2031 when residentship could be bought.

Alternatively, a policy shift scenario (see Box 1.3) takes the future as a starting point. Policy shift views sustainability not as meeting current needs without compromising the ability of future generations to meet their own needs (Brundtland Commission, 1987), but as fulfilling the needs of future generations while

adapting responsibly to current needs and conditions. Hence, the reference point is fundamentally different between the policy reform and the policy shift scenarios.

...fulfilling the needs of future generations while adapting responsibly to current needs and conditions.

A policy shift describes foresighted actions and looks to the future and what is presently unknown. In the Kuhnian sense and akin to transformation, a policy shift represents a systemic change in a fundamental model or perception of events, usually arising when the dominant paradigm under which existing policy frameworks (and mindsets) operate is rendered incompatible with new phenomena or unsustainable, thereby fostering the adoption of a new policy paradigm, framework, and modus operandi. Hence, a policy shift aims to innovate in impactful and systemic ways. In economic terms, multiple forms of impactful economic development by means of productivity, inclusion, and intergenerational equity take center stage. Consequently, citizen responsibility and community platforms are a driving force, in addition to an agile government and fully ingrained corporate social responsibility. Whereas policy reform focuses on bolstering economic growth, policy shifts foster economic sustainability.

Box 1.3. Synopsis and stylized factors of the policy shift scenario.

Imagine it's 2040 – Policy shift
Reflecting on past developments and future risks, the country reset its structural policy foundations in 2023. Working with the international community, Aruba reconsidered many of its previous policy assumptions and decisions. We set sail for a different future. A future, which today we know as financially sustainable and climate resilient, producing our own energy, and many of our agricultural services in eco-sustainable communities across the island. Through innovative climate mitigation and adaptation policies and sound environmental restoration programs, the island was able to strengthen climate resilience against global warming.

Back in 2022, we realized that we couldn't continue on the existing path. We focused on how tourism could co-shape and improve our community wellbeing. Rather than the economy working for tourism, we shifted our policies so that tourism would enable wellbeing for all. By redesigning our supply chains with circular systems, we were able to distribute the economic benefits across society.

Strong governance and social responsibility, underscoring an open, innovative and accountable government, are the new



fundamentals. Public and utility services are partly co-produced with residents, and an AI-enabled DLT network allows predictive and customized provision of secure, reliable, and efficient public services. Government is fully attuned to the needs of the community and puts it at the center of its policies and decisions. Food security and climate resilience, in addition to preventive care and continuous education are essential in safeguarding strong institutions and public finances.

Over the past decade, real GDP growth averaged 2.4%. Although unemployment lingers at 4.1%, the income poverty gap narrowed substantially by strengthening inclusive and equitable fiscal policies and programs. Social services are targeted at the most vulnerable people in society, in which citizen platforms play an active role. All residents and businesses have full access to basic financial services, largely spurred by developments in digital financial infrastructures, regulatory technologies, and the use of a digital florin.

References

- Acemoglu, D. & Robinson, J. A. (2012). *Why nations fail: The origins of power, prosperity, and poverty*. New York: Crown Publishing Group.
- Beuermann, D., & Schwartz, M. (Editors, 2018). *Nurturing institutions for a resilient Caribbean*. Inter-American Development Bank.
- Brundtland Commission (1987). *Report of the World Commission on Environment and Development*. United Nations.
- Centrale Bank van Aruba (2019). *Fostering economic resilience. From roots to routes*. Centrale Bank van Aruba, Oranjestad.
- Clague, C., P. Keefer, S., Knack & Olson, M. (1997). *Institutions and economic performance: property rights and contract enforcement*. Baltimore and London: Johns Hopkins University Press.
- Fox, J. (2012). *The Economics of wellbeing*. Harvard Business Review. Retrieved from <https://hbr.org/2012/01/the-economics-of-well-being>.
- International Monetary Fund (2021). *Kingdom of the Netherlands – Aruba. Staff report for the 2021 Article IV consultation discussions*. Washington, DC.
- Kahneman, D. (2012). *Thinking, fast and slow*. Macmillan USA
- Knack, S. & Keefer, P. (1995). *Institutions and economic performance: cross-country tests using alternative institutional measures*, *Economics and Politics* 7(3): 207–27.
- Miller, R. (2018). *Transforming the Future. Anticipation in the 21st century*. Routledge, Taylor & Francis Group.
- Nelson, R. R., and S. G. Winter. 1982. *An Evolutionary Theory of Economic Change*. Cambridge, MA: The Belknap Press.
- North, D. C. 1990. *Institutions, Institutional Change, and Economic Performance*. New York: Cambridge University Press.
- OECD (2019). *The economy of wellbeing*. Retrieved from <https://www.oecd.org/social/economy-of-well-being-brussels-july-2019.htm>
- Peterson, R. R. (2020). *Over the Caribbean top: Community wellbeing and overtourism in small island tourism economies*. *International Journal of Community Wellbeing*, <https://doi.org/10.1007/s42413-020-00094-3>.
- Raworth, K. (2017). *Doughnut economics. Seven ways to think like a 21st century economist*. Vermont: White River Junction.
- Rodrik, D. (1999). *Where did all growth go? External shocks, social conflict, and growth collapses*, *Journal of Economic Growth* 4(4): 385–412.
- Rodrik, D. (2000). *Institutions for high-quality growth: What they are and how to acquire them*. *Studies in Comparative International Development*, 35(3): 3–31.
- Rodrik, D. (2013). *The past, present, and future of economic growth*. Global Citizen Foundation Working Paper No. 1 (June).
- Rodrik, D., A. Subramanian & Trebbi, F. (2004). *Institutions rule: The primacy of institutions over geography and integration in economic development*, *Journal of Economic Growth* 9(2): 131–65.
- Scharmer, O. & Kaufer, K. (2013). *Leading from the emerging future. From ego-system to eco-system economies*. Berret-Koehler Publishers, Inc., San Francisco.
- Schreiber, D. A. & Berge, Z. L. (2019). *Futures thinking and organizational policy*. Palgrave Macmillan publishing.
- Taleb, N. N. (2008). *The Black Swan: The impact of the highly improbable*. Penguin Books Ltd.
- World Economic Forum (2017). *The inclusive growth and development report 2017*. Retrieved from: <https://www.weforum.org/reports/the-inclusive-growth-and-development-report-2017>.
- Wucker, M. (2016). *The Gray Rhino: How to recognize and act on the obvious dangers we ignore*. St. Martins.



2. Demographic changes and sustainable development in Aruba

By Rendolf (Andy) Lee

2.1 Introduction

The future is the actual playing field of power.¹ The future cannot be designed, but it is in the making. A desired future can be created through policies. The effects of policy interventions - or the lack thereof - cast their shadows into the future and affect the quality of life and well-being of citizens and nations. For this reason, it is important for every citizen of a nation, as well as for the nation itself, to be aware of how decisions taken today – including decisions not taken or policy advice not heeded -- affect their lives and the lives of their children and grandchildren in both the near and distant futures.

The setting of the political agenda is the arena for creating the future. A situation perceived as problematic to the society gets political attention and is dealt with through policy actions. Policies are designed to tackle the perceived problematic situation, and the costs and the benefits of resolving the situation being addressed are allocated among groups in the society. In many cases, some individuals or groups in that society must be willing to tolerate a reduction in their standard of living and in their quality of life to solve the problematic situation.

Demographic changes have been taking place at a fast pace in recent decades. These changes and their potential impact

on the country were identified from 1991 Census onwards and reported in several publications. However, until now, only a few of these demographic changes and their impact on society have received the necessary attention that put them on the government agenda.

After the Census 2000, the picture of the demographic trends taking place became much clearer. Aruba was confronting a rapid aging of its population, accompanied by a fast decline in the proportion of youth. Due to the economic boom of the tourism industry during the 1990s, a huge inflow of migrants took place to work mainly in the tourism and construction sectors. To illustrate the demographic changes, the tourism industry in 1991 was based on 2,300 hotel rooms and 80 percent of workers in the mentioned sectors were Arubans. In this context, Arubans are defined as persons of Dutch nationality who are born in Aruba. The remaining 20 percent of workers were resident foreigners, including Dutch nationals born elsewhere.

By the year 2000, a significant turn-around took place, as the number of hotel rooms expanded to 7,700 and 80 percent of workers in the hotel and construction sector were non-Aruban residents. During this decade, the population of Aruba grew from 66,546 persons, based on the Census 1991,

¹ Exploring Futures for policymaking – Synthesis of ‘Out of sight: Exploring futures for policymaking’ Wetenschappelijke Raad voor Regeringsbeleid/ Scientific Council for Government Policy, 2010`.

to 90,147 persons based on the Census 2000, a 35.5 percent growth of the population in 9 years. This increase is equivalent to an average growth of 3.9 percent per year during the period of 1991 to 2000. According to the Census 2000 results, 33.9 percent of the Aruban population were foreign born and thus migrated to Aruba during their lifetime.

From 1989 to 1993, Aruba had one of the fastest growing populations in the world. In this period, the average growth rate was well above 5 percent per year, peaking with a growth of 8.7 percent in 1993. In 2020, for the first time ever since 1987 and after 33 years of steady growth, the population of Aruba declined by 1 percent due to the lockdown on all inbound international flights and other measures of the government to mitigate the contagion effects of the COVID-19 pandemic.

This, in a nutshell, describes the unraveling story of the dynamic changes taking place within the Aruban population. These demographic changes have profoundly impacted the Aruban society in a number of ways for some decades and will continue to do so in the foreseeable future.

2.2 Focus of this chapter, units of analysis, and definitions used

In this section, we will analyze demographic changes that took place in Aruba between 1960 and 2020. The data for the period 1960 to 2010 are based on the stock data from the decennial Census of Aruba. As the Census 2020 data are not yet available, the flow data of the end-of-year population, as published by the Central Bureau of Statistics (CBS), were used as the best available proxy for Census 2020 data. We will be also looking at the expected demographic changes for Aruba for the period of 2020 to 2040. The data for the 2030 and 2040 projections were provided by the CBS.²

The main questions to be addressed in this chapter are:

- i. What demographic changes took place in our society from 1960 to 2020?***
- ii. What demographic changes are likely to take place in our society in the next 20 years?***
- iii. How are these demographic changes impacting Aruba?***
- iv. How can we efficiently address the challenges and harness the opportunities of population dynamics to promote sustainable development in Aruba?***

The focus will be on the total population of Aruba, as well as on age categories as units of analysis. The following age categories are distinguished:

² The Central Bureau of Statistics Aruba provided population projections for 2040, based on the data from the CBS publication Population projections 2010 – 2030: the 2014 revision.

- i. The young generation - defined as the age group of 0 – 14 years, the so-called school going age group.
- ii. The working age group - defined as the age group of 15 – 59 years, when analyzing the data of 1960 up to 2020, and the age group of 15 – 64 years when looking at the period 2020 to 2040 since the pension age is in the process of being increased from 60 years to 65 years during the period of 2015 to 2024.³
- iii. The elderly age group - defined as the age group of 60 years and over, when looking at the period of 1960 to 2020, and the age group of 65 and over when looking at the period of 2020 to 2040, since, as noted, the pension age is gradually being increased to 65 years as of 2024.⁴

Demographic changes pose risks to and offer opportunities for sustainable development of Aruba.

The demographic trends are evaluated against their impacts on the country’s sustainable development. In general, the concept of sustainable development has been defined in many ways. The most commonly used definition is based on the Report of the World Commission on Environment and Development: Our Common Future, also known as the Brundtland Report: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

2.3 Demographic trends 1960 to 2040 – where are we coming from, where do we stand now, and where are we going?

2.3.1 The size and the growth of the population of Aruba – 1960 to 2040

When analyzing the population data from the 1960 Census to the end of the year 2020 – a time span of 6 decades – one can conclude that the growth of the population during this period was impressive, particularly during the three decades beginning with the 1990s.

³ In 2025 the pension age in Aruba will increase to 66 years in accordance with the Ministry of Kingdom Relations. For the sake of simplicity and availability of data, the unit of analysis for the elderly will be based on the age category of 65 years and over.

⁴ See footnote 2.

Figure 2.1

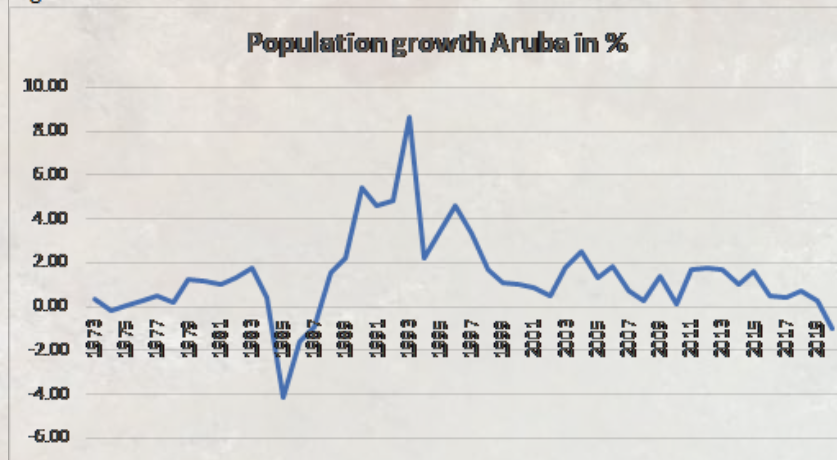
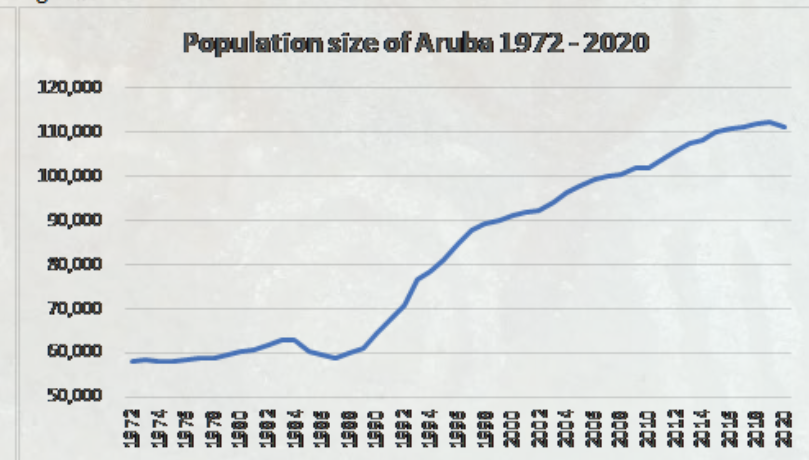


Figure 2.2



One of the most impactful changes that took place during this period was the growth in the size of the Aruban population. Starting from a population of 53,199 persons based on Census 1960, the population more than doubled between 1960 and 2020; it grew by 108.7 percent or a net absolute growth of 57,851 persons over the 60-year timespan (see Figure 2.1 and 2.2). The greatest portion of the total growth took place in the last three decades (between 1991 and 2020) with a net growth of 44,504 persons. This number is equivalent to 76.9 % of the total net growth of the population between 1960 and 2020. Some 40.7 percent of the total net growth of the population between 1960 and 2020 occurred during the decade of the 1990s.

This spectacular growth in population was mostly the result of the rapid expansion in the number of hotel rooms during the 1990s. This expansion led to a huge shortage of labor, resulting in a large influx of migrants into Aruba. In line with the population growth from 1960 to 2020, the population density more than doubled, i.e., from 296 persons/km² in 1960 to 617 persons/km² in 2020 (see Table 2.1). When compared to countries and economies in the world for 2020, Aruba ranks number 18 in population density.⁵

⁵ See the World Bank webpage Population density (people per sq. km of land area) - https://data.worldbank.org/indicator/EN.POP.DNST?most_recent_value_desc=true

Table 2.1
Population growth and population density in Aruba: 1960 - 2040

Year	Population (Census data)	Population Diff	Population growth (%)	Population density	Size of Aruba in km ²
1960	53,199			296	180
1972	57,908	4,709	8.9	322	
1981	60,312	2,404	4.2	335	
1991	66,689	6,377	10.6	370	
2000	90,505	23,816	35.7	503	
2010	101,484	10,979	12.1	564	
2020*	111,051	9,567	9.4	617	
2030**	132,225	21,174	19.1	735	
2040**	139,176	6,951	5.3	773	

*Flow data; ** 2030 and 2040 are projection figures, based on CBS projections.

The CBS projects that the population will grow by approximately 28,000 persons between 2020 and 2040. This projection represents a total growth of 25.3 percent in 20 years time. The biggest part of this growth is anticipated to happen between 2020 and 2030, with the population density continuing to expand to around 773 persons/km² in 2040.

2.3.2 Demographic changes and their impact on the age composition of the population of Aruba

Demographic changes during the past 60 years had a profound impact on the age composition of the country's population. These changes in the age composition are the

result of a rapid reduction in mortality, particularly at young ages, followed by an accelerated reduction in fertility. Increased knowledge and technological change in the form of advances in medicine, in public health, and in nutrition began to lower mortality rates. The decline in mortality rates resulted in higher life expectancy. The median age rose from 23.9 years in 1960 to 42 in 2020⁶, denoting a graying population.

Fertility started to decline. The rapid drop in fertility took place between the late 1950s and early 1970s, a timespan of approximately 15 years. During this period, the Total Fertility Rate (TFR) of Aruba, i.e., the number of children that women are having, declined from a rate as high as 5.0 children per women in 1957 to a rate of 1.7 children per women in 1973. The 1973 fertility was well below the United Nations estimated replacement rate of 2.1 needed to keep the population stable.⁷ Fertility for the Caribbean region as a whole dropped at a much more moderate rate.

Table 2.2 shows the result of the changes in age structure in Aruba. Table 2.2 is based on the Population and Housing Census 1961-2010. The 2020 data are based on flow data from the CBS, as the 2020 Population and Housing Census data are not yet available on a detailed level. The 2030 and 2040 data are based on projections provided by the CBS.

⁶ Census 2020 Results, webpage of the Central Bureau of Statistics Aruba

⁷ Total Fertility Rate is the average number of children that would be born alive to a woman (or group of women) during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year. This definition of Total Fertility Rate is from Population Reference Bureau (prb.org).



Table 2.2

Age	1960	1972	1981	1991	2000	2010	2020	2030*	2040*
0-14	22,003	21,016	15,615	16,298	20,970	21,057	18,997	23,026	23,142
15-59	28,592	32,591	38,953	43,530	59,398	64,757	66,864	74,831	76,718
15-64	29,550	34,331	40,704	45,661	62,885	69,893	74,921	82,936	84,365
60+	2,604	4,301	5,744	6,861	10,137	15,670	25,190	34,369	39,316
65+	1,646	2,561	3,993	4,730	6,650	10,534	17,133	26,263	31,669
80+	284	341	560	1,104	1,312	1,884	3,420	6,727	12,491
Total	53,199	57,908	60,312	66,689	90,505	101,484	111,051	132,225	139,176
Pop growth		8.9	4.2	10.6	35.7	12.1	9.4	19.1	5.3
Age	1960	1972	1981	1991	2000	2010	2020	2030	2040
0-14	41.4	36.3	25.9	24.4	23.2	20.7	17.1	17.4	16.6
15-59	53.7	56.3	64.6	65.3	65.6	63.8	60.2	56.6	55.1
15-64	55.5	59.3	67.5	68.5	69.5	68.9	67.5	62.7	60.6
60+	4.9	7.4	9.5	10.3	11.2	15.4	22.7	26.0	28.2
65+	3.1	4.4	6.6	7.1	7.3	10.4	15.4	19.9	22.8
80+	0.5	0.6	0.9	1.7	1.4	1.9	3.1	5.1	9.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Age 60+	1960	1972	1981	1991	2000	2010	2020	2030	2040
Aging index 60+	11.8	20.5	36.8	42.1	48.3	74.4	132.6	149.3	169.9
Youth dependency ratio (15-60)	77.0	64.5	40.1	37.4	35.3	32.5	28.4	30.8	30.2
Old-age dependency ratio (60+)	9.1	13.2	14.7	15.8	17.1	24.2	37.7	45.9	51.2
Total dependency ratio	83.3	73.7	52.5	50.7	49.5	52.5	59.0	69.2	74.0
Potential support ratio	11.0	7.6	6.8	6.3	5.9	4.1	2.7	2.2	2.0
Age 65+	1960	1972	1981	1991	2000	2010	2020	2030	2040
Ageing index 65+	7.5	12.2	25.6	29.0	31.7	50.0	90.2	114.1	136.9
Youth dependency ratio (15-64)	74.5	61.2	38.4	35.7	33.3	30.1	25.4	27.8	27.4
Old-age dependency ratio (65+)	5.6	7.5	9.8	10.4	10.6	15.1	22.9	31.7	37.5
Total dependency ratio	80.0	68.7	48.2	46.1	43.9	45.2	48.2	59.4	65.0
Potential support ratio	18.0	13.4	10.2	9.7	9.5	6.6	4.4	3.2	2.7

*2030 and 2040 are projected figures based on CBS projections

2.3.3 Changing age composition – rapid aging – 1960 to 2040

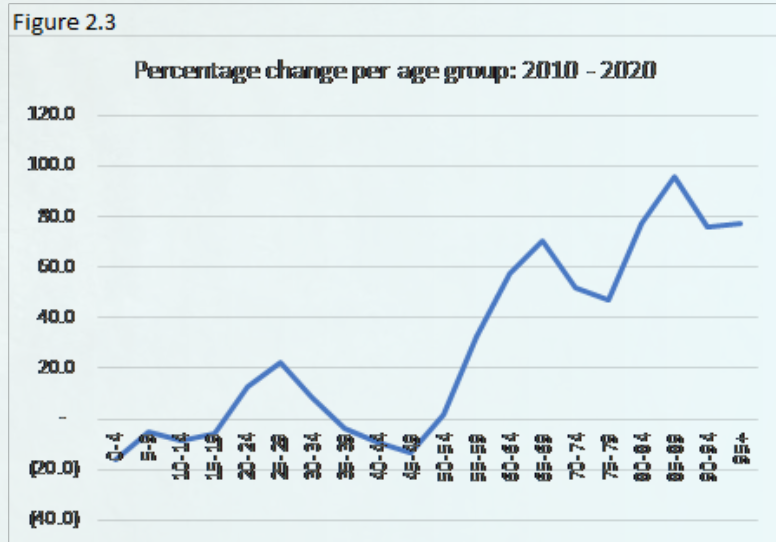
The number of persons 60 years and over is growing rapidly. Aging is illustrated by the proportion of persons in the age category of 60 years and over.⁸ As noted, the proportion of persons 60 years and over in the total population in the 1960 Census was 4.9 percent. In a time span of 60 years, it grew to 22.7 percent of the (increased) population in 2020, which represents more than one-fifth of the population. The number of persons 60 years and over grew from 2,604 in 1960 to 25,190 in 2020. By the end of 2020, the number of persons 60 years and over was about 10 times the amount in 1960.

The projected growth of the age category of 65 years and over – the new pension age as of January 2024 will be 65 years - for 2030 and 2040 shows the same trend. By 2040, the number of persons in the age category of 65 years and over is projected to reach approximately 31,700 persons, some 22.8 percent or more than one-fifth of the population of Aruba. The increase of the aging population is irreversible for the coming decades, resulting from the rapid decline in fertility and mortality. Fertility levels in Aruba are unlikely to rise again to levels that existed before the 1950s, resulting in a decreasing proportion of the youthful population. The decline in mortality leads to people

in Aruba living longer, resulting in an increasing proportion of the population in the age category of 65 years and older. These two trends led to in a fast aging of the Aruban population. Figure 2.3 illustrates the growth rate of age categories of the population of Aruba. The growth rate for age groups up to 54 years is much lower than the growth rate for age groups of 55 years and older. Within the elderly population aged 60 years and over, the age category of 80 years and over is the fastest growing group.

The projected number of persons 65 years and over for 2030 and 2040 is expected to show the same trend as in the years leading up to 2020. By 2040, the group aged 65 years and over is anticipated to reach 22.8 percent of the total population, more than one-fifth of the of the total population. The age category of 80 years and over will be 9 percent of the total population of Aruba in 2040, totaling some 12,500 persons. This is 3.6 times more people aged 80 years and over than in 2020.

⁸ The retirement age was 60 years until 2015. As of January 2015, the retirement age started increasing towards 65 years based on a change in legislation to gradually increase the retirement age to 65 years by January 2024. Beginning in January 2015, the retirement age was increased by 0.5 years each year. For the period 1960 to 2020, the indicators will be based on 60 years as retirement age. In this paper, for projections beyond 2020, the retirement age will be set at 65 years.



2.3.4 Indicators of aging

Other indicators that reflect aging of the population are the **aging index** and the **old-age dependency ratio**. The aging index refers to the number of persons 60 years and over per 100 persons under age 15. In 1960, there were 11.8 persons 60 years and over for every 100 persons under age 15 years. By 2020, the aging index for 60 years and over was 132.6. The old-age dependency ratio refers to the number of persons 60 years and over per 100 persons in the working age category (15-59). The old age dependency ratio jumped from 9.1 percent in 1960 to a staggering 37.7 percent in 2020.

The potential support ratio (PSR) indicates the number of persons aged 15 to 64 – the working age category – per every person aged 65 years or older.⁹ As a population ages, the potential support ratio tends to decrease. Between 1960 and 2020, the PSR in Aruba dropped from a high of 18.0 potential workers per person aged 65 years and over in 1960 to a low of 4.4 potential workers per person aged 65 years and over in 2020. By 2035, the PSR will drop to 2.7 potential workers per persons aged 65 years and over. The drop in the PSR has and will have important implications for social security schemes in Aruba, particularly for a pay-as-you go pension system under which the collected premiums of current workers’ pay the pensions of current retirees.

These indicators show the process of rapid aging that Aruba is going through. In 2020, the number of persons 60 years and over was almost ten times the number back in 1960. Between 1960 and 2020, the average annual growth of the population of 60 years and over was 14.5 percent. By 2020, almost one-fourth of the Aruban population was 60 years and over. Among the older population of Aruba, the fastest growing group is the age category of 80 years and over, with an average yearly growth of 18.6 percent between 1960 and 2020.

⁹ As the pension age will be 65 in 2024, the Potential Support Ratio was calculated for the pension age of 65 years.

2.3.5 Changing age composition: The working age population – 1960 to 2040

As an age category, the working age population increased steadily in absolute terms from 1960 to 2020. The proportion of the working age population – these are people aged between 15 years to 59 years - peaked at 65.6 percent in 2000.¹⁰ However, in 2010 and 2020 the proportion of the working age population within the total population decreased to 63.8 percent and 60.2 percent respectively. This means that after 2000, the working age population grew slower than other groups in the total population.

As the economically active group, the working age population is contributing – together with local enterprises - to the economically dependent groups of the youth and the elderly population in our society. Indicators like the youth dependency ratio, the old-age dependency ratio, the total dependency ratio, and the potential support ratio all indicate the growing weight the dependent groups – in particular, the elderly group -- is imposing on the working age population of Aruba.

As a group, the absolute number of the working age population is projected to continue to grow in 2030 and in 2040. However, the share of the working age population in the

total population will continue to display a declining trend towards 2030 and 2040.

2.3.6 Changing age composition – Youthful population

Besides the trend of the growing aged population group, a second observable trend is the shrinking size of the youth population group in our society. As a group, the proportion of the population aged 0- 14 in our society plunged from a high of 41.4 percent in 1960 to a low of 17.1 percent in 2020. During the past 60 years, this group had been either shrinking between censuses or growing at a much slower pace than the total population, resulting in a declining proportion as a group within the total population. The relative decrease of the youthful population is a direct effect of the rapid decline in the Total Fertility Rate (TFR). Aruba experienced a TFR that was well above 5 before the 1950's. Since then the TFR dropped considerably to 2.28 per woman in 1991. In 2000 the TFR was at 1.85, and continued to go down to 1.79 in 2010, which is below the replacement level.

The youth dependency ratio is the number of persons 14 years or younger per 100 persons in the working age category of 15 to 64 years. This ratio sank quickly between 1960 and 2020, indicating a decreasing share of the young in the total population of Aruba. For 2030 and 2040, the youth dependency ratio is projected

¹⁰ For the age category of 15 years to 64 years, the peak in 2000 was at 69.5 percent. In 2010 and 2020 the proportion of people aged between 15 years to 64 years within the total population decreased to respectively 68.9 percent and 67.5 percent.

to rise again to around 27 percent of the total population. The CBS projects the fastest growing group by 2030 - in absolute number - to be the group aged 0-4 years, followed by those aged 5-9. Proportionately, by 2030 all age groups, as depicted in table 2.2, will be growing at the expense of the age categories 15-59 and 15-64, leading to an increase in the Youth Dependency Ratio in 2030. The proportion of the youth population of the total population from 2020 to 2040 is projected to be at around 17 percent. In absolute terms, this is about 23.000 persons.

2.4 Why are the demographic trends of interest to policy makers?

Analysis of present and future trends in the structure of the population has a wide range of implications for the economy, for public policy, and in particular, for the social services and their financial sustainability. These trend also may have direct consequences for the public finances, in terms of whether they are or are not aligned with growing and/or changing demands of the society.

What we have learned from this short analysis of demographic changes in Aruba is that the decreasing fertility along with the increasing life expectancy have dramatically reshaped the age structure of the population

in a very short time span. These demographic changes have shifted the relative weight of the population from the younger to the older group. The process of aging is taking place at a quick pace, resulting in a growing group – in absolute and in relative terms – of elderly persons. According to the population projections of the CBS, by 2025 the number of persons in the age categories of 65 years and over will be much higher than the number of persons in the age category of 15 years and younger.

In 2021 the pension age in Aruba is 63.5 years, gradually rising to reach 65 years as of January 2024. In line with the conditions stipulated by the by the Dutch government related to the recent loans to the government of Aruba, as of Jan 2025, the pension age will be raised to 66 years. This reform will slow down the number of pensioners somewhat.

Demographic changes like population growth, rapid aging, migration, and urbanization affect development objectives on national agendas. They affect employment, income distribution, and standard of living. They also affect production, consumption, and social protection, with the risk of creating more poverty in our country if timely and effective interventions are not applied to mitigate these risks. These demographic changes are also important factors that can influence access to education, sanitation, health, housing, water, food, and energy. Population

dynamics place pressures on the environment, including the management of waste and wastewater, as well as that of management of resources like water, energy, and land.

Mrs. Loretta J. Mester, President and Chief Executive Officer of the Federal Reserve Bank of Cleveland, gave a Keynote address in 2018 about the topic of demographics and their implications for the economy and policy. In her keynote address, Mrs. Mester explained how demographic trends in the USA have consequences for labor market, economic growth, monetary policy, and fiscal and other government policies. Demographic implications for economic growth and for monetary policy are policy areas that have not been explored extensively for Aruba. These are interesting and relevant topics for a research agenda to explore and learn how demographic changes are affecting our economy and economic policy.

2.5 Demographic changes and sustainable development

This study focuses on the contribution of forward looking research and its ramification for impactful policy making. When reviewing future demographic developments and their possible impact, we focus on three scenarios, which are basically three possible futures.

We distinguish the following three scenarios:

- i. The policy-as-usual scenario: we assume that past trends are continued, and that the government carries on with business as usual.
- ii. The policy reform scenario: government chooses to follow a reform path.
- iii. The policy shift scenario: government undertakes a proactive routeway.

2.5.1 Policy as usual

The high population density leads to a consequential human footprint on our island, particularly on the environment. We have noted how the population density of the official population more than doubled in a time span of 60 years. Tourism is a driving force in the accelerated population growth of Aruba and also in the increased constant flow of visitors to our island.

It is important to realize that the daily traffic of people consists first of the inhabitants. Besides this group, visitors to Aruba also affect the density of people moving around on a daily basis on our island. They have an effect on our natural and social-economic environment. A third group that impacts the density of people moving around on Aruba comprises irregular

migrants and asylum seekers, in particular from Venezuela, but also from the rest of the world, who live, work, and attend school in Aruba. No official estimate of the number of those irregular migrants is available. However, the United Nations High Commissioner for Refugees estimates the number of irregular Venezuelan migrants in Aruba at 17,000 as of January 2021.¹¹ In addition to irregular migrants from Venezuela, a relatively large number of irregular migrants from other parts of Latin America and the Caribbean in Aruba is likely.

Besides the impressive expansion of the population, the tourism industry also has made a major impact on the growth in the number of visitors to our island during the past three decades. These visitors contribute to the economic success of Aruba. Although this group on average stays on our island for only about a week, while visiting Aruba they generate income for businesses, the government of Aruba, and for residents. However, tourists make intensive use of our infrastructure and public services (e.g., infrastructure like roads, the police for their safety and security, and medical services). By the constant presence of tourists in Aruba, just like the local inhabitants, this group also puts pressure on, for instance, our public finances, our beaches and environment, the traffic and transport, the production of water and electricity, the capacity of the country to process waste, and the use of medical services.

Therefore, tourists as a group need to be considered when planning and designing policy for our island.

During the tourism industry’s “top years”, more than a million visitors were welcomed annually. The number of visitors also contributes to the density of people on a daily basis on our island, thus enlarging the footprint of the total number of people present in Aruba each day. For example, on an average day in Aruba in 2019, Aruba had a total of 112,190 inhabitants. In addition to the residents of Aruba, the country welcomed, on a daily average, approximately 21,518 stayover visitors and 2,568 cruise visitors. When including the 17,000 irregular Venezuelan migrants,¹² the de facto daily average number of people in Aruba amount to 153,176 in 2019, the equivalent of 36.8 percent more persons than the total population of Aruba.¹³ The average de facto density of total number of persons on an average day, in 2019, was around 852 persons/km², as compared to the population density of Aruban residents of 623 persons/km². That pushes Aruba to the 13th place in terms of population density in the world.

¹¹ UNHCR Fact Sheet – Aruba & Curacao – January 2021.

¹² Irregular migrants on Aruba other than Venezuelans were not considered in this exercise as there are no data or estimation available for this group.

¹³ This figure is an estimation intended to give an indication or an impression of the number of persons present in Aruba on a daily basis.

Table 2.3

Rough estimate of density of people daily in/on Aruba									
Year	Population Aruba*	Population density Aruba/km2	No. stayover visitor	Average no. visitors/week	No. cruise visitor	Average no. Cruise visitors/week	Estimated no. of irregular migrant	Average no. people on Aruba	Density of people daily in/on Aruba
2010	101,944	566	822,329	15,814	569,424	1,560		119,318	663
2011	103,674	576	868,973	16,711	599,893	1,644		122,029	678
2012	105,474	586	903,934	17,383	582,309	1,595		124,453	691
2013	107,286	596	979,256	18,832	688,568	1,886		128,004	711
2014	108,355	602	1,072,082	20,617	667,095	1,828		130,800	727
2015	110,089	612	1,224,935	23,556	607,019	1,663	16,000	151,309	841
2016	110,617	615	1,101,954	21,191	656,043	1,797	16,000	149,606	831
2017	111,083	617	1,070,548	20,587	793,384	2,174	16,000	149,844	832
2018	111,849	621	1,082,003	20,808	815,161	2,441	16,000	151,097	839
2019	112,190	623	1,118,944	21,518	832,001	2,568	17,000	153,276	852
2020	111,050	617	368,322	7,083	255,384	700	17,000	135,833	755

* End of year population

Combining the number of visitors, including that of irregular migrants, makes our island on a daily basis much more crowded than using just the official number of inhabitants in Aruba. It provides for an even more urgent situation. As noted, visitors and irregular migrants to Aruba make use of our infrastructure, including internet and mobile services, our roads and available housing (Air BNB, etc.). They consume water and electricity, health services, gas, wastewater facility services, produce waste for the already congested landfill, and so much more. This increased consumption affects prices and availability of goods and services on our island.

The sustainable growth of the population of Aruba is not the only factor that needs to be considered when planning for a sustainable development of Aruba and its population. The number of stayover visitors, cruise visitors, and irregular migrants have a meaningful impact on the sustainable development of Aruba, as well as on the spatial planning and environment.

Currently, several hotel and condominium projects are being constructed or are about to start. Several other projects are in the pipeline. Construction of these projects will require more workforce than is available in Aruba, leading to an additional inflow

of migrant workers. When these projects are finished, additional visitors will be welcomed, requiring extra regular workers for the operation of these new hotels or projects. The population of Aruba (including resident migrant workers), the number of daily stayover visitors and the irregular migrants will increase, putting added pressure on the existing infrastructure and the already fragile government finances. The CBS projects the population of Aruba to rise by 22 percent, to approximately 132.000 by 2030. By 2040, the projected population of Aruba will be approximately 139.000.

Besides rapid growth of the population, the changes in the age structure will have a significant impact on the community. The rapid aging presents challenges that need to be tackled. The fast decline in fertility, combined with accelerated aging, are changing the situation, for example, for care of the elderly. In previous years, the care of the elderly was mostly done by family members, as the large number of children could divide the care of their parents among themselves. With the decline in fertility, and families having fewer children than before, there will be a bigger demand for some form of collective care of the elderly, as they tend to live longer than before. The fastest growing age category in Aruba is the 80 plus age category. These developments shift the responsibility of elderly care from a family affair to a more public responsibility for elderly care, affecting the public finance of Aruba.

The rapid aging and the fast growth of the group of elderly are putting a great pressure on the financing of the old age pension (AOV). As of 2027, the AOV fund is projected to incur continuous deficits to implement the current pension insurance scheme. In an unchanged policy scenario, these deficits would be financed by the Social Insurance Bank's (SVB) reserves, leading to a depletion by 2035. By law any liability of SVB is guaranteed by the government of Aruba, meaning that it must provide liquidity support to the SVB. Given the current weak financial situation of the government of Aruba, and the rapid aging, it will not be in the position to finance deficits of the AOV indefinitely.

Rapid aging creates the situation of redistribution issues in our society: how to distribute the additional costs of rapid aging of our society? Current costs are related to the old age pension. Given the situation of the depletion of the SVB funds in the foreseeable future, the GOA will soon need to take a decision on how to allocate liability of SVB and AZV. The options for the GOA are limited. Any reform decision of the GOA may lead to extra costs to certain group in our society. GOA can decide:

- i. To increase the contribution of workers, to maintain the income level of pensioners. This will lead to a reduction of the purchasing power of the group of workers,

- given the rapid decline in the Potential Support Ratio.
- ii. To maintain the pension level of pensioners by financing the annual deficit of AOV pension through the government budget. By doing this, the GOA limits its services to community through the budget cycle, as fiscal revenues will be used to finance general pension.
 - iii. To reduce the income level of the pensioner, leading to a drastic reduction in the purchasing power and quality of life of pensioners.

Whichever decision the GOA takes, there are always “winners” and “looser” in this “zero sum game” situation.

According to the UNHCR, some 17.000 undocumented Venezuelans live in Aruba. This is equivalent to 15.5 percent of the population of Aruba or 1 in 6. There is no information available of the number of undocumented persons other than Venezuelans in Aruba. Most of these undocumented persons need to work in order to survive and need shelter, impacting the labor market and the housing market.

2.5.2 Main conclusions of the policy as usual scenario

It can be concluded that policy as usual is not a sustainable option. The expected rapid growth of

the population of Aruba between 2020 to 2040, will deeply challenge sustainable development. The main part of the population growth is expected to happen during the 2020's. Furthermore, the expansion of the number of hotel rooms in the first half of the 2020's will lead to more visitors, resulting in a higher density of people on a daily basis in Aruba.¹⁴ According to the UNHCR, there is a high number of irregular Venezuelan migrants in Aruba who contribute to the high density of people on a daily basis.

Demographic changes on the level of age structure, migration, aging population, decline in the proportion of the youthful population and of the working-age population, have an impact on several policy areas and on economic wellbeing and prosperity. History seems to be repeating itself, as we had the same developments and experience during the nineties, when Aruba experienced an economic boom due to an accelerated development of the tourism industry.

The most important conclusions and lessons are that changes - be it demographic, economic or any other form - are not the real problem here. Changes happen every day and everywhere in life. Population changes, just like economic changes, and many other changes in our

¹⁴ See Table 2.3.

relevant internal and external environment, can have positive and negative impact on our economy and on our life. We can expect all kind of changes to happen around us. The main thing about any kind of change in our relevant external environment is that change is the norm, and thus change can never be the problem of a situation.

The real issue here is how to rapidly recognize and identify important changes that will be impactful, how to manage and mitigate the associated risks, and identify realistic ways to maximize benefits at the same time. When identifying relevant changes, as a country, we need to act swiftly to counteract negative changes and reap potential opportunities as fast as possible, if we want to survive as an autonomous country in a fast changing world.

2.5.2 Policy reform

Changes in population size, shifts in the age structure, and spatial distribution of population are foreseeable. Working towards sustainable development incorporates considering the demographic changes projected to take place in the next 15 to 20 years. Policymakers should include current and future demographic shifts to design proper planning, to identify and reach target groups, and to mark out areas where these

demographic changes offer opportunities to accelerate progress towards sustainable development. This way one can get a good picture of the situation, to pinpoint the problem situation in relation to success criteria to the problem situation, and policy areas that are being affected. It also helps designing policy instruments to realize the desired social change or policy goals.

Through decision making and effective policy execution, the Government of Aruba (GOA) affects the quality of life of its inhabitants. To continuously improve life, the decision making process and the policy making process have to be enhanced. It starts with the availability of reliable, regular, and timely data and statistics to support both the decision making and policy making processes based upon evidence.

i. ***Data collection, processing and analysis, and dissemination hereof are very important.*** Regular, timely and reliable data, and proper analysis of these data are very important inputs for the policy process.

- a. Policy process should be data driven. The GOA should put available data (in the form of statistics – so that no personal information can be deduced from the data) to serve policy making. It should proactively stimulate, assist, and work towards generating and disseminating reliable, regular and timely data on all relevant

- policy areas.
- b. The GOA should proactively stimulate the use of reliable and regular data to support the decision making process, by effective policy analysis process and evaluation.
 - c. It is necessary to allocate adequate resources to strengthen the data collection, data processing, and data dissemination, as well as the policy analysis and the policy implementation.
- ii. **Policy driven research is also essential in assisting the policy process with relevant knowledge, and should be backed up by sufficient resources and research infrastructure.**
 - iii. **Policy process based on normative evaluations of the results and impacts of policies on the community.** Policies in general should be aimed at improving the quality of life of the individual members of the the community. Policy evaluation, which includes normative judgements of results and impact of policy, should be an integral part of the policy process.
 - iv. **Demographic changes impact policy areas as they affect the life of current and future residents of Aruba.** Responsible and evidence based decision making is key when it is aimed at improving decisions that affect people's life. It is important that current and future research on

- demographic changes and population projections receives the necessary support of the GOA. Research can provide important data and insights that can be used to improve the quality of life of local residents.
- v. **In line with the aforementioned, it is also important to develop policy in the areas of economic, political, human and national security in order to understand which developments are important for us to act swiftly upon in order to safeguard and improve the quality of life of our inhabitants.**
 - vi. **This leads to changing and adapting the way our public sector is organized, and the institutional and administrative capacity to be able to timely identify risks and opportunities, that need to be swiftly addressed.**
 - vii. **The capacity and capability of the public sector are essential in order to develop effective policy, to identify and define relevant issues, to set objectives and priorities, to analyze options, constantly develop the capacity to implement and evaluate policy, to reach set objectives.** Chapter 7 of this policy study will be dealing with the Future of Government, elaborating on ways to improve the effectiveness of government policy.
 - viii. **The GOA should develop the capacity to anticipate and identify early on risks and opportunities that affects the**

prosperity, the wellbeing and security of our country and of our citizens. To develop these capacities, it is important to invest in and constantly improve the institutional capacity of the public sector. The social benefits of an effective public sector outweigh the necessary efforts and investment to realize an effective public sector.

- ix. ***Demographic changes taking place in Aruba affect several policy areas. Demographic shifts during the 1990s had a huge impact on welfare and wellbeing of citizens.*** If the expected population growth for the current decade is to materialize, the impact will be felt on several areas. This on itself is a sufficient and necessary condition to elevate population growth and and demographic changes, as a separate policy area within the public sector.

2.5.3 Main conclusions of scenario policy reform

We are living in a rapidly changing world and need to learn the skills to navigate our ship through “the rough seas ahead” and to steer it to safe havens. As change is the norm in the world we are living, we have to learn to deal effectively with changes, implying that our public sector needs to learn to work smart and productively. (Political) Decision making and policy impacts individual lives, businesses, and visitors in Aruba. Thus, it is imperative that we re-skill and

professionalize our civil service to work towards improving our life and conditions within which businesses operate. To achieve this, will require the necessary focus and attention at a ministerial level, dedicated to improving the quality of job and outputs of the civil service.

Demographic changes can have big impacts on policy areas and on the quality of life in Aruba. Yet, within the public service there is no department in charge of designing and implementing policy regarding demographic changes and their impact on society. It is important that population developments and changes and their impact on society be continuously considered in the sustainable development of Aruba. Given their impact on sustainable development, prosperity and wellbeing, demographic changes and population growth should be elevated as a separate policy area.

2.5.4 Policy shift

Analysis of demographic trends and changes provide several data to illustrate the situation at hand and likely future situations. The implications of these demographic changes can be be drastic for certain groups and individuals in our society and will keep impacting them in our society if

the path of policy as usual will continue to be followed.

It is important to keep in mind that behind all the data presented are individuals who are part of our community.

Human beings whose life are affected – among other things - by demographic changes, but also by climate change, economic development in Aruba, the quality and sustainability of the social security system and by financial development and financial inclusion.

The level of impact of these changes we allow to happen to these groups boils down to choices we make - as a society, as groups, and as individuals within this society we live in.

It constitutes the policies we choose and the actions we take as a society towards fellow citizens to mitigate or not the impacts of these changes on the life and wellbeing. In these choices science, research, and data are mere instruments – albeit important ones – to assist in realizing a vision of what we consider as fair in our society. The choices we make also imply our vision of the place, the role and the relevance our society adheres to co-inhabitants.

In making these choices, we step into to realm of normative analysis, whose objective is fairness, or what the outcome of social processes or goals of public policy

ought to be. For most individuals - in the public realm - the fair distribution of public goods and public services matters. Fairness as a value is considered as important in every society, as it reflects the value society adheres to every one of its members. This implies that we as a society need to be aware, seriously consider, and determine the values that we as a community consider important for our country, for our generation, and for the generations to come.

When talking about inclusive and sustainable development or growth, we implicitly identify and prioritize values that we as individuals and society consider important. Inclusive growth and development - as values - imply a vision of how a society envision the relation between individual and society: no one left behind.

The challenge every society is faced with is that in the public realm the ones to finance public goods and public services are not necessarily the ones to benefit of these public goods and public services. It is often difficult - but not impossible - to exclude free riders from public goods and public services. In such situation fairness as a value plays an important role in the distribution of public goods and services, if applicable.¹⁵ In the private realm, in contrast, there is no such problem: in general, the ones to pay for private goods and

¹⁵ As an example, this is not applicable for defense as a public good, as the ones paying and the ones not paying for that public service will receive the same service.

services are the same ones to benefit hereof.

Demographic changes, the effects of climate change, the state of the social security system and health system, the COVID-19 pandemic, and many other domestic and international factors will be impacting life, economic and human security, and opportunity in Aruba. As a society we will be confronted with challenges related to the allocation of proper financial means to deal with consequences emanating here from.

In general to stimulate beneficial cooperation within society, leading to a higher value added for society, it is imperative that normative analysis be an integral part of the policy making process, and to better legitimize and create a solid base for decision making and implementation of policy or decisions to help create more consensus for necessary actions, in light of distributional issues within society.

Recommendation to the Government of Aruba in the area of policy shift are:

- i. Changes taking place in society often tend to impact certain groups within our society.
- ii. The process of intervening and mitigating these impacts -

policy actions - will lead to additional costs to be incurred by our community.

- iii. The incorporation of normative analysis as an integral part of the policy analysis process to better legitimize and create a more solid basis for consensus regarding decision making and implementation of policy to the benefit of all in society is of utmost importance.

2.6 Conclusion

Aruba's population is changing at an accelerated and unplanned pace. These accelerating demographic changes are profoundly impacting the Aruban community as a whole as well as individually. There are five factors in the area of demographic changes that affect sustainable developments. These are:

- i. Changes in the size of the population.
- ii. Changes in the age structure of the population.
- iii. Rapid decline in the mortality rate, leading to an accelerated aging of the population.
- iv. Sharp drop in the fertility rate, causing a decline in the proportion of the younger generation.
- v. Significant migration, in particular the inflow of irregular migrants, the latter being worrisome, puts enormous strains on the fragile financial position of the government of Aruba.

Areas that are directly affected by these changes are, amongst other, the labor market, spatial planning, housing market, health care services, production of water and electricity and the handling of waste and of wastewater. In general, structural changes in any of the mentioned factors will affect all policy areas.

The Aruban population is aging rapidly, posing challenges in several policy areas, amongst which the financing of the old age pension. The age category of 85 years to 89 years is the fastest growing group in the population of Aruba, growing by approximately 100 percent between 2010 and 2020. The proportion of the youthful population of Aruba age 0- 14 years is decreasing as a group, i.e. from 41.4 percent in 1960 to 17.1 percent in 2020. The working age population of Aruba as a group is slowly declining.

Demographic changes could lead to drastic redistribution policies if the issues or problems are not properly dealt with in time. Two such areas are the general old age pension administrated by the SVB and the AZV.

The policy “business as usual” harms the sustainable demographic development. To avoid this, it is important to timely identify relevant demographic changes that will impact our community and sustainable development.

Under the policy reform scenario, the focus is on policy driven data and research to assist in improving the policy process in Aruba and enhancing opportunities and the quality of life of our residents. It is recommendable that the public sector’s staff be re-skilled and professionalized, and provided with the necessary means to do the best job possible. As demographic and population changes have huge impacts on the quality of life and the sustainable development of Aruba, it is recommended to elevate the area of demographic and population changes as a separate (ministerial) policy area.

Under the policy shift scenario, the focus is on incorporating normative analysis as an integral part in the policy analysis process to better legitimize and to create a more solid base for consensus regarding decision making and for implementation of policy, to the benefit of all. Given the times we live in, and the many challenges that Aruba will be confronting in the near future, careful attention should be paid to the allocation of costs and possible benefits resulting from the many challenges we are currently confronting. The passing on of the potential higher costs to individuals and certain groups in our society, may create situations in which the willingness to cooperate or to accept the allocation of costs or benefits will be challenging.

References

- *Balkestein, M.J. (2011). Special issue on Aruba's aging population.*
- *Census 2020 Results (2021). Webpage of the Central Bureau of Statistics Aruba.*
- *Central Bureau of Statistics Aruba (2014). Census 2010 – Population projections 2010 -2030: the 2014 revision.*
- *Central Bureau of Statistics Aruba (2002). Census 2000 Special Reports – The People of Aruba, Continuity and Change.*
- *Economisch Bureau Amsterdam (2020). Kleine Eilanden, Grote uitdagingen. Het Caribisch deel van het Koninkrijk in regionaal perspectief: prestaties, kansen en oplossingen.*
- *Mester, Loretta J, (2018). Demographics and Their Implications for the Economy and Policy, Cato Journal, Vol. 38, No. 2 (Spring/Summer 2018).*
- *Sociale Verzekeringsbank Aruba (2021). Outlook AOV and AWW 2021. Document presented at the IMF Article IV meeting 2021, Aruba.*
- *UNHCR Fact Sheet (2021). Aruba & Curacao.*
- *Wetenschappelijke Raad voor Regeringsbeleid/ Scientific Council for Government Policy (2010). Exploring Futures for policymaking – Synthesis of 'Out of sight: Exploring futures for policymaking'.*
- *World Commission on Environment and Development (1987). Our Common Future.*



3. Safeguarding economic development and prosperity

By Stephanie Werleman

3.1 Introduction

Since the late 80's, the Aruban economy has depended on the tourism sector as its main source for economic growth (Peterson & DiPietro, 2021). However, despite an expansion in the number of tourists visiting the island in the past twenty years, i.e., 55.1 percent increase in total stay-over visitors from 2000 to 2019, output in terms of real Gross Domestic Product (GDP) lingered. Specifically, between 1987 and 1999, real GDP gained averaged 7.2 percent, whereas stay-over visitors expanded by an average of 11.2 percent on an annual basis during the same period. Meanwhile, the average real GDP increase between 2001 and 2019 was 1.2 percent, paired with a mean upturn of 2.6 percent in stay-over visitors on an annual basis. This pattern is indicative of a sluggish economy, also known as economic stagnation (Hutchison, et al., 2005). In fact, recent studies on tourism-dependent island economies show that in spite of tourism boost, Caribbean tourism economies remain idle and is characteristic of maturing tourism destinations in a hypercompetitive global environment (Peterson, 2020). Along these lines, the IMF (2013) argues that the greater reliance on the labor-intensive tourism sector led to a falling Total Factor Productivity (TFP). TFP is the portion of output not explained by labor and capital inputs used in production. Therefore, the level of TFP is determined by how, efficient, effective, and innovatively

the inputs are applied and managed in production (Comin, 2010). Relating TFP to the government, previous studies find evidence of a strong link between TFP and institutional quality (Cavusoglu et al., 2016). For that reason, the declining TFP for Aruba and Caribbean economies is likely related to the lack of institutions' capabilities.

Moreover, Aruba faces another challenge. The observed diminished output is not mirrored in the level of economic prosperity; the economic gains in real GDP are not fully reflected in several economic development indicators (e.g., the per capita GDP build-up rate, the debt-to-GDP ratio, and the Gini index). Thus, the economic gains in real GDP are not equitably distributed and benefiting the Aruba community. We consider economic prosperity to be the state that goes beyond economic growth, i.e., enhanced equality for all people. The indicators of economic development capture more qualitative dimensions such as gender equality, income equality, and quality of life, which are also at the core of United Nations Sustainable Development Goals (SDG's). This multidimensional concept of economic development can be defined as "a process of creating and utilizing physical, human, financial, and social assets to generate improved and broadly shared economic well-being and quality of life for a community or region" (Seidman, 2005, p. 5). The notion of shared economic wellbeing is, thus, fundamental to

economic development and a key differentiating factor between economic growth and economic development. Furthermore, economic growth, by and of itself, does not measure other factors, including the level of inclusion or the distribution of income and wealth in an economy (Feldman, et al., 2014). Previous studies indeed confirm that strong economic growth does not necessarily translate into equal distribution of income or inclusion (Mulok et al., 2012; Feldman et al., 2014). To sum, economic growth does not imply economic development. It is a necessary but not a sufficient condition to achieve economic development.

In this chapter, we go beyond the traditional concept and measurement of economic growth for Aruba. We contend that economic development, not economic growth, is the sustainable end-goal to achieve domestic economic prosperity. Thus, economic growth is only one of the means to achieve that goal. Throughout this chapter, we maintain that economic growth can stimulate economic development only if it is inclusive and sustainable. Hence, beyond meeting the needs of the current generation without compromising the ability of future generations to fulfill their own necessities (United Nations, 1987), economic development emphasizes that we must answer to the needs of future generations while taking responsible policy actions today. We apply the definitions

of sustainable economic growth and economic development established by the United Nations (1987). Also, we define inclusive economic growth as the economic growth that is fairly distributed across society and creates opportunities for all (OECD, n.d. - a). Furthermore, we argue that the role of the government is one of the most significant contributing factors to foster economic development, and thereby economic prosperity and shared economic wellbeing (Feldman et al., 2014). Notwithstanding the importance of the private sector and civic society, the government – as a political economic institution – is an essential entity in the economy that has the mandate to promote prosperity (Feldman et al., 2014). In addition, the government has wide access to mechanisms to keep the economy on course (Feldman et al., 2014).

Focusing specifically on Aruba, this chapter addresses the following SDGs: number 3 ‘Good Health and Well-Being’, number 5 ‘Gender Equality’, number 8 ‘Decent Work and Economic Growth’, number 10 ‘Reduced Inequalities’, and number 11 ‘Sustainable Cities and Communities’ (United Nations, 2018). This chapter also relates to the first goal in the economic reform as planned by the “Caribisch hervormings- en ontwikkelingsorgaan” (COHO), i.e., to achieve a resilient and dynamic Aruban economy (Rijksoverheid, 2020).

The main questions of this chapter are:

- 1. What are the pathways towards unleashing the real development potential of the Aruban economy, without compromising the ability of future generations to meet their needs?*
- 2. What are the opportunities for safeguarding economic development by means of inclusive economic growth for Aruba?*

The remainder of this chapter is structured as follows.

Section 3.2 describes the key concepts, indicators, and the model utilized in this chapter. Section 3.3 explains the past trends in the Aruban economy and reviews recent economic development indicators for Aruba. Section 3.4 presents the adequacy benchmarks for 2040 and describes the recommendations for three scenarios. Finally, in section 3.5 the conclusions are presented.

3.2 Key concepts, indicators, and model

Economic growth is often conflated with economic development (Feldman et al., 2014). However, economic growth is not a synonym of economic development or (economic) prosperity.

Economic growth is universally defined as an increase in aggregate output over a period of time (Feldman et al., 2014).

Therefore, economic growth is easily quantified and measured by means of GDP (or GDP per capita), which calculates production and value creation within an economy. Meanwhile, the definition of economic development is not set in stone, as it may have different meanings to different people and to different nations (e.g., one nation gives more attention to income equality compared to quality of life). Nevertheless, most of the existing literature seems to agree that economic development has to do with improvements in institutions, social capital, labor and capital mobility, and income and wealth equity (Fagerberg, et al., 2013; Myint & Kreuger, 2016). Beyond capital and labor, these factors are conducive to strengthening (total factor) productivity, and hence foster economic development. In a similar way, Amartya Sen (1999) considers economic development to be the strengthening of autonomy and substantive freedoms allowing individuals to fully participate in economic life. In the words of Panth (2020), economic development is the reduction in poverty, heightened levels of employment and income, and improved goods and services. For the purpose of this chapter and based on the definition provided in United Nations (1997), **we define economic development as the sustained economic growth that leads to the achievement of higher quality of life, increased standards of living, provision of adequate shelter, and secure employment for all (including elimination of income inequality), preservation of the integrity of**



the environment, and the empowerment and full participation of women in all spheres of society.

Economic development emphasizes a qualitative change in how goods and services are produced, and the improvements thereof for the wellbeing of the nation's society and its natural environment. Thus, while economic growth measures only the value of goods and services produced within an economy, it does not capture morality concepts such as human development, depletion of natural resources, gender equality, and income inequality (Feldman et al., 2014). Taking this broader perspective, implies that sustained increases in GDP do not automatically translate into equal proliferation in economic development and shared economic wellbeing; an economy can grow without actual development (Kane, 2004). Alternatively, an economy can develop without growing, which is the central tenet of economic degrowth and the popularized concept of the “doughnut economy” (Raworth, 2017).

The differences between economic growth and economic development are summarized in table 3.1. In addition, table 3.1 contains the indicators¹ used for each concept, based on the goals, targets, and indicators of the SDGs of the United Nations and the National Key Performance Indicators (KPIs) of the World Economic Forum (2017). Consistent with the

¹ Not all indicators of the SDGs of the United Nations and the KPIs of the World Economic Forum (2017) are included due to lack of data for Aruba. In addition, indicators analyzed in the other chapters in this report are excluded from this chapter.

economic wellbeing policy framework (see Chapter 1), economic development is measured by examining dimensions of average

living standards, employment, income equality, gender equality, and intergenerational equity and sustainability.

Table 3.1 Economic growth vis-à-vis economic development

<i>Economic growth</i>	<i>Economic development</i>
<ul style="list-style-type: none"> • One-dimensional concept • Its definition is widely accepted as increases in the production of goods and services in an economy • Is a quantitative change of economic output and does not consider morality concepts • Easily quantified by means of changes in Gross Domestic Product 	<ul style="list-style-type: none"> • Multidimensional concept • Its definition is ambiguous • Economic development is about both quantitative and qualitative changes and includes the improvements on the well-being of the nation's society and its natural environment • Multiple indicators are used to measure economic development
<p><u>Indicators:</u> Real GDP growth, real GDP per capita growth²</p>	<p><u>Indicators:</u></p> <p><i>Average living standards:</i> real GDP per capita growth</p> <p><i>Employment:</i> unemployment rate</p> <p><i>Income equality:</i> Gini-index</p> <p><i>Gender equality:</i> gender gap in labor force, proportion of seats held by women in the national parliament</p> <p><i>Intergenerational equity and sustainability:</i> adjusted net savings, public debt to GDP</p>

² Real GDP per capita can be used as an indicator for both economic growth and economic development.

We assume that equal distribution of real GDP per capita, is a necessary condition to stimulate economic development, and thus foster a nation’s prosperity (Feldman et al., 2014).

The latter we define according to the Legatum 2015 Prosperity index as “more than just the accumulation of material wealth, but also as the joy of everyday life and the prospect of being able to build an even better life in the future”. Therefore, to stimulate economic development, we must first rethink the Aruban economic model and modus operandi.

3.3 Past trends in the Aruban economy

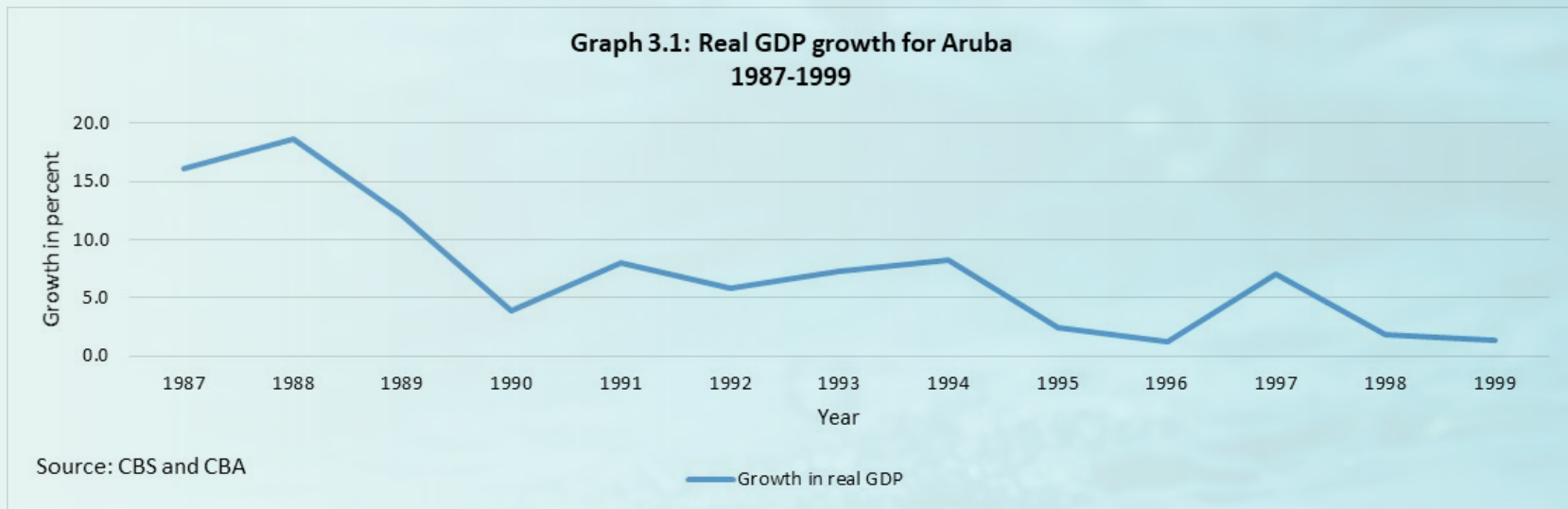
In this section, we analyze the Aruban economic growth and economic development in a historical context through the indicators depicted in table 3.1. For each indicator, we describe the past trends and compare the Aruban performance with similar Caribbean islands (available data permitting).

3.3.1 A stagnant Aruban economy paired with lower standards of living

We depict the stagnant Aruban economy through real GDP growth and real GDP per capita growth. With regard to the term stagnation, we follow the theory provided by Hansen (1939) that was enhanced by Summers (2016), where they described

stagnation as a long-term period of low or no economic growth. The current literature on economic stagnation does not provide a consensus or properly indicate the threshold of real GDP growth that is considered “low”. However, a steady diminished real output rate does indicate a stagnating economy. Moreover, the information pertaining to the SDGs does indicate that the real GDP per capita growth slowed down to 2.0 percent between 2010 and 2018, and reached 1.5 percent in 2019. Therefore, we consider a stagnant economy as one with an average of 2.0 percent real GDP per capita growth on an annual basis. Additionally, we describe the stagnating Aruban economy using the historical Aruban GDP growth as a point of reference and then benchmarking it against Caribbean Sub-National Island Jurisdictions (SNIJs) and Caribbean Small States (CSS).

Real GDP data for Aruba is available for the period of 1986-2020. This series contains a structural break in 1999 to 2000 due to a change in the base year. Therefore, the series is portioned into two parts: 1986-1999 (in 2000 constant prices) and 2000-2019 (in 2013 constant prices). The development in real GDP for Aruba is shown in graph 3.1 on an annual basis. Annually, Aruba experienced a continued growth in real GDP ranging between 1.3 percent and 18.6 percent. The average growth in real GDP during this period was 7.2 percent, with a standard deviation of 5.3 percent.



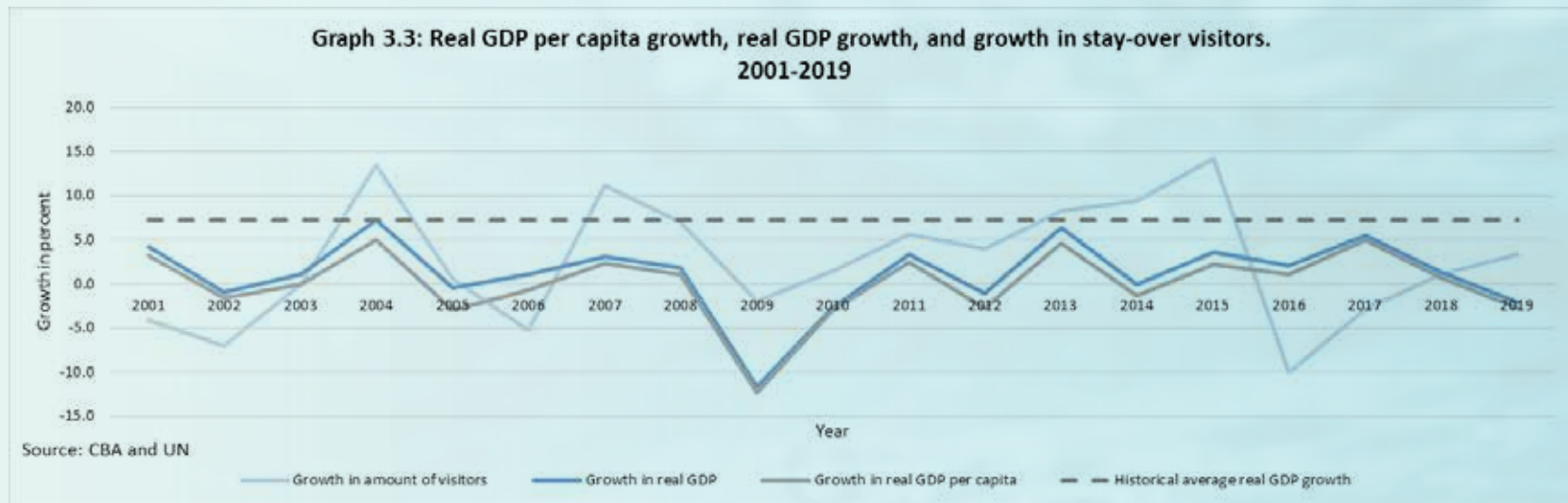
Subsequently, we compare the past nineteen years (i.e., 2000-2019) against the performance in 1986-1999 by using the average growth of 7.2 percent in real GDP as the benchmark. This comparison is used to demonstrate economic sluggishness for Aruba over the last few years (graph 3.2). As can be seen from graph 3.2, the growth in real GDP reached and surpassed the historical average of 7.2 percent only once (i.e., in 2004). For the remainder of

the years between 2001 and 2019, it stayed well below 7.2 percent, with an average real GDP growth of 1.2 percent. In addition, the expansion in tourism did not translate into heightened performance in real GDP. This observation is in line with Chamon, Charap, Chen, & Leight (2017) who indicated that international tourism has not been significantly beneficial in driving economic growth since the beginning of the new millennium.



Graph 3.3 indicates the evolution of real GDP per capita growth (against real GDP upturn and expansion in stay-over visitors) for Aruba in the past years. Aruba experienced several economic crises in this period, the largest one being the Global Financial Crisis (effect noted in 2009). During the period under review, the average real GDP per capita growth reached an average of 0.0 percent, significantly below the threshold of 2.0 percent. In addition, the real GDP per capita growth sits below

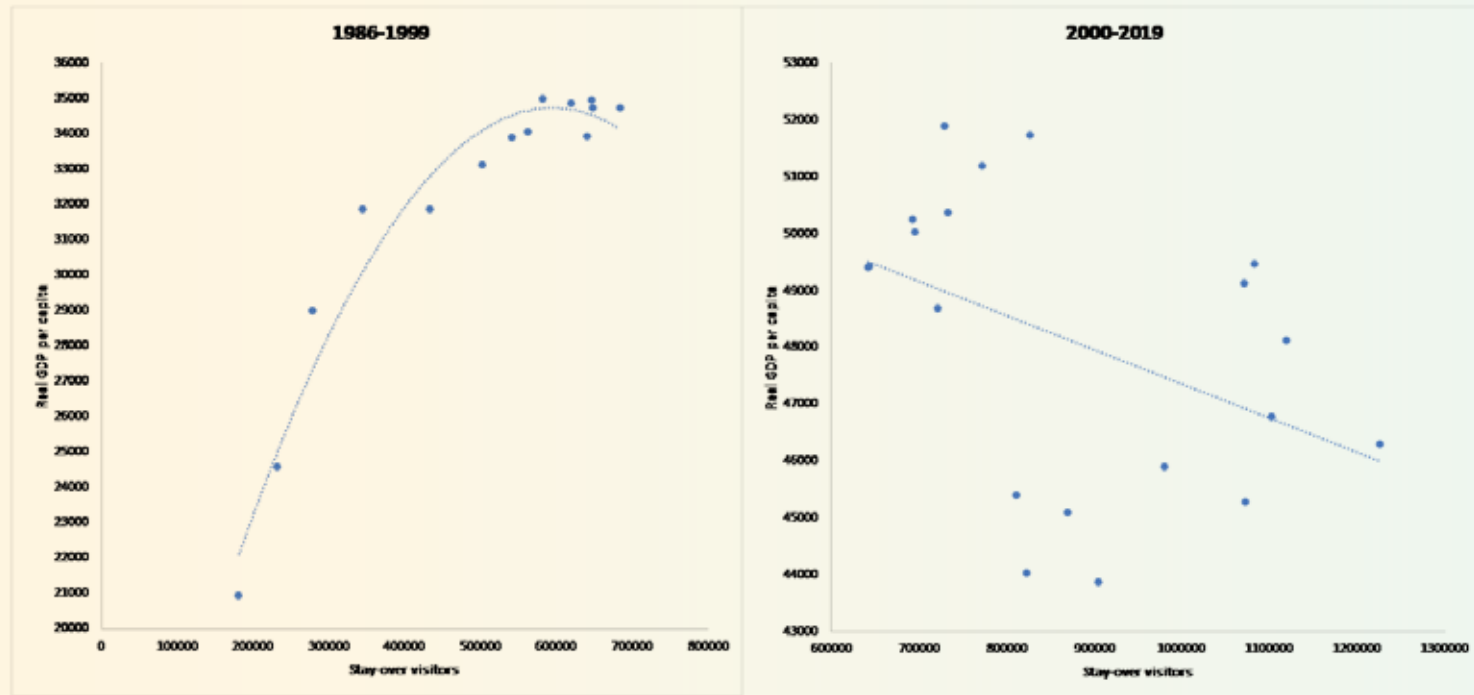
that of real GDP growth, indicative of economic growth that is unequally distributed in the Aruban population. This finding is related to the growing population – largely propelled by low-skilled immigrants - that is increasing at a faster rate than the growth rate of real GDP. Furthermore, since real GDP per capita serves as a measure of average living standards according to OECD (2013), we can deduce that the living standards of the average population in Aruba decreased in the past nineteen years.



Moreover, graph 3.3 shows that heightened upticks in stay-over visitors do not necessarily translate into equal improvements in real GDP and real GDP per capita. This finding is also demonstrated in graph 3.4. Graph 3.4 shows that in earlier years (1986-1999), tourism growth did have a positive contribution to real GDP per capita (or economic development). However, around between 1994 and 1996, tourism’s contribution to real GDP per capita started to diminish, and reached a tipping point during the late 1990’s, where the contribution of tourism growth to real GDP per capita turned negative (the coefficients in the polynomial regression model are statistically significant at the

5.0 percent confidence level). This adverse relationship between tourism growth and economic development continued well into the new millennium, and is strongly indicative of tourism-driven economic growth not contributing to economic development in Aruba over the past two decades (the coefficient in the linear regression model is significant at the 10.0 percent confidence level). These findings corroborate previous studies that Aruba has reached a tourism maturity phase, in which tourism has attained a tipping point after which expansions herein, particularly in terms of additional accommodations and visitors, are no longer conducive to economic development and wellbeing.

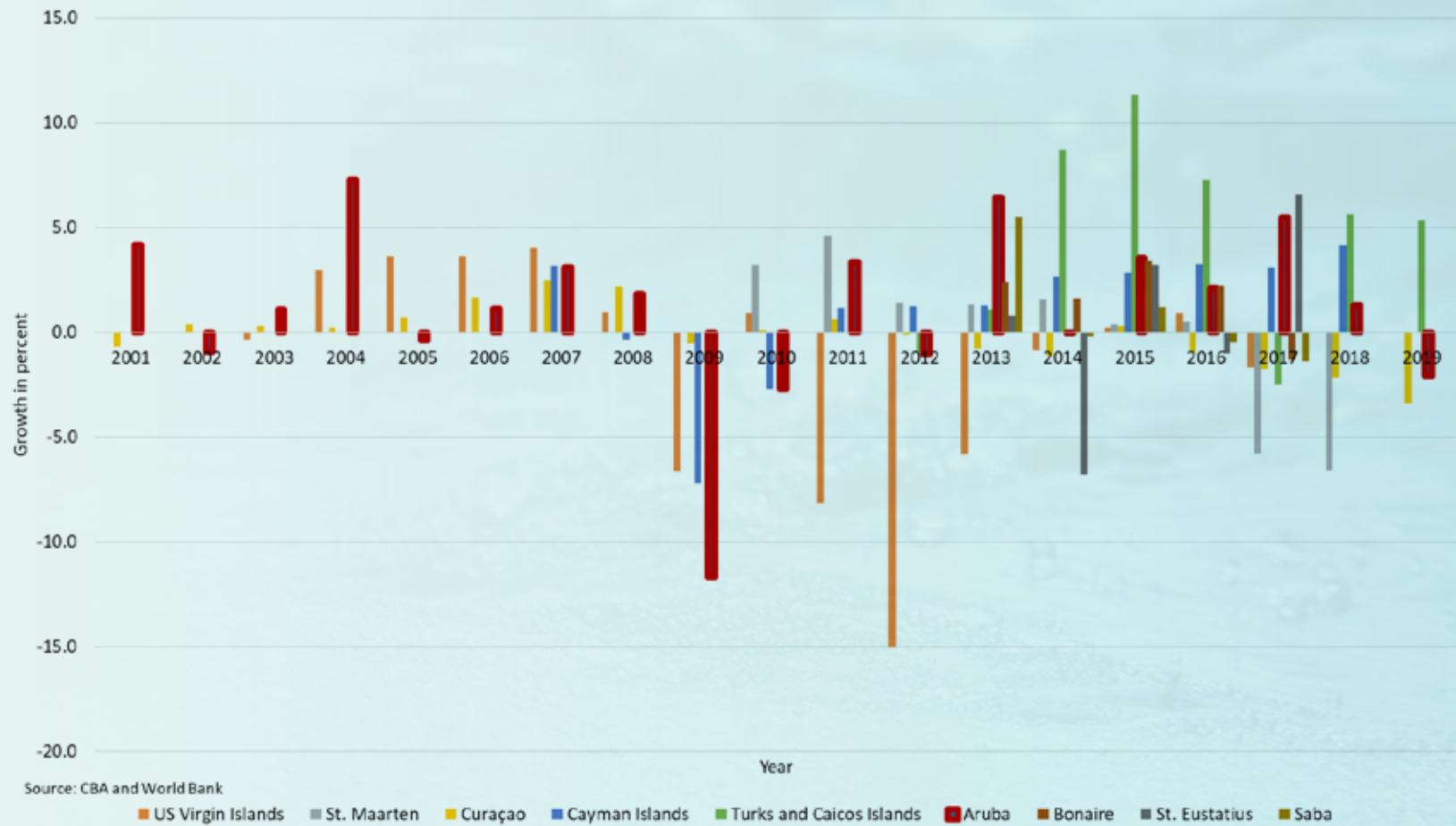
Graph 3.4: Relationship between stay-over visitors and real GDP per capita

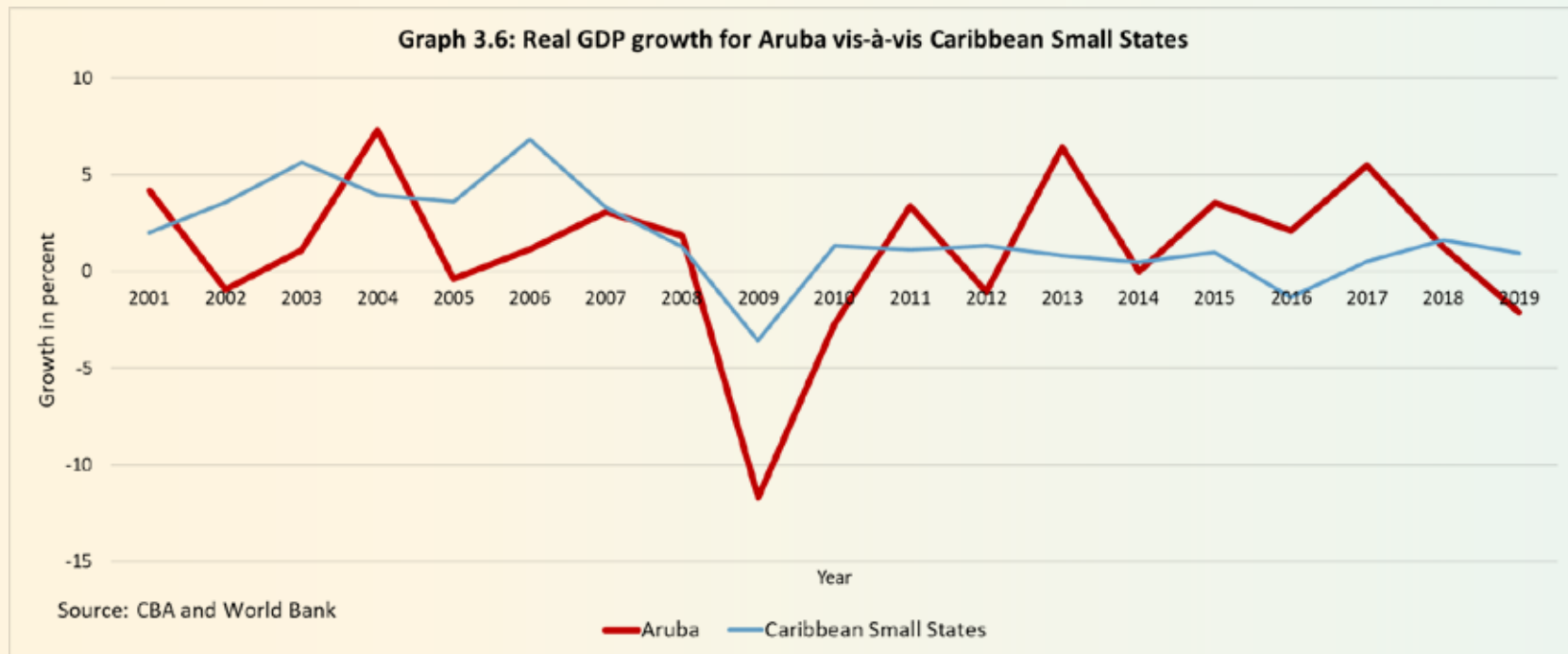


Last, we compare the recent economic performance of Aruba against other Caribbean islands. As noted in the introductory section of this chapter, economic stagnation appears across all Caribbean islands, and especially among Small Island Tourism Economies (SITEs) (Ruprah, et al., 2014; Peterson, 2020; United

Nations, 2020). The evolution of real GDP growth is shown in graph 3.5 and graph 3.6 for Aruba vis-à-vis Caribbean SNIJs and Aruba vis-à-vis CSS, respectively. As observed, the development in real GDP growth is similar to that of Caribbean SNIJs and CSS and, hence, indicative of economic stagnation in Aruba.

Graph 3.5: Real GDP growth for Aruba vis-à-vis Caribbean SNIJs





Based on the reviewed developments, we can observe that Aruba is experiencing a sluggish economy with likely repercussions for economic development and prosperity. The IMF (2013, 2019, and 2021) has broadly explained the potential causes of this stagnation:

- i. Despite being a competitive tourism destination, the tourism sector in Aruba reached its saturation point where additional tourists result in diminishing returns. This conclusion can be explained by the high tourism density, the limited availability of to-be-developed land, the demand for (low-skilled) foreign labor

and its consequent pressures on the (social) infrastructure, and leakages through imports and foreign labor remittance outflows. These findings are in line with what we described as “maturing tourism destinations” in the introductory section of this chapter.

- ii. Significant dependency on the tourism sector leads to a lack of economic diversification. The latter is paired with the limited size and availability of physical land and local markets, which impede economic diversification.
- iii. Structural impediments exist related to the business environment, governance, and labor markets (i.e., rigid labor market regulations). Furthermore, the lack of transparency and efficiency is paired with unequal treatment (i.e., preference is given to certain groups of people) in the Aruban public institutions. In addition, the high borrowing costs for entrepreneurs and the complexity in licensing requirements for new businesses lead to further obstacles in achieving economic diversification.
- iv. Related to the lack of economic diversification, the Aruban policymakers should focus on skill-intensive sectors as an attempt to diversify the economy. However, a domestic skill shortage caused by brain-drain exists on the island.
- v. The previously mentioned dependency on the tourism sector also has led to a contracting TFP. According to the IMF (2021), Aruba’s TFP has been declining since the 2000s, contributing to a sluggish economic growth.

3.3.2 Increased unemployment despite observed economic growth

The SDG number 8 and the World Economic Forum (2017) use the unemployment rate as an indicator for development.

The unemployment rate serves as a measure of under-utilization of the labor supply as it shows the inability of the economy to produce employment for those actively seeking work but not working (International Labour Organization, n.d.). The development in the unemployment rate for Aruba benchmarked against CSS is shown in graph 3.7. Moreover, graph 3.8 presents a scatterplot of unemployment against real GDP growth for Aruba.

**Graph 3.7: Unemployment rate in percent for Aruba vis-à-vis
Caribbean Small States
2000 - 2020**



Source: CBA and World Bank

As can be seen on graph 3.7, the Aruban unemployment rate trended at an estimated average of 8.4 percent for the period between 2000 and 2020.

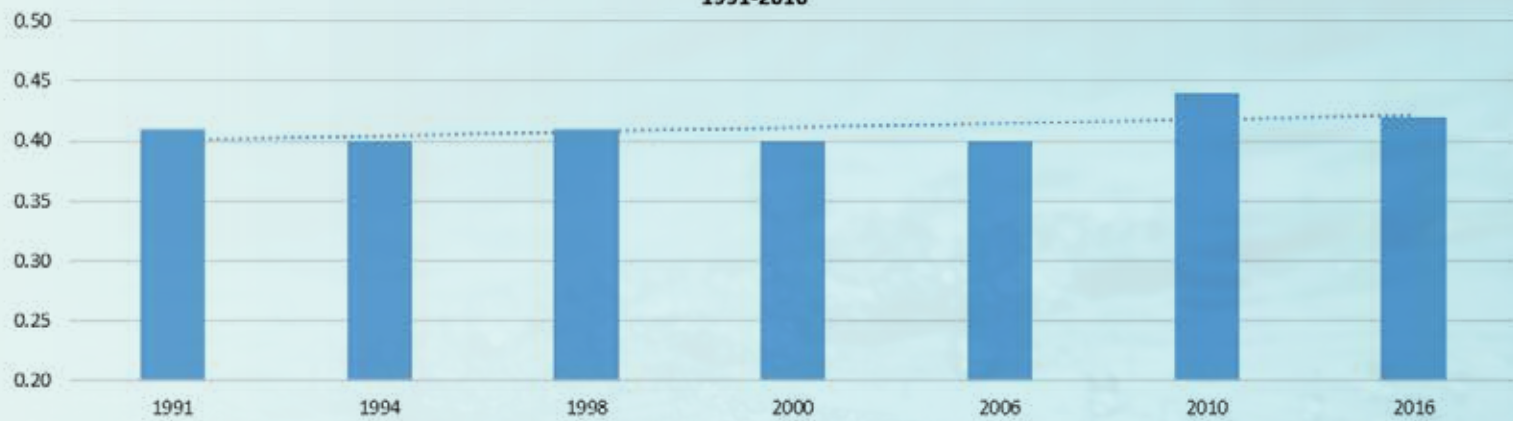
A decreasing trend can be observed since 2010, with the exception of the year 2020, where the unemployment rate spiked due to the COVID-19 crisis. Compared to Caribbean peers, Aruba's unemployment rate sits, on average, below the unemployment rate of CSS, with the exception of the year 2020. The latter increase is related to Aruba's significant dependency on the tourism sector, thus underscoring Aruba's tourism-related vulnerability. Notably, the unemployment rate rose in 2000, 2003, 2006, 2016, and 2017, despite the noted economic growth. This observation indicates that economic growth – in and of itself – does not always stimulate higher employment opportunities for Aruba (graph 3.8). According to the Centraal Bureau voor de Statistiek (CBS, 2019), the Aruban unemployment is mainly the result of higher unemployment in the lower-educated and intermediate-educated groups, and in the youth group (15-24 years), especially as these demographic groups surged with the expansion in tourism. The latter is in line with the findings of the Article IV mission of the IMF (2021). However, the adverse consequences of an informal labor market cannot be excluded.

3.3.3 Rising income inequality

The SDG number 10 and the World Economic Forum (2017) propose the Gini-index as a measure of economic development. The Gini-index represents the measure of income inequality within a nation, where a Gini-index of 0 indicates total equality and a Gini-index of 1 reveals that a single household is receiving the total national income (Departamento di Asunto Social, 2020). Therefore, the higher the index, the greater the degree of income inequality. Graph 3.9 (note that the Aruban Gini-index might be partially distorted as tips are not included in wages) indicate the development in the Gini-index for Aruba.

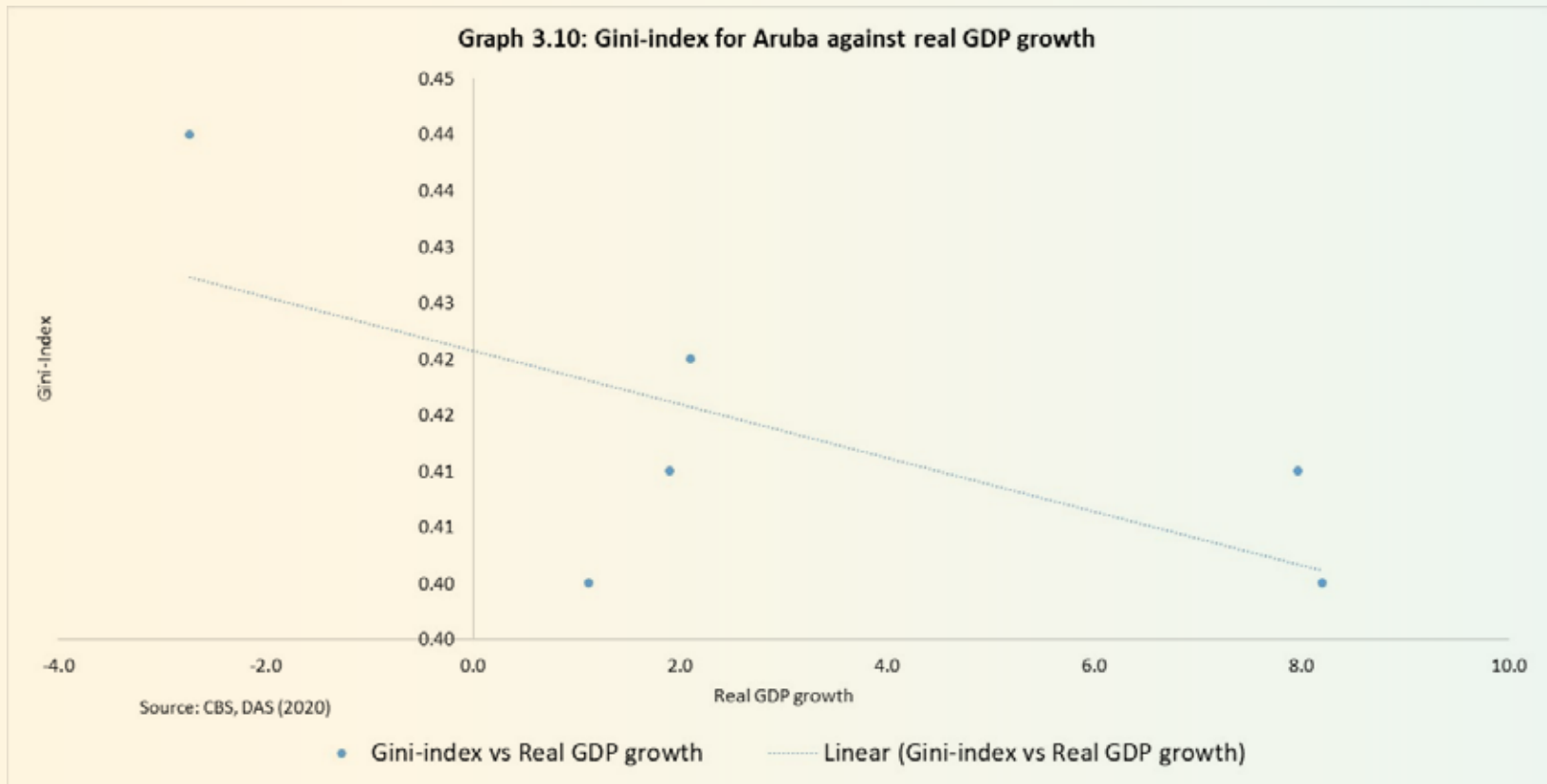
In general, economic growth reduces income inequality, if the wages of the lowest paid increase faster than the average wage. As illustrated in graph 3.9 and graph 3.10, this was not the case for Aruba in 2016 as the index is at 0.42 compared to 0.41 in 1991. Moreover, Peterson (2020) showed that the Gini-index stood at 0.46 in 2018. Therefore, no significant improvement in income equality has been observed in Aruba since 1991.

Graph 3.9: Gini-Coefficient Aruba
1991-2016



Source: CBS, DAS (2020)

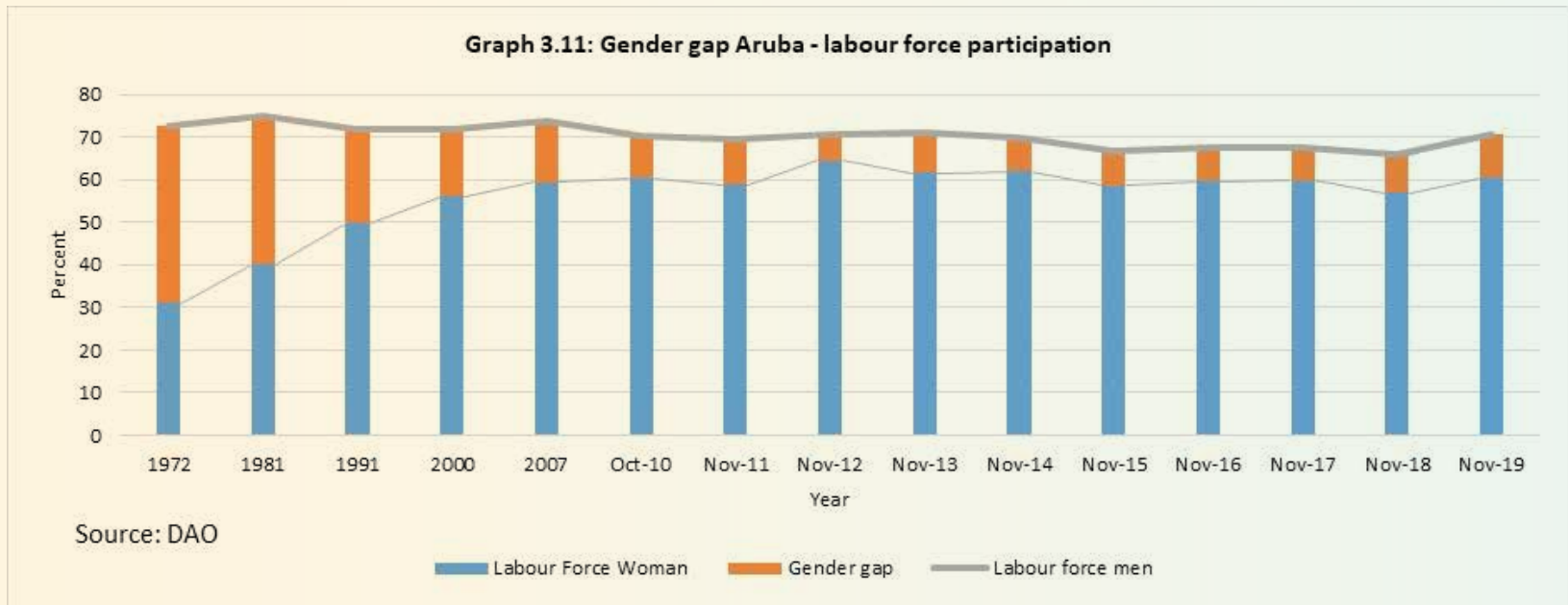
■ Gini-Coefficient Aruba Linear (Gini-Coefficient Aruba)



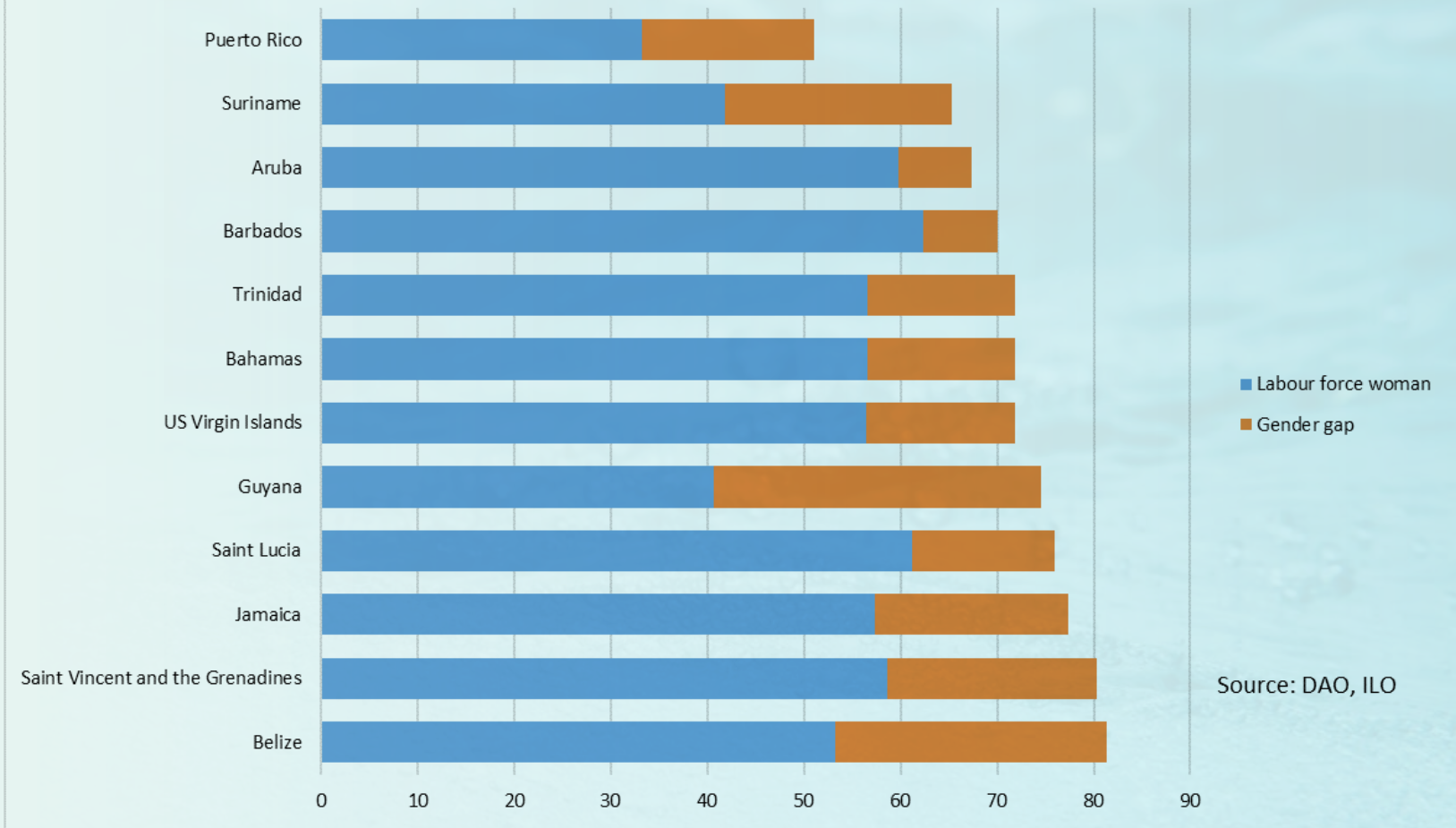
According to the Departamento di Asunto Social (2020), Aruba is among the regional countries with the worst income inequality. It further explained that Aruba's Gini-index is in line with the countries having the highest degree of unequal income in our region. To be specific, Aruba had a Gini-index of 0.44 in 2010, which is close to that of e.g., the Bolivian Republic of Venezuela (0.448 in 2013) and Jamaica (0.455 in 2013). Explanations for this (growing) income inequality are the phenomenon of institutional capture, which leads to a net loss for society and over-dependency on tourism (Peterson, DiPietro & Harrill, 2020). To be specific, Peterson (2020) found evidence that over-dependency on tourism – or a lack of economic diversification – led to a growing income inequality for Aruba due to official tourism labor wages lagging behind the average median wages for almost a decade, despite the strong “tourism tipping” contribution. This finding describes a structural lag in income distribution across labor markets. Related to the institutional capture described by Peterson et al. (2020), the Departamento di Asunto Social (2020) concluded that the growing income inequality of Aruba might be directly related to the low levels of interpersonal trust and general trust in Aruban institutions. Wilkinson and Pickett (2010) found a strong and significant relationship between equitable societies and trust levels in a society. Therefore, it is likely that the lack of trust also contributed to the rising income inequality (Aghion, et al., 2009).

3.3.4 Women's labor force participation and women in leadership

SDG goal number 5 calls for the full participation of women and equal opportunities for leadership at all levels of political and economic decision making (Eurostat, 2021). Globally, a gender gap exists between the participation rate of women and men in the workforce, and is often due to assumed gender roles, work-family balance, lack of transport, and lack of affordable childcare (International Labour Organization, 2021). Graph 3.11 depicts the evolution of the gender gap for Aruba between 1972 and 2019. As observed, the gender gap seems to be decreasing in the long term despite expansions in 2018 and 2019. Notably, the gender gap in Aruba remains significantly smaller when compared to peers (Graph 3.12). However, the (relatively) small gender gap in Aruba must be interpreted with caution as previous studies on Aruba demonstrate that women are overrepresented in the lower income categories and underrepresented in the higher income categories (Departamento di Asunto Social, 2020). Furthermore, indications exist of significant discrepancies between the wages earned by women compared to men, as the 2010 census data demonstrated that women earn on average 30.0 percent less than their male counterparts (Departamento di Asunto Social, 2020). Therefore, despite the long term decrease in the Aruban gender gap, the development in the wages of women vis-à-vis men did not follow suit.



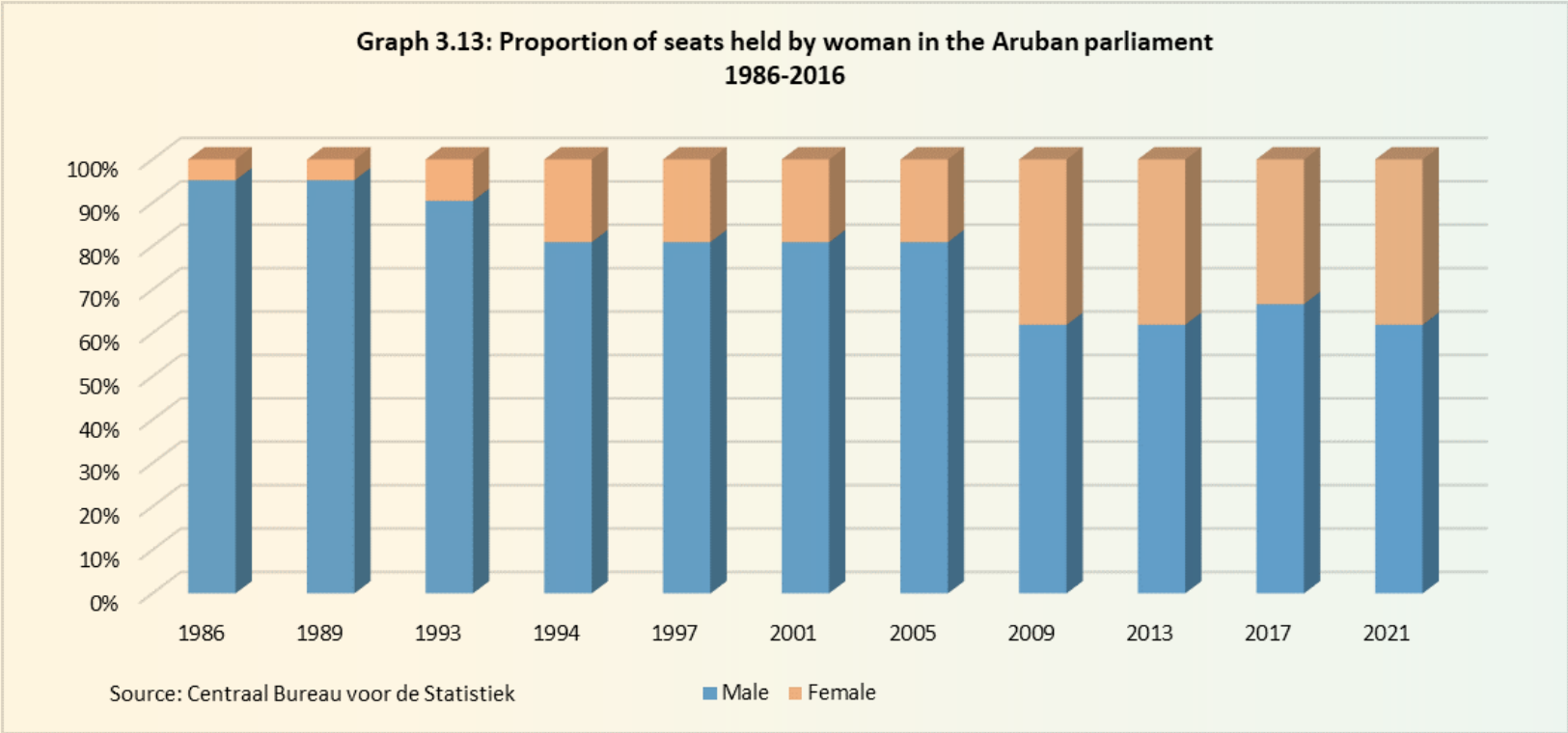
Graph 3.12: Gender gap - labour force participation 2017 (in percent)



Source: DAO, ILO

Meanwhile, graph 3.13 shows the development of the proportion of seats held by women in the Aruban parliament since Status Aparte. As noticed, significant progress has been made in the inclusion of women in political decision-making.

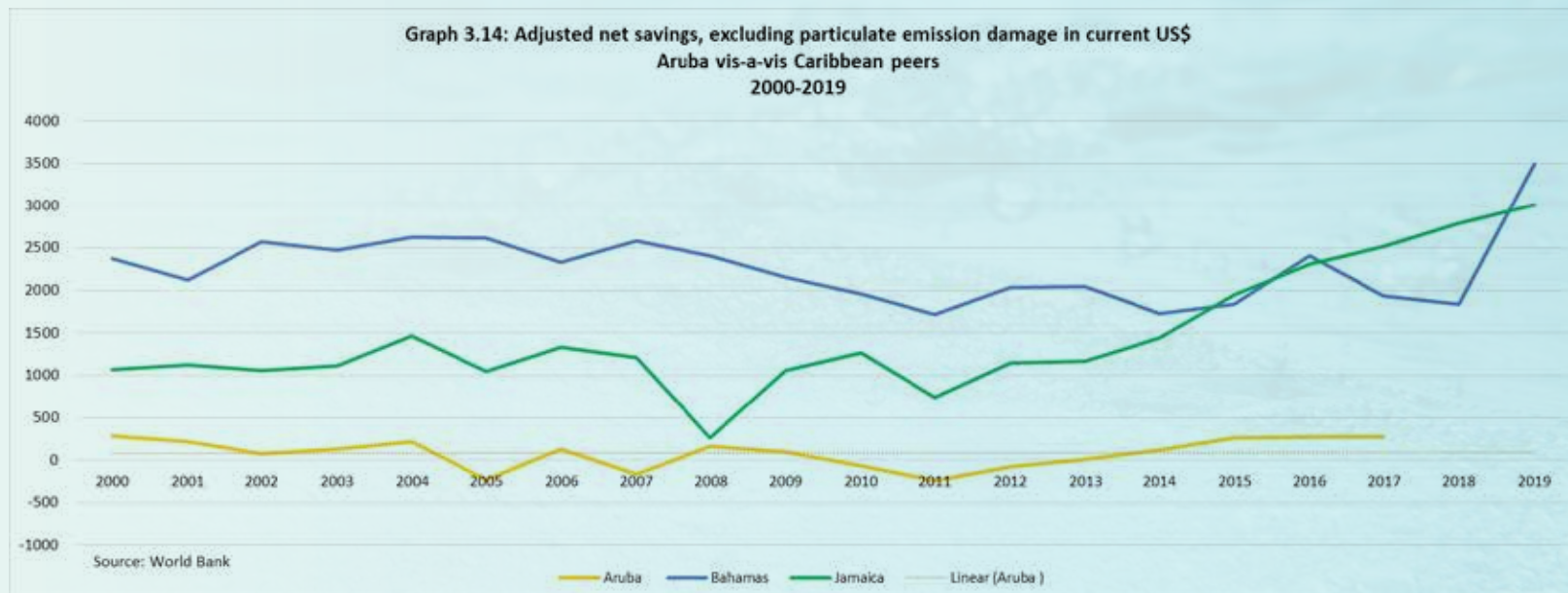
However, despite this advancement, the proportion of women in parliament is not yet equal to men and is indicative of women not being equally included in political and economic decision-making.



3.3.5 Intergenerational equity and sustainability

In this section, we use adjusted net savings and public debt as a share of GDP to measure intergenerational equity and sustainability. The adjusted net savings serves as a measure of a nation’s sustainability by taking into account the consumption of fixed capital, public expenditure on education, depletion of natural resources, and damages due to carbon dioxide and particulate emissions (UN, 2007). According to the UN (2007), a consistent negative adjusted

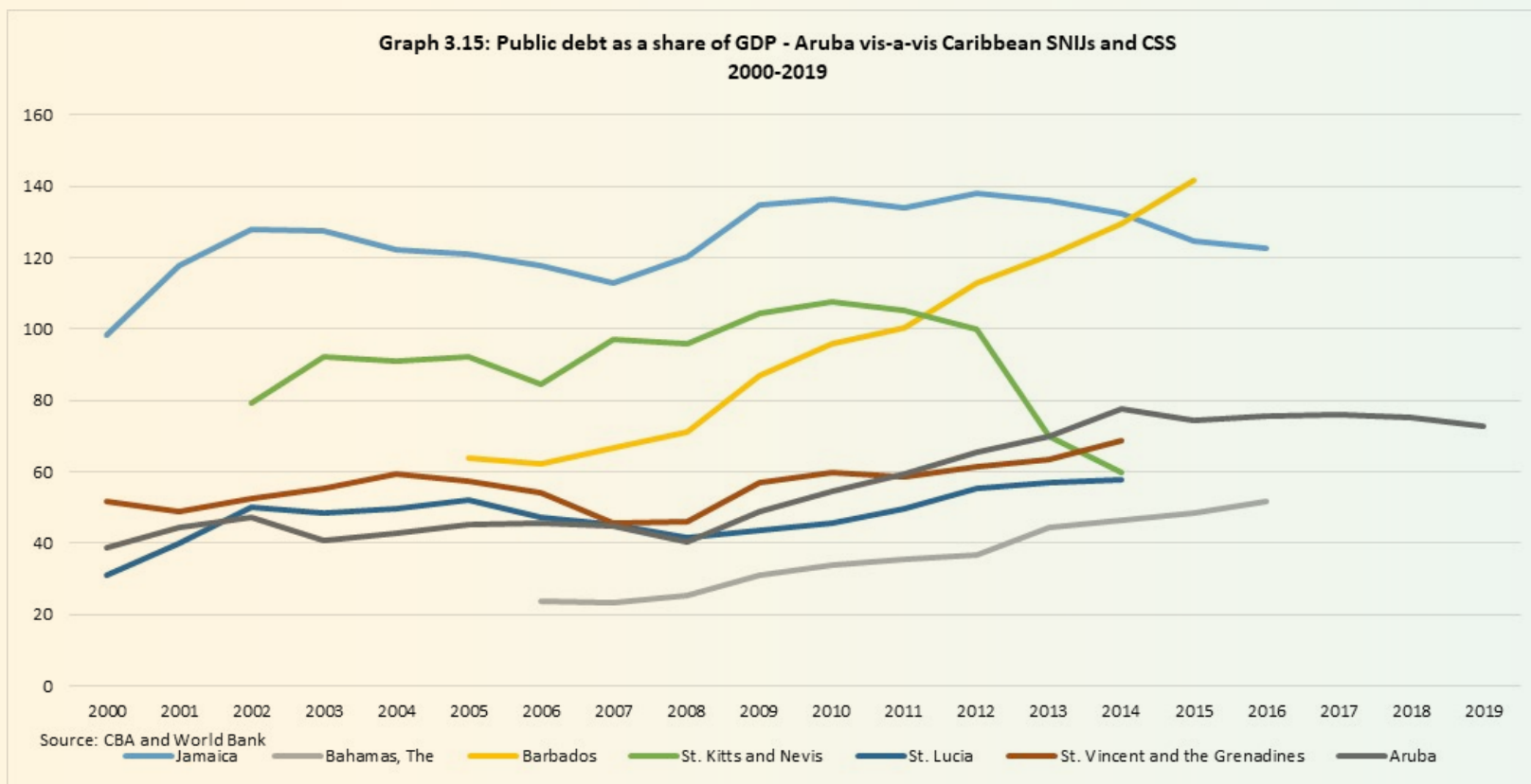
net savings indicates that an economy is on an unsustainable path. The latter shows that the nation’s saving and investment in education are not enough to offset the consumption of fixed capital and the depletion of natural resources. In the specific case of Aruba, negative adjusted net savings were registered in 2005, 2007, 2010, 2011, and 2012 (Graph 3.14). In addition, the adjusted net savings for Aruba is on average lower compared to peers. This observation implies that the Aruban economic growth is less sustainable vis-à-vis other islands in the Caribbean.



Similarly, the public debt as a share of GDP acts as a measure of sustainability since it shows the government’s ability to meet all its current and future payments without financial assistance or going bankrupt (IMF, 2021).

Additionally, the public-debt-to-GDP ratio acts as an indicator for intergenerational equity as it points to potential burdens for future generations (Catrina, 2013). The progression of the

Aruban public debt benchmarked against Caribbean islands is shown in graph 3.15. We can observe that the public-debt-to-GDP ratio of Aruba denotes a long-term increasing trend. In general, the adjusted net savings and the public-debt-to-GDP ratio of Aruba suggest an economic growth that is not sustainable for future generations and for the environment’s wellbeing.



To conclude, the review of past trends in this section highlights an Aruban economic growth that is stagnant, while most of the economic development indicators did not evidenced improvement over the past nineteen to twenty years.

These findings underline the need for the government to rethink and redesign the current economic model, as well as the economic development policies with an emphasis on economic wellbeing (table 3.2).

Table 3.2 Main findings based on past trends in the Aruban Economy	
<i>Economic growth</i>	<i>Economic development</i>
<ul style="list-style-type: none"> i. Past trends indicate a structural stagnation of the Aruban economy ii. Heightened performance in tourism did not convert into equal improvements in economic growth 	<ul style="list-style-type: none"> i. Heightened performance in tourism did not result in equal improvements in or better standards of living ii. Unemployment increased despite noted economic growth iii. Income inequality follows an upward trend. Moreover, real GDP growth did not reduce income inequality iv. The gender gap depicts a long-term decreasing trend. However, there are some recent upturns (2018 and 2019) v. Women are still not equally included in political and economic decision-making vi. Unsustainable development for future generations and the environment’s well-being

3.4 Economic growth and economic development for 2040: alternative scenarios for the future

In this section, we first choose the adequacy benchmarks for economic growth and economic development for Aruba for 2040. Then we provide some insight into the future state of Aruba under the policy-as-usual scenario where we assume that the government does not take actions, and, therefore, the adequacy benchmarks are not met. Last, we provide policy recommendations based on the alternative scenarios presented in Chapter 1, i.e.,

policy reform (scenario 2) and policy shift (scenario 3).

3.4.1 Adequacy benchmarks for economic growth and economic development

Table 3.3 presents the 2040 adequacy benchmark (i.e., the target) for each indicator of economic growth and economic development. For the concept of economic development, we provide benchmarks for each dimension, as well as a motivation and explanation behind each benchmark.

Table 3.3: Adequacy benchmarks for economic growth and economic development 2040

<i>Economic growth</i>		
Indicator(s)	Target	Motivation
1. <i>Real GDP growth</i>	Minimum real GDP growth of 2.0 percent annually by 2040	Target 8.1 of the UN's SDG states the following: "Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries". Since Aruba is a high-income country according to the World Bank, we benchmark its economic growth against the 2015-2019 average real GDP growth of high-income countries. This average real GDP growth amounts to 2.0 percent annually. Additionally, this target is related to the Landspakket Aruba, where the aim in section E in the framework is to strengthen the Aruban economic growth.

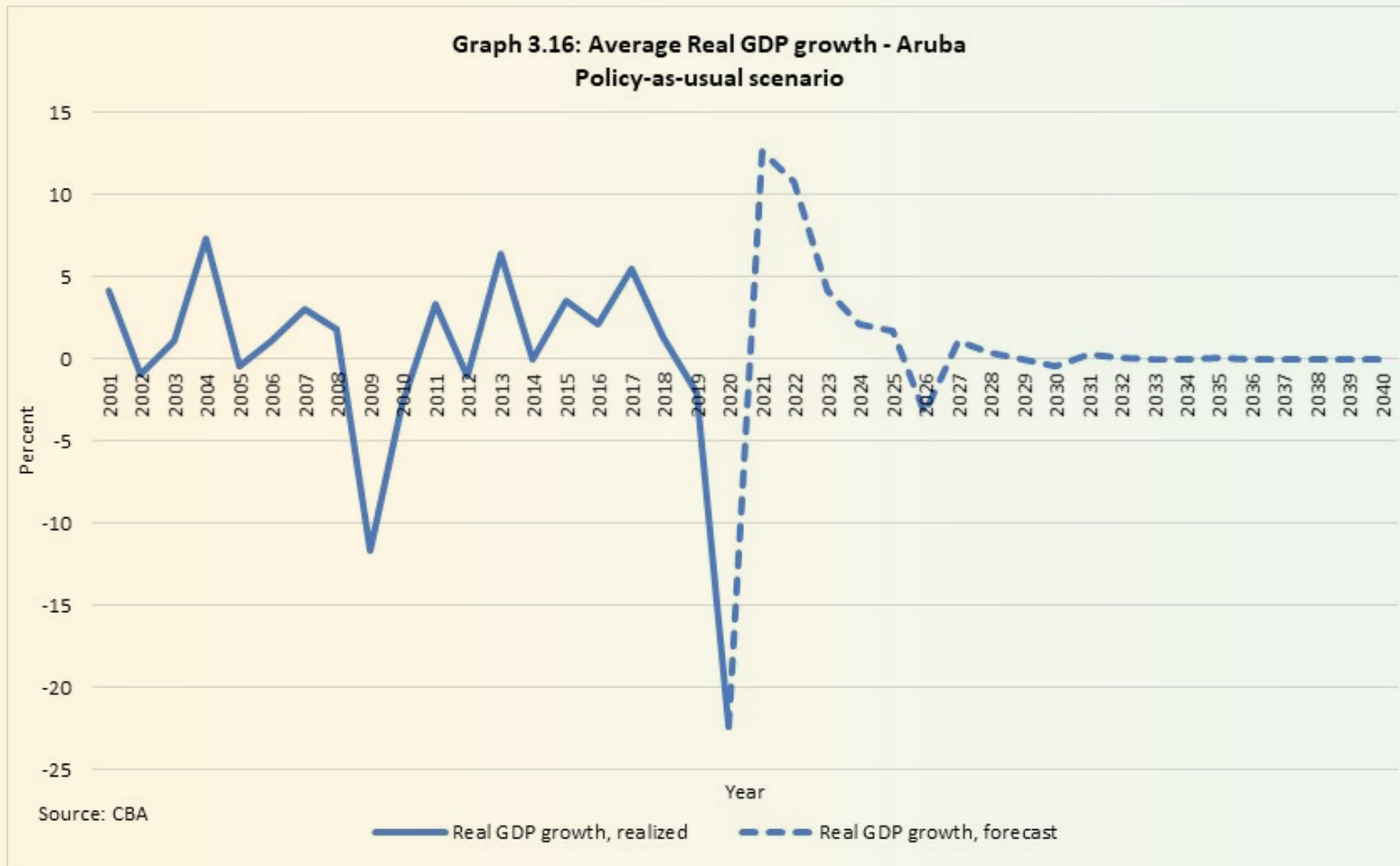
<i>Economic development</i>		
Dimension and indicator(s)	Target	Motivation
2. <i>Average living standards:</i> real GDP per capita growth	Minimum real GDP per capita growth of 1.5 percent annually by 2040	Target 8.1 of the UN's SDG states the following: "Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries". Since Aruba is a high-income country according to the World Bank we benchmark its economic growth against the 2015-2019 average real GDP per capita growth of high-income countries. This average real GDP per capita growth amounts to 1.5 percent. Additionally, this target is also related to section E of the Landspakket Aruba.
3. <i>Employment:</i> unemployment	5.7 percent unemployment by 2040	Target 8.5 aims to achieve full and productive employment and decent work for all women and men, including young people and persons with disabilities, and equal pay for work of equal value. This target is also related to section E of the Landspakket Aruba. The chosen benchmark of 5.7 percent of unemployment is in line with the 2015-2019 average of high-income countries.
4. <i>Income equality:</i> Gini-index	Gini-index of 0.248 by 2040 by 2040	Goal number 10 of the UN's SDG calls for reduced inequalities within and among countries. This SDG goal, however, does not provide a direct target for the Gini-index. Therefore, we use an average (i.e., 0.248) of the countries with the lowest Gini-index (Slovak Republic, Czech Republic, Slovenia, Iceland, and Belgium according to the OECD) as the proxy benchmark. The average of 0.248 is based on the latest datapoint available (2018).
5. <i>Gender equality:</i> gender gap and the proportion of seats held by women in the Aruban parliament	Gender gap of 0.0 percent by 2040 Minimum of 50.0 percent in the proportion of seats held by women in the Aruban parliament by 2040	Goal number 5 of the UN's SDG aims to achieve gender equality and to empower all women and girls. Therefore, we argue that for complete gender equality the gender gap must be reduced to 0.0 percent, while the proportion of seats held by women in the Aruban parliament reaches a minimum of 50.0 percent.
6. <i>Intergenerational equity and sustainability:</i> adjusted net savings and public debt as a share of GDP	Continued positive adjusted net savings by 2040 Public debt to GDP of 40.0 percent by 2040	Goal number 11 of the UN's SDG stipulates the call for sustainable cities and communities. Based on this goal, we formerly chose adjusted net savings and public debt to GDP as measures of intergenerational equity and sustainability. The international target for the adjusted net savings is a net savings that is not negative (UN, 2007). Meanwhile, we chose the benchmark of 40.0 percent of public debt to GDP based on the International Monetary Fund's benchmark on a prudent debt to GDP ratio.

3.4.2 The state of Aruba in 2040 under the policy-as-usual scenario

Under the policy-as-usual scenario, we assume that the past trends are continued, and that the government carries on

with business as usual.

Based on the analysis of historical trends, we foresee that under government inaction, economic growth will remain stagnant and will likely reach an average of 0.0 percent by 2040 (graph 3.16).



Along the same lines, we assume that under a growing population (refer to Chapter 2) and the long-term zero growth in real GDP (graph 3.16), the trend in output per capita growth will prevail and remain below 0.0 percent.

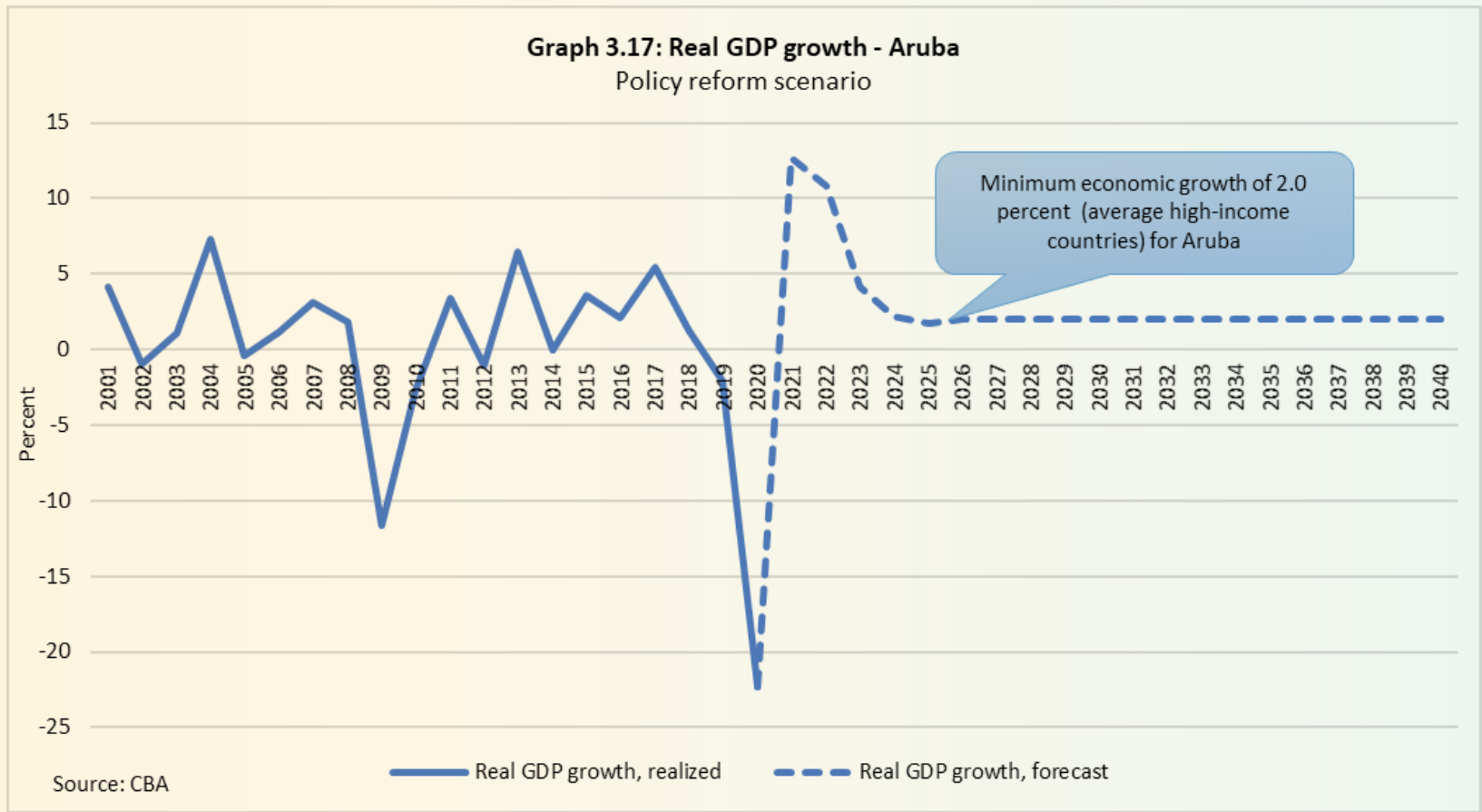
Under this assumption, the living standards of the average population will continue to decline. Further, we assume that unemployment decreases to 9.5 percent in 2021 and that under an unchanged scenario, the unemployment rate will only decline to the pre-COVID-19 average of 7.3 percent (2015-2019) in 2040. Therefore, another consequence under an unchanged scenario is that the labor market will remain highly dependent on the tourism sector. The unemployment rate will stay above the adequacy benchmark proposed in the previous section. As such, any shock related to the tourism sector (e.g., natural disaster) will significantly dampen disposable income and, in turn, consumption, thereby contributing to increased levels of income poverty and social deprivation. Related to the equality indicators, we assume that under an unchanged scenario, the income and gender inequality will follow their past trends and, therefore, will likely rise. This assumption is based on the recent increasing trend observed in the Aruban Gini-Coefficient and in the gender gap. Lastly, if the government does not intervene, economic growth is anticipated to remain unsustainable for future generations and for the environment, due to surging public debt and negative values for adjusted net savings.

In essence, the analysis of the past trends demonstrates that the Aruban economy is stagnant, while most of the economic development indicators do not show improvements. This finding indicates that if past trends are continued, we will not be able to reach the targets proposed in table 3.2. Therefore, a policy-as-usual scenario is not sustainable and not a viable policy option for building and maintaining shared economic wellbeing.

3.4.3 The state of Aruba in 2040 under the alternative scenarios

Policy reform scenario

Under the policy reform scenario, the government fosters continued economic growth by complying with the first target proposed in table 3.3. As such, it solely focuses on rebooting the Aruban economy in order to reach a minimum of 2.0 percent GDP growth in the long term (graph 3.17), although there may be spillover effects for the economic development dimensions in this scenario. However, we assume that the improvements in the economic development dimensions will not be significant since the government prioritizes economic growth over economic development in the policy reform scenario.



The recommendations proposed under this scenario are based primarily on the latest IMF Article IV Consultation and Rijksoverheid (2020), delineating the steps to foster economic

growth. In addition, we consider previous recommendations given by the CBA (2019). The recommendations under this scenario are provided in table 3.4 and include:

i. Master Plan (2020) (by the Government of Aruba (2020)) into practice to support the post-pandemic economic recovery while strengthening the long-term economic resilience. This plan includes proposals on labor market and tax reforms, the elimination of red tape, introduction of e-Government, and enhancement of the legislative capacity. In addition, it favored the simplification of regulatory and administrative burdens and the improvement of financial access for local entrepreneurs and SMEs (regular dialogue with the private sector is advised). In line with the Master Plan (2020), the IMF (2021) further recommended heightening export diversification by stimulating the Free Zone activities. In addition, the IMF (2021) proposes diversifying the economy by exploring the sectors related to renewable energy and ICT, as well as improving the business climate and the anti-corruption framework by putting governance and AML/ CFT reforms in place and by increasing the transparency and efficiency in Aruban public institutions. These reforms will tackle the impediments related to the business environment, governance, and the labor market, and will likely increase business profitability, investment, and growth. These recommendations are also in line with CBA (2019).

ii. Building on the previous point and following the IMF

(2021), we also recommend fundamentally rethinking the first pillar of the Aruban economy, which is the tourism sector. We suggest regulating tourism development by focusing on lower density tourism models, and thereby promoting sustainable tourism. The focus on lower density tourism models will help in reducing permanent scarring, while building resilience against environmental externalities. The IMF (2021) also tabled diversifying the tourism base, finding niche tourism markets, and maximizing tourism credits by investing in high-quality services and infrastructure.

iii. In line with the IMF (2021) we put forward policy reforms that increase TFP. To that end, we recommend that the government invest in technology, strengthen existing policies to increase secondary education enrollment, accelerate digital financial inclusion (refer to Chapter 6 and 7 in this report), and improve labor market flexibility through the planned labor market reform. IMF (2021) further pushed for the reduction of the red tape, improvement of process efficiencies, enhancement of legislative capacity, and regulatory innovation as steps to reverse the negative trend in TFP. Moreover, undertaking digital initiatives such as a national digital ID and a secure online platform for data sharing across entities will foster TFP. These recommendations, in turn, are likely to increase institutional quality which was previously proven to stimulate TFP.

<i>Table 3.4: Summary of policy recommendations – Policy reform scenario 2040</i>	
<i>Economic growth</i>	
<i>Goal: to reboot the Aruban economic growth</i>	
Recommendations:	Target
<p>1. Put the Master Plan and the recommendations given by the Centrale Bank van Aruba (2019) into practice:</p> <ul style="list-style-type: none"> • labor market and tax reforms, the elimination of red tape, introduction of e-Government, and the enhancement of the legislative capacity. • Improve the financial access for local entrepreneurs and SMEs (e.g. incentives to venture capital investors and angel investors). This should in turn reduce import dependency. • Increase export and economic diversification. At the same time, reduce oil dependency. 	<p>Minimum real GDP growth of 2.0 percent annually.</p>
<p>2. Regulate tourism development by promoting sustainable tourism. Diversify the tourism base, find niche tourism markets, and maximize tourism credits by investing in high-quality services and infrastructure.</p>	
<p>3. Execute policies that increase Total Factor Productivity:</p> <ul style="list-style-type: none"> • Invest in technology to digitalize manual processes • Create new policies with the aim to significantly increase secondary education enrollment • Build (digital) financial inclusion • Implement labor market reforms, with the goal to increase flexibility and productivity • Reduction/elimination of the red tape, improvement of process efficiencies and enhancement of legislative capacity and regulatory innovation 	

Policy shift scenario

Under the policy shift scenario, the government stimulates economic development through sustainable, inclusive, and equal economic growth. Under this scenario, it fosters economic prosperity for all of its citizens and aims to achieve the benchmarks proposed in table 3.3.

The specific policy recommendations for the policy shift scenario are shown in table 3.5. These recommendations are

built forth on the policy reform scenario and are based primarily on the following existing studies and reports: CC BY-NC-SA (2010), OECD (2012), World Policy Analysis Center (2014), International Labour Organization (2020), the Masterplan (2020) of the government, Rijkswet Caribisch orgaan voor hervorming en ontwikkeling (2021), IMF (2021), the Council of Europe (n.d.), and (OECD, n.d. - b). In addition, we follow the previous recommendations presented by the CBA (2019) that underscore that the policy actions for each dimension of economic development must be simultaneously executed.

Table 3.5: Policy recommendations - Policy shift scenario 2040

<i>Economic growth</i>		Target
Strengthen the Aruban economy by acting on the recommendations given under the policy reform scenario.		Minimum real GDP growth of 2.0 percent annually.
<i>Economic development</i>		
<i>Dimension</i>	<i>Recommendation</i>	<i>Target</i>
<i>Average living standards (real GDP per capita)</i>	<ul style="list-style-type: none"> i. Fortify skill-based immigration policies. ii. Promote the existing District297 platform (or create new platforms), which aims to bring back (high-skilled) Arubans living abroad. Additionally, create policies that deter brain-drain by promoting youth and young professional development opportunities. iii. Adopt the policy recommendations related to demographic trends (discussed in Chapter 2) and social safety nets (discussed in Chapter 4). iv. Execute the policy recommendations regarding (youth) unemployment, income equality, gender equality, and intergenerational equity and sustainability. 	Minimum real GDP per capita growth of 1.5 percent annually.

<p><i>Employment (unemployment rate)</i></p>	<p>v. Promote the reduction of youth unemployment through education and vocational training by investing in programs such as the National Action Plan for Youth Unemployment. This should include the promotion of youth entrepreneurship (i.e., self-employment) and the inclusion of the youth in social dialogue.</p> <p>vi. Stimulate innovative job creation in renewable energy, high-tech, logistics, and creative industries.</p> <p>vii. Privatize Enseñansa pa Empleo.</p> <p>viii. Promote the inclusive reach of education, including investing in retraining and reskilling, to support the labor reallocation to new sectors and improve long-term employability. In addition, encourage entrepreneurship by embedding entrepreneurship competencies and financial education in the national educational system.</p> <p>ix. Review the current education curriculum with the aim to foster 21st century skills development, social responsibility, and integrity.</p> <p>x. Promote and strengthen labor force participation programs. Develop new categories of labor market policies, such as incentive to promote employment (i.e., as a result of social benefits) by encouraging better matching of jobs with skills, and by providing continued support and monitoring.</p> <p>xi. Mitigate informal labor by promoting and enhancing labor market regulatory compliance and enforcement.</p>	<p>5.7 percent unemployment</p>
<p><i>Income equality (Gini-index)</i></p>	<p>xii. Act on the policy recommendations given under the employment and the gender equality dimensions.</p> <p>xiii. Increase trust in public institutions by promoting high levels of integrity, fairness, and openness. In addition, boost the Government's responsiveness and reliability in delivering public services and in effectively adapting to new needs. Moreover, hold political decision-makers and public servants responsible for their legal duties.</p> <p>xiv. Execute policy recommendations given under Chapter 6 (Financial Development and Inclusion). These include the structural embedding of financial education in the national educational curriculum.</p> <p>xv. Implement policy recommendations described in Chapter 7 (i.e., Innovation within the public sector)</p>	<p>Gini-index of 0.248</p>

<p><i>Gender equality (gender gap in labor force and the proportion of seats held by women in the Aruban parliament)</i></p>	<p>xvi. Foster women’s labor force participation through dedicated funding and micro loans and IT training. Moreover, increase funding for improving the availability and quality of formal care for children.</p> <p>xvii. Change existing laws that currently reinforce gender inequality by treating women differently from men. A suggestion would be the provision of equal and adequate paid parental leave for both mothers and fathers.</p> <p>xviii. Address the legal and policy shortcomings that matter to women, including, tackling the disparity between wages of men and women by enabling a law for equal pay for equal work.</p> <p>xix. Promote (e.g. through media exposure) the mentorship of women in order to boost the proportion of women in managerial positions and positions of political leadership.</p> <p>xx. Confront the gender stereotyping in media by, for example, strengthening codes of conduct to combat sexist imagery, language, and practices.</p> <p>xxi. Enforce existing laws against gender-based employment discrimination and sexual harassment.</p>	<p>Gender gap of 0.0 percent</p> <p>Minimum of 50.0 percent in the proportion of seats held by women in the Aruban parliament</p>
<p><i>Intergenerational equity and sustainability (adjusted net savings and public debt to GDP)</i></p>	<p>xxii. Execute existing fiscal consolidation plan and tax reform shift that leads to a reduced and sustainable public-debt-to-GDP ratio.</p> <p>xxiii. Strengthen tax revenue and compliance. Identify additional revenue sources such as a broader base for excises on alcohol, tobacco, and petroleum products.</p> <p>xxiv. Increase trust in Aruban public institutions by promoting high levels of integrity, fairness, and openness. In addition, boost the government’s responsiveness and reliability in delivering public services and in adapting to new needs. Moreover, hold political decision-makers and public servants responsible for their legal duties.</p> <p>xxv. Act on the proposed reduction of the public wage bill.</p> <p>xxvi. Finalize the planned debt management strategies as suggested by CARTAC and IMF, to reduce expenditures in a controlled manner. In addition, adopt an integrated asset-liability management strategy with the aim to guide financing decisions, including the assessment of alternative financing options.</p> <p>xxvii. Make the transition towards digital government services (e.g., platform for data sharing and a one-stop-shop for entrepreneurs).</p> <p>xxviii. Create and foster programs and policies on the development of the (innovative) agriculture sector. This can include the establishment of a National Food Security Platform where local entrepreneurship for cultivation and production is stimulated to enhance food security and resilience to climate change (by reducing import dependency on food products).</p> <p>xxix. Implement policy recommendations described in Chapter 5 (i.e., the impacts of climate change), including the transition to a green economy by expanding inclusive renewable energy capacities and climate-resilient infrastructures (both through private and public investments).</p> <p>xxx. Execute policy recommendations described in Chapter 7 (i.e., Innovation within the public sector).</p>	<p>Continued positive adjusted net savings</p> <p>Public debt to GDP of 40.0 percent.</p>

3.5. Conclusion

This chapter focused on the future of economic growth and economic development of Aruba. Economic growth is defined as the quantitative change in the amount of goods and services produced. Economic development, on the other hand, is the achievement of higher quality of life, increased standards of living, provision of adequate shelter and secure employment for all (including elimination of income inequality), the preservation of the integrity of the environment, and the empowerment and full participation of women in all spheres of society.

In this chapter, we analyzed the past trends of these concepts for the Aruban economy while we chose their adequacy benchmarks toward 2040. Specifically, we aimed to answer the research questions by investigating the future of economic development for Aruba under the policy-as-usual scenario, the policy reform scenario, and the policy shift scenario introduced in Chapter 1. We argue that under the policy-as-usual scenario, the long-term unsustainable trends will continue. In contrast, the government does take action in the policy reform scenario and the policy shift scenario. The difference between the second and third scenarios lies in the focus that the government puts on fostering economic development and shared economic wellbeing.

The analysis of the past trends reveals that the Aruban economy is indeed stagnant with no substantial improvement in economic development. To be specific, the average real GDP growth for Aruba for the period between 2001 and 2019 diminished to 1.2 percent, while the expansion in real GDP per capita resulted in a mean of 0.0 percent. These observations are strongly indicative of a sluggish economy paired with deteriorating standards of living as measured by the contraction in real GDP per capita. We further observe that the unemployment rate of Aruba is, on average, below that of CSS but Aruba remains more sensitive to tourism-related shocks than its Caribbean peers. However, Aruba was identified to be one of the countries in the region with the worst income equality, while no significant progress is observed since 1991 in the Aruban Gini-index. In fact, over the past 20 years, this index rose from 0.39 to 0.45, reflecting a deterioration in income equality and wealth distribution in the Aruban community. With regard to gender equality, it should be noted that Aruba's gender gap in the labor force remains significantly smaller when compared to its peers, with the share of seats held by women in the parliament greatly improving since the Status Aparte. Nevertheless, the gender gap experienced recent increases in 2018 and 2019, while the proportion of seats in the parliament is still not equally divided among men and women. In addition, women are

overrepresented in lower income categories, and earning, on average, 30.0 percent less than their male counterparts. On the subject of intergenerational equity and sustainability, Aruba experienced several episodes of negative adjusted net savings since the year 2000. This is indicative of unsustainable economic growth. Likewise, public-debt-to-GDP ratio has followed a steady upward trend since 2009, indicating an economy that is not affordable in the long-run for future generations. Therefore, the analysis of past trends reveals that policy as usual is not an option and underscores the need for the government to rethink and redesign the current economic model and economic development policies with an emphasis on economic wellbeing.

Without discarding the important role of the private sector and civic society, it is recommended that the government adopt the recommendations presented in the policy shift scenario. Under this scenario, it goes beyond economic growth by proactively and effectively targeting impactful economic development. In this framework, it takes the necessary actions to stimulate the Aruban economy by, e.g., labor market and tax reforms, promoting economic diversification, regulating tourism development, and by acting on policies that increase TFP. At the same time, the government focuses on economic development and

aims to improve the average standards of living, reducing unemployment, promoting income equality, progressing the equality between men and women, encouraging intergenerational equity, as well as sustainable economy. The actions needed under this framework include – but are not limited to – the creation of impactful policies that deter brain-drain, actively boost labor force participation and productivity, strengthen the government’s responsiveness and reliability in adapting to next-gen needs, and foster trust in its public institutions by promoting high levels of integrity and corporate governance.

In conclusion, the recommendations under the policy shift scenario are considered as the main pathways for creating an inclusive and sustainable economy to fulfill the needs of future generations, while taking responsible policy actions today.

References

- Aghion, P., Algan, Y., Cahuc, P., & Shleifer, A. (2009). *Regulation and Distrust*.
- Caribisch Orgaan voor Hervorming en Ontwikkeling. (2021). Rijksoverheid. Retrieved from Landspakket Aruba: Uitvoeringsagenda 1 april - 30 juni 2021: <https://www.rijksoverheid.nl/documenten/rapporten/2021/04/01/landspakket-aruba-uitvoeringsagenda-1-april-30-juni-2021>
- Catrina, I. (2013). *Intergenerational Equity of Public Debt*. *European Journal of Science and Theology*, 9(2).
- Cavusoglu, T., & Onal, K. D. (2016). *The Role of Institutional Quality on Total Factor Productivity: A Comparative Analysis on the CEE and MENA Economies*. In M. M. Ergodgu, & B. Christiansen, *Handbook of Research on Comparative Economic Development Perspectives on Europe and MENA Region*. IGI Global.
- CBS. (2019). *Labour Force On The Dutch Caribbean Islands*. CBS. Retrieved from https://www.cbs.nl/-/media/_pdf/2019/09/2019st08-labour-force-dutch-caribbean-islands_web.pdf
- CC-BY-NC-SA. (2010). University of Minnesota. Retrieved from *Social Problems: Continuity and Change*: <https://open.lib.umn.edu/socialproblems/front-matter/publisher-information/>
- Centrale Bank van Aruba . (2019). *Fostering Economic Resilience: From Roots to Routes*. Oranjestad: Centrale Bank van Aruba.
- Comin, D. (2010). *Total Factor Productivity*. In S. Durlauf, & E. Blume, *Economic Growth*. London: Palgrave Macmillan.
- Council of Europe. (n.d.). *Combating gender stereotyping and sexism in the media*. Strasbourg: Council of Europe.
- Departamento di Asunto Social. (2020). *Social Development: A situational analysis of Aruba Case*. Oranjestad: Departamento di Asunto Social - Aruba.
- Eurostat. (2021). Eurostat. Retrieved from *Eurostat Statistics Explained - SDG 5 Gender Equality*: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=SDG_5_-_Gender_equality#Gender_equality_in_the_EU:_overview_and_key_trends
- Fagerberg, J., Felmand, M., & Srholec, M. (2014). *Technological Dynamics and Social Capability: U.S. States and European Nations*. *Journal of Economic Geography*, 313-337.
- Feldman, M., Kemeny, T., Hadjimichael, T., & Lanahan, L. (2014). *The Logic of Economic Development: A Definition And Model For Investment*. *Environment and Planning C Government and Policy*, 34(1). doi:10.1177/0263774X15614653
- Forum, W. E. (2017). *The Inclusive Growth and Development Report*. Geneva: World Economic Forum.
- Government of Aruba, (2020), *Repositioning our sails: Aruba's mission driven model for economic recovery and resilience*.
- Hansen, A. (1939). *Economic Progress and Declining Population Growth*. *The American Economic Review*, 1-15.
- Hutchison, M., Ito, T., & Westermann, F. (2005). *The Great Japanese Stagnation: Lessons for Industrial Countries*. *Economic Policy Research Unit, University of Copenhagen, Department of Economics*. EPRU Working Paper Series 05-13.
- International Labour Organization. (2020). *Global Employment Trends For Youth 2020*. Geneva: International Labour Organization.
- International Labour Organization. (2021). *International Labour Organization*. Retrieved from *International Labour Organization - InfoStories*: <https://www.ilo.org/infostories/en-GB/Stories/Employment/barriers-women>
- International Labour Organization. (n.d.). *International Labour Organization*. Retrieved from *Description of Unemployment Rate*: <https://ilostat.ilo.org/resources/concepts-and-definitions/description-unemployment-rate/>
- International Monetary Fund. (2013). *Kingdom of the Netherlands - Aruba 2013 Article IV Consultation*. Washington: International Monetary Fund.
- International Monetary Fund. (2019). *Kingdom of the Netherlands - Aruba : 2019 Article IV Consultation Discussions-Press Release and Staff Report*. Washington: International Monetary Fund.

- *International Monetary Fund. (2021). Kingdom of the Netherlands—Aruba: 2021 Article IV Consultation Discussions-Press Release; Staff Report; and Staff Supplement. Washington: International Monetary Fund.*
- *Kane. (2004). Lahore College for Women University. Retrieved from Economic Principles: <http://www.lcwu.edu.pk/ocd/cfiles/Public%20Administration/Maj/PA-206/economicprinciples2.pdf>*
- *Mulok, D., Kogid, M., Asid, R., & Lily Jaratin. (n.d.). Is Economic Growth Sufficient For Poverty Alleviation? Empirical Evidence From Malaysia. Journal of Economics and Finance, 35(97), 26-32.*
- *Myint, H., & Kreuger, A. (2016). Britannica. Retrieved from <https://www.britannica.com/topic/economic-development>*
- *OECD. (2012). Reducing Income Inequality While Boosting Economic Growth: Can It Be Done? OECD. Retrieved from <https://www.oecd.org/economy/labour/49421421.pdf>*
- *OECD. (2013). OECD . Retrieved from National Accounts at a Glance 2013: https://www.oecd-ilibrary.org/economics/national-accounts-at-a-glance-2013/gdp-per-capita_na_glance-2013-5-en;jsessionid=CX3BaTPY48u_n5HnIHl3s_P5.ip-10-240-5-12*
- *OECD. (n.d. -a). Inclusive Growth. Retrieved from OECD: <https://www.oecd.org/inclusive-growth/>*
- *OECD. (n.d. -b). Trust in Government. Retrieved from Organisation for Economic Co-Operation and Development: <https://www.oecd.org/gov/trust-in-government.htm>*
- *Panth, P. (2020). Economic Development: Definition, Scope, and Measurement. In F. Leal, A. A., L. Brandli, A. Lange, P. Ozuyar, & T. Wall, No Poverty (pp. 1-13). Springer.*
- *Peterson, R. (2020). Over the Caribbean Top: Community Well-Being and Over-Tourism in Small Island Tourism Economies. International Journal of Community Well-Being.*
- *Peterson, R., DiPietro, R., & Harrill, R. (2020). In Search of Inclusive Tourism In The Caribbean: Insights From Aruba. Worldwide Hospitality and Tourism Themes.*
- *Raworth, K. (2017). Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist. London: Random House Business.*
- *Rijksoverheid. (2020). Rijksoverheid. Retrieved from Landspakket Aruba: <https://www.rijksoverheid.nl/documenten/brieven/2020/11/13/landspakket-aruba>*
- *Ruprah, I., Melgarejo, A., & Sierra, R. (2014). Is There a Caribbean Sclerosis? Stagnating Economic Growth in the Caribbean. IDB.*
- *Seidman, K. (2005). Economic Development Finance. California: Sage Publications.*
- *Sen, A. (1999). Development as Freedom. New York: Oxford University Press.*
- *Summer, L. (2016). The Age of Secular Stagnation: What It Is and What to Do About It. Foreign Affairs, 2-9.*
- *United Nations. (1987). Report of the World Commission on Environment and Development. New York: United Nations.*
- *United Nations. (1997). Resolution Adopted By The General Assembly. United Nations.*
- *United Nations. (2007). United Nations. Retrieved from United Nations, Sustainable Development Goals: https://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/econ_development/adjusted_net_saving.pdf*
- *United Nations. (2018). The 17 Goals|Sustainable Development. Retrieved from <https://sdgs.un.org/goals>*
- *United Nations. (2020). World Economic Situation Prospects. New York: United Nations.*
- *Wilkinson, R., & Pickett, K. (2010). The Spirit Level - Why Equality is Better For Everyone. Penguin Books Ltd.*
- *World Economic Policy Analysis. (2014). Closing the Gender Gap: A Summary Of Findings And Policy Recommendations. Los Angeles: World Economic Policy Analysis.*



4. **The future of social security**

By Lorraine E. M. Tromp

4.1 Introduction

The current chapter devotes attention to social security in Aruba. Fundamentally, social protection entails a wide range of policies and programs aimed at preventing and mitigating the negative effects of various risks, such as poverty, inequality, and social exclusion. Following the discussion on demographic trends presented in chapter 2, however, the focus is on the pension insurance scheme provided by the Social Insurance Bank (SVB) and the health insurance scheme as delineated under the General Health Insurance (AZV). As such, this chapter does not cover the domestic social protection floor, which is the nationally-defined set of basic social security guarantees, comprising not only of basic income security for the elderly, and access to essential health care, but also basic income security for children and persons of working age, including access to nutrition, education, care and any other necessary goods and services (International Labour Organization, n.d.).

The inception of the social security schemes in Aruba formalizes a commitment to parts of Article 25 paragraph 1 of the Universal Declaration of Human Rights. This paragraph states that everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control (United Nations General Assembly, 1948). In order to maintain this commitment, however, it is necessary to address various

developments that put pressure on the schemes, in a systemic manner. These include, but are not limited to lower fertility rates, ageing of the population, medical service prices and utilization intensity, as well as the COVID-19 pandemic. In light of these developments, the aim of this chapter is to determine the sustainability of the social security funds, and to explore the possible future states of public pension and health insurance in Aruba. The main questions that are addressed are the following.

- **How financially (un)sustainable are the pension insurance scheme (AOV) and the general health insurance scheme (AZV)?**
- **Which reform options can be implemented to strengthen the financial sustainability of the pension insurance scheme and the general health insurance scheme?**
- **How do we shift policies and pathways to meet the needs of the next generation?**

The chapter sets off by providing background information on SVB and AZV (Section 4.2), offering both a historical and an international perspective. It subsequently untangles and discusses the topic of sustainability within the context of social security. First, the concept of sustainability is defined. Second, the sustainability of SVB and AZV is analyzed using scenario analysis and forecasting (Section 4.3). Three different scenarios are presented: (i) policy as usual, that is, no significant change in policy orientation and actions, (ii) policy reform, where structural policy reforms are executed across different policy dimensions, and (iii) policy shift. The latter takes a transformational approach across the different policy dimensions, going beyond the structural reform of the existing system of policies and programs.

Last but not least, the chapter looks into impactful solutions that reduce the pressures on the schemes in a systemic manner, in order to meet the emerging and future needs of the Aruban society.

4.2 The social security funds: SVB and AZV

4.2.1 SVB

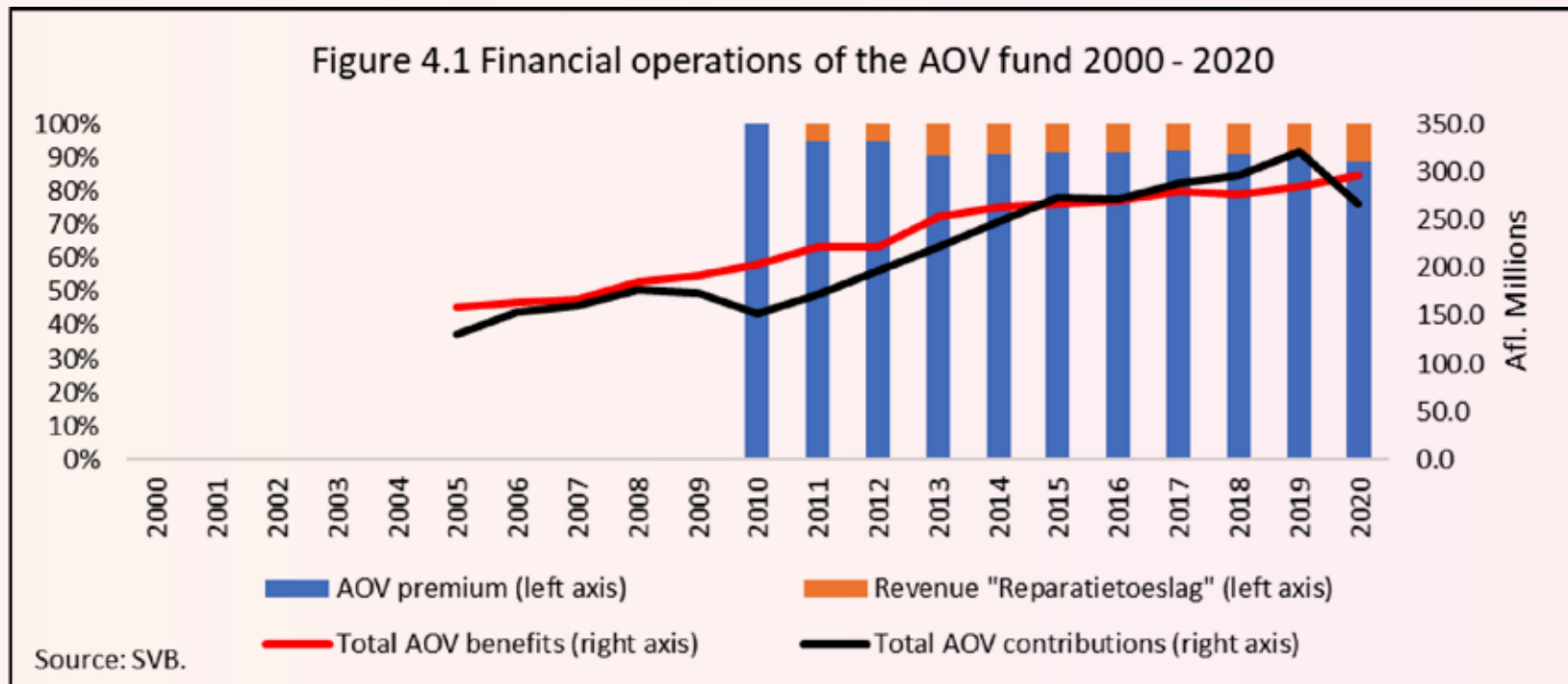
In 1960, the SVB was established to implement the old age pension law (AOV). Through the years, the SVB's mandate was expanded on several occasions, namely, in 1965 (introduction of the general widow and orphan pension) (AWW), 1966 (introduction of the sickness and accident insurance schemes) (ZV/OV), and 1983 (establishment of an unemployment fund to guarantee the compensation of workers in case of involuntary retirement, the so-called 'cesantia') (Sociale Verzekeringsbank Aruba, n.d.-a). The landscape in which SVB operates also changed with the achievement of Aruba's Status Aparte in 1986. As a result, SVB transformed from being an administrative branch to becoming an independent bank, with its financial obligations guaranteed by the Government of Aruba (GOA).

The old age pension law regulates social insurance for the financial consequences of old age. The insurance covers all individuals living in Aruba from the age of 15 up to the statutory retirement age. Every insured individual is entitled to receive

a pension income starting from the month after the statutory retirement age is reached (Sociale Verzekeringsbank Aruba, n.d.-b). Since the establishment of the AOV, for many years the statutory pension age had been 60 years. At some point, it was foreseen, however, that sociodemographic developments, such as longevity and lower fertility rates, would put significant pressure on the AOV fund. As such, the decision was made to increase the statutory retirement age. As of January 1, 2015, the retirement age increases by 6 months each year, up until January 1, 2024, when the retirement age reaches 65.

The funds required for the implementation of the old age pension law are obtained primarily from premiums (see Figure 4.1). In addition, the government finances the "reparatietoelag". This allowance is a supplement to the pension income, introduced in 2011 to mitigate losses in purchasing power. The AOV obligations entail a maximum monthly payment of Afl. 1.157 or¹ Afl. 974 to eligible insured individuals, as well as a Christmas bonus, and the (partial) coverage of funeral expenses. Both the contributions and the obligations of the fund have been trending upward since 2005. For most of the years observed, however, the contributions were insufficient to cover the obligations. In addition, the COVID-19 pandemic in 2020 highlighted the risk of relying solely on premium income as a source of contribution to the fund, as the premium base contracted due to the international travel restrictions and shelter in place measures taken.

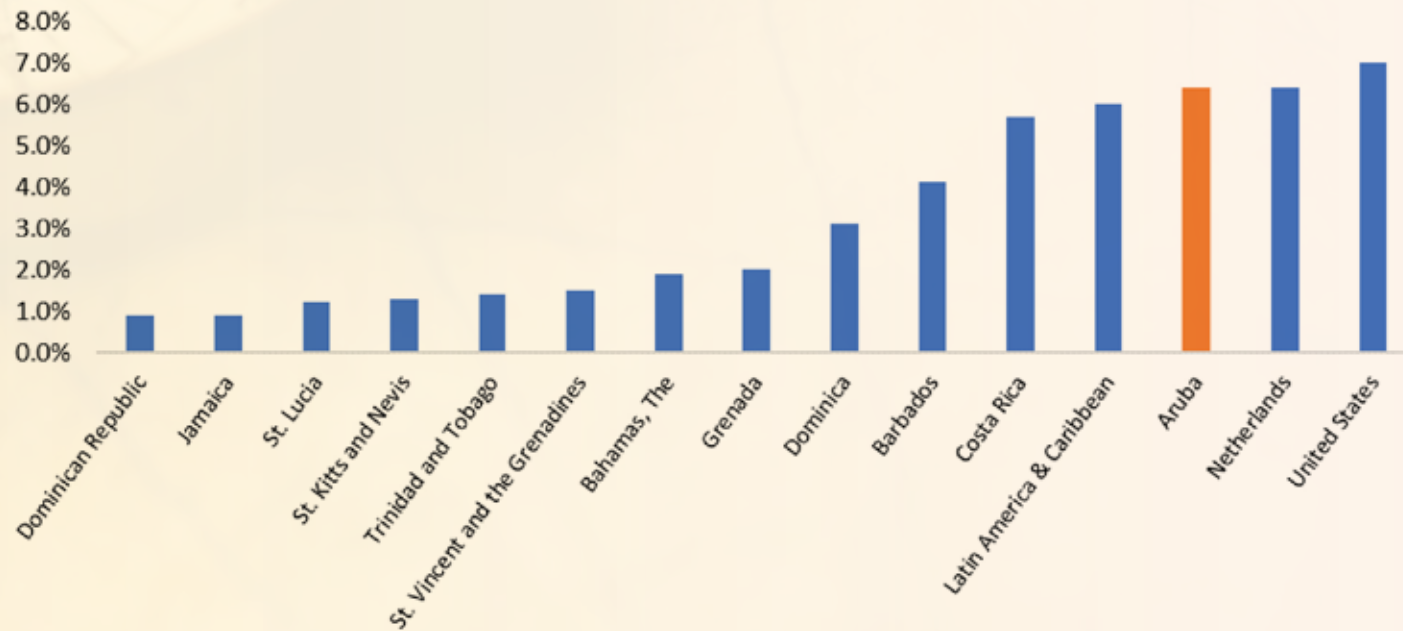
¹ The amount depends on the marital status of the beneficiary. Furthermore, for every year that an individual lives abroad between the ages of 15 and the statutory retirement age, the total pension amount is reduced by 2.14 percent.



A regional comparison of public spending on social protection for persons above the statutory pension age reveals that Aruba (6.4 percent) spends a significantly larger share of its gross domestic product (GDP) than its Caribbean counterparts (see

Figure 4.2). In this regard, Aruba is comparable to developed countries such as the Netherlands (6.4 percent) and the United States (7.0 percent), as well as Latin America and the Caribbean (6.0 percent).

Figure 4.2 2017/2018 Public social protection expenditure on pensions and other benefits, excluding health, for persons above the statutory pensionable age (% of GDP)



Source: World Social Protection Report 2017/2018 (International Labour Organization).

4.2.2 AZV

In keeping with key aspects of the right to the enjoyment of the highest attainable standard of physical and mental health, as stipulated in the 1946 Constitution of the World Health Organization (WHO), Aruba introduced the National Ordinance General Health Insurance (AZV) in 2001.

By means of this ordinance, all Aruban residents or valid residency permit holders are insured for curative medical care. This care entails care by a general practitioner, specialist care, care by a midwife, care by a physiotherapist, limited dental care, hospital care, medicine, and auxiliary medical devices as well as medical treatment abroad. The AZV is also responsible for the civil servants health insurance scheme, the so-called AZV plus. This consists of several add-ons to the care generally provided by the AZV for civil servants and their families.

To cover the costs of the general health insurance scheme, AZV relies on various types of income streams:

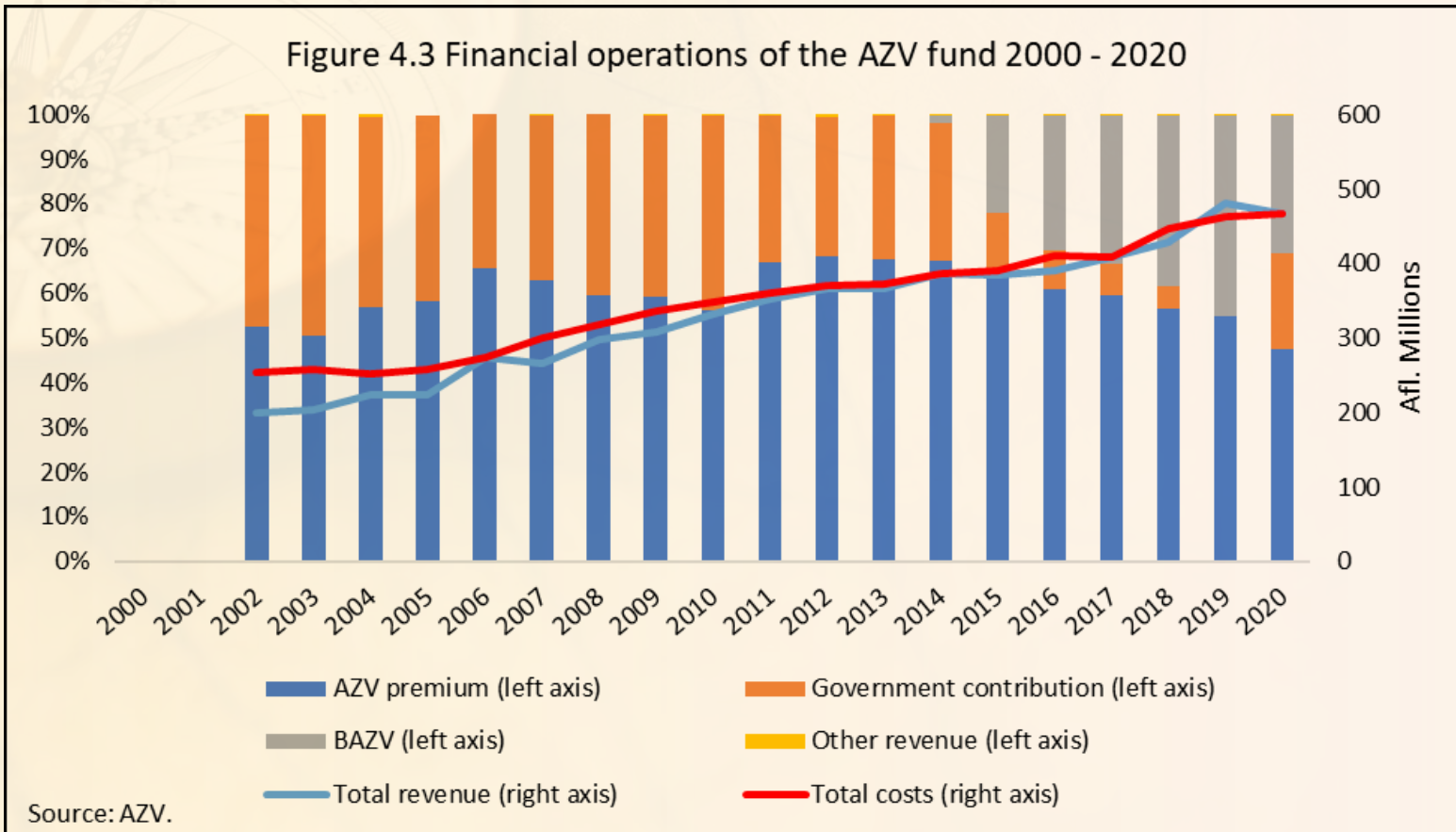
- i. The AZV premium;
- ii. The 'bestemmingsheffing AZV' (BAZV);
- iii. The national contribution from the government;
- iv. The right of recourse.

The AZV premium amounts to 10.5% of total gross salary,

paid in part by employees (1.6%), and in part by employers (8.9%), with a maximum threshold of Afl. 85,000. The self-employed contribute the 10.5% completely, while pensioners pay 6% on the first Afl. 35,000 and 11.9% on all income above this threshold. The BAZV, on the other hand, is a revenue-based tax of 3%. In addition, AZV is legally entitled to receive a financial contribution from the government. The law provides for an initial contribution based on the budget, as well as an additional contribution whenever a deficit in the fund is foreseen. Lastly, AZV is also endowed with the right of recourse, allowing it in certain cases, e.g., car accidents, to recover medical costs paid from the insurance companies of the responsible parties.

The share of each income stream in total AZV revenue can be seen in Figure 4.3 (left axis). For the most part, the AZV's revenue comprises premium income, which is complemented by the national contribution from the government. Since the introduction of the BAZV on December 1, 2014, the reliance on the government's contribution had steadily decreased, with the AZV's operations requiring no direct financial support from the government in 2019. The COVID-19 pandemic in 2020, however, shrank the tax base for both the AZV premium and the BAZV, and again made it necessary for the government to contribute to the fund.

Figure 4.3 Financial operations of the AZV fund 2000 - 2020



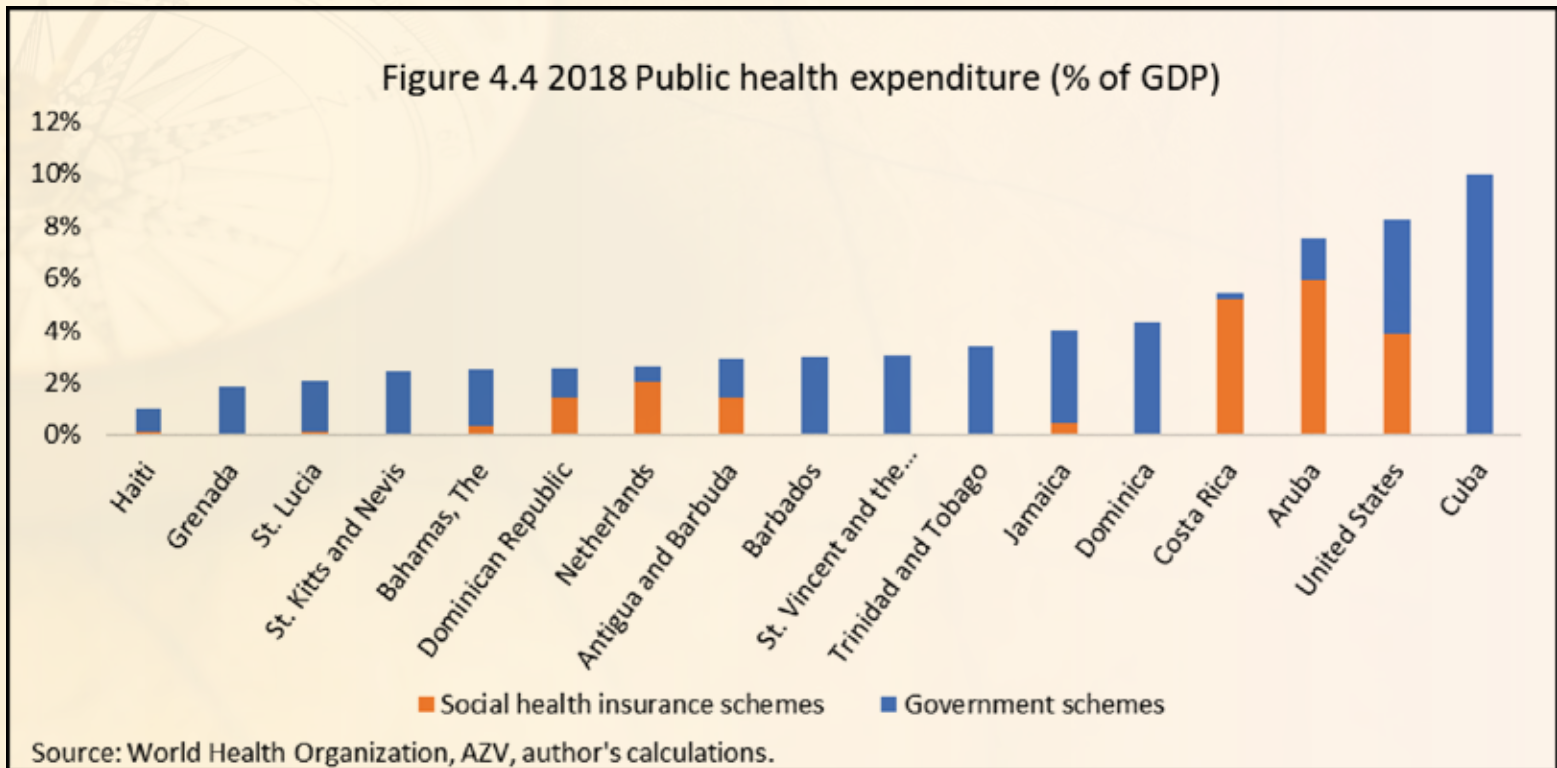
The AZV employs various tools in an effort to contain its costs. It engages in lump-sum contracts with key medical care providers, such as the Dr. Horacio Oduber Hospital (HOH), IMSan, and Respaldo. It compensates family physicians based on a subscription model, applies a budget cap on medical specialist care, and shifts medical care to the first line where possible. With regard to medicines, the AZV disburses expensive medicines only via HOH, makes use of a tender system for various medication, and has achieved a substantial penetration of generic medicine. For medical referrals abroad, the AZV monitors market pricing and makes use of a medical auditor (Sociale Verzekeringsbank Aruba, 2021). Even so, the total costs of the AZV fund – of which on average 96.0 percent relate to healthcare costs – have been rising since 2002 (see Figure 4.3 (right axis)). During this period, the share of the AZV’s total cost in GDP floated between 6.1 percent and 8.7 percent.

It should be noted, however, that the AZV’s healthcare costs do not constitute total spending on healthcare on the island. According to the most recent National Health Account for Aruba (NHAA), presenting figures for 2015, government and compulsory healthcare financing comprise 96.1 percent of total healthcare spending in Aruba. Voluntary healthcare payment schemes and household out-of-pocket payment account for the other 0.4 percent and 3.5 percent, respectively (Department

of Public Health Aruba, 2019). The NHAA further shows that part of general government spending on healthcare, including, spending on mental health and substance abuse facilities, family planning centers, as well as on providers of preventative care, is not assigned to AZV, but to other public units within various ministries.

A comparison between Caribbean island states, based on 2018 figures, shows that Aruba lies at the higher end of the spectrum when it comes to the share of public health expenditure² in GDP. At 7.5 percent of GDP, Aruba’s public spending on healthcare by far surpasses the Caribbean island average of 3.7 percent, and lies between the shares of developed countries, such as the Netherlands (2.6 percent) and the United States (8.3 percent). It is also noteworthy that Aruba is one of the few Caribbean islands with a relatively large reliance on social health insurance to finance public health expenditure.

■ ² In the current chapter, public health expenditure refers to general government health expenditure, which includes AZV healthcare costs in the case of Aruba.



4.3 Sustainability

Sustainability is a widely used concept. It was brought to the forefront of the world stage by the report of the World Commission on Environment and Development in 1987. In the report, sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987). Following the mentioned report, various definitions arose. Nonetheless, nearly all definitions of sustainability share core elements (Vos, 2007). First is the interconnectivity between the economy, the environment, and society. Second is a focus on intergenerational equity. Third is an emphasis on working beyond simply complying with existing laws and regulations. Nevertheless, Vos (2007) posits that the question is not so much what sustainability is, but rather what it means to be unsustainable. In this regard, the literature stresses the importance of defining what should be sustained (Goodland, 1995; Vos, 2007), as well as specifying for how long (Costanza & Patten, 1995). According to Costanza & Patten (1995), sustainability cannot mean infinitely maintaining something, because while systems can have a long life span, nothing lasts forever. By placing unrealistic longevity expectations on a system, the system either becomes fragile or ceases to exist. Alternatively, to sustain a system under dynamic conditions requires adaptability. Thus, maintaining a system in the long run requires sustaining an adaptive capacity.

The point of departure in the current chapter is financial sustainability, which refers to the ability of current policies to continue now and in the future without causing the debt level to rise continuously (Rodríguez Bolívar, 2016). The time span considered is the period 2020 – 2040.

As such, two definitions of sustainability emerge:

i. **Sustainability of medical care:**

The provision of required curative medical care for all Aruban residents and valid residency permit holders until 2040 without causing the government debt level to rise every year.

ii. **Sustainability of the retirement income system:**

The provision of a nominal monthly retirement income of Afl. 1.157 or Afl. 974 to all insured individuals of retirement age until 2040 without causing the government debt level to rise every year.

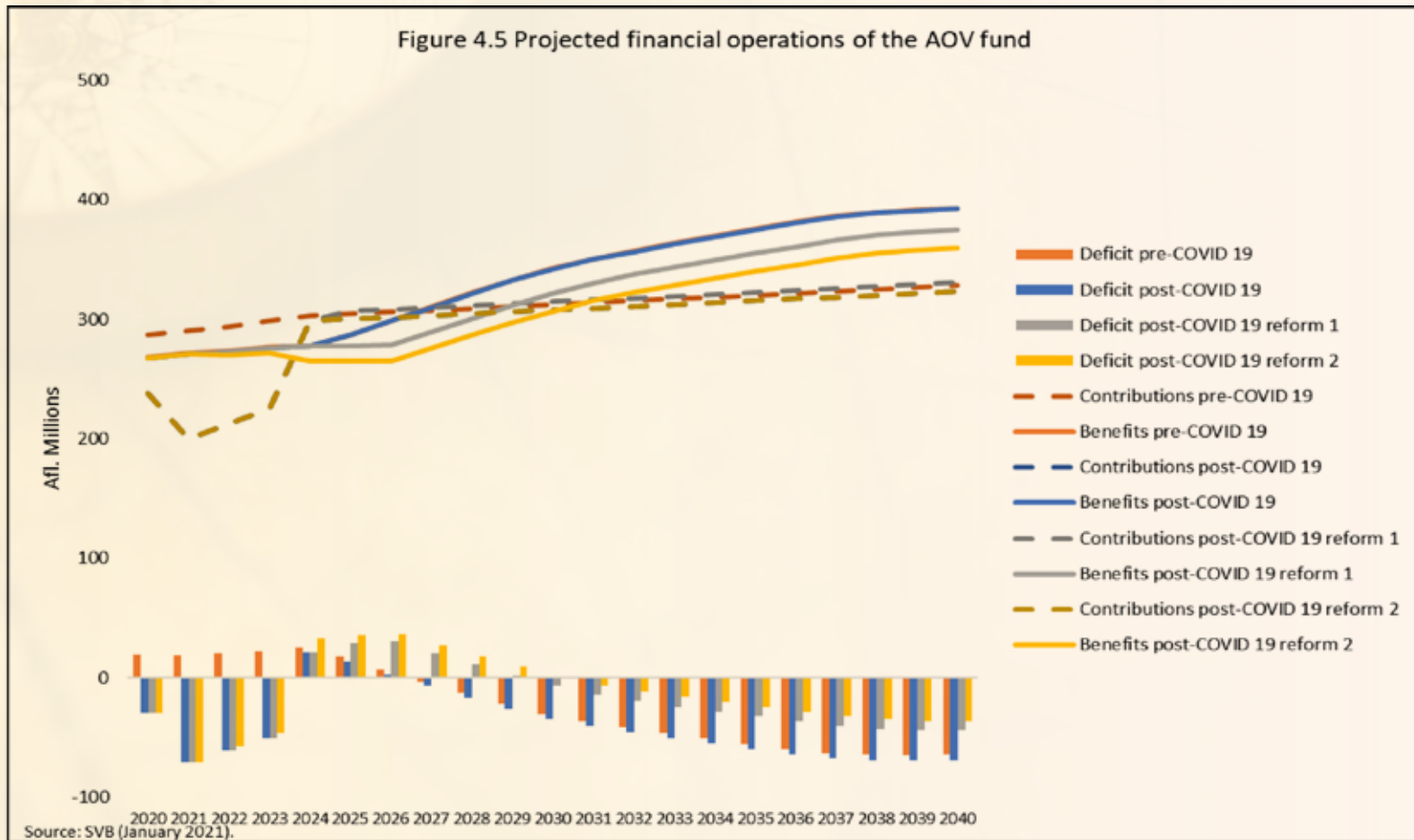
4.3.1 The sustainability of SVB

4.3.1.1 Policy as usual

Analysis shows that regardless of the COVID-19 pandemic, the AOV fund is projected to incur continuous deficits as of 2027 in order to implement the current pension insurance scheme. Figure 4.5 presents the projected financial operations

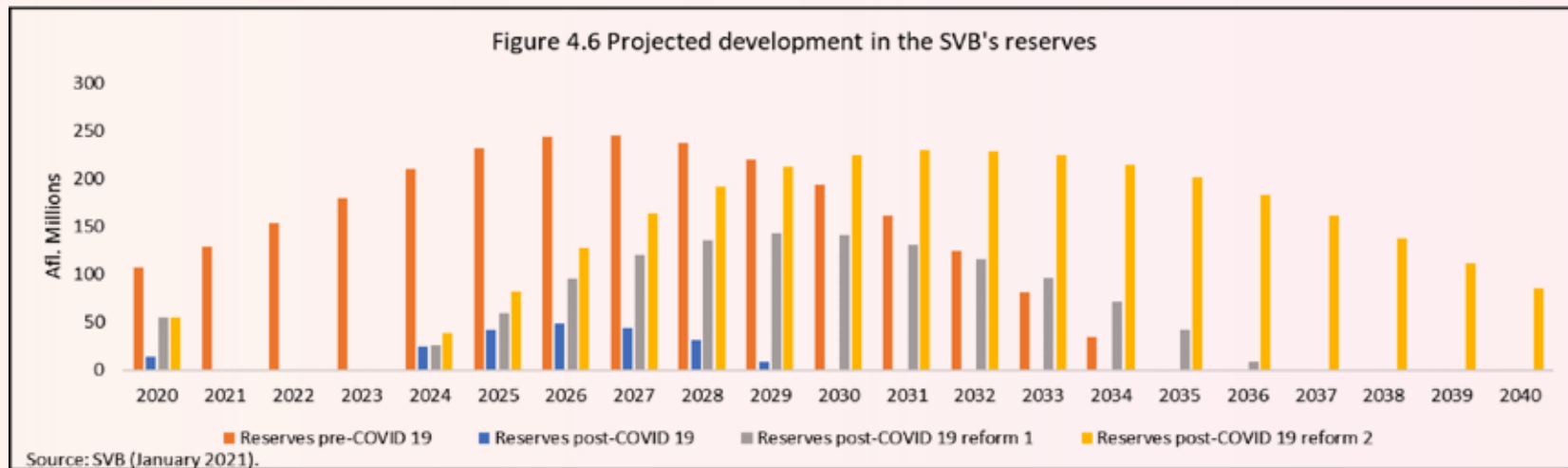
of the AOV fund. As a result, the continuity of the program hinges on the SVB's reserves, which will be worn down. Leaving out the impact of the COVID-19 pandemic on the AOV fund's financial operations, depletion is reached by 2035. Taking into account the impact of the pandemic brings us to depletion even sooner. Assuming that the deficits during the COVID-19

recovery period (2021 – 2023) are covered by the GOA, the reserves are depleted by 2030 (see Figure 4.6). Based on Article 21 paragraph 1 of the National Ordinance SVB, any liability of SVB is guaranteed by the government of Aruba. This stipulation implies that once the SVB lacks the funds to meet its obligations, the GOA must provide liquidity support to SVB.



The expected developments presented thus indicate, in terms of the financial sustainability definition described above and the timeline considered in this chapter, that under policy as usual, the existing SVB's pension insurance scheme is unsustainable. Given the expected levels of contributions and benefits, the SVB's reserves will be depleted in time. The government will be called upon

for liquidity support, and in turn, would have to finance the deficit. This puts upward pressure on the government's expenditures, and may lead to higher borrowing for as long as the revenues it collects are insufficient to cover its operational costs. Therefore, the conclusion is that policy as usual is unsustainable, as it would lead to an increasing burden in the form of future debt repayments.



4.3.1.2 Policy reform

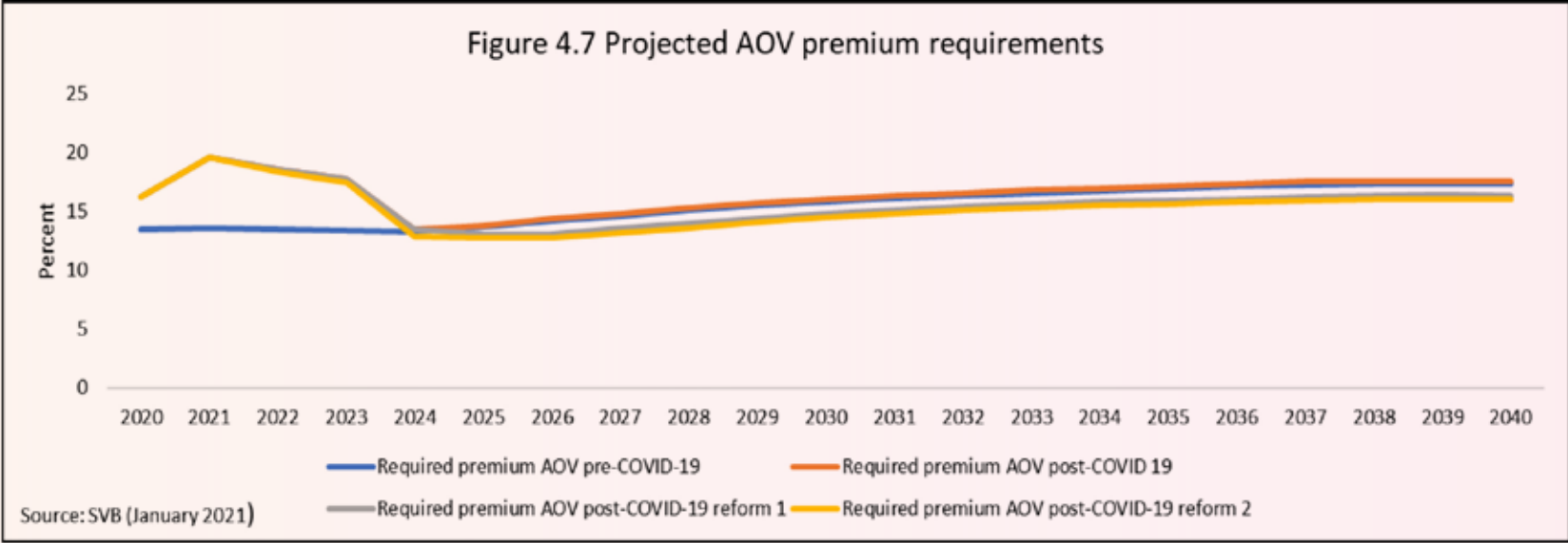
Moving towards policy reform, a higher premium could be required to maintain the pension insurance scheme's current benefits. While this solution may seem financially sustainable at first, it fails to uphold the principle of intergenerational equity, as the decision to maintain the current level of benefits requires future generations to face increasing costs in the form of higher contribution rates. Furthermore, a higher premium can jeopardize the competitiveness of the economy, as it leads to increases in labor costs (Liaropoulos & Goranitis, 2015). Indeed, estimates show that the expected required AOV premium could amount to as much as 19.6 percent, compared to the 13.5 percent required in the 2020 pre-COVID-19 scenario (see Figure 4.7). Moreover, even after the projected COVID-19 recovery years, the required premium is expected to follow an increasing trend. Alternatively, an earmarked general tax could be introduced to complement the premium contributions, similar to the BAZV. This approach helps raise revenues by broadening the contribution base, thereby reducing the heavy reliance on employer and employee contributions. One should take into account, however, that simply introducing an additional tax without reforming the current tax system, would further crank up the tax burden in Aruba, which already

outpaces selected regional countries based on the tax³ -to-GDP ratio (Croes & Ashby, 2018).

Policy reform could also entail changes to the conditions of eligibility, such as an increase in the retirement age, or a reduction in the benefits provided by the AOV fund. With regard to the latter, options might include a reduction in the Christmas bonus, the funeral expenses covered, and/or even the monthly income to retirees. It should be noted, however, particularly in relation to a reduction in the monthly income to retirees, that the current monthly income received per retiree (Afl. 1.157 or Afl. 974) is already lower than the subsistence level for a single adult (July 2021: Afl. 2.293) (Central Bureau of Statistics Aruba, 2021), as calculated by the Central Bureau of Statistics of Aruba (CBS). This means that the level of income currently received is lower than what is perceived necessary to achieve an adequate standard of living in Aruba.

³ Including social contributions.

Figure 4.7 Projected AOV premium requirements



Figures 4.5 and 4.6 depict, in addition to the pre- and post-COVID-19 scenarios, two post-COVID-19 reform scenarios. Reform 1 entails an increase in the pension age to 66 years as per 2025, as proposed in the ‘Landspakket’ of the Council of Ministers of the Dutch Kingdom, and will apply to both current and future pensioners (Sociale Verzekeringsbank Aruba, 2021). Reform 2, which is a proposal drafted by the SVB, goes one step further, and in addition to the measures taken in reform 1, includes adjustments to various benefits pertaining to both the AOV and the AWW ordinances (Sociale Verzekeringsbank

Aruba, 2021). Figure 4.6 shows that the implementation of reform 1 raises the longevity of the SVB’s reserves by 7 years, compared to the post-COVID-19 scenario in which no reform takes place. After requiring liquidity support for 3 years following the COVID-19 pandemic, the fund starts to build back reserves in 2024. Even so, the fund is still expected to reach depletion in 2037, deeming it financially unsustainable. The only reform projected to be financially sustainable by 2040 is reform 2. However, it should be noted that even in this scenario, the reserves are continuously depleted as of 2032.

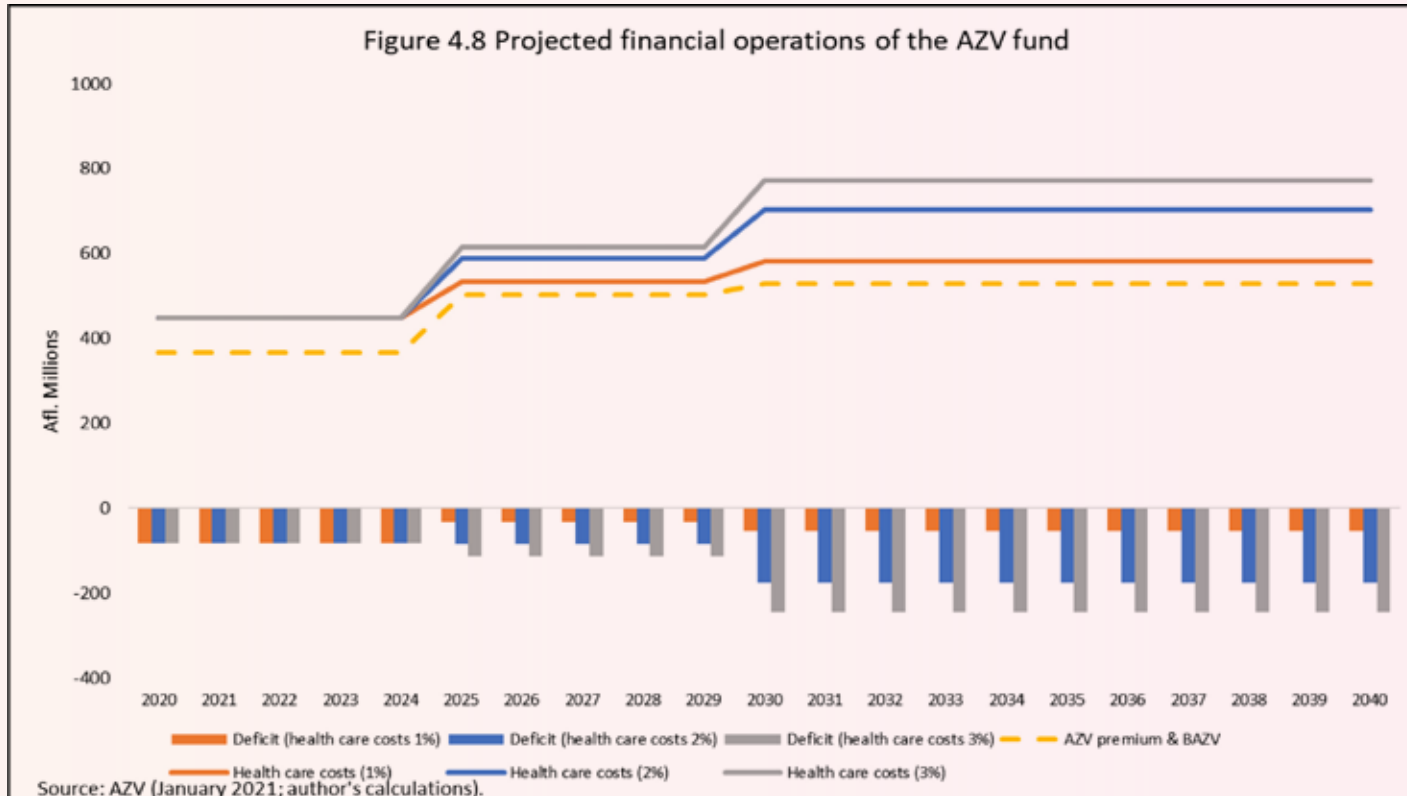
Table 4.1 Proposed reform components	
Reform 1	Reform 2
AOV: Pension age increases to 66 years as per 2025.	AOV: Pension age increases to 66 years as per 2025.
	AOV: Adjustments in pension benefit, Christmas bonus, and funeral benefit rights for non-residents.
	AOV: Adjustments in funeral benefit rights for residents.
	AWW: Adjustments in pension benefit rights for widows and widowers; adjustments in benefits and eligibility requirements for orphans.

4.3.2 The sustainability of AZV

4.3.2.1 Policy as usual

The projected financial operations of the AZV fund are presented in figure 4.8. As was the case for most years in the past,

the AZV fund is expected to face recurring shortfalls in the future, even surpassing the level of past deficits. Thus, the government is expected to provide continuous financial support and will need to increase borrowing if it isn't generating sufficient revenue. This option would lead to a continuous expansion in the level of government debt, meaning that the AZV fund is not sustainable under policy as usual.



4.3.2.2 Policy reform

Various policy reform options can be considered to sustain the health insurance scheme. First, a higher premium could be charged to maintain current benefits, or alternatively, the maximum annual wage on which the premium can be levied can be increased. As discussed previously in the case of SVB, however, pushing up premiums does not take into account intergenerational equity, and it compromises the competitiveness of the economy. As another option, the BAZV tax rate can be amplified to bring in more revenue. In doing so, AZV could reduce its reliance on premium income to fund its operations. Indeed, various countries, such as Australia, Canada, England, New Zealand, and Sweden fund their national health insurance schemes mostly through general tax revenues (Tikkanen et al., 2020). As mentioned earlier, however, such a move calls for additional tax reforms in order not to raise the tax burden in Aruba excessively.

Changes to the conditions of eligibility are less straightforward with regard to the AZV. Stricter eligibility requirements breach the principles of accessibility and nondiscrimination in provisions that are stated in the right to the enjoyment of the highest attainable standard of physical

and mental health. Indeed, strict eligibility requirements go against the concept of a universal healthcare system. Another policy reform option to consider is the introduction of copayments. Cost-sharing aims to make patients more aware of the costs of medical care in an effort to prevent overuse. It is practiced to various extents in several countries (Organisation for Economic Co-operation and Development, 2021). Several studies have proven that cost-sharing indeed reduces the demand for healthcare services (Manning et al., 1987; Paul & Nilsson, 2014; Chandra, Flack & Obermeyer, 2021). However, cost-sharing can negatively impact health outcomes (Chandra, Flack & Obermeyer, 2021; Laba et al. 2014) and long-term health costs, increase the financial burden on households (Laba et al., 2014), as well as undermine the basic principle of accessibility (Organisation for Economic Co-operation and Development, 2019; Laba et al. 2014). Policy reform could also involve a reduction in the cover provided by the AZV by adjusting the composition of the standard package of benefits.

4.4 Traversing beyond policy reform: Policy shift

The unsustainable nature of the funds can be considered as a nudge to review and drastically reconsider and change the way medical care and retirement income are arranged on

the island beyond the previously mentioned policy reforms.

While to some extent the social security schemes still serve the purpose for which they were established in the past, their current structure hinders their ability to respond to the emerging and future needs of the Aruban society.

In thinking about how to set up the provision of medical care and retirement income optimally, the question arises whether the government should be the entity responsible for their provision. Visions of the future of government include a centralized government that is citizen-centered and has managed to leverage technological advances to improve its services (Vesnic-Alujevic et al., 2019). However, equally likely is a scenario in which political power rests with individuals and the private sector (Vesnic-Alujevic et al., 2019; Nye, 2014). In this scenario, individual responsibility and choice prevail in a society where the private sector is the main provider of collective services (Nye, 2014).

As such, with regard to the provision of medical care and retirement income, a range of possibilities exists. On one end of the spectrum, while more responsibility is shifted towards individuals, the government still plays a role in defining the rules of the system. On the other end, one could imagine a scenario in which individuals are fully responsible and free to

decide whether and how they take care of their medical needs, as well as generate income past the productive phase of their lives. Whichever scenario plays out, shifting social security policies with foresight requires the following concerted actions:

i. Review and reform the role of government

The government needs to scrutinize its purpose and identify the services it is truly required to provide to achieve its purpose most effectively. In doing so, it should take into account the various tools at its disposal that enable it to provide the required services in an indirect manner, including among other means, regulation, the tax code, and sourcing options (Gansler, 2006). Hereto, it is pivotal that our social institutions, including health and social security governance, are strengthened by developing the requisite management and innovation capabilities (see also Chapter 7). With regard to the provision of health insurance and retirement income, a reference point for the government is its responsibility described under fundamental human rights that entail an obligation to protect its citizens. The government remains responsible for legislation that sets the standards for the private sector, as well as oversight on the private sector. Thereby it guarantees that privatization does not pose a threat to the availability, accessibility, acceptability, and quality of healthcare or to the prevention of poverty.

ii. Make an inventory of transition costs

Policy shift doesn't happen overnight. In addition, it doesn't entail starting off with a clean slate. In moving from the current to the desired future state, the government should take into account all claims for which it is responsible, and explore ways to spread the burden of transition as fairly as possible over different segments of the population, as well as between the current and future generations. Taking pension reform as an example, a transition from the current pay-as-you-go system to a funded system would mean that the contributions of current workers are no longer available to pay for the pension benefits of current retirees, as they are accumulated in an account to provide for their own retirement in the future. Furthermore, current workers in the later stages of their working life, whose past contributions have financed the pension benefits of retirees, will only have a short time to accumulate funds to finance their own retirement (Miles et al. 1999). The unfunded liabilities of the pay-as-you-go system would have to be taken care of and could entail the introduction or increase of taxes (at the expense of current workers), cutting benefits (at the expense of current retirees), or issuing debt (at the expense of future generations). The transition from a pay-as-you-go system to a funded system would inevitably leave some people worse off (Breyer, 1989; Geanakoplos et al., 1998), as it would require

some generation to have lower consumption. In addition, a funded system has its own risks, such as the underperformance of investment portfolios. This can have a mayor negative impact on the retirement income of some people, particularly if underperformance happens close to the retirement phase (Miles et al. 1999). Governments, especially those committed to the Sustainable Development Goals (SDG 1: End poverty in all its forms everywhere), could ensure that every generation of retirees is guaranteed a minimum annual return on their retirement investments, but this also incurs costs. As the example shows, it is thus important to have insights into the costs of a potential transition, as well as on the factors that determine how much and which generations stand to gain or lose. Leading up to a transition, an inventory of costs aids in preparing for a smoother transition, as well as in informing and preparing the public for the changes to come.

iii. Include private sector participation

Increased participation of the private sector would help to spread the financial burden, as well as differentiate and expand the supply of goods and services. This would boost access and (particularly in the case of healthcare) reduce waiting times for patients. In this regard, the government should assess whether policies,

fiscal measures, or regulations act as unnecessary barriers to (potential) providers. It could also introduce incentives to increase private sector participation, particularly in areas where a lack of supply, as well as a willingness to pay by residents has been identified. More importantly, an integrated health and social security ecosystem should be pursued. This would entail a digital ecosystem of interconnected stakeholders in the social and healthcare system through the use of mHealth, i.e., the use of mobile phones and other wireless technologies to educate and empower residents about their health and social security. By means of secured and distributed ledger technologies (DLT), the resulting economies of scale and scope would also allow to realize a more holistic (less fragmented), equitable, and efficient (less costly) social security system.

iv. Deepen the financial market

A broader supply of financial products and services, as well as improved access to these products and services can help residents be better able to provide for their retirement. Individuals would be able to diversify their savings, and firms would be able to raise money through stocks, bonds, and international capital markets (Sahay et al., 2015). It should be noted, however, that in the case

of Aruba, expanding the supply of financial products and services for retirement purposes might require an adaptation to the ‘Landsverordening algemeen pensioen’. At the moment, only domestic company pension funds and life insurance companies are legally allowed to offer pension plans. The supply could be expanded by, for instance, allowing commercial banks to offer these plans as well. A deeper financial market can, furthermore, aid in the financing of private (health care) sector initiatives. An example would be the design of a Social Impact Policy Framework and the issuance of Social Impact Bonds, which proceeds would fund new and existing social health projects with impactful and measurable social outcomes, including targeted social security, essential health care, and lifestyle learning. With regard to the broadening of the supply of financial products and services, as well as the access to these, the government should focus on shaping the regulatory and supervisory framework with transparent rules and predictable enforcement as well as embedding Artificial Intelligence (AI) in its monitoring and surveyance. In addition, it should strengthen and/or establish additional cornerstone institutions, define taxation policies that are in line with its market development objectives, and promote the use of technology to develop a state-of-the-art market infrastructure (Jain et al., 2017).

v. Transform citizens into citizens of the future

Preconditions exist for shifting more responsibility towards individuals. Such a shift requires fostering critical thinking and making sure that information is accurate, available, and accessible at all times. A future entailing a smaller government role, furthermore necessitates the nurturing of individual and societal resilience, as well as policy literacy (Vesnic-Alujevic et al., 2019). Hereto, the impact of health citizenship, health education, and lifestyle learning are quintessential. Health citizenship refers to health knowledge and health literacy that is integrated and contributes to the planning of health care, programs, and policy. Rather than be merely consumers of health and social services, nurturing responsible citizenship for the future would strengthen the individual rights, as well as the collective responsibilities for safeguarding the future of social security. In the 'Citizens-4-Future' (C4F) program, residents would own their data, reinforced by comprehensive privacy laws and data regulation. They would also take responsibility for self-care and positive health behaviors, thereby actively contributing to a more equitable, fair and inclusive society. The government can support individual resilience by, for example, promoting holistic education and creating an effective reskilling ecosystem (Assi et al., 2020). Societal

resilience can be fostered by supporting the creation of a civic infrastructure (Noya & Clarence, 2009), which includes policies, programs, and places for people to come together and connect with each other, define and address shared concerns, build community, and solve public problems (Patrick & Brady, 2015).

4.5 Conclusion

Aruba's public pension and general health insurance schemes are under pressure due to, among other factors, lower fertility rates, aging of the population, medical service prices and utilization intensity, as well as the COVID-19 pandemic. As a matter of fact, the AOV and AZV funds are deemed financially unsustainable under current policies. While policy reforms are required to prolong the existence of the funds, they could lead to, among others, intergenerational inequity, failure to adhere to fundamental human rights principles, and have adverse effects on desired outcomes.

In order to meet emerging and future needs of the Aruban society, the government must transform and shift the current public pension and general health insurance arrangements towards more sustainable, inclusive, and

equitable policy models. To facilitate this transformation and shift, it should review and reform its own role, include private sector participation, deepen the financial market, and transform its residents into the residents of the future. Furthermore, prior to transitioning to the future state, the government should conduct a thorough inventory of transition costs, in an effort to assure a policy shift that minimizes risks and hazards, and is efficient and equitable.



- Nye, J. S. (2014). 2050: How can we avoid a gated world? [Blog post]. Retrieved from: 2050: How can we avoid a gated world? | World Economic Forum (weforum.org)
- Organisation for Economic Co-operation and Development (2019). *Out-of-Pocket Spending: Access to care and financial protection*, URL: *OECD-Focus-on-Out-of-Pocket-Spending-April-2019.pdf* (accessed on August 10, 2021).
- Organisation for Economic Co-operation and Development (2021). *Health expenditure and financing, Joint OECD, EUROSTAT and WHO Health Accounts SHA Questionnaires (JHAQ)*, URL: *Health expenditure and financing (oecd.org)* (accessed on August 10, 2021).
- Organisation for Economic Co-operation and Development/Inter-American Development Bank/The World Bank (2014), *Pensions at a Glance: Latin America and the Caribbean*, OECD Publishing, Paris, URL: https://doi.org/10.1787/pension_glance-2014-en (accessed on August 10, 2021).
- Office of the United Nations High Commissioner for Human Rights & World Health Organization. (2008). *The Right to Health. Fact sheet no. 31*.
- Patrick, S., & Brady, S. (2015). *Building an Intentional and Inclusive Civic Infrastructure*. *Stanford Social Innovation Review*, URL: *Building an Intentional and Inclusive Civic Infrastructure (ssir.org)* (accessed on November 15, 2021).
- Paul, A., & Nilsson, A. (2014). *The effect of copayments on children's and adolescents' demand for medical care*.
- Rodríguez Bolívar M.P. (2016). *Financial Sustainability*. In: Farazmand A. (eds) *Global Encyclopedia of Public Administration, Public Policy, and Governance*. Springer, Cham. https://doi.org/10.1007/978-3-319-31816-5_2288-
- Sahay, R., Cih'ak, M., Papa N'Diaye, A., Barajas, R. B., Ayala, D., Gao, Y., Kyobe, A., ~ Nguyen, L., Saborowski, C., Svirydzenka, K., and Yousefi, S. R. (2015). *Rethinking financial deepening: Stability and growth in emerging markets*. *IMF Staff Discussion Note*.
- Sociale Verzekeringsbank Aruba (2021). *Outlook AOV and AWW 2021*. Document presented at the IMF Article IV meeting 2021, Aruba.
- Sociale Verzekeringsbank Aruba (n.d.-a). *Historia*. URL: *Historia | (svbaruba.org)*
- Sociale Verzekeringsbank Aruba (n.d.-b). *Pensioen di Biehes*. URL: *Pensioen di Biehes | (svbaruba.org)*
- Tikkanen, R., Osborn, R., Mossialos, E., Djordjevic, A. & Wharton, G. (2020). *International Profiles of Health Care Systems 2020*.
- United Nations General Assembly (1948). *Universal declaration of human rights, 10 December 1948, 217 A (III)*.
- Vesnic-Alujevic, L., Stoermer, E., Rudkin, J., Scapolo, F. and Kimbell, L. (2019). *The Future of Government 2030+*, EUR 29664 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-00164-5, doi:10.2760/007284, JRC115008
- Vos, R. O. (2007). *Defining sustainability: a conceptual orientation*. *Journal of Chemical Technology & Biotechnology: International Research in Process, Environmental & Clean Technology*, 82(4), 334-339.



5. **The implications of climate change for Aruba**

by Giantcarlo G. Croes

5.1 Introduction

Since the turn of the 20th century, global temperatures have increased at an unprecedented pace. Most scientists agree that global temperatures are set to rise further depending on the world's ability to reduce greenhouse gas (GHG) emissions, the central cause of global warming (IPCC 2013). Extreme weather events, such as heat waves, droughts, and floods will become more frequent in addition to a rising sea level. According to the IPCC, the world has about a decade left to achieve a low-carbon transition and avoid catastrophic global warming.

Climate change is expected to have significant macroeconomic impact, especially on small developing states (SDS) that are more exposed to the whims of the weather.¹ This is even more the case in countries in warmer climates and those in coastal zones. Therefore, building resilience to climate change and natural disasters is a key priority for many SDS. The IMF considers climate change one of the fundamental challenges of the 21st century. However, the right climate policies can address these risks and also bring great opportunities for transformative investments, economic growth, and green jobs.

In December 2015, 186 countries signed the Paris accord,

laying the foundation for meaningful progress on addressing climate change. Participating countries pledged to substantially reduce carbon dioxide (CO₂) emissions by 2030 and reach carbon neutrality by 2050. Such significant reductions are necessary to keep temperature rise below 2°C by 2100. Moreover, advanced economies have committed to provide financing to support mitigation and adaptation in developing economies.

Given that Aruba is a small country with a warm climate and surrounded by ocean, it is highly likely that Aruba will be affected by climate change.² This gives rise to the question 'How can and should Aruba cope with the impact of climate change in the coming decades?'

This chapter will address the risks of unmitigated climate change and the potential impacts for Aruba. We will also assess the current state of preparedness of Aruba and the plans currently in place. Next, we will seek answers to the following questions.

- ***What measures can Aruba take to mitigate climate change?***
- ***What can Aruba do to adapt to climate change?***
- ***How can these measures be financed?***

To answer these questions, we will explore best practices

¹ Small developing states are defined as developing countries with populations below 1.5 million.

² Burke, Hsiang, and Miguel (2015a) provide evidence that productivity peaks at 13 degrees Celsius and strongly declines at higher temperatures.

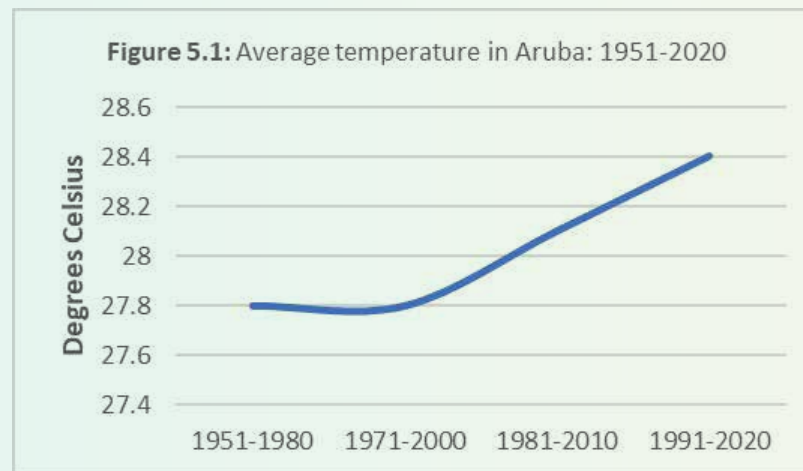
and recommendations for similar small island economies.

The measures to mitigate and adapt to climate change can be costly and will require investment from both the private and public sectors. We will present recommendations for financing these, while considering that these required investments may also be an opportunity to boost the economic recovery after the pandemic. The recommendations will be put forward under three scenarios: policy as usual, policy reform, and policy shift.

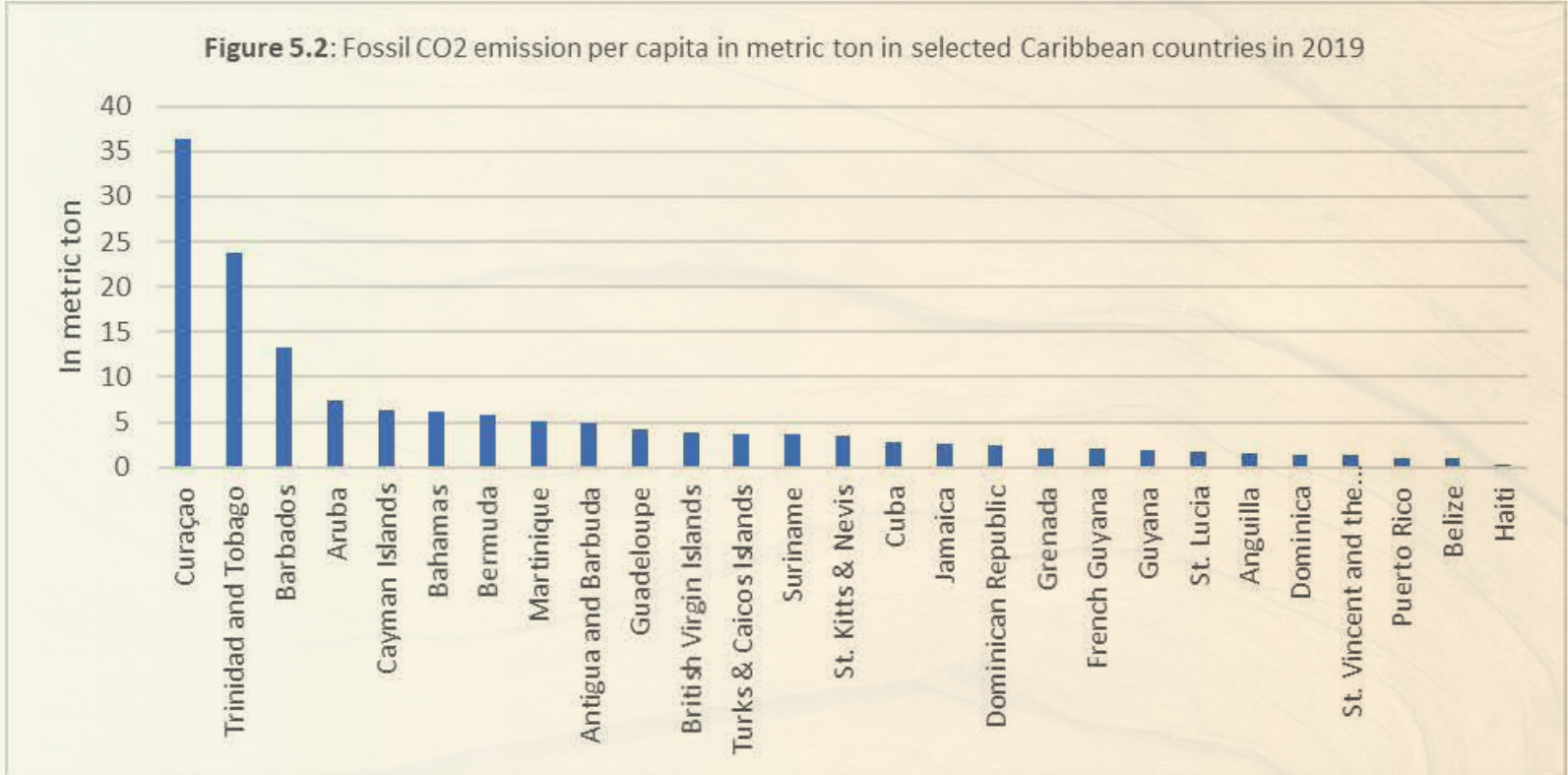
5.2 Impact of unchanged/unmitigated policy

Global temperatures have risen by roughly 1°C compared to the 1880-1910 average. The upsurge in global temperature really began to take off as of 1970 following a large increase in CO₂ emissions. While natural factors explain some of the warming over the past 100 years, more than half of the rise in temperature since 1950 can be attributed to human activity through rising greenhouse gas (GHG) concentrations, according to the Intergovernmental Panel on Climate Change (IPCC 2014). In Aruba, the average temperature climbed from 27.8°C during the period 1951-1980 to 28.4°C during 1991-2020 (Figure 5.1).³ Moreover, the department of meteorology of Aruba reported that 2020 was on track to be one of the three warmest years on record, while 2011-2020 is the warmest decade registered with the six warmest years all having

occurred since 2015. While by far the largest share of CO₂ emissions has been caused by advanced economies and large developing economies, Aruba is one of the largest per capita emitters in the Caribbean region, its emissions coming from fossil fuel consumption and liquid fuel consumption (ECLAC, 2011). A cause of this high emission rate may have been the operation of the oil refinery without having adequate environmental protection policies in place. In the meantime, this oil refinery is not operational anymore.



³ www.meteoaruba.aw



Source: www.statista.com

The overwhelming majority of scientists agree that future climate change depends largely on the path of CO2 emissions. The latter is in turn determined by demographic changes, economic development, technological advancement, and the strength with which countries implement mitigation measures. Currently, the mean projected warming in the absence of mitigation is expected to reach about 3.7-4.8°C by 2100 (IPCC, 2014). On the current path, within the next 20 years, global warming is likely to surpass 1.5°C and move in the direction of 2°C possibly by mid-century.

In addition to temperature, the sea level also has shown significant change. Since 1900, the global mean sea level has risen by 17-21 centimeters (IMF WEO October, 2017). The pace of sea level rise has increased from 0.17 centimeter a year for most of the 20th century to 0.32 centimeter a year since the mid-90s (IPCC 2014). Under the Representative Concentration Pathways (RCP) scenario of unmitigated climate change offered by the IPCC, the global mean sea level would rise by almost 0.8 meter by the end of the 21st century, exposing coastal areas, such as Aruba, to higher risk of flooding and erosion. In the next 20 years, estimates of sea level rise range from 8 to 36 centimeters, which would create additional problems for low lying coastal cities and islands. Based on estimations by the World Bank, some small island

states and coastal countries could lose 10 percent of GDP or more under high sea level scenarios. Rising sea levels could also increase the risk of storm surges and tropical cyclones, particularly in the Caribbean.

Climate change risks can be categorized as physical and transitional risks. Physical risks can be defined as those risks that arise from the interaction of climate-related hazards with the vulnerability of exposure of human and natural systems, including their ability to adapt (Batten et al., 2018). Batten et al. (2018) identifies two main sources of physical risks: gradual global warming and increase in extreme weather events. Extreme weather events are mostly unpredictable events that can have significant economic consequences, while gradual global warming causes economic loss due to a reduction in productivity of workers and a diversion of resources from productive investment to adaptation capital. Meanwhile, transition risks are defined as those risks that might arise from the transition to a low-carbon economy (Table 5.1).

Table 5.1: Examples of macroeconomic risks from climate change

Type of shock/impact		Physical risks		Transition risks
		From extreme weather events		From gradual global warming
Demand	Investment	Uncertainty about climate events		'crowding out' from climate policies
	Consumption	Increased risk of flooding to residential property		'crowding out' from climate policies
	Trade	Disruption to import/export flows		Distortions from asymmetric climate policies
Supply	Labor supply	Loss of hours worked due to natural disasters	Loss of hours worked due to extreme heat	
	Energy, food, and other inputs	Food and other input shortages		Risks to energy supply
	Capital Stock	Damage due to extreme weather	Diversion of resources from productive investment to adaptation capital	Diversion of resources from productive investment to mitigation activities
	Technology	Diversion of resources from innovation to reconstruction and replacement	Diversion of resources from innovation to adaptation capital	Uncertainty about the rate of innovation and adoption of clean energy technologies

Source: Batten (2018)

Extreme weather events such as floods and storms impact the demand side of the economy by adversely affecting household wealth and, subsequently, private consumption.

Moreover, business investment could be reduced by damage to physical and financial assets, while natural disasters also have significant effect on bilateral trade (Gassebner et al., 2010, Oh and Reuveny, 2010). Even economies that are less exposed to extreme weather could be adversely impacted by climate change shocks in their trading partners, mainly through reduced exports resulting from failure in transportation and distribution networks.

In general, gradual global warming affects the supply side of the economy through economic losses stemming from reduced productivity of workers and agricultural crops

due to higher temperatures (Dell et al., 2014). Empirical analysis by Burke, Hsiang, and Miguel (2015a) suggests that rising temperatures lower per capita output in countries with relatively high annual average temperature. In these economies, the adverse effect is long-lasting and operates through several channels: lower agricultural output, depressed labor productivity in sectors more exposed to the weather, reduced capital accumulation, and poorer human health. In addition, resources could be diverted from productive investment and innovation to adaptation capital, i.e., investment needed to mitigate the impact

of higher temperatures. However, available data show that macroeconomic outcomes have not become any less sensitive to temperature shocks in recent years, indicating significant adaptation constraints (IMF WEO, 2017).

Transition risks can influence the demand side of the economy by changes in current preferences due to the expectation of future losses, e.g., a shift towards greener consumption.

Uncertainty about future demand and growth prospects could also have a diminishing effect on business investment. In addition, climate policies to promote investment in low-carbon technologies can also cause demand-side shocks if they result in “crowding out” private investment and consumption.

The effects of rising temperatures will be vastly unequal around the world with the brunt of adverse consequences borne by low-income countries that can least afford it.

The IMF estimates that under a scenario of unmitigated climate change and under the conservative assumption that weather shocks have permanent effects on the per capita GDP level, rather than on the growth rate, per capita GDP of a representative low income country would be 9 percent lower in 2100 than it would have been in the absence of temperature increases (IMF WEO, 2017). Meanwhile, when discounting at

the growth adjusted rate of 1.4 percent, the present value of output losses would amount to more than 100 percent of current GDP. And within low-income countries, the poor would likely be the most heavily affected by climate change (Hallegatte and Rozenberg, 2017), leading to an increase in inequality within these countries.

5.3 Impact for Aruba

Similar to the Caribbean region, the main vulnerability in Aruba is the warming and acidification of the ocean, and the bleaching and diebacks of coral reefs (ECLAC, 2011).

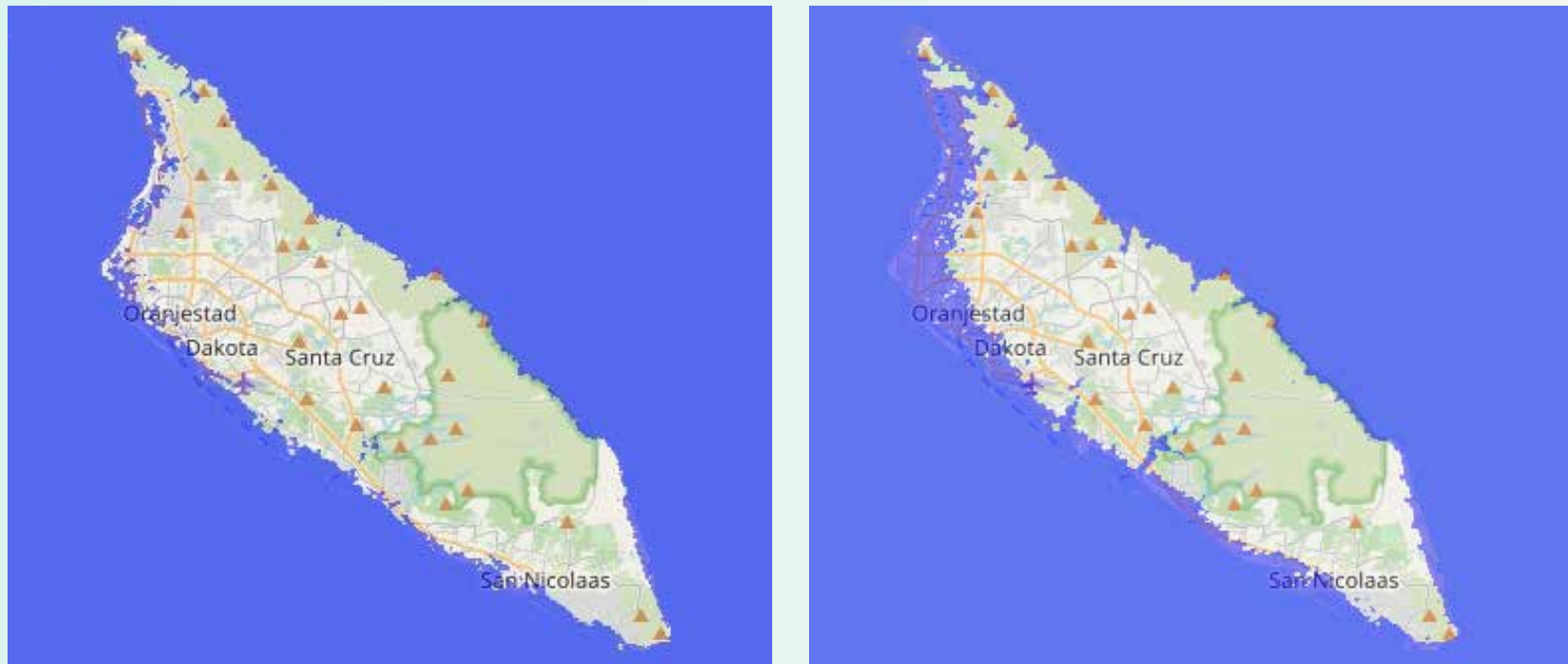
These reefs provide protection against storm surges and are also important for the tourism industry as they are a key source of tourism activity. According to Peterson (2020), 46 percent of households reside in areas susceptible to storm surges and flooding. Moreover, the majority of tourist accommodations on the island are located near the coast. The Inter-American Development Bank (IDB 2011) suggests that a 1m sea level rise would cause almost all small-island tourism economies to lose their environmental assets, including biodiversity, beaches, mangroves, and coral reefs, from a combination of sea level rise and warming sea temperatures. In addition to tourism, a large part of Aruba's primary infrastructure (port, airport, water and power plant, sewerage) is located near the coast, contributing to its vulnerability.

Figure 5.3: Risks of flooding (highlighted in light and dark blue) are highest in most densely populated (coastal) areas (Oranjestad, Tanki Flip, Noord). Source: CBS.



Figures 5.4 and 5.5 show simulated impacts for Aruba in the case of a 50 centimeter sea level rise and a 1 meter rise. These simulations illustrate significant flooding of coastal areas.

Figures 5.4 and 5.5: Elevation and simulation flood maps. (+0.50m and +1m vertical sea level rise) Source: www.climate.gov



Apart from sea level rise, rising temperatures also can have potential negative impacts on the Aruban economy. IMF

research shows that for the median emerging market economy, a 1°C upsurge from a temperature of 22°C lowers growth in the same year by 0.9 percentage point. For the median low-income developing economy, with an average temperature of 25°C, the effect of a 1°C increase in temperature is even larger, with growth falling by 1.2 percentage points. Burke, Hsiang, and Miguel (2015a) provided evidence that productivity peaks at 13°C and declines strongly at higher temperatures. Given that Aruba's average temperatures are significantly higher than the 13°C optimum, an increasing temperature could significantly impact productivity in Aruba, especially in sectors exposed to the heat, such as construction and tourism. Moreover, temperature is considered to be the most important climate variable in the analysis of climate demand, because beyond a certain range it affects comfort (ECLAC, 2013). In addition to the economic impact, higher temperatures are also likely to impact the environment. Many animals and plants live in areas with very specific climate conditions, such as temperature and rainfall patterns that enable them to thrive. Any changes in these conditions can impact the animals and plants living in that area, as well as the composition of the entire ecosystem.

Additionally, higher temperatures also could lead to higher energy costs related to cooling of homes and businesses.

While the additional energy consumption caused by higher temperatures differs by country based on factors such as the average temperature, population density, and the number of people that own air conditioning, studies have shown that energy consumption could jump by as much as 6.7 percent for a 1°C temperature rise for countries with an average temperature over 24°C.⁴ Considering Aruba's current energy mix and assuming no further renewable energy adoption, this temperature rise of 1°C would potentially lead to a similar expansion in imports of crude oil, and conversely, additional outflows of foreign exchange to abroad.

As temperatures rise, the risks of extreme weather events, such as floods, droughts, and heat waves will increase, as will the frequency of disasters caused by heat waves or tropical cyclones (IPCC, 2014). This outcome means that Aruba may also be exposed to more frequent severe weather and natural disasters such as hurricanes. The significant negative impact of hurricanes on output is felt primarily in small states and islands that are generally more exposed to this type of storm. Moreover, the effects are long-lasting with per capita output almost 1 percent lower seven years after an average storm than if the storm had not happened. In small states, experienced losses are 2.5 times larger, with the economy taking over 20 years to recover fully.⁵

⁴ Yao.J., Electricity Consumption and Temperature: Evidence from Satellite Data, IMF Working paper, February 2021.

⁵ IMF WEO 2017, Effects of Weather Shocks.

The higher occurrence of severe weather and natural disasters is also likely to push up insurance costs, impact savings, and raise the vulnerability of the financial sector as households and businesses are more frequently affected.

Moreover, extreme weather events, such as droughts, can lead to failed crops in food exporting countries. These failed crops can cause food scarcity, which is a problem for Aruba that needs to import most of its food.

Another impact of climate change is that countries considered vulnerable to climate change may also see changes reflected in their sovereign rating. Cevik and Tovar Jalles (2020) found that climate change vulnerability has adverse effects on sovereign credit ratings, after controlling for conventional macroeconomic determinants of credit worthiness. A drop in credit ratings for Aruba would make borrowing on the international market more costly for the government and for businesses, which subsequently could cause a potential reduction in investment and thus in economic growth.

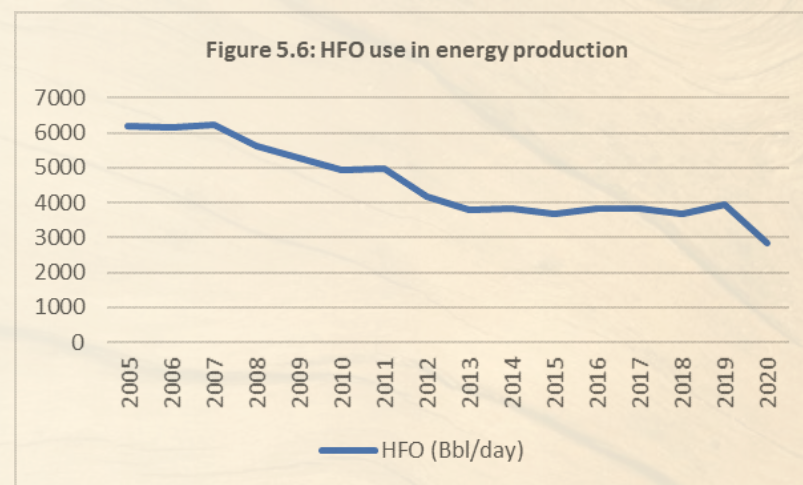
Table 5.2: Summary of potential macroeconomic impacts.

Short-run	Long-run
Negative impact on output due to increased occurrence of extreme weather events such as hurricanes, floods, droughts, and heat waves.	Loss of environmental assets, including biodiversity, beaches, mangroves and coral reefs, due to a combination of sea level rise and warming sea temperatures.
Increased occurrence of extreme weather events raises insurance costs, impacts savings and increases vulnerability of the financial sector.	Damage to Aruba’s primary infrastructure located near the coast.
Higher import prices for food due to scarcity resulting from failed crops in food exporting countries.	Declining productivity due to rising temperatures, especially in sectors exposed to the heat.
Deterioration of sovereign rating due to climate change vulnerability.	Higher energy costs related to cooling of homes and businesses, leading to increased outflows of foreign exchange reserves.

Several studies have attempted to quantify these potential consequences for the Aruban economy. ECLAC (2011) estimated that the value of land loss in an unmitigated scenario until 2050 could amount to US\$ 252 million, while the annual hotel room replacement cost could reach approximately US\$ 20 million. Based on a study by Gill (2010), who estimated that about 22 percent of tourist expenditures can be attributed to reef-related activities, the economic value of coral reefs for Aruba can be put at US\$ 94 million per year.⁶ Bueno et al. (2008) estimated the cost of climate change for the Caribbean if these countries don't take action to counteract the effects of climate change. For this estimation, they combined the cost of hurricane damages, the loss to the tourism sector, and sea level rise. In a business as usual scenario, the estimated loss of GDP for Aruba amounted to 20 percent of GDP in 2050. Meanwhile, ECLAC (2011) found that the potential loss for Aruba due to climate change ranges from 1.5-2 percent of Aruba's GDP each year.

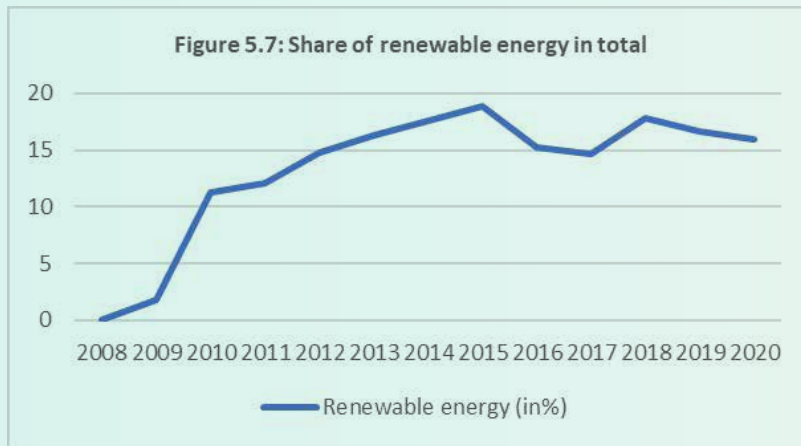
5.4 How is Aruba coping with climate change?

Aruba has reduced the carbon intensity of its power production in recent years (Figure 5.6) through investing in more fuel-efficient equipment at the water and electricity company (WEB). Conversely, the share of renewable energy in total energy production went from zero in 2008 to 18.1 percent in 2021 (Figure 5.7; WEB Aruba, 2021).



The share of renewables was increased through investment in wind turbines and solar panels. Moreover, commercial banks extended loans at favorable interest rates to households for the purchase of solar panels. In addition, the government lowered import tariffs for solar panels and energy efficient appliances. Reduced import duties also were introduced for hybrid and electrical cars. Furthermore, in 2014 the Aruban government instated environmental levies on car rentals of US\$ 1 per car per day and US\$ 3 per night per occupied room night for hotels. In addition, the government replaced streetlights with more energy efficient led lighting.

⁶ Based on 2011 values.



In 2018, the government of Aruba established the Aruba Marine park with one of the purposes being to conserve and protect marine biodiversity and ecosystems while managing accessibility in a sustainable way. Also, the spatial development plan (ROP 2019) was renewed and approved in 2019, with an important aim being the balance between social and economic needs and those of nature and the environment. The ROP (2019) provides a framework for the protection of natural areas as well as rules for constructing in safe living areas. Moreover, the Aruban government introduced a ban on

the import of plastic and foam to limit the damage caused by these materials to the environment.

In 2020, in consultation with stakeholders, the government designed a Recovery Master Plan,⁷ which contains a comprehensive set of policies the government wishes to pursue in the coming years. Among these, the Recovery Master Plan prioritizes 21 projects aimed to transition to a circular economy and manage waste streams as resources. These projects include items such as procurement and building guidelines, national awareness, climate resilience and adaptation, educational program, land usage and space, sustainable landfill operations and strategic waste operations, wastewater treatment, waste reduction programs, import tariffs reform, and wetland upgrades.

Furthermore, the Aruban government has recently adopted an energy resolution to serve as the base for a national energy policy.⁸ In this resolution, the government establishes objectives and targets for 2030 and 2050. The defined objectives and targets include (but are not limited to) the following:

- a. Reduce Aruba's CO₂ emissions by at least 45 percent from 2010 levels by 2030 in accordance with the United Nations' target of limiting global warming to 1.5°C. Furthermore,

⁷ Repositioning our sails: Aruba's mission driven model for economic recovery and resilience, 2020.

⁸ Resolutions - Energy Summit III, March 2021.

- by 2050 at the latest, Aruba's CO₂ emissions should reach 'net zero' (i.e., carbon neutral), in accordance with the Paris Agreement of 2015. However, this resolution currently excludes refinery effects.
- b. Increase the energy efficiency of households, businesses, and other organizations to at least 15 percent from 2020 to 2030.
 - c. Increase the share of renewable energy for centralized electricity generation to a level of 35 percent by 2024 and further to at least 50 percent by 2030. Harmonized spatial solutions form a key requisite for this goal.
 - d. Reduce the HFO consumption for electricity generation from 3,679 Bbl/day (2018) to approximately 2,800 Bbl/day after the implementation of RECIP4/SWRO3 projects; and after realization of 40 percent renewable energy, reduce electricity consumption further to a level below 2,000 Bbl/day by 2030 at the latest.
 - e. Increase the adoption of electric vehicles as part of personal-type cars (either privately or publicly owned) to at least 15 percent by 2030.
 - f. Keep Aruba's energy tariffs unchanged (excluding external oil price volatility effects); and, if possible, reduce the energy tariffs in keeping with long-term power tariff stability and reliability requirements.
 - g. Diversifying propositions/programs, as well as consumption

- patterns and savings measures, for socially vulnerable groups, will be a further topic of study.
- h. Pursue energy efficiency through (1) increasing public awareness, (2) use of energy efficient appliances, and (3) promotion of sustainable building practices (in new construction and retrofitting).
 - i. The use of gas as transition fuel remains subject to study by the WEB with specific focus on LNG.
 - j. Include clean refinery considerations in negotiations geared toward a potential reopening of the Aruba refinery.
 - k. Include as topics for further discussion: policies for reducing gasoline and diesel transport emissions, for both new and existing cars.
 - l. Discuss the topic of new utility business models, which will be required in the long-term.
 - m. As part of energy policy implementation, pursue a framework for energy performance requirements for buildings (without as yet making this mandatory).

To put this resolution into perspective, Table 5.3 shows the highlights of the energy goals of a number of selected Caribbean countries.

Table 5.3: Highlights energy goals of selected Caribbean countries.

Aruba	Bahamas	Barbados	Grenada	St. Lucia
Reduce CO2 emissions by at least 45 percent from 2010 levels by 2030 and reach net zero by 2050 (excluding refinery effects).	Reduce GHG emissions by 30% by 2030 compared to business as usual scenario	100% green and fossil-fuel free by 2030 and reduce GHG emissions as close as possible to zero by 2030.	GHG emission 30% below 2010 levels by 2025 and 40% by 2030.	Reduce GHG emission by 7% in the energy sector compared to 2010 levels by 2030.
Increase the energy efficiency of households, businesses, and other organizations to at least 15 percent from 2020 to 2030.	Increase the share of renewables in energy production to at least 30% by 2030, including 10% residential self-generation.	95% of share of renewable energy in electricity mix by 2030	10% of reduction through renewables, 20% through increased efficiency for 2025.	Increase the share of renewables to 35% by 2025 and to 50% by 2030.
Increase the share of renewable energy for electricity generation to 35 percent by 2024 and to at least 50 percent by 2030.	Establishment of a permanent forest estate to capture carbon.	Full electrification of or use of biofuels by the passenger vehicle fleet by 2030.	Reduce CO2 emissions 20% by 2025 through promotion of biofuels, raising of gasoline/diesel taxes, fuel efficiency.	Improve energy efficiency for buildings, appliances, and lighting.
Reduce HFO consumption to less than 2,000 BPD no later than 2030.		20% increase in efficiency across all sectors compared to business as usual scenario by 2030	Reduce methane by at least 90% through methane capture and use for electricity production and waste conservation.	Promote fuel-efficient vehicles (including hybrid and electric).
Increase the adoption of electric vehicles (either privately or publicly owned) to at least 15 percent by 2030.		A 29% decrease in industrial, commercial and residential fuel consumption as compared to business as usual by 2030	Double carbon storage in protected areas by planting fast growing species and reducing fire risk.	Improve power grid efficiency and expand public transport.
Unchanged energy tariffs and if possible lower tariffs		A 20% decrease in waste emissions		
		Government-owned fleet fully electrified by 2030.		

5.5 International best practices for mitigation and adaptation

5.5.1 Best practices for mitigation

While Aruba's contribution to global GHG emissions, like that of most other small states, is negligible, mitigation is still important for small states. It gives credibility in dialogue on the Paris agreement, and it could potentially leverage external finance, mobilize domestic revenues through good carbon pricing, strengthen the external sector by mitigating foreign exchange outflow, and promote energy security.

5.5.2 Best practices for mitigation in scenario 2: Policy reform

At the sectoral level, feebates can reinforce carbon pricing, especially to stimulate the purchase of electric vehicles, but also for other sectors. Feebates apply a sliding scale of fees to products or activities with above-average emission rates (or increases in emissions over time) and a sliding scale of rebates to products or activities with below-average emission rates (or reductions in emissions over time).⁹ Another advantage of feebates is that they do not lead to a loss of revenue and do not impose a burden on the average household or firm. Feebates are revenue neutral as long as (i) the 'pivot point' (the point above or

below which fees/rebates are applied) is set equal to the industry or product average emission or energy consumption rate, and (ii) the pivot point is updated over time so that the fees collected pay for the rebates. The feebate system could be combined with an ad valorem tax on vehicles to meet fiscal needs as excise collections decline over time when people switch to low-emission vehicles.

Price incentives could be considered to reduce waste/waste management. Landfills are also a source of GHG emissions. Governments are encouraged to design and implement a national waste management strategy incentivizing waste reduction and recycling. Price-based policies are a good option as they have proven effective to contain waste, for instance, pay-per-bag trash schemes and deposit refunds for hazardous waste.

5.5.3 Best practices for mitigation in scenario 3: Policy shift

The primary policy tool that the IMF recommends is a carbon pricing scheme, whereby the price of carbon is raised significantly over a number of years. This scheme should include all sources of emission, i.e., power generation as well as road fuels. An extensive decarbonization of the economy will require both energy efficiency and a significant increase in the share of low-carbon sources in energy supply.

⁹ Climate Mitigation Policy in Denmark: A Prototype for other countries, IMF, working paper, 2020.

These changes will require carbon-intensive energy to become much more expensive relative to both low-carbon energy and other goods and services than it is currently. Fossil fuels are now massively underpriced, reflecting undercharging for production and environmental costs – including for air pollution and global warming.¹⁰ The price of carbon globally is currently at about US\$ 3 per metric ton. According to IMF estimates, the price should be increased to at least US\$ 75 by 2030. By raising the price of polluting energy sources relative to clean sources, carbon pricing provides incentives to improve energy efficiency and to redirect innovation efforts towards green technologies.¹¹

The government also can introduce so-called feebates or impose direct mandates and regulations on emissions as alternative or complementary tools that are less efficient, but do raise the implicit price of carbon and may encounter less political resistance. Also, removing existing distortions would support better carbon pricing. For instance, it is undesirable that household consumption of electricity and road fuels is not subject to vat or turnover taxes; ideally these taxes should be reflected in the prices of all consumer products to avoid distorting household choices.

The government can complement its carbon pricing scheme with a broader package of measures to enhance its

effectiveness and acceptability including public investment in clean technology networks and measures to assist vulnerable households and workers. Therefore, an additional set of policies should be introduced aimed at making low-carbon energy sources more abundant and cheaper and tackling broader market failures in their provision. Actions that the government can take under this approach include subsidies and price guarantees to hike demand, investment, and supply in the low-carbon energy sector; direct public investment in low-carbon technologies and infrastructure; and research and development subsidies to incentivize innovation.

The increased private and public investment in low-carbon technologies, i.e., a green fiscal stimulus, also will help boost demand and supply in the economy, supporting the recovery from the COVID-19 crisis. Part of the revenues from the carbon tax can be used to compensate vulnerable households and workers through targeted financial transfers to protect their purchasing power and to ensure inclusion of the more vulnerable in the transition to a low-carbon economy. Also, some of the revenue can be used to finance higher public spending in low-carbon sectors, which will create jobs and offset employment losses in carbon-intensive sectors. Another benefit of a carbon tax is that it will stabilize government revenue to compensate for the loss

¹⁰ IMF WEO, *A long and difficult ascent*, October 2020.

¹¹ IMF (blog), *A Proposal to Scale up Global Carbon Pricing*, June 2021.

in fuel taxes that will occur as vehicles become more fuel efficient.

The government could consider price incentives to reduce traffic congestion as a complementary measure to carbon pricing. An electronically collected congestion fee, with schedules designed to smooth traffic flows over the course of the day, along with mileage-based tolls could effectively manage road congestion. These price incentives also are a promising alternative to stabilize transportation revenue when excises on gasoline begin to fall (when more people drive more efficient vehicles) and to manage pressure on road networks.

Restorative ocean farming is a promising sector in countries with extended coastal areas. It involves farms that grow seaweed, oysters, clams, and mussels and thus have the potential to capture large amounts of carbons, produce protein suitable for both people and animal nutrition, foster ecosystem conservation, and create jobs.

Reforestation can help reduce the impact of climate change. Carbon is stored in biomass - the trunk, root, and leaves - as well as in the soil. Planting trees could therefore help mitigate CO₂ concentrations, since trees absorb CO₂ as they grow, and the carbon remains stored until the wood decomposes or is burnt.

5.5.4 Best practices for adaptation

Adaptation refers to deliberate adjustments in ecological, social, and economic systems to moderate adverse impacts of climate change and harness any beneficial opportunities (Agrawala et al., 2011). Adaptation consists of “hard” policy measures (e.g., adapting infrastructure) and “soft” measures (e.g., building codes, insurance). In general, preventive actions are more effective and more common than reactive actions, but they are hindered by uncertainties and funding constraints, particularly for developing economies. While adaptation costs can be high, especially for developing economies with limited fiscal space, studies show that US\$ 1 invested in adapting to the changing climate yields US\$4 to US\$ 7 in damage prevented.¹²

In developing countries, a close link exists between adaptation and development strategies. Development aspects such as better education, health care, and infrastructure facilitate adaptation, while some adaptation strategies (e.g., efficient water use, climate-resilient housing) facilitate development. Therefore, countries can benefit from synergies between adaptation and development. However, realizing the benefits from such synergy requires close policy integration and evaluation of climate impacts.

¹² K. Georgieva, IMF podcast, Island States Paying the Price for Climate Change, July 2021.

5.5.5 Best practices for adaptation in scenario 2: Policy reform

Infrastructure spending accounts for the largest share of adaptation costs. For this kind of spending, the government should map infrastructure assets to areas that are vulnerable to climate risks and natural disasters and take steps to enhance resilience, such as land raising, relocation of assets, and building barriers. Areas of key vulnerability – critical infrastructure, tourism and coastal management, food security, biodiversity, water security,¹³ health -- should be identified and priority adaptation investment for each area listed in a clear public investment plan. A clear investment plan (including an estimation of the costs and a timeline for implementation) enables better identification of financing gaps.

Many countries are beginning to develop integrated climate strategies and incorporate climate adaptation into medium-term budget frameworks. These strategies should not be addressed in isolation, however, but rather should be reconciled with other objectives such as growth and poverty reduction. Internalizing climate-related expenditures into fiscal frameworks can help with assessing fiscal sustainability, measuring adaptation gaps, and identifying the extent of additional financing needed to combat the negative impact of climate change.

Adaptation in the area of transport can be achieved by reviewing and updating standards for construction and maintenance of transportation infrastructure to include an additional protective measure for expected risks from natural disasters and climate change, and implementation of key infrastructure reinforcements and relocations.

With regard to energy, adaptation actions can comprise assessment of exposure of power infrastructure to key climate risks; identification of solutions to climate-proof the existing infrastructures; evaluation of long-term energy planning with consideration of climate change, with a focus on new investments/ infrastructures; assessment of bottlenecks in disaster preparedness procedures and proposal of solutions to remove barriers for more efficient and effective disaster response and recovery.

When it comes to health, adaptation measures can include assessing the impacts of climate change on human health, establishing baseline conditions and the public health policies and programs that address the risks. Measures can also be about improving the capture, management, and monitoring of diseases and vectors affected by climate change and related forecasting and early-warning systems, enhancing the health sector's capacity to address epidemics/outbreaks, and improving disease control and prevention.

¹³ The United Nations defines water security as “The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability” (UN Water, 2013).

5.5.6 Best practices for adaptation in scenario 3: Policy shift

Another important element of climate change adaptation is waste management. Governments are advised to develop an integrated solid waste management program that addresses waste segregation, storage, collection, and transport, minimization, reuse and recovery, cost recovery, education and communications. The program should encompass capping and closing open dumps, capturing and utilizing landfill gas, and ensuring proper waste handling and organics management.

Apart from investment spending, adaptation requires adoption of appropriate legislation and regulatory frameworks. In this regard, land use planning is important. This planning should include elements such as infrastructure risk assessment, as well as strategic land-use and settlements policy to adapt to potential rise in sea level and integrate with land use, flooding and drainage plans; building of infrastructural defenses to protect communities from flooding; improvement of drainage and sanitation facilities; and creating of marshlands/wetlands as a buffer against sea level rise. Moreover, such planning should contain development and adoption of a sustainable building code to climate-proof existing and future infrastructure, a coastal zone management strategy and action plan, and a waste management strategy.

To enhance resilience to natural disasters, the IMF has proposed a three-pillar approach. The first pillar is structural adaptation, which requires infrastructure and other investments to limit the impact of disasters. Examples include strengthened roads, bridges, telecommunications, and water supplies and sanitation systems. The government has a key role in bringing about this kind of adaptation, although private sector initiatives should be encouraged. The second pillar is post-disaster and social resilience, such as contingency planning and related investments to ensure an efficient disaster response with minimal disruption to public services. The third pillar is creation of financial resilience ahead of disasters. Creating resilience involves creating fiscal buffers and using pre-arranged financial instruments to protect fiscal sustainability and manage recovery costs. This can be done by setting up a contingency fund, arranging standby financing for catastrophes in the form of credit lines at international institutions, arranging disaster insurance (e.g., Caribbean Catastrophe Risk Insurance Facility (CCRIF)), and market-based instruments like catastrophe bonds. These actions can be especially useful when liquidity constraints limit the ability of the government to invest in structural adaptation.

Table 5.4: Best practices for mitigation and adaptation.

Mitigation	Adaptation
Carbon pricing.	Enhance resilience of vulnerable infrastructure assets.
Feebates.	Incorporate climate adaptation into medium-term budget frameworks.
Investment in clean technology.	Review and update standards for construction and maintenance of transportation infrastructure
Policies to assist vulnerable households and businesses.	Assess exposure of power infrastructure to key climate risks.
Price incentives to reduce waste and traffic congestion.	Assess impacts of climate change on human health, establish baseline conditions and public health policies and programs that address the risks.
Restorative ocean farming.	integrated solid waste management.
Reforestation	Appropriate legislation and regulatory frameworks, including water security/management.
	Enhance resilience to natural disasters <ul style="list-style-type: none"> - Structural adaptation - Post disaster and social resilience - Financial resilience ahead of disasters
	Establishment of a disaster and climate risk reduction facility for housing.
	Innovative financing and disaster preparedness.

The resiliency of housing can be enhanced by the establishment of a disaster and climate risk reduction facility for housing (e.g., the Climate Adaptation Financing Facility (CAFF) in St. Lucia). This climate risk reduction facility provides households (including those with informal income) with concessional loans dedicated to pre-emptive investments, including retrofitting their homes. The facility can provide technical and financial support to homeowners to help ensure reduced vulnerability to hurricanes and floods of their houses.

Moreover, the financial sector can play a significant role in supporting adaptation to climate change by mobilizing innovative financing and by being a positive force in disaster preparedness. In the context of small economies, safeguarding access to credit for households and businesses, and promoting a resilient mobile banking platform could facilitate recovery after a natural disaster.

5.6 International best practices for financing mitigation and adaptation programs

Adaptation investment may be challenging, given limited fiscal space, but it is worthwhile. According to calculations by the Global Commission on Adaptation, every dollar invested in building resilience could result in US\$ 2 – US\$ 10 in long-term

net economic benefits.

However, many countries, especially developing economies with limited fiscal space, lack the means to finance critically needed investments in climate adaptation and mitigation.

The COVID-19 crisis has severely worsened public finances, which in many countries were already weak before the crisis. Consequently, many countries will require debt relief to respond effectively to the crisis and undertake meaningful investment to climate-proof their economies.

Given the situation of stretched public finances, all public expenditures and economic stimulus, as well as the tax system should be aligned with the climate goals. This alignment should include the phasing out of all fossil fuel subsidies, a move that would deliver significant public savings and lower emissions, as well as lower mortality from air pollution. Revenues from carbon tax could be redistributed to support low-income households and communities that are most impacted by the transition to a low-carbon economy or the physical effects of climate change.

Furthermore, carbon pricing in developing economies can serve as a catalyst for private sector climate finance and help in its efficient allocation. Carbon pricing promotes overall

incentives for clean energy projects and the efficient ordering of these projects by serving as a mechanism that ensures that the most cost-effective projects are selected first.

In addition to fiscal policy, finance flows need to be aligned with a pathway toward low GHG emissions and climate resilient development. To this end, monetary and financial authorities have to fully integrate climate risks into their prudential and monetary frameworks. These frameworks should make the disclosure of climate and other sustainability risks mandatory throughout the financial sector to enable better risk analysis, require financial institutions to conduct regular climate stress testing, and integrate climate-related financial risks into prudential supervision.

Also, multilateral and national development banks can fulfill an important role by providing countercyclical funding that simultaneously supports economic activity and employment in the short term, while contributing to the transition to a more sustainable low-carbon economy in the longer term.

Charges on international aviation and maritime emission are appealing as a possible source of climate finance. Implementation would require international coordination and resolving some legal issues with regard to treaties and bilateral air agreements, but the practicalities should be manageable.

Moreover, the IMF gives the following recommendations in its climate change policy assessment reports:

- i. Develop a comprehensive picture of financing needs, including contingency financing.
- ii. To ensure continued fiscal and debt sustainability while responding to climate change challenges, rely as much as possible on private sector and grant financing (and where possible on revenue mobilization). This reliance may require setting up focused units dedicated to mobilizing climate change funding and implementing donor projects.
- iii. Make good use of available fiscal space to invest in infrastructure and resilience building.
- iv. Ensure all relevant policy and legal frameworks are in place to attract private investment in the energy sector and other relevant sectors (e.g., sustainable tourism).
- v. Successful implementation of a clean energy strategy should be high-priority, not least because it will strengthen the balance of payments. However, care should be taken to offset revenue loss from fuel and vehicle taxation. This revenue loss is another reason that a carbon tax would be valuable.
- vi. Ensure that innovative financing packages offer value-for-money. Care will be needed to avoid swapping old liabilities for new obligations that entail a new set of high costs.

5.7 Recommendations for Aruba in scenario 1: Policy as usual

In a business as usual situation, climate change and its potential impacts would continue at the current pace with limited mitigation and adaptation measures. Consequently, the probability is high that the risks associated with climate change will materialize and incur significant costs. Given the magnitude of these costs, continuing on the existing 'policy as usual pathway' is unsustainable, and thus not recommended. At the very least, the energy resolution should be prioritized, including the efforts to reach a circular economy. Also, the emissions of a potential refinery would have to be included in the emission targets for these to be meaningful.

5.8 Recommendations for Aruba in scenario 2: Policy reforms

5.8.1 Mitigation

Substantially increase the share of renewable energy in Aruba's total energy production to at least 35 percent in 2024 and 50 percent by 2030. These are the levels aspired to in the government's Energy resolution document. However, a country such as Belize already has a renewable energy share of 57 percent and is aiming to increase this to 85 percent by

2030. Aruba should aspire to achieve at least similar shares of renewable energy by 2040. In 2019, the imports of fuel oil, used for domestic energy production, amounted to Afl. 157.2 million. Increasing the share to 85 percent would represent an estimated savings on import payments for fuel oil of about Afl. 125 million (assuming constant prices). To achieve these shares, investment in solar and wind energy should be ramped up. In addition, the public should be stimulated to achieve a significant switch to electric vehicles. The energy resolution aims to achieve 15 percent electric vehicles by 2030. Given that a number of advanced economies have already announced that they will prohibit the import and production of internal combustion engine (ICE) vehicles by 2030, a more ambitious target may be pursued. Aruba should look to at least match countries such as Seychelles, Belize, and St. Lucia, which are pursuing targets between 20 and 30 percent for 2030. In 2019, import payments for gasoline and diesel totaled Afl. 103.5 million. Raising the share of electrical vehicles would conduce to projected savings of about Afl. 31 million on gasoline and diesel imports assuming 2019 prices. A well-priced carbon tax may help in this regard, as the fuel price for ICE vehicles would rise markedly. Apart from reduction of CO₂ emissions, increased renewable energy will help Aruba achieve energy security and significantly reduce its imported fuel bill and thereby strengthen its current account position.

Introduce feebates to stimulate the purchase of electrical vehicles. The feebate system could be combined with an ad valorem tax on vehicles to meet fiscal needs as excise collections decline over time when people switch to low-emission vehicles. Feebates could also be used in other sectors. An additional option to accelerate the transition to electrical vehicles is to introduce policy that supports availability of reliable and widespread overnight or at-work charging stations.

Design and implement a national waste management strategy, incentivizing waste reduction and recycling. Landfills, such as the one at Parkietenbos, are an important source of GHG emissions. A waste management strategy also would be consistent with the government's aim to transition to a circular economy by 2050.¹⁴ The government should consider price-based policies, which have proven effective to contain waste, for instance, pay-per-bag trash schemes and deposit refunds for hazardous waste.

If the refinery is restarted, its emissions along with all (energy production and consumption-related) emissions from all sectors should be incorporated in any emission goals or energy resolutions set by the government. Given that the refinery would likely be one of the largest emitters on the island if it becomes operational, any emission reduction scheme

that does not include it would not be meaningful.

5.8.2 Adaptation

Map infrastructure assets to areas that are vulnerable to climate risks and natural disasters and take steps to enhance resilience, such as land elevation, relocation of assets, and building barriers. Areas of key vulnerability should be identified and priority adaptation investment for them listed in a clear public investment plan. A clear investment plan (including cost estimates and timeline) would allow Aruba to better identify financing gaps. For Aruba, important infrastructure assets that are located near the coast include the airport, the hospital, the ports, hotels, and the power and sewerage plants.

Incorporate climate strategies and climate adaptation into medium-term budget frameworks and explicitly link investment projects. Investment in resilient infrastructure, disaster risk management, and sustainable natural resources should be increased and specifically mentioned in the budget. These strategies should not be addressed in isolation, however, but rather be reconciled with inclusive growth objectives. Specifically, the government should capitalize on the opportunity to make this economic recovery a green recovery by investing in and promoting investment in climate mitigation and adaptation.

¹⁴ Master plan: Repositioning our sails, Government of Aruba, 2020.

Given that fiscal space is limited, the possibility should be explored to include these investments in the investment program of the Landspakket/COHO.

Given the importance of the tourism sector for the Aruban economy, formulate detailed adaptation plans and involve the private sector (hotel sector) in the financing of adaptation investments. Actions that can be taken in relation to tourism include sea level rise vulnerability mapping with attention to areas for tourism development, review regulations for setback requirements, mangrove and coral reef conservation, beach nourishment, and property decommissioning. Other tourism-related actions comprise enhancing the resilience of coral to climate change by reducing pollution and implementing maximum carrying capacity limits for areas impacted negatively by excessive human activity.

Review standards for construction and maintenance of transportation infrastructure and update to include protective measures for expected risks from natural disasters and climate change, and implement key infrastructure reinforcements and relocations.

Conduct an assessment of exposure of power infrastructure to key climate risks. This assessment should include

investigation of climate vulnerabilities of the existing power system, and identification of solutions to climate-proof the existing infrastructures; evaluation of long-term energy planning in light of climate change, with a focus on new investments/infrastructures. Also, assess disaster preparedness and enhance efficient and effective disaster response and recovery.

Assess the impacts of climate change on human health, establishing baseline conditions and the public health policies and programs that address the risks. Other measures to be considered include improving the capture, management, and monitoring of diseases and vectors affected by climate change and related forecasting and early-warning systems, enhancing the health sector's capacity to address epidemics/outbreaks, and improving disease control and prevention.

Include measures in the ROP to adequately address sea-level rise and storm surges. The adoption of appropriate legislation and regulatory frameworks is needed to support adaptation. The ROP could be expanded to include explicit regulation for sustainable building codes to climate-proof existing and future infrastructure, and a coastal zone management strategy and action plan. An example of climate-proofing infrastructure is by encouraging and then implementing white

color roofs to reduce electricity consumption as was recently adopted in Sydney, Australia. Also, regulation can be related to a moratorium on new hotels to protect sustainability in the face of coastal erosion and pressure on energy, food, and water.

Considering the importance of the ocean and its role in both mitigating and adapting to climate change, the government should leverage the Marine Park Aruba to build coastal resilience. Given the importance of preserving, enhancing, and strengthening coastal ecosystem resiliency while also enabling social and economic development, the government should explore the implementation of an integrated coastal zone management to regulate the integrated use, development and protection of the coastal zone. This management should include early warning systems for storm surges, restoration of mangroves, and strengthening of other sea defenses against coastal erosion.

Involve the financial sector with the climate change strategy and raise awareness of the issues. Given the small size of the Aruban economy, safeguarding access to credit for households and businesses and promoting a resilient mobile banking platform could facilitate recovery after a natural disaster.

Box 5.1: Examples of mitigation and adaptation in small island economies.

While the countries in the Caribbean have not yet started implementing the primary policy recommendations by the IMF centered around carbon pricing and feebates, various countries have already begun to implement some of the other mitigation and adaptation recommendations.

In Granada, for instance, the authorities have put in place a number of elements of a comprehensive natural disaster risk layering strategy, including establishing contingency funds, participating in regional parametric insurance schemes, and including a hurricane clause in debt restructuring agreements.

Meanwhile, disaster planning is a relatively strong point for Seychelles. It has managed to mobilize some innovative financing, and has negotiated a contingency credit line with the World Bank that can be drawn down in the event of an emergency. Seychelles also has a small budget contingency line. It plans to meet its emission reduction targets mainly by switching to renewable energy (solar), shifting 30 percent of private vehicles to electric, and capturing landfill methane.

St. Lucia has a balanced mitigation strategy backed by costed

investment plans and a qualitative adaptation strategy with identified priority sectors. There is strong government commitment and high public awareness. St. Lucia plans to meet emission reduction goals mainly by increasing use of renewable energy (wind, solar, and geothermal) and improving energy efficiency. It is also working on articulating priority investment and other specific support reforms for its adaptation strategy. Moreover, St. Lucia has established the Climate Adaptation Financing Facility (CAFF), which provides households (including those with informal income) with concessional loans dedicated to pre-emptive investments, including retrofitting their homes.

Like Seychelles and St. Lucia, Belize plans to meet its mitigation goals by expanding its already relatively high share of renewable energy (from 57 to 85 percent of electricity supply), reducing energy intensity and fossil fuel use in transport, protecting forest reserves, and improving sustainable forest management. In addition, Belize has clearly specified adaptation priorities, and has identified necessary actions to achieve these priorities. Investment in strengthening the resilience of infrastructure connectivity – roads and bridges – was flagged as the most urgent priority and has been prominent in recent budgets.

Finally, the Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC) is the world's

first regional catastrophe risk-pooling mechanism that allows countries to pool their hurricane and earthquake risk and collectively approach the international reinsurance market to purchase cheaper coverage. The sixteen current members of the facility are Anguilla, Antigua & Barbuda, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Granada, Haiti, Jamaica, Nicaragua, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, Trinidad & Tobago, and Turks & Caicos.

5.8.3 Financing of mitigation and adaptation

Prioritize investment in infrastructure and resilience building. While there may be competing demand for the limited fiscal space, investments to enhance climate resilience generate substantial returns and are also necessary to avoid the disastrous impact of climate change.

Develop a comprehensive picture of financing needs, including contingency financing. The government should define its climate change strategy including the necessary investment projects, their costs, and the time horizon. In this way, the annual needs for financing can be identified.

Reach agreement with the Netherlands to finance mitigation and adaptation projects through COHO. Many small and

developing countries rely on multilateral and national development banks and donor countries for concessional financing. In the case of Aruba and given the imminent establishment of the COHO, it would seem that this vehicle can have a role in providing countercyclical funding that simultaneously supports economic activity and employment in the short term, while contributing to the transition to a sustainable low-carbon economy.

Ensure all relevant policy and legal frameworks are in place to attract private investment in the energy sector and other relevant sectors (e.g., sustainable tourism). Enhancing climate resiliency is also in the interest of the private sector. Policies (e.g., a credible carbon price) and legal frameworks should steer private investment away from carbon intensive to low-carbon projects.

Prioritize implementation of a clean energy strategy. This action will strengthen the balance of payments. However, as the clean energy strategy becomes more successful, revenues from fuel and vehicle taxation will decline. A carbon tax would be valuable in offsetting this loss.

Explore the possibility of gaining access to international climate funds, e.g., the Green Climate Fund. These types of funds can represent a source of funding through grants for

climate strategies but do have requirements that countries have to meet in order to gain access.

5.9 Recommendations for Aruba in scenario 3: Policy shift.

This scenario contains all the recommendations included in scenario 2 and includes several additional recommendations.

5.9.1 Mitigation

Implement a carbon pricing scheme as the primary policy tool, whereby the price of carbon will be raised significantly by 2030. This scheme should include all sources of emission, i.e., power generation as well as road fuels. An extensive decarbonization of the economy will require both energy efficiency and the share of low-carbon sources in the energy supply to increase significantly. These changes will require carbon-intensive energy to become much more expensive relative to both low-carbon energy and other goods and services than it is currently. The price of carbon should be increased to at least US\$ 75 by 2030 consistent with global IMF recommendations. Precautions should be taken, however, to protect Aruba's competitive position. This could be done by reaching agreement with countries in the region on a regional carbon price floor, thereby ensuring fair competition in the transition to a low-carbon economy.

In addition to a carbon pricing scheme, introduce so-called feebates that raise the implicit price of carbon. Also, the government should remove existing distortions to support better carbon pricing. For instance, it is undesirable in the scope of carbon pricing that household consumption of electricity and road fuels is not subject to the turnover tax (BBO); ideally BBO should be reflected in the prices of all consumer products to avoid distorting household choices.

Complement the carbon pricing scheme with public investment in clean technology networks and measures to assist vulnerable households and workers. Actions that the government can take under this approach include subsidies and price guarantees to increase demand, investment, and supply in the low-carbon energy sector; direct public investment in low-carbon technologies and infrastructure; and research and development subsidies to incentivize innovation. The increased private and public investment in low-carbon technologies could also help boost demand and supply in the economy, supporting the recovery from the COVID-19 crisis.

Use part of the revenues from the carbon tax to compensate vulnerable households and workers through targeted financial transfers to protect their purchasing power and to ensure inclusion in the transition to a low-carbon economy.

Also, some of the revenue can be used to finance higher public spending in low-carbon sectors, which will create jobs and offset employment losses in carbon-intensive sectors. These actions should help overcome short term focus and fear of lost jobs and livelihoods and instead enable a longer-term vision toward stopping climate change.

Introduce an electronically collected congestion fee to reduce traffic congestion as a complementary measure to carbon pricing. This should include schedules designed to smooth traffic flows, along with mileage-based tolls. Such a scheme could also help stabilize transportation revenue when excises on gasoline begin to fall and manage pressure on the road network.

Explore the possibility of promoting restorative ocean farming. This action could help reduce carbon emission, increase food security, foster ecosystem conservation, and create jobs.

5.9.2 Adaptation

Long-term energy planning with consideration of climate change also should include reconsideration of the business model of the utility companies going forward. The current

business model is not likely to be sustainable or in the general interest of Aruba transitioning toward a low-carbon economy. Hence, preparations should be made for these companies to transition to the government's goal of carbon neutrality.

Develop an integrated solid waste management program that addresses waste segregation, storage, collection, transport, minimization, reuse and recovery, cost recovery, education, and communications. The plan should encompass capping and closing open dumps, capturing and utilizing landfill gas, and ensuring proper waste handling and organics management.

Enhance the resilience of water security/management infrastructure. Some aspects that should be considered include the quality of drinking water, the improvement of water irrigation, and the capture of rainwater. With regard to the production of drinking water, a transition should be made to the use of renewable energy to reduce the contribution to emissions. Meanwhile, for irrigation natural biofilters could be used. The water capture in urbanized areas should be improved to manage rain fall and prevent flooding of roads and residences. The water captured at residences can also be put to productive use like watering home-grown produce. Another important aspect is the protection of the marine ecosystem from land-

based contamination, through the placement of mangroves and sponges, which can act as a purifier for the land water streaming into the ocean.

Enhance post disaster and social resilience. To achieve this, contingency planning and related investments are required to ensure an efficient disaster response with minimal disruption to public services.

Create financial resilience ahead of disasters. The government should create fiscal buffers and utilize pre-arranged financial instruments to protect fiscal sustainability and manage recovery costs, and thereby avoid a financial disaster like occurred due to the outbreak of Covid-19. To this end, it is recommended that a contingency fund be created that can provide financial assistance in the event of a disaster. The government should also explore the possibility of arranging standby financing for catastrophes in the form of credit lines at international institutions. Another option is to arrange disaster insurance through various risk transfer mechanisms, such as the Caribbean Catastrophe Risk Insurance Facility (CCRIF), and market-based instruments like catastrophe bonds.

Establish a disaster and climate risk reduction facility for housing. This facility should provide households with

concessional loans dedicated to pre-emptive investments, including retrofitting their homes. This facility should be able to provide technical and financial support to homeowners to help ensure reduced vulnerability to hurricanes and floods of their houses.

5.9.3 Financing of mitigation and adaptation

Phase out fossil fuel subsidies by introducing a carbon tax. While there may be no explicit subsidies, the fact that the externalities caused by fossil fuel emissions are not priced represents an implicit subsidy. A carbon tax will reduce carbon emissions and produce additional environmental and health benefits.

Redistribute revenues from carbon tax to fund other initiatives, for example retrofitting houses, and support low-income households, workers, and communities that are most impacted by the transition to a low-carbon economy or the physical effects of climate change. In this way, the transition to a low-carbon economy will be inclusive with no extra costs to the government.

Explore the possibilities of charging international aviation and maritime emissions. While establishing such a charge may

require some international coordination, it could provide a useful source of financing.

5.10 Main findings and conclusions

Like the rest of the world, Aruba already feels the impact of climate change. Its main vulnerability is the warming and acidification of the ocean, and the bleaching of coral reefs. Coral reefs provide protection against storm surges and are also important for the tourism industry as they are a key source of tourism activity. The impact of flooding risk is substantial as 46 percent of households reside in areas that are susceptible to storm surges and flooding. Moreover, the majority of tourist accommodations on the island are located near the coast. In addition to tourism, a large part of Aruba's primary infrastructure (port, airport, water and power plant, sewerage) is located near the coast, contributing to its vulnerability.

Apart from sea level rise, rising temperatures can also potentially have negative impacts on the Aruban economy. An increasing temperature could significantly impact productivity in Aruba, especially in sectors exposed to the heat, such as construction and tourism. Additionally, higher temperatures could also lead to increased energy costs related to cooling of homes and businesses. Considering Aruba's current energy mix, this

would lead to more imports of crude oil, and conversely, higher outflows of foreign exchange to abroad. As temperatures rise, the risks of extreme weather events will increase, exposing Aruba to more frequent severe weather and natural disasters such as hurricanes.

Another impact of climate change is that countries that are considered vulnerable to climate change may also see this reflected in their sovereign rating. A drop in the rating would push up international borrowing costs for the government and for businesses, and subsequently could cause a reduction in investment and thus in economic growth.

Several studies have attempted to quantify the potential impacts of climate change for Aruba. Using a business as usual scenario, Bueno et al. (2008) estimated that the loss of GDP for Aruba would amount to 20 percent of GDP in 2050. Meanwhile, ECLAC (2011) found that the potential loss for Aruba due to climate change ranges from 1.5-2 percent of Aruba’s GDP each year.

Aruba has taken some steps to address climate change. For instance, in 2018, the government of Aruba established the Aruba Marine Park with one of the purposes being to conserve and protect marine biodiversity and ecosystems while managing

accessibility in a sustainable way. Also, the spatial development plan (ROP 2019) was renewed and approved in 2019, with an important aim being the balance between social and economic needs and those of nature and the environment. Moreover, the Aruban government introduced a ban on the import of plastic and foam to limit the damage caused by these materials to the environment.

Aruba has reduced the carbon intensity of its power production in recent years through investing in more fuel-efficient equipment at the WEB. Conversely, the share of renewable energy in total energy production rose from zero in 2008 to 18.1 percent in 2021. Moreover, the government along with private sector partners have created favorable conditions for the purchase of solar panels, hybrid and electrical vehicles, and energy efficient appliances. Meanwhile in 2020, the government stated its intention to transition to a circular economy and manage waste streams as resources. Furthermore, it has recently adopted an energy resolution which serves as the base for a national energy policy. While these are encouraging steps, they are not sufficient. In this chapter we have put forward the following recommendations in response to climate change.

Table 5.5: Recommendations scenario 1: policy as usual

<i>Policy as usual is unsustainable, thus not recommended.</i>
<i>At the very least prioritize Energy Resolution, including impactful actions to move towards a circular economy.</i>
<i>Include all emission, including those of a potential refinery, in emission targets.</i>

Table 5.6: Recommendations scenario 2: policy reforms.

Mitigation	Adaptation	Financing
<i>Substantially increase share of renewable energy to at least 35% in 2024, 50% in 2030 and 85% by 2040.</i>	<i>Map infrastructure assets to vulnerable areas and enhance resilience.</i>	<i>Prioritize investment in infrastructure and resilience building.</i>
<i>Introduce feebates and invest in charging infrastructure to stimulate switch to electrical vehicles and increase share to 20-30% by 2030.</i>	<i>Incorporate climate strategy and adaptation into medium term budget frameworks. Explore the possibility to incorporate these investments in Landepakket/COHO investment program.</i>	<i>Develop a comprehensive picture of financing needs, including contingency financing.</i>
<i>Design and implement national waste management strategy to incentivize waste reduction and recycling.</i>	<i>Formulate detailed adaptation plans for tourism sector and involve the private sector in the financing.</i>	<i>Reach an agreement with the Netherlands to finance mitigation and adaptation projects through Coho.</i>
<i>Emission targets should include all sectors, also the refinery if it becomes operational.</i>	<i>Review standards for construction and maintenance of transportation infrastructure.</i>	<i>Ensure all relevant policy and legal frameworks are in place to attract private investment in the energy sector and other relevant sectors.</i>
	<i>Assess exposure of power infrastructure to key climate risks.</i>	<i>Prioritize implementation of clean energy strategy.</i>
	<i>Assess impact on human health and establish baseline condition and public health policies that address risks.</i>	<i>Explore the possibility of gaining access to international climate funds.</i>
	<i>Include measures in ROPV to adequately address sea level rise and storm surges.</i>	
	<i>Leverage Marine Park Aruba to build coastal resilience.</i>	
	<i>Involve financial sector with the climate change strategy and raise awareness of the issues.</i>	

In addition to the recommendations for scenario 2, the following policies are recommended for shifting policies forward (scenario 3).

Table 5.7: Recommendations scenario 3: policy shift

Mitigation	Adaptation	Financing
<i>Implement a carbon pricing scheme as the primary policy tool, whereby the price of carbon will be raised significantly by 2030.</i>	<i>Long-term energy planning with consideration of climate change should also include reconsideration of the business model of the utility companies going forward.</i>	<i>Phase out fossil fuel subsidies by introducing carbon tax.</i>
<i>In addition to a carbon pricing scheme, introduce so-called feebates that raise the implicit price of carbon.</i>	<i>Develop an integrated solid waste management program that addresses: waste segregation, storage, collection, transport, minimization, reuse and recovery, cost recovery, education, and communications.</i>	<i>Redistribute revenues from carbon-tax to support low-income households, workers and communities that are most impacted by the transition to a low-carbon economy or the physical effects of climate change.</i>
<i>Complement the carbon pricing scheme with public investment in clean technology networks and measures to assist vulnerable households and workers.</i>	<i>Enhance the resilience of water security/management infrastructure.</i>	<i>Explore the possibilities of charging international aviation and maritime emissions.</i>
<i>Use part of the revenues from the carbon tax to compensate vulnerable households and workers through targeted financial transfer to protect their purchasing power and to ensure inclusion in the transition to a low-carbon economy.</i>	<i>Enhance post disaster and social resilience.</i>	
<i>Introduce an electronically collected congestion fee to reduce traffic congestion as a complementary measure to carbon pricing.</i>	<i>Create financial resilience ahead of disasters.</i>	
<i>Explore the possibility of promoting restorative ocean farming.</i>	<i>Establish a disaster and climate risk reduction facility for housing.</i>	

References

- Acevedo, S., Mrkaic, M., Novta, N., Poplawski-Ribeiro, M., Pugacheva, E., and Topalova, P., (2017), *Effects of Weather Shocks on Economic Activity*, IMF WEO October 2017 Chapter 3, IMF.
- Agrawala, S., Bosello, F., Carrato, C., de Cian, E., Lanzi, E., (2011), *Adapting to Climate Change: Costs, Benefits, and Modelling Approaches*, *International Review of Environmental Economics* (5): 245-84.
- Batini, N., Parry, I., Wingender, P., (2020), *Climate Mitigation Policy in Denmark: A Prototype for other countries*, working paper, IMF.
- Batten, S., (2018), *Climate Change and the Macro Economy: A Critical Review*, Staff Working Paper No. 706, Bank of England.
- Bueno, R. (2008), *The Caribbean and climate change: the cost of inaction*, Stockholm Environment Institute (US Center) and Global Development and Environment Institute (Tufts University).
- Burke, M., Hsiang, S.M., and Miguel, E., (2015a), *Global Non-Linear Effect of Temperature on Economic Production*, *Nature* 527: 235-39.
- Cevik, S., Tovar Jalles, J., (2020), *Feeling the Heat: Climate Shocks and Credit Ratings*, IMF Working Paper, IMF.
- Dell, M., Jones, B.F., Olken, A., (2014), *What Do We Learn from the Weather? The New Climate-Economy Literature*. *Journal of Economic Literature* 52 (3): 740-98.
- ECLAC, *An Assessment of the Economic Impact of Climate Change on the Tourism Sector in Aruba*, 2011.
- Gaspar, V., Parry, I., (2021), *A Proposal to Scale Up Global Carbon Pricing*, IMF blog.
- Gassebner, M., Keck, A., and R. Teh, (2010), *Shaken, not stirred: The impact of disasters on international trade*, *Review of International Economics*, 18(2): 351-368.
- Gill, D. (2010), *Economic Valuation of Goods and Services Derived from coral Reefs in the Tobago Cays Marine Park*, iabin (Inter-American Biodiversity Information Network) and OAS (Organisation of American States).
- Government of Aruba, (2020), *Repositioning our sails: Aruba's mission driven model for economic recovery and resilience*.
- Government of Aruba, (2019), *Ruimtelijk Ontwikkelingsplan 2019*.
- Government of Aruba, (2021), *Resolutions - Energy Summit III*.
- Hallegate, S., Rozenber, J., (2017), *Climate Change Through a Poverty Lens*, *Nature Climate Change* 4: 250-56.
- IPCC, 2013: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.
- IPCC, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
- Jaumotte, F., Barrett, P., Bogmans, C., Carton, B., Eugster, J., Mohommad, A., Pugacheva, E., Tavares, M., Voigts, S., (2020), *Mitigating Climate Change – Growth- and Distribution- Friendly Strategies*, IMF WEO October 2020, Chapter 3, IMF.
- Oh, C., Reuveny, R., (2010), *Climatic natural disaster, political risk, and international trade*, *Global Environmental Change*, 20(2): 243-254.
- Peterson, R.R., (2020). *Whence the twain shall meet: Weathering overtourism and climate change in small island tourism economies*, Working paper, Central Bank of Aruba.
- Yao, J.,(2021), *Electricity Consumption and Temperature: Evidence from Satellite Data*, IMF Working paper, IMF.



6. Advancing Financial Development and Financial Inclusion in Aruba

By Elmelynn Croes

6.1 Introduction

Achieving economic growth has long been a key macroeconomic goal of Aruban policy makers to raise living standards and increase the wellbeing of its people. However, economic growth does not necessarily mean that the higher living standards and wellbeing generated apply to everyone or are shared equally across different groups of society. Moreover, as mentioned in Chapter 3, Aruba has not incurred any significant improvement in income equality since 1991 as measured by the Gini-index, despite steady growth, albeit at a slower pace. Additionally, the COVID-19 pandemic has exacerbated inequality trends, and has globally adversely affected low-income households more acutely, including Aruba. The pandemic has, thus, created a more urgent call for policy makers to include pro-growth policies that foster inclusion, promote economic growth that is distributed fairly across society, and create opportunities for everyone.

Studies have shown that financial development and financial inclusion are conducive to inclusive growth, as they can positively shape the distribution of economic opportunities. Furthermore, past research confirms that financial development has a positive impact on economic growth and income inequality (Beck et al., 2007). Moreover, recent studies on the impact of financial inclusion conclude that inclusion is beneficial to reduce

inequality, poverty, and raise economic growth (Loukoianova & Yongzheng, 2018). Implementing policy actions that increase financial development and financial inclusion in Aruba can, thus, lead to sustainable economic development that raises living standards across all socio-economic groups and elevate the wellbeing of all its people. Thereto, the strengthening of financial capabilities for financial wellbeing is pivotal. According to the World Bank, financial capabilities embody the knowledge, attitudes, skills, and behaviors of consumers with regard to managing their financial resources, and understanding, selecting, and making use of financial services in a responsible manner that fit their needs.

This chapter takes stock of financial development and financial inclusion in Aruba, and identifies areas of opportunity for advancing financial development and strengthening financial inclusion. Additionally, it will look at the role of financial education to stimulate financial inclusion and wealth creation. This chapter will address and answer the following questions:

- *What are the levels of financial development and financial inclusion in Aruba?*
- *How can financial development contribute to inclusive growth in Aruba?*
- *What are the possible opportunities to increase financial inclusion in Aruba?*

These questions are answered by a review of the relevant literature, international best practices, and an analysis of available survey data for Aruba. Furthermore, three different scenarios will be explored for financial development and financial inclusion in Aruba up to 2040. Scenario one entails a continuation of current policies and assumes no change. Scenario two involves policy reforms in which the government makes adjustments to current policies. Scenario three requires a policy shift by which the government implements new policies to create significant systemic change.

6.2 Previous studies

At a basic level, financial development can be defined as a reduction in the cost of market imperfections. In a broader sense, according to Cihak et al. (2012), financial development is defined as improvements in the quality of five key financial functions: (a) producing and processing information about possible investments and allocating capital based on these assessments; (b) monitoring individuals and firms and exerting corporate governance after allocating capital; (c) facilitating the trading, diversification, and management of risk; (d) mobilizing and pooling savings; and (e) easing the exchange of goods, services, and financial instruments. As such, the financial system affects savings rates and resource allocation, which in turn have

a significant impact on economic activity.

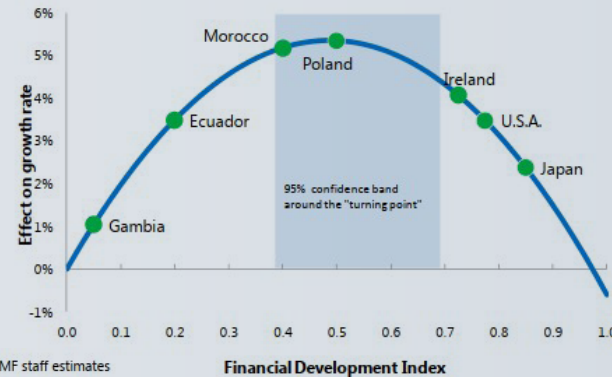
The better a country's financial system can perform the five key financial functions, the faster its economy tends to grow (Levine, 1997, 2004; Levine and Zervos, 1998).

Levine and Zervos (1998) found that stock market liquidity and banking development are positively correlated with economic growth, capital accumulation, and productivity growth. Moreover, empirical analyses demonstrate a strong positive link between the functioning of the financial system and long-run economic growth (Levine, 2004).

Financial development promotes entrepreneurship, which in turn helps to drive economic growth (Kerr & Nanda, 2010; de Mello & Dutz, 2012). Stronger performing financial systems can help allocate resources to the firms and businesses with the best projects and ideas, as these financial systems can more effectively produce and process information and are better able to screen firms and households. Recent research, for example, shows that financial policy reforms that intensified competition in the financial system, enhanced the quality of financial services provided to the non-financial sectors, lowered entry barriers facing non-financial firms, thereby intensifying competition through the non-financial sector, and increased both the rate of new firm entry and old firm exit (de Mello & Dutz, 2012).

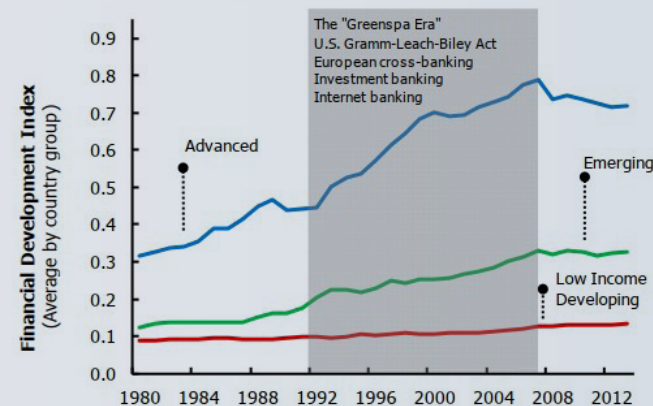
Financial development not only drives economic growth and entrepreneurship, but research shows that it also has a disproportionately positive effect on lower income families (Beck et al., 2007; Clarke et al., 2006). Beck et al. (2007) found that greater financial development induces the incomes of the poor to grow faster than average per capita GDP growth, which lowers income inequality. As such, financial development creates economic growth that is inclusive and stretches across all income groups.

Nonetheless, according to Sahay, et al., (2015) empirical analysis indicates that there is a significant, bell-shaped, relationship between financial development and growth. Their analysis suggests that financial development induces growth, but the effect weakens at higher levels of financial development, and eventually becomes negative (Figure 6.1). However, there is a wide band around the turning point, reflecting the variation in countries' fundamentals and institutional settings. The latter highlights the importance of institutional capabilities and, in particular, the quality of financial regulations and financial supervision. Additionally, they find that Emerging Markets (EMs) are closer to AE's in financial institutions than in financial markets. Furthermore, despite lower depth, the efficiency of EMs financial institutions is relatively high (Figure 6.2).



Source: IMF staff estimates

Figure 6.1: Financial development effect on growth.



Source: IMF staff estimates

Figure 6.2: Financial development among different economies.

As mentioned, financial inclusion also has been proven to foster inclusive growth (Loukoianova & Yongzheng, 2018; Burgess et al., 2005). It has received much attention on national agendas globally as a potential means to economic benefits (Barajas et al., 2020). Financial inclusion allows households and firms to invest in their future, smooth their consumption, and diversify risk. Moreover, it is an additional dimension of financial development. Financial inclusion can be defined in many ways. There is no universally accepted definition; most definitions touch upon access, usage, and the quality of financial products and services (Barajas et al., 2020). The World Bank defines financial inclusion as individuals and businesses having access to useful and affordable financial products and services that meet their needs- transactions, payments, savings, credit and insurance- delivered in a responsible and safe way. Demirguc-Kunt et al. (2017) concluded that studies show that appropriate financial services have substantial benefits for consumers, especially women and poor adults. Sahay et al. (2015) found that financial inclusion reaps (economic) growth benefits that are separate from those achieved by the overall level of development of the financial sector. Moreover, this positive impact continues to hold for financial inclusion indicators related to the bottom income quartile and to women users.

Globally, financial markets have become increasingly more accessible to smaller investors (Lusardi & Mitchell, 2014). However, at the same time financial products and services have become increasingly more complex, leading people to navigate difficult financial terrain involving complicated calculations and decisions. For example, in order to save for old age, consumers need to consider prospective survival probabilities, discount rates, investment returns, earnings, pensions, and social security benefits (Lusardi & Mitchell, 2009). Moreover, the consumer must be able to use this information to make and execute an optimal consumption/savings plan. Furthermore, as indicated in chapter 4, trends in the pension and social security landscape may require a shift of responsibility for saving and investing onto workers and retirees. All in all, current and future generations need to be able to make ever more difficult calculations and choices in order to optimize their financial wellbeing.

Consequently, financial literacy is pivotal. In order to make effective financial decisions and engage in certain financial activities such as financial planning, people require knowledge of financial products and concepts, as well as mathematical skills, or numeracy. The latter is considered as financial literacy. The OECD (2011) defines financial literacy as a combination of awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions and, ultimately, achieve

individual financial wellbeing. A lack of financial literacy can be problematic if it hinders a person from making optimal financial decisions that would benefit their financial wellbeing.

The literature reveals that the cost of low financial literacy is significant. For example, Rooij et al. (2012) learn that the net worth difference associated with the difference in the 75th and 25th percentiles of the advanced financial literacy index equals €80,000. Furthermore, Lusardi et al. (2013) find financial estimates that are strongly supportive of the conclusion that financial literacy plays a key role in explaining inequality and should not be ignored. As such, financial literacy can contribute to higher financial inclusion, a more equal distribution of wealth, and increased equality among a country's population. To conclude, evidence on financial development, financial inclusion, and financial literacy demonstrates that they are conducive to inclusive growth, and should be policy priorities on the national agenda of countries, including that of Aruba.

6.3 Methodology and scenarios

This chapter uses the financial development definition proposed by Svirydenka (2016) as a combination of:

- i. Depth: size and liquidity of markets;
- ii. Access: ability of individuals and companies to access

financial services;

- iii. Efficiency: ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets.

The IMF Financial Development Index (FDI) is used to take stock of the level of financial development in Aruba (Figure 6.3). Financial development is a multidimensional process and should be evaluated by looking at multiple indicators. To overcome the shortcomings of single indicators as proxies for financial development, Svirydenka (2016) created a number of indices that summarize how developed financial institutions and financial markets are in terms of their depth, access, and efficiency, culminating in the final index of financial development (annex 1).

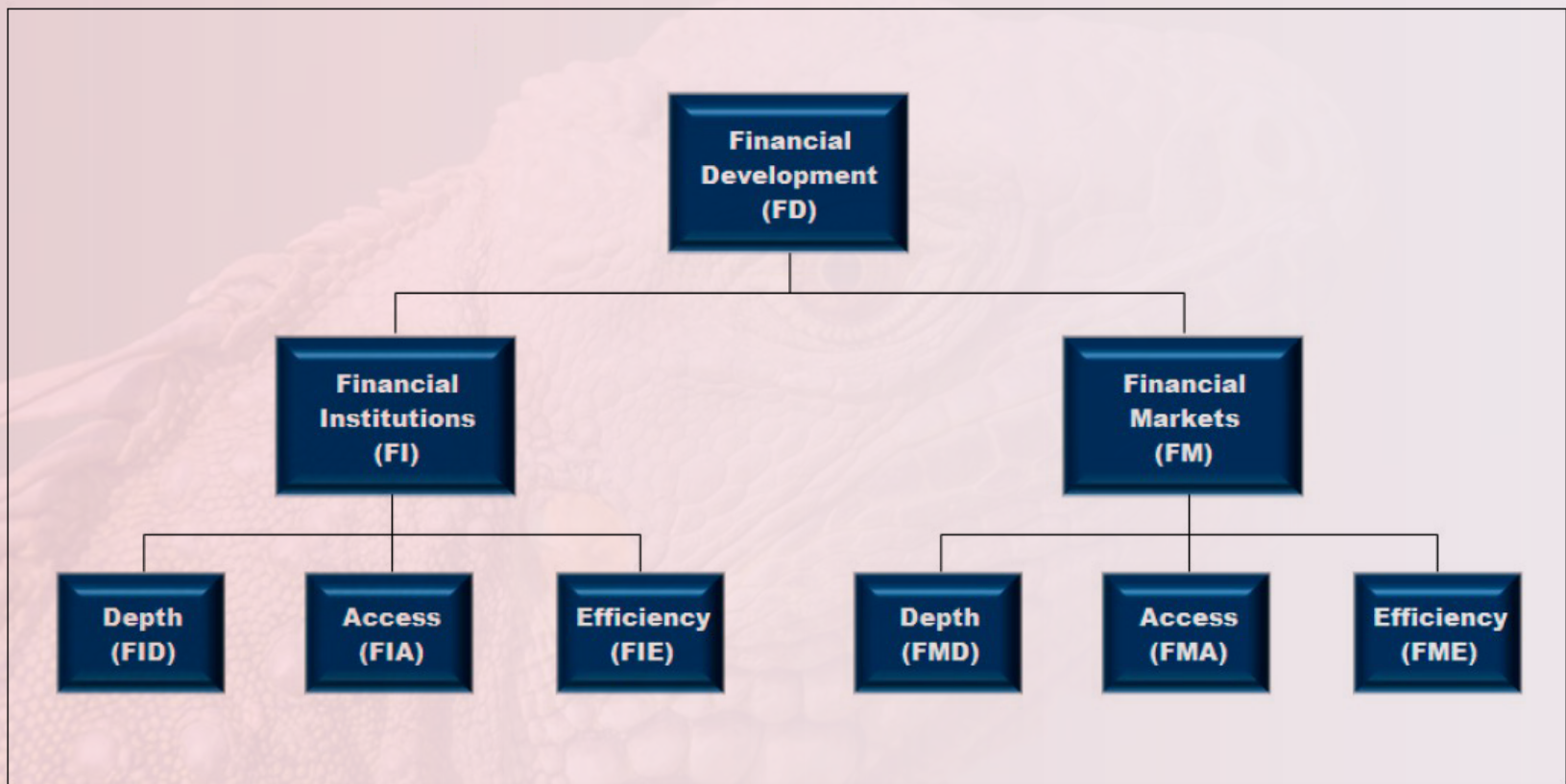


Figure 6.3: Financial Development Index Pyramid.
Source: IMF staff, based on Čihák and et al. (2012)

Furthermore, in this chapter financial inclusion is defined as access to and use of formal financial services by individuals, based upon the definition used by Sahay et al., 2015. Available survey data for the Household Financial Survey (2017), Financial Inclusion Survey (2018), and Household Financial Wellbeing Survey (2021) are used to assess the level of financial inclusion in Aruba.

For financial development, the first scenario, which assumes ‘policy-as-usual’ and hence that the current level of financial development, as measured through the financial development index, will remain largely unchanged up to 2040.

The second scenario, which calls for policy reforms, investigates possibilities to raise the financial institutions index by increasing the depth of financial institutions through structural reforms and policies that bolster the business, regulatory, and supervisory environment. The third scenario, which calls for a shift in policy, looks for opportunities to increase the depth of the capital markets, by, e.g., expand both the financial institutions and financial markets index by adopting policies to stimulate the domestic bond market (including the issuance of securities by private and public companies) and establishing an equity market in Aruba.

For financial inclusion, the first scenario would entail a continuation of current levels of financial usage and

financial literacy among the Aruban population aged 18 years and older. The second scenario examines ways to stimulate financial inclusion by promoting financial and digital literacy. The third scenario is contingent on realizing a structural transformation in the financial system, as well as building financial and digital literacy among the Aruban population in order to stimulate wealth creation.

6.4 Findings

6.4.1 Financial development

Financial development in Aruba, as measured by the Financial Development Index (FDI)¹, shows that index scores have hovered around 0.30 index points and averaged 0.28 index points over the period from 1986 to 2019 (Figure 6.4). The FDI stood at 0.29 index points at the end of 2019. The latter is explained by the practically non-existent level of the Financial Markets Index (FMI), which averaged 0.0 over the period. On the other hand, Aruba’s Financial Institutions index (FI) averaged 0.56 index points. When compared to selected regional economies, Aruba shows a relatively higher level of financial development (Figure 6.5). Barbados is the only country among the selected economies with a higher FDI than Aruba.

■ ¹ On a scale of 0 to 1 with a higher index point denoting higher financial development.

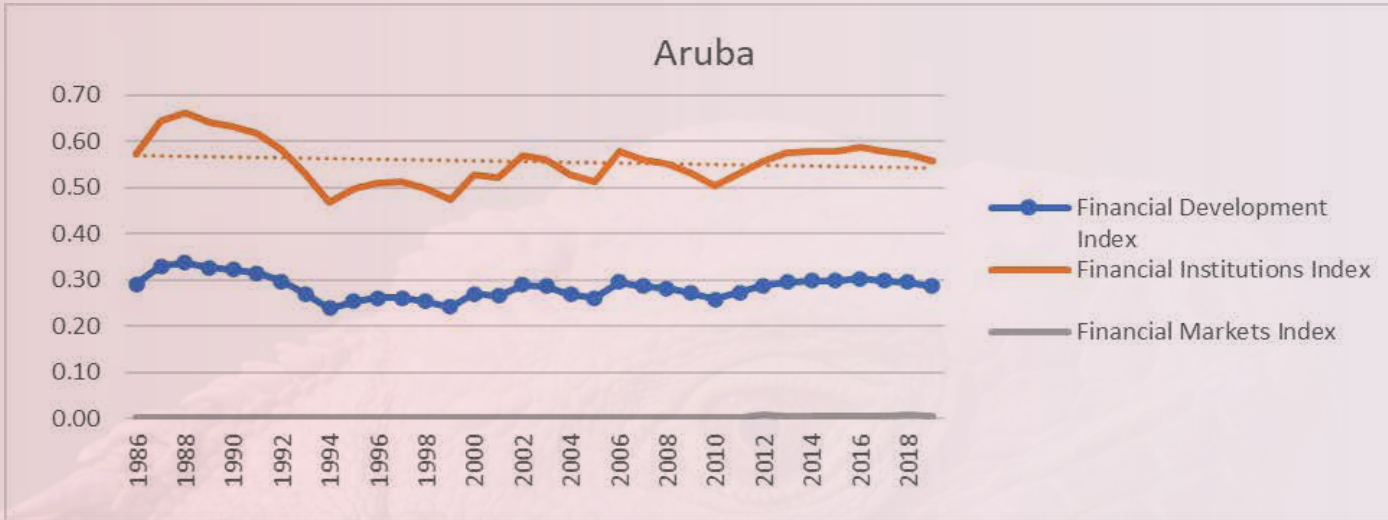


Figure 6.4: Financial development index. Source: IMF

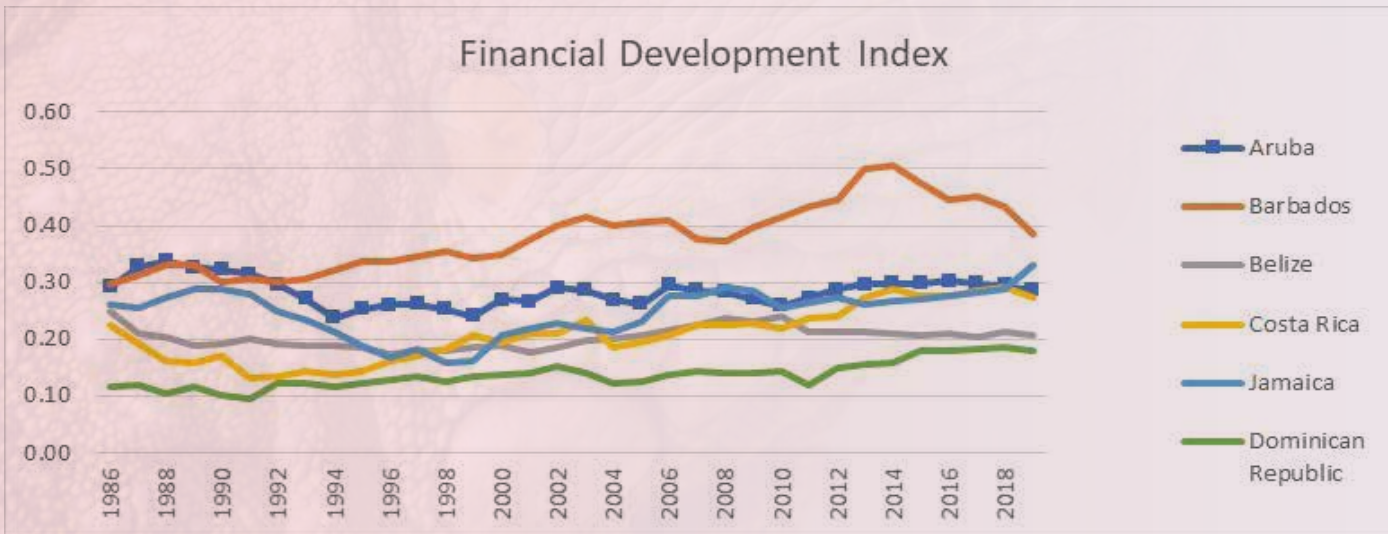


Figure 6.5: Financial development index for comparable countries. Source: IMF

When comparing Aruba with an Advanced Economy (AE), like the Netherlands, it shows that the Netherlands has a substantially higher FDI, averaging 0.72 index points over the entire period under review (Figure 6.6). Furthermore, the Netherlands recorded an average FI index of 0.81 index points and an average FM index of 0.60 index points. The latter shows that Aruba lags substantially behind the Netherlands. Furthermore,

Aruba (2019: 0.28 FD index points) is below the inflection point of financial development after which growth contribution decelerates, i.e., between 0.4 and 0.7 on the FDI (Sahay, et al., 2015) (Figure 6.2). This suggests that an increase in financial development would still contribute positively to growth in Aruba, especially if concerted policy actions are focused on strengthening the business, regulatory, and supervisory environment.

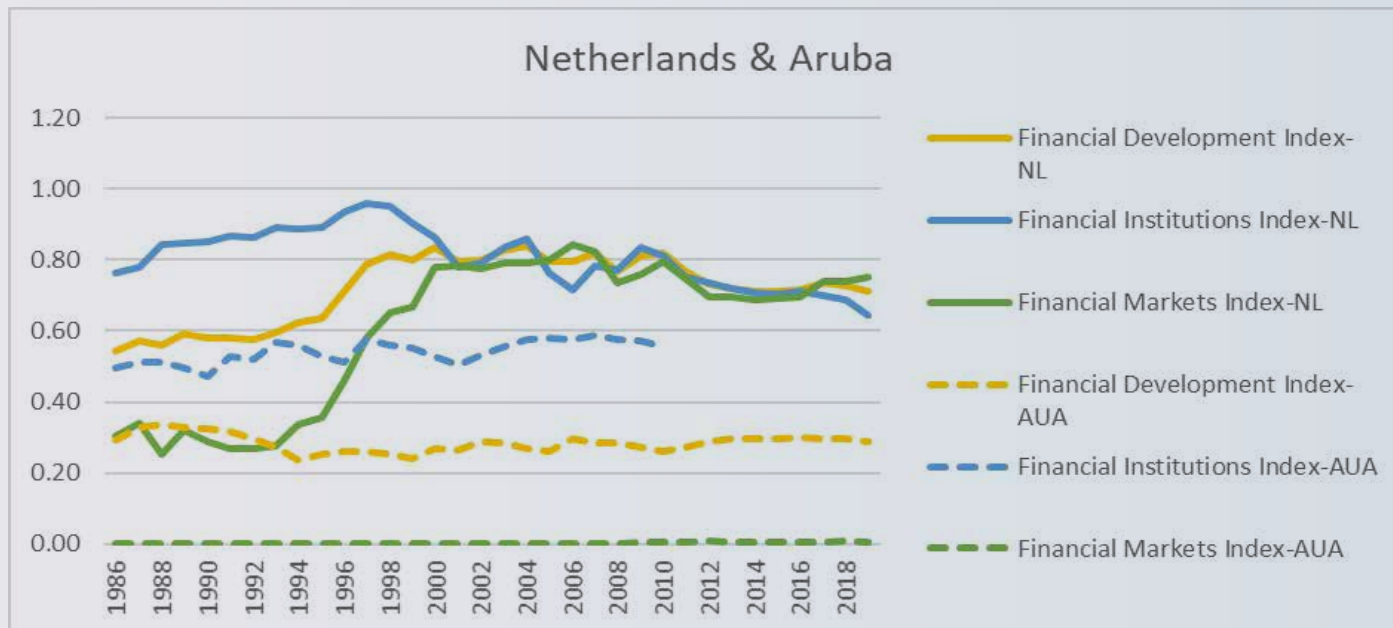


Figure 6.6: Financial development index for the Netherlands & Aruba. Source: IMF

The comparative higher level of financial development of Aruba is largely attributed to more developed financial institutions access and efficiency, with index points averaging 0.73 and 0.60, respectively, over the period (Figure 6.7). Aruba enjoys a relatively high level of financial institution access. At the end of 2019, Aruba had 126.7 ATMs and 14.8 commercial bank branches per 100,000 adults. Furthermore, compared to the selected economies, Aruba has a relatively high level of financial institutions efficiency, averaging 0.55 index points

over the period, which stood at 0.56 index points at the end of 2019. The latter suggests that Aruba's financial institutions are relatively more efficient at intermediating savings to investment, have relatively higher operational efficiency, and are relatively more profitable. This coincides with global findings by Sahay et al. (2015), as they find that Emerging Markets (EMs) are closer to AE's in financial institutions than in financial markets. Furthermore, despite lower depth, the efficiency of EMs financial institutions is relatively high.

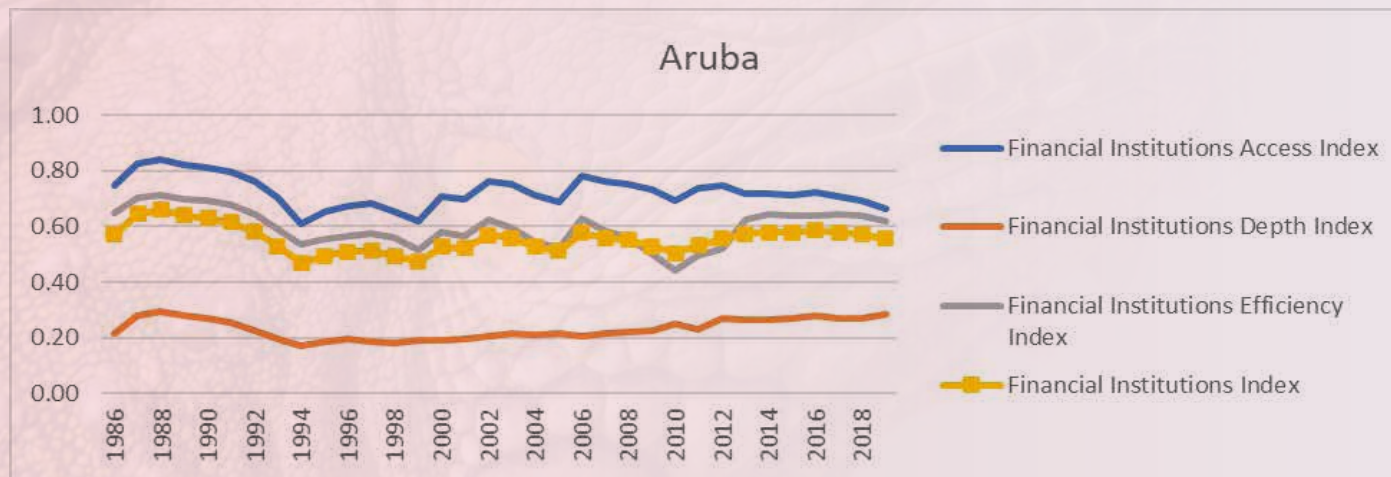


Figure 6.7: Financial Institutions Index for Aruba. Source: IMF

6.4.2 Financial inclusion

With regard to financial inclusion, the FDI reveals Aruba has a relatively high level of financial access, while survey data points towards under saving by Aruban adults (18+). Furthermore, CBA survey data shows that in 2018 about 88 percent of Aruban adults (18+) had at least one of the following: checking/current account, savings account, fixed-term deposit, investment fund, or other account at a bank or financial institution (CBA, 2018). However, when looking at the different types of account ownership, the level of account ownership drops significantly beyond that of a current account. Whereas over 80 percent of respondents indicated that they had a checking/current account, only about 50 percent reported that they have a savings account (Figure 6.8). Moreover, merely about 1 percent stated that they have a fixed-term deposit and/or an investment fund. Additionally, about 40 percent have one type of account, about 45 percent have two types of account, and only about 2 percent have three types of account (Figure 6.9). Looking more in depth, the Financial Wellbeing of Households Survey data shows that of the households that own a savings account, only about one-third essentially saves on a regular basis (Centrale Bank van Aruba, 2021).



Figure 6.8: Types of account ownership. Source: CBA

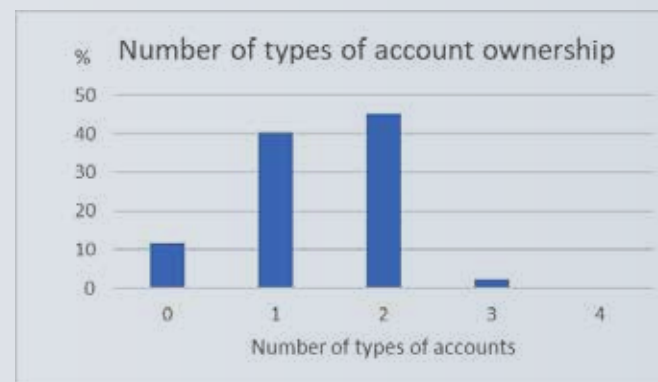


Figure 6.9: Number of types of account ownership. Source: CBA

Looking at credit, almost half of adults had a loan and/or credit at a financial institution (Centrale Bank van Aruba, 2018). More specifically, about one-third of Aruban adults have a credit card, about one fifth has a mortgage, and 17 percent have a personal loan (Figure 6.10). Examining consumer credit data of the commercial banks for the past 15 years, it is noted that consumer credit by commercial banks slowly declined over the period. Moreover, this declining trend was exacerbated by the COVID-19 pandemic as the decreasing trend became much more pronounced in 2020. Furthermore, almost 40 percent of respondents have a life insurance and about 75 percent of adults have a non-life insurance.



Figure 6.10: Types of credit ownership. Source: CBA

In comparison to the selected economies, Aruba fared relatively well, as suggested by available data (Figure 6.11). Nonetheless, it should be noted that due to a lack of comparable data, the World Bank Global FINDEX survey and the IMF Financial Access Survey (FAS) are used for indicative purposes only in this regard. Available data for the selected economies suggest that Aruba has higher levels of adult account ownership at a financial institution compared to Costa Rica and the Dominican Republic, as well as greater credit card ownership and outstanding housing loans (mortgage). Nonetheless, it's noted that an advanced economy like the Netherlands enjoys almost complete account ownership at a financial institution among its adult population. The latter could be related to the fact that according EU Directive 2014/92/EU, anyone residing legally in the European Union has the right to open a payment account with basic features in any EU country. Furthermore, the Netherlands has higher levels of outstanding housing loans and credit card ownership. Lastly, Aruba has a higher level of adults with a life-insurance policy compared to Costa Rica (Figure 6.12). On the other hand, Costa Rica has a higher level of adults with non-life insurance policies.

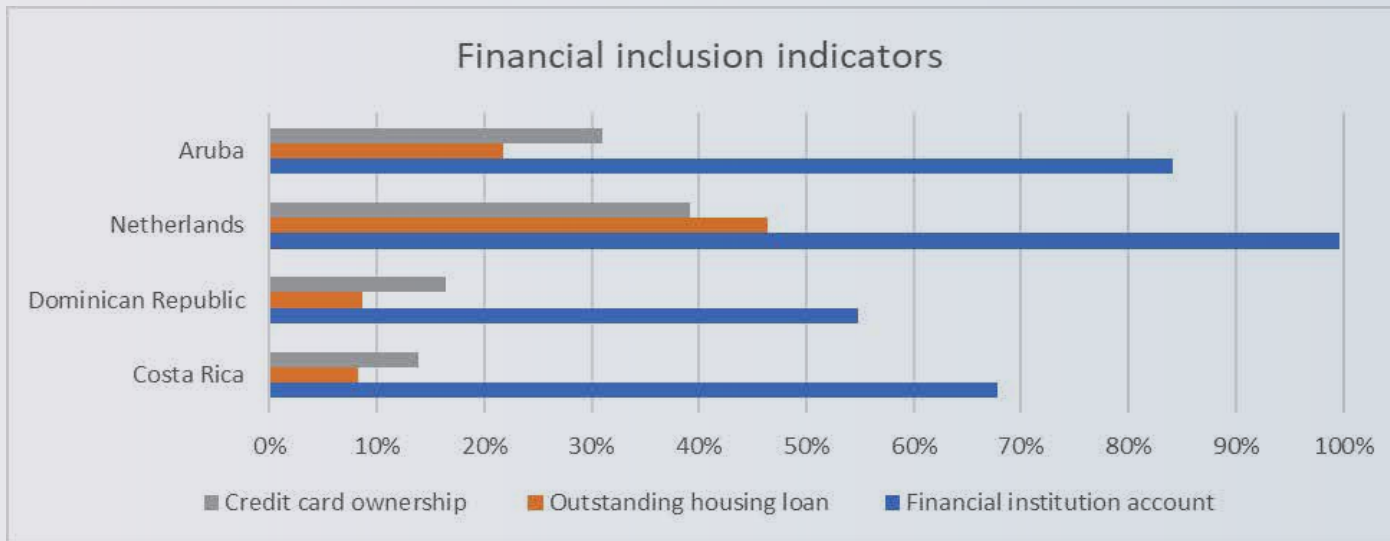


Figure 6.11: Financial inclusion indicators for selected economies. Source: FINDEX, World Bank.

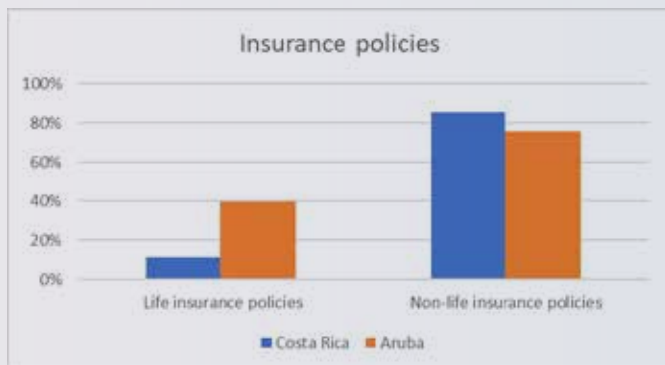


Figure 6.9: Number of types of account ownership. Source: CBA

All things considered, Aruba has a high level of financial access and usage when compared to selected peers, however, concerns of undersaving and declining consumer credit prevail, as well as the poor usage of certain types of financial instruments for building wealth. Almost half of the Aruban adult population do not have a savings account at a financial institution. Moreover, according to the report Financial Position of Aruban Households (2017), the household survey data shows that 74.5 percent of households that overspend do not have enough savings to cover their overspending. Additionally, it is concluded that a fraction of Aruban households

had problems with either overspending or overleveraging or both in 2017. All in all, the low amount of savings account ownership of Aruban adults leaves a significant amount of the population in a vulnerable position if they are faced with an emergency or difficult times and are unable to obtain financing. Fast forwarding, the latter was likely exacerbated by the COVID-19 pandemic, which resulted in job losses and significantly reduced salaries and secondary benefits of those that remained employed.

Moreover, the global COVID-19 pandemic has affected many people's financial wellbeing and has disproportionately affected lower income and lower skilled workers. CBA survey data shows that at least 2 out of 3 households reported that the COVID-19 pandemic negatively affected their household finances due to a decrease in income (75%) and savings (74%) (Centrale Bank van Aruba, 2021). Countries that are heavily reliant on tourism services, such as Aruba, have been particularly negatively impacted by the pandemic. As a result, income inequality is likely to have increased further in Aruba. Consequently, the urgency to advance financial inclusion is greater than ever.

6.4.3 Financial literacy

CBA survey data on the Big Three, as set forth by Lusardi and Mitchell (2006), are used to assess the level

of financial literacy of Aruban adults (18+) and indicate low levels of financial literacy. In order to try and measure financial literacy Lusardi and Mitchell (2006) created three questions that assess the understanding of three core financial concepts: compound interest, real rates of return, and risk diversification. These questions have been widely replicated and adapted, and are known as the Big Three. CBA survey data show that about two-third of respondents answered the compound interest correctly, slightly less than half answered the inflation question accurately, and less than one-third got the stock risk question right (Centrale Bank van Aruba, 2018). Additionally, more than half of respondents did not know or chose not to answer the stock risk question (Table 6.1). Even though the three questions comprises basic financial literacy questions, as the questions progressed from compound interest to stock risk, the ratio of respondents that provided the right answers decreased, while the ratio of the respondents who chose "I don't know" or would rather not answer the question increased. The survey results show that the Aruban population 18 and older is relatively financially illiterate.

Question	correct	incorrect	DK	Refuse
Compound interest	68.4%	8.1%	18.2%	5.2%
Inflation	49.1%	18.7%	26.4%	5.9%
Stock risk	27.4%	14.3%	50.3%	8.0%

Table 6.1: Lusardi and Mitchell's Big Three financial literacy questions. Source: CBA, Note: DK = I don't know, refuse = would rather not answer

When looking at the number of questions respondents answered correctly, only about half of them could answer the simple 2 percent calculation and knew about inflation, and less than one-fifth answered all three questions correctly (Table 6.2). Moreover, there is a substantial mismatch between respondents self-assessed knowledge versus their actual knowledge. The latter is measured by the correct answers to the Big Three questions, while self-assessed knowledge is measured by asking respondents how they would assess their overall financial knowledge from very poor to very good. It is notable that even though actual financial literacy knowledge is

low, respondents are generally very confident of their financial knowledge and thus tend to overestimate how much they know (Figure 6.13). The results show that 85.0 percent of respondents assessed their overall financial knowledge as fair or better, yet only 17.8 percent could answer all three questions correctly. As such, although actual financial literacy levels are low, most people are unaware of their lack of knowledge. The latter could partially explain the low levels of types of savings among adults in Aruba. More importantly, it can provide a significant opportunity to increase financial inclusion and wellbeing by raising financial literacy levels.

1 correct	2 correct	3 correct
25.2%	33.1%	17.8%

Table 6.2: Percent of respondents who answered 1, 2, or 3 of the questions correctly. Source: CBA



Figure 6.13: Self-assessed financial knowledge. Source: CBA

6.5 Scenarios

6.5.1 Policy-as-usual

In a policy-as-usual scenario, no significant or structural changes take place in government policies. In essence, current trends continue up to 2040. The latter will result in a continuation of shallow financial markets and low financial development. In this scenario, the FDI is projected to drop below the current financial development index and to remain below 0.3 index points up to 2040 (Figure 6.14).

For financial inclusion, business-as-usual means that no policy changes are made to advance financial inclusion in Aruba, and financial access and usage among adults will likely stay at about the same levels up to 2040. In an unchanged policy scenario, no new avenues for wealth creation are formed for the Aruban population, while current low levels of formal savings and investment will prevail. Consequently, the Aruban adult population will likely remain highly vulnerable to economic shocks due to a lack of financial buffers.

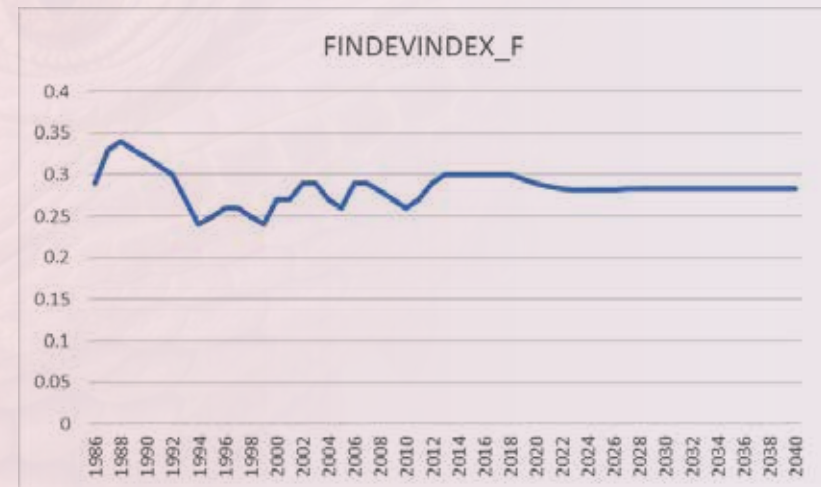


Figure 6.14: Financial development index projection under scenario 1 policy as usual. Source: IMF & CBA

6.5.2 Policy reform

In a policy reform scenario, the government implements structural reforms and policies that promote financial development and financial inclusion in Aruba. The former is achieved by fostering greater depth of financial markets through increased savings and investments by 2040. The latter is bolstered by effective programs to raise financial literacy awareness. In this scenario, the FD index is increased by targeting the 2019 Financial Institutions Depth (FID) index level of the Netherlands. If the target is achieved, it is estimated that the FD index for Aruba could be raised to an estimated 0.4 index points by 2040.

In order to accomplish the former, it is recommended that the government:

- i. ***Adopt a national vision and strategy on financial development and financial inclusion.*** The adopted financial sector development vision should have a clear link to a national strategy and clearly articulate the role of the financial sector for economic development (Todoroki & Strobbe, 2015). The financial inclusion strategy (or as component of the financial sector development strategy) should include a multi-year framework with short- to medium-term targets and a multi-pronged strategy (Centrale Bank van Aruba,

- 2019). The financial inclusion strategy should address the three core aspects; access, usage, and quality of financial products and services. Moreover, financial education should be an important part of the national financial development and financial inclusion strategy. The government should introduce roadmaps and action plans for financial education (i.e., guiding documents that set objectives, means, and define partners) that are ideally evidence-based.
- ii. ***Develop policies that aim to relax regulatory constraints and entry barriers into the financial system.*** Regulatory agencies that remove, rather than impose, barriers to competition boost the quality of financial services and expand access to financial services and private financial market participants compete for profits (de Mello & Dutz, 2012). A risk-based approach that limits regulation and financial system entry requirements to transactions and firms above a certain threshold can be useful (Barajas, Beck, Belhaj, & Naceur, 2020). The use of regulatory technologies, including AI-supported riskmanagement, should be pursued. Moreover, the critical principles that matter for financial development and financial stability are essentially the same. This means that better—not more—regulation is what promotes financial stability and development (Sahay, et al., 2015). As such, financial development and financial stability are not mutually exclusive. Furthermore, as suggested by the IMF (2021),

reforms geared towards removing current obstacles to the private sector identified by the Master Plan, such as advancing the e-Government framework, and improving access to financial resources, particularly for SMEs, could spur business profitability, investment, and growth. Furthermore, introducing the right to a basic bank account, such as the one that was introduced in the European Union in 2014, could help to further lower barriers to financial access (EU Directive 2014/92/EU).

- iii. **Improve the information environment through the adoption of international accounting and auditing standards and introduction or improvement of credit registries and bureaus.** The extent to which shareholders and creditors can effectively monitor firms and induce managers to maximize firm value, will improve the efficiency with which firms allocate resources, and thus make savers more willing to finance production and innovation. The use of distributed ledger technologies (DLT) platforms should be actively piloted, in order to develop an integrated and secured digital credit network. In turn, the absence of financial arrangements that enhance corporate governance may impede the mobilization of savings and also keep capital from flowing to profitable investments (Stiglitz and Weiss, 1983).
- iv. **Improve financial and digital literacy.** Adopt measures that aim to promote financial capability of MSMEs and individuals

to encourage the responsible use of financial products, e.g., in a way that will enable them to be resilient and pursue opportunities over time. Tailor-made interventions can have an impact on entrepreneurship and business expansion. Furthermore, individuals who lack information and knowledge about how much they should be saving and how to evaluate saving options do not have the tools and skills to make financial decisions that are in their best interests, leading them to save and invest sub-optimally. Moreover, using digital means to impart financial education have positive effects for financial literacy. As noted by Tiwari et al., (2020), establishing online tools to impart financial literacy, coupled with digital literacy amongst individuals, have led to an increased and targeted use of subscription of financial services by consumer around the world. According to Barajas et al. (2020), financial and digital literacy efforts should target the less literate groups, such as women, youth, the elderly, the poor, the lower education consumers, as well as, be tailored to participants needs and at teachable moments. Furthermore, the delivery channel should be adapted to the target audience.

- v. **Design saving products that are affordable and meet the liquidity needs of individuals and households.** In cases where the products do not meet these requirements, take-up and use are low, and there is little benefit for individuals and households. Financial products need to be tailored to the

needs of people to be relevant and make a difference in their financial lives. For example, financial institutions could use hyper-personalization to respond to customers' needs. Hyper-personalization can be defined as using real-time data to generate insights by using behavioral science and data science to deliver services, products, and pricing that are context-specific and relevant to customers' manifest and latent needs (i.e., those needs which, due to a lack of information or availability of a product or service, cannot be satisfied) (Deloitte, 2020).

vi. **Provide consumer education and protection to build and ensure trust in the formal financial system.** Consumer protection has implications for the healthy development of the financial sector, financial inclusion, and broader economic growth (World Bank, 2017). Moreover, the emergence of the digital era and a globalized economy has made consumer protection evermore essential (Benöhr, 2020). According to the OECD (2018), in order to realize the benefits of digital financial services, and to mitigate the risks, policy makers and relevant private and civil stakeholders, should take concrete actions that include establishing and complying with appropriate and flexible financial consumer and data protection frameworks, complemented by efforts to strengthen the digital and financial literacy of consumers. The GOA should consider reforms to current laws that would strengthen consumer protection, such as the CBA draft state ordinance to regulate consumer credit

(Centrale Bank van Aruba, 2020). The draft state ordinance aims to (i) ensure that consumers receive sufficient information before entering into a consumer loan agreement; (ii) place a cap on the interest rates that lenders are allowed to charge to consumers; and (iii) prevent over-crediting. Moreover, the introduction of a deposit insurance scheme will help protect (small) depositors as well as help preserve trust in the banking system, thereby contributing to financial stability and consumer protection (Centrale Bank van Aruba, 2020). Furthermore, the GOA should leverage insights from global best practices, such as those lay forth by the World Bank (World Bank, 2017), which covers, complements, and expands upon international principles and guidance. An example hereof are the Group of Twenty (G20) High-Level Principles on Financial Consumer Protection and accompanying Effective Approaches to Support Implementation.

vii. **Implement financial data collection efforts for financial development and inclusion.** Better and broader data on financial inclusion would strengthen monitoring and policy design. Country-level data and diagnostic assessments inform the design and sequencing of reforms, and can also be valuable to the private sector for adapting the design and delivery of financial services (World Bank, 2012). As such, rigorous, objective and reliable indicators help policymakers to better assess, design, monitor, and evaluate targets and

policies. Main indicators should cover financial access, usage, and quality. Moreover, both demand-side and supply-side data collection should be used for better policy making.

6.5.3 Policy shift

In a policy shift scenario, the government realizes systemic change by, in addition to implementing recommendations from the policy reform scenario, adopting policies to stimulate the domestic bond and equity markets, as well as structurally embedding and strengthening the financial capabilities and wellbeing of citizens. These could, boost financing and expansion capabilities of firms, as well as saving and investment opportunities for individuals, to increase wealth creation. Furthermore, the government will not only promote and stimulate financial and digital literacy, but also embed financial education in the education system's national curriculum throughout all education levels, as well as anchor financial education in legislation. In this scenario, the FD index is increased by targeting the 2019 Financial Institutions Depth (FID) index and an FM index levels of the Netherlands by 2040. If the target is achieved, it is estimated that the FD index could reach about 0.7 index points by 2040. To accomplish these goals it is recommended to:

i. ***Stimulate a secondary bond market and improve market***

infrastructure and investor base. The ease of selling government bond markets affects investors' willingness to buy government bonds in the first place (World Bank, 2001).

- ii. ***Develop the corporate bond market.*** Important components for a corporate bond market are attractive issuers, a disclosure and information system, a credit-rating system, and adequate bankruptcy laws (The Emerging Markets Committee of the International Organization of Securities Commissions, 2002). For example, the GOA could promote the corporate bond market by stimulating the issuance of green and blue bonds by state companies. Likewise, so-called (sovereign) Sustainable Development Goals (SDG) bonds should be actively facilitated to attract institutional investors and finance a relevant set of public sector and private sector activities in realizing the critical SDGs by 2030, including inclusive economic development and reduced inequalities (see Chapter 3), good health and wellbeing (see Chapter 4), climate action and responsible consumption (see Chapter 5), and strong institutions for sustainable communities (see Chapter 7).
- iii. ***Develop an equity market.*** Evidence suggests that macroeconomic and institutional factors are the most important driving forces for the success in developing stocks. As shown by Sahay et al. (2015), stronger institutions are positively associated with greater financial development, both in the overall FD index and with regard to the institutions

and markets indices. Moreover, macroeconomic factors such as income level, savings depth, and inflation are key determinants. As such, all the recommendations in scenario 2 should be in place, like accounting standards, corporate governance, transparency and appropriate regulations. Furthermore, the long-term success of nascent stock markets is mostly explained by their early years and by the environment in which they are established such as the size of the banking sector and the level of national saving (Albuquerque et al., 2016). Given that the required macroeconomic and institutional factors in scenario 2 have been created, the government could promote firm listings by having Initial Public Offerings (IPO's) of credible state-owned enterprises. The latter can bolster market development. Furthermore, the government should introduce incentives that encourage firms to go public, and it should stimulate venture capital and private equity, as well as develop small and medium enterprise (SME) exchanges.

- iv. **Increase stock investment demand.** The government should promote long-term saving, by for example, introducing automatic enrollments into retirement programs. Moreover, the GOA should stimulate competition in the local pension market as a means to financial deepening. Currently, under the general pension state ordinance (LAP), only local pension funds and life insurance companies are allowed to provide

pension plans. As such, the GOA could expand on the LAP to include pension plan provisions by the commercial banks. Also, the government should build relationships and link up with regional markets.

- v. **Anchor financial education in legislation.** According to the OECD/INFE Policy Handbook (2015), governments should establish clear mandates with earmarked funds to conduct financial education policies, and separate executive and supervisory roles. Build in reporting mechanisms and feedback loops, as well as collaborating with the private sector under appropriate guidelines.
- vi. **Embed a national financial education program into the school curriculum throughout all educational levels.** The financial education program should preferably be integrated into the school curriculum as part of the national strategy for financial education (OECD, 2014). An assessment and analysis of the current level of financial literacy of children and youth should be performed prior to introducing financial education into the school curriculum. Furthermore, the involvement and support of the Ministry of Education are essential and should ideally be involved at the beginning of the project. The financial education program should have appropriate, tailored and quantifiable goals. Financial education should start as early as possible, preferably in kindergarten and primary school. Moreover, appropriate

information and training of teachers and school staff are critical to successful implementation of financial education.

6.6 Conclusion

Research findings show that financial development and financial inclusion are important contributors to an equal and inclusive distribution of economic growth among society. Findings on financial literacy indicate that it can contribute to higher financial inclusion, a more equal distribution of wealth, and increased equality among a country's population. As such, it is important for policies that foster financial development, financial inclusion, financial literacy, and financial capability be at the forefront of national agendas for sustainable development. Moreover, future research should focus on building the financial capabilities of the Aruban population.

Taking stock of the levels of financial development it can be noted that Aruba has ample room for increased financial development as it is below the turning point of the positive effect of financial development on growth as proposed by Sahay et al., 2015. Aruba has a higher level of financial development, as denoted by the FDI, compared to most selected regional peers. However, it still lags behind in financial development compared to Barbados. Furthermore, there is a

substantial gap compared to advanced economies, especially with regards to the depth of financial institutions and financial markets.

On the subject of financial inclusion, Aruba has high levels of financial access and usage based on the amount of bank branches and ATMs per 100,000 adults and high levels of account ownership at a financial institution, yet undersaving and slackening consumer credit prevail.

When looking at the different types of account ownership among Aruban adults, it is evident that the account ownership beyond that of a checking/current account drops substantially. Furthermore, only about one-third of households save on a regular basis. The latter could leave a significant amount of the population in a vulnerable position if they are faced with an emergency or difficult times and are unable to obtain financing. Moreover, the COVID-19 pandemic has likely exacerbated the financial wellbeing of those that are more vulnerable, as the pandemic has disproportionately affected lower income and lower skilled workers.

What is more, the financial literacy level of Aruban adults is low, and most adults are unaware of their lack of financial literacy. Consequently, increasing financial literacy levels could provide a significant opportunity in raising financial development and financial inclusion in Aruba, especially regarding savings depth.

Looking at the different scenarios, the policy-as-usual would lead to a continuation of shallow financial institutions and financial markets depth, low savings, and a substantial lack of financial literacy. As such, it is not advised to follow the policy-as-usual scenario. The policy reform scenario would probably result in higher financial institutions depth, increased savings and investments, and more financial literacy awareness. Nonetheless, financial market development would likely still remain very low due to the absence of a well-developed bond and equity market, as well as the lack of a secure foundation of financial literacy through legislation and national financial education curriculum programs.

Consequently, it is not sufficient to solely pursue the policy reform scenario, and the government should pursue both the policy reform and the policy shift scenarios. Additionally, for the financial development elements of the policy shift scenario, it is advised to first have the policy reform scenario recommendations firmly in place. Promoting government and corporate bond markets, as well as an equity market could provide increased avenues for wealth creation in Aruba. Furthermore, by anchoring financial education in legislation and embedding it in the school curriculum, Arubans will be armed with the financial literacy knowledge to engage with financial institutions and markets optimally, hereby enhancing both financial development and financial inclusion.

References

- *Albuquerque, J., Beck, T., Bergeijk, P., & van Dijk, M. (2016). Nascent Markets: Understanding the Success and Failure of New Stock Markets. CPER discussion paper.*
- *Barajas, A., Beck, T., Belhaj, M., & Naceur, S. B. (2020). Financial Inclusion: What Have We Learned So Far? What Do We Have to Learn? International Monetary Fund.*
- *Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, Inequality and the Poor. Journal of Economic Growth.*
- *Benöhr, I. (2020). The United Nations guidelines for consumer protection: Legal implications and new frontiers. Journal of Consumer Policy, 105-124.*
- *Burgess, R., Pande, R., & Wong, G. (2005). Banking for the Poor: Evidence from India. Journal of the European Economic Association, 268-278.*
- *Centrale Bank van Aruba. (2018). Financial Inclusion Survey (CBA internal data source).*
- *Centrale Bank van Aruba. (2019). Financial Position of Aruban Households 2017.*
- *Centrale Bank van Aruba. (2019). Strengthening Digital Financial Inclusion in Aruba. Centrale Bank van Aruba.*
- *Centrale Bank van Aruba. (2020). Financial Sector Supervision Report. Centrale Bank van Aruba.*
- *Centrale Bank van Aruba. (2021). The Financial Wellbeing of Households.*
- *Čihák, M., Demirgüç-Kunt, A., Feyen, E., & Levine, R. (2012). Benchmarking Financial Systems around the World. Washington, DC: The World Bank.*

- Clarke, G. R., Xu, L. C., & Zou, H.-f. (2006). *Finance and Income Inequality: What Do the Data Tell Us?* *Southern Economic Journal*, 578-596.
- de Mello, L., & Dutz, M. A. (2012). *Promoting Inclusive Growth: Challenges and Policies*. OECD publishing.
- Deloitte. (2020). *The future of retail banking. The hyper-personalisation imperative*. Deloitte.
- Demirguc-Kunt, A., Klapper, L., & Singer, D. (2017). *Financial Inclusion and Inclusive Growth*. Washington, DC: The World Bank.
- International Monetary Fund. (2021). *Article IV Consultation Kingdom of the Netherlands-Aruba*.
- Kerr, W. R., & Nanda, R. (2010). *Financing constraints and entrepreneurship*. Harvard Business School.
- Levine, R. (1997). *Financial Development and Economic Growth: Views and Agenda*. *Journal of Economic Literature*, 688-726.
- Levine, R. (2004). *Finance and Growth: Theory and Evidence*. Cambridge: National Bureau of Economic Research.
- Levine, R., & Zervos, S. (1998). *Stock Markets, Banks, and Economic Growth*. *The American Economic Review*, 537-558.
- Loukoianova, E., & Yongzheng, Y. (2018). *Financial Inclusion in Asia-Pacific*. Washington, DC: International Monetary Fund.
- Lusardi, A., & Mitchell, O. (2006). *Financial Literacy and Planning: Implications for Retirement Wellbeing*. De Nederlandse Bank.
- Lusardi, A., & Mitchell, O. (2019). *How ordinary consumer make complex economic decisions: financial literacy and retirement readiness*. Cambridge: National Bureau of Economic Research.
- Lusardi, A., Michaud, P., & Mitchell, O. (2013). *Optimal Financial Knowledge and Wealth Inequality*. Cambridge: National Bureau of Economic Research.
- Lusardi, A., & Mitchell, O. S. (2014). *The Economic Importance of Financial Literacy: Theory and*. *J. Econ Lit*, 5-44.
- OECD. (2014). *Financial Education for Youth, The role of Schools*.
- OECD. (2018). *G20/OECD Financial Consumer Protection Approaches in the Digital Age*. OECD.
- OECD/INFE. (2015). *National Strategies for Financial Education*.
- Sahay, R., Čihák, M., N'Diaye, P., Barajas, A., Mitra, S., Kyobe, A., Yousefi, S. R. (2015). *Financial Inclusion: Can It Meet Multiple Macroeconomic Goals*. Washington, DC: The International Monetary Fund.
- Sahay, R., Čihák, M., N'Diaye, P., Barajas, A., Bi, R., Ayala, D., . . . Yousefi, S. (2015). *Rethinking Financial Deepening: Stability and Growth*. International Monetary Fund.
- Stiglitz, J. E., & Weiss, A. (1981). *Credit Rationing in Markets with Imperfect Information*. *The American Economic Review*.
- Svirydzenka, K. (2016). *Introducing a New Broad-based Index of Financial Development*. Washington, DC: International Monetary Fund.
- The Emerging Markets Committee of the International Organization of Securities Commissions. (2002). *The Development of Corporate Bond Markets in Emerging Market Countries*.
- Tiwari, C., Gopalkrishnan, S., Kaur, D., & Pal, A. (2020). *Promoting Financial Literacy through Digital Platforms: A Systematic Review of Literature and Future Research Agenda*. *Jorunal of General Management Research*, 15-26.
- van Rooij, M., Lusardi, A., & Alessie, R. (2012). *Financial Literacy, Retirement Planning and Household Wealth*. *The Economic Journal*, 449-478.
- World Bank. (2001). *Developing a Government Bond Market: An Overview*. In *Developing Government Bond Markets*.
- World Bank. (2012). *Financial Inclusion Strategies Reference Framework*. World Bank.
- World Bank. (2017). *Good Practices for Financial Consumer Protection*. World Bank.

Annex:

CATEGORY	INDICATOR	DATA SOURCE
Financial Institutions		
Depth	Private-sector credit to GDP	FinStats 2015
	Pension fund assets to GDP	FinStats 2015
	Mutual fund assets to GDP	FinStats 2015
	Insurance premiums, life and non-life to GDP	FinStats 2015
Access	Bank branches per 100,000 adults	FinStats 2015
	ATMs per 100,000 adults	IMF Financial Access Survey
Efficiency	Net interest margin	FinStats 2015
	Lending-deposits spread	FinStats 2015
	Non-interest income to total income	FinStats 2015
	Overhead costs to total assets	FinStats 2015
	Return on assets	FinStats 2015
	Return on equity	FinStats 2015
Financial Markets		
Depth	Stock market capitalization to GDP	FinStats 2015
	Stocks traded to GDP	FinStats 2015
	International debt securities of government to GDP	BIS debt securities database
	Total debt securities of financial corporations to GDP	Dealogic corporate debt database
	Total debt securities of nonfinancial corporations to GDP	Dealogic corporate debt database
Access	Percent of market capitalization outside of top 10 largest companies	FinStats 2015
	Total number of issuers of debt (domestic and external, nonfinancial and financial corporations)	FinStats 2015
Efficiency	Stock market turnover ratio (stocks traded to capitalization)	FinStats 2015



7.

**Innovation
within the public
sector**

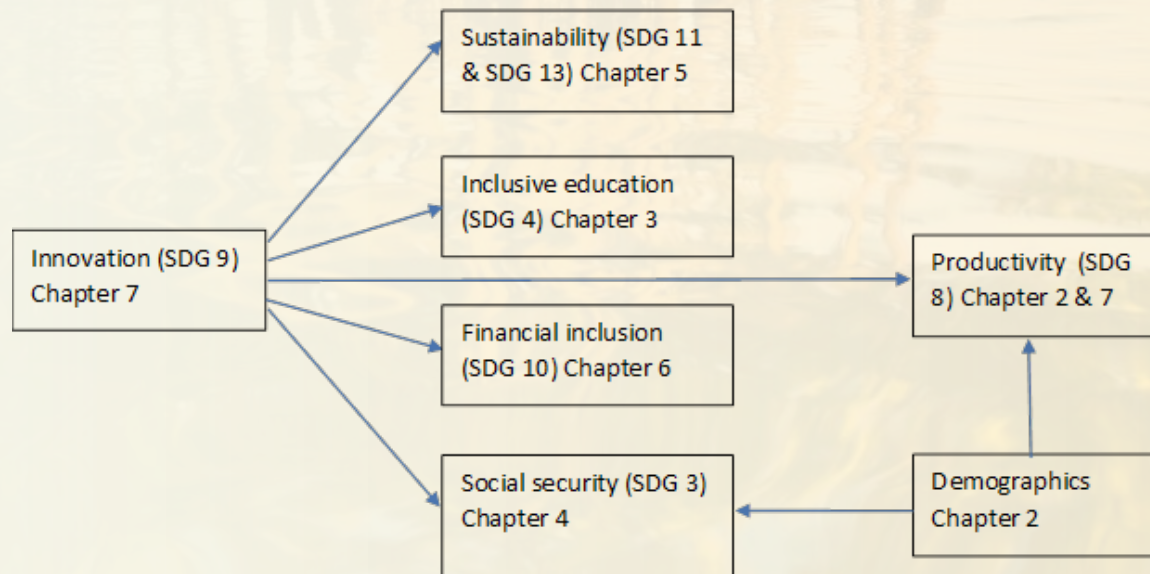
By Rynall Kock

7.1 Introduction

Effective innovation policy is vital to achieving the Sustainable Developments Goals (SDGs), especially SDG 9, which relates to fostering innovation. Innovation itself is crucial to several SDGs (see Graph 1). For instance, innovation plays a vital role in making communities safe, climate resilient, and sustainable (SDG 11 & SDG 13), as explained in Chapter 5. Moreover, innovation is a nurturer of SDGs centered around inclusive growth (see Chapter 3). This role of innovation is exemplified by how the technology of tomorrow can ensure

inclusive quality education and lowering the barriers to lifelong learning (SDG 4). Moreover, in line with SDG 3, innovation can fortify social security and strengthen health care insurance (see Chapter 4), a pillar of SDG target 3.8., as well as fostering societal wellbeing in the face of demographic changes (see Chapter 2). Furthermore, Chapter 6 highlighted the importance of innovation in reducing income inequality (SDG 10) through financial inclusion. Lastly, innovation is essential in increasing productivity (SDG 8), a struggling issue for Aruba, given the 1.7 percent drop in total factor productivity contribution to growth between 1995-2019 (IMF, 2021).

Graph 1: SDG interlinkages between chapters



While there is considerable research on how the government can spur innovation in the private sector, less is written about innovation within the public sector itself (Bugge & Bloch, 2016), especially in the context of a Small Island Developing State (SIDS). The aim of this chapter is then to shed light on how innovation within the public sector can be fomented, especially in the case of Aruba.

Impactful innovation requires an enabling institutional environment. Thereto, fomenting managerial capabilities and providing innovation complementarities are pivotal (Cirera & Maloney, 2017). The question remains of how developed these are in Aruba. Following Kaufmann et al. (2010), while managerial capabilities and innovation complementarities are difficult to measure, they are reflected by Government Effectiveness, Regulatory Quality, Voice & Accountability, Political Stability & Absence of Violence/Terrorism, Rule of Law, and Control of Corruption (see Chapter 7.3 for arguments). Benchmarking it against neighboring countries leads to the observation that Aruba historically outranked its Latin American and Caribbean peers in all six Worldwide Governance Indicators (World Bank, 2020). In general, Aruba never ranks below the top 75 percent of the world for any of the six indicators throughout the period 2004-2019. In contrast, the Latin American and Caribbean region never reaches the top 60 percent throughout the period under review. However,

Government Effectiveness being this high is at odds with the findings by de Vries (2013). Furthermore, while the same World Bank data would indicate that Regulatory Quality is better in Aruba compared to its Latin American and Caribbean peers, the Cost of Doing Business Report (CBA, 2019) would prove otherwise. Moreover, Aruba outperforming its peers in Control of Corruption may possibly contradict the findings by the Corruption Survey Report (CBA¹, 2020)

Under a policy-as-usual scenario of not developing managerial capabilities from within nor innovation complementarities¹, innovation in the Aruban public sector will likely remain scant in 2040. In particular, innovation will potentially lag across five domains of public service. Following Canning et al. (2020), these are service delivery, operations, policy & decision making, talent & workforce, and regulation & enforcement. In this chapter, it is recommended to develop managerial capabilities under the policy reform scenario. Therefore, across the five domains of public service, basic innovation initiatives crystalize by 2040, such as a streamlined service delivery, automated operations, policy and decision making based on stakeholders consultation and a high-skilled workforce. To arrive at a policy shift scenario, it is advised to develop both organizational capabilities from within and innovation complementarities. Accordingly, unconventional

¹ The interlinkages and reinforcing mechanisms of innovation policy variables (Mohnen & Röller, 2005).

innovation measures are taken, such as no-touch government services triggered by life events, cognitive automation, citizen policy & decision making, open-talent workforce, and Regtech.

In what follows, Section 7.2 formalizes the scope of this chapter by first defining innovation and the public sector.

Section 7.3 argues why managerial capabilities and innovation complementarities are needed for innovation. Subsequently, Section 7.4 demonstrates how the public sector fairs in terms of managerial capabilities and innovation complementarities. Section 7.5 then posits that under a policy-as-usual scenario of poor managerial capabilities and innovation complementarities, innovation in the public sector will keep lacking in Aruba. Section 7.6 then sheds light on an alternative scenario in which standard innovation initiatives materialize, due to innovation complementarities being effectively addressed. Against this background, Section 7.7 shows how under a scenario of innovation complementarities and organizational capabilities becoming realized, unconventional innovation projects will be executed. Lastly, Section 7.8 concludes this chapter.

7.2 Scope of innovation and the public sector

This section formalizes the scope of Chapter 7 by defining innovation and the constituents of the public sector. Given that the aim of this chapter is to give insight on how to foster

innovation within the public sector, one needs to know what classifies something as innovation and which entities are included as part of the public sector.

7.2.1 Defining innovation

Innovation can mean a plethora of things and there is no consensus on its definition (Timur & Antanas, 2017).

Throughout this chapter, the definition by Cirera & Maloney (2017) is followed. They define innovation as the ability to use knowledge to develop and apply new ideas that result in changes in the production and structure of an organization. As such, innovation is not only about invention, it also about absorption. Concretely, absorption involves new commercial and public application of (existing) technologies, copying features from other products, and the adoption of new managerial and organizational practices from other organizations. Invention on the other hand includes coming up with new technologies and disruptive business models.

7.2.2 Defining the public sector scope

Throughout this chapter, the recommendations offered are meant for the collective sector. The collective sector includes seven legal entities responsible for carrying out public functions that rely for more than 50 percent of their income on the public

resources -- in line with the UN System of National Accounts -- and are controlled by the government (IMF, 2021). In October 2019, the list of entities included in the collective sector under the medium-term budgetary framework for the 2019-21 financial years was agreed upon between the State Secretary for Home Affairs and the Kingdom Relations (IMF, 2021). These entities are: the central government, the General Health Insurance (AZV), the Social Insurance Bank (SVB), Aruba Tourism Authority (ATA), the University of Aruba, the Waste Collection and Management Entity (Serlimar), and the Foundation for Basic Professional Education (SEPB).

7.3 Managerial capabilities and innovation complementarities necessary for innovation

For innovation to happen, there needs to be enabling factors. Key to these factors are fomenting managerial capabilities, a shift in the mindset and working skills, as well as providing innovation complementarities (Cirera & Maloney, 2017).

7.3.1 Linking managerial capabilities with innovation

Managerial capabilities are central to introduction of new processes, technologies, and products in the private sector (Cicera & Maloney, 2017), as well as in the public sector

(Bekkers, 2011). Multiple studies on the explanation of the East Asian Miracles for example, accentuate the process of learning and raising the capabilities for innovation of firms (Dutrénit et al, 2013; Lee, 2013). Against this background, the introduction of the World Management Survey (WMS), initiated by Bloom & Reenen (2010), allows the quantitative analysis of management practices and their links with innovation. The WMS demonstrates that developing country firms are indeed falling behind in multiple capabilities, crucial to the technological catch-up. In particular, developing countries score well below developed nations in terms of monitoring and using data to improve service delivery, employment opportunities on a just-in-time basis, internal feedback mechanism, long-run planning, and human resource policies. Consequently, firms lack the capabilities to identify new technological opportunities, develop a plan, and cultivate the human resources to exploit them. That is, both private and public managers may neither have the awareness nor the ability to interact with technological advances (Bekkers, 2011). Cirera & Maloney (2017) state that one of the underlying drivers of managerial capabilities is education level. In addition, limits on competition can impair managerial capabilities, either by enabling inefficient firms to survive or by failing to provide adequate incentives for firms to upgrade. This is particularly relevant for Aruba, where semi-public companies have monopoly, while government departments have little to no incentive to innovate.

7.3.2 Linking innovation complementarities with innovation

Innovation complementarities are also important drivers of innovation in the private sector (Cirera & Maloney, 2017) as well as in the public sector, since technology diffusion mostly happens from the private to public sector (de Vries et al., 2018). Conceptually, innovation can be thought of as the accumulation of knowledge capital. It is thus subject to the same impediments as other types of capital, for instance, cost of doing business, thin financial markets, and macroeconomic volatility. In particular, when entrepreneurs face cumbersome regulations and higher costs of business, it can drag entrepreneurship, thereby stifling research and innovation (Boudreaux, 2017). Furthermore, there are also market failures specific to knowledge capital. In particular, since knowledge capital is non-rival² and non-excludable³ (OECD, 2010), a person bringing new technology to a country will not be able to recoup the full benefit of the investment, if others can profit from the investment at no cost to themselves. Remedies for these market failures have traditionally been R&D subsidies, tax incentives, and the creation of nonmarket institutions such as public universities. However, the National Innovation System literature argues for a much more integrated approach between the universities, governments and firms (Golichenko, 2016). Concretely, the government's task is to cultivate 'good institutions' (political stability, property rights

protection, control of corruption, among others), overseeing the interactive process, and intervening when necessary. Good institutions help in the process of registering new patents, diffusion of ideas across researchers, enforcement of property rights, innovation funding, and reduce the uncertainty of new projects (Tebaldi & Elmslie, 2013).

7.4 Benchmarking managerial capabilities and innovation complementarities

The previous section highlighted why both managerial capabilities within the public sector and innovation complementarities are important determinants of public sector innovation. The question then naturally arises whether managerial qualities and innovation complementarities are better in Aruba than other countries. This is assessed by linking them with the Worldwide Governance Indicators (WGI) by the World Bank. Nevertheless, assessing this requires first defining the WGI.

7.4.1 Defining the Worldwide Governance Indicators

The WGI are aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2020. Governance consists of the traditions and institutions by which authority in a country is exercised (Kaufmann et al., 2010).

² By non-rival is meant that the use of knowledge by one party does not prevent the simultaneous use by other parties.

³ Non-excludability entails that a party cannot force another party to not exploit an idea once that idea is public.

One of the key features of governance is the capacity of the government to effectively formulate and implement sound policies. This capacity is proxied by the indicators Government Effectiveness and Regulatory Quality (Kaufmann et al., 2010).

- i. *Government Effectiveness* captures the perceptions of a) the quality of public services, b) the quality of the civil service and c) the degree of its independence from political pressures, d) the quality of policy formulation and implementation, e) and the credibility of the government's commitment to such policies.
- ii. *Regulatory Quality*, on the other hand, captures perceptions of the formulation and implementation ability of the government to a) formulate and b) implement sound policies and regulations that permit and promote private sector development.

Another key feature of governance is the democratic process by which governments are selected, monitored, and replaced. The quality of this process is proxied by the indicators Voice & Accountability, and Political Stability & Absence of Violence/Terrorism.

- i. *Voice & Accountability* capture perceptions of the extent to which a country's citizens are able to participate in a) selecting, monitoring and replacing their government, as well

as b) freedom of expression, freedom of association, and free media.

- ii. *Political Stability & Absence of Violence/Terrorism* capture perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.

The last feature of governance is the respect of citizens for the institutions that govern economic, and social interactions among them. The extent hereof is proxied by the indicators Rule of Law and Control of Corruption.

- i. *Rule of Law* captures the perceptions to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
- ii. *Control of Corruption* captures the perceptions to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

7.4.2 Linking managerial capabilities and innovation complementarities with the Worldwide Governance Indicators

Since the WGI have been defined, it can now be shown how they are linked to managerial capabilities and innovation complementarities.

- i. *Voice & Accountability* are linked to **innovation complementarities** in so far as low speaking power leads to misallocation of resources and favoritism in resources (Sabry, 2019). Low accountability enables the government to divert attention and/or funds from key areas as well, such as R&D investment, which are essential to innovation (Enderwick, 2005).
- ii. *Political Stability & Absence of Violence/Terrorism* are related to **innovation complementarities** to the extent that If there is political stability, there is more certainty around future policies, conducting to a more predictable environment for long-term innovation investment (Okrah & Hajduk-Stelmachowicz, 2020).
- iii. This chapter specifically presumes that *Government Effectiveness* correlates with **managerial capabilities**, as the literature review by Boyne (2003) shows that public service quality (see aspect (a) of the definition of Government Effectiveness) is principally determined by better management and more financial resources. Furthermore, the quality of policy formulation and implementation -- that is, aspect (d) of the definition of

Government Effectiveness -- is a function of managerial capabilities, following Cirera & Maloney (2017).

- iv. This chapter also assumes that there is a co-movement between *Regulatory Quality* and **innovation complementarities**, as the government's ability to formulate and implement policies that promote private sector development (conform the definition of Regulatory Quality) depends on exactly the ones discussed in Subsection 7.3.1, i.e., cost of doing business, thin financial markets, and macroeconomic volatility, among others.
- v. *Rule of Law* is related to **innovation complementarities** as the quality of contract enforcement and property rights (see definition in Subsection 7.3.1) has an influence on whether innovators will be able to recoup the full benefit from their innovation investment (Cirera & Maloney, 2017).
- vi. *Control of corruption* is associated with **innovation complementarities** in that corruption takes away funds that otherwise could have gone to towards investment in R&D and other productive activities (Baris, 2019). Additionally, it creates distrust by businesses, and them eventually delaying or opting out of innovation investment (Anokhin & Schultze, 2009).

7.4.3 Linking innovation with the Worldwide Governance Indicators empirically

Current data indicate that there is some causal relation between innovation and the governance indicators (see Table 1). The dependent variable innovation is proxied by the number of patent applications received by the Bureau of Intellectual Property (BIE), similar to Burhan et al. (2017). As for the independent variables related to the WGI, each indicator has a numeric value between +2.5 and -2.5. The other independent variable is human capital, and it is proxied by the number of people enrolled in secondary education⁴. In doing so, the stock of potential new ideas is captured, similar to Baris (2019). A 1-year lag and 7-year moving average⁵ are applied to secondary education enrolment to account for the fact that it takes 7 years for roughly 75 percent of the Dutch Caribbean students to complete their Dutch higher education (van Casteren et al., 2021).

Indeed, there seems to be a positive effect of governance on innovation, as evidenced by the general positive partial effects from the WGI, with the notable exception of Political Stability. Interestingly enough, the negative relationship between political stability and innovation could be indicative of an adverse effect of the institutional inertia, i.e., maintaining the 'status quo' on economic innovation (Acemoglu & Robinson, 2012). At the same time, the partial effects found are generally statistically insignificant as the p-value is larger than a significance level

of 5 percent. In other words, there is more than a 5 percent chance that the partial effects found, were driven by chance. This is likely the result of the short time span of the time series i.e., 16 years. Still, the partial effect of Rule of Law on the number of patent applications is positive and statistically significant. Concretely, if the Rule of Law index increases by half a unit (roughly the amount it would take to reach the level of the Netherlands in 2020), then everything else equal, the number of patent applications grows by $(69.01/2) \approx 35$, or roughly 1.5 times the number of patent applications in 2019 (see Graph 2). There is thus some empirical evidence in Aruba that governance has a causal effect on innovation, consistent with the theory in Subsection 7.3.2 and arguments set out in Subsection 7.4.2. For the other WGI, perhaps had there been a longer time series, statistical significance could have been teased out.

⁴ A better proxy would be tertiary school enrollment including those Arubans that are studying abroad. However, this data were unavailable.

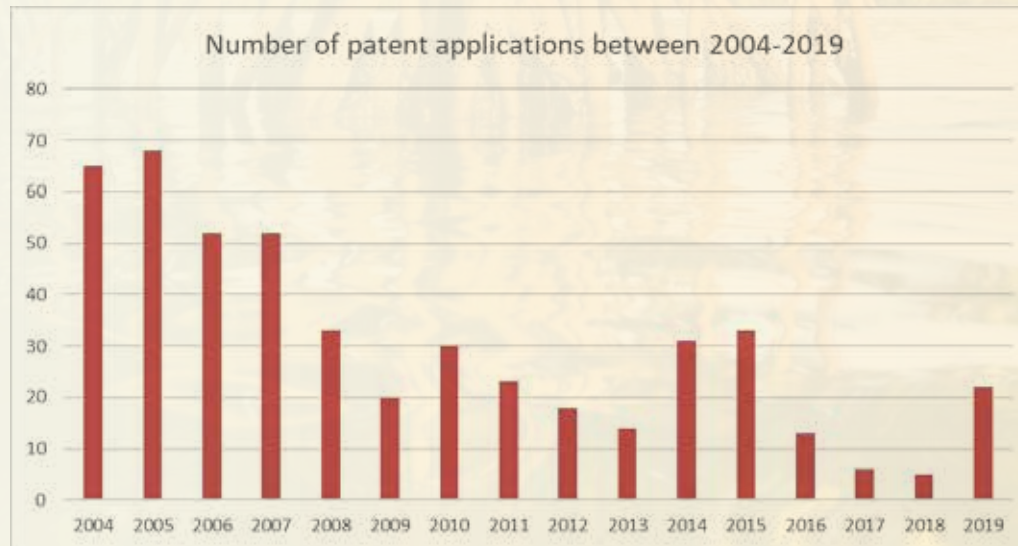
⁵ Meaning that the human capital index of the year 2019 is the average of the index between 2018-2012.

Table 1: Regression between the number of patent applications and governance indicators

Number of patent applications	
Intercept	259.4* (105.05)
Government Effectiveness index	25.74 (17.7)
Regulatory Quality index	2.53 (17.67)
Voice and Accountability index	61.58 (46.59)
Political Stability index	-70.38 (47.95)
Rule of Law index	69.01* (26.21)
Control of Corruption index	26.05 (46.25)
Secondary school enrollment	-0.03 (0.01)

Estimated partial effects are reported along with standard errors in parenthesis

*p-value<0.05, n=16

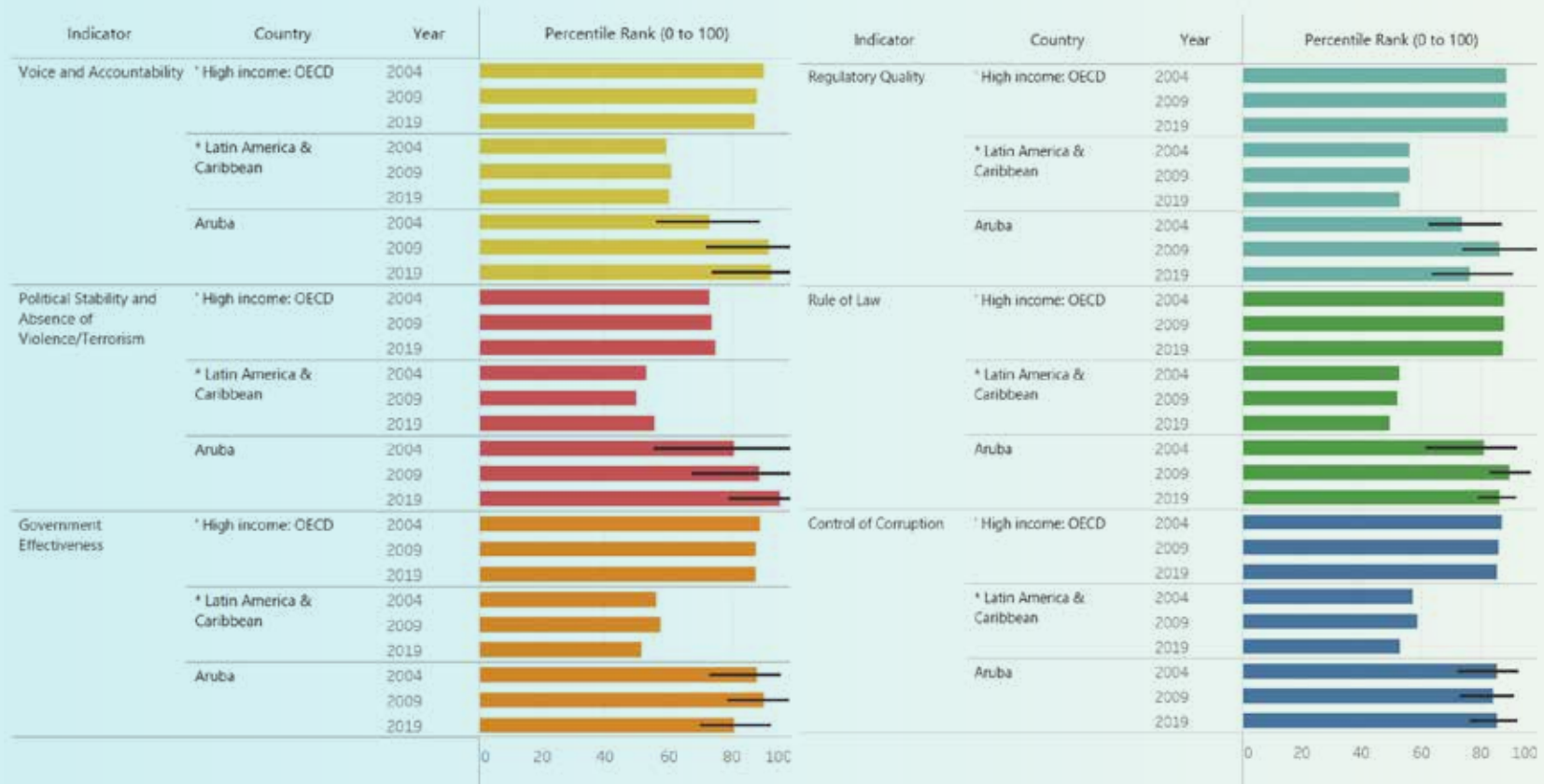


Graph 2: Innovation developments. Source: BIE

7.4.3 Benchmarking Government Effectiveness

Since Government Effectiveness proxies managerial capabilities (see Subsection 7.4.2) and the World Bank tracks data on Government Effectiveness for multiple countries, managerial capabilities can be benchmarked over time. Using perception-based survey data and views from public, private and NGO experts, the World Bank assigns a percentile rank to each

country or region for Government Effectiveness. During the 2004-2019 period, the World Bank assigns Aruba between the 76th and 88th percentile of the distribution, whereas for Latin America and the Caribbean, they lie between the 51st and 57th percentile (see Graph 2). This region is also the best comparison group, as this group shares similar economic drivers and/or (colonial) pasts with Aruba. As such each country has a similar starting point to develop institutions of high quality (Bennett et al., 2017).



Graph 2: Ranking countries by Voice & Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

Source: World Bank (2021), Worldwide Governance Indicators

Thus, in the period under review, at a minimum, 76 percent of all countries rank below Aruba, including Latin America and the Caribbean, even when considering the large uncertainty surrounding Aruba's rank, reflected by the wide 90 percent confidence interval and given by the black bar in Graph 1. The wider the confidence interval indicates relatively more

uncertainty surrounding the percentile rank. However, Government Effectiveness being high in Aruba is at odds with the findings by de Vries (2013). Namely, insufficient scores (<5.5) were given by 97 private sector managers for the internal functioning of the Aruban public sector, especially for efficiency (see Table 2).

Table 2: Mean score (between 1 and 10) given for the internal functioning of the Aruban government

In terms of expertise	5.3
In terms of administrative integrity	5.3
In terms of effectiveness	5.1
In terms of quality of the civil service	5.1
In terms of accessibility	5.0
In terms of efficiency	4.5

Source: de Vries (2013)

No certain comparison can be made between Aruba and high income OECD countries, as the confidence interval of Aruba crosses with the ranking of high income OECD countries. Looking at Aruba's own development, again no certain conclusions can be made, as the confidence intervals overlap with each other. However, between 2004-2019 Singapore outperforms Aruba in terms of Government Effectiveness. Singapore namely ranked higher than all of the countries

surveyed, whereas – at its lowest in the period – Aruba ranked higher than 76 percent of all countries.

7.4.4 Benchmarking Regulatory Quality

Given that Regulatory Quality captures innovation complementarities (see Subsection 7.4.2) and the World Bank tracks data on Regulatory Quality for

multiple countries, innovation complementarities can be benchmarked over time. During the 2004-2019 period, the World Bank assigns Aruba between the 75th and 90th percentile of the distribution, whereas for Latin America and the Caribbean, they lie between the 52th and 57th percentile (see Graph 1). Hence in the period under review, at a minimum, 75 percent of all countries rank below Aruba, including Latin America and the Caribbean, even accounting for the large uncertainty around Aruba's rank. However, the high score for Regulatory Quality contrasts with the findings in the paper by de Vries (2013), the State of Innovation Survey (CBA, 2018), and the Cost of Doing Business Report (CBA, 2019). De Vries (2013) shows

that insufficient scores were given for policy development and the involvement of the business community thereof (see Table 3). Moreover, the State of Innovation Survey (CBA, 2018) shows that there are various impediments to private sector development (see Table 4). For example, 71 percent of people find it somewhat or very difficult to start a business, and 78 percent of the surveyed private sector managers believe that the level of taxes limit incentives to invest. In the Cost of Doing Business Report (CBA, 2019), it is documented that the high cost of doing business is not only affected by the significant taxes, social premiums, and utility costs, but also by the time and effort needed, for example, to obtain the necessary permits.

Table 3: Mean score (between 1 and 10) given for policy development by the Aruban government

In terms of developing new policy	5.3
In terms of involving people in policy development	5.3
In terms of involving the business community	5.1

Source: de Vries (2013)

Table 4: The main challenges for doing business (percentage of positive responses in total responses)

How burdensome is government administration?	82
How much does the level of taxes limit incentives to invest?	78
How much activity is informal/unregistered?	33
How easy is it to start a business?	29
How easy is it to access and acquire financial capital?	22
How efficient are customs procedures?	11
How efficient is the management of public services?	7

Source: State of Innovation Survey (CBA, 2018)

No certain assessment can be made for Regulatory Quality differences between Aruba and high income OECD countries, as the confidence interval of Aruba crosses with the ranking of high income OECD countries. Regarding Aruba's own development, again no certain conclusions can be made, as the confidence intervals intersect. Nevertheless, a comparison between Singapore and Aruba can in fact be made. In 2019 for example, Singapore placed higher than any other country surveyed, while Aruba ranked higher than 76 percent of the countries.

7.4.5 Benchmarking Control of Corruption

Given that Control of Corruption captures innovation complementarities (see Subsection 7.4.2) and the World Bank tracks data on Control of Corruption for multiple countries, innovation complementarities can be benchmarked over time. During the 2004-2019 period, the World Bank assigns Aruba between the 85th and 86th percentile of the distribution, whereas for Latin America and the Caribbean, they lie between the 53th and 57th percentile (see Graph 2). Hence in the period under review, at a minimum, 75 percent of all countries rank below Aruba, including Latin America and the Caribbean -- even accounting for the large uncertainty around Aruba's rank. However,

the high score for Control of Corruption contrasts with the findings in the Corruption Survey Report (CBA¹, 2020) as citizens perceive that corruption is widespread. Specifically, it shows that between 2018 and 2020, the proportion of respondents that believe corruption is widespread, increased from 76 percent to 94 percent. In addition, the proportion of respondents that believe corruption has risen in the last 12 months, went from 52 percent to 59 percent in the period under review. However, no comparison can be made between Aruba and high income OECD countries, as the confidence interval of Aruba crosses with the ranking of high income OECD countries. In relation to Aruba's own development, once more no definitive conclusions can be made, as the confidence intervals overlap with each other. However, between 2004-2019, Singapore outranks Aruba in terms of Control of Corruption. At its lowest, Singapore ranked higher than 96 percent of the countries surveyed, whereas Aruba ranked higher than 84 percent of all countries.

7.4.6 Benchmarking the rest of the Worldwide Governance Indicators

For the rest of the WGI, a similar story follows compared to the WGI in Subsection 7.4.3, 7.4.4, and 7.4.5. Specifically, in terms of Rule of Law, Voice & Accountability and Political

Stability & Absence of Violence/Terrorism, a majority of countries rank below Aruba between 2004-2019, including Latin America and the Caribbean, even accounting for the large uncertainty around Aruba's rank. In line with the observations from the WGI in Subsection 7.4.3, 7.4.4, and 7.4.5, no certain comparison can be made between Aruba and high income OECD countries, as the confidence interval of Aruba crosses with the ranking of high income OECD countries. Concerning Aruba's own development over time, again no firm conclusions can be made, as the confidence intervals overlap with each other. Similarly, no valid comparisons can be made between Aruba and Singapore, with the exception of Voice and Accountability. At its lowest, Aruba ranked higher than 91 percent of the countries surveyed, compared to 39 percent in the case of Singapore.

Looking at Aruba's own development over time, again no certain conclusions can be made, as the confidence intervals overlap with each other. Yet, the total factor productivity decline (IMF, 2021) would indicate that, in fact, there is a decline in the quality of governance (Qiu et al., 2021). The only difference between the two groups is that there are country-specific studies and surveys conducted for Government Effectiveness, Regulatory Quality, and Control of Corruption to juxtapose with the World Bank data.

7.5 Policy-as-usual scenario

Under a policy-as-usual scenario of not developing managerial capabilities from within nor innovation complementarities, innovation in the public sector will likely remain scant (for arguments given in Subsection 7.3.1). Concretely, innovation can lag across 5 domains of public service. Following, Canning et al. (2020), these are service delivery, operations, policy & decision making, talent & workforce, and regulation & enforcement. Needless to say, some government departments are more involved in certain domains as others. For instance, the Department of Human Resources (DRH) is more involved with the public workforce than Aruba Police Force, which concerns itself more with enforcement. Nevertheless, table 5 serves as a self-reflection and inspiration for individual government departments and others.

Table 5: Overview of the three policy scenarios

	Policy-as-usual scenario	Policy reform scenario	Policy shift scenario
Service delivery	Standardized	Customer-centered	Personal services
	Multistep	Streamlined	Once-only
	Limited digital service delivery	Digital service delivery	Anytime, anywhere service delivery
	Citizen-initiated	Government initiated, but input needed from citizen	No-touch, life events
	Largely in-house	Competitive outsourcing	Do-it-yourself society
Policy & decision making	Often not evidence-based	Evidence-based	Government by simulation, AI-based scenario analysis
	Stakeholder consultations but limited follow-through	Stakeholder consultations (Council of Economic Advisors) and concrete action afterwards	Crowdsourcing and distributive policy making
	Slow and reactionary	Agile but reactionary	Anticipatory and preventive
Operations	Back-office services somewhat decentralized	More centralized back-office services	Integrated center office, public sector digital factories
	Labor intensive	Automation	Cognitive automation
Regulation & enforcement	Limited regulation capacity	Increased regulation capacity	Risk-based-regulation development, self-regulation
	Often not evidence-based	Evidence-based	AI-based scenario analysis
	Lack of enforcement	Enforcement	Positive enforcement strategy, touchless compliance
Workforce	Lifetime civil service, one-dimensional workforce	Lifelong learning workforce, on-the-job training	Consulting staffing model, widen talent network

7.5.1 Service delivery

Under a policy-as-usual scenario, public service delivery will remain standardized, with the government as the end customer instead of the citizens as the beneficiaries (GoA, 2020). Furthermore, public service delivery is presently a cumbersome and lengthy process, with for example employers need to report the new employees not only at the SVB, but also at the Department of Labor and Research (DAO) (IDEA, 2021). If such policies are not addressed, public service delivery remains an (unnecessary) **multistep** and **citizen-initiated** process. Another characteristic of public service delivery under a policy-as-usual scenario is a continued limited role of digitization. Currently, a proof of residence document is requested online, yet it requires physical presence at the Aruban town hall office, whereas the municipality of Amsterdam sends the document to the applicant's address, and payment is done online. In addition, public service delivery is by far **in-house** under the business-as-usual scenario. This means that the government is the main provider of public goods and the result hereof is an (excessive) big government, as pointed out by the Socio-Economical Council (SER) already in 2002. The most common way to measure government size is the government expenditure approach (Nyasha & Odhiambo, 2019). In this regard, Aruba has a public consumption to GDP ratio of 23.6 percent in 2018, in contrast to

the lower Caribbean and Latin American average of 16.4 percent (World Bank, 2021). To put in perspective, the same World Bank data shows that the Singaporean public consumption to GDP ratio is 10.0 percent.

7.5.2 Policy & decision making

Under a policy-as-usual scenario, policy and decision making remain non-evidenced-based (Committee Economic Recovery and Innovation Aruba, 2020). Currently, policy and decision making are based on assumptions and/or are politically biased (GoA, 2020). Moreover, despite continued **stakeholder consultations**, there is **limited follow-through** under a policy-as-usual scenario. As the RvA (2020) indicates, "various studies and reports have been published to restructure public administration or public finances, yet the political will was not present to bring about a change". Similarly, policy and decision making are **slow and reactionary**, and are expected to stay so under a policy-as-usual scenario. An example hereof is the waste policy for the 'Parkietenbos' landfill that is operating against international environmental guidelines (GoA, 2021).

7.5.3 Operations

Under a policy-as-usual scenario, back-office services such

as procurement, HR, and IT maintain their decentralized nature, even though presently there are central government finance, HR and IT departments. In terms of IT, the initial digital assessment of the e-Government Roadmap (GoA, 2020) highlights that despite there being a central IT government department, there is a lack of government-wide standards and a formal common strategy across government departments. In addition, the digital assessment shows that IT procurement and digitalization projects are often executed on an individual basis per government department. Another feature of the policy-as-usual scenario is that government operations maintain their labor intensive characteristic. This is currently reflected by the paper-enabled opaque government transactions (GoA, 2020) and the costly, inefficient, and tedious government operations (Committee Economic Recovery and Innovation Aruba, 2020).

7.5.4 Regulation & enforcement

Under a policy-as-usual scenario, regulation capacity is limited. For example, the legal framework for a competition law to ensure effective and fair competition, is not in place (GoA, 2020). Similar to policy & decision making, regulation is **often not evidence-based**. For instance, the rigid labor market regulations were defended on the grounds of the fear that some businesses hire and fire regularly (IMF, 2017). However,

no local cost-benefit analysis has been performed to guide the labor market regulation. Furthermore, there is a **lack of enforcement** when regulations are violated under a policy-as-usual scenario. The SER (2019) stresses that non-compliance in tax payments is a serious issue, and that Afl. 1.6 billion in owed taxes have not been collected, or 28 percent of 2018 nominal GDP (CBS, 2021).

7.5.5 Workforce

Under a policy-as-usual scenario, lifetime civil service is kept as the norm. Given that there is a public sector wage premium vis-à-vis the private sector, particularly for low-skilled labor (CBA, 2017), there is currently little incentive for civil servants to move to the private sector. This is exacerbated by the (presumably) safer public worker legal position compared to private sector labor laws. Furthermore, a **one-dimensional workforce** is currently observed and is assumed to linger under the policy-as-usual scenario. Evidence for the current one-dimensional workforce is that public employees feel uncomfortable using computers and productivity software (Black et al., 2019). Additionally, the mixed experiences of various departments that have independently digitized their processes (Committee Economic Recovery and Innovation Aruba, 2020) underline the rigidity of the workforce.

7.6 Policy reform scenario

To arrive at a policy reform scenario, this chapter recommends developing managerial capabilities. *This requires having an active policy for a) monitoring and using data to improve service delivery, b) employment opportunities on a just-in-time basis, c) internal feedback mechanism, d) long-run planning, and e) human resource policies.* If these capabilities are developed, basic innovation initiatives can materialize (Cirera & Maloney, 2017). Therefore, across the five domains of public service, this chapter assumes basic innovation initiatives crystalizing by 2040. Once more, table 5 serves as a source of self-reflection and inspiration for individual government departments and others.

7.6.1 Service delivery

Under a policy reform scenario, public service delivery is built on customer experience. This approach is in line with customer-centered Aruban e-Government system in development (GoA, 2020). In this system, customers' needs define how public services, websites, and apps are designed, as well as how government departments communicate with their customers. Another feature of the policy reform scenario is that public service delivery becomes more streamlined. This feature is included

in one of the proposed projects of the Recovery Master Plan (Committee Economic Recovery and Innovation Aruba, 2020), that aims to establish a digital one-stop shop for licensing.

The policy reform scenario is also characterized by public service delivery being initiated by the government department itself (although it requires the citizen's input). No local government document has been found that explicitly states the transition from citizen initiation to government initiation, hence it cannot be assessed if the government intends to incorporate this aspect into its innovation policy. Nonetheless, US examples serve as a source of inspiration. Concretely, in some US states, government departments send automated, personalized reminders about benefit applications, upcoming renewals, or missing verification documents through the applicant's preferred method of communication, upon which applicants can send supplementary documents (Dockray et al., 2019; Dean & Keith-Jennings, 2020).

Competitive outsourcing is another feature of the policy reform scenario. Such features are in accordance with the recommendations by the Committee Economic Recovery and Innovation Aruba (2020). Namely, there needs to be a review of which services are core to government function and identification of which ones can be merged, discontinued or outsourced. CBA's

2017 paper on Sustainable Government Policies (SGP) advised in the past to introduce a 'sui-generis' status for the Tax Department on grounds of efficiency, effectivity (as it opens up avenues for much-needed extra human capital) and better compliance.

7.6.2 Policy & decision making

Under a policy reform scenario, policy and decision making are evidence-based. The intention of the Recovery Master Plan (2020) is to also realize data-driven policy making. To achieve this, the execution capacity of the CBS will be upgraded through training and investment in tools. Moreover, the government intends to offer data-driven policy making workshops for policy advisors and (top) department managers. In contrast to the policy-as-usual scenario, the assumption of the policy reform scenario is that there will be **follow-through after stakeholder consultations**, as well as **agile** policy and decision making. Arguments for this assumption are a) the scheduled reform conditions stipulated by the Dutch government to be eligible for Dutch loans, b) the exposed vulnerability of Aruba's one-sided economy in the face of the COVID-19 pandemic (CBA², 2020), and c) the assurance of political and top management commitment to create understanding of and support to the Recovery Master Plan (2020) (i.e., Pillar 1, National Mission 1, Project 15). A new institutional platform along the lines of

a **'National Council of Economic Advisors'** should be (re-) established by the government to ensure data and evidence-based economic policy development and implementation, close the gap between scientific research and political decision making, and in general, to fortify the economic institutional capabilities. Inspirations can be sought from, e.g., the US Council of Economic Advisors.

7.6.3 Operations

Under a policy reform scenario, back-office services are more centralized. Patrucco, et al. (2021) for example find that centralization of procurement in Peru eliminates inefficiencies in human and financial resources. A more centralized procurement strategy is also the aim in the e-Government Roadmap. Specifically, the strategy is to develop a centralized IT procurement process for IT hardware and software. **Automation** is another central element of the policy reform scenario. This feature is also incorporated in the Recovery Master Plan (2020), whereby a point of action is to develop a secure and reliable digital system to support and automate (parts) of the legislative process.

7.6.4 Regulation & enforcement

Regulation capacity improves under the policy reform scenario.

This hinges on the proposal of the Committee Economic Recovery and Innovation Aruba (2020) to seek technical assistance from the Dutch government to address reform needs in the short term. In the mid to long term, the Committee strongly advises the government to build the necessary legislative capacity locally, combined with the outsourcing and insourcing of human capital. Another feature of the policy reform scenario is that regulation is **evidence-based**. For instance, pursuant to the ‘landspakket’, there will be an integral analysis of the current labor market policy – in terms of part-time work, fixed period contracts, illegal employment, and youth unemployment. Laws and regulations will be adjusted accordingly on the basis of the analysis and subsequent results.

7.6.5 Workforce

The policy reform scenario is characterized by life-long learning and on-the-job training. The e-Government Roadmap gives substance to these principles. In particular, the aim is to stimulate digital capacity building of the public workforce through a training hub that offers skill-based certifications. Incentives to take part can be tax cuts or credits (Pillar 2, National Mission 7, Project 4). Capacity building can be also stimulated by instilling a culture of recognition (GoA, 2020). More specially, a self-assessment tool for public employees to track their skills

developments can be created, in conjunction with a platform that highlights their achievements and innovation initiatives.

7.7 Policy shift scenario

To arrive at a policy shift scenario, we advise to develop managerial capabilities and innovation complementarities.

The latter can be achieved by lowering cost of doing business, broaden financial markets, and mitigate macroeconomic volatility. Furthermore, there needs to be an integrated approach between the universities, governments, and firms. Concretely, the government’s task is to cultivate ‘good institutions’ (political stability, property rights protection, among others), overseeing the interactive process, and intervening when necessary. If these accelerators are developed, more complex innovation initiatives can materialize (Cirera & Maloney, 2017). Therefore, across the five domains of public service, this chapter assumes complex innovation initiatives crystalizing before 2040.

7.7.1 Service delivery

Personal services typify a policy shift scenario. The Recovery Master Plan (2020) also advocates for personal services, prevalent in education, among others. The idea is to introduce a digital, personalized, flexible and experimental

learning system. Materialization hereof can already be observed elsewhere. For example, South Carolina's Department of Education created a branch specific for personalized learning. Educators in the state can tailor their lessons based on individual student profiles (Logan, 2020). Under a policy shift scenario, **an anytime, anywhere no-touch** service delivery based on **life events** can be expected. The confluence of all these features has not been highlighted in reviewed Aruban government documents. However, when a child is born in Austria for example, citizens do not have to complete a form or perform any other action to receive a family allowance, i.e., the no-touch aspect of service delivery. The birth triggers data transfers from the hospital to the central civil registry, to the Ministry of Finance to the local tax office, which disburses the allowance. Another feature of the policy shift scenario is that citizen-government interactions – whether applying for unemployment or filing taxes – can be conducted using a single digital identity (Kampen, 2018), that is, the **once-only** principle. The proposed Aruban e-Government framework in the e-Government Roadmap will also rest on this principle.

A significant feature of public service delivery under a policy shift scenario is a (Do-It-Yourself) DIY society in which empowered citizens supply public services, instead of the government (Vesnic-Alujevic et al., 2019). No local

government document has been found which sets out a plan for a DIY society. Nonetheless, a DIY society is especially relevant against the background of high debt burden and limited fiscal space of the government (IMF, 2021) to improve service delivery. An example of how such a society can develop is through platforms such as synAthina (Vesnic-Alujevic et al., 2019). Faced with the city's inability to supply public services in the aftermath of the Financial Crisis, citizens of Athens began to carry out acts of solidarity. Across the streets of Athens, people were self-organizing on a small scale, doing community work. However, many activities were disconnected, restricted by outdated regulations and poor infrastructure. The city then introduced a crowdsourcing platform synAthina, enabling citizens to engage in problem solving and innovative policy shift. After individuals and groups submit their activities and ideas, they are forwarded to the appropriate (municipal) government representative and private businesses. In this way community-led initiatives can be realized.

7.7.2 Policy & decision making

Under a policy shift scenario, policy and decision making are assumed to be guided by AI simulation and scenario analysis. This entails AI enabling government to test policies for real-life scenarios before implementing them. This can aid

decision making for urban planning and disaster management (Canning et al., 2020). For instance, AI was used at the onset of the COVID-19 pandemic to understand drivers of spreading and develop contingency plans (Rao & Firth-Butterfield, 2020). It seems that the Aruba is also heading in that direction, with plans to develop a broad AI strategy according to the e-Government Roadmap. **Crowdsourcing and distributive policy making** also typify the kind of policy and decision making under a policy shift scenario. A recent example was DIY communities designing open-source COVID-19 testing kits (Weinberger, 2020). AI and big data have made efforts to **anticipate and prevent** societal problems (instead of reacting to) more viable (Perricos & Kapur 2019), a key pillar of the policy shift scenario. For instance, Canada's revenue agency uses AI and big data to identify likely tax evaders and improve compliance.

7.7.3 Operations

Under a policy shift scenario, governments will bundle up back-office functions such as HR, finance, and procurement to become an integrated center office that leverages cross-functional data (Canning et al., 2020). At the same time, government digital factories further depict the policy shift scenario, in which interdepartmental teams work in an agile manner, highlighting a more decentralized way of working.

Cognitive automation in essence automates machine learning and thus essentially mimics human behavior (Lacity & Willcocks, 2018). Powered by advanced technologies such as natural language processing, text analytics, and data mining, cognitive automation enables government to reduce costs and manual labor. For instance, the US Veteran Benefits Administration (VBA) used those same technologies to sort claims from mail, fax and electronic submissions. As a result, the VBA cut the time spent on sorting claims from 10 days to 4 hours (Barnett, 2020).

7.7.4 Regulation & enforcement

A feature of the policy shift scenario is that regulators identify firms and individuals that pose a risk to unwanted outcomes and minimize the burden for low-risk firms and individuals, i.e., risk-based regulation. The identification process utilizes various data sources, such as compliance history and information from other sources (Canning et al., 2020). The City of Cascais, for example, uses a prediction system to identify individuals at risk of long-term unemployment, in partnership with Data Science for Social Good (Perricos & Kapur 2019). Pursuant to the e-Government Roadmap, there is also intention to transition to risk-based regulation framework. **Positive enforcement strategies** that reward good behavior can contribute to better compliance, and is a pillar of the policy

shift scenario. It has been shown in for instance in Bornman & Stack (2015) that rewarding compliance can improve future tax compliance attitude in the South African metropolitan area of Ekurhuleni. Similarly, gentle nudging programs are considered in the Recovery Master Plan. **Regtech** is another pillar of the policy shift scenario. It can, for example, help in the determination of the tax status of the client in relation to the tax authority, by requiring banks to record the fiscal residency of their clients and storing this info on a blockchain (Lootsta, 2017). In this aspect, preliminary steps are being taken, by instituting a national block coalition consisting of public, private and academic stakeholders (GoA, 2020). Self-regulation is the final pillar of the policy shift scenario. No Aruban government document has been found that envisions self-regulating citizens. However, in the EU context there is an accelerating shift from governments and large NGOs regulating green spaces and infrastructure to citizens and small NGOs (Buijs et al., 2016).

7.7.5 Workforce

A policy shift scenario revolves around reimagining the way of working and who works in the public sector. A consulting staffing model would mean that employees will jump (virtually) from one department to another department on a project-by-project basis. Scarce top-talents in the government are then

better utilized. In this environment, government workers need to be self-sufficient, self-motivated, and loyal to teams and clients. An appropriate HR recruitment policy is then warranted. Smart governments also **widen their talent networks** from ‘partnership talent’ (employees who are part of joint ventures), ‘borrowed talent’ (employees of contractors), and ‘freelance talent’ (independent, individual contractors) to ‘open-source talent’ (people who do not work for government at all but are part of a value chain of services). This makes it possible to economize on small projects and keep letting departments focus on their core business.

7.8 Conclusion

Under a policy-as-usual scenario of not developing managerial capabilities from within nor innovation complementarities, innovation in the public sector will likely remain scant in the decades ahead. In particular, innovation will potentially lag across five domains of public services: service delivery, operations, policy & decision making, talent & workforce, and regulation & enforcement. Cirera & Maloney (2017) suggest that the government needs to help public sector managers develop certain managerial capabilities in order to stimulate public sector innovation. This requires having an active policy for a) monitoring and using data to

improve service delivery, b) employment opportunities on a just-in-time basis, c) internal feedback mechanism, d) long-run planning, and e) human resource policies. Impairments on managerial capabilities, such as low education level and limits on competition, need to be also addressed in a structural manner. Limits on competition can weaken managerial capabilities, either by enabling inefficient firms to survive or by failing to provide adequate incentives for firms to upgrade. If these issues are addressed, basic innovation initiatives can materialize (Cirera & Maloney, 2017), and we arrive at a policy reform scenario. Across the five domains of public services, this scenario is characterized by a streamlined service delivery, automated operations, policy and decision making based on stakeholders consultation, a high-skilled workforce, and evidence-based regulation.

Furthermore, strengthening innovation complementarities is another prerequisite for innovation within the public sector (Cirera & Maloney, 2017). This involves lowering cost of doing business, broaden financial markets and mitigate macroeconomic volatility. In addition, it revolves around the government cultivating solid and reliable institutions (political stability, property rights protection, among others), overseeing the interactive process between innovation stakeholders, and intervening when necessary. If innovation complementarities

are strengthened, along with improving managerial capabilities, complex innovation initiatives can be expected, and we arrive at the policy shift scenario. Such a scenario is characterized by innovation within the five domains of public services: no-touch government services triggered by life events, cognitive automation, citizen policy & decision making, open-talent workforce, and Regtech utilization.

References

- Anokhin, S. & Schulze, W. S. (2009). *Entrepreneurship, Innovation, and Corruption*, *Journal of Business Venturing*, 24 (5), 465-476.
- Barnett, J. (2020) *By using AI, the VA dramatically decreased claims processing intake times, official says*.
- Bekkers, V. (2011). *Innovation in the Public Sector Linking Capacity and Leadership*. Palgrave Macmillan.
- Bennett, D. L., Faria, H. J., Gwartney, J. D., & Morales, D. R. (2017). *Economic institutions and comparative economic development: A post-colonial perspective*. *World Development*, 96, 503-519.
- Beuermann, D., Schwartz, M., Schmid, J. P., Dippel, C., Khadan, J., Fajgenbaum, J. & Smets, L. (2018). *Nurturing institutions for a resilient Caribbean*. Inter-American Development Bank.
- Black, D., Hunaskatti, M., Moraga V., Razavi C., Regalado E. Smolenova I., Uthaiwan T. Worner D. (2019). *Toward a digital Aruba: Increasing readiness of Arubans and Aruba's civil servants for e-government*.
- Bloom, N., & van Reenen, J. (2010). *Why do management practices differ across firms and countries?*. *Journal of economic perspectives*, 24(1), 203-24.
- Boudreaux, C. J. (2017). *Institutional quality and innovation: some cross-country evidence*. *Journal of Entrepreneurship and Public Policy*.
- Brewer, G. A., Choi, Y., & Walker, R. M. (2007). *Accountability, corruption and government effectiveness in Asia: an exploration of World Bank governance indicators*. *International Public Management Review*, 8(2), 204-225.
- Bugge, M. M., & Bloch, C. W. (2016). *Between bricolage and breakthroughs—framing the many faces of public sector innovation*. *Public Money & Management*, 36(4), 281-288.
- Buijs, A. E., Mattijssen, T. J., Van der Jagt, A. P., Ambrose-Oji, B., Andersson, E., Elands, B. H., & Møller, M. S. (2016). *Active citizenship for urban green infrastructure: fostering the diversity and dynamics of citizen contributions through mosaic governance*. *Current Opinion in Environmental Sustainability*, 22, 1-6.
- Burhan, M., Singh, A. K., & Jain, S. K. (2017). *Patents as proxy for measuring innovations: A case of changing patent filing behavior in Indian public funded research organizations*. *Technological Forecasting and Social Change*, 123, 181-190.
- Canning M., Eggers W.D., Chew B., O'Leary B. (2020), *Creating the government of the future: Uncovering the building blocks of change to become more anticipatory, human centered and resilient*, *Deloitte Insights*.
- van Casteren, W., Cuppen, J., Termorshuizen, T., Sacré, R., van der Vegt, J., van 't Klooster, N. & Leeuwen, J. (2021). *Studiesucces en -ervaringen van studenten uit de Caribische delen van het Koninkrijk: Onderzoek in opdracht van het ministerie van Onderwijs, Cultuur en Wetenschap*.
- Central Bank of Aruba (2017), *Sustainable Government Policies: Recommendations to the Government of Aruba for the Period 2017-2021*.
- Central Bank of Aruba (2018), *State of Innovation Report*. Retrieved from <https://www.cbaruba.org/cba/readBlob.do?id=4349>.
- Central Bank of Aruba (2019), *Cost of Doing Business Report*. Retrieved from <https://www.cbaruba.org/cba/readBlob.do?id=5971>.
- Central Bank of Aruba¹ (2020), *Corruption Survey Report*. Retrieved from <https://www.cbaruba.org/cba/readBlob.do?id=6820>.
- Central Bank of Aruba² (2020), *State of the Economy 2020Q1*. Retrieved from <https://www.cbaruba.org/cba/readBlob.do?id=8056>
- Central Bureau of Statistics (2021), *National Accounts*, Retrieved from <https://cbs.aw/wp/index.php/2021/01/08/gdp-table-production-approach-full/>.
- Chew B., Flynn M., Black G., Gupta R. (2021), *Government trends 2021: Global transformative trends in the public sector*, *Deloitte Insights*
- Cireira, X., & Maloney, W. (2017). *The Innovation Paradox*. In *Technical Report*. World Bank Group.

- *Committee Economic Recovery and Innovation Aruba (2020). Recovery Master Plan: Repositioning Our Sails.*
- *De Coster, I., & Sigalas, E. (2017). Citizenship Education at School in Europe, 2017. Eurydice Brief. Education, Audiovisual and Culture Executive Agency, European Commission.*
- *Dean S., Keith-Jennings B. (2020). State SNAP agencies can help connect SNAP households with federal economic impact payments. Center on Budget and Policy Priorities.*
- *Demircioglu, M. A., & Audretsch, D. B. (2017). Conditions for innovation in public sector organizations. Research policy, 46(9), 1681-1691.*
- *Dockray H., Silas J., Eppes E., Machell G. & Neuberger Z., (2019). Launching new digital tools for WIC participants. Center on Budget and Policy Priorities.*
- *Dutrénit, G., De Fuentes, C., Santiago, F., Torres, A., & Gras, N. (2013). Innovation and productivity in the service sector. Inter-American Development Bank, No. IDB-DP-293.*
- *Eggers W.D. & Macmillan P. (2015), Gov2020: A Journey into the Future of Government, Deloitte Insights.*
- *Enderwick, P. (2005). What's bad about crony capitalism?. Asian Business & Management, 4(2), 117-132.*
- *Golichenko, O. G. (2016). The national innovation system: From concept to research methodology. Problems of Economic Transition, 58(5), 463-481.*
- *Government of Aruba (2020). e-Government Roadmap 2021-2025: Building a better citizen experience.*
- *Government of Aruba (2021). Parkietenbos. Retrieved from https://www.overheid.aw/informatie-dienstverlening/wonen-en-woonomgeving-subthemas_46949/item/parkietenbos_37162.html*
- *Iniciativo pa Desoroyo di Empresa Aruba (2021). Pasonan pa tuma (sigui) ora di cuminsa un negoshi. Retrieved from <http://www.idea.aw/pa/maneha-bo-negoshi/contrata-empleado/>*
- *International Monetary Fund (2021). IMF Executive Board Concludes 2021 Article IV: Consultation Discussions with the Kingdom of the Netherlands—Aruba.*
- *International Monetary Fund (2021). Strengthening fiscal planning -- Aruba.*
- *Jaramillo, M., & Wright, G. D. (2015). Participatory democracy and effective policy: is there a link? Evidence from rural Peru. World Development, 66, 280-292.*
- *van Kampen, J. (2018). From Plan to Reality: Applications of the European eGovernment Action Plan 2016-2020 on the National and Institutional Level—a Comparison between Germany, the United Kingdom and Estonia.*
- *Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The worldwide governance indicators: Methodology and analytical issues. World Bank policy research working paper, (5430).*
- *Lacity, M., & Willcocks, L. P. (2018). Robotic process and cognitive automation: The next phase. SB Publishing.*
- *Lee, K. (2013). Schumpeterian Analysis of Economic Catch-Up: Knowledge, Path-Creation, and the Middle-Income Trap. Cambridge, UK: Cambridge University Press.*
- *Logan K. (2020) How to use the South Carolina Framework for personalized learning component in your student-centered classroom. KnowledgeWorks.*
- *Lootsma, Y. (2017). Blockchain as the newest regtech application—the opportunity to reduce the burden of kyc for financial institutions. Banking & Financial Services Policy Report, 36(8), 16-21.*

- Mohnen, P., & Röller, L. H. (2005). Complementarities in innovation policy. *European economic review*, 49(6), 1431-1450.
- OECD (2021), Central government spending (indicator). doi: 10.1787/83a23f1b-en (Accessed on 02 November 2021).
- Okrah, J., & Hajduk-Stelmachowicz, M. (2020). Political stability and innovation in Africa. *Journal of International Studies*, 13(1), 234-246. doi:10.14254/2071-8330.2020/13-1/15.
- Organisation for Economic Co-operation and Development (2013), *Trust in government, policy effectiveness and the governance agenda*, in *Government at a Glance 2013*, OECD Publishing, Paris.
- Qiu, W., Zhang, J., Wu, H., Irfan, M., & Ahmad, M. (2021). The role of innovation investment and institutional quality on green total factor productivity: evidence from 46 countries along the “Belt and Road”. *Environmental Science and Pollution Research*, 1-15.
- Nyasha, S., & Odhiambo, N. M. (2019). Government size and economic growth: A review of international literature. *SAGE Open*, 9(3), 2158244019877200.
- OECD (2010), *Knowledge Networks and Markets: A Typology of Markets in Explicit Knowledge*, Document DSTI/IND/STP/ICCP(2010)3, OECD, Paris.
- Oluwatobi, S., Efobi, U., Olurinola, I., & Alege, P. (2015). Innovation in Africa: Why Institutions Matter. *South African Journal of Economics*, 83(3), 390-410.
- Popat, S., & Starkey, L. (2019). Learning to code or coding to learn? A systematic review. *Computers & Education*, 128, 365-376.
- Rao, A., Firth-Butterfield K. (2020). 3 ways of COVID-19 is transforming advanced analytics and AI. *World Economic Forum*.
- Sabry, M. I. (2019). Fostering innovation under institutional deficiencies: formal state–business consultation or cronyism?. *Economia Politica*, 36(1), 79-110.
- Sociaal-Economische Raad (2002). *Sanering van de overheidssector: Een absolute noodzaak*.
- Sociaal-Economische Raad (2019). *Het gebrek aan compliance*.
- Singh, P., Sawhney, R. S., & Kahlon, K. S. (2019). Twitter based sentiment analysis of GST implementation by Indian government. In *Digital business* (pp. 409-427). Springer, Cham.
- Tebaldi, E., & Elmslie, B. (2013). Does institutional quality impact innovation? Evidence from cross-country patent grant data. *Applied Economics*, 45(7), 887-900.
- Timur, K., & Antanas, M. (2017). The definition and classification of innovation. *Holistica*, 8(1), 59-72.
- Vesnic Alujevic, L., Stoermer, E., Rudkin, J., Scapolo, F. and Kimbell, L. (2019), *The Future of Government 2030+*, EUR 29664 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-00164-5, doi:10.2760/007284, JRC115008.
- de Vries, H., Tummars, L., & Bekkers, V. (2018). The diffusion and adoption of public sector innovations: A meta-synthesis of the literature. *Perspectives on Public Management and Governance*, 1(3), 159-176.
- Weinberger, H. (2020). Crowdsourcing against coronavirus: Seattle biologists work on DIY test kit. *Crosscut*.
- World Bank (2021), *World Bank National Accounts*. Retrieved from <https://data.worldbank.org/indicator/NE.CON.GOVT.ZS?locations=AW-ZJ>



Governing from the Future - Leading with Impact

Prospects, policies, and pathways for Aruba 2040



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