Ministry of Economic Affairs, Communication and Sustainable Development

Aruba's Transition to a Sustainable & Inclusive Economic Model

NATIONAL ACTION PLAN 2023 – 2025

MARCH 2023

Ministry of Economic Affairs, Communication and Sustainable Development

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Foreword

Aruba is currently experiencing an urgent social, economic, and ecological crisis. Although our economy has grown significantly through tourism since the implementation of the 'Status Aparte', we can no longer ignore the negative impact on our natural environment and society. Furthermore, the tourism sector is expected to continue growing, putting even more pressure on the livability and prosperity of our island.

We must move away from the idea of "business as usual" and tirelessly focus on creating a new economic model that is sustainable, inclusive, and future-proof. This is our responsibility to current residents and future generations. We must work together to make Aruba a more resilient, socially responsible, and environmentally conscious society.

As a ministry, we have therefore organized a coordinated effort to develop an actionable plan that provides concrete implementation for this transition to a new economic model. This action plan is not intended as a "silver bullet" that solves all problems at once, but as a guideline to keep us focused on where we want to go and how we can get there.

We have developed this action plan through interactive participation sessions with public, private, academic, and civil stakeholders, as well as input from content experts and more than 100 individuals who have personally or on behalf of their organizations contributed. We have also translated existing research reports and vision papers into concrete and actionable projects to stimulate innovation and sustainable development in Aruba. In doing so, we emphasize the importance of safeguarding the quality of the collective basic facilities (energy, food, water, and infrastructure) necessary to facilitate life and economic activities on the island.

Foreword

While this action plan is primarily intended to guide us as a ministry, we realize that we cannot do this alone. We need the support and contribution of the entire community to implement these projects. Therefore, I invite everyone to review the plan and determine how they can contribute to the sustainability of Aruba. My ministry is always open to individuals or organizations that want to contribute to our efforts to make Aruba more sustainable.

On behalf of the government of Aruba, I would like to thank everyone who has contributed to the development of this action plan. Let us work together towards a resilient and dushi Aruba! If you are interested in making a concrete contribution to our action plan, please feel free to contact us at gocircular@gobierno.aw.

Geoffrey Wever

Minister of Economic Affairs, Communication & Sustainable Development.

1. Vision & Priorities

1.1 INTRODUCTION

Since the Status Aparte, the Aruban economy has shown considerable growth, primarily driven by tourism. Tourism is both a capital-intensive and labor-intensive industry and has resulted in an active real estate market with a generally healthy labor market. The nominal Gross Domestic Product (GDP) grows consistently, except in years when the oil refinery stopped its operations (see Figure 1)[1]. However, the real GDP per capita has a weaker trend due to the labor-intensive nature of tourism, population growth, and the costs of collective facilities. There is also revenue outflow to non-residents.

Aruba lags behind developed countries in terms of real GDP per capita (see Figure 2)[2]. Additionally, the Aruban population also suffers from abrupt and unforeseen price increases in international markets that are almost immediately imported. Moreover, the GDP does not account for its impact on the environment and society.

Declining economic growth, reduced purchasing power, lack of space, destruction of nature, and damage to culture and health is the new reality for the Aruban population. Prosperity and livability on the island are under great pressure as a result. Over the next three years tourism is expected to continue to grow. The number of hotel rooms is estimated to increase by approximately 22% (about 2,800 hotel rooms) in the coming years[3]. It is expected that prosperity and livability will come under further pressure. Continuing on the same trajectory as in the past three decades is therefore not a sustainable alternative for the future. Aruba's economy must transition to sustainable, inclusive, and resilient economic models. This requires a focus on the quality of collective facilities necessary to facilitate life and economic activities.

The concepts of 'sustainable development', 'circular economy', and 'inclusive economy' are therefore at the core of the economic vision of the Ministry of Economic Affairs, Communication and Sustainable Development (hereinafter: the Ministry). They are instrumental and guiding (in addition to the economic vision of the Ministry) to give concrete meaning to the transition towards a new, more inclusive and resilient economic model.

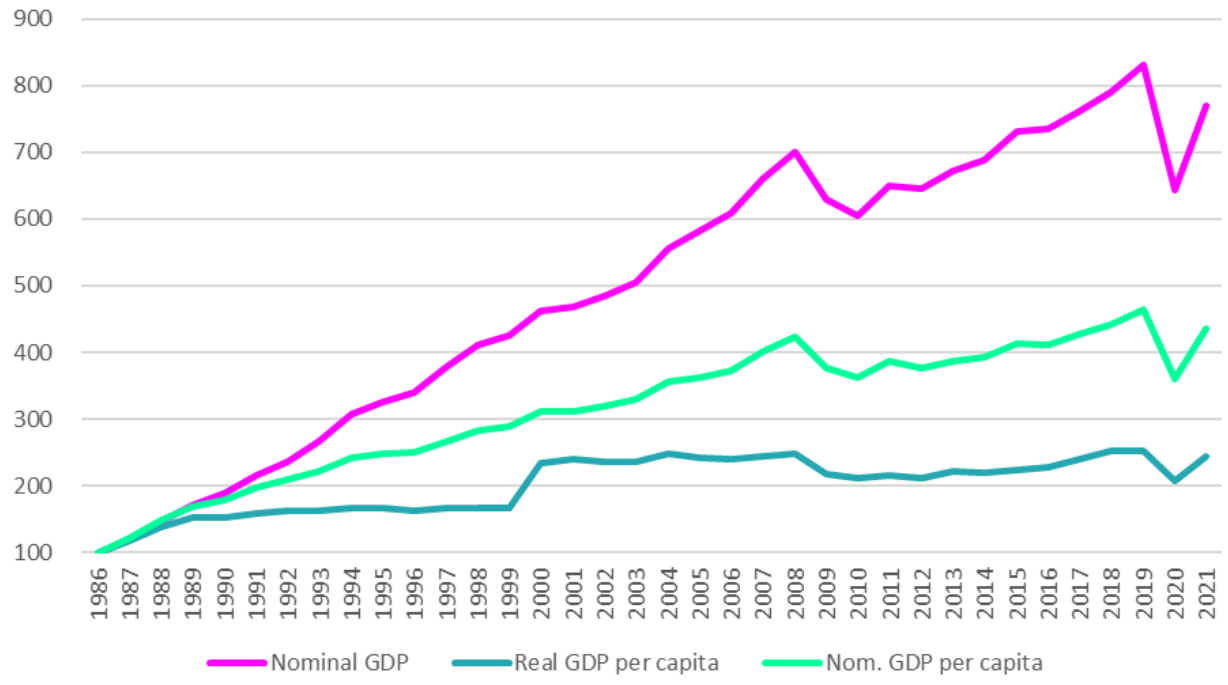


Figure 1. Nominal GDP vs. Real GDP per capita, Index numbers.

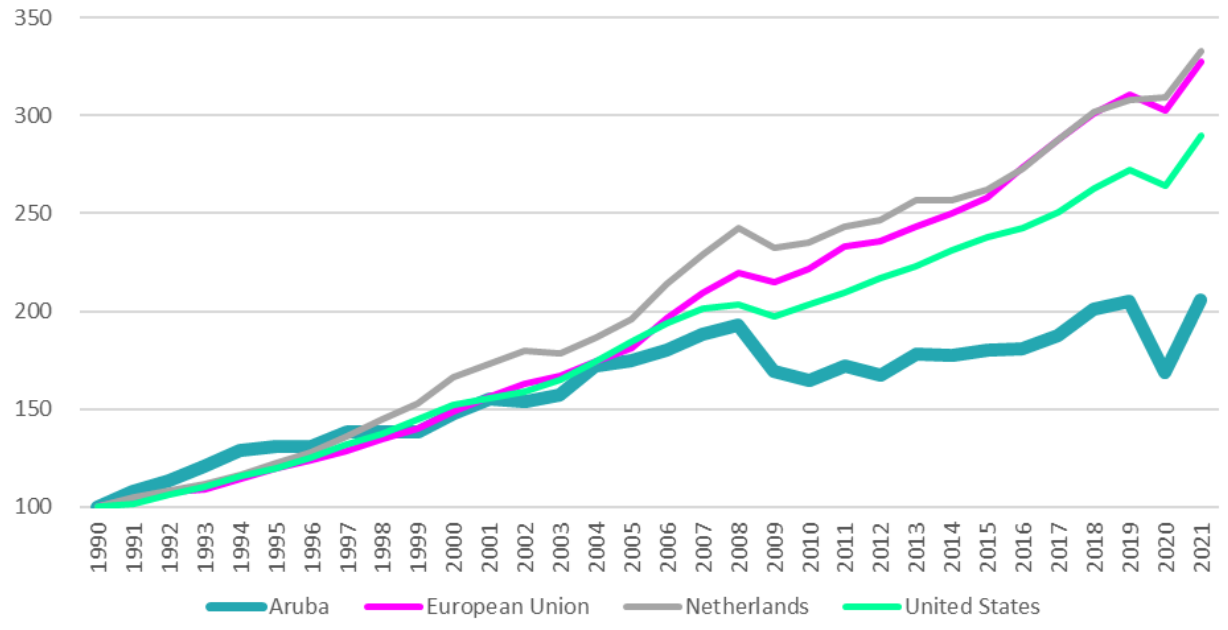


Figure 2. Real GDP per capita, Index numbers.

Below is further described the vision of the Ministry to contribute to increasing prosperity and livability in Aruba. Important guiding concepts and priorities are also introduced.

1.2 ECONOMIC VISION AND GUIDING FRAMEWORKS

The Ministry applies a number of core principles when formulating and implementing economic policy and projects in Aruba. These principles touch the core of the Ministry's economic vision:

- Innovation and entrepreneurship together form the most important growth engine of our economy. It is therefore important to stimulate and maintain entrepreneurship and innovation on the island;
- A conscious and critical consumer functions as an accelerator of this growth engine;
- Economic diversification (and subsequently specialization) is crucial to safeguard long-term economic growth, prosperity, and livability. Barriers to innovation, diversification, and specialization must therefore be reduced or removed;
- Economic development, prosperity, and livability (inclusion, purchasing power, and well-being) must be as resilient as possible to external price and geopolitical developments for current and future generations;
- Collaboration with (inter)national experts and stakeholders from across society is fundamental to formulating and implementing effective policy. It is therefore important to involve stakeholders at the right time and adequately.

1.2.1 SUSTAINABLE DEVELOPMENT

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" (WCED, 1987, chapter 2, pt 1)[4]. Sustainable development aims for an ideal balance between ecological, economic, and social interests. Developments that contribute (technologically, economically, ecologically, politically or socially) to a better environment with prosperous inhabitants and well-functioning ecosystems are thus by definition sustainable.

Sustainability, however, is a broad concept. Therefore, the United Nations has formulated the Sustainable Development Goals[5] (SDGs) as a tool for the formulation of coherent sustainability policies by nations. Aruba has also voluntarily committed itself to achieving these SDGs. This action plan is entirely focused on facilitating sustainable development. The SDGs have helped formulate the goals and projects within this action plan.

1.2.2 CIRCULAIR ECONOMY

In essence, the concept of "circular economy" is a specific solution framework on a systemic level to facilitate sustainable development (also read the achievement of the SDGs). According to the Ellen MacArthur Foundation[6] this model is based on three main principles to design solutions (services, products, or infrastructure) in such a way that:

a. The likelihood of waste and pollution (through the use of toxic substances for humans and the environment) is removed from the system;
b. Materials, products, and components are kept in use for as long as possible;
c. Regeneration of natural systems is facilitated.

The concept of the circular economy assumes that it is possible to increase the efficiency and productivity of Aruba's resources (resource efficiency) in such a way that economic development can be decoupled from the negative social and ecological effects of necessary products and resources. Within a circular economy, there is no waste, as all residual streams are input for other processes. The necessary materials and products thus remain in usable form on the island for longer and do not need to be re-imported time and time again.

In figure 3 you can see an extensive model of the circular economy.
This also outlines options for dealing with biological residual flows.

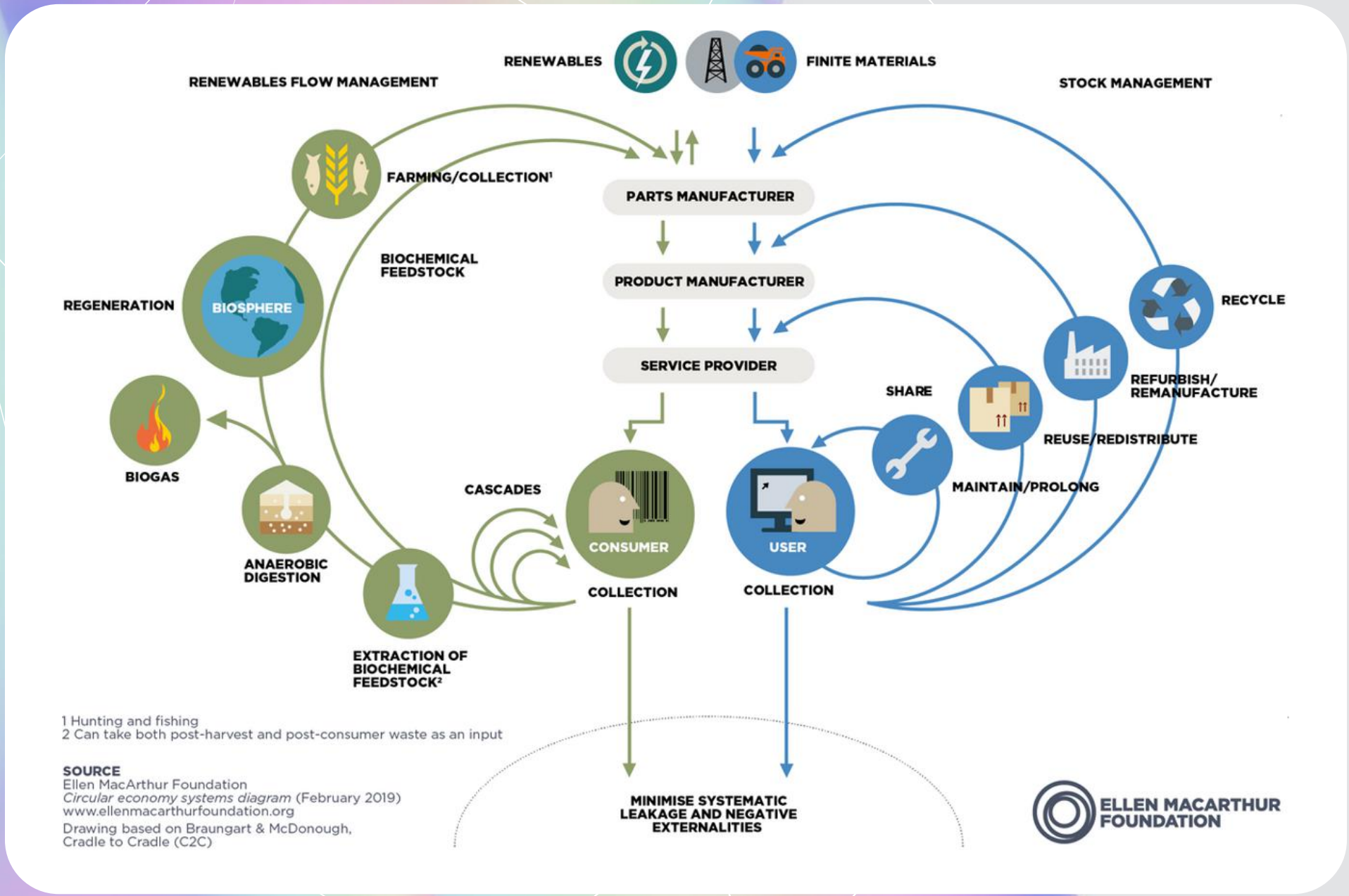


Figure 3: Butterfly diagram Circular Economy of the Ellen MacArthur Foundation.

1.2.3 INCLUSIVE ECONOMY

The Ministry sees an inclusive economy as one of its main priorities. An inclusive economy is an economic model that values social capital and embraces and utilizes diversity. This includes diversity in all aspects, such as gender, origin, beliefs, but also different perspectives. In an inclusive economy, all residents automatically benefit from economic growth and prosperity. Specifically, this means that the ministry always continuously strives for:

- Social support and cohesion;
- Empowerment of citizens and other stakeholders;
- Equal opportunities for everyone;
- Support for households with the weakest financial positions;
- Cooperations with diverse stakeholders to bring about positive impact.

1.3 PRIORITIZED THEMES

The Ministry considers it necessary to focus its efforts (within the framework of this action plan) on sustainability within the following themes:

- Energy;
- Food;
- Water;
- Built environment.

Energy, food, clean water, and built environment (homes, buildings and infrastructure) together form the most important basic necessities needed for a good living standard, economic development and prosperity in Aruba. Within this document, livability refers to how attractive and/or suitable an area or community is to live or work in. The costs related to providing these basic necessities are hyper-sensitive to 'inflation shocks' because all necessary energy, materials and products are imported.

1.4 CURRENT ECONOMIC MODEL VS. THE NEW SCI-MODEL

In table 1 below, an attempt is made to outline characteristics of the new economic model within the scope of the prioritized themes and seen through the lenses of sustainability, circularity and inclusion (SCI). This serves as a compass for the desired development of Aruba. In other words, it serves as a compass for the transition to a sustainable, circular and inclusive economy.

CURRENT ECONOMIC MODEL	NEW SCI-MODEL
Focused only on 'quick fixes' and short-term financial value creation/growth.	Focused on short and long-term financial and societal value creation (people and the environment).
Dependent on fossil fuels (such as oil and gas) from abroad for centralized energy production.	Sustainable energy is produced locally and (de)centralized using solar panels, wind turbines, or other renewable sources.
Dependent on food products from abroad.	Food products are produced as much as possible on the island and food waste is minimized.
Dependent on fossil fuels for the production of clean water, including a high degree of water waste (low water efficiency).	Clean water is produced based on sustainable and renewable energy, and waste is prevented.
Products, infrastructure, homes, and buildings are designed based on the 'Take-Make-Waste' design philosophy.	Products, infrastructure, homes and buildings are designed as 'temporary storage facilities for materials' that can be reused locally.
Focused on reducing initial investment costs as much as possible.	Focused on reducing the total cost of ownership (TCO) throughout the entire life cycle.
Inflationary price shocks have an almost immediate negative impact on purchasing power, livability, and prosperity.	Built-in mechanisms (safety nets) to absorb inflationary price shocks as much as possible.
The benefits of economic growth accrue to citizens with strong financial positions.	Even citizens with the weakest financial positions benefit from economic growth.
Nature conservation is undervalued and seen as a burden.	Nature conservation is a core principle for safeguarding prosperity and livability.

Table 1. Characteristics current economic model versus the new SCI-model.

1.5 AMBITION & ROLE OF THE MINISTERY

Through the implementation of the projects described in this action plan, the Ministry aims to speed up the transition towards a more sustainable, circular and inclusive model (hereinafter: the transition). The higher purpose here is to ensure prosperity and livability of the island for current and future generations. To achieve this ambition, the Ministry encourages an inclusive ecosystem in which the government collaborates with all relevant societal actors (private sector, multinationals, knowledge sector, intermediaries and citizens) to promote social change and innovation.

The government (all ministries) also has an important role to play in the transition, it has to lead by example. This includes formulating integrated policies, regulations and taking measures to make its own operations more sustainable. This also signals to society that the government is taking the transition seriously. The government plays a "catalytic and facilitating role" in the transition. Within this framework, the Ministry sees its role as:

- Agenda setting and creating awareness among all stakeholders about the importance and necessity of the transition;
- Reducing or removing (legal, technological, and organizational) barriers that impede the transition.

1.5.1 STIMULATING INNOVATIVE SECTORS

The Ministry cannot create competitive industries, only companies can do that. However, the Ministry is able to create an environment with the right underlying conditions in which entrepreneurs must innovate to maintain a competitive advantage. Figure 4 schematically describes the Ministry's vision for strengthening the innovation capacity within a sector while also using it to accelerate the transition.

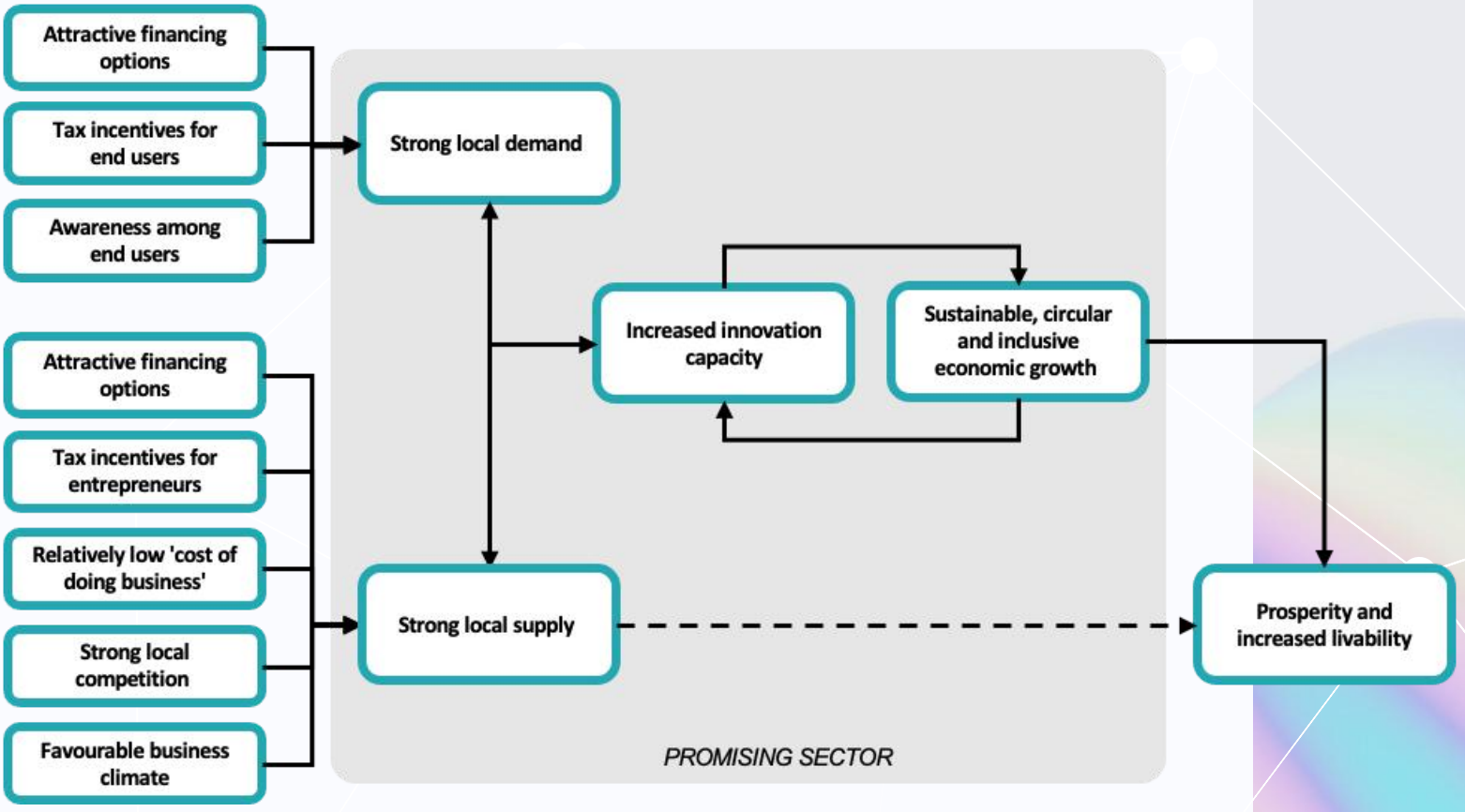
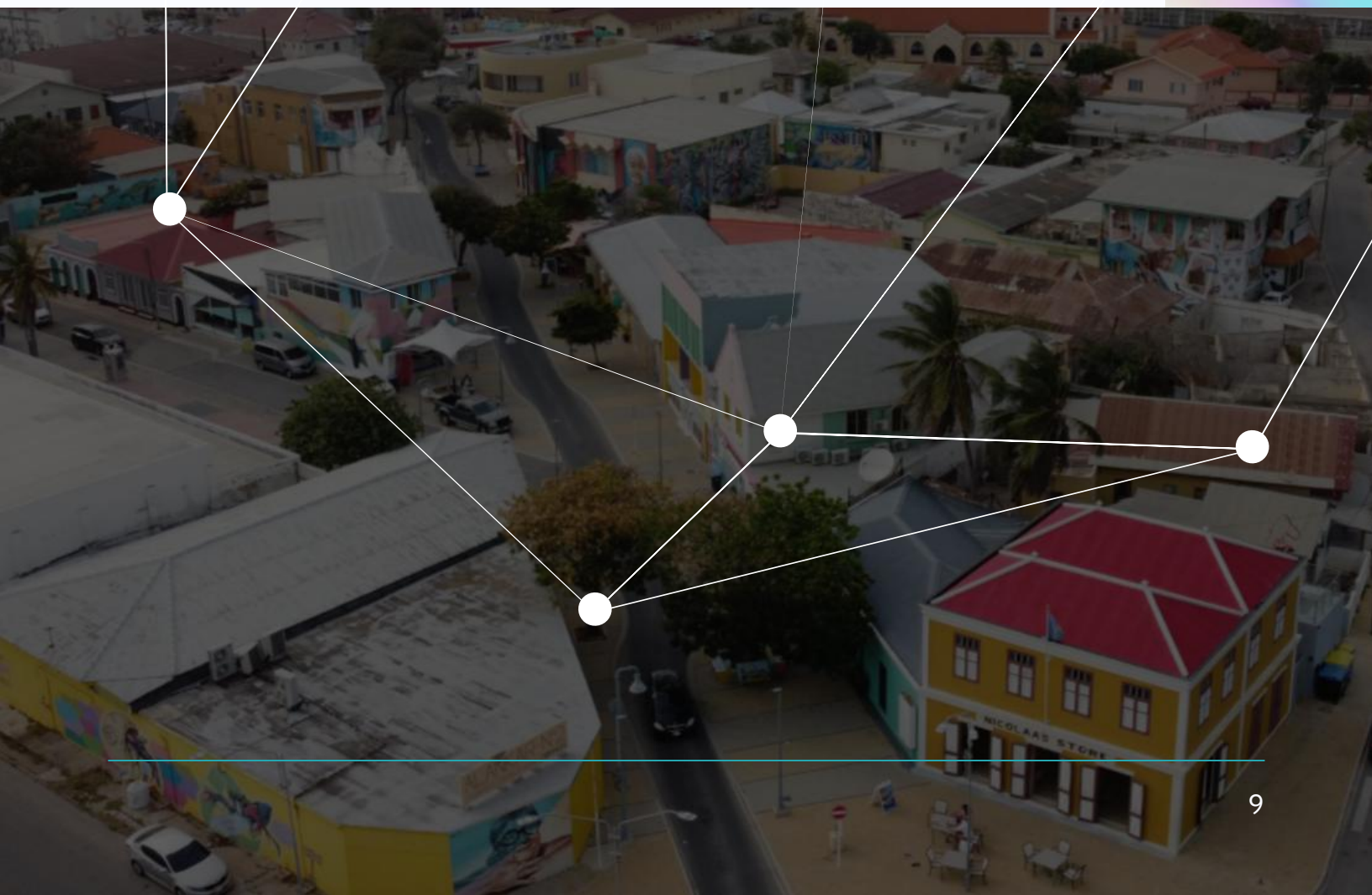


Figure 4. Vision to drive sustainable innovation within sectors.



2. Integral Analysis

2.1 INTRODUCTION

Sustainable, circular and inclusive development is one of the biggest challenges of the 21st century. There is no blueprint or set goals, but rather guiding principles. The transition should be seen as a joint search towards a balanced development of Aruban society in social, economic, and ecological areas.

Innovation is a necessary condition for the concrete implementation of the transition. This includes not only process and product innovation, but also innovation of social systems. At the systemic level, there is a crisis caused by "design flaws" in our systems. Energy, water, food supply and the built environment are examples of current systems in which sustainable innovation is insufficient and too slow.

To understand which interventions are necessary (and feasible) to effectively promote the transition, an integrated analysis has been made of the unwanted developments (symptoms) and underlying root causes (design flaws). This chapter discusses the status quo within the themes, findings and conclusions of the integrated root cause analysis.

2.2 STATUS QUO

2.2.1 ENERGY SUPPLY

Aruba is for almost 90% dependent on the import of fossil fuels for its energy supply (WEB 2022)[7]. Each fuel price shock is undesirable. Aruba uses a "cross-subsidized structure" where commercial users of electricity (through Elmar N.V.) and water (through WEB N.V.) pay a relatively higher rate to keep costs as low as possible for household users. This "social safety net" has worked in the past but is no longer effective in protecting households against external price shocks.

Higher prices for fossil fuels put great pressure on our utilities and reduce the purchasing power of households. This is particularly difficult for vulnerable households, minimum wage earners, welfare recipients, and retirees who are already under significant financial pressure. In addition, an increase in the electricity tariff results in an increase in the cost of doing business. Companies are forced to increase the prices of their products, resulting in an inflationary spiral. The expected economic recovery is therefore further compromised.

Higher fuel prices also put great pressure on the payment balance and foreign exchange reserves. In 2019 (pre-COVID), Aruba spent AWG 178 million (WEB 2020, p5)[8] on purchasing fossil fuels for the production of electricity and water. An estimated AWG 250-300 million in total is spent annually on the import of fossil fuels for local use (Ministery of Energy 2020, p45)[9].

Burning fossil fuels also releases hazardous substances into the environment, which has adverse effects on human health and the environment (livability). Burning fossil fuels also directly contributes to climate change through the emission of greenhouse gases such as carbon dioxide (CO2).

Global warming leads to sea level rise and the destruction of coral reefs, which can have catastrophic consequences for the Aruban economy. In a worst-case scenario, the sea level will have risen by 2.5 meters by the year 2100 compared to the current situation. This will heavily damage the West Coast of Aruba where the most popular beaches and tourists are located (SER 2021, p9)[10]. Coral reefs, in addition to being popular attractions, are also important for maintaining fish populations and producing white sand.

2.2.2 FOOD PRODUCTION

Access to affordable and nutritious food is a fundamental human right. In 2019, local production of vegetables and fruits was responsible for only 0.8% compared to the imported value. Furthermore, the contribution of the local agriculture sector was less than 0.5% of the GDP (SER 2020, p11)[11]. Food security is not only important for the local population, but also to meet the demand for food from the average 1.5 million tourists who visit us annually (CBS, Total Visitors 2009 -2021)[12].

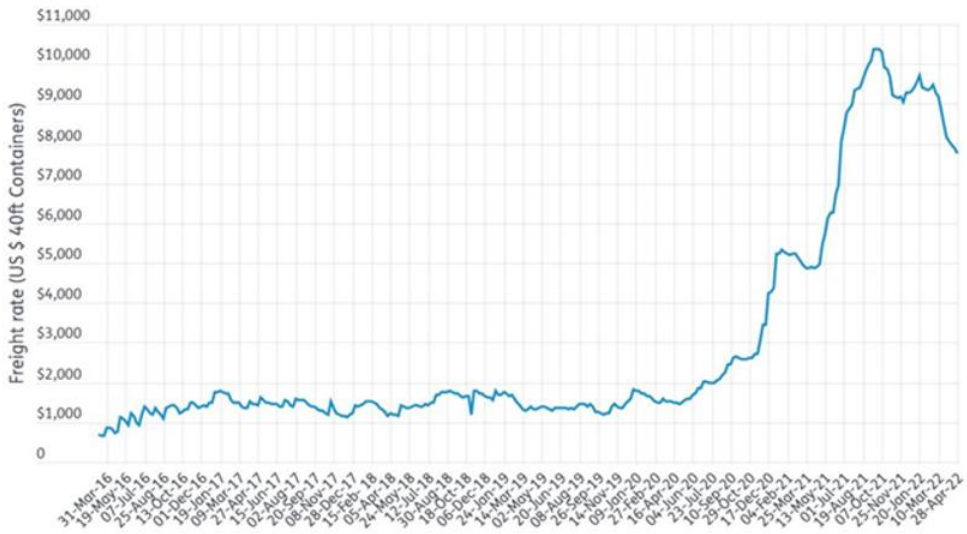


Figure 5. Drewery Container Freight Rate Index, Maart 2016 – April 2022

According to the Food Price Index (proxy) of the United Nations' Food and Agriculture Organization, international prices for food commodities increased by 28.1% in 2021 compared to 2020 (FAO, Food Price Index)[13]. International price increases for food products and transportation are passed on to the consumer locally. In the past five years, the subsistence level on Aruba within the sector "food and non-alcoholic beverages" for a family of two adults and two children has increased by 33.6% (CBS, Subsistence Level by Sector, 2017 – Augustus 2022)[14]. See, for example, in Figure 5 how international shipping costs have increased drastically within a year.

In Aruba, the agriculture sector is still quite limited. Challenges in this sector include the dry climate, limited water sources, limited rainfall and rainwater collection and low nutrient levels in tap water for agricultural use. Other barriers include high energy and water costs related to production, high purchasing costs for materials and equipment, a significant lack of (new) agricultural knowledge, food safety and quality standards, access to and availability of land and/or infrastructure for entrepreneurs. Furthermore, there are few financing opportunities and weak market conditions that do not further encourage local agriculture (SER en World Bank Group, 2020)[11]+[15]. Additionally, the sector also suffers from inadequate and/or outdated laws and regulations.

2.2.3 WATER SUPPLY

Water is an essential life necessity. On Aruba, there are few natural freshwater sources such as groundwater and/or water reservoirs. Aruba has a semi-desert climate and a scarcity of rainwater.

On average, 35.6 million liters per day are produced by WEB on Aruba, and 33 million liters of water are consumed per day (WEB, 2022)[16]. 31.8% of the water produced by WEB ends up at a wastewater treatment plant (WWTP). Only 10% of the treated water by the WWTP is eventually reused in some way (SER 2021, p19)[17]. See Figure 6 for an overview of the water flows on Aruba.

Currently, there is also a wastewater leakage that is causing damage to the nature areas in and around the Bubali Plas, including beaches in the tourist area. This poses a significant health risk (SER 2021, p21)[18]. Given the expected increase in water use (due to population growth and tourism), it is necessary to increase the capacity of the sewage treatment facilities on Aruba.

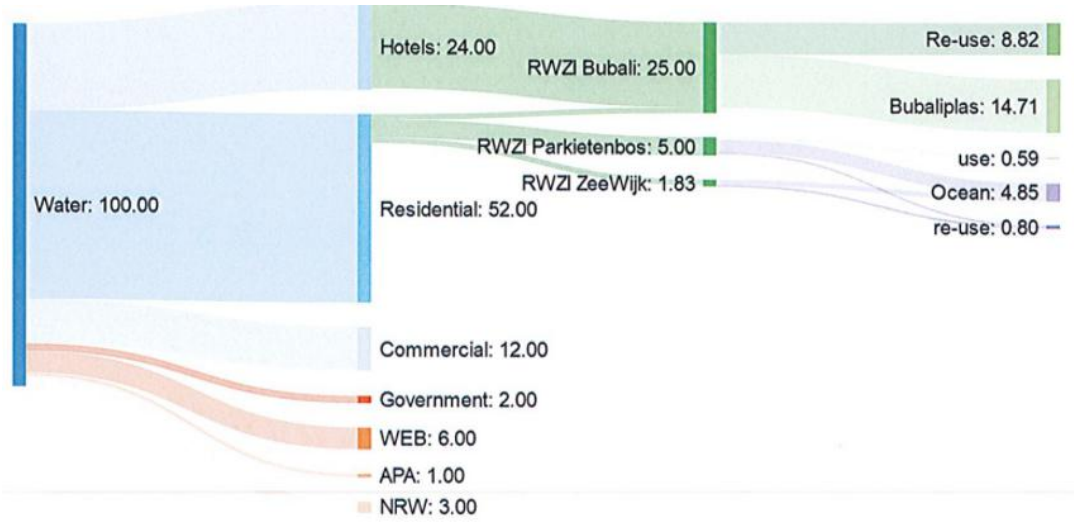


Figure 6: Water flows in Aruba (source: SER, 2021)
Note: APA = Aruba Ports Authority / NRW = Non-Revenue Water

2.2.4 BUILT ENVIRONMENT

Due to the increasing population growth, there is little space available for all future land use. The current population density of Aruba is estimated at 627 inhabitants per square kilometer (km2). CBS projects a population density of 735 inhabitants/km^2 by 2030 (DIP, 2021, p14)[19].

Currently, there is an acute need for housing. According to the projections of DIP, there will be a demand for at least 5,000 homes until 2025 (DIP, 2021, p17)[20]. The high pace of urbanization on the island requires the effective and efficient use of all available space.

On Aruba, there are few to no places left for the extraction or excavation of building materials. As a result, we remain dependent on the import of various basic materials for construction such as sand, granite, or limestone. In addition, the extraction of local raw materials has led to large and deep excavations (horizon pollution) spread throughout the island.

The exact number of vacant buildings on the island was unfortunately not known at the time of writing, but based on visual observations in Oranjestad, Noord, and San Nicolaas, the number of vacant or abandoned buildings is remarkable. Prolonged vacancy leads to capital destruction, a decrease in the value of neighboring land and structures, an increase in illegal intrusion or use, and the outflow of property owners to other neighborhoods on the island. This effect leads to an increase in crime in the area and a deterioration of public safety. Ultimately, the area becomes unattractive to investors and economic activity decreases, further increasing vacancy.

In addition, existing structures on Aruba are often characterized by their low energy and water efficiency. This leads to higher operational costs for households, businesses and the government. This inefficiency of our buildings and infrastructure also makes Aruba more dependent on fossil fuels to produce energy and clean water.

Aruba uses outdated standard building regulations for all structures. The current building code is based on a Dutch building code from the 1930s and does not impose requirements for environmentally friendly building materials and the efficiency (energy and water) of structures.

During the demolition of buildings, the added value of the entire construction value chain is completely destroyed at that moment. Building materials are then disposed of in large volumes as waste without any perceived (residual) value for the disposer. On Aruba, there is also a lack of cost-effective methods to process and valorize these (sometimes complex) construction waste streams. These materials and/or products (which can contain toxic substances) end up at the landfill and thus contribute to the growing waste problem on the island. Construction waste is estimated to account for 17% of the total waste deposited at Parkietenbos (TrashToCash, 2022)[21].

2.2.5 FINANCIAL POSITIONS ARUBAN HOUSEHOLDS

The table below is based on the classifications for financial positions of households used by the Central Bank of Aruba (CBA). It is estimated that there are 39,000 households in Aruba. About 11,000 households have a fragile to vulnerable financial position and have no room to invest in sustainability. Roughly 21,000 households are in need or have a dependent financial position. Around 7,100 households have a stable or healthy financial position (CBA 2021, p17)[22].

CLASIFICATION	% POPULATION	% DEBT	# HOUSEHOLDS
Fragile	16,5%	> 100%	6435
Vulnerable	11,7%	76% – 100%	4563
In need	19,4%	51% – 75%	7566
Dependent	34,2%	26 – 50%	13.338
Stable	16,4%	11% – 25%	6396
Fit	1,8%	< 10%	702

Table 2. Number of Aruban households with a given financial position.

2.2.4 AWARENESS & KNOWLEDGE

The concepts of 'sustainable development', 'circular and inclusive economy' are still unknown and/or vague terms that are interpreted in various ways by most citizens, professionals and entrepreneurs on Aruba. Often, the practical implications of these concepts are incorrectly perceived as impossible or as too great a risk for the status quo. Additionally, there is a lack of awareness regarding the enormous potential for cost savings that the transition can bring.

In many businesses only 'financial profit' is central. Most businesses and end users consume resources and materials as if they are infinite. Furthermore, insufficient value is placed on nature (conservation). This is highly undesirable, especially considering that our beaches, landscapes, climate, and culture are mainly what attract foreign tourists. In other words, the economic development of the island is based on and directly dependent on the quality of our natural environment and the well-being of the population.

Entrepreneurs who strive for sustainability are therefore not only faced with the challenge of achieving short-term financial gain, but also adding long-term value for people and the planet. It is crucial to find a balance between 'people, planet, and profit'. This balancing act is relatively new and difficult, as the 'financial profit-driven growth model' still carries the most weight.

Due to the lack of local awareness, knowledge and experience, businesses and governments need the right (inter)national partners for inspiration, motivation, knowledge sharing and guidance.

2.3 ROOT CAUSE ANALYSIS

To identify the root causes of the persistent and complex (wicked) problems that Aruba is facing within the themes, the Systematic Cause Analysis Technique (SCAT) has been used. This practical method is applied to effectively investigate the root causes of undesirable events such as accidents, incidents, process disruptions, or in this case, unfavorable social developments.

The main goal of this analysis is to identify the root causes of our nation's lack of self-sufficiency (read also import dependency). This was done so that the Ministry could better understand its role, and identify the best needed interventions to speed up the transition.

2.3.1 FINDINGS

On the next page, figure 7 shows a graphic representation of the main findings of the root cause analysis. The identified root causes are shown on the left side of the graph (gray background), while the unwanted developments/effects (status quo) are shown on the right side (white background). The graph can be read from left to right or vice versa.

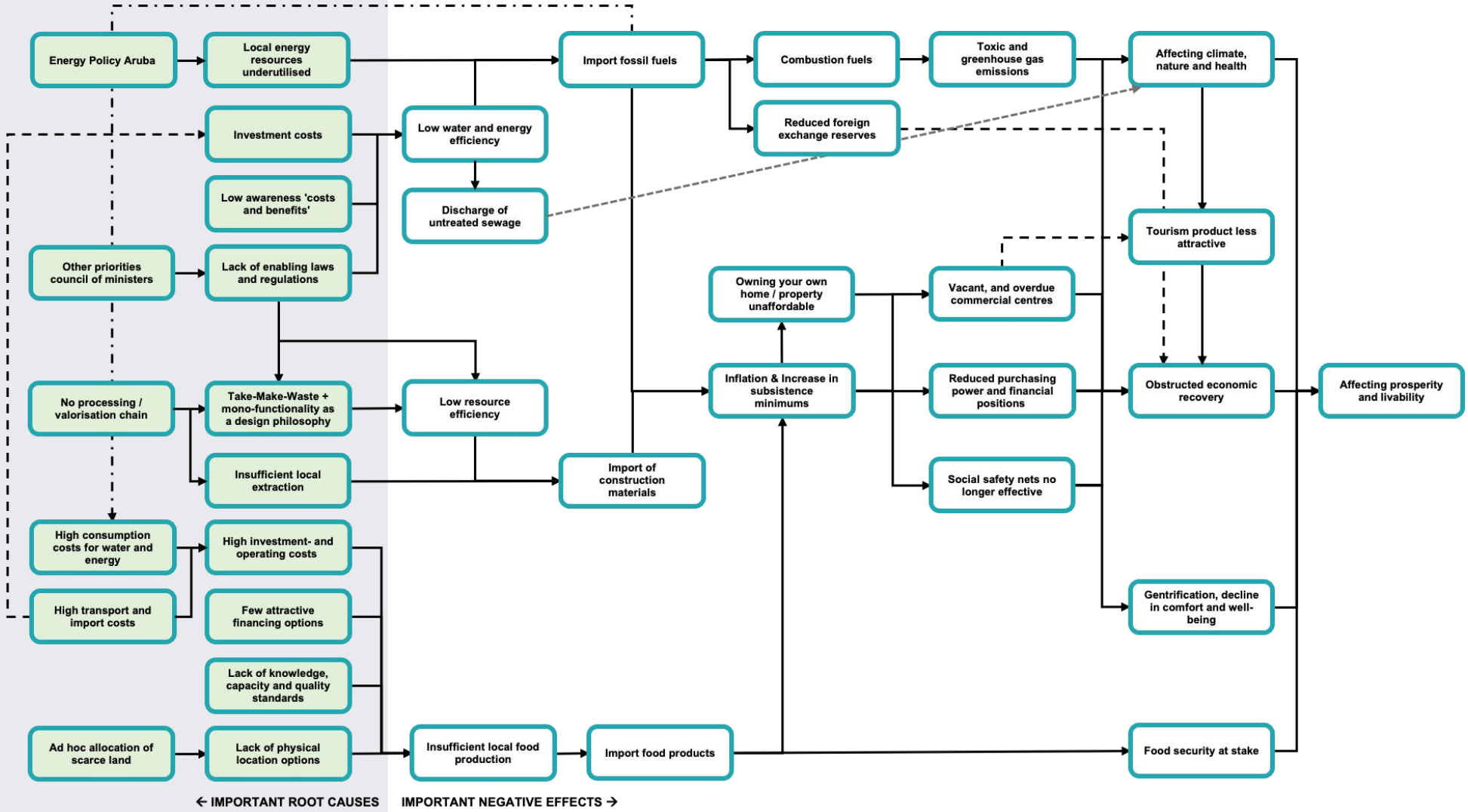


Figure 7: Findings root cause analysis.

2.3.2 CONCLUSIONS ROOT CAUSE ANALYSIS

Aruba is a small open economy that produces very little. As such, it is inherently bound by various limitations on what is economically possible. Realistically, Aruba will only be able to be self-sufficient to a limited extent and will therefore remain dependent on imports and external developments. Below are the main reasons why the Aruban population is insufficiently protected against inflation shocks.

Import fossil fuels

Aruba is still dependent on the import of fossil fuels for the following reasons:

- The (historical and) current energy policy of Aruba is insufficiently focused on the use of local energy sources (such as sun and wind);
- High investment costs for the installation of energy and water-saving measures or own generation by end-users;
- Low awareness among end-users with regard to the enormous cost savings potential of these efficiency measures;
- Lack of laws and regulations that stimulate end-users to implement water and energy-saving measures within their homes and buildings.

Import food products

The weak local supply (agriculture sector) is maintained for the following reasons:

- Outdated and incoherent laws and regulations;
- High investments (resources, transport and import) and operational costs (water and energy) for agricultural companies;
- Little access to attractive financing options;
- Lack of local knowledge and capacity in modern agricultural technologies;
- Lack of food safety and quality standards to meet multinational procurement policies;
- Long and ad hoc allocation process of land to local agricultural entrepreneurs by Aruba.

Import building materials

The weak local supply of building materials and products is sustained for the following reasons:

- Too few or no more places available for the extraction or excavation of locally available building materials such as sand, granite and limestone;
- Homes, buildings and infrastructure are designed to be demolished and disposed of as construction waste without residual value at the end of the use phase;
- High investment costs for sustainable construction and installation of water and energy-saving measures;
- Low awareness among end-users and developers regarding the enormous potential for operational cost savings of sustainable construction throughout the entire lifecycle of structures;
- Lack of laws and regulations that encourage end-users to build more sustainably;
- Weak local supply of cost-effective methods for processing and valorizing (sometimes complex) construction waste streams.

Theme-overriding root causes

The analysis showed that 'high investment costs', 'lack of encouraging laws and regulations', and 'low awareness and knowledge' occur within all the themes as unwanted root causes.

3. Solution Frameworks

3.1 INTRODUCTION

In this chapter, the Ministry describes the solution frameworks, additional opportunities and developments it sees to reduce or eliminate the identified root causes from the previous chapter.

3.2 TRANSITION TO RENEWABLE ENERGY

According to the Ministry, the solution to becoming independent of imported fossil fuels is twofold. On the one hand, it is necessary to switch as quickly as possible to energy and water production based on renewable energy sources. On the other hand, it is also necessary to accelerate the implementation of energy and water-saving measures by end-users. Solar and wind power are now the cheapest ways to generate electricity in most markets. Under the right market conditions, this could mean that end-users can switch cost neutral to their own renewable energy supply based on solar and/or wind (IEA, 2021, p17)[23].

Potential benefits of renewable energy for Aruban society and the economy may include:

- Cost savings through cheaper energy production and lower maintenance costs;
- Resilience through independence from the volatility of fuel prices in world markets;
- Long-term economic diversification and job creation;
- Foreign exchange savings by reducing oil imports;
- Promoting health by reducing harmful emissions (such as NOx and particulate matter) that are released during fuel combustion;
- Combating climate change by reducing greenhouse gas emissions.

3.2.1 STRENGTENING THE GREEN TECH SECTOR

To achieve economic diversification and improve energy and water efficiency in Aruba, the strategy is to invest in the *green tech sector*. This sector provides services such as advice, design, installation, and management of sustainable energy production, water conservation, and energy conservation solutions. To create strong demand for these solutions, attractive financing options are necessary, while attractive fiscal incentives are needed to promote entrepreneurship and supply.

3.2.2 TRADING IN CO2 EMISSION RIGHTS

The implementation of renewable energy projects (such as solar or wind parks) in Aruba leads to a reduction in CO2 emissions. This reduction or avoided emissions can be converted through a certifying agency into so-called CO2 credits or emission rights. These rights can be traded on international markets. Both private and public parties are interested in this to compensate for their net CO2 emissions. The ministry sees this as an opportunity and will investigate how international trade in carbon emission rights can contribute to our economy and society.

3.2.3 TRANSNATIONAL GREEN HYDROGEN CHAIN

The demand for green hydrogen (production based on renewable energy) is increasing worldwide. Countries with an abundance of renewable energy, access to water, and trade routes to major demand centers (such as Europe) have the opportunity to become producers and exporters of green hydrogen (IRENA 2022, p10)[24].

Hydrogen can also play an important role in stabilizing the local energy grid by capturing and storing excess electricity production from renewable sources (such as solar panels). Driven by the need for economic diversification and our sustainability ambitions, the Ministry, in collaboration with the Ministry of Labor, Integration and Energy, will assess the feasibility of a transnational value chain for green hydrogen in Aruba. This process will also involve Curaçao, Bonaire and the Netherlands.

3.3 STRENGTHENING THE AGRICULTURAL SECTOR

The intended strategy to become less dependent on imported food products is to stimulate a strong and sustainable agricultural sector for food security and economic diversification. Within the scope of this action plan, the Ministry's focus is on stimulating commercial-scale vegetable and fruit production by investing in viable expansions and entrepreneurship.

The ministry will create facilitating market conditions for the local agricultural sector by supporting start-ups and established entrepreneurs in obtaining access to micro-credits, domain areas, and a training program that focuses on innovation and successful entrepreneurship. These micro-credits can also be used to implement measures to comply with international quality standards such as the GlobalGAP.

3.4 CIRCULAR BUILDING AS THE NEW NORM

Circular building (and renovations) is a form of sustainable building in which circular economy design principles are applied in construction. This starts at the architect's drawing board. In Table 3 on the next page, you can read what these circular design principles can mean in practical terms for the development of real estate and infrastructure in Aruba. In Appendix 1A and 1B, you will find case studies of sustainable, circular and profitable buildings.

DESIGN PRINCIPLE	PRACTICAL APPLICATION IN CONSTRUCTION*
Waste and contamination out of the system	• As much as possible, repurposing of existing buildings; • Use of environmentally and human-friendly materials; • Avoidance of toxic substances; • Integration of water- and energy-saving solutions; • Independent generation of renewable energy and water; • Ensure that building structures and components can be cost-effectively disassembled and reassembled without loss of physical and functional characteristics and economic value; • Design objects and infrastructure as "temporary resource and component depots" that can be mined in the future for the development of new assets.
Materials, products and components in use for as long as possible	• Ensure that dismountable and reusable elements, materials, and products are actually reused as quickly as possible and with added value and also; • Ensure that these elements and materials can continue to function at their highest possible value in the long term.
Support regeneration of natural systems	• Take into account Build-with-Nature Policy (DNM 2019)[25]; • Inventory of flora and fauna, including any necessary measures to protect these species; • Sharing excess renewable energy, clean water or material flows with third parties for other purposes or to help regenerate nature; • Ensure the indoor air quality of buildings contributes to a healthy working and living environment for the users of the facility.

Table 3: Practical implications circular economy principles within the construction sector in Aruba.
***Note: This is not an exhaustive list of possible practical applications in construction.**

3.4.1 EXPANSION OF BUILDING CODE & PERMIT

To ensure prosperity and livability on Aruba for current and future generations, the Ministry considers it necessary to stimulate the construction of highly (energy-, water- and resource-) efficient homes, buildings and infrastructure as quickly as possible through the building code and permit.

To address the problem of space shortage and vacancy, the Ministry aims to encourage users, architects, and developers to incorporate repurposing and multifunctionality as much as possible in the design phase through the building permit.

3.4.2 STRENGHTENING THE CIRCULAR CONSTRUCTION SECTOR

In addition to expanding building regulations to ensure circular building and renovation, it is also necessary for the government to invest in the sector that provides services related to advice, design, realization, management, and repurposing of circular constructions (hereinafter referred to as the circular construction sector) on Aruba. On the one hand, attractive financing options are needed to stimulate demand in the market, while on the other hand, attractive fiscal incentives are needed to stimulate entrepreneurship (supply).

3.4.3 LOWER FINANCIAL RISKS, MORE OWNERSHIP

Sustainable and circular innovation in construction leads to structures of much higher quality, reducing financial risks for financiers. This can lead to more favorable mortgages and loans. It is important to consider the concept of "Total Cost of Ownership[26] (TCO)" to show the added value of circular design in a cost-benefit analysis over the entire lifecycle.

If there was a circular economy for building products on Aruba, the necessary building materials (and other products) would already be partially available on the island. This makes it cheaper to construct or renovate buildings. Independent energy and water production and advanced water and energy-saving solutions also lead to significant reductions in operational costs.

Designing constructions as "temporary depots" for building materials and products will also increase their (residual) value. This reduces the barrier for a larger part of the Aruban population to own their own homes or business properties. This can lead to better financial positions and resilience. The building or home can serve as collateral to obtain other essential loans and investments.

In addition, homeownership provides households with the security of having their own roof over their heads (a primary need and a human right). It also allows them to use the construction as collateral when taking out mortgages for their children. This increases the chances for future generations to own their own homes or properties on the island.

3.4.4 MULTIFUNCTIONAL DESIGN AS DRIVER FOR VIBRANT CITY CENTRES

Old traditional buildings that are often found in the city center not only have historical or cultural value but also provide an excellent opportunity to develop new multifunctional residential, commercial spaces and urban farms. These spaces can serve as innovative, cultural, and gastronomic "hot spots" on the island, potentially leading to an increase in economic activity in the neighborhood.

3.5 REMOVING FINANCIAL BARRIERS FOR INITIAL INVESTMENTS

In order to remove the financial barriers concerning investments in solutions that contribute to promoting sustainability and circularity, the Ministry deems it necessary to establish the Aruba Sustainability Fund (ASF). This involves developing an investment program that is financed by mobilizing excess liquidity currently parked at the local banks. Through the ASF, households, businesses, and even the government can apply for attractive financing for the implementation of measures that contribute to the transition.

3.6 MORE FISCAL INCENTIVES

To stimulate the green tech and circular construction sectors, the Ministry also considers it necessary to implement more fiscal incentives to stimulate both the demand and supply sides of these sectors. Entrepreneurs in the agricultural sector already enjoy special tax exemptions. These include exemptions from taxes on:

- Profit and income;
- Turnover related taxes (BBO and BAZV).

In addition, the Landsverordening in-, uit- en doorvoer also ensures that necessary resources (such as equipment, seeds and seedlings, animal feed, feed and transport vehicles) can receive exemption from import duties.

Since 2012, measures have also been in effect to stimulate the import of energy-efficient cooling equipment, solar panels, and electric vehicles. This involves a more favorable import duty rate of 2% (Douane Aruba 2021)[27].

Given the aforementioned regulations, the ministry will build on the existing regulations where necessary.

3.7 INCREASING AWARENESS & PARTICIPATION

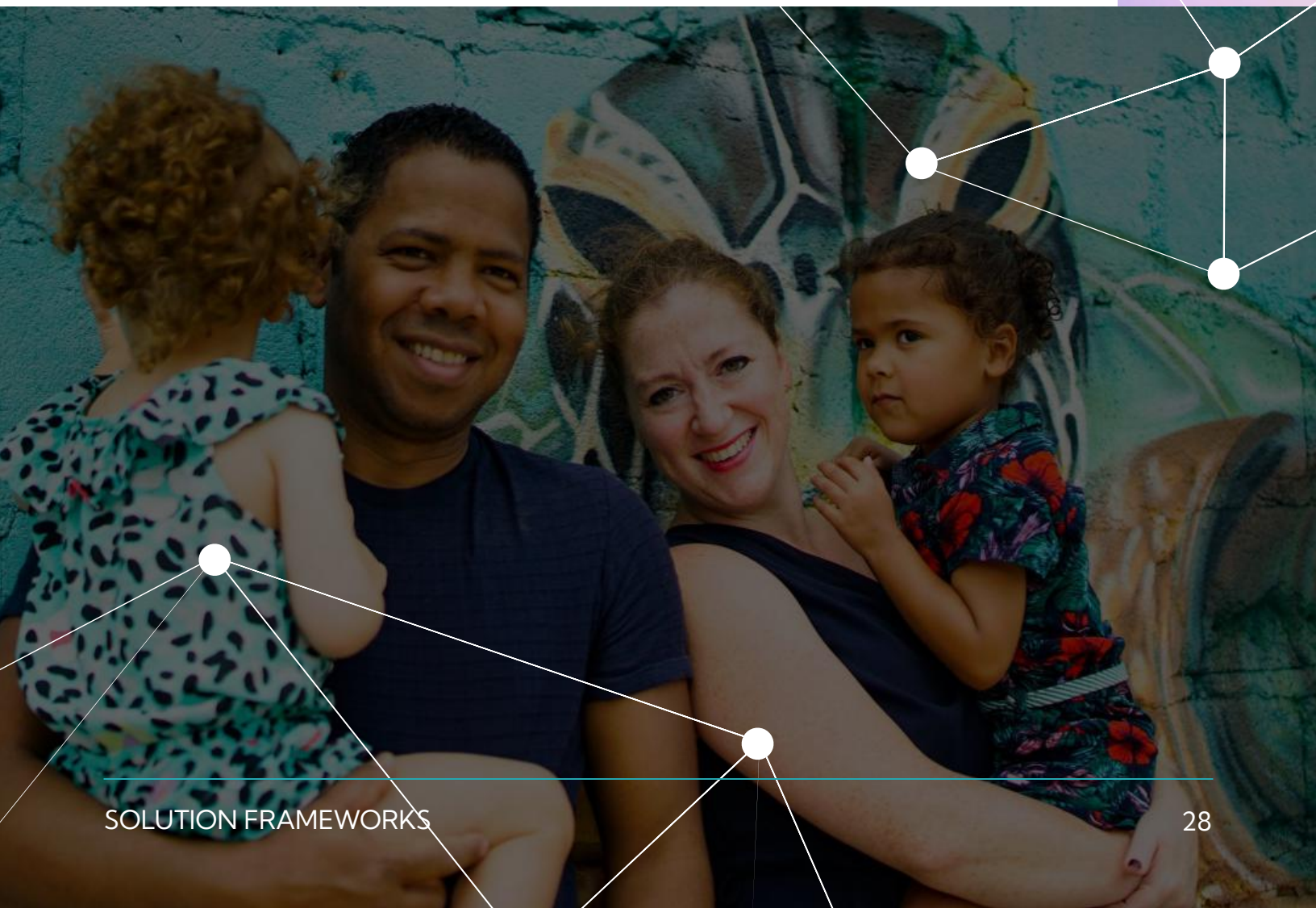
Aware and engaged end-users act as an accelerating factor in the transition. Therefore, the Ministry considers it important to involve various groups within society adequately and at the right time. It is necessary for individuals and organizations to be aware of the benefits, necessity, and cost-saving potential of the transition, including what their options are. In the table below, the Ministry describes how stakeholders are involved in the transition for each target group (within the scope of this plan).

TARGET GROUP	APPROACH
Citizens	• Stakeholder participation sessions; • New awareness campaigns through digital and physical channels and; • Where possible, align with already ongoing campaigns such as "Cumpra Local".
Companies/ knowledge institutes	• Stakeholder participation sessions; • Individual discussions with management; • Open circular innovation pathways in collaboration with local foundations such as Aruba Circular Economy Foundation (ACEF).
Government	• Stakeholder participation sessions.; • Internal roadshows for the management team of government agencies.

Table 4. Approach to increase stakeholder awareness and participation.

3.8 EVERYONE BENEFITS

More than 80% of Aruban households require financial support. They are unable to invest independently in green tech solutions or circular construction without compromising their financial position. As a result, they may never be, in example, in a position to benefit from the continuously decreasing costs of renewable energy production. This is why the Ministry has focused its efforts on developing alternative and more future-proof social safety nets for the most vulnerable groups in our society.



4. Projects

4.1 INTRODUCTION

On May 18th, 2022, a stakeholder session was organized with more than 100 key societal actors in the Aruban economy and society. During this interactive policy development session, measures were identified and prioritized per theme, in collaboration with the stakeholders, to accelerate the transition towards sustainability and circularity.

Additionally, feedback was sought from stakeholders and subject matter experts to gather their perspectives. Please refer to Annex 2 for an overview of the consulted organizations and their main input during the participation session.

Based on the previous root cause analysis, input from stakeholders, identified solution frameworks and opportunities, a short list of defined projects was formulated to speed up to the transition. The implementation of the projects within the scope of this action plan takes place in three phases:

- **Phase 1**: Preparation (consultation with stakeholders, data collection, initial analyses, scoping, action plan, budgeting, hiring third parties, etc.);
- **Phase 2**: Execution (execution of action plan, project and/or program management);
- **Phase 3**: Completion (transfer to relevant authorities if necessary and evaluation).

4.2 SOLUTION-ORIENTED APPROACH

Table 5 on the next page shows the targeted approach from the Ministry to reduce or remove the identified root causes. Annex 3 divides the projects by theme and provides more details. A distinction has been made between general and theme-specific projects.

ROOT CAUSE	THEMES	SOLUTION-ORIENTED APPROACH
Energy policy insufficiently focused on exploiting local energy sources.	• Energy	Protect households and businesses with weak and fragile financial positions against high energy-related inflation by implementing a National Solar Energy Plan, allowing them to benefit from the transition to renewable energy sources.
		Fulfill the government's leading role by investing in electric vehicles, energy efficiency, and independent renewable energy production in its operations.
		Gain insight into the economic feasibility and potential impact of a green hydrogen chain on Aruba by conducting a feasibility study.
		Gain insight into the feasibility and potential impact of international trade in CO2 emission rights by conducting a feasibility study.
High investment cost for implementation.	• Energy • Food • Water • Built environment	Offer financing options through the founding of the Aruba Sustainability Fund to households, businesses, and the government for the installation of green tech solutions (water and or energy savings, independent production of renewable energy and circular building or renovations of existing constructions on the island.
		Encourage investments in (de)centralized sustainable production and/or savings measures for water, energy, and/or circular building and stimulate the green tech sector by developing fiscal incentives, including exemption from import duties on necessary equipment and resources, as well as exemptions from income, profit, and sales taxes for entrepreneurs.
Lack of encouraging laws and regulations.		Ensure high energy, water, resource efficiency, and multifunctionality of building structures by expanding the current building code and permit with the necessary regulations.
Low awareness and knowledge		Ensure that the right individuals and organizations are aware of the usefulness, necessity, cost-saving potential, and their options for action by involving the appropriate stakeholders per project through targeted participation sessions and/or general awareness campaigns.
		Activate local companies to do business more sustainably (in collaboration with knowledge partners) by creating a "circular innovation programme" together with the Aruba Circular Economy Foundation (ACEF) (Impact Island).
		Stimulate integration of sustainable and circular innovation within the management of companies and public sector by implementing a reporting requirement (for relatively large) organisations. This so that they will publicly report their impact on the economy, society and the environment.
Little access to attractive financing options agricultural entrepreneurs.	• Food	Facilitate access to micro-credit, domain terrains and training programme for local entrepreneurs by establishing and implementing the Agripreneurial Development Programme (ADP) in collaboration with Qredits, Banco Arubano di Desaroyo NV (BAD) and Santa Rosa.
Lengthy and unclear terrain allocation process.		
Lack of knowledge modern agricultural technologies and successful commercialisation.		Stimulate knowledge transfer between agricultural entrepreneurs and innovative international players by organising a regional AGRITECH summit in Aruba.

Table 5. Solution-oriented approach by root cause.

ROOT CAUSE	THEME	SOLUTION-ORIENTED APPROACH
Building materials not available locally.	• Built environment	Secure high resource efficiency and multifunctionality of building structures on the island by expanding the current building code permit with the necessary regulations.
Take-Make-Waste design philosophy for homes, buildings and infra.		
Lack of processing and valorisation of construction waste streams.		Stimulate the construction-waste recycling sector by developing tax incentives that include exemption from import duties on necessary equipment and resources + exemption from tax on business turnover, income and profit for entrepreneurs.

Table 5. Solution-oriented approach by root cause.

4.3 GOVERNANCE STRUCTURE

To ensure implementation of this action plan, a functional organisation called the 'Taskforce SCI' was temporarily established. It consists of the Minister of Economic Affairs and Sustainable Development (MINECDO), a program manager and dynamic workgroups led by the Ministry's sustainability policy advisers. The configuration of a workgroup is determined for each project based on key stakeholders.

ROLE	RESPONSIBILITIES
Minister	• Promoting a sustainable, circular and inclusive economy; • Make resources available for implementation of action plan; • Ensure support and focus of action plan within the Council of Ministers.
Program manager	• Monitor content and timeliness of action plan; • Forming the necessary workgroups and; • Managing and supporting policy advisors on sustainability; • Reporting to minister(s).
Sustainability policy advisor (workgroup lead)	• Involving/consulting relevant stakeholders; • Create necessary documents for internal and external decision-making; • Create supported implementation plan per project, including planning and budget; • Reporting progress and issues to program manager and minister; • Finalizing and possibly transferring the relevant project.
Other workgroup members	• Provide necessary information / views to policy advisor sustainability to draft the documents; • Implement relevant actions from implementation plan in accordance with agreements; • Reporting progress and issues to policy advisor sustainability and their organisation / management.

Table 6. Roles and responsibilities Taskforce SCI.

4.4 PERFORMANCE INDICATORS

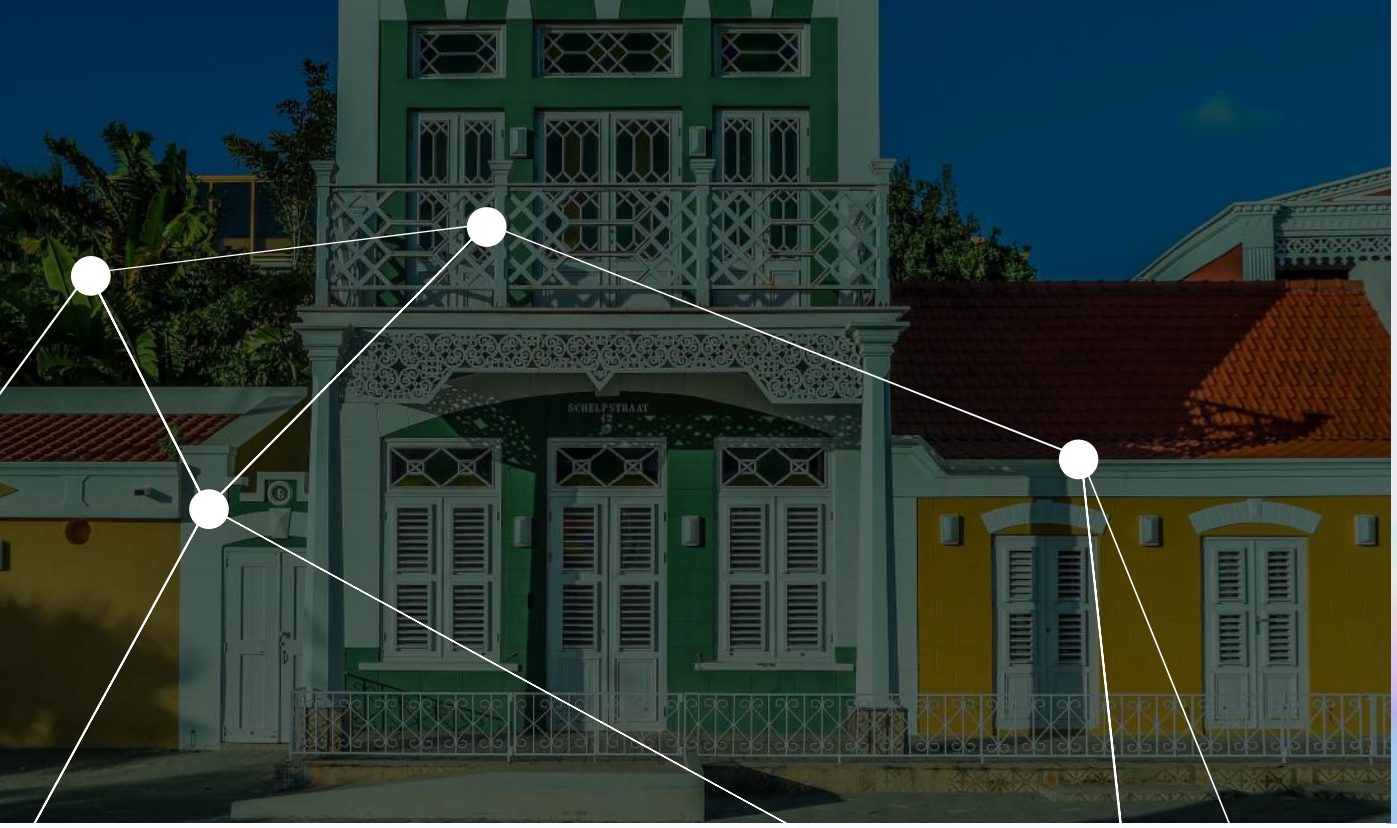
Within the scope of this document, an attempt is made to monitor the performance of the proposed measures (projects) on two levels, in order to enable data-driven decision making. For effective management, it is necessary to determine whether:

- Individual measures are actually functioning as intended;
- Measures (individually and collectively) are actually producing the desired effects in society.

The table below provides an overview of the performance indicators formulated for each theme.

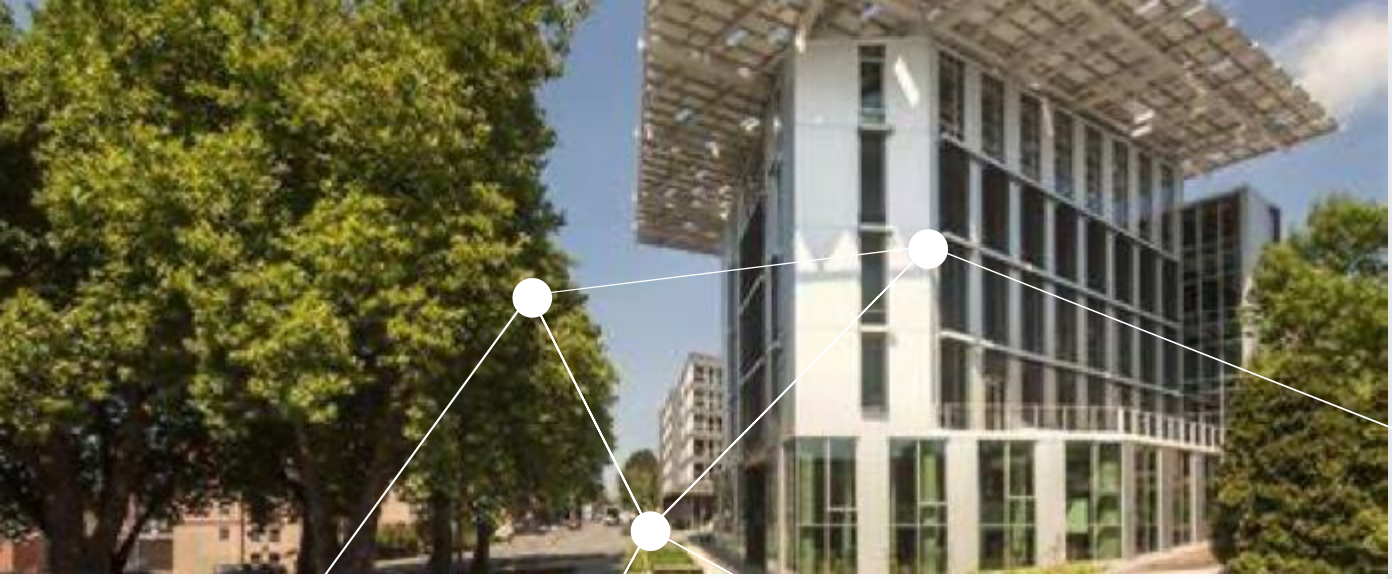
THEME	PERFORMANCE INDICATORS
General	• Number of projects funded by the Aruba Sustainability Fund (ASF) by theme per month / Target: TBD / Baseline 2023: 0 per month.
Energy	• Funded solar capacity in Megawatts / Target: TBD Megawatts (MW) / Baseline: 0 MW; • Projected household cost savings per Kilowatt-hour (kWh) / Target: 30% reduction / Baseline 2023: 0.3853 Afl / kWh (Elmar household tariff); • Projected avoided fossil fuel procurement (as the result of financed projects) in barrels and Afl per year / Target: TBD / Baseline 2023: 0.
Food	• Share of locally produced fruit, vegetables relative to kilos imported by participants ADP trajectory / Target: TBD / Baseline 2023: 0
Water	• Projected water savings from the project in litres / Target: TBD / Baseline 2023: 0 Litres; • Projected avoided fossil fuel procurement (as the result of financed projects) in barrels and Afl. per year / Target: TBD / Baseline 2023: 0.
Built environment	• Status of the project / Target: draft updated legal frameworks and new permit regulations ready on schedule / Baseline: N/A; • Projected proportion of local reuse of building materials from ASF-funded circular construction projects relative to imported values / Target: TBD / Baseline 2023: 0.

Table 7. Performance indicators by theme.



5. Annexes

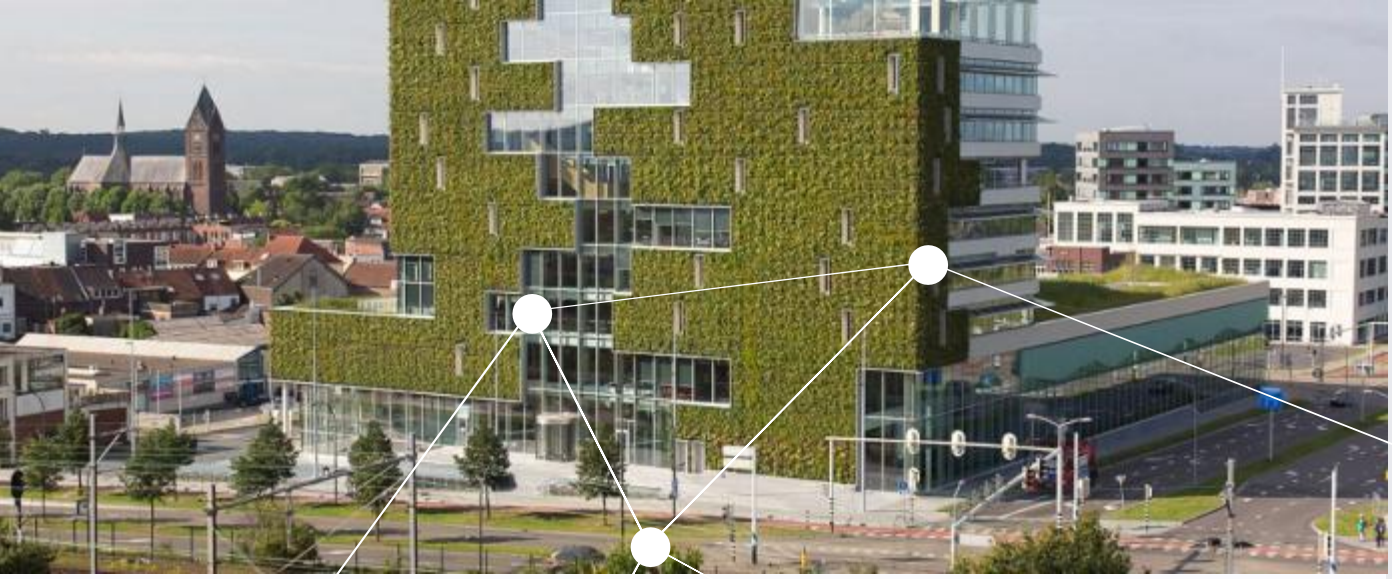
ANNEX 1A: Case study, The Bullit Center in Seattle
ANNEX 1B: Case study, City Office in Venlo
ANNEX 2A: List of consulted stakeholders
ANNEX 2B: Input from stakeholders
ANNEX 3A: General projects
ANNEX 3B: Projects by theme



CASE STUDY: THE BULLIT CENTER, SEATTLE

Seattle's Bullitt Center was once hailed as the world's most sustainable office building. The building combines several advanced green tech solutions to be completely self-sufficient with regard to energy and water. It is also designed to encourage a healthy lifestyle among its users. More than 360 toxic substances have been avoided. The Bullitt Centre has a Living Building Certificatie.

The cost of the Bullitt Centre was about $50 per square foot higher than that of a "regular" building, representing about $2.5 million (or 8.3%) extra for the $30 million building. Given the energy efficiency and limited water consumption compared to other buildings, combined with the solar energy production from the PV system, the payback period has been estimated at 25 years. Not bad for a building designed to last 250 years (source: engineering.com).



CASE STUDY: CITY HALL VENLO

The Venlo Municipal Office is an important example of the application of Cradle to Cradle design principles for buildings. The building's green 'lung facade' measurably purifies the air, while rainwater and wastewater are reused. The building is energy-neutral and promotes health. Moreover, the building produces no waste and acts as a temporary raw materials bank with guaranteed residual values for various (building) products. With its green facade, the building acts as a vertical urban park, providing a natural habitat for more than 100 species of plants, animals and insects, contributing to (bio)diversity.

Compared to a regular building, the cost came to €3.4 million (or 5.7%) extra for the total €62 million building. This additional investment is expected to yield a net €16.9 million during the 40-year use phase. The expected return on investment (ROI) is 11.2%.

ANNEX 2A, STAKEHOLDER INPUT

THEME	MEASURES WITH MOST STAKEHOLDER SUPPORT	INCLUDED WITHIN THIS PLAN?
Energy	The building permit should mandate sustainable energy generation and conservation in new and remodelling projects.	Yes, see annex 3B, project G1.
	More tax incentives for installation of renewable energy generation facilities, implementation of energy saving measures and purchase of electric cars by households and businesses.	Yes, see annex 3B, project E3.
	Increasing the imposed production capacity limits (10 kW and 100 kW for households and businesses respectively) AND speeding up the ELMAR and DIP approval process for the installation of solar panels.	Not included. These limits have the function of ensuring grid stability. We will include this within the hydrogen trajectory in cooperation with the Ministry of Energy.
Food	Research the crops that have the highest chances of commercial success and can compete at a favourable level at the market level.	Yes, see annex 3B, project V2.
	Offer open educational pathways on modern agricultural and horticultural techniques and commercialisation of agricultural products.	Yes, see annex 3B, project V1.
	Expand capacity and knowledge level (capacity building) of Santa Rosa.	Yes. Santa Rosa will be included in the Agripreneurial Development Program (ADP). See annex 3B, project V1.
Water	Ensure through the building permit that in new construction and/or renovations, assets are equipped with measures to collect grey water for reuse.	Yes, see annex 3B, project G1.
	Draw up a holistic water management plan for the country of Aruba.	Not included. This is an infrastructure and planning task that lies primarily with the Ministry of Planning and Infrastructure. We will share and further coordinate this recommendation with them.
	Investigate possibilities for better utilisation of alternative freshwater sources such as groundwater and water from caves.	Not included. We believe this initiative is linked to the preparation of a holistic water management plan. Please see text above.
Built environment	Develop attractive tax incentives/tax exemptions for households and businesses to encourage sustainable and circular construction.	Yes, see annex 3B, project A2.
	Implement a legal framework to ensure that the construction sector develops sustainable and circular assets.	Yes, see annex 3B, project G1.
	Encourage utilisation of vacant properties on the island.	Yes, see annex 3B, projects A2 and D2.

ANNEX 2B, STAKEHOLDERS & EXPERTS CONSULTED

CONSULTED DURING STAKEHOLDER SESSION		EXPERTS CONSULTED
• 360 Innovation • ACEF • AHATA • AIB • Airport • Amsterdam Manor • Apex • APFA • Aruba Bank • ARUGAS • ATA • ATIA • Bibliotheca National Aruba • Centrale Bank Aruba • Chamber of Commerce • CMB • DEACI • Digicel • DIP • Directie Onderwijs • DNM • DOW • Ecotech Freezone NV • Elmar • Fantastic Gardens	• FCCA • Frasa • Green Wheels Aruba • Happy Ponics / UINI Water • KIVI • Marriot • Ministerie Justitie en Sociale Zaken • Ministerie Onderwijs & Sport • Ministerie Transport, Integriteit, Natuur en Ouderenzaken • Ministerie Toerisme & Volksgezondheid • Mr. Green • O Foundation • Ocean Cooling Consortium • Ocean Villas • Palm Tours • Parke Nacional Arikok • Qredits • SETAR • SNBA • Stichting Rancho • Tropical Bottling / Balashi • Universiteit van Aruba • WEB	• Arugas • B-Energy • CBS Aruba • DEHZI • DIP • DOW • DNM • Directorate Santa Rosa • Drive To Zero Global MOU Forum • Economisch Bureau Amsterdam • Engysol • Francielle Laclé, University of Aruba • Greening Government Initiative • Herry Koolman, independent • Kevin de Cuba, independent • Metabolic Foundation Aruba • Ministry of Transportation, Integrity, Nature and Elder Affairs • Ministry of Economic Affairs and Climate (NL) • Moons Consulting Engineers • Rendell de Kort, independent • RVO Nederland • SDG Commission Aruba • TaxAruba • Wernet Solar Solutions & Engineering

ANNEX 3A, GENERAL PROJECTS

A1 – ARUBA SUSTAINABILITY FUND (ASF)	
Description:	Investment program to be developed to finance large- and small-scale sustainability projects by households, businesses and the government. This will make financing sustainability projects a possibility for all.
Scope:	The ASF will focus on financing investment projects that contribute to the transition such as: • Increasing water and energy efficiency; • Increase (de)centralised renewable energy production; • Reduce transport/mobility related emissions; • Increase (de)centralised production and recovery of water; • Increase resource efficiency of (re)construction projects by applying sustainability and circular design principles.
Key Stakeholders:	The societal actors that are important here are: • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning; • Users (households, businesses and government); • Institutional and private investors; • Solar developers, technical consultants, installers etc.; • Utilities Aruba; • Fund manager (to be determined).
Phase:	PREPARATION
Completion:	Q4 2023

A2 – IMPLEMENTATION OF FISCAL INCENTIVES	
Description:	Package of measures to encourage the installation of green tech solutions, circular construction, renovation of vacant properties and local processing or valorisation of construction waste, among households, businesses and the government by making it fiscally (more) attractive.
Scope:	Initiative focused on: • Removing import duties on necessary equipment for the production, storage, saving, recovery and/or better utilisation of water, electrical energy, space, building materials or other construction-related products necessary for the realisation and recycling of circular constructions.; • Making tax-deductible the necessary investments in green tech solutions, circular construction and the valorisation of (construction) waste; • Specifically to strengthen the green tech and circular construction sectors: tax exemption on business turnover, income and profit for active companies.
Key Stakeholders:	The societal actors that are important here are: • Users (households, businesses and government); • Technical consultants, installers and other suppliers; • Ministry of Finance and Culture; • Ministry of Transport, Integrity, Nature and Elderly Affairs; • Customs.
Phase:	PREPARATION
Completion:	Q4 2024

ANNEX 3A, GENERAL PROJECTS

A3 – ISLAND IMPACT INNOVATION ACCELERATOR	
Description:	Initiative to activate local companies to implement sustainable and circular pilot projects by linking them to international front runners (knowledge partners) for support. This initiative is a collaboration between the ministry and the Aruba Circular Economy Foundation (ACEF).
Scope:	The focus of this initiative is on: • Increase awareness and knowledge among local businesses; • Identify opportunities for relevant participants; • Match making to link to appropriate knowledge partners; • Implementation of concrete sustainable and circular (pilot) projects; • Collecting and sharing best practices and lessons learned with stakeholders.
Key Stakeholders:	The societal actors that are important here are: • Aruba Circular Economy Foundation (ACEF); • Management of local businesses; • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning; • (Inter)national knowledge partners and consultancies.
Phase:	PREPARATION
Completion:	Q4 2023

A4 – MANDATORY SUSTAINABILITY REPORTING	
Description:	Initiative to make it mandatory for relatively large public and private organisations on the island to publicly report their impact on society, nature and the economy. This aims to promote the integration of sustainable and circular entrepreneurship and transparency from companies. As a result, there is a greater need for sustainability consultancy and related services within the companies concerned
Scope:	Initiative focused on: • Adapt or draft the relevant laws and regulations (legal framework); • Ensure enforcement of reporting obligation.
Key Stakeholders:	The societal actors that are important here are: • Management of local companies; • All ministries and underlying government agencies of the country of Aruba; • (Inter)national knowledge partners and consultancies.
Phase:	HASN'T STARTED YET
Completion:	Q2 2024

ANNEX 3B, ENERGY & WATER PROJECTS

E1 – NATIONAL SOLAR ENERGY PLAN	
Description:	Package of measures to a) stimulate the purchase of solar panels and energy storage among households and businesses. Also, to b) ensure that households with fragile financial positions can also benefit from cheaper energy production through solar panels.
Scope:	Investment project to be funded through the ASF focused on: • Awareness campagne creëren rondom de business case van zonnepanelen inclusief de aantrekkelijke financieringsopties vanuit de ASF; • Building a solar park where the profits are exclusively used to subsidize energy rates for households with fragile and vulnerable financial positions (a social safety net against rising energy rates).
Key Stakeholders:	The societal actors that are important here are: • Users (households and businesses); • Institutional and private investors; • Solar developers, technical consultants and installers; • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning; • Ministry of Labor, Integration and Energy; • Utilities Aruba.
Phase:	HASN'T STARTED YET
Completion:	Q4 2024

E2 – SWITCHING TO ELECTRIC DRIVING	
Description:	Pilot project to further make the government's energy consumption more sustainable and reduce operational costs by switching to electric driving. This also fulfils the government's leading role.
Scope:	This project focuses on the phased replacement of the current combustion engine cars within all departments of the ministry.
Key Stakeholders:	The societal actors that are important here are: • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning; • Department of Public Works (DOW); • Utilities Aruba (Elmar); • Automobile and mobility companies.
Phase:	PREPARATION
Completion:	Q1 2024

ANNEX 3B, ENERGY & WATER PROJECTS

E3 – FEASIBILITY GREEN HYDROGEN VALUE CHAIN	
Description:	Initiative to assess feasibility of a transnational green hydrogen value chain in Aruba in collaboration with the Ministry of Labour, Integration and Energy.
Scope:	Project aimed at promoting an inclusive energy transition AND long-term economic diversification through the: • Establish a formal cooperation protocol between various actors within the Dutch Caribbean and Aruba; • Assessing the technical and socio-economic feasibility (cost-benefit) of large-scale hydrogen production in Aruba and; • Formulating a supported green hydrogen roadmap for Aruba.
Key Stakeholders:	The societal actors that are important here are: • Ministry of Economic Affairs, Communication & Sustainable Development; • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning; • Ministry of Integration, Labor & Energy; • Dutch Ministry of Economic Affairs & Climate; • Refineria Di Aruba (RDA); • Knowledge Institutes (such as TNO and University of Aruba).
Phase:	HASN'T STARTED YET
Completion:	Q2 2025

E4 – FEASIBILITY OF TRADING IN CO2 EMISSION RIGHTS	
Description:	Research to identify whether and how carbon emissions trading can contribute to the sustainability and diversification of our economy.
Scope:	Initiative aimed at international trade of the CO2 emission rights granted to, for example, renewable energy projects implemented in Aruba and/or CO2 storage capacity via (natural) 'carbon sinks'.
Key Stakeholders:	The societal actors that are important here are: • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning; • Ministry of Integration, Labor & Energy; • Ministry of Finance & Culture; • Metabolic Foundation; • Parties that have invested in renewable energy production and conservation; • Technical consultants and accrediting bodies; • Aruba Sustainability Fund (ASF).
Phase:	PREPARATION
Completion:	Q1 2024

ANNEX 3B, ENERGY & WATER PROJECTS

E5 – WATER AND ENERGY SAVING GOVERNMENT BUILDINGS	
Description:	Project to increase water and energy efficiency within government buildings and operations. This also fulfils the government's leading role.
Scope:	This project focuses on implementation of decentralized renewable water and energy production, conservation and recovery systems within government buildings and operations.
Key Stakeholders:	The societal actors that are important here are: • Users (ministries + underlying departments and directorates); • Solar developers, technical consultants and installers; • Utilities Aruba (Elmar).
Phase:	PREPARATION
Completion:	Q3 2024

ANNEX 3B, FOOD PROJECTS

V1 – AGRIPRENEURIAL DEVELOPMENT PROGRAM	
Description:	Pilot programme from the government to support startups and expansions of active businesses in the agricultural sector with access to microcredits, domain terrains and training programs.
Scope:	Initiative aimed at encouraging commercial scale local fruit and vegetable production through: • Access to microcredit financing at attractive conditions. • Education and training programmes on knowledge of modern agricultural technologies and successful entrepreneurship. • Access to domain sites if participants do not have their own plot of land
Key Stakeholders:	The societal actors that are important here are: • Qredits; • Banco di Desaroyo N.V.; • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning. • Directorate of Infrastructure and Planning (DIP); • Ministry of Transportation, Integrity, Nature and Elder Affairs; • Santa Rosa; • Startup and/or established agricultural entrepreneurs.
Phase:	IMPLEMENTATION
Completion:	Q2 2023

V2 – MARKET ANALYSIS ECONOMIC PROFITABILITY	
Description:	Research the most promising crops (including underlying technology and business models) for successful production and commercialisation in the Aruban market.
Scope:	Research aimed at encouraging local fruit and vegetable production through: • Empowering local entrepreneurs; • Successful commercialisation; • Advanced agricultural technological (agritech) solutions/knowledge; • Pilot projects based on the findings (applied knowledge).
Key Stakeholders:	The societal actors that are important here are: • Starting and/or established agricultural entrepreneurs; • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning; • Ministry of Transport, Integrity, Nature and Elderly Affairs; • Santa Rosa; • Knowledge Institutes.
Phase:	HASN'T STARTED YET
Completion:	Q2 2024

ANNEX 3B, FOOD PROJECTS

V3 – AGRITECH SUMMIT ARUBA 2023	
Description:	Regional summit (event) in partnership with MinTINO and the Dutch Caribbean Agriculture Visioning Conference inviting innovators from around the world to share their visions and solutions with local and regional agricultural entrepreneurs.
Scope:	Initiative aimed at encouraging local fruit and vegetable production focused on: • Creating awareness within society; • Innovation/knowledge boost for agricultural entrepreneurs; • Ability to network and establish partnerships (match making); • Positioning Aruba as an "agritech hot spot" within the Caribbean region.
Key Stakeholders:	The societal actors that are important here are: • Start-up and/or established agricultural entrepreneurs; • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning; • Ministry of Transport, Integrity, Nature and Elderly Affairs; • Santa Rosa; • Knowledge Institutes; • RVO Nederland; • Dutch Caribbean Agriculture Visioning Conference 2023.
Phase:	PREPARATION
Completion:	Q2 2023

ANNEX 3B, BUILT ENVIRONMENT PROJECTS

G1 – EXPANSION OF BUILDING CODE AND PERMIT	
Description:	Initiative to map how we can use the building permit (and underlying legal frameworks) to ensure that sustainability and circularity become the new building standard.
Scope:	The main focus of this initiative will be on expanding the Spatial Development Plan with Regulations (ROPV), the dated Building and Housing Decree and the resulting regulations in the building permit. This will involve increasing the quality, multifunctionality, energy and water efficiency, circularity and sustainability of new and existing building structures in Aruba.
Key Stakeholders:	The societal actors that are important here are: • Clients and users (households, businesses and government); • Architects, technical consultants, developers and installers; • Ministry of General Affairs, Innovation, Infrastructure and Spatial Planning; • Department of Inspection & Planning (DIP); • Department of Public Works (DOW).
Phase:	HASN'T STARTED YET
Completion:	Q2 2025

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