ECONOMY
The USVI has—or had, before the storms—a $3.9 billion economy that depends on the Territory’s natural beauty to attract tourists and on tax incentive policies to attract investment by companies from the US mainland and the rest of the world. Some clusters are also emerging in industries like marine technology or agriculture.

In recent years, the Territory’s economy has not been doing well: in real terms, it contracted 27 percent since 2006 and lost about 6,000 jobs (albeit together with an 11,000 population decline)—especially after the Hovensa refinery, a large employer, closed in 2012. Government revenue has been stagnant, public debt load has been increasing, and the Territory has been finding it more and more difficult to raise new debt to continue financing its operations.

Against this background, the 2017 hurricanes came as a particularly big blow. Physical infrastructure on which the economy’s functioning depends was destroyed and did not recover for months, thousands of people left the Territory for the US mainland and either did not or could not return, and tourist arrivals, on which the Territory’s economy so heavily depends, almost disappeared for several months and, as of the writing of this report, were yet to fully recover.

As in disasters before, the Territory’s economy will recover in three stages: first the immediate rebuilding phase will stimulate construction; then the larger-scale recovery, supported by federal funding, will stimulate construction further yet; then, finally, the economy will begin to return to its pre-crisis state.

This report is not the place to lay out a comprehensive economic strategy for the Territory: it only concerns itself with recovery from the 2017 storms and resilience in the face of future ones. The initiatives in the report’s other sections will help make more resilient the sectors on which the economy depends—especially power, telecom, and transportation. This section focuses on describing the way the USVI economy functions, capturing the hurricane damage to it based on the data that is available, and outlining several initiatives that will strengthen public ability to engage with the economy, support recovery, and help make sure that, in future storms, the Territory can recover more quickly.
OVERVIEW

The USVI has a $3.9 billion economy that formally employs over 43,000 people. Its main private sectors include hospitality, retail, manufacturing, and professional services; government plays a large role, too. The economy has contracted since 2008: real GTP (Gross Territorial Product) and employment both went down, as did the population (see charts: USVI real GTP, 2006-2016; USVI real GTP growth, 2007-2016; USVI unemployment rate, 1990-2016; USVI population, 1990-2016). The Territory lost 11,000 people and 6,000 jobs, mostly in manufacturing, construction, and territorial government.

Firms and sectors

As with most of the rest of the US, services accounted for most of the Territory’s economy: 65 percent. Goods production represented 14 percent and government, 21 percent. Real GTP in 2016 was 27 percent lower than in 2006, in large part because the Hovensa refinery on St. Croix closed in 2012, which reduced output by $580 million and took away over 2,000 well-paid jobs. After the Hovensa closure, the share of goods-producing industries in the Territory’s GTP went from 31 percent to just 14 percent (see charts: Change in USVI real GTP, 2007-2015; USVI GTP by industry).

Tourism, another major contributor to the economy, stayed at the same level in terms of visitor arrivals in 2016 as it was in 2011: 2.65 million visitors came to the USVI in both years, fewer by cruise ships and more by air in 2016 than five years prior (see chart: Visitor arrivals in the USVI). Tourism spending increased, but only moderately compared to some other Caribbean destinations: a West Indian Company Limited (WICO) report based on analysis from the Florida Caribbean Cruise Association (FCCA) found the growth to be behind destinations like St. Maarten and the Cayman Islands. While expenditures on St. Thomas—the main cruise ship destination in the USVI—grew 19 percent between 2006 and 2015, expenditures in St. Maarten and the Cayman Islands grew 130 percent and 50 percent, respectively (see chart: Tourist expenditures in selected Caribbean ports).

Some bright spots like rum exports, which expanded almost twofold because Diageo, the British multinational, began production on St. Croix, could not compensate for declines or stagnation elsewhere.
**USVI GTP by industry**

Percent of total in nominal dollars;
2007 = $4.8bn; 2015 = $3.8bn

<table>
<thead>
<tr>
<th>Industry</th>
<th>2007</th>
<th>2015</th>
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</thead>
<tbody>
<tr>
<td>Territorial government</td>
<td>14%</td>
<td>18%</td>
</tr>
<tr>
<td>Federal government</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>Other services, except government</td>
<td>35%</td>
<td>41%</td>
</tr>
<tr>
<td>Accommodation and food services</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>Wholesale and retail trade</td>
<td>31%</td>
<td>14%</td>
</tr>
<tr>
<td>Goods-producing industries</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>Other goods-producing industries</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Inflation adjustment</td>
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<td></td>
</tr>
<tr>
<td><strong>2007 Total</strong></td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td><strong>2015 Total</strong></td>
<td>100%</td>
<td></td>
</tr>
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**Change in USVI real GTP, 2007-2015**

Millions of chained 2009 dollars

<table>
<thead>
<tr>
<th>Year</th>
<th>Real GTP</th>
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<tr>
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<td>4,460</td>
</tr>
<tr>
<td>2015</td>
<td>3,302</td>
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Task Force analysis based on USVIBER data

**Visitor arrivals in the USVI**

Millions, FY 2011-2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Cruise</th>
<th>Air</th>
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<tbody>
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<td>2.65</td>
<td>1.99</td>
</tr>
<tr>
<td>2012</td>
<td>2.68</td>
<td>1.94</td>
</tr>
<tr>
<td>2013</td>
<td>2.65</td>
<td>1.95</td>
</tr>
<tr>
<td>2014</td>
<td>2.78</td>
<td>2.06</td>
</tr>
<tr>
<td>2015</td>
<td>2.69</td>
<td>1.93</td>
</tr>
<tr>
<td>2016</td>
<td>2.65</td>
<td>1.87</td>
</tr>
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</table>

Task Force analysis based on data from USVIBER

**Tourist expenditures in selected Caribbean ports**

$ million

- St. Thomas
- St. Maarten
- Cayman Islands

<table>
<thead>
<tr>
<th>Year</th>
<th>Cruise</th>
<th>St. Maarten</th>
<th>Cayman Islands</th>
</tr>
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<tbody>
<tr>
<td>2007</td>
<td>$288</td>
<td>$123</td>
<td>$138</td>
</tr>
<tr>
<td>2009</td>
<td>$384</td>
<td>$140</td>
<td>$174</td>
</tr>
<tr>
<td>2012</td>
<td>$356</td>
<td>$158</td>
<td>$158</td>
</tr>
<tr>
<td>2015</td>
<td>$425</td>
<td>$344</td>
<td>$208</td>
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</tbody>
</table>

West Indian Company Limited based on data from Florida Caribbean Cruise Association
Workers

In 2016, USVI had slightly under 43,000 formal workers (meaning those who report their employment to the government and pay taxes). Unemployment rate—defined as the share of those who say that they are looking for work but have not found it—was at 11.1 percent. The government employed the greatest number of workers, 27 percent; professional, business, educational, health, and other services were next with 22 percent, followed by leisure and hospitality and trade with 18 percent and 17 percent, respectively (see chart: USVI job makeup by sector).

Between 2006 and 2016, the economy lost over 6,000 jobs, driven primarily by declines in construction and mining, manufacturing, and Territorial government (see chart: USVI job gains and losses by sector, 2006-2016). The Territory’s population shrank by 11,000 people in the same period, but unemployment still went up because the ratio of jobs lost to the number of people who left was higher than the ratio of the number of people in the workforce to the number of people in the Territory. The only sector that expanded employment was leisure and hospitality, adding slightly more than 200 jobs in ten years.

Although jobs are being lost and unemployment is high, the Territory suffers from a shortage of high-skilled workers: a 2015 BER study found that “approximately 38 percent of businesses indicate they have difficulties filling positions. The sectors where there are hiring difficulties include retail; professional, scientific and technical services; health care and social services; and accommodation and food services.”¹ The VI Workforce Investment Board summarized the state of the labor market as “… caught between the familiarity of and reliance on a structure characterized by varied levels of low/moderate skilled, low/moderate wage long-term employment; and the emergence of a fast paced, highly skilled, technology based global economy.”²

Wages

The average (mean) wages that the workers received for their work were lower than the United States average: according to BLS data from May 2016, they stood at $18.10 as compared to $23.86—or 24 percent less.

¹ Quoted in VI Workforce Investment Board, Unified State Plan for the Workforce Innovation and Opportunity Act of 2014, 16.
² Ibid.
Government revenue and taxation

Most of the Territory’s revenue comes from various forms of taxation, including federal taxes, which, as a Territory, the USVI directly administers and collects through its Bureau of Internal Revenue (BIR). Of all the taxes administered in the Territory, individual taxes are the government’s most important source of revenue: in 2016, they accounted for 46 percent of the total. Gross receipts tax was next with 20 percent; real property, corporate, hotel room, trade/excise, and all other taxes made up the remaining 34 percent (see chart: Tax makeup of USVI government revenues).

While individual tax rates mirror the federal tax code, the gross receipts tax is specific to the Territory (most states in the US rely on sales tax instead). The Territory’s retail sector presents the absence of a sales tax as a benefit to visitors, but GRT—unlike sales tax or value-added tax (VAT)—also has the disadvantage of being assessed each time a good or service is passed between businesses prior to final consumption, which increases the burden of tax compliance on both businesses and the government.

USVI takes in less in taxes and other revenues than it spends. As a result, debt load used to fund the deficit—mostly general government operations—has been increasing: between 2005 and 2015, according to the Government Accountability Office (GAO), “the Territory’s debt nearly doubled, reaching $2.6 billion and a debt to GDP ratio of 72 percent.” As debt levels increased, USVI government has been finding it more difficult to borrow in the markets and was unable to find investors for a debt issue in 2017.

The Territory’s budget situation is complicated by the fact that federal funding in areas like health care and support for low-income populations falls below what the USVI would have received had it been a state. In health care, Medicaid funding is capped at a lower rate than would otherwise be available, and funding for hospitals and Medicare reimbursement is lower as well. In low-income population support, the Territory must fund from its revenues the Earned Income Tax Credit and Child Tax Credit programs that the federal government funds elsewhere in the US. Finally, in highway funding, the Territory also receives less funding than a state would. Considered together, these differences substantially reduce the development benefits that federal tax breaks for companies operating in the Territory are supposed to provide.

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ECONOMY

Economic development policies

The Territory has a program managed by the USVI Economic Development Authority (EDA) that allows private firms from around the US and the world to get incentives that include 100 percent exemptions from some local taxes such as gross receipts and property and up to 90 percent exemption on federal taxes for the firm and its owners who reside in the Territory. Several groups manage the promotion, application process, and enforcement of these benefits, including the Economic Development Commission, the Virgin Islands Economic Park Development Corporation, Economic Development Bank and Enterprise Zone Commission, and RTPark, which is a division of the University of the Virgin Islands. The RTPark program extends the benefits offered by the EDA and is designed to bring innovative firms to the Territory and grow the small, yet important, information technology sector.

Government regulation

While part of the United States, the Territory sits outside the United States customs zone and is therefore subject to a unique combination of United States federal and local regulatory policy measures. USVI directly administers various federal policies, including areas like EPA regulations that impact permitting enforcement. A concern of some local businesses is that local agencies administering these policies are often overwhelmed, which can lead to long wait times.

Competitive standing and resources for growth

Much of USVI economic activity has its origins in exemptions from some federal policies, including the Jones Act (which prohibits foreign-flagged vessels from carrying goods between American ports), agreements that benefit the production of rum, and IRS policies that allow the Territory to offer significant tax incentives. Other than these incentives, the USVI’s economic makeup is similar to several neighboring island nations whose economies also have a heavy reliance on tourism, retail, and manufacturing sectors—although USVI, compared to its neighbors, also has the advantages of being a US Territory, including having tariff and quota-free access to the US market and—for US investors—familiar legal and regulatory structures.

The Territory’s resources for growth include its exceptional natural landscapes, several deep-water ports, and a relatively large—for an island—amount of undeveloped land on St. Croix that is suitable for agriculture, development, and industrial activity. Potential constraints include the poor state of the Territory’s infrastructure (including roads and the water supply system, both of which suffer from years of deferred maintenance) and—especially—the relatively high cost of power compared to the rest of the US (around 35 cents per kWh compared to around 12-13 cents on the mainland).
USVI AND THE US MARKET

For a less wealthy, less economically sophisticated community to be part of a larger community that is overall wealthier and more economically sophisticated is both a blessing and a curse. On the one hand, the USVI has access to an enormous market—one of the largest in the world. On the other hand, people who live in the USVI can leave easily to go look for jobs elsewhere in that market—and while it may be difficult to find something to sell to the enormous market other than the beauty of the islands’ geography, it can be quite easy for some of the Territory’s best people to leave. For those people, it means opportunities that people from, say, Jamaica do not have—but it also means that the Territory is going to keep losing its best people generation after generation, including after it has spent a lot of public money to educate them. Some of those who left will return because their families are here or because they prefer to live in the USVI—but many will not. And so the Territory finds itself in a curious situation: it has access to a market that others in the Caribbean would love to have access to as well, but because that access comes with the freedom of movement that makes it easy for people to leave the Territory, the USVI may find it difficult to build economic sectors that can take advantage of that access.

Current federal government policy toward US territories is based on the idea of giving them tax breaks. The logic is: if territories cannot develop sophisticated economic sectors by themselves, let companies come from the outside and bring in the required expertise and market access. That has happened, but only to some extent—and a two-track economy is the result. There is a track with relatively high-wage, high-skill jobs in part thanks to the companies that come for the tax breaks. And there is also a track in which there are a lot of lower-skill, lower-paid jobs in sectors like tourism and construction. That, of course, is a better outcome than if one had all jobs be of the lower-skill, lower-wage variety—but what can one do to have more highly paid, high-skilled jobs?

The answer probably has something to do with education, but those systems are very difficult to turn around—especially if some of the Territory’s best-educated people leave.

A question to ask might be: is the current federal policy toward developing the more remote corners of the US adequate to the challenges that they face in an age where more and more wealth is created through skills and knowledge? In an industrial economy, tax incentives may have attracted Hess Oil to set up Hovensa and provide a lot of well-paid jobs that did not require the level of training that, say, offering IT services would require. But what happens in a post-industrial economy when many industrial jobs have moved abroad? Tax incentives can cause companies to consider the USVI, but where will their workers come from if the local education system is not training the workers that those companies need? And so, the USVI risks being left permanently behind. Can the federal government try to turn the situation around by supporting long-term, large-scale initiatives to dramatically improve education systems in the country’s more isolated corners, the USVI included? The question remains open.
IMPACT OF THE HURRICANES

The hurricanes disrupted the lives of the Territory’s workers and damaged the physical infrastructure that supported the work of their organizations. As a result, the Territory’s economic activity—especially tourism—was severely reduced in the months following the storm, leading to job losses on the three main islands and a total estimated economic impact of $1.54 billion. Federal assistance coming into the Territory softened some of the blow in the first two months after the storms. By November-December, some activity began to return. Still, by April 2018, tourist arrivals—on which most of the economy depends—were still more than a third lower than in the same month the year before.

Impact on workers and on physical infrastructure

Already before the hurricanes arrived, thousands of people evacuated from the Territory; after the storms, the trend continued. Those people who stayed in the Territory—including those who were employed—spent the first several weeks after the storm taking care of their damaged homes and were often not able to come into work. Even when they were able to do so, there was often nowhere to come to: a lot of the establishments were simply not open, whether because their facilities were damaged directly, because there was not enough business, because the infrastructure on which they rely—especially power, telecom, ports and airports, and roads—was damaged, or all of the above. Of the Territory’s ten largest employers in 2016, six—five hotels and one retail store—sustained enough damage in the storms that they are not set to reopen until at least 2019 (see table: Status of ten largest private employers in the USVI).

People outflow from the Territory continued until the end of November; in December, around 1,000 more people came into the Territory’s airports than left it, followed by two more months of positive net arrivals before the trend turned negative again in March (see chart: Net airline arrivals in the USVI). Some of the people who wanted to return to the Territory could not do so either because of damage to their property or—especially for those with children—because of concerns about the state of the Territory’s damaged health care and education facilities.

Impact on economic activity

Total economic impact of the hurricanes on the Territory’s economy was estimated at $1.54 billion, or nearly 40 percent of annual GTP. The number includes lost wages, lost government tax revenue, and damage to commercial property.

Damage to the Territory’s main source of income and employment—tourism—was equally severe. The storms brought tourism to a sudden halt, with all airports and seaports closing for several weeks due to the storms. Seaports on St. Croix, St. Thomas, and St. John closed on September 5, 2017 and did not reopen for three weeks. Both of the Territory’s airports closed on September 6, 2017, and while the St. Thomas airport reopened on September 28, 2017, St. Croix’s airport did not reopen until October 5, 2018. Even as the airports reopened, tourism remained low because of a lack of accommodations (a result of disaster-related damage to hotels), the perception that the islands were completely decimated, damage to the British Virgin Islands (where cruise ships often dock in addition to the USVI) and limited commercial flights (only one or two per day came into the Territory for weeks following the storms). Even by June 2018, the level of flights was still just slightly over a half of what it used to be two years before (see chart: Major carrier flight seats by month).
Net airline arrivals in the USVI at STX and STT airports
Thousands, 2017/2018

Task Force analysis based on T-100 data from US Bureau of Transportation Statistics

Major carrier flight seats by month
Thousands

USVIBER
As a result, few visitors other than recovery personnel arrived in September and October 2017. Visitor arrivals picked up in November with the return of cruise ships and further improved in December—but still, in April 2018, cruise visits were 28 percent lower and airline arrivals 52 percent lower compared to a year before, for a total drop of 36 percent (see chart: USVI visitor arrivals).

Hotel occupancy dropped as well, both because of facility damage and because of low visitor numbers: in December 2017, the Territory lost 78 percent of its monthly room nights compared to December 2016, with more than 90 percent of that loss occurring in the St. Thomas-St. John district where hotel capacity was far higher than on St. Croix (119,000 monthly nights compared to 37,000) and the drop, because of the closures of several major resorts, steeper. Relatively speaking, St. Thomas and St. John lost 88 percent of their room nights in December 2017 compared to a year before, and St. Croix lost 33 percent (see chart: Hotel room nights occupied). The dramatic decrease in visitors to the islands led to a substantial decrease in revenue across the USVI. According to the US Virgin Islands Bureau of Economic Research (BER), tourists (arriving by air) spend an average of $1,373 on their visits to the islands, and excursionists (day visitors, mostly via cruise ships) spend an average of $224 on their visits to the Territory. Before the storms, that amounted to a total monthly spend of $84.8 million in October 2016. One year later, in October 2017, the USVI saw a loss of $49.8 million in tourist spending and $21.3 million in lost excursionist spending, amounting to a total of $71.1 million in unrealized revenue in that month alone. This is likely an underestimate of lost spending as many of the visitors arriving by air in October 2017 were recovery workers, who spend significantly less than regular tourists.

### USVI visitor arrivals
Thousands, 2017/2018

<table>
<thead>
<tr>
<th>Month</th>
<th>Air</th>
<th>Cruise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>280</td>
<td>77</td>
</tr>
<tr>
<td>Feb</td>
<td>234</td>
<td>75</td>
</tr>
<tr>
<td>Mar</td>
<td>203</td>
<td>159</td>
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<td>May</td>
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</tr>
<tr>
<td>Dec</td>
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<tr>
<td>Apr</td>
<td>107</td>
<td>107</td>
</tr>
</tbody>
</table>

**USVIBER**
ECONOMY

Job losses

As a result of the hurricanes, the Territory lost several thousand jobs, causing an estimated 4,300 additional jobless claims—equal to 11 percent of total employment (see chart: USVI jobless claims).

Unemployment increased from 10.2 percent in August 2017 to a peak of 17.1 percent in October. St. Thomas-St. John were affected worse than St. Croix despite having a lower initial level of unemployment: there, the unemployment rate doubled, going from 9.3 to a peak of 18.6 percent, compared to a 31 percent increase on St. Croix, from 11.4 to 14.9 percent (see chart: Unemployment rate).

The worst affected sectors included leisure and hospitality, trade, and education and health. Manufacturing and construction posted modest increases because of the reconstruction activity—but nowhere near enough to compensate for the loss of jobs elsewhere. In leisure and hospitality, the drop became worse between October and December as some hotels that had initially kept their staff on were letting the staff go, as opposed to trade, where the situation improved as stores reopened, or other sectors, where the situation remained more or less the same (see chart: Job loss by sector).
Job loss by sector
Change Aug-Oct 2017 vs. change Aug-Dec 2017

Local job loss following natural disasters
Percent, from onset to trough


Federal Reserve Bank of New York
Employment paths after hurricanes

Comparative damage

Comparatively speaking, the USVI job loss was one of the worst on record in the US in the last 30 years, second only to job loss in New Orleans after Katrina in 2005 and in the USVI itself after Hugo in 1989 (and followed by Marilyn, also in the USVI, in 1995; see chart: Local job loss following natural disasters). In comparison, New York City saw a 3.3 percent job loss in 10 months during the Great Recession.

Recovery prospects

After Hurricanes Marilyn and Hugo, it took the USVI 12-14 months to return to pre-hurricane levels of employment. After Hurricane Katrina, with its much greater loss of jobs, New Orleans had not returned to pre-storm job levels even 30 months later. The job loss in the USVI following Irma and Maria was worse than after Hurricane Marilyn but not as bad as after Hurricane Hugo (see chart: Employment paths after hurricanes). What that means for the Territory’s recovery is impossible to tell—but, if the past is any indication, the recovery’s initial phase will have been fueled by federal relief spending, followed—about a year in—by private and federal spending on infrastructure recovery. One-off deals may help as well: as of June 2018, negotiations were under way with a group of investors for restarting petroleum refining in the former Hovensa refinery on St. Croix.
IMPACT ON CULTURAL RESOURCES

USVI cultural resources suffered losses and damage from the storms. Coastal erosion damaged archaeological sites, and historic structures lost their roofs to heavy winds, exposing interiors and contents to the elements.

On St. John, Hurricane Irma damaged or destroyed several National Register of Historic Places sites. At the island’s East End Schoolhouse, dating back to 1862, the hurricanes exacerbated existing deterioration. The Battery in Cruz Bay lost its entire roof and in Coral Bay the historic Emmaus Moravian Church suffered the same fate. Additionally, the Cinnamon Bay Archaeological Laboratory and Museum was completely destroyed.

On St. Thomas, a few historic houses in the Charlotte Amalie Historic District that were previously damaged collapsed because of the hurricane winds. Fort Christian, built in 1671, lost the roof to its stable. In the fort’s historic Church and Governor General’s Quarters, wind and rain damaged portions of the wood flooring. Wind also destroyed the historic parsonage’s metal roofing of the Memorial Moravian Church site, exposing the roof rafters and interior to flooding.

On St. Croix, the Christiansted Historic District had a sheltered position from the south and overall fared better during the storms but suffered minor damage to historic roofs and windows. Fort Frederik, a US National Historic Landmark, received catastrophic damage to its doors and shutters, and a large mahogany tree fell against its eastern parapet wall. Outside the fort, the historic lime kiln’s southern wall collapsed, exposing the internal firebox. A recently discovered cemetery on the fort’s northern apron along the LaGrange Gut had exposed human bones displaced by flooding. Friedensfeld Midlands Moravian Church, built in 1854, suffered substantial damage to the steeple roof, downspouts and gutters, and siding. In addition, The Whim Great House, the only sugar plantation museum in the Virgin Islands, sustained extensive roof damage and water soaked the interior walls and antique furniture. Elsewhere on the island, sites such as Sandy Point and Ha’Penny Beach, which have open seafront to the west, suffered significant damage.

Since Irma and Maria, public and private agencies, volunteers, and individuals have worked together to preserve and restore the Territory’s cultural resources. An ongoing effort to identify, assess, and repair damaged historic properties, items, and artifacts has been undertaken by the VI State Historic Preservation Office (VISHPO) in partnership with the Division of Libraries, Archives and Museums (DLAM), the Council on the Arts, and the Virgin Islands Territorial Emergency Management Agency (VITEMA).

The Virgin Islands Department of Planning and Natural Resources (DPNR) estimates that the total damage to historic structures in the Territory was at least $16 million.
IMPACT ON NATURAL RESOURCES

From the picturesque beaches of St. Thomas to the incredible national parks on St. John to the renowned coral reefs of St. Croix, the USVI’s natural resources are an extremely important asset for both residents and visitors alike. Hurricanes Irma and Maria damaged them severely. The storms ripped nearly all leafy vegetation from trees and plants, destroying native species’ habitats; winds and storm surge tore hundreds of ships from their moorings, leaving them askew on beaches and tossing them into mangrove lagoons; extensive soil erosion created by the hurricanes swept mud and pollutants into the water, harming coral reefs and other aquatic life. Natural systems have begun to recover, but full restoration—if it ever occurs—will take many years.

While a comprehensive analysis of natural resource damage has not been conducted, the notes below offer some highlights.

Coral reefs

Coral reefs, which are critically important ecological and economic resources for the USVI, suffered as a result of the hurricanes. Storm surges broke coral into pieces, which can be life-threatening to the habitat. While coral fragments can reattach themselves, it requires a significant amount of energy, and coral cannot be under significant amount of stress, or else coral disease or red algae are likely to set in. Trained personnel can assist in reattaching coral fragments with the use of an epoxy or cement; however, many of the organisms will succumb to the damage. The future holds additional risks: rising ocean temperatures will increase bleaching and ocean acidification, which could kill the reefs off, decreasing fish and invertebrate populations. Animals will also suffer, such as sea turtles whose nesting habitats are already threatened. The loss of coral means that mangroves and seagrass beds will lose their most important protection. It can also negatively directly or indirectly impact fish, turtle, and marine invertebrate populations.

Seagrass beds

Storm surges scoured USVI seagrass beds, resulting in the complete loss of seagrass cover in some areas. An invasive seagrass, *Halophila stipulacea*, has rapidly replaced the original seagrass beds, transforming the habitat and displacing the marine community that had relied on it.

Turtle nesting beaches

Irma and Maria caused widespread beach erosion, removing as much as three feet of beach elevation at multiple sites, damaging coastal vegetation, and exposing roots. The reduction of vegetation cover allowed invasive plant species, particularly *Theespesia populnea*, to fill open areas. This reduced habitat quality for native species of plants and animals and degraded nesting conditions for Hawksbill sea turtles. Future sea level rise will affect beaches as well, potentially further reducing some of the nesting areas.

Tree damage

Most trees in the Territory lost all their foliage to the storms; many were also damaged. Much of the damage occurred along the shoreline, and, while regrowth of foliage will occur for the trees that remain, the lack of shade significantly impacts recreational beach goers. Additionally, destroyed vegetation and trees dramatically increased available habitat for red tail boa and its prey and also made it easier for invasive plant species to settle in.

Mangroves and other wetlands

Mangroves did not suffer much damage across the Territory as a result of the storms. Most mangrove populations are in protected embayments, and most of the
damage as a result of the storms was to the branches. Mangroves are fairly resilient such that when their root structures are intact, they regenerate branches at their normal rate. Other wetland species did not fare as well as mangroves; however, with the amount of rains that fell following both storms, their recovery should not be too heavily impacted. Wetland species depend on conditions of periodic or permanent inundation, and the rains following the storms, all the way into November 2017, provided those conditions. In addition, large amounts of sediment were transported through gutts from the storms, which also create ideal conditions for wetland vegetation to take root.

Wildlife

The storms critically impacted three species of frugivorous bats: Jamaican Fruit-eating Bats, Antillean Fruit-eating Bats, and the rare endemic Red Fruit-eating Bat. Another visible species, the Brown-throated Parakeet, has all but disappeared, with only small groups of individuals now documented compared to previous numbers. Hurricane winds, rainfall, and storm surge threatened crops and livestock and the forage they need for sustenance.

Sunken vessels

The storms caused nearly 500 vessels to sink in the USVI waters. These vessels carried a number of pollutants, including 12,500 gallons of fuel and oil, 50 propane filters, more than 300 batteries, and other hazardous substances that could pollute the water. The vehicles’ battering during the storm also caused anchors and moorings to drag, damaging the sea bed, sea grasses, and coral.

Water pollution

During the storms, pathogens flowed through gut waters and into the sea. Storm water runoff also carried various types of “nonpoint source pollution,” which occurs when small amounts of pollution from a large variety of sources are picked up by storm water runoff and carried into water bodies. This pollution damaged the mangrove lagoons and coral reefs, which provide crucial storm protection. Sediment (dirt, soil, etc.) increased seawater turbidity. Sewage from wastewater treatment plants and sewer lines overflowed into the ocean from the increased rains. Health hazards created by these issues drove the authorities to close the beaches after the hurricanes; many of these beach water quality issues extended for months after the storms.

Natural resource recovery

DPNR, which administers and enforces laws related to preservation and conservation of fish and wildlife, trees and vegetation, coastal zones, cultural and historical resources, water resources, and air, water and oil pollution, will be working to restore the Territory’s natural resources as much as funding and the degree of damage allows. Measures will include coral reef restoration (including through supporting coral nurseries), restoring coastal vegetation communities and enlarging wetland buffer/setback areas to allow landward migration of mangroves, protecting sea turtle habitat, and preventing indiscriminate removal of damaged trees by cleanup crews.
INITIATIVES FOR INCREASING THE ECONOMY’S RESILIENCE

The economy is not a sector unto itself: its functioning depends on the functioning of a lot of other sectors. As those sectors become more resilient, so will the economy: a stronger power grid, stronger telecommunications, and stronger logistics channels will contribute a lot to the economy’s resilience in the face of future storms. Some improvements will benefit the economy in non-storm times, too: lower power prices as a consequence of the initiatives described in the Energy section are one example. Beyond those strategies, there are also initiatives that one can undertake to improve the economy’s functioning directly. A full inventory of those would need a separate report; this chapter outlines several initiatives that bear a relationship to post-crisis recovery and resilience in the face of future storms, including those that can help the government better engage with the economy in crisis times, those that will help support the recovery, and those that will allow the Territory to sustain less damage in future storms.

STRENGTHEN PUBLIC ECONOMIC POLICYMAKING AND IMPLEMENTATION CAPACITY

These initiatives will strengthen the ability of the government and its partners to shape the USVI’s economic policy, both in the medium term to support hurricane recovery and in the longer term to support the Territory’s overall resilience.

Initiative 1
Strengthen the government’s economic policymaking capacity

Strategies to improve the Territory’s economy following the storms will not be worth much if there is nobody to implement them. Currently, the Territory’s main economic development body, the Economic Development Authority (EDA), is more of an administrator of economic development benefits than an agency that actively shapes the Territory’s economic policy. Having no agency to actively engage with the economy might work in relatively stable times, but after a major crisis, government coordination and intervention are required to prevent the economy from sliding into a recession.

The Governor’s Office will work with the EDA to strengthen the government’s economic policymaking and implementation capacity, either by strengthening the EDA’s role or by strengthening the economic staff in the Governor’s Office. The EDA and/or the Governor’s Office will also improve cooperation between the different organizations in the Territory that work on issues related to the economy (including BER, Department of Labor, and UVI) by regularly bringing them together.

Initiative 2
Update the Territory’s Comprehensive Economic Development Strategy

BER, working with a private consultant, published a Comprehensive Economic Development Strategy for the Territory in 2016. The strategy included an analysis of the Territory’s economic condition and provided—albeit at a fairly high level—an overview of the kinds of strategies that the USVI could undertake in order to grow its economy. Some of the strategy’s recommendations are still applicable; some will need to be updated in light of the changes that the hurricanes brought. The Governor’s Office will work with BER to update the Territory’s economic development strategy to serve as a foundation for future overall economic development.

Initiative 3
Update workforce development plans to support hurricane recovery

In the last decade, the USVI’s economy has shifted toward services away from manufacturing. In the decade to come, it will shift again—certainly quite heavily toward construction in the next 2-3 years as the Territory rebuilds, as well as to some energy occupations as the USVI modernizes and updates its grid, and possibly to new manufacturing jobs, whether in old industries like petroleum refining
or in emerging clusters like boatbuilding or IT. Taking advantage of these opportunities will require a well-trained workforce. In its 2016 report, the VI Workforce Investment Board proposed a number of initiatives to strengthen workforce training in the Territory. Those will need updating in the face of the challenges that the hurricanes brought. The Governor’s Office will work with VI Workforce Investment Board, the Department of Labor, the Department of Education, and the University of the Virgin Islands to update and implement the existing workforce development plans with hurricane recovery needs in mind. Workforce development efforts will be mindful of the need to strike a balance between supporting the economy’s medium-term needs that will be mostly about recovery (next 2-3 years) and longer term ones that will signal a return to the economy’s more stable functioning (3-10 years).

**Initiative 4**
**Work with UVI to establish an Economic Development Policy Institute**

In addition to making sure that economic recovery is successful in the next three to five years, there is also a need to think long term about the direction of the USVI’s economy—and here there is little agreement between the community, government, and NGOs. Without such agreement initiatives are short-lived, don’t meet their potential, and are subject to changes based on election cycles. The Governor’s Office will work with the University of the Virgin Islands to establish an Economic Development Policy Institute as an extension of the UVI RTPark program to support economic policy development with a particular focus on engaging the community and on taking the long-term view on economic development.

**SUPPORT RECOVERY**

These initiatives will support the recovery of the Territory’s most important sector—tourism—and support capital access for small businesses.

**PROMOTE RESILIENCE IN THE FACE OF FUTURE STORMS**

Other sections of this report address in detail various initiatives that will help the Territory and its economy weather future storms better. The initiatives mentioned here complement them.

**Initiative 5**
**Review Tourism Master Plan**

The Territory’s Tourism Master Plan needs an update both in the face of hurricane damage and in the face of the ever-changing tourism landscape in the Caribbean. BER, in partnership with the Department of Tourism and industry associations such as VI Hospitality and Tourism Association will revise the Territory’s Tourism Master Plan to develop a strategy to support, refresh, and expand the variety of tourism businesses and offerings that will help USVI attract and expand its visitors (including by focusing on cultural, heritage, eco-and agri-tourism, all of which are promising but relatively underdeveloped areas of the Territory’s tourism economy).

**Initiative 6**
**Fill gaps in capital access for small businesses and entrepreneurs**

Following storms, businesses’ capital needs are particularly urgent—but there currently are no microlenders, community development banks, rural lending intermediaries, or similar institutions serving the USVI. This especially affects financing available for start-ups, new entrepreneurs, and businesses seeking small loans of $10,000-30,000.

The Governor’s Office will work with federal agencies in the Economic Recovery Support Function to identify policy measures that may assist USVI businesses with securing capital, credit, insurance, bonding, and related financial capacity to meet the needs of the recovery economy. Any measures taken would be coupled with steps to promote financial literacy among prospective borrowers.
Initiative 7

Invest in infrastructure to protect marine vessels in future storms

Hundreds of boats were destroyed in the Territory following the storms, resulting in extensive environmental and economic loss and diversion of emergency repair funds to removing vessels. Part of the reason: the Territory does not have sufficient mooring or on-land storage facilities to get boats safely out of the water, making this sector non-resilient in future storms.

The Department of Planning and Natural Resources (DPNR) will update water use plans for the Territory to accommodate transient vessels and work with local nonprofits to develop mooring infrastructure. Subject to availability of funding, the Port Authority and DPNR will partner with private boat storage operators to establish boatyards and public ramps that can help remove vessels from the water prior to storms and service the charter boat economy.

Initiative 8

Promote an equally distributed set of small and large hotels across the Territory

The vast majority of the Territory’s hotel rooms is to be found in large hotels on St. Thomas. Following a disaster, large properties can find it easier to rebuild because they may have better access to credit—but they can also take longer, especially when they are owned by groups that operate multiple properties in different locations for which their USVI locations are only one part of a large portfolio. As a result, the tourism economy can be decimated by a single disaster: as noted above, in the St. Thomas-St. John district, hotel nights in December 2017 were down 88 percent compared to the year before. Encouraging the development of smaller hotels spread out across all of USVI’s islands—in addition to primary islands—may allow the Territory to recover more quickly following future storms.

The EDA and Department of Tourism will work to support small businesses in establishing new small-scale eco-friendly hotels throughout the entire Territory even as the two agencies work to support restoration of existing large-scale resorts on St. Thomas and St. John and to attract new large hotels to St. Croix.

Initiative 9

Introduce cloud-based systems for government IT services

Following the storms, one problem for businesses was that government services like licensing or property registration were not available for weeks, if not months. Part of the reason: electricity and telecommunications were out for as long as they were—in future storms, and following the implementation of the initiatives in this report, these outages will hopefully be shorter and government services will recover more quickly. However, some of the reasons for the long recovery had to do with the structure of the government’s services itself: in just one example, a lot of the data was only stored locally, and when data was lost in a government data center on St. Croix, no off-island backup was available. Bureau of Information Technology (BIT) will work with all the different parts of the USVI government to introduce cloud-based systems for data storage and customer service that will be more resilient in future storms (see Communications: Public Sector section for more details).