DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BARBADOS

NATIONAL TOURISM PROGRAM

(BA-L1033)

MONITORING AND EX-POST ECONOMIC IMPACT EVALUATION STRATEGY

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CONTENT

ABBREVIATIONS

AOP: Annual Operating Plan

GDP: Gross Domestic Product

IDB: Inter-American Development Bank

MTIT : Ministry of Tourism and International Transport

I. Introduction

Barbados is a successful but mature touristic destination in the Caribbean, mostly known for beach-resort tourism and cruises. Tourism showed in 2015 good performance and contributed 12% of GDP, about 40% considering indirect effects, approximately 37% of total employment (46,000 jobs[1]) and 60.4% of total exports, and it is clearly the main driver for growth in the country. The year 2015 put an end to the waning of tourism experienced since 2007 by the country. Barbadian tourism recurrently faces cyclical peaks and valleys in its total number of visitors and receipts, mainly caused by international conditions and oil prices. After the early 1990s recession, tourism picked up again and by the end of the decade the country reached for the first time one million tourist arrivals per year. Once recovered from the crisis that followed the 2001 attacks and the SARS outbreak, there was a new increase in the number of visitors until 2006, but the 2007-2014 period was characterized again by a fluctuating decline in the number of visitors (-9.25%) and receipts (-7.64%), mostly explained by the impact of the global crisis on household budgets in main tourism source markets and inflated airfares due to high fuel costs[2]. In 2015, tourism began recovering again with increases in both arrivals and receipts. It is therefore evident that Barbados needs to increase the resilience of its tourism sector to external shocks and improve its performance, and in order to achieve that the country needs to address three structural challenges: (i) <u>Need to diversify geographical source markets and travelers' consumption patterns</u>**.** (ii) <u>Improve Barbados tourism positioning</u>, (iii) <u>Improve Air connectivity in an efficient manner</u>.

The project has been designed to address these challenges. The overall objective of the projectis increasing the resilience of the Barbados tourism industry, with a focus on increasing tourism receipts. The Program will have three components and the resources of the loan will additionally finance part of the administrative costs and the contingencies.

Component 1: New Tourism Products. (US$11.3 million) This component will finance the development of new tourism products targeted at addressing the cultural and heritage priority themes identified and agreed with the Government during project preparation. The

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[1]   Travel& Tourism-Economic impact 2015. Barbados. World Travel & Tourism Council.
[2]   Economic assessment of airlift support policies; Betancor Ofelia, Javier Campos, Juan Luis Eugenio Martin, M. Pilar Socorro, Federico Inchausti; University of Las Palmas, Gran Canarias, Spain. 2015.

implementation of these products is expected to contribute to increasing visitors' expenditures. Four new products have been identified and agreed with the Government, related to key cultural thematic lines: Bridgetown, a historic marvel of maritime engineering; the story of sugar and rum and the Industrial Heritage; and Bajan soul and cultural practices.

This component will finance: (i) a new Visitor Centre in the Old Town Hall Building (including civil works, furniture and hardware and software) and the Urban Tourist Walking Route through historic Bridgetown, with a combined estimated cost of US$6.1 million; (ii) implementation of two other tourism products (Renewed National Museum at the Garrison, and Oistins waterfront improvement) for which preliminary cost estimates have been prepared; (iii) preparation of interpretation content and materials for all products to be disseminated by both physical and electronic means, final engineering/architectural designs, environmental and social project specific plans (if required) for all products; and (iv) contracting of specialized consultancies to supervise construction works. Final designs and procurement documents will be available for the Visitor Centre and Urban Tourist Route at the time of first disbursement of the loan, and preliminary budgets have been prepared for the other two products. All works are expected to be undertaken on public property. For purposes of the Urban Tourist Route small grants will be provided to improve (minor repairs, painting, etc. of frontage) of private properties along the route.

Component 2: Strengthening Digital Marketing (US$2.0 million). This component will finance the updating and improvement of marketing strategies, with a special emphasis on the use of digital marketing in a coordinated manner with the private sector. The main objective of this component is to increase market awareness of Barbados as a cultural destination and to effectively market the new tourism products developed in Component 1. More specifically, this component will finance investments aimed at: (i) reinforcing Barbados' cultural sub-brand strategy, through new content creation for the different digital (website, social media, mobile apps) and traditional channels (media, printed publications, and others), and integration of public content creation efforts with the private sector; (ii) designing and implementing a detailed annual operational plan, which will include campaigns in each of the preselected targeted source markets, to promote the new cultural products; and (iii) defining a digital tourism marketing scorecard, including attainable objectives and expected results, as well as

prioritization of Key Performance Indicators (KPIs) to measure the implementation of the digital operational plan on an annual basis.

Component 3. **Improving airlift (US$4.0 million).** This component will finance the detailed design and implementation of a new mechanism to contract an airline to start service for a new route between Barbados and Latin America. This mechanism consists of three different stages. Each stage aims to achieve a different goal.

The following sections present the Monitoring Plan and the Ex-Post Impact Evaluation Strategy.

II. Monitoring Plan

2.1. Output Indicators

Based on the results matrix of the program, the monitoring will consider the output indicators in Table 1.

Table 1. BA-L1033 Output Indicators

Products	Cost (US$000)	Unit	Means of verification
Indicator 1.1: Visitor center completed	1,400	Project completed	Reports form Executing Unit
Indicator 1.2: Urban Tourist route in Bridgetown completed	4,700	Project complete	Reports form Executing Unit
Indicator 1.3 : Renovated National Museum at the Garrison completed	2,500	Project Complete	Reports form Executing Unit
Indicator 1.4.: Oistins waterfront improvement completed	2,700	Project complete	Reports form Executing Unit
Indicator 2.1: General actions	560	5 sub products*	Reports form Executing Unit
Indicator 2.2: Specific actions for new products	900	15 sub products*	Reports form Executing Unit
Indicator 2.3: Transversal actions	540	5 sub products*	Reports form Executing Unit
Indicator 3.1: Airlift contract operating for new route	4,000	Contract signed and in operation with airline	Report from Executing Unit.

* Subproducts are described in the final report for the second component

2.2. Reporting Monitoring Results

To accommodate the reporting requirements of both the Ministry of Tourism and the Bank, the Executing Unit will prepare a detailed **Annual Operations Plan (AOP)** 60 days prior to the beginning of each calendar year (details in table 2). Semi-**annual Progress Reports (PRs) will be presented within 60 days after the end of each six-month period** during program execution.

Table 2. Reporting Requirements

Year	Date	Reports IBD	Reports MTCCA/PPDU	Comments
Year N-1	30th November		**AOP 12 months**: from 1st January Year N-1 to 31st December Year N	Full AOP providing information for both Ministry and IDB needs
			Annual report from 1st January Year N-1 to 31st December Year N	
Year N	31st August		Semestrial report 1st January Year N-1 to 30th June Year N	Semestrial report provides: physical and financial progress against previsions by outputs and components
	28st February		Semestrial report 1st July Year N-1 to 31st December Year N	
	30th November		**AOP 12 months**: from 1st January Year N to 31st December Year N+1	
			Annual report from 1st January Year N to 31st December Year N+1	

The AOP will be supported by the Project Procurement plan (PP) for the acquisition of goods and services; and a financial plan, based on estimated procurement costs and other program activities to be undertaken. The AOP and Progress Reports (PR) will be prepared following a template consistent with the Bank's Project Monitoring Report (PMR). The AOP for the following calendar year shall include: i) a forecast of disbursements; ii) an updated Procurement Plan; iii) detail achievements in relation to planned activities, outputs and outcomes, among others; iv) budget analysis, disbursement and financial plan; v) Output Indicators and Costs – PMR Matrix.

The semi-annual PRs will focus on the fulfillment of output indicators and progress towards achieving the outcomes proposed in the Results Framework, analyze the problems encountered and propose corrective measures. The PR shall include: (a) physical progress; (b) financial progress in terms of commitments, payments and disbursements under the loan; (c) updated financial plan; (d) outputs and outcomes measured against program indicators; (e) work plan and related budgets for the next 6 months; (f) unaudited financial statements; (g) a description

of actions taken to guarantee the operating conditions of equipment purchased by the loan; and (h) the output indicators and costs matrix required for the IDB Project Monitoring Report (PMR). The PR also includes the updated maintenance plans of the infrastructure works concluded and transferred to the participating institutions / municipalities.

Within 60 days after the last disbursement date, the Executing Unit will prepare a final report, summarizing all the PR prepared during the program's life and will organize a closing workshop to present and discuss the Project Completion Report prepared by the Bank.

2.3. Monitoring Coordination, Work Plan and Budget

Table 3 provides details on the responsible entities for the implementation of the monitoring plan, monitoring activities, budgetary allocations for each activities and funding sources.

Table 3. Timeline of activities, agent responsible, cost and funding source

Activity	Year 1				Year 2				Year 3				Year 4				Year 5				Resp.	Cost (US$)	Source of Funding
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Mid-term evaluation										X											Executing Unit	15,000	Project
Final evaluation																				X	Executing Unit	25,000	Project
Inspection visits		X		X		X		X		X		X		X		X		X		X	IDB	10,000	Supervision Plan
Administrative missions						X								X						X	IDB	20,000	Supervision Plan
Day-to-day project monitoring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Executing Unit and IDB		

III. Ex-post Impact Evaluation Strategy

3.1. Main Evaluation Questions

The objective of the ex-post impact evaluation is to assess whether the project in fact induced the impacts hypothesized at time of approval, and in particular, to assess if the indicators moved in the expected direction and the size of the movements is similar to the expected ones. For this project the following table presents present the impact and outcome indicators established in the Result Matrix.

Table 4. Impact and Outcome Indicators

Indicators	Unit	Baseline		Goals		Means of verification	Observations
		Value	Year	Value	Year		
EXPECTED IMPACT							
Impact 1: Increase in tourism expenditures in Barbados by tourists							
Indicator 1.1: Total expenditure in Barbados by stayover tourists, by trip	US$/tourist	1557	2015	1617	2020	Surveys to tourists contracted by executing agency, and statistics on total number of visitors from Central Bank.	Estimated as 50% of expected value estimates.
Indicator 1.2: Total expenditure in Barbados by cruise ship tourists, by trip	US$/tourist	78	2015	128	2020		Indicators for number of tourists and expenditures by tourists are used to construct the indicator for total expenditure.
Indicator 1.3: Total number of stayover tourists	Tourists/year	591,900	2015	591,900	2020		
Indicator 1.4: Total number of cruise ship tourists	Tourists/Year	586,700	2015	586,700	2020		
Indicator1.5: a) Total expenditure by tourists							
b) Incremental expenditure in Barbados by Tourists as a result of the	US$ million/year	0	2016	83	2020		Incremental value should be estimated using

Indicators	Unit	Baseline		Goals		Means of verification	Observations
		Value	Year	Value	Year		
project	US$ million/year		2016		2020		synthetic control methodology as described in annex on impact evaluation.

OUTCOMES

Expected Results	Unit	Baseline		Intermediate		Goals		Means of verification	Observations
		Value	Year	Value	Year	Value	Year		
EXPECTED RESULTS									
Results component 1: Tourist expenditures on new heritage and cultural products									
Indicator 1.1: Mean expenditure of tourists in new cultural products in Bridgetown (stay over and Cruise ships) **Indicator 1.2** Tourists taking tours to visit new cultural areas of old Bridgetown.	US$/tourist Tourists(000)	0 0	2016			16 590	2018	Surveys to be contracted by executing unit	Total expenditures are calculated as the multiplication of number of tourists and average expenditure by tourist
Indicator 1.3: Mean expenditure of tourists to visit the new National museum (stay over and cruise ships) **Indicator 1.4:** Number of tourists visiting new national museum	US$/tourist Tourists(000)	0 0	2016			52 590	2020	Surveys to be contracted by executing unit	Total expenditures are calculated as the multiplication of number of tourists and average expenditure by tourist
Indicator 1.5: Mean expenditure of tourists to visit renewed water front at Oistins. **Indicator: 1:6** Number of tourists visiting the renewed waterfront at Oistins.	US$/tourist Tourist(000)	0 0	2016			42 590	2020	Surveys to be contracted by executing unit	Total expenditures are calculated as the multiplication of number of tourists and average expenditure by tourist.
Results component 2: Increased awareness of Barbados as a cultural destination									
Indicator 2.1: Traffic to Barbado's official tourism website	2.1.1 Estimated monthly visits	25,000	2015			76,000	2020	Statistics produced by Google Analytics; Reports from	2.1.1 The goal is the average of monthly visits to

Expected Results	Unit	Baseline		Intermediate		Goals		Means of verification	Observations
		Value	Year	Value	Year	Value	Year		
(www.visitbarbados.org).								Executing Unit	the official websites of Barbados competitors (Puerto Rico, Cuba, Dominican Republic and Jamaica)
	2.1.2 Geographic traffic sources	75% from traditional markets (USA, UK, Canada)	2015			50% from traditional markets	2020	Reports from Executing Unit	2.1.2 As an indicator of geographic market diversification
	2.1.3Time on site	1:39 minutes	2015			3:00 minutes	2020		2.1.3 As an indicator of relevant contents for website visitors. The goal considers the time on site in other competitors' websites (3:44 minutes for www.godominicanrepublic.com)
Results component 3: Expenditures by tourists arriving in new route contracted under the program									
Indicator 3.1 Expenditures in Barbados by tourists from new routes contracted under the Program	US$/tourists	0	2016	1,800	2017	1,800	2020	Survey contracted by Executing Unit; Reports form Executing Unit	Estimates based on lowest expenditures obtained in survey

Expected Results	Unit	Baseline		Intermediate		Goals		Means of verification	Observations
		Value	Year	Value	Year	Value	Year		
									during preparation
Indicator 3.2 Number of tourists from new routes contracted under the Program	Tourists/year	0	2016	7,000	2017	10,000	2020	Statistics from Ministry of Tourism and Transportation; Reports form Executing Unit	Estimates based on preliminary studies for 6 routes in LatinAmerica.

The key impact indicator is "Incremental expenditure in Barbados by Tourists as a result of the project" when compared to the base year. Total expenditure by tourists is calculated based on the number of tourists (stay over and coming in cruise ships) and their average expenditures. Given that the number of tourists visiting the country and their average expenditure can change due to changes in economic conditions (international oil prices, exchange rates, economic situation in country of origin, price levels in the Barbados, and many other), the impact of the project can't be assessed by simply looking at total expenditures reported by national or international tourism statistics. A methodology for this purpose is presented in the following section.

Besides, assessing the overall impact of the project, it is important to assess whether each component achieved their expected results, because this helps understand how the project achieved or failed achieving the expected impact. The project has three components, and each one is expected to contribute to the overall objective. The expected results of the project are presented in the previous table.

Based on the above, the main questions that must be assessed by the impact evaluation are:

i)   Did the project increased total expenditure by tourists by year 2020 over the values in the base year (2015), compared to what would have happened in the absence of the project. This is the key impact indicator.

ii)   Did expenditures by tourists in "cultural products" financed with the project increased as hypothesized?

iii)   Did the increase in expenditures on cultural products came at the expense of other expenditures?

iv)   Did the expenditures by tourists coming to Barbados on new routes contracted with component 3 generate enough economic benefits to cover the payments made the Government. Economic benefits should be estimated using a value of benefits by tourist estimated with a methodology similar to the one used for the economic analysis of airlift contracts.[3]

The following section present the methodology proposed to carry out the impact evaluation.

3.2. Impact Evaluation Methodology

Impact indicator.

The greatest challenge for impact evaluation of national tourism projects is attribution, and this project is not an exception[4]. Projects that include actions that affect a whole sector can't be the subject of a randomized control experiment, and not even a quasiexperimental approach can be used to assess the impact of these projects. Besides that, as mentioned before, the simple comparison of a key indicator, such as total expenditure by tourists in Barbados, for a particular year at the end of the project with the value of the indicator for the base year, is not a valid assessment. The flow of tourists and their expenditures per trip are affected by changes in exchange rates, oil prices, and several other economic parameters, and for that reason the comparison before-after can't confidently elucidate the impact of the project.

[3]   Economic assessment of airlift support policies; Betancor Ofelia, Javier Campos, Juan Luis Eugenio Martin, M. Pilar Socorro, Federico Inchausti; University of Las Palmas, Gran Canarias, Spain. 2015.
[4]   Taylor, J. E., & Filipski, M. J.. *Beyond Experiments in Development Economics: Local Economy-wide Impact Evaluation*. Oxford: Oxford University Press. 2014

The literature on impact evaluation has developed a methodology for these cases: Synthetic Control.[5] In a few words, this methodology allows the analyst to create a synthetic version of the selected indicator for the country using information from other countries, such that it closely matches the real indicator for a period before the start of the project and can be calculated as well for the period after the project. The idea is that a combination of units often provides a better comparison for the unit receiving the treatment than any single unit. After the project, at some time T, the analyst can have then: i) the real values of the indicator at time T (i.e. with the project), and ii) the values of the synthetic indicator at time T computed using now the information at time T for the same group of countries, which can be seen as a synthetic counterfactual. Given some complementary assumptions, the comparison between these two values of the indicator is then an estimate of the impact of the project on the selected indicator.

This methodology has been used in several studies.[6,7] The description below closely follows the presentation in Abadie et al as well as in Castillo et al.

We have statistics for the key indicator for $J + 1$ countries in the Caribbean over T periods with Barbados being one of them. Among these, only Barbados will be exposed to the project. The J remaining countries will serve as potential controls and are conventionally called the "donor pool". Our sample at the time the impact evaluation will be conducted will include a positive number of pre-intervention periods, $T0$, as well a positive number of post-intervention periods, $T1$, with $T = T0 + T1$. In this context, it is useful to think in terms of potential outcomes in a panel setup.

Let the treatment effect for Barbados (unit i=1) at time $t = T0 + 1, \dots, T$ is defined as

$$\propto_{1t} = Y_{it}^{I} - Y_{it}^{N} = Y_{1t} - Y_{it}^{N} \quad (1)$$

[5]   Abadie, A., Gardeazabal, J. (2003). The economic costs of conflict: A case study of the Basque Country. American Economic Review 93 (1), pp. 112–32.

[6]   Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of the California's Tobacco Control Program"; Abadie A., Alexis Diamond, Jens Hainmueller. American Statistical Association. 2010.

[7]   Tourism policy, a Big Push to employment? Evidence from a multiple sunthetic control approach. Castillo V, Lucas Figal Garone, Alessandro Maffioli, Lina Salazar. IDB. 2015

With Y_{it}^N the outcome that would have been observed in the absence of the project, and Y_{it}^I the outcome that would be observed with the project, for t=T0 + 1,.... ,T. The observed outcome is then given by:

$$Y_{1t} = Y_{1t}^N + \propto_{1t} \quad (2)$$

Given that Y_{1t}^I is observed we need to estimate Y_{it}^N. Suppose that Y_{it}^N is given by:

$$Y_{it}^N = \delta_t + \theta_t Z_i + \gamma_t \mu_i + \varepsilon_{it} \quad (3)$$

Where δ_t is an unknown common factor across countries, Z_i is a (r X 1) vector of observed covariates not affected by the intervention (i.e. the project), θ_t is a (1 X r) vector of unknown parameters, γ_t is a (1 X F) vector of unobserved common factors, μ_i is a (1XF) vector of unobserved factor loadings, and ε_{it} are unobserved transitory shocks with zero mean. Notice that, while the traditional differences-in-differences (fixed-effects) model would restrict the impact of unobservable heterogeneity to be constant over time – i.e. $\gamma_t = \gamma$ for all t –, the factor model presented allows the impact of these confounding unobserved characteristics to vary with time. We can think, for instance of γ_t as the shock from 9/11 (a common shock across countries)) and $\mu_i \gamma_t$ as the heterogeneous impact on country i.

Given a (J X 1) vector of weights W= $(w_2, w_3, \dots w_{J+1})$ such that they are ≥ 0 and add up to 1, such that one can generate a weighted average of the control countries. The outcome variable can then be expressed as:

$$\sum_{j=2}^{J+1} w_j Y_{jt} = \delta_t + \theta_t \sum_{j=2}^{J+1} w_j Z_j + \gamma_t \sum_{j=2}^{J+1} w_j \mu_j + \sum_{j=2}^{J+1} w_j \varepsilon_{jt} \quad (4)$$

Assuming that there are $(w_2^*, \dots w_{J+1}^*)$ such that:

$$\sum_{j=2}^{J+1} w_j^* Y_{j1} = Y_{11} \qquad \sum_{j=2}^{J+1} w_j^* Y_{j2} = Y_{12} \quad \dots \quad \sum_{j=2}^{J+1} w_j^* Y_{jT0} = Y_{1T0}$$

And $\qquad \sum_{j=2}^{J+1} w_j^* YZ_j = Z_1 \qquad (5)$

Abadie et al show that if $\sum_{t=1}^{T0} \gamma'_t \gamma_t$ is nonsingular, then the mean of the right hand side of the following expression will be close to zero If the number of preintervention periods is large relative to the scale of the transitory shocks.

$$Y_{1t}^N - \sum_{j=2}^{J+1} w_j^* Y_{jt} = \sum_{j=2}^{J+1} w_j^* \sum_{s=1}^{T0} \gamma_t \left(\sum_{n=1}^{T0} \gamma'_n \gamma_n\right)^{-1} \gamma'_s (\varepsilon_{js} - \varepsilon_{1s}) - \sum_{j=2}^{J+1} w_j^* (\varepsilon_{jt} - \varepsilon_{1t}) \quad (6)$$

Given this, we can estimate the impact of the project for time T0+1 up to T as:

$$\propto^{est}_{1t} = Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt} \quad (7)$$

In practice, it is often the case that no set of weights exist such that equation (6) holds exactly. So for each particular application the analyst can judge if the characteristics of the treated unit (Barbados in this case) are sufficiently matched by the synthetic control in the period previous to the project. As in the case of a common lagged dependent variables model, the identifying assumption in the synthetic control method is independence of treatment status and potential outcomes conditional on lagged outcome variable and other observable confounders.

It is important to restrict the donor pool to countries with similar characteristics. In this case, by using primarily Caribbean countries we can assure that the main characteristics are similar (i.e. tourism is a key sector of the economy, main attraction of most countries is sun and beach recreation, exchange rate for most countries are aligned with the dollar, and the pool of countries of origin for tourists is relatively similar –Europe, USA, Canada and LatinAmerica to a lesser extent.

Implementation of this model can follow the procedure proposed by Abadie-(2003)[8] for the case when we want to reproduce on total expenditure by all tourists. An alternative is to try to reproduce indicators 1.1 to 1.4. In the latter case, the analysis needs to select a matrix V reflecting the importance given to each indicator (See Appendix B in Abadie).

The key outcome variable (total yearly expenditure by tourists) can be observed for Barbados ($X1 = Y_{1t}$) and the donor countries ($X0 = Y_{jt}$ with j= 2, ...J+1) for years t=1,

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[8] The Economic Costs of Conflict: A case study of the basque Country. Alberto Abadie, Gardeazabal J. The American Economic Review. P113-132. 2003

...,T0 previous to the implementation of the project. X1 is a vector (T0X1) and X1 is a matrix (T0 X J). The vector of weights W* can be chosen to minimize (X1-X0W)'(X1-X0W) subject to the weights being non-negative and adding up to 1. Estimation of can be done using the routines in Stata or R.

To assess the confidence of the estimates, it will be necessary to conduct placebo tests, which can be done trying to reproduce one country at a time in the donor set.

Time series data for at least 10 years to conduct the analysis can be compiled from data bases of the Barbados Central Bank, Ministry of Tourism of Barbados, Caribbean Tourism Organization, World Tourism Organization, World Travel & Tourism Council, and Florida Tourism Cruise Association. An initial list of "donor countries" is: Aruba, Bahamas, Belize, Jamaica, Trinidad and Tobago, Dominican Republic, Martinique, Antigua and Barbuda, St. Lucia, Grenada, St Kitts and Nevis.

Result Indicators. To assess the results of the project by component, it will be necessary to conduct surveys in the case of components 1 and 3. The results of the project for component 2 can be assed using Google analytic.

Surveys to estimate expenditures by type (accommodation, restaurants, transportation, tours, others) are normally conducted by the Caribbean Tourism Organization for the Ministry of Tourism every year. Those surveys will have to be modified to include specific questions related to the four new products. Nevertheless, regular surveys done by the Ministry will be useful to complement the information obtained from the surveys contracted as part of the project, specially to obtain a better coverage of tourists for high and low season. The survey used during the preparation of the project to analyze expenditure patterns of tourist travelling on routes contracted by the Ministry of Tourism can be easily modified to eliminate questions not relevant (1 and 2) and include a specific question about expenditures in the new products following question 18 for example, or as part of question 10. It will be important to try to get information on these expenditures for the case when the tours of the new products were part of a package bought at home.

Results for component 3 can be easily monitored based on statistics from the Ministry of Transportation (visitor by country) and the expenditure surveys, which should be done specifically to visitors on the selected route contracted.

<u>Sample size</u>

The sample size for the expenditure surveys can be determined assuming that we want to estimate the mean with a relative precision r (i.e. r=$\frac{\mu-\pi}{\pi}$ with μ the estimate and π the population mean) such that the estimate is less than that proportional distance from the true with probability α. Given a coefficient of variation γ (mean/standard deviation) the sample size is given by

$$N = Z^2 \gamma^2 / r^2$$

with Z the upper α/2 point of the normal distribution

If r=.05, Z= 1.96, and $\gamma = .6$[9], we get N= 553

In case we want to estimate the proportion of the expenditures by categories, and we want to estimate them with probability .95 that all proportions are within 0.05 of the population values, the sample size is 510[10]

Based on these results a sample size of 550 for each one of the expenditure surveys is recommended.

IV. Work Plan and Budget

Contracts for the execution of the impact evaluation will be done by the Executing Unit. The list of contracts, the timing for contracting and estimated cost are presented in the following table.

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[9] Estimated based on expenditures in Barbados capture in surveys to tourists done during preparation of the project
[10] Table 5.1, page 39. Sampling. Steve Thompson. 1992

Table 5. Ex-post Economic Impact Evaluation Work Plan

Item	Value (USD)	Timing
Baseline expenditure surveys	$25,000	At start of implementation
Midterm expenditure surveys	$25,000	One year after completion of first two products
Final expenditure survey	$25,000	6 months after completion of last 2 products
Impact evaluation	$20,000	6 months after completion of last two products, or 2 months before the end of project
Total	$95,000	

ANNEX 1.