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Mid-Term Evaluation of the Accompanying Measures for Sugar Protocol Countries (AMS)

Belize

Final Report

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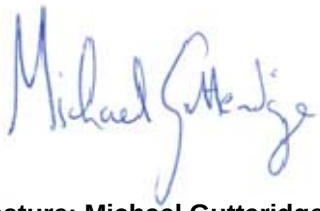

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Mid-Term Evaluation of the Accompanying Measures for Sugar Protocol Countries (AMSP) – Belize

Final Report - January 2016

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List of abbreviations

ACP	Africa-Caribbean-Pacific group of states
AMSP	Accompanying Measures for Sugar Protocol Countries
ASR	American Sugar Refineries
BAHA	Belize Agricultural Health Authority
BAMS	Banana Accompanying Measures
BLPA	Belize Livestock Producers' Association
BoQ	Bill of Quantities
BRDP	Belize Rural Development Programme
BSCFA	Belize Sugarcane Farmers' Association
BSIL	Belize Sugarcane Industries Limited
BZD	Belizean dollar
CBB	Central Bank of Belize
CDB	Caribbean Development Bank
CEO	Chief Executive Officer
CTU	Cane Testing Unit
DFC	Development Finance Corporation
EC	European Commission
EDF	European Development Fund
EU	European Union
EUD	European Union Delegation (based in Jamaica)
EUR	Euro
FA	Financing Agreement
FAO	Food and Agricultural Organisation
FFS	Farmer Field School
GDP	Gross Domestic Product
GoB	Government of Belize
HR	Human Resources
ID	Identification Fiche
IDB	Inter-American Development Bank
IICA	Inter-American Institute for Cooperation on Agriculture
IPDM	Integrated Pest and Disease Management
IR	Identification and Registration
KESREF	Kenya Sugar Research Foundation
LICU	La Inmaculada Credit Union
LTES	Long-Term Engineering Support
LTS	Long-Term Supervision
M&E	Monitoring and Evaluation
MFED	Ministry of Finance and Economic Development
MIP	Multi-annual Indicative Programme
MIS	Management Information System
MNRA	Ministry of Natural Resources and Agriculture
MWT	Ministry of Works and Transport
MSMEs	Micro, Small and Medium-sized Enterprises
NAO	National Authorising Officer
NAS	National Adaptation Strategy
OGV	Ocean-Going Vessel
OIRSA	Organismo Internacional Regional de Sanidad Agropecuaria
OVI	Objectively Verifiable Indicators
PCM	Project Cycle Management
PEFA	Public Expenditure and Financial Accountability
PEU	Project Execution Unit
PIU	Project Implementation Unit

PSC	Programme Steering Committee
RMU	Road Maintenance Unit
ROM(&E)	Results-Orientated Monitoring (and Evaluation)
SAS	Sugar Adaptation Strategy
SCPC	Sugarcane Production Committee
SCRP	Sugarcane Replanting Programme
SDF	Sugar Development Fund
SEA	Strategic Environmental Assessment
SIA	Sugar Industry Act
SICB	Sugar Industry Control Board
SIFSRAP	Sugar Industry Field Sector Reform Action Plan
SIMIS	Sugar Industry Management and Information System
SIRDI	Sugar Industry Research and Development Institute
ST	Short Term
TA	Technical Assistance
TCTS	Tonnes Cane to Tonnes Sugar
TL	Team Leader
ToR	Terms of Reference
USD	United States dollar
WTO	World Trade Organisation

Executive Summary

The sugar industry is one of the largest in the agricultural sector of Belize and sugar is the country's single most important agricultural export product, accounting for almost 8% of its total Gross Domestic Product (GDP) and 34% of total foreign exchange earnings. The sugar industry is largely concentrated in the rural areas of Corozal and Orange Walk districts in the Northern region of Belize. The total population in the two districts is approximately 100,000, about 40,000 of whose livelihoods are directly or indirectly dependent on the sugar industry.

In 2006, at the request of the World Trade Organisation (WTO), the Council of the European Union (EU) adopted a reform of the EU Sugar Regime, which introduced a significant reduction (of 36% over the period 2006-2009) in the EU price of sugar from Sugar Protocol Countries (including Belize as an ACP country). By October 2017, all EU imports from ACP countries should be quota-free and duty-free without any price support. These decisions will have an important impact on sugar-exporting ACP countries, which have been relying on the EU market for the past 30 years under the Sugar Protocol. In order to assist these countries to adapt to the new EU sugar regime, the European Commission (EC) established the Accompanying Measures for Sugar Protocol Countries (AMSP). Each country was invited to draw up its own National Adaptation Strategy (NAS) and submit this to the EC for financial assistance to its implementation[1].

Also in 2006, the Government of Belize (GoB) submitted a National Adaptation Strategy for the sugar sector[2] covering the period 2006-2015. The strategy contains measures to make the sugar industry more competitive and to prepare it to face the challenge of the forecasted decline in the global market price of sugar by 2017, as well as to reduce the dependency of Belize's agricultural sector on sugarcane cultivation. The overall objective of the strategy is to "*reduce poverty and to improve the standard of living of the population of Northern Belize*". To assist the Government of Belize (GoB) in the implementation of the NAS, the EC Multi-Annual Assistance Strategy 2006-2013 (MAAS) was elaborated. The total EU allocation for assistance during the period under review (2006-2013) is 72.4 million EUR[3]. Based on the MAAS, two Multi-annual Indicative Programmes (MIPs) have been elaborated: the MIP 2007-2010 and the MIP 2011-2013.

The main objective of the EU support programme to the sugar industry of Belize is the same as that of the country's NAS, i.e. poverty reduction and improved living standards of the rural population in Northern Belize. The main expected results (which will contribute to the achievement of the programme's overall objective) are:

- A competitive and diversified sugarcane industry that contributes to a sustainable environment in sugar-producing areas of Belize;
- Improved physical and institutional infrastructure that contributes to the social and economic development of Northern Belize; and
- Diversified sources of employment and improved levels of income for the rural population in Northern Belize.

The EC MAAS/AMSP strategy is therefore based on 3 main components: Competitiveness, Diversification and Infrastructure (mainly sugar feeder roads).

[1] Source: ToR, Mid-Term Evaluation AMS in Belize, 2015
[2] Belize National Adaptation Strategy for the Sugar Sector 2006-2015, April 2006
[3] Source: ToR, Mid-Term Evaluation of the Accompanying Measures for Sugar Protocol Countries (AMS) Belize

The first Mid-Term Evaluation of the AMSP in Belize was carried out in 2010 (MTE 2010) and covered the MIP 2007-2010. The MTE concluded that since the start of the EU support programme, not much headway had been made toward establishing a competitive or diversified sugarcane industry. Little action had taken place and the work done consisted mainly of studies and proposals. No direct support had been provided to sugarcane farmers to improve their farming practices or to strengthen sugarcane farmers' organisations.

The strengthening of extension and research services had yet to start, although tentative steps had been taken to establish a Sugar Industry Research and Development Institute (SIRDI), for which a further specialised 'operationalisation' mission was commissioned in 2010. Actions related to the diversification of sources of income and employment had been very modest[4], although the significant level of interest expressed by the population in this programme was encouraging. Progress made toward improving the Sugar Belt road network remained modest and behind schedule, but was very much visible. Since the road network has been improved in areas with a relatively dense rural population and high traffic density, the investment appeared to be justified with good prospects for overall economic growth in the Sugar Belt area. As the construction costs of roads are high, this component however absorbed a significant amount of the programme's budget (66% of the MIP 2007-2010).

The MTE 2010 also concluded that the institutional setup behind programme implementation was still weak. It appeared that the programme designers had greatly underestimated the local human resources required to implement the programme. It was assumed that with assistance from the Project Implementation Unit (PIU), both the Ministry of Agriculture and Fisheries (MAF, since renamed the Ministry of Natural Resources and Agriculture (MNRA)) and the Ministry of Works and Transport (MWT) would be able to generate enough capacity within two years[5] to assume full ownership of the programme. By 2010, just 6.5 million EUR (36% of the total budget of about 18 million EUR for the period 2006-2009 and covering the approved AMSP for 2006, 2007 and 2008) had been contracted, which reflected significant constraints to the efficiency and effectiveness of programme implementation.

A second MTE was carried out in October-November 2015 (MTE 2015). This and the MTE 2010 remain the only external evaluations so far carried out of the AMSP components. No EC Results-Orientated Monitoring (ROM) missions have been conducted (which is unusual).

The overall scope of the MTE 2015 concerns the evaluation of the AMSP in Belize covering the period 2006-2015 (MIP 2007-2010 and MIP 2011-2013). Specifically, the MTE is to provide information on i) the performance of the AMSP project in Belize; ii) the adequacy of its organisational structure; iii) the adequacy of the aid modalities chosen; and iv) the performance of the contractors under the AMSP. Since this is a mid-term evaluation, focus is placed on 3 of the 5 standard OECD/DAC[6] evaluation criteria: the efficiency, effectiveness and sustainability of the three main result areas of the AMSP in Belize (Competitiveness, Diversification and Roads (infrastructure)). The impact of the programme will be assessed in terms of both foreseen and unforeseen impacts and is closely related to the effectiveness of programme implementation.

The MTE 2015 concludes that while the programme clearly responds to the need to increase the incomes of the final beneficiaries (sugarcane farmers and poor rural households) from sugarcane growing and alternative agricultural and non-agricultural enterprise development, it continued to suffer from limited capacities for local absorption and implementation (as

[4] Carried out by the La Inmaculada Credit Union (LICU) in Orange Walk, as sole contractor under the AMSP diversification component
[5] Duration of the PIU, which was to provide assistance to the two Ministries
[6] OECD/DAC: Organisation for Economic Co-operation and Development/Development Assistance Committee

observed by the MTE 2010). The MTE 2015 concluded that programme implementation also suffered from the complex aid modality used by the EU for the AMSP in Belize[7], due to which frequent changes to the implementation period and programme budget were required. Notwithstanding these changes, which included major alterations to the overall governance of the programme[8] in 2013, the programme managed to stay on track, albeit with significant delays to implementation.

A key indicator used by the consultants to determine the efficiency of the programme is its rate of budget utilisation (planned versus actual expenditures). AMSP efficiency is low, with an overall utilisation rate of 75% (2006-2015). At the current rate of budget utilisation (13% per year on average), it is unlikely that the budget will be exhausted unless implementation of the 2013 Financing Agreement is extended. Most disconcerting is the low pay-out rate (amount contracted versus that actually paid) for the Roads component (73%, which is below the average total pay-out rate of 77% across all budget lines). This is mainly due to delays to implementation caused by some of the road contractors. Some EUR 6.5 million still needs to be paid out from the 2010 FA (which expires in October 2016).

Despite issues with programme management and implementation, the MTE 2015 rates the overall achievement of expected results and specific and overall objectives as "satisfactory" for all 3 components (Competitiveness, Roads and Diversification) of the AMSP. The scores are based on the components' degree of compliance with their related objectively verifiable indicators (OVIs) as per the logical framework (logframe) of the AMSP programme. With the exception of the Competitiveness component, which involved 3 parties (the Sugarcane Production Committee, the Corozal sugar factory and SIRDI), this can primarily be attributed to the direct intervention of the AMSP programme.

The improvement of roads has been an important programme investment, representing 61% of total programme expenditure (EUR 72.4 million). The funding of road improvements is considered by the MTE to be money well spent since this activity has had a positive impact on cane farmers and the wider rural community. Road maintenance is vital but underfunded. Since 2010, maintenance has improved but the GoB provides it with inadequate resources. The establishment of a Road Maintenance Unit (RMU) at the MWT and the development of a Long-Term Road Maintenance Strategy have been vital first steps.

The MTE 2015 identifies no issues regarding the institutional and technical sustainability of the programme. Institutions considered the main drivers of the sugar industry (e.g. SIRDI, the Sugarcane Production Committee (SCPC) and Sugarcane Producers' Associations) are well embedded and financed by way of a cess on sugarcane delivered and sugar produced, by Fairtrade premiums and other sources as may be approved by the MNRA. Technical sustainability is equally secure as the new techniques being introduced by SIRDI to improve cane farming practices are simple and require only low investment by the cane farmers.

[7] This mainly involved the use of the yearly Financing Agreements (FAs), each of which had an operational implementation period of 48 months (i.e. overlap) and frequent changes to their logframes, especially as regards the expected results as noted by the MTE 2015. A total of 7 FAs covered the AMSP period 2007-2015.
[8] With the National Authorising Office at the Ministry of Finance and Economic Development (MFED) having to assume full control of the programme following the decision of the MNRA to drop out of the AMSP in mid-2013

The main issue concerns the financial sustainability of sugarcane producers in the medium and long term, which is highly uncertain due to unstable global sugar prices[9] and the above-mentioned duty-free and quota-free deadline of October 2017 for all EU imports from ACP countries. Another aspect to consider is the USD/EUR exchange rate. A weak Euro (as is currently the case) will benefit raw sugar producers exporting to the EU market[10]. In short, sugar trade experts are unable to predict what the market will do by 2017.

Based on a farm cost-benefit analysis using SIRDI figures, cane farming will not become financially sustainable if farmers are to receive BZD 47 per metric tonne (MT) of cane as was recently proposed by the sugar factory (9 November 2015) unless cane yields significantly increase (from 25 to a potential optimum of 40 MT/acre) and overall production costs are reduced by 30%. Analysis shows the latter to be possible, especially as regards the cost of harvesting and transportation of cane. Climatological conditions in Belize are very favourable to rain-fed cane production and with the use of better farm practices and field drainage, it should technically be possible to achieve the optimum yield of 40 MT/acre.

A main recommendation of the MTE 2015 is that the operational implementation period of the FA 2013 be extended by at least 18 months (to October 2018) since EUR 18 million remains to be committed before the effective closure of the FA 2013 in April 2017. This would enable the GoB to implement specific activities as recommended by the MTE. Another big concern is the aforementioned low rate of pay-out for the Roads component, mainly due to delays in implementation by some of the road contractors. EUR 6.5 million[11] remains to be paid out from the FA 2010 which expires in October 2016 (Addendum 1 of FA 2010, 22 February 2012). Specific technical assistance is needed to help the MWT resolve issues with road contractors and if needed, to revise contracts to clear bottlenecks which were not anticipated during the design stage in order to accelerate implementation.

Persistent lack of financial information at cane farmer level makes it difficult to accurately determine the financial sustainability of cane farming families under changing conditions (input and output prices). The MTE recommends that SIRDI carry out a cost/benefit survey and store the information obtained in the Sugar Industry Management Information System (SIMIS, which currently has no cost/benefit data at cane farmer level).

The MTE recommends that during the next 2-3 years, cane producers focus on reducing overall production costs, increasing their cane yields and improving payments based on cane sucrose content. The target at the end of year 3 should be a cost reduction of about 50% per metric tonne of cane. To achieve this will require a radical restructuring of the present sugarcane production, harvesting and haulage business model, followed by its reestablishment on a commercial and efficient footing (with limited or no intervention by the GoB) that makes it competitive in the international market. A second target should be the reduction of sugar production costs at factory level, which would allow the industry to better respond to the anticipated drop in global market sugar prices without resorting to a drastic lowering of the cane price (as is currently the case).

[9] There are two scenarios for projected world market prices by 2017: i) Lower world price scenario and ii) Higher world price scenario, as presented by the International Sugar Organisation (ISO). The lower price scenario predicts a decline in the price of raw sugar (as produced in Belize) to around USD 375 per MT of sugar by 2017. The higher price scenario predicts an increase to around USD 460 per MT raw sugar by 2017 (Free on Board prices). The EU market price of raw sugar will follow the same decline or incline but should remain slightly above the world market price

[10] Source: The EU Sugar Market Post-2017, International Sugar Organisation (ISO), April 2014

[11] EUR 9.5 million contracted of which so far EUR 3 million or 32% has been paid out (see also Annex 6: AMS programme budget and expenditures: AMS 2010)

Importantly, transportation and shipping costs would need to be reduced. This would require a re-appraisal of the 2012 offshore sugar bulk terminal study with the aim of reducing the investment cost of the terminal with a better financial internal rate of return, including a financing plan (to be formulated by the factory, the Inter-American Development Bank (IDB) and the AMSP). In addition the GoB could pay more for the electricity produced by the co-generation plant, thus allowing cane farmers to receive a higher price for their bagasse. Finally, steps should be taken by the factory to improve the current cane testing system with the introduction of an independently operated cane testing unit (CTU).

Even if cane and sugar production costs were reduced, with the current cane price it would be difficult if not impossible for individual farmers with limited acreage to make a living from cane farming as sole source of income. The development of alternative agricultural and non-agricultural enterprises is an option for them to maintain (or even increase) their incomes. The MTE recommends that current diversification efforts under the AMSP programme be stepped up over the next 2-3 years. Commodity value chain development is crucial and developments with the Food and Agricultural Organisation (FAO) Agribusiness and Value Chain Development project need to be closely monitored and (based on project experiences and lessons learnt) replicated for other commodities with good market potential. Equally crucial is non-agricultural enterprise development, including the establishment of service providers (of inputs and machinery) for cane farmers. Such replication should be carried out by local contractors with ample experience in this area (e.g. the La Inmaculada Credit Union (LICU)).

Finally, while this would not have much effect on the final years of implementation of the AMSP in Belize, it is recommended that in future, the EU step away from the use of yearly FAs for country programmes. Instead, a 4-year multi-annual strategy should be produced on the basis of which Annual Action Programmes (AAPs) are formulated (with the operational implementation period of an AAP being one year rather than four years as with the FAs).

1 Context

As a response to the declining performance of the sugar sector in Belize, considered a vital component of the country's economy, the Government of Belize (GoB) prepared in 2006 a National Adaptation Strategy (NAS) for the sugar sector[12] for the period 2006-2015. The strategy contains measures to make the sugar industry more competitive and to prepare it to face the challenge of the forecasted decline in the global market price of sugar by 2017, as well as to reduce the dependency of Belize's agricultural sector on sugarcane cultivation. The overall objective of the strategy is to "*reduce poverty and to improve the standard of living of the population of Northern Belize*". The NAS has five major components:

1) Increased efficiency of cane production;
2) Greater diversification (co-generation, ethanol);
3) Agricultural diversification;
4) Socio-economic development (including of MSMEs); and
5) Appropriate policy interventions and measures.

The total estimated cost of implementation of the strategy is USD 140 million in 2006-2015, 56% was to come from external resources.

In 2006, to assist the Government of Belize (GoB) under the Accompanying Measures for Sugar (AMSP) Programme and in line with the National Adaptation Strategy for the Belize sugar sector, the EC Multi-Annual Assistance Strategy 2006-2013 (MAAS) was elaborated. The total EU allocation during the period under review (2006-2013) is EUR 72.4 million[13]. Based on the MAAS, two Multi-annual Indicative Programmes (MIPs) have been elaborated: the MIP 2007-2010 and the MIP 2011-2013.

The overall objective of the MIP 2007-2010 was to reduce poverty and improve the living standards of the rural population in Northern Belize through the provision of support to the sugar industry and vulnerable groups. The total budget for 2006-2010 was EUR 48 million. There were 4 main areas of intervention: i) sugar production improvement and rehabilitation; ii) improvement of the Sugar Belt road network and other strategic roads; iii) an enterprise development programme; and iv) policy development, capacity building and training. The 2010 Mid-Term Evaluation (MTE) of the AMSP revealed limited progress in production improvement (area 1); good progress in the development of the road network (area 2); some progress in diversification (area 3) and no progress at all in policy development (area 4) as no such request had been received from the GoB.

Following the MTE of the AMSP in 2010, the MIP 2011-2013 was prepared with a total (indicative) budget of EUR 25.6 million. The overall objective remains "*to reduce poverty and improve living standards among the rural population in Northern Belize*". The main areas of intervention are similar to those of the MIP 2007-2010 but are worded differently:

- Competitiveness component (capacity building and institutional strengthening of the Sugar Industry Research and Development Institute (SIRDI), Sugarcane Farmers' Association (SCFA) and Sugar Industry Control Board (SICB), in addition to the development of more cost-effective sugar transport from farm to ship; and
- Diversification component (the development of income-generating opportunities and sources of employment both on- and off-farm); and

[12] Belize National Adaptation Strategy for the Sugar Sector 2006-2015, April 2006
[13] Source: ToR, MTE of the Accompanying Measures for Sugar Protocol Countries (AMSP) Belize

- Infrastructure component (the rehabilitation and maintenance of key sections of the Sugar Belt road network to lower transportation costs and improve access to services and markets[14].

[14] There was a fourth component: the "Policy development, capacity building and training component (improved public financial management based on the 2009 Public Expenditure and Financial Accountability (PEFA) report, strengthening of organisations involved in the delivery of social services in the Sugar Belt and improvement of the policy and strategic framework for rural development in Belize, including the reform of the sugar sector". This component was not considered in the (three) yearly Financing Agreements drawn up under the MIP 2001-2013, possibly because no requests were received from the GoB for activities under this component.

2 The Assignment

The overall scope of this assignment concerns the evaluation of the European Union (EU) sugar support programme to Belize under the Accompanying Measures for Sugar Protocol Countries (AMSP) covering the period 2006-2015. The main objectives of this evaluation are to:

1) Make an overall independent and unbiased assessment of the past performance of the programme from 2006 to 2015, paying particular attention to the impact of the programme's actions against its objectives and the sustainability of the results;
2) Draw lessons learnt and make recommendations to integrate a comprehensive EU Phasing-Out Strategy of the AMSP in Belize, including possible follow-up actions and a review of the programme established by the EU and other programme partners.

Specifically, the evaluation is to provide information on:

- The performance of the AMSP project in Belize, vis-à-vis its established objectives and timeframe;
- The adequacy of its organisational structure to achieve the established objectives using available resources;
- The adequacy of the aid modalities chosen in relation to the resources available at national and regional level; and
- The performance of the contractors.

The approach and methodology of the evaluation are straightforward and are based on the standard OECD/DAC evaluation criteria of Relevance, Efficiency, Effectiveness, Impact and Sustainability. An assessment of the programme against the 5 evaluation criteria forms the main body of this report. Based on this assessment and on a hard look at what was planned by the programme versus what was actually achieved, subsequent chapters documenting lessons learnt and overall and specific conclusions and recommendations are drawn up to inform follow-up actions and the EU phasing-out strategy of the AMSP.

As an MTE, the evaluation focuses on the efficiency, effectiveness and sustainability of the three main result areas of the AMSP in Belize: competitiveness, diversification and roads. The impact of the programme is assessed in terms of both foreseen and unforeseen impacts and is closely related to the effectiveness of programme implementation.

The Inception Phase of the mission started on 13 October with a briefing at the Delegation of the European Union (EUD) to Jamaica at which only the Team Leader was required to be present. During the briefing the Terms of Reference (ToR) were further clarified, particularly with regard to the precise meaning of the Phasing-Out Strategy of the AMSP in Belize[15], the expectations of the EUD and the planning of the mission according to the provisional work plan submitted prior to its inception.

Specific issues were also discussed, particularly those concerning the performance of the rehabilitation of the sugar feeder roads under the AMSP covering such aspects as: the contracting process, financial management (accountability), the long-term supervision of the AMSP roadworks and the current status of the contracted works.

[15] Known as the "Exit Strategy" in the ToR, but the EUD considered the term "Phasing-Out" strategy to be more appropriate as it entails specific interventions before the closure of the operational implementation phase of the AMS in Belize in April 2018 that will be based on the recommendations of the MTE mission

Another identified issue relates to the overall performance of the AMSP. Concern has been expressed by the EUD that so far, there has not been much visible impact on either the overall objective of the AMSP (i.e. poverty reduction and improved living standards among the rural population in Northern Belize) or the competitiveness and economic sustainability of the Belize sugar industry. Another major concern expressed by the EUD is the absence of a long-term/multi-annual road maintenance strategy and operational plan in Belize to secure the investments made by the EU in the rehabilitation of the Sugar Belt road network. These specific issues and concerns should be addressed by the MTE mission as part of its required outputs.

The briefing in Jamaica was concluded on 15 October, following which the Team Leader travelled to Belize on 16 October to meet with the other two team members on Monday 19 October in Belize City. The entire team then travelled to Belmopan that same day. On Tuesday 20 October the team held a kick-off meeting at the EU Technical Support Office in Belmopan. On 23 October the mission submitted its Inception Report for comment and, after some minor corrections and quality control by the contractor (Cardno UK) the report was approved by the client (EUD) on 6 November (see Annex 2: Inception Report). Field visits and interviews in Belmopan, Orange Walk and Corozal were completed on 12 November with a debriefing in Orange Walk[16] which was attended by major stakeholders of the AMSP programme[17]. Since this was outside the mission's approved work plan, the EUD to Jamaica specifically requested a second debriefing to be held by the Team Leader in Jamaica on 13 November 2015.

[16] At the LICU Training Centre
[17] The debriefing was attended by a total of 17 persons from the (three) Cane Farmers'/Producers' Associations, the EU Technical Support Office, the NAO office, the Sugarcane Production Committee, Development Finance Cooperation (DFC), the Inter-American Institute for Cooperation on Agriculture (IICA) and LICU

3 Programme Relevance

Relevance is the extent to which the objectives of the programme are consistent with the beneficiaries' requirements, country needs, global priorities and the priorities of both partners and the EU. The consultants assessed the relevance of the programme in terms of:

1. Appropriateness of programme design, quality of the logical framework matrix;
2. Identification of key stakeholders and target groups, including a gender analysis;
3. Establishment of effective management and monitoring systems;
4. Inclusion of stakeholder participation in the design, management and implementation of the project;
5. Response to the real needs of the intended beneficiaries by being both consistent with and supportive of the policy and programme framework within which the project is placed (i.e. the EC's Response Strategy and the National Sugar Strategy);
6. Local absorption and implementation capacity and local ownership of the project;
7. Justification of any changes made to the programme design during implementation (e.g. changes to the objectives, the logframe, the overall strategy, funding, etc.);
8. Analysis of issues related to the sustainability of the project (institutional, financial, economic and environmental); and
9. Establishment of clear selection criteria for investment in infrastructure relevant to the programme's objectives.

3.1 Programme Design

The AMSP programme is designed around the Belize National Adaptation Strategy for the Sugar Sector 2006-2015 (NAS) which was presented by the Belize Sugar Industry Control Board (BSICB) in April 2006. Its main goal is to sufficiently improve the performance of the sugar sector to place the industry on an internationally competitive and sustainable footing. The NAS has five main components: i) increased efficiency of cane production; ii) greater diversification (co-generation, ethanol); iii) agricultural diversification; iv) socio-economic development (including of MSMEs); and v) appropriate policy interventions and measures.

On the basis of the NAS, the EC Multi-Annual Assistance Strategy (MAAS) was elaborated by the EC in 2006. The MAAS presents the basic design of the AMSP programme, which is further refined in the Multi-Annual Indicative Programmes (MIPs) and Financing Agreements (FAs) elaborated during 2007-2014 (with the last FA (2013) signed in May 2014) .

According to this design, the core of the system of governance, control and direction of the AMSP programme is the National Authorising Office (NAO) at the Ministry of Finance and Economic Development (MFED). Responsibility for the implementation, supervision and monitoring of the programme was delegated to the Ministry of Natural Resources and Agriculture (MNRA),the Chief Executive Officer (CEO) of which also chaired the Programme Steering Committee (PSC), which was composed of representatives of all key stakeholders in the sugar sector and is mandated to meet twice a year. Further details on the functioning of the design are presented later in this report.

3.2 Logical Framework

Logical frameworks (logframes) for the AMSP are provided in the EC MAAS 2006-2013, the two MIPs (2007-2010 and 2011-2013) and all 7 FAs elaborated during 2006-2013[18]. These critical documents are analysed using tables throughout this report in order to compare the overall objectives, project purposes, results and objectively verifiable indicators (OVIs) of the MAAS and 2 MIPs based on their FAs. Note that it was necessary, and a very arduous task, to put together a common logframe from those of the 7 annual FAs, whose components (particularly their OVIs) varied substantially.

Since the MTE of the AMSP programme in 2010 was based on the MIP 2007-2010 (which was based on the FAs from 2008 and 2009), this MTE focuses on the MIP 2011-2013. The MIP 2007-2010 will be used as a reference to verify any OVIs which have not been carried over to the MIP 2011-2013 (such as the number of hectares replanted and rehabilitated, number of farmers trained, number of new varieties tested and number of farmers accessing affordable credit, all of which come under Result 2).

Specific logframes were also available for the individual Grant Contracts (GCs), Contribution Agreements (CAs) and Programme Estimates (PEs) of the AMSP. These formed the main point of discussion during interviews held with individual contractors, especially regarding: i) progress made toward meeting the targets set out in the OVIs for the project's objectives and expected results; and ii) how these match up with the OVIs in the AMSP programme logframes as presented in the tables throughout this report. These findings helped clarify progress made so far toward achieving the targets (qualified and quantified) set out in the OVIs, but are not presented here since they are based on a variety of logframes that are not essential to this programme evaluation.

The intervention logic of the ASMP logframe assembled by the consultants, as well as that of the logframes of the individual GCs, CAs and PEs, is considered appropriate with clear links between the expected results and overall objectives. No obvious deficiencies have been observed except for the variations among the logframes of the individual FAs, which did not much disturb the overall intervention logic of the common AMSP logframe.

3.2.1 Programme Objectives

The overall objective of the AMSP programme, as indicated in the MAAS logical framework, is "*To reduce poverty through promoting sustainable development*". No specific objectives are mentioned in the MAAS logframe. The purpose of the programme (*to improve the living standards of the rural population in the sugar belt in Northern Belize*) is more specific. While the overall objective and purpose of the MAAS are clearly relevant to the overall AMSP, subsequent changes have occurred in the MIPs and FAs. These refer more to wording than context and concern the concepts of poverty reduction, improved living standards, support to the sugar industry and the specification of Northern Belize as a target area (see Table 1).

In contrast, the overall objective of the MIP 2007-2010 (based on the MAAS 2006-2013) is both specific and comprehensive: *To reduce poverty and improve the living standards of the rural population in Northern Belize through support to the sugar industry and vulnerable groups*. This is more or less in line with Belize's National Adaptation Strategy (NAS) for the sugar sector. The overall objective of the MIP 2011-2013 was simply "*To reduce poverty and*

[18] Following the presentation of the MAAS in 2006, two Multi-annual Indicative Programmes (MIPs) were drawn up: the MIP 2007-2010 and the MIP 2011-2013. For each MIP annual FAs were signed between the Government of Belize and the EU: four under the MIP 2007-2010 and three under the MIP 2011-2013. (No FA was prepared for 2011, for reasons unknown to the consultants)

improve living standards among the rural population in Northern Belize". The main areas of intervention were similar to those of the MIP 2007-2010 but more detailed as mentioned earlier in Chapter 1 (Context).

Table 1: Comparative Overview of Logical Frameworks: Overall and Specific Objectives of the MIP 2007-2010 and MIP 2011-2013

MIP 2007-2010 **(based on the FAs 2006-2009)** Mainly from FA 2008 and 2009 (allocation EUR 48.2 million)	**MIP 2011-2013** **(based on the FAs 2010-2013)** Excludes FA 2011 as not prepared (allocation EUR 25.6 million)
Overall Objective To reduce poverty and improve the standard of living of the rural population in Northern Belize through support to the sugar industry and vulnerable groups (MAAS 2006-2013: Overall objective: "*To reduce poverty through promoting sustainable development*")	**Overall Objective** To reduce poverty and improve the standard of living of the rural population in Northern Belize
Specific Objectives	**Specific Objectives**
1. To improve physical access, communication and transportation through the rehabilitation of the Sugar Belt road network (MAAS 2006-2013: no specific objective)	1. To improve physical access, communication and transportation through the rehabilitation of the Sugar Belt road network
2. To strengthen the competitiveness and economic sustainability of the Belize sugar industry (MAAS 2006-2013: no specific objective)	2. To strengthen the competitiveness and economic sustainability of the Belize sugar industry
3. To support an enabling environment for rural recovery and economic diversification in sugar-dependent areas of Belize (MAAS 2006-2013: no specific objective)	3. To support an enabling environment for rural recovery and economic diversification in sugar-dependent areas of Belize
	4. Socio-economic conditions in Northern Belize improved through an increase in sugar production, additional income-generating activities (through economic diversification) and the provision of quality education opportunities (AMSP 2012 and 2013)

Source: adapted from the complete reconstructed logframe in Annex 2: Inception Report

In the MIP 2011-2013 an additional specific objective was included (from the AMSP 2012 and 2013) which overlaps to some extent with specific objective 3 but is more specific as to how socio-economic conditions are to be improved (i.e. through increased sugar production, economic diversification and quality education opportunities).

As mentioned earlier, this MTE will be guided by the above overall programme objectives of the MIP 2011-2013.

3.2.2 *Programme Results*

Project results as mentioned in the logframe compiled by the consultants and presented in Table 2 were found to be relevant to the achievement of the overall and specific objectives of the AMSP programme with regard to poverty reduction, improved living standards and the provision of support to the sugar industry in Belize.

As already mentioned, the expected results vary considerably between the MIP 2007-2010 and MIP 2011-2013. In some cases they became more detailed and specific, while in others results were removed, added and/or overlapped. A case in point is the expected result of "*Improved national and local-level plans and capacity to reform sugarcane production and other strategic aspects of the sugar industry and to promote rural economic diversification, including agricultural and non-agricultural enterprise development*" (Result 4 of the MIP

2007-2010). Promotion of rural economic diversification was already covered by "*Alternative agricultural and non-agricultural enterprise developed, sources of employment promoted*" (Result 3 of the MIP 2007-2010 and Result 4 of MIP 2011-2013). The expected result of "*Improved national and local-level plans and capacity to reform sugarcane production and other strategic aspects of the sugar industry*" was thus removed entirely from the MIP 2011-2013.

The rehabilitation of the Sugar Belt road network in Northern Belize is an expected result in the two MIPs, but was not mentioned at all in the MAAS, despite being the biggest single expenditure of the AMSP in Belize (61% of the total budget).

Based on the logframe in Table 2, the expected results of the AMSP in Belize can be summarised as follows: i) a competitive and diversified sugarcane industry; ii) improved physical and institutional infrastructure; and iii) diversification of employment and improved income. All three should contribute to the sustainable social, economic and environmental development of Northern Belize where the main cane-producing areas are located.

The three results were also found to be largely in line with and relevant to expected results 1, 3, 4 and 5 of the Belize NAS. (Result 2 was not considered in the intervention logic of the AMSP programme.)

Table 2: Comparative Overview of Logical Frameworks: Expected Results MIP 2007-2010 and MIP 2011-2013

MIP 2007-2010 **(based on the FAs 2006-2009)** Mainly from FA 2008 and 2009 (allocation EUR 48.2 million)	**MIP 2011-2013** **(based on the FAs 2010-2013)** Excludes FA 2011 as not prepared (allocation EUR 25.6 million)
Expected Results	**Expected Results**
1. Sugar Belt road network rehabilitated (Northern Belize) (MAAS 2006-2013: not mentioned as an expected result)	1. Important roads in the Sugar Belt road network rehabilitated (AMSP 2010) 2. Improved physical and institutional infrastructure contributing to social and economic development in Northern Belize (AMSP 2013)
2. Productivity, efficiency and competitiveness of the sugar industry enhanced (MAAS 2006-2013 expected result: "*A competitive and diversified sugarcane industry developed in an environmentally sustainable way (i.e. that contributes to a stable and sound physical environment in sugar-dependent areas* "; and "*Social conditions in sugar-dependent areas improved*")	3. A competitive and diversified sugar industry that contributes to a sustainable environment and socio-economic development in sugar-producing areas in Belize (Orange Walk and Corozal Districts) (AMSP 2012 and 2013)
3. Alternative agricultural and non-agricultural enterprise developed, sources of employment promoted (MAAS 2006-2013 expected result: "*Sources of income and employment in sugar-dependent areas diversified and levels of income improved*")	4. Alternative agricultural and non-agricultural enterprise developed, sources of employment promoted (AMSP 2010)
4. Improved national and local-level plans and capacity to reform sugarcane production and other strategic aspects of the sugar industry and for promoting rural economic diversification, including agricultural and non-agricultural enterprise development (AMSP 2007) (MAAS 2006-2013 expected result: "*Management of the macro-economy improved, in particular in the area of Public Financial Management*")	No mention of this expected result
	5. Diversify sources of employment and strengthen the educational and skills base of the workforce to meet the needs of the private sector (AMSP 2012)

An additional expected result was included in the logframe of the MIP 2011-2013: "*Diversify sources of employment and strengthen the educational and skills base of the workforce to meet the needs of the private sector*". This result was added to the logframe of the FA 2012. The expected result included in the MIP 2007-2010 "*Improved national and local-level plans and capacity to reform sugarcane production and other strategic aspects of the sugar industry"* was entirely removed from the MIP 2011-2013.

This MTE is based on the expected results of the MIP 2011-2013 since the MIP 2007-2010 was already covered by the MTE of the AMSP carried out in 2010.

3.2.3 Objectively Verifiable Indicators (OVIs)

The AMSP logical framework put together by the consultants presents a wide-ranging and fairly complete set of Objectively Verifiable Indicators (OVIs), most of which are quantified in the MIP 2011-2013. (Very few were quantified in the MIP 2007-2010, which is considered a major fault in programme design as regards the monitoring and evaluation (M&E) of the AMSP in Belize.) This is also why the evaluators opted to use only the logframe of the MIP 2011-2013 in this chapter (see Table 3).

The OVIs in the MIP 2011-2013 were found to be well linked with the results and specific objectives and useable for M&E. However, the OVIs linked to the overall objective of the AMSP programme (such as the number of people living below the poverty line) appear to be standard OVIs and no details are given on how to measure them within the boundaries of programme interventions (i.e. as a direct effect of the programme in question).

Table 3: Overview of Logical Frameworks: OVIs MIP 2011-2013

MIP 2011-2013 **(based on FA 2010 to 2013)** Excludes FA 2011 as not prepared (allocation EUR 25.6 million)	
Intervention Logic	**OVIs**
Overall Objective To reduce poverty and improve the standard of living of the rural population in Northern Belize	1) Number of people living below the poverty line 2) Increase in income for sugar and non-sugar households 3) 5% reduction in the percentage of the population in the Northern Districts living in poverty by 2015 (AMSP 2012) 4) 1.5% reduction in poverty rates in Orange Walk and Corozal by the end of 2016 (Baseline 2009 Orange Walk 37%, Corozal 46%) (AMSP 2013)
Specific Objectives	**OVIs**
1. To improve physical access, communication and transportation through the rehabilitation of the Sugar Belt road network	1.1 Reduction in transport costs 1.2 Increased access to markets and health and education facilities for rural communities
2. To strengthen the competitiveness and economic sustainability of the Belize sugar industry	2.1 Increase in farm productivity (yields) 2.2 At least a 10% increase in the average yield of sugarcane by 2017 (baseline 18 tonnes/acre in 2012) (AMSP 2013) 2.3 At least a 25% increase in sugar production in 2017 (baseline 116,000 tonnes in 2013) (AMSP 2013); 2.4 At least a 50% increase in the volume of cane processed through factories by 2017 (baseline 1.05 million tonnes in 2013) (AMSP 2013) 2.5 Reduction in production costs (AMSP 2010)
3. To support an enabling environment for rural recovery and economic diversification in sugar- dependent areas of Belize	3.1 Number of new businesses started 3.2 Number of jobs created (AMSP 2010)
4. Socio-economic conditions in Northern	4.1 A 10% increase in sugar revenue

MIP 2011-2013 **(based on FA 2010 to 2013)** Excludes FA 2011 as not prepared (allocation EUR 25.6 million)	
Intervention Logic	**OVIs**
Belize improved through an increase in sugar production, additional income-generating activities (through economic diversification) and the provision of quality education opportunities (AMSP 2012 and 2013)	4.2 A 3% decrease in unemployment in Northern Belize by 2017 (AMSP 2012) *Note: No mention of an increase in income*
Expected Results	**OVIs**
1. Important roads in the Sugar Belt road network rehabilitated (AMSP 2010) 2. Improved physical and institutional infrastructure contributing to social and economic development in Northern Belize (AMSP 2013)	1.1 Number of km rehabilitated and maintained (60 km paved) (AMSP 2010) 2.1 28 miles of roads rehabilitated in Northern Belize by 2017 (AMSP 2013) 2.2 100% of rehabilitated roads maintained by 2017 (AMSP 2013) 2.3 33 miles of roads to paved standards by 2015 (AMSP 2012)
3. A competitive and diversified sugar industry that contributes to a sustainable environment and socio-economic development in sugar-producing areas in Belize (Orange Walk and Corozal Districts) (AMSP 2012 and 2013)	3.1 20% increase in sugarcane productivity per acre per year for the three years after replanting 3.2 50% of farmers implementing a combination of best practices within the first two years of the project by 2017 3.3 At least 20% of women and youth successfully participating in replanting schemes by 2016 (AMSP 2012) 3.4 At least a 20% increase in the acreage of sugar fields drained by 2017 (baseline 3,000 acres in 2013) 3.5 Number of farmers adopting integrated pest and disease management strategies for the control of froghoppers and other pests and diseases increased from 100 in 2013 to 700 by 2017 3.6 Maintain tonnes cane to tonnes sugar ratio in the range of 9-10 between 2013 and 2017 (AMSP 2013)
4. Alternative agricultural and non-agricultural enterprise developed, sources of employment promoted (AMSP 2010)	4. 1 Number of new enterprises established 4.2 Number of producer groups created 4.3 Number of hectares under new cultivation (AMSP 2010)
No mention of this expected result	
5. Diversify sources of employment and strengthen the educational and skills base of the workforce to meet the needs of the private sector (AMSP 2012)	5. 1 At least a 40% increase in the average number of vendors at the Orange Walk market by 2017 (baseline 2013 = 100 vendors (AMSP 2013)) 5.2 A At least 20 new/improved successful small enterprises by 2016 5.3 At least 80 new successful micro-enterprises by 2016 5.4 At least 25% of women and youth participating in MSMEs by 2017 (AMSP 2012) 5.5 100% increase in the number of trained teachers active in early childhood education (125) by 2017 5.6 30-70% increase in the number of trained teachers active at secondary level (125) by 2017 5.7 An increase in the number of school places by 36.3-43.2% (300) at Early Childhood Education level by 2017 (AMSP 2012)

3.3 Key Stakeholders and Target Groups

Key stakeholders and target groups were identified in the programme documents (MAAS 2006-2013 and the MIP 2007-2010). The key stakeholders (in addition to the EU) are:

- The Government of Belize (GoB) through the Ministry of Finance and Economic Development (MFED)/National Authorising Officer (NAO), the Ministry of Natural Resources and Agriculture (MNRA) and the Ministry of Works and Transport (MWT);
- Institutions active within the sugar industry, e.g. the sugar manufacturer (BSIL/ASR), the Sugar Industry Control Board (SICB), the Sugarcane Production Committee (SCPC) and the Sugar Industry Research and Development Institute (SIRDI); and
- 3 farmers' associations; the Belize Sugarcane Farmers' Association (BSCFA), the Progressive Sugarcane Producers' Association (PSCPA) and the Corozal Sugarcane Producers' Association (CSCPA).

Target groups have been identified as small-scale sugarcane farmers and rural populations living below the poverty line in the Corozal and Orange Walk districts in the Sugar Belt of Northern Belize.

3.4 Management and Monitoring System

The programme was designed to be managed by the EU through the EUD to Jamaica. The Contracting Authority for the AMSP programme is the National Authorising Officer (NAO) within the Ministry of Finance and Economic Development (MFED). As stipulated in the FAs, the programme supervisor is the Ministry of Natural Resources and Agriculture (MNRA). The FAs further stipulate that the implementing agencies of the 3 main components of the AMSP programme are the MNRA for Competitiveness; the MWT for Roads and the NAO (with technical support from the MNRA) for Diversification. Project Execution Units (PEUs) were set up accordingly at the MNRA, MWT and NAO.

A Programme Steering Committee formed of GoB and sugarcane stakeholders (Sugarcane Farmers' Associations, the Sugar Mill, MNRA, MFED/NAO) meets at least twice annually to review progress and ensure that good governance is exercised. Since the start of the AMSP, the NAO has delegated increasing responsibilities for the implementation, supervision and monitoring of the project to the MNRA in order to ensure a more direct and significant role of the Ministry.

Under the first MIP (2007-2010) a Technical Assistance team was recruited to assist with the implementation of the AMSP programme through a Project Implementation Unit (PIU). The MTE of the AMSP in 2010 concluded that the institutional setup for implementation of the AMSP was weak, primarily since the programme designers had greatly underestimated the local human resource capacity required to implement the programme. The TA changed key experts 3 times during the contract and little progress was made. It was decided to recruit another TA (Sofreco) for the second MIP (2011-2013) to assist the MNRA, the NAO office and other Line Ministries and departments to more efficiently implement the AMSP. The TA would also provide expertise and policy advice to the MNRA and other key stakeholders (SICB/SIRDI/BSCFA, etc.), as well as advice and assistance to the MNRA on EU-funded projects (including training in EU procedures).

Unfortunately there were also 3 changes of Team Leader during this second TA contract. The first was in place from June to December 2011 (7 months), the second from February 2012 to June 2013 (17 months) and the third from December 2013 to December 2014 (12 months). This reduced the effectiveness and efficiency of programme implementation.

In addition, in mid-2013 the MNRA reported that it wanted no further involvement with either the design or the implementation of the AMSP, after which the TA was moved from the MNRA to the NAO. Despite fears that the lack of MNRA involvement in AMSP activities could have a negative impact on the effectiveness of coordination, this has since been mitigated by the establishment of two sub-working groups, the AMSP Roads Sub-Committee and the Sugarcane Replanting Scheme Sub-Committee/Technical Working Group.

Roads

The implementing agency for the AMSP roads component is the Ministry of Works and Transport. Initially it was assumed that the MWT would take full responsibility for the AMSP roads component under the auspices of the PIU and the Chief Executive Officer (CEO) of the MWT was appointed as Supervisor. Shortcomings in the PIU led to the establishment of a Project Execution Unit (PEU) within the MWT in August 2009. Well qualified road engineers are in short supply in Belize and the MWT-PEU was understaffed. From January 2010 to August 2012 TYPSA was contracted to provide long-term engineering support (LTES) to the PEU. Subsequently Roughton International was contracted from June 2011 to June 2013 for the long-term supervision (LTS) of AMSP roadworks. Following the departure of Roughton, a team of domestic consultants, PE1, was recruited to assist the PEU until the contracting of TYPSA for the LTS of road contracts from March 2015 to September 2016. The MWT was initially the Contracting Authority for roads, but this was later changed to the MFED. The NAO checks tenders, oversees the awarding of contracts and authorises any changes.

A Technical Working Group was established to cover EU-funded infrastructure projects in Belize in June 2014. At present it covers AMSP, the Belize Rural Development Programme (BRDP) and the Banana Accompanying Measures (BAMS). To date it has held 3 meetings attended by MWT, MNRA, representatives of the sugar industry and the NAO, with the EU Technical Support Office to Belize and TYPSA attending as observers.

Two audits of AMSP roads have been conducted; one of the Phase 1 Lot A and Lot B roads and another of the Phase 2 roads.

3.5 Stakeholder Participation in Design, Management and Implementation

The National Adaptation Strategy (NAS) for the Belize sugar sector was prepared by the Government of Belize with the full participation of stakeholders in the sugar industry. The NAS concludes that there is scope for the development of a viable sugar industry in Belize, but that current industrial practice must be reformed in order to achieve this (in line with the EU Sugar Reform). The MAAS 2006-2013 (which is based on the NAS) embraces four main areas for long-term EC support: (i) Competitiveness; (ii) Diversification; (iii) Improvement of social conditions in sugar-dependent areas; and (iv) Creation of a stronger macro-economic framework. These have been translated into programmes and projects implemented through annual Financial Agreements (FAs) that are signed between the GoB and sugar industry stakeholders and include both budgets and timetables for project implementation.

Based on a diagnostic analysis by stakeholders and on the findings and recommendations of the 2010 MTE, the following main activities for the second phase of the Belize AMSP were proposed in the MIP 2011-2013: i) Competitiveness; ii) Diversification; iii) Roads; and iv) Policy development, capacity building and training. The MNRA was to play an important role in the implementation of the first two activities of the programme, but withdrew from the programme in 2013 for reasons unknown to the evaluators.

A 2008 study by Hydroplan[19] provided a list of road improvement projects to be prioritised for funding under the 2008-2013 allocations of the AMSP Programme. This was developed in consultation with various groups of stakeholders including Cane Farmers' Associations, the Belize sugar industry, non-cane farmers and actors involved in health, education, tourism and disaster response. Each group provided a list of priority roads. The final selection and ranking of roads was based on a combination of these priorities and the locations of facilities such as schools and health services. While all the roads improved under AMSP are those identified by the study as high-priority, a pragmatic approach was applied to the ranking due to evolving circumstances. Initially marl-surfaced roads were constructed but at the end of Phase 1, it was decided to instead pave roads and reduce the total length of road improved. Cane Farmer Associations were again consulted on their priorities and expressed their preference for surfaced roads, even though fewer roads could be improved.

3.6 Programme Response to the Real Needs of Intended Beneficiaries

The most pressing need of the intended beneficiaries of the AMSP programme is to increase income and improve standards of living to an extent that enables them to escape the vicious circle of rural poverty in Northern Belize. The programme aims to do this by:

- Rehabilitating important roads in the Sugar Belt road network;
- Improving physical and institutional infrastructure in order to develop a competitive and diversified sugar industry that contributes to social and economic development in Northern Belize;
- Developing alternative agricultural and non-agricultural enterprises; and
- Diversifying sources of employment and strengthening the educational and skills base of the workforce to meet the needs of the private sector.

Roads and infrastructure

Before the start of the AMSP in Belize, the main roads throughout the Sugar Belt road network were in very poor condition and hampered access among rural communities to markets and health and educational facilities. Poor-quality roads lead to high transport costs due to the more frequent need for vehicle maintenance and repair and the increased use of fuel, which have an obvious negative effect on the cost of transporting cane from the fields to the sugar factory near Orange Walk town (and in turn on the competitiveness of the sugar industry).

Improvements to infrastructure and the development of a more competitive and diversified sugar industry should boost social and economic development in Northern Belize (in which some 40,000 people[20] are directly or indirectly dependent on the sugar industry). Improved physical infrastructure concerns not only the sugar feeder roads, but also the sugar factory itself (e.g. the introduction of a better and faster cane analysis system and improved cane off-loading facilities) and the improvement of the factory-to-ship transport of sugar which is still very costly[21]. Institutional infrastructure has much to do with the institutional setup of the sugar industry at the level of cane production.

[19] Hydroplan (December 2008): Road Study for the EC-Supported Sugar Programme in Belize. Final Report Phase 1 – Northern Belize – The Sugar Belt – Corazal and Orange Walk Districts
[20] This figure appears frequently in the Belize sugar industry documentation but is not backed by hard evidence
[21] The high cost of factory-to-ship transport of sugar has a direct effect on the cane price paid to the producers

Cane research and development

The results of the MTE 2010 showed cane research and development to be virtually non-existent, with cane producers being poorly organised (particularly in terms of the harvesting of cane and its transport to the sugar factory). Since September 2010, steps have been taken by the AMSP to improve cane research and development with the establishment of the Sugar Industry Research and Development Institute (SIRDI) in the centre of the Sugar Belt in Northern Belize (Orange Walk). SIRDI has already had a positive effect on cane yields and has improved sugar production[22] (for more details see Chapter 5: Effectiveness).

Diversification

The development of alternative agricultural and non-agricultural enterprises by the AMSP was strongly recommended by the MTE 2010 in order to improve (or at least secure) the income of cane farmers from other sources than cane as part of diversification efforts. The main target groups of this component are farmers who are cultivating relatively small fields of cane which provide insufficient income to support their families.

Based on the recommendation of the MTE 2010, a commodity value chain programme was started in 2015 under the AMSP by the United Nations Food and Agricultural Organisation (FAO) in Northern Belize[23]. At least 50% of the programme's target beneficiaries are cane farmers according to project management. Another diversification project was started by the La Inmaculada Credit Union (LICU) in 2011 named: "*Small-Scale Enterprise Development in Agriculture and Tourism",* which is implemented in Orange Walk. This project set up a small business training centre to train a wide range of entrepreneurs in both agricultural and non-agricultural activities. A National Sanitary Cattle Plan was also started by the AMSP in 2011. While it does not (yet) involve cane farmers, the principal aim of this project is to introduce official International Veterinary Certificates for cattle to be exported as part of Belize's export diversification programme (which should hopefully go on to provide opportunities for cane farmers to diversify their income).

AMSP interventions in the area of "*diversifying sources of employment and strengthening the educational and skills base of the workforce to meet the needs of the private sector*" in order to improve the incomes and living conditions of populations in cane-dependent areas, have been boosted by the LICU project for small-scale enterprise development. LICU in fact conducted a similar (albeit very modest) project before 2010 with a budget of EUR 230,000, under which 40-45% of the beneficiaries or about 35 sugarcane-dependent families received small grants and micro-grants. Another project on "Improving the quality of early childhood and secondary education" to be carried out by the University of Belize has been launched, although its impact can only be measured in the long term. Its main purpose is to ensure that all teachers in Belize are sufficiently trained for certification.

The Credit Fund

Under the AMSP programme EUR 6.5 million[24] has been made available to the GoB through a Contribution Agreement with the Caribbean Development Bank (CDB) to provide loans (via the Development Finance Corporation (DFC) and local financial institutions[25]) to farmers for

[22] This is reflected in an improved Tonnes cane/Tonnes sugar (TCTS) ratio with a better sugar extraction rate by the sugar factory due to the timelier delivery of better-quality cane to the factory.
[23] Promoting Agribusiness Development in Northern Belize. Contractor: FAO/Jamaica. Duration: 30 months. Start date: December 2014
[24] Funding comes from the AMSP 2008 and AMSP 2010
[25] Local financial institutions such as Credit Unions in Orange Walk and Corozal districts, which receive a loan from the Development Finance Corporation to be provided in turn to cane farmers for replanting and ratoon

cane replanting. SIRDI supports the replanting programme through technical appraisal of the requests for loans received from cane farmers. The establishment of this Credit Fund in March 2012 was recommended by the MTE 2010 to improve the competitiveness of the industry through replanting in order to increase cane yields, and is thus in line with the needs of cane farmers. As per the Contribution Agreement, the funds allocated should enable the replanting of a maximum of 2,600 acres annually through the use of improved agricultural practices and certified seed varieties. An additional EUR 1 million has been allocated under the AMSP 2012 to enable an effective continuation of the Credit Fund. Loan repayments by cane farmers (at a maximum annual interest rate of 9%) are deposited in a revolving fund administered by the DFC.

To date, the Credit Fund is underperforming. Of the EUR 5.6 million actually available for credit[26], 907 loans have so far been approved for a total disbursement value of BZD 5 million (EUR 2 million). About EUR 3.5 million (62% of the total credit amount available) remains undisbursed. Due to a non-functioning M&E system[27], the project has so far been unable to measure any direct impact on the livelihoods of cane farmers who have used the loans for replanting (e.g. increased net income, productivity or yields). At a later stage (May 2014), the modality of the Credit Fund was modified through the addition of loan applications for the maintenance of ratoons. Based on the monitoring information available[28], by May 2015 a total of 4,015 acres had been replanted (39% of the 10,300-acre target[29]) and 387 acres were under ratoon maintenance, which translates into about 7% of the total cane area of 70,000 acres[30].

The principal reason for the low loan disbursement rate is that the majority of applicants are in deep debt with the commercial banks. Cane farmers obtain commercial loans with cane revenue as security (under the loan contract, the sugar factory transfers the receipts from cane sales to the farmer's loan account of a commercial bank). As such the applicant may receive a positive technical appraisal from SIRDI, but still have their application rejected by the Credit Fund due to too much debt with the commercial bank and hence the large risk of loan defaulting (it is estimated that only 1 in 5 applicants who are "technically approved" by SIRDI actually receive a loan from the Fund). Regular progress reports are produced by the DFC with regard to the approval and disbursement of loans; however the reports provide no information on the status of the Revolving Fund.

It follows that the additional EUR 1 million that was made available under the AMSP 2012 still remains unused.

maintenance. Only LICU in Orange Walk has so far signed up to the scheme with a loan of EUR 2 million from the DFC at an interest rate of 3%. Another Credit Union in Corozal (St. Francis Xavier) rejected the DFC's offer on the basis that it was too expensive

[26] Of the EUR 6.5 million budget a total of about EUR 950,000 has been alllocated to project administration (EUR 521,000); long-term monitoring and evaluation, including the design of an M&E system (EUR 333,000) and promotion (EUR 94,000)

[27] One of the expected results of the Credit Fund project was the development and commissioning of an M&E system by way of a service agreement with an external consultant. This has not been successful and even after pressure by the Caribbean Development Bank (CDB) to re-launch the consultancy for the development of the M&E system, it was decided (by a Technical Working Group meeting in April 2015) to defer the hiring of an external consultant and await the results of the present MTE for guidance on how to move forward (according to communication from NAO Office, December 2015)

[28] Provided by the long-term M&E consultant specifically contracted to continuously monitor and report on performance throughout the implementation period of the Credit Fund

[29] Source: Contribution Agreement between the EU and the CDB, March 2012. Annex 1, Page 3, Table 1, Logical Framework.

[30] Adapted from data provided by the long-term monitor of the Credit Fund, Implementation Status Report (21 April 2015, pages 2 and 3)

3.7 Local Absorption and Implementation Capacity, Local Ownership

Roads

The capacity of the MWT is hindered by a lack of well qualified engineers in Belize, low staff numbers, high staff turnover and inadequate resources leading to low pay. The Project Execution Unit (PEU) is the supervisor of all EU works contracts and is staffed at present by a Director and two Project Engineers (one for AMSP and one for BRDP). The MWT-PEU staff have contracts, which enables higher pay and the recruitment of experienced staff. The EU has provided TA under a number of contracts to support the PEU. The EU and other donors have supported the setting up of a Road Maintenance Unit (RMU) within the MWT under which each district has a District Technical Service Team responsible for road condition surveys, maintenance and repair. The teams are however short of personnel, funds, vehicles and equipment. Most district personnel have had little formal technical education and have learnt road maintenance techniques on the job. About 45% of necessary equipment is out of order, largely due to lack of funds to buy spare parts.

SIRDI

SIRDI has been able to recruit an enthusiastic team of young researchers and technical and administrative staff who are capable of carrying out the activities expected of a research and development institute.

The Belize-based office of the Inter-American Institute for Cooperation on Agriculture (IICA) provides administrative and technical support to SIRDI in the implementation of the AMSP as per the Contribution Agreement.

Since SIRDI opened its office and research facilities in May 2014, its interaction with farmers and stakeholders has increased and the Institute has become a focal point in the farming community. The office serves as a critical infrastructural component of the project in terms of improved service delivery to farmers and stakeholders. The facility is used to host meetings, training sessions, seminars and field days. The MNRA was intended to play an important role in the implementation of the AMSP, but withdrew fully from the programme in 2013 for reasons unknown to the evaluators.

BAHA (Livestock)

The Belize Agricultural Health Authority (BAHA) received a grant to support the eradication of Bovine Tuberculosis and Brucellosis from Belize's livestock population. The grant covered about 50% of total costs, with the remainder supplied by the GoB and livestock producers. To date 3 cattle sweeps have been completed, which should be sufficient to declare the country free of Brucellosis if the results are positive. However, another 2 cattle sweeps are required for the eradication of Bovine Tuberculosis to be confirmed. Both the EU grant funds and the financial and operational commitments of the other stakeholders have been all but exhausted and the consultants have no insight as to how the additional 2 cattle sweeps will be financed.

LICU (diversification)

Local capacity at LICU for small-scale enterprise development was found to be good. This has much to do with the fact that the Project Coordinator had the same position on the pre-2010 project and has been able to put their experience (including lessons learnt) to good use. The project was implemented in accordance with the Grant Contract and targets were achieved (and sometimes exceeded) as per the project's logframe. The project management capacity of the FAO project (commodity value chain development), is reported to be high as

the project manager is the former CEO of the MNRA. Not much can yet be said about local capacity at the operational level of this project since it is still in its initial stages of operation.

The Credit Fund

The implementation capacity of the Credit Fund for replanting and ratoon maintenance has been disappointing due to the aforementioned low rate of loan approval. As per Contribution Agreement with the CDB, the operational implementation phase of the Fund ends in March 2016[31]. At the current pace of loan disbursement it is very unlikely that the Fund will be exhausted by the end of the Agreement, suggesting that unused funds will be returned to the EU.

3.8 Changes to Project Design during Implementation

As previously mentioned, the subtle changes observed in the programme's objectives across the logframes of the various Financing Agreements (FAs) did not affect the main course of programme implementation as set out in the MIPs for 2007-2010 and 2011-2013. The core elements of the programme (competitiveness, diversification and roads) remained in place. More significant variations were observed among the expected results of the two MIPs, with some results removed, others added and others found to be overlapping. The expected results nonetheless remain relevant to the objectives of the AMSP programme.

The programme suffered from serious delays to its implementation. This was already evident in 2006-2009 for which just 36% of the total budget financing (covering FA 2006, 2007 and 2008) was ultimately contracted. In 2011 the FA 2010 was extended by 7 months, in 2012 the FA 2008 was extended by 30 months and in 2015, the FA 2012 was extended by 12 months. To date, the budgets of the FAs for 2006-2010 have been committed (contracted) in full, while just 31% of the budget for the FA 2012 and 18% of that of the FA 2013 has been committed. The closure of these FAs is expected in April 2018. The balance of uncommitted funds currently stands at EUR 18 million.

Changes to the AMSP budget lines are relatively minor considering the total programme budget of EUR 72.4 million. EUR 0.5 million allocated to the improvement of factory-to-ship transport (FA 2010) was reallocated to finance the development of the SIRDI Sugar Industry Management Information System (SIMIS). The FA 2012 added EUR 1 million to the Credit Scheme for Replanting while the FA 2013 allocated EUR 2 million to the improvement of drainage in the sugarcane fields (although this was left unused due to the project's failure to address its impact on watershed areas in Belize).

The roads developed under Phase 1 of the AMSP were completed in 2009 and improved to a good (unpaved) standard. An audit of these roads recommended that future AMSP roads be improved to bituminous surface standard using double surface dressing. The EU agreed to this but due to the increased cost, the number of roads to be improved was reduced.

The above is indicative of the complexity of the aid modality used by the EU for the AMSP in Belize. The MIPs are straightforward and set out the main areas of intervention, including a budget and logframe, for a period of 4 years. The aid modality used by the EU requires the preparation of annual Financing Agreements (FAs) based on the MIP. This is not a problem in itself as it makes room for possible changes (e.g. to budget lines) but it would make more sense in the case of the AMSP if the FAs had an implementation period of one year rather than four. Worse, the EU applies the rule of "D+3", meaning that 3 years after the date of

[31] The Contribution Agreement was signed in March 2012 and has an operational implementation period of 48 months

signature of the FA by the beneficiary country, no new contracts can be accepted which last more than 12 months. This has proven to particularly affect road contracts in Belize, which are notoriously prone to delays and require substantially more than 12 months to complete.

Because of this overlap between FAs, the AMSP in Belize has the inherent problem of financing projects from FAs dating back 3 years or more, with negative consequences for project management. A case in point is the Credit Scheme for Replanting, which started in 2012 but was financed from the FAs 2008 and 2010 (both of which needed to be extended).

3.9 Analysis of Sustainability Issues

Despite these being considered in the MIPs for 2007-2010 and 2011-2013 and in all FAs so far, little analysis has yet been done of the institutional, financial, economic or environmental sustainability of the programme.

No economic analysis has been conducted of either the programme or its components. This would have been highly valuable had it been included in the National Adaptation Strategy, which should have provided enough data on costs and benefits to facilitate such an analysis (as observed by the MTE 2010).

Roads

Despite being the largest component of the AMSP in terms of EU investment (with 61% of the overall budget), to date no economic analysis has been done of the Roads Component, mainly due to lack of data on economic benefits. The maintenance of AMSP roads is a concern and the IDB, EU and World Bank have agreed to assist the Government and MWT to strengthen the maintenance regime currently in place. The MWT Road Maintenance Unit has developed a Long-Term Road Maintenance Strategy and a Road Maintenance Fund is under discussion, but sources of funding are not yet fully identified. Road maintenance has improved in the last 2-3 years but is still considerably underfunded, with the MWT receiving only 45% of the funding required. Fundraising options under consideration include:

- *Levies on consumables,* including a surcharge on fuel, lubricant, tyres, spare parts and (possibly) the purchase of new vehicles. However, traffic levels are low in Belize and the GoB is attempting to keep down the price of fuel, so this is unlikely to be sufficient;
- *Tolls on specific roads,* although this usually only applies when there is an alternative toll-free road (a challenge given the nature of the existing road network). Also, where traffic volumes are low the cost of toll collection may exceed the revenue obtained;
- *Supplementary HGV fees* (annual vehicle license fees for heavy vehicles that reflect both vehicle weight and the number of axles);
- *Fines for overloaded vehicles* (a revision of the scheduling of fines for such offences to more accurately reflect road repair costs);
- *International transit fees* (i.e. vehicles coming into Belize from neighbouring countries should face road use costs equivalent to those of domestic road users); and
- *Head tax on visitors* (all visitors to Belize would pay a tax as they enter Belize on the basis that they are also users of the road system while in the country).

Diversification

A cost/benefit analysis was done by LICU[32] to assess the financial sustainability of each grant provided to beneficiaries. In 2013, LICU also surveyed the beneficiaries of their first project (2008-2010) which presented a wide range of cost/benefit data and net income projections. Unfortunately no such survey was carried out by LICU of its second small-scale enterprise development project (2011-2014). Conversely, it is expected that the Agribusiness and Value Chain Development project being implemented by FAO since January 2015 will pay due attention to the financial and economic aspects of its interventions.

Competitiveness

The institutional sustainability of the Competitiveness component of the AMSP concerns all major institutions directly involved in the sugar industry, i.e. the Sugar Industry Control Board (SICB), the Sugar Industry Research and Development Institute (SIRDI), the Sugarcane Production Committee (SCPC) and the 3 Sugarcane Producers' Associations. The first three institutions are financed from the Sugar Development Fund (SDF) which receives its funding from an export tax of BZD 11 on each MT of sugar exported (with 127,350 MT exported in 2015). The annual income of the SDF varies in accordance with the annual export volume. Sugarcane Producers' Associations are funded by a cess (tax) paid by the members on each MT of cane delivered to the factory. This tax varies among the associations from BZD 0.60 to BZD 1 per MT. This income similarly fluctuates depending on the volume of cane delivered for processing (in 2015 a total of 1.2 million MT was processed). Since the sugar factory is a private entity, no financial data are available.

Financial data have however been prepared by SIRDI in the form of a cost/benefit analysis at farm level. The analysis is not based on empirical information (as this was not available) but rather on a model farm scenario using best practices as presented by SIRDI, including replanting (for more details see Chapter 7: Programme Sustainability).

3.10 Relevance of Investments in Infrastructure

Roads

The final selection and prioritisation of roads for rehabilitation was developed in cooperation with a wide range of stakeholders. Of primary importance was the need to reduce the cost of delivery of cane to the factory in order to improve the competitiveness of the sugar industry. Other criteria included the direct benefits to other economic activities and their potential for growth, potential for economic diversification (including tourism) and access to services for health and education.

Offshore Transfer Terminal

In 2012, two studies were conducted of a *Floating Offshore Transfer Terminal for Bulk Sugar* in order to develop more cost-effective transport of sugar from factory to ship. This activity was foreseen in the MIP 2011-2013 (FA 2012) under the Competitiveness component and was intended to receive TA for feasibility studies and funding for equipment/installation[33]. This is in line with the 2006 National Adaptation Strategy, whose objective is for the industry to become more cost-effective and viable in the long and medium term through the reduction of transport costs, particularly of sugar from the factory to ocean-going vessels (OGVs).

[32] La Inmaculada Credit Union, as part of the Small-Scale Enterprise Development Programme in 2008-2010 and 2011-2014 under the AMSP programme
[33] MIP 2011-2013, page 6

There is no access for deep-sea vessels to the factory. The only solution is for sugar (and molasses) to be transported 33 miles from the factory using small barges (150 MT capacity) along the New River to Corozal Bay, and then 89 miles along the coast to a deep-water anchorage situated 4-6 miles offshore of Belize City. This system is slow and severely limits delivery rates to OGVs (with a single vessel taking 4 weeks to be loaded[34]).

The above could be resolved either by using much larger barges or with the installation of a simple floating offshore terminal near the anchoring site of the OGVs. This could be as basic as a written-off OGV adapted to loading, storing and offloading bulk sugar. The first option of having larger barges could be problematic due to the presence of narrow stretches along the New River and the requirement for heavier tugboats. The most feasible option is to install the offshore terminal using the existing system of barges and tugs. The consultants were told that in order to transport molasses to OGVs, the factory has already installed a floating offshore terminal in the form of a large ferro-cement vessel (less costly than steel).

The investment costs presented in the studies were found to be too high by the sugar factory which cited low rates of return on investments. Management claims that the installation of the floating offshore terminal for sugar and based on their experience with the floating offshore terminal for molasses, could have lower investment costs in order to ensure better rates of return. This would require a re-appraisal of the two studies already carried out but would remain a highly relevant infrastructure investment under the AMSP programme[35].

Drainage project

Funds were reserved for a pilot drainage project under the FA 2010. Further deliberation concluded that a pilot drainage scheme was inappropriate without a full drainage master plan of the whole area (the MNRA even insisted on a national drainage master plan). It was therefore decided to discard the pilot drainage scheme and reallocate the funds to the start-up of the Sugar Industry Management Information System (SIMIS).

[34] Source: Action Fiche for Belize – Accompanying Measures for Sugar Protocol Countries 2012. Information from BSIL/ASR management and international relations

[35] The allocation of EUR 500,000 under the FA 2012 for the rationalisation of factory-to-ship transport was removed and used for the development of the Sugar Industry Management and Information System (SIMIS) as per Addendum n° 1 to the FA 2012, April 2015

4 Programme Efficiency

The performance of a programme is not only determined by the extent to which its objectives have been achieved and its impact on the intended beneficiaries, but also by the efficiency of its operations. A key question concerns whether "*things were done right*" in terms of value for money or whether similar results could have been achieved by other means at lower costs. The consultants assessed the efficiency of the programme in terms of:

1. Programme organisation and management, including organisational arrangements (funding, structures, human resources, responsibilities and contract arrangements) relating to the AMSP project (Technical Assistance (TA), Grant, Service and Works Contracts, Contribution Agreements);
2. Quality of day-to-day management (budget, personnel, risk management, relations with other stakeholders, M&E, reporting, respect for deadlines);
3. Performance of the supervisory/coordinating structure, including the system for the processing and checking of payment certificates submitted by the works contractors;
4. Performance of TA services and works contractors (including sub-contractors) in carrying out their work (as per their Terms of Reference where these exist);
5. The extent to which the costs of the project have been justified by the direct and indirect perceived benefits (i.e. value for money);
6. Contributions from beneficiaries, local institutions, the Government and other parties;
7. Support from the EUD; and
8. Quality of monitoring (internal and external).

4.1 Programme Organisation and Management

The programme was designed to be managed by the EU through the EUD to Jamaica. The contracting authority for the AMSP programme is the National Authorising Officer (NAO) within the Ministry of Finance and Economic Development (MFED). As stipulated in the FAs, the programme supervisor is the Ministry of Natural Resources and Agriculture (MNRA). The FAs further stipulate that the implementing agencies of the 3 main components of the AMSP programme are the MNRA for Competitiveness; the Ministry of Works and Transport for Roads; and the NAO office (with technical support from the MNRA) for Diversification.

The AMSP programme was implemented through a wide range of (Action) Grant Contracts, Contribution Agreements, Works Contracts, Supply Contracts, Service Contracts and one Programme Estimate (see the List of Documents and Contracts in Annex 5 for more details). According to the FA, a Programme Steering Committee (PSC) was to be set up to oversee the overall direction and policy of the programme. As part of the organisational setup, a TA team was to provide assistance to the implementation of the programme in the form of policy and expert advice, capacity building and assistance to planning, monitoring and reporting, procurement and financial management. The TA team is recruited by the NAO through a Service Contract.

The organisation and management of the implementation of the AMSP programme seems straightforward and practical, with significant involvement of the MNRA and MWT in the implementation of the three programme components. With the NAO as overall Contracting Authority, direct linkage with the EUD to Jamaica and the presence of both a Programme

Steering Committee (consisting of representatives of all key programme stakeholders)[36] and a TA team to provide expert assistance, the organisational and managerial aspects of the AMSP programme appear to be solid.

The MTE 2010 however reported that the programme designers had greatly underestimated the capacity of local human resources to implement the programme. It was also assumed that with the assistance of the TA team, the MNRA and MWT would generate sufficient capacity within a period of two years (the planned duration of the first[37] TA) to take full ownership of the programme. This did not ultimately happen. The functioning of the first TA team was severely jeopardised by the frequent changes required to its management staff because of underperformance (huge delays in programme implementation) and poor rapport with the EUD. The second TA (2011-2014) did not fare much better with a re-assignment to the NAO office rather than to the MNRA as originally planned (following the withdrawal of the latter from the programme).

In 2010 an EU Technical Support Office in Belize was set up to provide direct technical support to the Government of Belize (GoB) in the implementation of EU programmes in the country. While this technical support should clearly have had a positive effect on programme implementation given the proximity of EU staff, the extent to which it improved the efficiency of implementation could not be determined by the consultants.

Because of the above-mentioned organisational and managerial problems, the efficiency of programme implementation was rated "low" by the MTE 2010, by which time just EUR 6.5 million (37% of the total budget of about EUR 18 million for the period 2007-2009) had been contracted. Since then, there has been some improvement in programme implementation as shown in Table 4 below.

To date, 75% (EUR 54.4 million) of the total budget financing of EUR 72.4 million has been contracted. This means that for 2010-2014 the rate of budget utilisation is about 67%, with an available budget of EUR 65.9 million (EUR 72.4 million minus EUR 6.5 million[38]), of which a total of EUR 47.9 million was contracted (EUR 54.4 million minus EUR 6.5 million[39]). This is not considered significant as it covers a period of 5 years (with an annual disbursement rate of about 13% on average).

Table 4: Belize Summary Overview of AMSP Financial Flows 2007-2015

Main budget lines	Budget	% of Budget	Contracted	% Contracted	Paid	% Paid
Roads	44,500,000	61%	34,357,199	77%	25,047,683	73%
Competitiveness	14,350,000	20%	11,289,179	79%	9,510,822	84%
Diversification	6,803,000	9%	5,158,491	76%	4,000,735	78%
Other (studies, capacity building, etc.)	2,690,000	4%	2,390,000	89%	2,390,000	100%
Audit, Evaluations, Visibility, Contingencies	4,078,000	6%	1,156,505	28%	983,627	85%
Grand Total	**72,421,000**	**100%**	**54,351,374**	**75%**	**41,932,867**	**77%**

Source: Adapted from data provided by the Belize Technical Office, October 2015 and verified by the EUD to Jamaica, October 2015 (details in Annex 6)

[36] For instance: Belize Sugar Industries Ltd (BSIL), the Sugar Industry Control Board (SICB), the Sugar Industry Research and Development Institute (SIRDI) and representatives of Cane Farmers' Associations and the EU
[37] The first TA team was from 2009-2010, the second from 2011-2014
[38] Already committed during the period 2007-2009
[39] Already committed during the period 2007-2009

Table 4 shows that of the total budget of EUR 72.4 million, about EUR 18 million (25% of the budget) still remains uncommitted (EUR 72.4 million minus EUR 54.4 million). The AMSP programme expires in April 2018 with the closure of the operational period of both FA 2012 and FA 2013. When applying the D+3 rule of the EU (see Chapter 3.8), the actual time left to contract the unspent funds of EUR 18 million would be until April 2017, or 16 months from time of writing (December 2015). At the current rate of utilisation it is unlikely that this could be achieved unless the operational implementation period of the FA 2013 is extended.

Table 4 also provides more information on programme efficiency as the last column shows what has actually been paid out in both value and percentage. Most of the figures are well above the average of 77%. The Diversification component is closer to the average but this is mainly due to the FAO Agribusiness and Value Chain Development project which began in early 2015 and will end by mid-2017. More disconcerting is the low pay-out rate for the Road component (at 73%), which is mainly due to delays in implementation caused by some of the road contractors (see Chapter 5: Effectiveness).

4.2 Daily Quality Management

Ministry of Works (MWT)

The MWT Project Execution Unit (PEU) is the supervisor of all EU works contracts and is now staffed by a Director (in post since December 2014 and previously a member of the Roughton LTS team) and two Project Engineers (one for AMSP and one for the Belize Rural Development Programme (BRDP)). The present staff are both experienced and effective but have an excessive workload.

High staff turnover at the MWT, the EUD and among TA consultants has led to the failure to detect errors, slow correction where these are detected, difficulty tracking down important documents and loss of knowledge gained through past experience and lessons from the roads component. This has provoked disputes over the root causes of issues such as the dismissal of the contractor for the Progresso road who is now threatening litigation. Also, the TYPSA LTS team did not realise that the Remate road was rehabilitated under AMSP Phase 1 until informed by the Rural Roads Specialist of the Evaluation Team in late October 2015. The LTS team then decided to further test materials before finalising the Bill of Quantities (BoQ) for the upgrading of the Remate road under Phase 4, having identified the potential to save on the quantities of base and sub-base required.

SIRDI

The Sugar Industry Research and Development Institute (SIRDI) boasts a team of young and enthusiastic staff who function very effectively under the guidance of the senior staff and the assistance of the TA provided by the IICA. A medium-term research programme has been established to guide the preparation of annual work programmes, including targets and budgets for the actions. To date most annual targets have been achieved or surpassed, with the exception of the replanting credit scheme, and regular reporting is done on all activities.

Collaboration with the MNRA has been less impressive, eventually resulting in the complete withdrawal of the MNRA from the AMSP programme in 2013.

BAHA

The EU provided support to the Belize Agricultural Health Authority (BAHA) in the form of a grant for cattle sweeps in order that the country may be declared free of Bovine Tuberculosis and Brucellosis. BAHA submits regular reports on the status of this operation, including financial statements.

The Credit Fund

Despite regular reporting on the status of the loan disbursements, no information is provided on the status of the revolving fund. This is very odd and the information should be requested as soon as possible from the Development Finance Corporation (DFC) which has opened a specific account for the revolving fund[40]. Another observation is that there is no fully-fledged M&E system as stipulated in the Contribution Agreement of the Credit Fund (for more details see Chapter 4.7: Quality of Monitoring).

4.3 Performance of the Supervisory/Coordinating Structure

The design of the programme assigns responsibility for the supervision and overview of the various components of the AMSP programme to the National Authorising Office within the Ministry of Finance and Economic Development (NAO/MFED). Various meetings have been conducted to review the status of the various programme elements and produce both reports and minutes.

A Programme Steering Committee (PSC) which includes representatives of all stakeholders provides guidance to the NAO and meets twice annually in accordance with its mandate. Minutes of these meetings have also been produced.

Despite the NAO (as the Contracting Authority for the programme) being responsible for the development of a monitoring and evaluation system, the only M&E activities identified by the Evaluation Team concerned the credit scheme for replanting.

Roads

The November 2009 audit of the Lot A & B marl roads developed under Phase 1 found only minor issues with the design, tendering and management of the road contracts. Among other points, the auditors recommended that:

- The Contracting Authority be changed from the MWT to the Ministry of Finance and Economic Development;
- A new EC Unit equipped with EC-specific administrative skills be established within the MWT;
- Technical Assistance be provided to this unit (this started shortly afterwards); and
- An experienced Supervisory Representative be employed for the administration of EC Works Contracts.

The Phase 2 audit team found that long-term supervision (LTS) staffing in the office and on site to be generally adequate, although a full-time Quantity Survey/Measurement Engineer should have been employed to review and process interim payment applications submitted by the Contractors. LTS staff were criticised for the lack of project management software on site, which made it difficult if not impossible to objectively verify requests by the contractors for extensions to the period in which to implement tasks. In each case there appeared to be tacit acceptance by the PEU of the extension period requested by the contractor.

Some of the basic records and documentation of works which should have been kept by the LTS were found to be absent or substandard, including the test results of some laboratory materials. Reporting on the progress of roadworks was nonetheless satisfactory.

[40] As communicated by the Credit Delivery Manager of the DFC on 17 November 2015

Works on all three of the roads rehabilitated under Phase 2 suffered considerable delays in construction, due in part to inadequate design and BoQs in the works contracts, but also to arguments between contractors and road supervisors and the delay or suspension of works by contractors. While the contractors should take some of the blame for this, the PEU, the TYPSA LTES and Roughton LTS teams and the NAO must also bear some of the responsibility. The Phase 2 Audit Report states that: "*Events have clearly shown that the design provided at tender did not represent the true requirement of actual work required. As a result, the various Contractors have been instructed to carry out re-design which has invariably delayed the works, been an additional and substantial cost to the Contractors and for which no Administrative Order has been issued, no reimbursement made and no adjustment to the period for implementation of the tasks been granted*".

Some delays resulted from inaccuracies in design and from changes to requirements as a result of the long delay between design and tendering. In addition the contractors for all 3 roads were criticised for having insufficient equipment and personnel on site.

The following additional issues affected the three roads being developed:

- *Orange Walk-Lazaro road (13 km)*: The PEU demanded that 8 km of rejected base course be replaced (Roughton believed this to be unnecessary). In the event 2km was replaced which considerably delayed progress. Significant increases in drainage works were required;
- *Orange Walk-Progresso road (25.5 km)*: The first tender had to be relaunched due to the winning contractor making serious errors in the BoQ, causing a 9-month delay in award of the contract. The contractor who was finally awarded the contract in July 2011 was dismissed in March 2015 following minimal progress over nearly 4 years. It appears that inaccuracies in the design and BoQs of the initial tender documents were a major cause of disputes and delays. The NAO rejected a relaxation of specifications agreed between the PEU and the Contractor (which had already been applied to the Phase 2 Lot C contract). Specification requirements for surface dressing chippings were tightened;
- *Xaibe roads (8.7 km)*: Service utility companies caused significant disruption to the progress of the works. Increases of both earthworks and drainage works were required.

The audit team considered the Contracting Authority (NAO) to have been put at significant financial risk as a result of:

- The failure of the Supervisor (under the Works Contract for all 3 Lots, the Supervisor is named as "*the CEO of Ministry of Works*") to appoint the Consultant (Roughton) as Supervisory Representative under the Works Contract with the necessary delegated responsibilities and authority;
- Failure to accept the advice of the Consultant;
- The PEU having issued instructions and assumed the role of Supervisor while having no authority to do so under the Works Contract;
- The failure of the Supervisor to carry out necessary re-design of the Works; and
- Interference of the TYPSA LTES team in the administration of the Works Contract.

4.4 Performance of Technical Assistance

The TA to the MNRA recruited for the period under evaluation (the MIP 2011-2013) was provided by Sofreco of France (contracted from 16 May 2011 to 15 April 2014 and later extended to 15 December 2014 by Addendum 4 of 21 January 2014) who supplied a Team Leader to assist the MNRA, the NAO and other Line Ministries and departments to facilitate efficient implementation of the AMSP programme. The TA would also provide expertise and policy advice to the MNRA and other key stakeholders (the Sugar Industry Control Board (SICB), SIRDI, the Belize Sugarcane Farmers' Association (BSCFA), etc.), as well as advice and assistance to the MNRA on EU-funded projects, including training in EU procedures.

Unfortunately the TL was substituted twice during this TA contract, which reduced the efficiency of the implementation of the programme. Furthermore, the decision to move the TL "under the direct supervision of the NAO office to provide technical assistance to the NAO, the MNRA and other Line Ministries and departments as well as EU-funded projects" (*Addendum 3 to the contract, 16 December 2013),* resulted in the TL becoming involved in a wide variety of projects other than AMSP, particularly infrastructure (roads) projects and the Banana Accompanying Measures (BAMS).

In addition the MNRA withdrew from the programme in mid-2013, following which the TA had only limited involvement with this Ministry.

The TA has been highly instrumental in the preparation of concept notes, project proposals, tender dossiers and Terms of Reference (ToR) for components of the AMSP 2012 and 2013, as well as for the BAMS 2012 and 2013 and their competitiveness, rural and economic development components.

Several short-term assignments were undertaken including: Institutional Strengthening of the BSCFA (AMSP); a Needs Assessment of individual banana farms (BAMS); the development of an Integrated Pest Management Strategy (AMSP); and a review of specifications for pre-school buildings (AMSP).

SIRDI

The TA to SIRDI was conducted through a Contribution Agreement signed between the EU and the Inter-American Institute for Cooperation in Agriculture (IICA) for "Institutional Support to Strengthening the Sugar Industry Research and Development Institute (SIRDI), 30 May 2012 to 30 July 2015" (38 months, extended to end December 2015 by addendum n^{o} 3 to the Agreement signed on 4 June 2015). The project seeks to increase the capability of SIRDI to address the technological, production and quality requirements of cane producers, manufacturers, and associations, by promoting and supporting Research and Development in sugarcane production. The project is structured around 4 key result areas:

- Strengthening SIRDI's Development Strategy;
- Strengthening the Coordination and Monitoring Capability of the Sugarcane Industry;
- Improving the Dissemination and Adoption of Applied Sugarcane Production and Research Technologies; and
- Strengthening of SIRDI to Provide Cost-Effective Support Services.

The Belize office of the IICA provides administrative and technical support to SIRDI in the implementation of the project. However, IICA changed its representative four times over the agreement period (44 months), which deprived the programme of the institutional continuity it required.

The main accomplishment of the project has been the operationalisation of SIRDI including of its premises, staff and equipment. A planning, monitoring and evaluation system for SIRDI was installed and a user manual prepared in accordance with the programme objectives.

The level of interaction between SIRDI, cane farmers and stakeholders has increased since the launch of its administrative office and research facilities in May 2014. The SIRDI building is a critical infrastructural component of the project in terms of improved service delivery to farmers and stakeholders and is used to host meetings, training sessions, seminars and field days.

In 2015, two international agencies with offices in Belize (the United Nations Development Programme (UNDP) and the Inter-American Development Bank (IDB)) conducted separate assessments of SIRDI's financial and administrative systems and its capacity to receive and manage grant funds. Both agencies found the SIRDI system to be satisfactory and the funds were approved. The Multilateral Investment Fund (MIF) of the IDB approved a grant of USD 1.3 million to SIRDI to finance a 3-year project that will build and complement efforts under the current EU project.

Significant progress has been made toward developing the activities of the Sugar Industry Management Information System (SIMIS), despite the challenges facing the industry. Two major datasets were developed: i) a farmer ID system and ii) a cane parcel dataset. To date 73,294.91 acres (95%) of 76,810.92 digitalised acres have undergone ground truthing and verification. Other data collected included crop variety, estimated yield, owner of the parcel, age of the field, ratoon cycle, condition of the field and acreage. A farmer ID system was set up which included the distribution of farmer identification cards by SIRDI and the Sugarcane Production Committee (SCPC) with the support of sugar industry stakeholders. Phase 2 of SIMIS will involve three key actions:

- The integration of all datasets to form a single master dataset;
- The implementation of a Cane Harvest Management and Delivery System (CHMDS); and
- The development of a sustainability plan for the SIMIS.

SIRDI launched a formal *farmer training programme* in the last quarter of FY 2011 which has made successful use of the Farmer Field School (FFS) model. A total of 650 farmers in 21 FFS have been trained in Best Agricultural Practices in the last 4 years. Furthermore some hundred field days and workshops have been held on subjects including land preparation, cane planting, IPDM, plant nutrition and harvesting, which attracted 2,500 farmers. Three important instruments of support to the extension programme were completed:

- A Froghopper Pest Strategy and Action Plan for the Sugar Industry;
- A Manual on Best Practices in Sugarcane Husbandry; and
- A Farmer Training Manual for field technicians (which included 15 technical guides).

Under the research programme, trials of sugarcane nutrition practices, new varieties and fertiliser application based on soil type and analysis have been installed and observations are on-going. Seed cane nurseries were also established under the Clean Seed Cane Initiative. A tissue culture seed cane nursery of 2.68 acres was established in late July 2015 to serve as a nucleus and SIRDI has since become the single largest producer of seed in the industry.

The Department of Agricultural Engineering at SIRDI has developed and demonstrated the importance and benefits of improved cultural practices in the industry through its Support

Services Programme, which provided land preparation and ratoon maintenance services to farmers. A number of farmers have procured tools with their own resources to implement the best practices being promoted by SIRDI.

SIRDI has also provided support to the sugarcane replanting credit programme funded by the EU and the Caribbean Development Bank (CDB), for which SIRDI field officers held field visits to select farmers. SIRDI field officers also monitored the farmers who received loans through the programme (in order to ensure they worked in line with best industrial practices) and recommended the disbursement of subsequent tranches of funds.

BAHA Livestock

The Overall Objective of the BAHA livestock project is to reduce poverty and improve the standard of living of the rural population in Belize by increasing the level of income of cattle farmers and creating employment. The OVI of a 10% increase in the income of the target population by 2016 has been superseded and the desired 200% increase in the number of cattle on the hoof was achieved by 2014. The target of a 3% increase in employment in the livestock sector has been met, along with the desired increase of 3% in the number of new farms and additional employment opportunities at field level (which has been substantially surpassed).

In 2015 17,531 heads of cattle were exported from Belize to neighbouring countries, far surpassing the OVI of the official annual export of 10,000 heads of cattle by 2016. The target of a 50% increase in the price of meat by 2016 has already been superseded as the average price of cattle on the hoof has increased from BZD 0.90 per lb in 2011 to BZD 2.63 per lb in 2015.

All cattle in Belize have undergone two sweeps for Bovine Tuberculosis and Brucellosis and a third sweep is almost complete. The results show that the national herd can be declared free of Brucellosis. An additional two sweeps are necessary to achieve the same result for Bovine Tuberculosis.

It was indicated that all cattle farms, their farmers and their animals have been recorded in the Belize Livestock Register and the Belize Livestock Producers' Association (BLPA) is now able to report on the movement of animals and farm audits following the tagging of animals.

Roads

The Project Execution Unit (PEU) at the Ministry of Works and Transport has been under-staffed since its inception and requires support to implement the AMSP roads component. TA has been essential to the design, contracting and supervision of roadworks, but the performance of some of the TA staff has failed to meet expectations.

TYPSA was contracted to provide Long-Term Engineering Support (LTES) from January 2010 to August 2012. Its remit included engineering support for road design, reviewing the design of the works contracts and preparing a template for a tender dossier for paved roads.

Roughton International was contracted to provide long-term supervision (LTS) of roadworks from June 2011 to June 2013, but was not named as the Supervisor's Representative under the Works Contracts. The PEU and EU were aware of the situation but failed to rectify it. Roughton was subsequently criticised by the Phase 2 Auditors for the poor standard of some of its works management records and documentation.

The high turnover of Roughton's international staff also adversely affected their performance (particularly in the first year). During the two-year contract there were 4 Team Leaders and 2

Material Engineers. Initially the Roughton TL worked on a "two months on and two months off" basis, but it was soon realised that this was far from ideal and at the end of the first year an Addendum was signed to make the Team Leader position full-time. Despite Roughton's shortcomings, the auditors recommended that their contract be extended as they considered it preferable that a consultant experienced in European Development Fund (EDF) Contracts assume the role and duties of the Supervisor's Representative for Phases 3 and 4 of the AMSP road rehabilitation programme. This did not happen.

TYPSA LTES was criticised by the Phase 2 Auditors for interfering in the direct implementation of the Works Contracts when they were unauthorised to do so. This led to considerable friction between the TYPSA LTES and Roughton LTS teams. Similarly, TYPSA LTES was criticised by the Auditors for publishing conflicting conditions and requirements in its tender dossiers (for which no acceptable explanation was given).

The TL of the PEU commented that the road designs prepared by the previous TYPSA LTES team are now having to be changed and corrected by the new TYPSA LTES team, which has a contract to supervise AMSP roadworks from March 2015 to September 2016. The high turnover of international staff has again been a problem, with the first LTS TA Team Leader leaving for medical reasons and the second TL being dismissed due to arguments with the domestic LTS team (which led to a two-day strike). An interim TL arrived in late October 2015 and is due to have handed over to another Team Leader in late November 2015.

The TA consultants, PEU and NAO were all also criticised in the Audit report for delays and errors in the issuing of Administrative Orders and Addenda to the Works Contract.

4.5 Cost and Value for Money

The cost of the project is well known (EUR 72.4 million), but there is little or no evidence-based information on the direct or indirect economic benefits incurred by the programme's beneficiaries (e.g. in terms of incremental net income x number of cane farmers, increased income from non-cane farming (diversification) increased employment, etc.). This would normally derive from outcome-orientated monitoring based on the logframe OVIs linked to the expected results and objectives of the programme. No such monitoring has been carried out since the AMSP programme started in 2007. Despite this lack of information, this report will attempt to estimate the economic benefits based on information collected from SIRDI, SCPC and the sugar factory.

The most important economic benefits of the AMSP programme should be felt by the cane farmers and the sugar factory. These account for a major part of the cost of the Roads component (the consultants estimate 75% of EUR 44.5 million, i.e. EUR 31 million[41]) and of the Competitiveness component (EUR 14.4 million), bringing the total cost to about EUR 45 million to be considered as long-term investment costs (minimum 10 years).

Cane and sugar

Based on information received from the SCPC and SIRDI, cane production has increased from 980,115 metric tonnes (MT) in 2007/2008 to 1.2 million MT in 2014/2015 (an increase of 220,000 MT). Based on an average cane price of BZD 65/MT cane for the period 2007-2015, the total increase in value would be BZD 14.3 million (approximately EUR 6.5 million). Throughout 2007 to 2015, there has been an upward trend in the production of sugar from a

[41] The remaining 25% could be attributed to the diversification and socio-economic development of communities living near the roads

low of 78,000 MT in 2007/2008 to a high of 142,000 MT in 2014/2015 (for more details see Annex 7). The total increase in sugar value is estimated at USD 300[42] x 64,000 MT = USD 19 million or about EUR 15 million. It can thus be concluded that the Belize sugar industry has increased its production value (of cane and sugar) by EUR 21.5 million since the start of the AMSP programme in 2007.

Weather conditions have been erratic during the period and cannot thus explain the upward trend. A likely explanatory factor (from the point of view of rational economic behaviour) is the steady increase in the price of cane from a low of BZD 55/MT in 2007/2008 to a high of BZD 76/MT in 2014/2015, which prompts farmers to invest in taking better care of their cane. Another factor may be the effect of interventions by SIRDI, which has introduced best practices through its field training programmes. The 2014/2015 season in fact produced a cane surplus of 360,000 MT[43] which exceeded the milling capacity of the sugar factory (1.3 million MT). This suggests that in reality cane farmers produced a total of 1.56 million MT in 2014/2015.

The increase in sugar production can primarily be attributed to three factors: i) investments by the factory to improve the extraction rate; ii) timelier delivery of cane; and iii) the delivery of better-quality cane by the producers.

Diversification

Assessment of the value added by the Diversification component of the programme would focus on two projects: the Small-Scale Enterprise Development project implemented by La Inmaculada Credit Union (LICU) and the Agribusiness and Value Chain Development project implemented by FAO. The value generated by the small businesses started by the project is unknown as a post-project survey remains to be carried out by LICU.

BAHA (livestock)

No detailed economic data are available on the BAHA Belize National Sanitary Cattle Plan project (EUR 2 million of EU investment under the Diversification component), although it is reported that meat prices have increased from BZD 0.90 per lb in 2011 to BZD 2.63 per lb in 2015[44]. This means that the value of the total number of cattle in Belize (estimated to be 100,000 at a total value of BZD 84 million or about EUR 30 million in 2011[45]) has increased by almost 200% within 4 years and shows no signs of abating in view of strong demand from neighbouring countries (notably Mexico). However, in order for cattle producers to penetrate the lucrative meat market it is imperative that Belize be officially declared free of Brucellosis and Bovine Tuberculosis and that all cattle sold for export have International Veterinary Certificates. According to BAHA project management, Belize will be declared brucellosis-free by February 2016. For Bovine Tuberculosis this will take an additional two years since two more cattle sweeps are needed.

Agribusiness development

Since the FAO Agribusiness and Value Chain development project has only just started, no economic information is yet available. The project is currently at the strategy and action plan stage.

[42] Average estimated (London) market price of FoB raw sugar per MT, 2007/08-2014/15
[43] Also called “standing cane” and left in the field to be milled the following year. Sugar (glucose) content would typically be at 50% or less and therefore a loss to the farmer
[44] BAHA, M&E 2015
[45] Source: Grant Contract “The Belize National Cattle Sanitary Plan”, August 2011

Roads

The total budget for roads improvement under the AMSP is EUR 44.5 million. The cost of rehabilitation of the Phase 1 marl roads ranged from EUR 28,500 to EUR 36,400 per km, with an average cost of EUR 31,800 per km. The cost of upgrading roads to paved standard ranges from EUR 231,000 for the Xaibe roads to EUR 342,000 for the San Antonio road, which is still under construction and includes a kilometre of concrete road through a low-lying area that is prone to flooding. The average cost of the paved roads completed to date is EUR 276,000 per km. The cost of road maintenance is significant, with the RMU estimating the annual cost of routine road maintenance to be EUR 2,512/km for paved roads and EUR 3,433/km for marl roads. In addition, paved roads will have to be resealed every 7-10 years and gravel roads resurfaced every 3-4 years.

The lack of monitoring data on AMSP roads makes it impossible to calculate the direct and indirect economic benefits provided to the programme's beneficiaries. It is not known how many cane farmers or member of the wider rural community are actually benefiting from the improved roads.

Based on interviews with a range of stakeholders it is clear that the volume of traffic has increased on all of the AMSP roads, particularly those that have been paved. Traffic along the Blue Creek to Orange Walk road is estimated to have increased by 70-100% in the last year. According to cane farmers the cost of transporting cane to the factory has not fallen, possibly due to increased fuel costs and to much of the haulage being from the field to the road and along unpaved AMSP roads. However, Blue Creek farmers exporting cattle, poultry and rice estimate their transport costs to have decreased by about 25% now that most of the road is paved. Cane farmers and other road users all acknowledge that damage to vehicles has decreased, fewer vehicle repairs are needed, tyres last longer, less fuel is used and journeys take less time. Some people are swapping 4WD vehicles for more economical cars. Bus services are improving on most roads and buses do not break down as often. Bicycles are becoming much more common on paved roads, with many children cycling to school.

Concluding remarks

The purpose of the above estimation of the (gross) value generated during the operational period of the AMSP in Belize is solely to demonstrate that there have been additional gains within the Sugar Belt areas in Belize, which to date has been experiencing an upward trend. The majority of these can be attributed to the programmes, such as the effect of SIRDI on cane production practices, resulting in improved yields per acre and the timelier delivery of better-quality cane to the factory (shorter "kill-to-mill" time than before), among others.

Some factors, such as the increased price of cane and meat, have also played a role in the improved economic performance of the sector. However, these are partly due to external market developments and cannot be wholly attributed to the efforts of the AMSP to enhance the quality of the products (cane, sugar and meat) and achieve compliance with export standards. Most importantly, with an initial investment of EUR 60 million[46] the incremental economic gains have been estimated at roughly EUR 20-25 million each year. Whether this provides a good return on the investments made (i.e. good value for money) cannot be determined as the economic gains presented are gross incremental gains and the economic costs per year are unknown. Conversely, an 11% rate of return on the investment of EUR 60 million would require about EUR 10 million per year in economic net benefits over 10 years.

[46] Total investment costs are calculated as follows: Roads and Competitiveness: EUR 45 million; Diversification: EUR 16 million (including 25% of investment in roads as well as investment in BAHA)

4.6 Contributions from Beneficiaries and Other Donors

Government contribution to the programme takes the form of the establishment of Project Execution Units (PEUs) at the Ministry of Natural Resources and Agriculture and the Ministry of Works and Transport. The PEUs act as the local counterparts of the TA teams by way of Project Implementation Units (PIUs) and of late by Technical Assistance Support Persons placed within the various Ministries (the MNRA, MWT and MFED). No GoB contributions have been made to the TA team (indeed none were requested in the Financing Agreements between the EU and the GoB except for the FA 2013, which included a GoB contribution of EUR 300,000 (for improved road maintenance) and a beneficiary contribution of EUR 160,000 (SIRDI)[47]). To date these contributions have not been used as the activities are yet to start.

Total contributions by the beneficiaries of the various (Action) Grant Contracts, Contribution Agreements and the Programme Estimate (PE) were EUR 3.5 million or 32% of the total budget for the period 2007-2014 (see Table 5).

Table 5: Contribution of Beneficiary Grant Contracts, Contribution Agreement and PEs in EUR: 2007-2014

Description	Total budget	EU	Beneficiary
Grant Contract: Small-Scale Enterprise Development in Agriculture and Tourism for the Orange Walk and Corozal Rural Communities (closed)	229,998	172,485	57.500 (LICU)
Grant Contract: Small-Scale Enterprise Development in Agriculture and Tourism for the Orange Walk and Corozal Rural Communities (closed)	677,035	507,395	169,640 (LICU)
Grant Contract: Improving the quality and relevance of early childhood and secondary education in Northern Belize (just started)	1,211,056	903,000	308,056 (University of Belize)
Grant Contract: The Belize National Sanitary Cattle Plan Project (on-going)	4,402,574	2,200,000	2,202,574 (BAHA)
Grant Contract: Promoting agribusiness development in Northern Belize (on-going)	1,000,000	800,000	200,000 (FAO)
Contribution Agreement: Institutional Support to the Strengthening of the Sugar Industry Research and Development Institute (SIRDI) (on-going)	3,055,445	2,498,350	557,095 (SIRDI/IICA)
Programme Estimate: Construction of (3) pre-school buildings in the Corozal and Orange Walk Districts (just started)	634,228	599,228	35,000 (GoB)
Total:	**11,210,336**	**7,680,458**	**3,529,865**

The own contribution amount of BAHA is notably large (50% of the total project budget and way above the average of 32%). As stipulated in the Grant Contract (signed in August 2011), the cattle producers are to contribute USD 5 (EUR 3.60 in 2011) per head of cattle, with the remainder to be covered by the MNRA and other sources (see Table 6).

[47] For "Strengthening integrated pest and disease management (IPDM) in the sugar industry". Source: FA 2013, page 11

Table 6: Grant Contract for the Belize National Sanitary Cattle Plan Project: sources of own contribution (including in kind)

Source of funding	% distribution	Amount (EUR)
Ministry of Natural Resources and Agriculture	28.57	1,257,815
Cattle Owners (mandatory contribution to the identification and registration of cattle through BLPA)	17.16	755,482
OIRSA/SENASICA (International Regional Organisation for Plant and Animal Health/the Mexican Veterinary Authority)	3.27	143,964
Belize Livestock Producers' Association (BLPA)	1.03	45,347
Total:	**50**	**2,202,574**

Source: Grant Contract between the Ministry of Finance and Economic Development and the Belize Agricultural Health Authority (August 2011)

Based on the financial information provided by the EUD regarding the BAHA project, EUR 1.98 million (90%) of the EU contribution of EUR 2.2 million has already been paid out as of October 2015 (EU/CRIS). At the time of this MTE the project had used BZD 5,714,928.65 of the total funding of BZD 6,123,155.72 contributed by other sources (GoB, producers, etc.). The project was supposed to end in August 2014 but was extended until January 2016 through an Addendum to the Contract. As such, for the remaining period (November 2015-January 2016) the BAHA project will have to operate largely using its own resources. This risks becoming a problem for both BAHA and the project.

With regard to the other (six) contracts, no certified (i.e. audited) information is available on the provision or use of own financial resources for the projects. Of the six remaining projects, two have just started (Education and Schools) and one has been in operation for just 9 months (FAO). It is not clear from the contract of the Education project (University of Belize) in what form the own contribution is to be provided. The same applies to the FAO project, whose budget does not indicate specific budget lines to be covered by FAO's own resources (EUR 200,000). Own contributions to the school construction project (GoB) would be in the purchase and maintenance of a vehicle as indicated in the project budget (EUR 35,000).

Two small business development projects run by LICU have closed. Own contributions by LICU for these two projects consisted mainly of staff, staff travel costs, equipment and supplies and office rental for the project coordinating unit (EUR 227,140). Lastly, one project is coming to an end in December 2015 (SIRDI/IICA), with own contributions of EUR 534,805 (96%, SIRDI) and EUR 22,289 (4%, IICA). SIRDI's contribution is mainly in the form of staff (62%) and local office costs (31%). IICA contributes only to the cost of M&E.

In accordance with the NAS, by 2010 Belize Sugar Industries Limited (BSIL) had increased its crushing capacity to about 1.3 million tonnes per season (30 weeks) by upgrading the mill and installing a cane shredder. It also diversified into the co-generation of electricity using bagasse (a by-product of the sugar mill) by setting up a 32.5 megawatt hour (MWh) co-generation plant which will eventually supply 13.5 MWh to the national grid (covering 20% of national consumption). By 2015, BSIL/ASR[48] had installed and improved crushing machinery to improve the extraction capacity rate and hence the overall manufacturing of sugar by the factory (i.e. an improved ratio of tonnes cane to tonnes sugar (TC/TS)).

The sugar industry is currently also actively exploring technical capacity funding and loan financing from the Inter-American Development Bank (IDB), which mainly concerns further

[48] American Sugar Refiners, who acquired the mill in 2012

investments in the co-generation plant[49] (bio-energy) and improving the efficiency of the factory-to-ship transport of raw sugar. A contract has already been arranged to assist SIRDI to complete Phase 2 of SIMIS and accelerate the transfer of technology through Extension Services.

SIRDI and BSIL/ASR are also in contact with the Livelihoods Fund for Family Farming[50] and the Clinton Foundation, for the improvement of cane farmers' revenue and the promotion of income diversification (according to the Vice-President, International Relations, ASR/BSI and SIRDI management, 5 November 2015).

Fairtrade is also active in Belize whereby CFAs, having passed the inspections and received a yearly certificate (from the Jamaica Fairtrade office), receive a Fairtrade premium of USD 60 per MT of sugar. Notably, Belize (together with Fiji) currently produces the most Fairtrade sugarcane of any country in the world (Fairtrade Sugar Facts, November 2015).

4.7 Quality of Monitoring

According to the FAs, the beneficiary (GoB) is obliged to conduct continuous technical and financial monitoring of the AMSP programme, generate progress reports and ensure internal control. Normally this is done by the NAO through a performance monitoring system. The EC recruits independent consultants for results-orientated monitoring (ROM) starting from month 6 of project operation and ending 6 months before closure at the latest.

In 2010 a Mid-Term Evaluation of the AMSP was carried out to cover the period 2006-2010. This was done by the same consultants as the current MTE and thus cannot be assessed by the team terms of quality. Comments from the beneficiary and EU were minor and the final report was accepted following some corrections. To date, no ROM missions have ever been carried out for the AMSP or its 3 components (Roads, Competitiveness, and Diversification).

Technical and financial monitoring at the NAO office consists mainly of the electronic filing of the documents (FAs, addenda, etc.) and progress reports produced under the AMSP. This system appears to work well as the consultants were able to collect most of the required documents for this MTE from the NAO office before the start of the mission and when in Belize. Surprisingly, this is not the case with either the EUD to Jamaica or the EU Technical Support Office in Belize, at which it proved difficult to obtain the required documents (with the exception of financial information, which was readily available via the CRIS system). No programme monitoring reports have ever been prepared by the NAO office, or at least none were made available to the consultants.

The progress reports produced under the various components of the AMSP programme were difficult to get hold of and most had to be collected from the contractors themselves. Those received were found to be of reasonable quality but were mainly output-orientated (especially for the Roads component) and did not include much information on progress made toward achieving the results, specific or overall objectives in the project's logframe.

[49] The co-generation plant has a capacity of 32.5 megawatt hours (MWh) and could supply 13.5 MWh to the national grid (20% of national consumption). Delivery prices however remain to be agreed between the industry and the GoB (source: ASR)

[50] The Livelihoods Fund for Family Farming is an investment fund set up by the Mars and Danone corporations (as part of their corporate social responsibility programmes) to invest in smallholder agricultural projects and connect them to their supply chain. The LFFF looks to create partnerships with public and private entities for the setup of large-scale projects for several agricultural commodities such as sugar, cocoa, vanilla, etc.

The Contribution Agreement for the Credit Fund allocates EUR 333,000 to M&E to provide for:

- A short-term consultant to design an M&E system and establish baseline data for the tracking of the inputs, outputs, outcomes and impacts of the Credit Fund; and

- A long-term M&E consultant to continuously track and report on the Credit Fund's performance using the M&E system designed by the short-term consultant.

As mentioned earlier, no M&E system has yet been established, due firstly to difficulties with the contracting of qualified consultants to design the system and later on to problems of duplication with SIRDI's SIMIS system (leading to a surplus of M&E systems within the industry[51]).

Despite the absence of an M&E system, the long-term M&E consultant was able to track and regularly report on progress made regarding the programme's activities (inputs and outputs) and to produce specific recommendations on how to move forward. It was not however possible for the monitor to provide data on programme outcomes such as the (net) income earned by farmers, increased productivity (yields) or the cost of cane production, as this would have required a fully-fledged M&E system capable of capturing this type of data and information.

Two audits have so far been carried out of the AMSP roads:

1. Hydroplan, November 2009: Feeder Roads Rehabilitation Project AMSP – Phase 1 Lot A and Lot B Infrastructure Programme Verification Audit; and
2. Safege/Tractebel Engineering, February-March 2013: Technical Audit & Operational Evaluation of the Belize AMSP Road Rehabilitation Programme Phase 2.

The design and construction of the Phase 1 marl roads was relatively straightforward. The auditors identified some shortcomings (e.g. inadequate drainage) but stated that the roads meet the objectives laid down in the Financing Agreement (with the proviso that adequate and frequent maintenance be implemented).

The Phase 2 auditors assessed the three Lots in great detail and were critical of numerous aspects of the design, tendering and implementation of the roads.

[51] Communication from NAO Office Belize, December 2015

5 Programme Effectiveness

Effectiveness refers to the extent to which the project's activities (outputs) and subsequent results (outcomes) have led or are leading to the achievement of its overall and specific objectives. The consultants have assessed the effectiveness of the programme in terms of:

1. Whether the planned main benefits as per the project logframe are being delivered as perceived by the stakeholders (particularly in terms of increased incomes and improved standards of living, commercial profitability and viability);
2. Whether there have been unforeseen beneficiaries or unintended consequences and if so, why and to what extent (e.g. with the rehabilitation of the sugar road network);
3. Whether the programme's resources (including TA, personnel, equipment, training and research) directly relate to the programme's expected results and objectives as per the logframe;
4. Whether appropriately qualified/experienced staff have been assigned to implement the individual projects and contribute to the programme's expected results;
5. Whether assumptions and risks have so far proven invalid or if unforeseen external factors have intervened (and if so, how these were addressed by the programme's management and supported by key stakeholders); and
6. Whether the possible reasons for unplanned results or shortcomings were identified.

5.1 Delivery of Planned Benefits

On the basis of qualitative and quantitative information collected by the consultants (mainly during the field phase), this chapter attempts to assess progress made toward the planned benefits according to the logical framework of the AMSP programme (Chapter 3). During this process, the logframes of the individual projects were set against the master logframe of the AMSP and project management staff were asked about the level of achievement of the OVIs in their respective project logframes.

In accordance with the programme's intervention logic, the first step in this assessment is to determine the extent to which the programme has delivered the expected results, specific and overall objectives as per its logframe. Table 7 presents the achievement of the expected results of the AMSP programme against their related OVIs.

Table 7: Achievement of expected programme results (MIP 2011-2013)

Expected Result	OVI as per logframe	Actual level of achievement
1. Important roads in the Sugar Belt road network rehabilitated (AMSP 2010)	1.1 Number of km rehabilitated and maintained (60 km paved) (AMSP 2010)	Phase 1 (marl roads): Completed = 90.6 km/56.6 miles Phases 2, 3 and 4 (paved roads): Completed = 45.1 km/28.2 miles Under construction = 26.7 km/16.7 miles (includes 6 km rehabilitated under Phase 1) Design stage = 40.9 km/25.6 miles (includes 14.3 km rehabilitated under Phase 1) These roads were all identified as high-priority for the Sugar Belt **(Overall level of achievement: medium)**
2. Improved physical and institutional infrastructure contributing to social and economic development in Northern Belize (AMSP 2013)	2.1 28 miles of road rehabilitated in Northern Belize by 2017 (AMSP 2013)	
	2.3 33 miles of road rehabilitated to paved standard by 2015 (AMSP 2012)	
	2.2 100% of rehabilitated roads maintained by 2017 (AMSP 2013)	All Phase 1 marl roads have undergone sporadic routine maintenance, mainly

Expected Result	OVI as per logframe	Actual level of achievement
		grading. The busy Phase 1 roads are in mostly poor condition, while other roads are in fair condition. The maintenance of verges and clearing of drains has been neglected on virtually all roads The MWT has established a Road Maintenance Unit and developed a Long-Term Maintenance Strategy. A Road Maintenance Fund is in the pipeline, but sources of finance have yet to be established **(Overall level of achievement: poor)**
3. A competitive and diversified sugar industry that contributes to a sustainable environment and socio-economic development in sugar-producing areas in Belize (Orange Walk and Corozal Districts) (AMSP 2012 and 2013)	3.1 20% increase in sugarcane productivity per acre per year for the three years after replanting	Based on information provided by SIRDI using the SIMIS database, sugarcane productivity has increased by with 36% **(Overall level of achievement: good)**
	3.2 50% of farmers implementing a combination of best practices within the first two years of the project by 2017	SIRDI estimates that in 2015 at least 40% of sugarcane farmers (about 2,000 beneficiaries) have adopted best practices due to the Farmer Field Schools established by SIRDI under the AMSP **(Overall level of achievement: good)**
	3.3 At least 20% of women and youth successfully participating in replanting schemes by 2016 (AMSP 2012)	25% of the loans provided by the Credit Fund for replanting are to female cane farmers. 15% participate in the Farmer Field Schools and 17% are receiving technical training from SIRDI **(Overall level of achievement: good)**
	3.4 At least a 20% increase in the acreage of sugar fields drained by 2017 (baseline 3,000 acres in 2013)	This activity was cancelled (see Chapter 3.10)
	3.5 Number of farmers adopting integrated pest and disease management (IPDM) strategies for the control of froghoppers and other pests and diseases increased from 100 in 2013 to 700 by 2017	This target has been surpassed, with 2,000 cane farmers having adopted IPDM strategies (**Overall level of achievement: good)**
	3.6 Maintenance of the TCTS ratio within the range of 9-10 between 2013 and 2017 (AMSP 2013)	During the period 2007-2010 the TCTS ratio was around 12. This has improved gradually to 8.35 by 2014/15 and is now likely to stay at this level given the new improvements at the sugar factory and the more timely delivery of better-quality cane **(Overall level of achievement: good)**
4. Alternative agricultural and non-agricultural enterprise developed, sources of employment promoted (AMSP 2010)	4.1 Number of new enterprises established	With the 9 grants provided by LICU, a total of 18 MSMEs have been established for coconut oil processing, vegetable production, beekeeping, tourism, meat products and bakery products. The total amount of the grant was BZD 207,000 (EUR 94,000) and the total number of beneficiaries was 755 **(Overall level of achievement: good)**
	4.2 Number of producer groups created	This mainly relates to the agribusiness and value chain development project being carried out by FAO, which aims to create producer groups for three different commodities (honey, sheep and onions). The number of producer groups to be created is not defined in the logframe as

Expected Result	OVI as per logframe	Actual level of achievement
		an OVI. The target number of farmers trained would be 100 (onions); 90 (honey) and 100 (sheep). There are no data yet on levels of achievement as the project is still in its initial phase **(Overall level of achievement could not be verified)**
	4.3 Number of hectares under new cultivation (AMSP 2010)	This also mainly relates to the above FAO project for which there is no information. The project logframe targets do not include the number of hectares to be covered and the agribusiness projects set up by LICU do not mention the number of hectares (only the number of members) **(Overall level of achievement could not be verified)**
5. Diversify sources of employment and strengthen the educational and skills base of the workforce to meet the needs of the private sector (AMSP 2012)	5.1 At least a 40% increase in the average number of vendors at the Orange Walk market by 2017 (baseline 100 vendors in 2013) (AMSP 2013)	This relates to the MSME development projects implemented by LICU. This AMSP/OVI was not mentioned as a target in the project's logframe, but the project did provide micro-financial and business support services to over 4,700 new LICU members. It has held 5 marketing events for small entrepreneurs and has improved the quality, marketing and distribution of 8 local products. It is assumed that this has increased the number of vendors **(Overall level of achievement: medium)**
	5.2 At least 20 new/improved successful small enterprises by 2016	This relates mainly to the MSME development project implemented by LICU with the establishment of 10 new small and medium-sized businesses prior to 2010 and 18 since. A survey done in 2012/13 by LICU showed that most of the 10 businesses established prior to 2010 are still in business. No information was available as to whether the 18 businesses established since 2010 are still operating as a post-project survey is still to be done **(Overall level of achievement: medium)**
	5.3 At least 80 new successful micro-enterprises by 2016	This also relates mainly to the LICU MSME development project. Before 2010, 80 micro-grant projects were set up. The MTE 2010 reported positive indications that these micro-grants would generate additional income for the beneficiaries. The 2012/2013 LICU survey indeed showed that most were still active, with moderate to good market prospects. Since 2010, LICU has expanded micro-financial services to 25 rural communities in Corozal and Orange Walk districts covering over 4,700 new members. During this time a total of 92 training sessions in small business skills have been provided to over 2,400 participants **(Overall level of achievement: medium)**
	5.4 At least 25% of women and youth participating in MSMEs by 2017 (AMSP 2012)	LICU report that at least 50% of the MSMEs started up are run by women and youth. Of the 4,700 new members who have joined since 2010, 50% are women and LICU reports and photos suggest a

Expected Result	OVI as per logframe	Actual level of achievement
		high number of young female participants in business training **(Overall level of achievement: good)**
	5.5 A 100% increase in the number of trained teachers active in early childhood education (125) by 2017	A project was recently launched to improve the quality and relevance of early childhood and secondary training in Belize by the University of Belize **(Overall level of achievement could not be verified)**
	5.6 A 30-70% increase in the number of trained teachers active at secondary level (125) by 2017	Ditto
	5.7 An increase in the number of school places by 36.3-43.2% (300) at Early Childhood Education level by 2017 (AMSP 2012)	A project was recently launched by the GoB to construct 3 pre-school buildings in Corozal and Orange Walk district **(Overall level of achievement could not be verified)**

Additional remarks on roads

- The OVIs for the length of paved road to be completed are confusing, not helped by figures sometimes being given in kilometres and sometimes in miles;
- The OVIs in the FA 2010 give the number of kilometres to be rehabilitated and maintained as 60 km of paved road;
- The OVIs in the FA 2012 set a target of 33 miles (53 km) of roads to be rehabilitated to paved standard by 2015. Under Phases 2 and 3 work has been completed on 45.1 km and is underway on 26.7 km, making a total of 71 km for expected completion in 2015 (higher than the FA 2012 OVI figure);
- The FA 2013 indicates that approximately 28 miles (44.8 km) will be rehabilitated by 2017 under AMSP 2012 and AMSP 2013. Two roads, with a total length of 40.9 km, are under design but must be tendered and the construction contracts awarded by 22 April 2016 or the EU funds will be lost.

A map showing the Sugarcane Parcels and the location of AMSP roads and a table giving brief details of the AMSP roads (Map 1 and Table 8) are shown on the following pages.

Map 1. Showing Sugarcane Parcels and AMSP Roads in Northern Belize

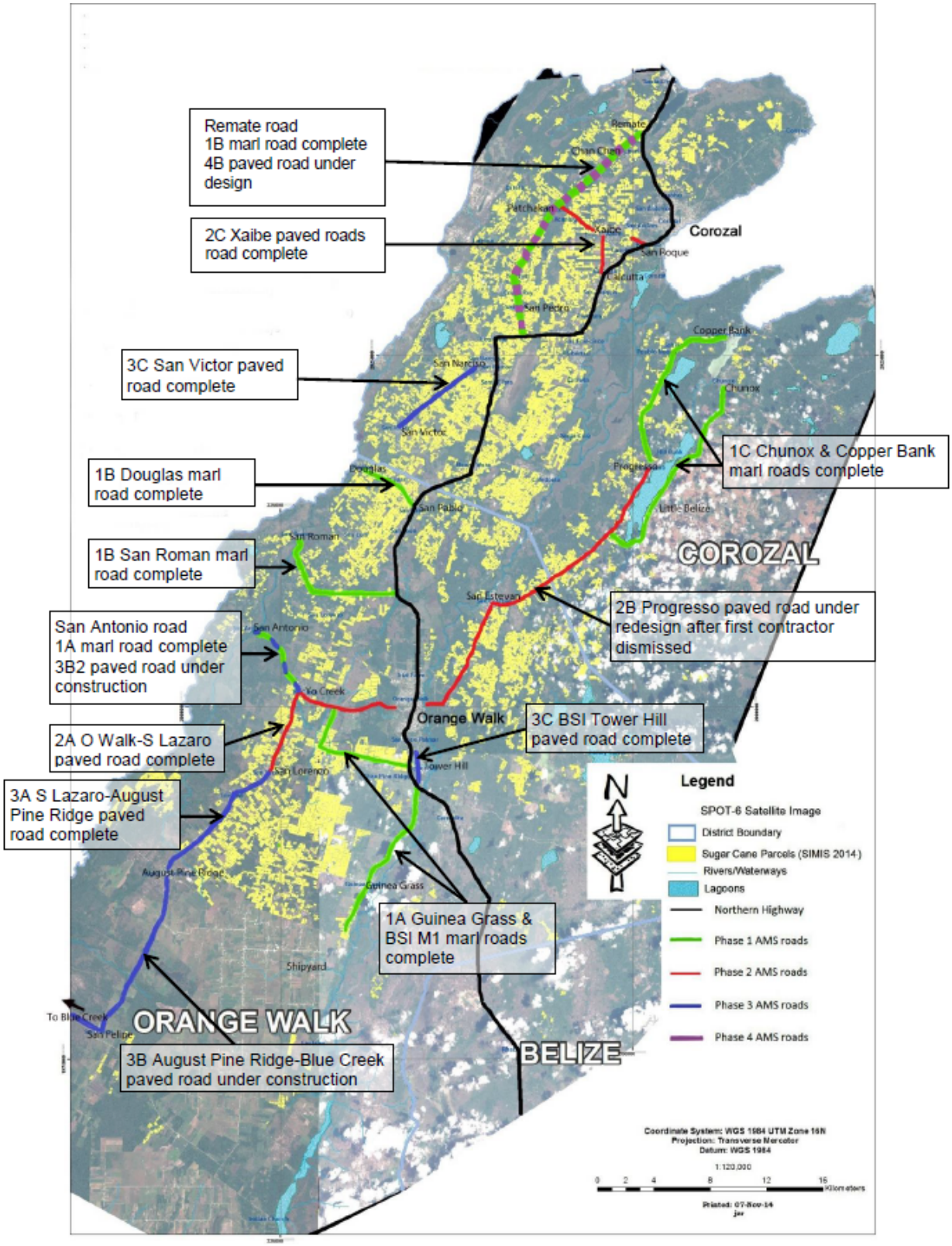


Table 8: Brief Details of AMSP Roads

Phase & Lot	Road name	New surface	km	miles	Cost €	Cost/km €	Cost/mile €	Status	
1A	1. Guinea Grass Road	Marl	14.4	9.0	920,003	30,423	48,677	Closed	Works contract signed 7/08
	2. BSI MI Road	Marl	9.8	6.1					Guinea Grass and BSI M1
	3.Yo Creek to San Antonio	Marl	6.1	3.8					Yo Creek-San Antonio roa
1B	1. Remate Road	Marl	14.3	8.9	844,919	28,516	45,625	Closed	Works contract signed 7/08
	2. San Pablo-Douglas Road	Marl	4.7	2.9					Remate road heavily traffic
	3. Northern Highway-San Roman Road	Marl	10.7	6.7					(see below)
									Douglas and San Roman ro
1C	Little Belize-Chunox Road	Marl	13.9	8.7	1,119,528	36,443	58,309	Closed	Works contract signed 12/0
	Progresso-Little Belize Road	Marl	3.0	1.9					Progresso-Little Belize-Chu
	Progresso-Copper Bank Road	Marl	13.8	8.6					Copper Bank road fairly lo
2A	Blue Creek road (O Walk Town - San Lazaro)	Paved	13.3	8.3	4,144,436	311,612	498,579	Final accounts outstanding	Works contract signed 10/1 11/15. Final accounts outst section of road had to be re to sign final accounts and g but some wear and a few s
2B	Progresso road (O Walk Town-S Estevan-Progresso)	Paved	25.5	15.9				Under design	First works contract termina funds but going to litigation. contract must be signed by
2C	Calcutta-Xaibe (Noguero-Xaibe Sugar Road)	Paved	2.7	1.7	2,015,459	230,866	369,132	Final accounts outstanding	Works contract signed 10/1
	Patchakan-Xaibe	Paved	4.8	3.0					accounts. Delays in constru
	San Roque (MOW)-Xaibe	Paved	1.2	0.8					These short paved sections area with much traffic.
3A	Blue Creek road (San Lazaro-August Pine Ridge)	Paved	10.5	6.6	3,006,631	286,346	458,153	Defect liability period	Works contract signed 2/13 liability period. Contractor heavily traficked.
3B	Blue Creek road (August Pine Ridge-Blue Creek)	Paved	20.8	13.0	5,752,689 (contract amount)	276,572		Under construction	Works contract signed 3/14 Very heavily trafficked roa
3B2	Yo Creek-San Antonio	Paved	5.9	3.7	2,024,172 (contract amount)	341,921		Under construction	Works contract signed 3/14 Cost higher than average d
3C	San Narciso-San Victor	Paved	9.5	6.0	3,286,905	262,323	419,716	Defect liability period	Works contract signed 2/13
	Old Northern Highway-BSI Junction	Paved	3.0	1.9					liability period. Both roads a with traffic. BSI road past s
4B	San Pedro Remate-Patchakan-Tumbalto	Paved	15.4	9.60				Under design	Redesign and tender docs 22/4/16. About half marl roa

Marl roads - average cost / km = € 31,840 average cost / mile = € 50,945
Paved roads - average cost / km = € 276,374 average cost / mile = € 442,140 (considering only roads where construction complete)

Table 9 presents the level of achievement of the specific objectives of the AMSP programme against their OVIs.

Table 9: Achievement of specific programme objectives (MIP 2011-2013)

Specific Objectives	OVI as per logframe	Actual level of achievement
1. To improve physical access, communication and transportation through the rehabilitation of the Sugar Belt road network	1.1 Reduction in transport costs	No apparent reduction in transport costs has been noted (possibly due to increased fuel costs), but there is less wear-and-tear on vehicles, lower repair costs, more time saved and less fuel used. Some people are switching from 4WDs to more economical cars. Bus services are improving and bicycles are becoming more common **(Overall level of achievement: good aside from the rise in fuel costs)**
	1.2 Increased access to markets and health and education facilities for rural communities	Access to markets, health services and education facilities have greatly improved for many rural communities **(Overall level of achievement: good)**
2. To strengthen the competitiveness and economic sustainability of the Belize sugar industry	2.1 Increase in farm productivity (yields)	Farm productivity and the quality of cane delivered to the mill has improved. Yields have increased to 21 MT/acre from 18 MT/acre and the TCTS ratio has improved from 12 to 8.5 **(Overall level of achievement: good)**
	2.2 At least a 10% increase in the average yield of sugarcane by 2017 (baseline 18 tonnes/acre in 2012) (AMSP 2013)	Based on available SIMIS information, the calculated average yield for 2014 was 21 MT/acre, which is a 16.6% increase as compared to the 2012 baseline **(Overall level of achievement: good)**
	2.3 At least a 25% increase in sugar production in 2017 (baseline 116,000 tonnes in 2012) (AMSP 2013);	In 2014 a total of 123,081 tonnes of sugar were produced (only a 6% increase as compared to the 2012 baseline) **(Overall level of achievement: medium)**
	2.4 At least a 50% increase in the volume of cane processed through factories by 2017 (baseline 1.05 million tonnes in 2012) (AMSP 2013)	In 2014 a total of 1,214,106 tonnes of cane were milled (only an 11% increase as compared to the 2012 baseline) **(Overall level of achievement: medium)**
	2.5 Reduction in production costs (AMSP 2010)	No hard evidence is available on production costs as farmers do not keep financial records **(Overall level of achievement could not be verified)**
3. To support an enabling environment for rural recovery and economic diversification in sugar-dependent areas of Belize	3.1 Number of new businesses started	Based on the findings in Table 8 (expected results), to date 28 new small and medium-sized businesses and about 160 micro-enterprises have been started by LICU under the AMSP programme **(Overall level of achievement: good although AMSP lacked a quantified target)**
	3.2 Number of jobs created (AMSP 2010)	The number of jobs created is for the 28 small and medium-sized businesses is over 1,000 (an average of 35 members per business group). Each of the estimated 160 micro-enterprises created should benefit one family

Specific Objectives	OVI as per logframe	Actual level of achievement
		(Overall level of achievement: good although AMSP lacked a quantified target)
4. Socio-economic conditions in Northern Belize improved through an increase in sugar production, additional income-generating activities (through economic diversification) and the provision of quality education opportunities (AMSP 2012 and 2013)	4.1 10% increase in sugar revenue	The increase in sugar revenue relates primarily to the price of sugar on the European and global market and to a much lesser extent, to the improvement in yield and cane quality. Due to a specific supply contract with a European buyer, the prices of Belizean sugar have been relatively high. When this contract comes to an end in 2017, prices will reassume their link to the global market price which is considerably lower **(Overall level of achievement: medium)**
	4.2 3% decrease in unemployment in Northern Belize by 2017 (AMSP 2012)	The unemployed labour force in Corozal and Orange Walk totals 2,700 persons (source: Belize NAS, April 2006, page 4). A 3% reduction in unemployment would be equivalent to the creation of jobs for 81 persons. This target could be easily achieved by the LICU MSME development project **(Overall level of achievement: good)**
	Note: No mention of an increase in income	See Table 10

Table 10 shows the programme's actual achievement against its overall objectives and their related OVIs.

Table 10: Achievement of overall programme objectives (MIP 2011-2013)

Overall Objective	OVI as per logframe	Actual level of achievement
To reduce poverty and improve the standard of living of the rural population in Northern Belize	1) Number of people living below the poverty line	According to the NAS, the number of people living below the poverty line is stated to be 26% in Corozal (9,000 persons) and 35% in Orange Walk (16,000 persons). The total is 25,000 persons or about 5,000 families (with an average of 5 members per family). Presuming that the LICU MSME development project manages to create jobs (and hence income) for over 1,000 beneficiaries or families (not including the micro-enterprises for 160 families), a very rough estimate is a reduction in the number of persons living below the poverty line by 5,000 across both districts **(Overall level of achievement: good)**
	2) Increase in income for sugar and non-sugar households	No current income data for sugar are available. Of the non-sugar-producing households, data from the 2012/2013 survey by LICU show that almost 50% of the project beneficiaries (10 small businesses and 80 micro-enterprises) reported gross revenues of BZD 250 per week; 25% reported BZD 251-500 per week and 25% reported BZD 501 or more. The survey doubts the integrity of data on net revenue since

Overall Objective	OVI as per logframe	Actual level of achievement
		beneficiaries tend to purposefully report low profitability figures. Hence no conclusive statement can be made on increased income **(Overall level of achievement: presumably medium)**
	3) 5% reduction in the percentage of the population in the Northern Districts living in poverty by 2015 (AMSP 2012)	Based on the estimated reduction in the number of people living below the poverty line, this would be a maximum reduction of 20% for both districts by 2015 **(Overall level of achievement: good)**
	4) 1.5% reduction in poverty rates in Orange Walk and Corozal by the end of 2016 (Baseline 2009 Orange Walk 37%, Corozal 46%) (AMSP 2013)	Baseline figures are contested in this case since the difference is very large compared with the figures presented in the NAS. Assuming the baseline figures are correct, this would mean that a total of about 16,300 + 16,600 = 32,900 people[52] are living in poverty across both districts. A 1.5% reduction in unemployment would entail the creation of jobs for 495 persons, which could easily be attributed to the LICU project interventions as stated above **(Overall level of achievement: good)**

The above assessment of the achievement of the programme's expected results, specific objectives and overall objective will be used to assess its overall impact in Chapter 6 of this report.

5.2 Unforeseen Beneficiaries and Unintended Consequences

SIRDI

The verification of areas under sugarcane cultivation carried out by SIRDI (using SIMIS) has unexpectedly revealed that close to 75,000 acres are under cane. Before SIMIS this was generally accepted to be 60,000 acres of land. As hardly any new land has been brought under cultivation in the last couple of years, all previously calculated cane and sugar yields should now be re-calculated with this information. The result is that cane and sugar yields per acre are even worse (about 20% lower) than previously thought.

Roads

Some of the main unforeseen beneficiaries of the roads programme include:

- *Owners of property with frontages on the roads that have been recently completed and paved by AMSP*: Property prices are said to have doubled and in some cases tripled. This particularly applies to the road from Orange Walk to Blue Creek, where businesses are now buying road-front land and buildings;
- *Employees who are finding it easier to get to work*. For example 700 people from villages near the Blue Creek road, and from as far away as Orange Walk Town, travel daily to work in Blue Creek;

[52] Calculated as follows: Corozal population: 35,500 x 46% = 16,300. Orange Walk population: 44,900 x 37% = 16,600 (population data: Belize Strategy, April 2006)

- *Traders* are benefiting considerably from better roads, with less damage to their vehicles, less wasted time and particularly, the arrival of goods at markets in much better condition (e.g., fruit and vegetables suffer far less bruising);
- Some *vehicle owners* are replacing 4WD vehicles with cheaper, more economical cars. Cycling is becoming popular on the newly paved road, particularly around Xaibe and San Narciso where many children now cycle to school;
- The health of people who live near roads is improving due to the absence of dust. In particular, children are suffering from fewer chest infections; and
- In some areas, *cane farmers* report to be suffering less flooding as a result of the road drainage installed (it was noticeable that the few places where roadside drains had been cleared was where they were adjacent to cane fields).

An unintended negative consequence of the AMSP roads is an increase in the number of traffic accidents. Residents of several villages have requested that additional speed bumps be installed.

5.3 Use of Programme Resources

SIRDI

It is a well-established fact that the introduction and operationalisation of the Sugar Industry Research and Development Institute (SIRDI) has contributed to higher cane yields and to the delivery of better-quality cane to the mill. The introduction of the Farmer Field School (FFS) methodology to transfer better cultivation practices has been very successful and is highly appreciated by the beneficiaries. The results produced so far (and particularly those still to be produced) by SIMIS will make valuable contributions to the capacity to properly plan and programme cane production, harvesting and haulage in the near future.

The TA provided by IICA to the operationalisation of SIRDI has established an environment in which SIRDI can carry out the activities for which it is responsible: i.e. research into the improvement of sugarcane yields through the development and introduction of new varieties, better land preparation methods, better nutritional and integrated pest control, an extension service for the farmers and appropriate cane harvesting methods.

The purchased equipment is being used to provide better services to cane farmers, which in turn will eventually result in higher yields and higher income for the farmers.

Roads

The use of TA was essential to the design, contracting and supervision of roadworks as there are few well qualified road engineers in Belize.

5.4 Use of Appropriately Qualified and Experienced Staff

Roads

The capacity of the MWT is hindered by the lack of well qualified engineers in Belize, low numbers of staff and inadequate resources, leading to low pay and high staff turnover. The MWT Project Execution Unit (PEU), the supervisor of all EU works contracts, has contract staff which enables higher pay rates. Following some criticism of earlier PEU staff, the PEU now has an experienced Director (in post since December 2014 and previously a Roughton LTS Senior Inspector), an AMSP Project Engineer (in post since December 2014), a BRDP Project Engineer and two administrators. The MWT-PEU however has a heavy workload and

additional engineers would be desirable. The EU has provided Technical Assistance to support the PEU in the design, contracting and supervision of AMSP roadworks under a number of contracts.

A Road Maintenance Unit was established at the headquarters of the MWT in Belmopan in August 2013 and is staffed by 4 technical officers. Six District Technical Service Teams, one for each district, are responsible for road condition surveys, maintenance and repair but are short of personnel, funds, vehicles and equipment. Most district personnel have had little formal technical education and have learnt road maintenance techniques on the job. About 45% of necessary equipment is out of order, largely due to lack of funds to buy spare parts.

Under the AMSP, a conscious decision was made to employ relatively small domestic road contractors and the roads were thus split into separate smaller contracts. However the works contracts were subject to contractual and specification regimes that would have been better suited to much larger contracts and this was daunting for some of the small domestic operators. The first TA long-term supervision (LTS) team (Roughton) found that in addition to their main task of ensuring that roadworks met the specifications, they had to both assist contractors to get to grips with the complex and highly technical requirements of the contracts, and train them in the managerial techniques needed to meet the relatively rigid output requirements in terms of both quality and quantity. The Phase 2 road contractors were criticised for the slow pace of works and the deployment of insufficient equipment and personnel on site. However, some delays were due to inadequate design and BoQs in the works contracts, arguments between contractors and road supervisors over the quantity and quality of materials and (in the case of Phase 2 Lot A), PEU instructions for lengthy road sections to be replaced (which were deemed unnecessary by the Roughton LTS). Road contractors for Phase 3 roadworks have since performed satisfactorily.

From January 2010 to August 2012 TYPSA was contracted to provide long-term engineering support (LTES) to the PEU. Roughton International was subsequently contracted from June 2011 to June 2013 for the LTS of AMSP roadworks. Following the departure of Roughton, a team of local consultants, PE1, were recruited to assist the PEU until TYPSA was contracted for LTS from March 2015 to September 2016. Turnover among the international TA staff has been high. Some have left for personal reasons, while others have been dismissed due to disagreements with the PEU or local staff, or to doubts as to their ability to do a good job. The present TYPSA LTS contract started in March 2015. Their first TA Team Leader left for medical reasons and the second has been dismissed due to arguments with the domestic LTS team (which led to a two-day strike). An interim TL arrived in late October 2015 and will hand over to another in late November 2015.

SIRDI

SIRDI has been able to attract a team of young but very enthusiastic staff, researchers, technicians and administrative personnel. Under the guidance of the senior staff members and the technical assistance provided by the IICA they are becoming a group of experienced operators, capable of gradually directing sugarcane farmers toward the adoption of better cultivation practices, which will ultimately produce higher cane yields and provide better-quality cane to the mill. IICA has also provided capable experts for specific subjects such as financial and administrative systems, integrated pest management; the development of a medium-term research programme; MIS development (SIMIS) and plant nutrition.

The only failure to record has been that of the Project for the Capacity Building of the Belize Sugarcane Farmers' Association (BSCFA), which included organisational structure, financial management, stock-keeping and human relations. Due to lack of interest by the BSCFA only one phase of the project was executed.

BAHA

The BAHA cattle sweeps were carried out as planned by experienced and qualified BAHA staff, assisted by MNRA staff and veterinary staff from Mexico.

LICU (diversification)

Under the Diversification component, LICU staff have been sufficiently well qualified and experienced to implement the two small-scale enterprise programmes under the AMSP. This was also reflected in the establishment of an MSME Training Centre at LICU in July 2013, which (as of August 2014) has carried out over 90 trainings with a total of 2,400 participants.

The Credit Fund

There is no issue with the qualification of the Development Finance Corporation (DFC) staff dealing with the loan applications under the Credit Fund. To date the default rate on the loans is BZD 188,190, which is approximately 5% of the total portfolio[53] and is considered manageable. Staff are perhaps too cautious when approving the loans and seem to neglect the technical appraisals carried out by SIRDI (who might also have included a financial analysis to demonstrate that following replanting, the applicant would be in a better financial state than before). Neither is there an issue with the qualification of the long-term M&E consultant to continuously keep track and report on the overall performance of the Credit Fund. Progress reporting was regular, informative and found to be of good overall quality. The reporting was done according to EU standards by following the programme's logframe (activities per expected result) and included recommendations on how to move forward. In between the progress reports, short intermediate reports were also produced by the monitor with programme highlights and updates.

5.5 Validity of Assumptions and Risks

Assumptions and risks to be tested during this evaluation have been largely derived from the logframes attached to the 7 FAs under the MIP 2007-2010 and MIP 2011-2013. The following assumptions are considered "soft", having proven to be of relatively low risk to the overall performance of the AMSP programme:

1. The GoB remains committed to implementing the EC MAAS;
2. Macro-economic and social stability is maintained;
3. There is no increase in the severity or frequency of hurricanes or floods;
4. Sugarcane growers invest in their enterprise;
5. Sugarcane production is viable and farmers continue to require the services of Cane Farmers' Associations;
6. Businesses in Northern Belize can attract finance to respond to new opportunities;
7. Government macro-economic policies do not have a negative effect on the industry;
8. Belize maintains (or increases) its sugar market access to overseas markets.

To date, the GoB remains committed to the AMSP programme and the macro-economic and social situation has remained stable (assumption proved valid). There is no evidence that macro-economic policies have had a negative effect on the industry, although issues persist

[53] Source: Progress Report of the "Sugarcane Replanting Programme for the period ending September 2015", DFC, Belmopan, Belize, 16 October 2015

with regard to the pricing of electricity delivered by the sugar factory's co-generation plant to the national grid. The programme has not so far been affected by hurricanes or floods (assumption proved valid). Sugarcane growers have increased their production, which could only have been possible if farm investment had taken place (albeit modestly and at a slow pace). Increased production also proves that the cane business has so far been viable to farmers (with surplus production of cane in the last two years, totalling 360,000 MT in 2015) and that farmers are reliant on the services of CFAs. Credit for new business opportunities is now less restricted and has become available from commercial banks and credit unions such as La Inmaculada (LICU). Belize has maintained its access (including Fairtrade) to overseas sugar markets, with exports to the EU and countries in the Caribbean Community and Common Market (CARICOM). The industry also has long-term export agreements with Tate and Lyle (UK). This assumption has thus also proven valid.

Assumptions considered "hard" due to their relatively high risk of affecting the performance and long-term sustainability of the sugar industry have been defined in the FA logframes as follows:

1. Global market sugar prices remain stable;
2. The regulatory framework (the Sugar Act) for the sugar industry is updated (as part of the de-politicisation of the sugar industry);
3. The GoB is committed to developing and approving Master Plans and to ensuring the long-term maintenance of the sugar road network.

The biggest concern is now that of a drop in global sugar market prices (including on the EU market), which will have a significant impact on the income of sugarcane farmers, and hence the sustainability of the entire sector (more details on this are found in Chapter 6 (Impact)).

To date the Sugar Act, which dates from 2001, has only been amended to reflect the division of the Farmers' Association (2015). Major updates are required to enable stakeholders in the sugar industry to manage it effectively and on a more commercial basis. The new regulatory framework should adopt a more deregulated approach, whereby GoB involvement in the committees and structures which govern the industry is reduced and the producers and millers have more autonomy to effectively organise the industry. The regulatory system that emerges should be simple in order to ensure efficiency of the industry and develop it on a commercial footing. The main areas of reform should be the regulations which establish the functioning and roles of institutions such as the Sugarcane Industry Board, the Sugarcane Production Committee and the Sugarcane Farmers' Association of Belize. The fundamental issue is the need to consider the level and nature of GoB involvement in the coordination of the industry.

Finally, little effort has been made so far by GoB to develop or approve a road maintenance Master Plan including a long-term financial maintenance plan for the sugar road network. Hence, the maintenance of these roads cannot at present be assured (more details on this are found in Chapter 6: Impact).

5.6 Possible Reasons for Unplanned Results or Shortcomings

Roads

Since road construction costs are high, the road component absorbs a significant part of the AMSP programme budget (61%). Since the improved roads have been identified as high-priority by a range of stakeholders, serve relatively large rural populations and have relatively high and increasing volumes of traffic, the investment in their development appears to be justified, with good prospects for overall growth in the Sugar Belt.

A concern is that some of the busier marl roads completed in Phase 1 (which were slated for paving in Phase 4) have deteriorated considerably. The Phase 1 road from Yo Creek to San Antonio is under construction at present, and the Remate road is under design but must be tendered (and a works contract signed by 22 April 2016 or else the EU funds will be lost). The Guinea Grass and BSI M1 roads, both of which are busy and in poor condition, were scheduled to be paved under AMSP Phase 3, but will receive no further funding.

A major criticism of the Phase 1 marl roads was inadequate drainage, which contributed to the rapid deterioration of some sections of road. According to the audit of Phase 1 Lots A and B, this was because no provision was made in the road design for access to fields, as a result of which the drains were made shallow to allow vehicles to cross. The MTE noted that in some places farmers had filled in deeper side ditches to allow access to fields. Maintenance of these roads is sporadic and the busier Phase 1 roads are mostly in poor condition, despite other roads are in fair condition. Maintenance of verges and clearing of drains has been neglected on virtually all roads.

Works on all three of the Phase 2 roads suffered considerable delays in construction[54], due in part to inadequate design and Bills of Quantities in the works contracts, but also due to arguments between contractors and road supervisors and to the suspension or delay of work by contractors. While the contractors should take some blame for this, the PEU, TYPSA, Roughton and the NAO must also bear some responsibility. For example, the Phase 2 Audit Report states that: "*Events have clearly shown that the design provided at tender did not represent the true requirement of actual work required. As a result, the various Contractors have been instructed to carry out re-design which has invariably delayed the works, been an additional and substantial cost to the Contractors and for which no Administrative Order has been issued, no reimbursement made and no adjustment to the period for implementation of the tasks been granted*".

Some delays resulted from inaccuracies in design and from changes to requirements as a result of the long delay between design and tendering. Roughton was recruited to supervise roadworks but was not named as the Supervisor's Representative in the Works Contracts. The PEU and EU were aware of this situation but failed to rectify it. TYPSA LTES was criticised by the Phase 2 auditors for interfering in the direct implementation of the Works Contract (as they had no authority to do so) and for providing conflicting conditions and requirements within the tender dossiers for which no acceptable explanation was given. The TA consultants, PEU and NAO were criticised in the audit report for having caused delays and errors in the issuing of Administrative Orders and Addenda to the Works Contract. Lastly the contractors for all three of the roads were criticised for having insufficient equipment and personnel on site.

The following additional issues affected the three roads being developed:

- *Orange Walk-Lazaro road (13 km)*: The PEU demanded that 8 km of rejected base course be replaced (Roughton believed this to be unnecessary). In the event 2km

[54] The text in FA 2012 indicates that:

- Phase 2, EUR 10 million for 47 km (29.4 miles) of paved road, was to be financed under AMS 2008 and AMS 2009;
- Phase 3, EUR 6.5 million for 23 km (14.4 miles) of paved road, was to be funded under AMS 2009 and EUR 15 million for 57 km was to come under AMS 2010 and AMS 2012;
- Phase 4, EUR 25 million for 95 km, was to be funded under AMS 2012, but it was recognised that funds were insufficient for all priority roads

was replaced which considerably delayed progress. Significant increases in drainage works were required;

- *Orange Walk-Progresso road (25.5 km)*: The first tender had to be relaunched due to the winning contractor making serious errors in the BoQ, causing a 9-month delay in award of the contract. The contractor who was finally awarded the contract in July 2011 was dismissed in March 2015 following minimal progress over nearly 4 years. It appears that inaccuracies in the design and BoQs of the initial tender documents were a major cause of disputes and delays. The NAO rejected a relaxation of specifications agreed between the PEU and the Contractor (which had already been applied to the Phase 2 Lot C contract). Meanwhile, specification requirements for surface dressing chippings were tightened;
- *Xaibe roads (8.7 km)*: Service utility companies caused significant disruption to the progress of the works and intensification of both earthworks and drainage works was required.

Competitiveness

Prior to registration and verification of the actual size of sugarcane fields by SIMIS, records used a standard area of 60,000 acres as the production area. SIMIS records now show that some 75,000 acres are under sugarcane production. As there has been no substantial expansion into new (virgin) areas in the last few years, existing records have been corrected to reflect the new figure of 75,000 acres. Observations on increased productivity are thus based on these new criteria.

The 2014 harvesting season was delayed for 8 weeks (48 crop days) due to an industrial dispute. Had these weeks been productive, the potential totals of cane processed and sugar produced could be extrapolated as follows: 1,214,106 tonnes cane/168 crop days x (168+48 = 216 crop days) = 1,560,993 tonnes cane processed (a 49% increase compared with 2012) and 123,081 tonnes of sugar/168 crop days x (168+48 =216 crop days) = 158,247 tonnes of sugar produced (a 36% increase compared with 2012).

The introduction of the “delivery by appointment” cane delivery system, in use since 2011, has improved the quality of the cane presented. The improved farming practices promoted and demonstrated through the extension service and Farmer Field Schools has had a very positive effect on the quality of cane delivered. Kill-to-mill times have decreased and much fresher cane is delivered to the mill. The simultaneous improvements in cane preparation at the mill (extra cane knives and better mill extraction) have resulted in an improvement in the TCTS ratio.

The present production capacity of the mill (1.2 to 1.4 MT) has been reached and without additional investment (extra boiler, improved extraction techniques) no substantial increase in production can be expected.

Effort is made by SIRDI through the FFS to introduce the maintenance of financial records and the preparation of farm budgets. There is no means of verifying a decrease in cost since historic data on production costs are not available. However farmers are comparing the costs of the best production practices promoted by the FFSs and SIRDI with those of other service providers and conclude that there are gains to be made.

The Credit Fund

The disappointing rate of disbursement of loans from the Credit Fund has taken many by surprise. There has always been high demand for (agricultural) credit from cane farmers and the Fund was clearly put in place to respond to this demand, with expectations of being

exhausted within 4 years and installing a Revolving Fund to boot. In hindsight, had they done a baseline survey at the start of the AMSP programme (a lesson learnt from the MTE 2010), the designers of the Credit Fund would have had a better knowledge of the actual financial situation of the cane farmers, especially with regard to the size of their debts with the commercial banks. With this kind of knowledge, better estimates could have been made of the loan distribution rate and hence the needed size of the Fund. In addition loan approval requirements could have been less stringent in terms of the repayment period, the interest rate (lower than 9%) and the inclusion of a means of refinancing outstanding commercial loans by the applicant of up to e.g. 25% of total loan application.

6 Programme Impact

While closely related to effectiveness, impact deals more with the long-term effects of the programme (both positive and negative, expected and unforeseen). Impact assessments are generally considered to be the most difficult part of an evaluation. Changes often occur over time and can only be thoroughly assessed some years after completion of the programme, while other factors external to the programme might also have played a significant role.

In this chapter the consultants will primarily focus on the extent to which:

1. Planned overall and specific objectives are being achieved and how far can this be directly attributed to the programme;
2. The programme has (positively and negatively) affected such issues as economic and social development, poverty reduction and the environment (i.e. the wider effect of the programme);
3. The most important reasons for the possible success or failure of a project under the AMSP programme could be explained; and
4. The desired outcomes of the programme might have been achieved through other, more cost-effective means (e.g. a different design, organisational setup, supervisory and coordinating structure etc.).

6.1 Achievement of the Objectives

The overall objective of the AMSP is "*To reduce poverty and improve the standard of living of the rural population in Northern Belize".* This is rather broad, although the programme's expected results and specific objectives clearly indicate the means by which poverty is to be reduced and living standards improved (see Table 12).

Scoring of the achievement of expected results against their OVIs revealed that the overall achievement across all 5 results was good (with 7 of 12 OVIs achieved). Five OVIs under expected results 4 and 5 could not be verified as the relevant projects have just started or (in the case of the FAO project) are still in the initial stages of implementation. The poor score assigned to Results 1 and 2 (Roads) owes to the continuous absence of a road maintenance programme for the rehabilitated roads (see Table 11).

Table 11: Expected Results: scoring of level of achievement

Expected Results/AMSP Pillar	Score (against n° of OVIs)				
	N° OVIs	Good	Medium	Poor	Not Verifiable
1. Important roads in the Sugar Belt road network rehabilitated 2. Improved physical and institutional infrastructure contributing to social and economic development in Northern Belize (AMSP 2013) **– AMSP Pillar: Roads**	2		1	1	
3. A competitive and diversified sugar industry that contributes to a sustainable environment and socio-economic development in sugar-producing areas in Belize (Orange Walk and Corozal Districts) (AMSP 2012 and 2013) **– AMSP Pillar: Competitiveness**	5	5			
4. Alternative agricultural and non-agricultural enterprise developed, sources of employment promoted (AMSP 2010) **– AMSP Pillar: Diversification**	3	1			2
5. Diversify sources of employment and strengthen the educational and skills base of the workforce to meet the needs	7	1	3		3

Expected Results/AMSP Pillar	Score (against n° of OVIs)				
	N° OVIs	Good	Medium	Poor	Not Verifiable
of the private sector (AMSP 2012) **– AMSP Pillar: Diversification**					
Total:	**17**	**7**	**4**	**1**	**5**

Source: Chapter 5, Table 7

Achievement of the specific objectives is equally high with 7 good scores across a total of 11 OVIs (Table 12). One OVI related to Specific Objective 2 could not be verified due to the lack of evidence that cane production costs have actually declined (as cane farmers do not keep financial records; see Chapter 7: Sustainability).

Table 12: Specific objectives: scoring of level of achievement

Specific Objectives/AMSP Pillar	Score points (against n° of OVIs)				
	N° OVIs	Good	Medium	Poor	Not Verifiable
1. To improve physical access, communication and transportation through the rehabilitation of the Sugar Belt road network – **AMSP Pillar: Roads**	2	2			
2. To strengthen the competitiveness and economic sustainability of the Belize sugar industry – **AMSP Pillar: Competitiveness**	5	2	2		1
3. To support an enabling environment for rural recovery and economic diversification in sugar- dependent areas of Belize – **AMSP Pillar: Diversification**	2	2			
4. Socio-economic conditions in Northern Belize improved through an increase in sugar production, additional income-generating activities (through economic diversification) and the provision of quality education opportunities – **AMSP Pillar: All**	2	1	1		
Total:	**11**	**7**	**3**		**1**

Source: Chapter 5, Table 9

Achievement of the project's overall objective is also good, with 3 good scores across 4 OVIs (Table 13). Achievement against the fourth OVI ("*increased income for sugar and non-sugar households*") was rated medium and is mainly driven by the interventions of the LICU small-scale enterprise development project.

Table 13: Overall objective: scoring of level of achievement

Overall Objective	Scoring points (against n° of OVIs)				
	N° OVIs	Good	Medium	Poor	Not Verifiable
1. To reduce poverty and improve the standards of living of the rural population in Northern Belize	4	3	1		

Source: Chapter 5, Table 10

The current level of achievement of the overall and specific objectives (bearing in mind that this is not a final evaluation) can mostly be attributed to the interventions of the AMSP programme. This is most obvious under the Roads component (as the rehabilitation of the most important roads in the Sugar Belt network was financed and implemented entirely by the AMSP programme) but also applies to the Diversification component, to which the EU is the only active AMSP programme donor.

The Competitiveness component, in which 3 parties are involved, is different and progress made in this area can also be attributed to interventions by the SCPC to ensure the timelier delivery of better-quality cane to the factory. The factory itself has invested in improving the extraction process which has resulted in better TC/TS ratios. The Sugar Industry Research and Development Institute (SIRDI), whose establishment was financed entirely by the EU under the AMSP programme, has made important contributions to increasing sugarcane productivity through Farmer Field Schools (FFS), support to re-planting programmes and the promotion of integrated strategies for better pest and disease control by cane farmers.

Due to the lack of monitoring data for Roads, the number of cane farmers and rural people who benefit from the improved roads is unknown. It is clear from interviews with a range of stakeholders that traffic has increased on all AMSP roads, particularly those that have been paved. Traffic along the Blue Creek to Orange Walk road is estimated to have increased by 70-100% in the last year.

According to cane farmers the cost of transporting cane to the factory has not fallen, possibly due to increased fuel costs and to much of the haulage being from the field to the road and along unpaved AMSP roads. However, Blue Creek farmers exporting cattle, poultry and rice estimate their transport costs to have decreased by about 25% now that most of the road is paved. Cane farmers and other road users all acknowledge that damage to vehicles has decreased, fewer vehicle repairs are needed, tyres last longer, less fuel is used and journeys take less time. Some people are swapping 4WD vehicles for more economical cars. Bus services are improving on most roads and buses do not break down as often. Bicycles are becoming much more common on paved roads, with many children cycling to school.

A number of projects under the Diversification component (pre-school construction, teacher training and agribusiness development) have just started or have only been in operation for a short time. As such 5 of the 17 OVIs under Diversification could not yet be verified.

6.2 Wider Effect of the Programme

Roads

Access to education, health services, markets and places of work in Northern Belize is now easier and faster due to road improvements. Secondary-school children in particular often have to travel some distance to school. Primary schools in remoter villages are now finding it easier to attract and retain teachers. Easier access to healthcare is much appreciated by people in rural communities. Most villages have a small health centre run by part-time staff, but people must travel to Orange Walk or Corozal for the treatment of more serious health problems.

The health of people living along the recently paved roads is improving. Notably, children are suffering fewer chest infections. Farmers producing fruit, vegetables and eggs say that they are selling more and that less bruising and other damage occurs to produce in transit (often in the back of a pickup). People who own property along the recently paved roads, particularly the Orange Walk to Blue Creek road, have found that their property prices have increased (and in some cases doubled or tripled).

Traders and other businesspeople are moving in and buying buildings and land along these roads. There is word in the Blue Creek area that a road is to be constructed on the Mexican side of the border to join with the AMSP road near Blue Creek.

The wider effect of the pre-school construction and teacher training projects under the Diversification component will be seen only in the long term (10-15 years from now) with the development of a workforce equipped with improved knowledge and skills to meet the needs

of the private sector. In the long term the cane sector is likely to evolve, using economies of scale with larger cane farms and greater mechanisation (e.g. green harvesting), entailing less demand for labour.

SIRDI

In 2015, two international agencies with offices in Belize (the United Nations Development Programme (UNDP)) and the Inter-American Development Bank (IDB), conducted separate assessments of SIRDI's financial and administrative systems and its capacity to receive and manage grant funds. Both agencies found SIRDI's systems satisfactory and the funds were approved.

The Multilateral Investment Fund (MIF) of the IDB approved a grant of USD 1.3 million to SIRDI to finance a 3-year project designed to build and complement efforts under the current EU project. In particular it will enhance extension services and develop the coordination and monitoring (SIMIS) programme, which (once fully implemented), will be a critical tool for a viable and sustainable sugar industry.

SIRDI also collaborated with the Department of the Environment (DoE) of the Ministry of Forests, Fisheries and Sustainable Development and with the Global Environmental Facility of the UNDP in the implementation of a Waste Management project. This Green Harvesting component focused on discouraging the practice of post-harvest burning and on promoting the adoption of plant residues as green fertilizer and to improve the organic matter level of the soil.

6.3 Explanation of Programme Successes and Failures

Roads

It is clear from interviews with a wide range of stakeholders that the Sugar Belt roads are generally in much better condition now than they were in 2010.

With the exception of the Phase 1 Yo Creek to San Antonio road (which is currently being paved), the Phase 1 roads remain unsealed. Some of the other Phase 1 roads with relatively higher volumes of traffic, particularly the Remate, Guinea Grass and BSI M1 roads, should have been paved from the outset to ensure better value for money.

Maintenance of roads has improved over the last few years, but budgets are inadequate and more needs to be done. The establishment of a Road Maintenance Unit (RMU) at the MWT and the development of a Long-Term Maintenance Strategy are major steps forward, but means of financing the proposed Road Maintenance Fund are still to be worked out and this may take considerable time.

Competitiveness

Successes under this component should primarily be attributed to SIRDI and its activities. In particular, interaction between SIRDI, farms and stakeholders has increased since its office and research facilities opened in May 2014. The building serves as a critical infrastructural component of the project in terms of improved service delivery to farmers and stakeholders. The use of the Farmer Field School methodology to transfer new technologies and better cultivation practices to the farmers is perhaps the most successful of SIRDI's activities since genuine appreciation has been expressed by the farming community. Another success is the development of the Department of Agricultural Engineering at SIRDI which has introduced better equipment and methods of land preparation which are much appreciated by farmers. Tools provided by SIRDI are crucial, especially to farmers who have graduated from FFS

and are now requesting appropriate land preparation for their fields. Demonstration of the use of appropriate equipment for land preparation has prompted some service providers to purchase similar equipment in order to provide the same quality service as that of SIRDI.

Another major success is the development of the Sugar Industry Management Information System (SIMIS) as recommended in the 2010 MTE. SIMIS, still incomplete at this time, has already provided valuable information on actual land planted with sugarcane, actual farm ownership, cane varieties and much more. The introduction of identification schemes for farms and farmers (another recommendation of the 2010 MTE) has also been followed up and should enable proper planning and programming of the cane production, harvesting and haulage system. This would however entail a thorough restructuring of the entire sugarcane-growing environment (see the Specific Recommendations and Chapter 11).

The biggest failure of the programme has been the Credit Fund project for cane replanting. This very basic but crucial project, designed to re-establish a sugarcane cropping cycle, underestimated the level of farmer debt with commercial banks, which made many farmers too much of a credit risk to financial institutions. In addition the restricted uptake of cane by the factory in the last two years, which resulted in large quantities of cane standing over, did not encourage farmers to replant or produce more cane.

Another failure of the programme was the capacity building project for the Belize Sugarcane Farmers' Association (BSCFA), only one phase of which was ultimately implemented due to lack of interest on part of the beneficiary.

Lastly the withdrawal of the MNRA (one of the main stakeholders and beneficiaries) from the AMSP programme in 2013 is incomprehensible to the evaluators.

6.4 Alternative Methods of Programme Implementation

Roads

Had the Phase 1 marl roads been sealed immediately after their completion, the overall work required and the cost of the final paved roads would have been reduced.

In view of the inadequate budget for road maintenance, more expensive and resilient road surfaces could have been provided to reduce maintenance requirements. However, since a concrete or hot mix surface costs about BZD 84/m^2 while the double seal used on the AMSP roads costs BZD 16/m^2, fewer kilometres of road could have been improved under AMSP. This would have been hard to justify.

Competitiveness and diversification

There were no alternative means of implementing the competitiveness or diversification components of the AMSP programme.

7 Programme Sustainability

Sustainability concerns whether the benefits of the programme are likely to continue after external funding has been withdrawn. The consultants have assessed the sustainability of the programme in terms of:

1. The extent to which the programme is embedded in local institutional structures (research and extension services, infrastructure and financial institutions) as well as the institutional capacity of these institutions;
2. Whether the business governance model introduced by the programme is likely to foster sustainability of programme efforts;
3. Financial sustainability (long-term viability) of the sugarcane-producing environment (including production, research and development, transport etc.);
4. The degree to which beneficiaries are able to adapt and maintain the technologies introduced and the infrastructure provided; and
5. Cross-cutting issues such as gender equity and environmental impact.

7.1 Programme´s Embedding in Local Institutional Structures

The staff of the Ministry of Works and Transport Project Execution Unit (MWT-PEU) are on contract and are unlikely to remain with the MWT once the AMSP programme comes to an end. The AMSP roads are included in the Annual Work Plans of the RMU and this should continue, but funding of the annual road maintenance works may well be inadequate.

The competitiveness and diversification programmes were found to be reasonably well embedded in the local institutional structures, with the exception of the MNRA which left the programme in 2013.

7.2 Business Governance Model Introduced

The business governance model is the system of rules, practices and processes by which the AMSP is directed and controlled. The nucleus of this system is the NAO Office at the Ministry of Finance and Economic Development (MFED), which is responsible for the implementation of AMSP-funded activities.

This setup is not ideal and a better model would have been to use a (more specialised) National Sugar Board. In the absence of such a board, Belize delegated responsibility for the implementation, supervision and monitoring of AMSP to the Ministry of Natural Resources and Agriculture (MNRA). For want of capacity and capability at the MNRA at the time, a Project Implementation Unit (PIU) was established including Project Execution Units (PEUs) at the level of the relevant Ministries (the MNRA and the Ministry of Works and Transport (MWT)). The intent was for the PIU to provide technical advice and assistance to the PEUs for a fixed period of time (two years) in order for the PEUs to become acquainted with the rules, practices and procedures involved in EU programme implementation. This type of capacity building would also foster the sustainability of programme efforts in the medium and long term.

This did however not work out due to the weak performance of the PIU and PEUs (including a lack of qualified staff, high staff turnover, and limited budget to operationalise the PEUs). The complete withdrawal of the MNRA from the AMSP by mid-2013 made matters worse.

Another obstacle to the correct functioning of the model in place is the aid modality used by the EU to implement the AMSP in Belize. The use of annual Financing Agreements (FAs)

dramatically complicated project implementation and management as each FA had an operational implementation period of 4 years leading to frequent overlap.

Given the lack of a National Sugar Board, it seemed logical to use the MNRA as the key institution to direct and manage the Programme and to use the NAO office at the MFED for supervision and as the main contact with the EU Delegation to Jamaica. Hence when this model failed the NAO Office assumed direction of the programme and manages it to date. Sugar industry stakeholders, e.g. the Sugar Industry Control Board (SICB), the Sugarcane Production Committee (SCPC), Belize Sugar Industries Limited/American Sugar Refineries (BSIL/ASR) and the Sugar Industry Research and Development Institute (SIRDI), are limited to being members of the Programme Steering Committee (PSC) established under the AMSP programme. Their power to control and manage the programme is limited at best, since they have little or no knowledge of EU rules, practices or procedures.

Sugarcane in Belize is mainly grown by small-scale independent farmers, who manage their own operations and have their own agricultural machinery. These small producers are very vulnerable to cane price shocks and relatively small reductions can have catastrophic effects on their income (as shown by the cost/benefit analyses in Chapter 7.3). The efforts made by SIRDI and other institutions to inform farmers of how to increase their production per unit of land and reduce production costs will be wasted if the farmers themselves do not re-group into larger production units, block farms or synchronised farming groups. The overall re-structuring of the sugarcane production environment is a requisite if the Belize sugar industry wishes to be internationally competitive and sustainable in the future. As yet, no new farming business model has been introduced by the AMSP.

The on-going development of a Sugar Development Plan (SDP) for the entire Belize sugar industry is an opportunity to introduce far-reaching changes to the existing structure of the industry, particularly as regards its regulation and the production, harvesting and delivery of cane. It must however be wholeheartedly supported by all stakeholders in the sugar industry in order to be successful.

7.3 Financial Sustainability

Since they produce over 90% of sugarcane in Belize, the financial sustainability of cane farmers determines that of the entire sugar industry. No financial data are available on actual production costs at farm level and no relevant baseline survey was ever carried out. Neither the Belize National Adaptation Strategy (NAS) nor the EC Multi-Annual Assistance Strategy (MAAS) 2006-2013 include any figures on farm income.

Based on actual cost data collected in the field, SIRDI prepared a cost analysis at farm level as part of the cane replanting scheme. This information was shared with the consultants who used it to prepare a simple farm cost/benefit analysis based on the SIRDI model of cane production costs. Gross benefits are calculated on the basis of actual cane prices received by the farmers (see Table 13).

Table 13: Cost/benefit analysis of cane producers per acre (plant cane and ratoon) based on the SIRDI replanting scheme (values in BZD)

	PER ACRE		PER MT	
	(35 MT/acre)	(25 MT/acre)		
Cost description	**Plant cane**	**Ratoon**	**Plant cane**	**Ratoon**
- Establishment costs (planting material, maintenance) per acre	1.499	0	43	
- Crop maintenance costs (ratoon) per acre		510		20
Total establishment and maintenance cost: (A)	**1.499**	**510**	**43**	**20**
- Burning and cutting (BZ$ 8/MT)	289	206	8	8
- Loading (BZ$ 6/ MT)	210	150	6	6
- Transport (BZ$ 15/ MT)	525	375	15	15
- Cess levy (1.50/ MT)	52,50	37,50	1,5	1,5
Total harvesting and transport cost (B)	**1.077**	**769**	**31**	**31**
Grand total costs: (A + B)	**2.576**	**1.279**	**74**	**51**
Cane yield per acre	35	25		
Cane price per MT (2015: 75,89 /MT)	75,89	75,89		
Total cane sales per acre (C)	**2.656**	**1.897**	**76**	**76**
Net-benefit (A+B-C)	**81**	**619**	**2**	**25**
Source: Adapted from data provided by SIRDI (2015)				

Note that the crop maintenance costs for plant cane are already included under establishment costs.

Table 13 shows that with replanting and the use of best practices as introduced by SIRDI, cane farmers could achieve a net benefit of BZD 619 per acre in the years after replanting (ratoon) based on current yields of 25 MT/acre at the 2015 cane price of BZD 76/MT.

The total cost of harvesting and transport is notably high at BZD 31/MT cane (61% of the total production cost of BZD 51/MT). This is largely because small cane farmers tend to be disinclined to make use of collective means of harvesting, loading or transport or to operate as a group. Farmers in Belize often use their own equipment for the loading and transport of cane, making such equipment expensive overall since it is massively under-utilised (with each set of equipment used just once a year by a single farm). These costs must be reduced if net benefits are to increase and if financial sustainability is to be enhanced at cane farm level.

Chapter 5.5 refers to the "hard" risk of destabilisation of global market sugar prices. There are two scenarios for projected world market prices by 2017: i) Lower world price scenario and ii) Higher world price scenario, as presented by the International Sugar Organisation (ISO). The lower price scenario predicts a decline in the price of raw sugar (as produced in Belize) to around USD 375/MT of raw sugar by 2017. The higher price scenario predicts an increase to around USD 460/MT of sugar by 2017 (Free on Board prices). The EU market price of raw sugar will follow the same decline or incline but should remain slightly above the world market price.

Another aspect to consider is the USD/EUR exchange rate. A weak Euro (as is currently the case) should benefit raw sugar producers exporting to the EU market[55]. In short, sugar trade experts are unable to predict what the market will do by 2017. Variables include the actions of European sugar producers, a potential increase in world consumption of sugar substitutes

[55] Source: The EU Sugar Market Post 2017, International Sugar Organisation (ISO), April 2014.

and the actions of Brazil (as market leader) and of India and China (as emerging economic superpowers).

The overall production cost per MT of cane must be reduced if cane farmers in Belize are to cope with a possible downward trend in global market prices. This could be achieved by increasing yields per acre and by reducing the maintenance, harvesting and transport costs per MT of cane, thus increasing the productivity of cane farmers.

Table 14 presents an optimum scenario of enhanced productivity with an increase in yield from 25 to 40 MT of cane per acre, and by an overall reduction in total costs of 30%. This model uses a new (lower) cane price of BZD 47/MT since the sugar factory announced on 9 November 2015 (anticipating lower sugar prices) that 2015/2016 cane prices would fall to BZD 47/MT. Naturally this announcement came as a great shock to the cane farmers and it remains to be seen if this price will eventually be accepted.

Table 14: Cost/benefit analysis of cane producers per acre (plant cane and ratoon) based on optimum scenario of enhanced productivity and lower cane price (values in BZD)

	PER ACRE		PER MT	
	(56 MT/acre)	(40 MT/acre)		
Cost description	**Plant cane**	**Ratoon**	**Plant cane**	**Ratoon**
- Establishment costs (planting material, maintenance) 30% reduction	1.049	0	19	
- Crop maintenance costs (ratoon) 30% reduction		357		9
Total establishment and maintenance cost: (A)	**1.049**	**357**	**19**	**9**
- Burning and cutting (BZ$ 6/MT) 30% reduction	336	240	6	6
- Loading (BZ$ 4/MT) 30% reduction	224	160	4	4
- Transport (BZ$ 10/ MT) 30% reduction	560	400	10	10
- Cess levy (BZ$ 1.50/ MT) no reduction	84	60	1,5	1,5
Total harvesting and transport cost (B)	**1.204**	**860**	**22**	**22**
Grand total costs: (A + B)	**2.253**	**1.217**	**40**	**30**
Cane yield per acre	56	40		
Cane price per MT (2016: BZ$ 47/MT)	47	47		
Total cane sales per acre (C)	**2.632**	**1.880**	**47**	**47**
Net-benefit (A+B-C)	**379**	**663**	**7**	**17**
Source: Adapted from data provided by SIRDI (2015)				

Table 14 shows that net benefits can still be kept above BZD 600 per acre at a cane price of BZD 47/MT but only with a sector-wide reduction of 30% in the cost of production, harvesting and transport of cane and a 40% increase in yields from 25 MT to a maximum of 40 MT per acre (the maximum feasible for rain-fed cane). It however also shows that the maximum total net benefit that could possibly be attained by a cane farmer of 10 acres would be BZD 6,630 (BZD 663 x 10 acres) or USD 3,315 (USD 9 per day) to support a family of e.g. 5 persons. This figure would be at the poverty line of USD 1.90/day/person as considered by the World Bank (source: World Bank Global Monitoring Report 2015/2016). This means that even with the above projected reduction in cane production costs, with the current cane price it would be difficult if not impossible for farmers with limited acreage to make a decent living from cane farming as their sole source of income[56]. The potential to reduce production, harvesting

[56] It is common knowledge that there are small cane farmers with other sources of income besides their cane farm in terms of temporary or permanent employment within or outside the sugar industry. There is however no evidence-based information on the number of small farmers with other sources of income or on how much of their total yearly (net) income is accounted for by these alternative sources.

and haulage costs by 30% is based on results from neighbouring countries as reported by the Landell Mills Company's country profiles[57].

Table 15: Field production costs (cane production, harvesting and haulage) expressed in USD/ MT of raw sugar/ex-mill

Belize	**425**
Guatemala	**218**
Honduras	**228**
Nicaragua	**209**
Brazil	**198**

These projected yields would mean that at a factory capacity of 1.3 million tonnes of cane, the area planted should be around 32,500 acres (about 50% of the present area), while with an improved mill capacity of 1.8 or 2.0 million tonnes the area required would be 50,000 acres (about 67% of the present area). All remaining land could be used for diversification.

To achieve these optimum yields and the desired reduction in production costs, it is crucial that the present sugarcane production, harvesting and haulage business model be radically restructured. If the Belize sugar industry is to become competitive in the international market the cane production environment should be reorganised on a commercially efficient footing, with limited or no interference by the Government. This is discussed further in the specific recommendations and in Chapter 11.

Roads

Sustainability of the roads developed under the AMSP is linked directly to their maintenance. Timely and adequate maintenance is one of the most important tasks of road management. Non-maintenance leads to a rapid decline in asset value and it costs more to rehabilitate the road following non-maintenance than to maintain the road on a regular basis.

The Long-Term Road Maintenance Strategy developed by the recently formed RMU at the MWT is a good first step toward improving the systematic maintenance of the road network in Belize. The establishment of a Road Maintenance Fund is awaiting GoB approval, but the financing of the fund has to be determined and agreed.

According to the RMU, an annual amount of about BZD 33.19 million is needed to keep the country's roads in usable condition. The required annual budgetary allocation comprises:

- BZD 4.19 million for 492 miles of paved road (BZD 8,516/mile or EUR 2,512/km);
- BZD 24.4 million for 2,097 miles of gravel road (BZD 11,636/mile or EUR 3,433/km); and
- BZD 4.6 million for 217 miles of earth road (BZD 21,198/mile or EUR 6,254/km).

If maintenance is outsourced to contractors, costs may initially increase by an additional 21% to allow for taxes and profit margins for private contractors. In addition, AMSP paved roads will need resealing about every 7-10 years depending on traffic levels to keep them in good condition, at a cost of about EUR 30,000 (?) per km. Gravel roads need resurfacing every 3-4 years at a cost of about EUR 10,000 (?) per km.

[57] Landell Mills Co. Country profiles 2012

In the budget for 2013-2014 the GoB allocated BZD 386,238 to the maintenance of the 91 km of AMSP roads constructed under Phase 1, but the total amount spent was BZD 671,115 (about BZD 7,400 per km). For 2014-2015 the road maintenance budget was BZD 669,577. At present maintenance is mainly done through District Technical Service Teams but these are short of personnel, funds, vehicles and equipment. The busier roads are deteriorating as a result. It was observed during the evaluation mission that even where the roads had been recently upgraded, vegetation along the verges had not been cut back and the drains had not been cleared.

The pipeline Road Maintenance Fund proposes the development of a micro-enterprise fund to be used to contract community groups for the routine maintenance and minor repair of local roads. This would have the advantage of providing income to people in rural areas and has proven to lead to good work in other countries where it is practised since the community has a vested interest in keeping the road in good condition.

Cane farmers have expressed willingness to pay a small cess (tax) on cane delivered to the factory (e.g. BZD 1 per MT) to help establish a Sugar Road Maintenance Fund to keep the sugar feeder roads in good condition. The fund would be managed by an agency such as the Sugar Board. As with the micro-enterprise fund described in the previous paragraph, routine maintenance and minor repairs could be contracted to community groups (such as village groups or cane farmer groups). These groups would need basic training, assistance with tools and equipment, and overall supervision by the MWT Road Maintenance Unit. TA to design the sugar feeder road maintenance programme would also be needed.

SIRDI

SIRDI's budget for 2014/2015 is around BZD 790,000 and is intended to cover personnel emoluments (44%), materials and supplies, operational costs, utilities, maintenance costs (of vehicles and buildings), training and technical support and publicity[58]. The contribution of the GoB to the SIRDI budget was BZD 250,000[59]. The remaining part (BZD 540,000) is financed by the Sugar Development Fund (SDF), which accounts for 65% of a cess on the total sugar exported of either BZD 11 per MT or 2% (whichever is greater). As such with an export volume of 127,350 MT in 2015, the SDF would receive BZD 11 x 127,350 = BZD 1.4 million x 65% = BZD 910,550 per year. SIRDI would use about 60% of the SDF to meet its budget requirements.

SIRDI has to compete for funds with both the Sugar Industry Control Board (SICB) and the Sugarcane Production Committee (SCPC). The consultants understand that so far there have been no major disputes among the 3 parties regarding the distribution of funds from the SDF. Contributions from the SDF and GoB more or less secure the financial sustainability of SIRDI since it is not dependent on external finance (donors). However, given the anticipated drop in sugar prices and hence in income from sugar exports, SIRDI should be careful not to take on too many activities as part of its core budget (or if it does, it must seek (temporary) external funding for extra financing).

7.4 Technological Issues

The farmers consulted during the field visits, all of whom had participated in FFS, expressed their satisfaction with this method of transferring new technologies and better agricultural practices. All indicated that they were now applying these new technologies and practices to

[58] Source: SIRDI administration and financial office, 27 October 2015
[59] To cover the costs of Farmer Field Schools, transport for extension services, the Clean Seed Programme and equipment

their fields and had observed a marked improvement in their cane. The evaluators visited several fields and can indeed confirm this finding.

In addition the new and improved technologies demonstrated for land preparation and the equipment developed by the Department for Agricultural Engineering at SIRDI have been accepted by the farmers. Some service providers have purchased the same (or similar) equipment using their own resources in order to be in a position to provide the improved land preparation services that are now being requested by farmers.

7.5 Cross-Cutting Issues

A Strategic Environmental Assessment (SEA) was carried out in March 2009 with the specific objective of confirming and finalising the findings and recommendations of the NAS as regards environmental issues. Two main recommendations that stand out from the study relate to Result 4: (i) to develop a national water resources management plan and endorse the Government's National Water Policy; and (ii) to develop a national land use management policy and plan. To date, Belize still lacks both of these plans. This is also one of the reasons why the planned programme for the improved drainage of sugarcane fields was cancelled (FA 2013). Destruction of flora and fauna could not be assessed since there has been no extension of cane fields.

Gender equality was found to be relatively good within the AMSP programme. The support project developed by LICU for small-scale enterprise development (LICU) has 50% female beneficiaries. However, the Credit Fund for cane replanting provides just 25% of its loans to female cane farmers and women represent only 15% of participants in FFS.

Since it follows the layout of existing roads, the development of roads under AMSP raises no serious environmental concerns. Cross-drainage has been considered in the design and the roads do not encroach on forests or other environmentally sensitive areas.

8 Lessons Learnt

5 of the 7 main lessons learnt from the 2010 MTE still stand according to the MTE 2015:

1. **Focus on increased production should have been strong from the start**. The financial wellbeing of the sugar factory is crucial to the survival of the Belize sugar industry and hence the livelihoods of much of the population in the Sugar Belt. Much more attention should have been paid from the outset to ensuring the quick start-up of research, development and extension as vital elements of increased sugarcane production, industrial development and poverty reduction;

   Validation MTE 2015: The noted upward trend in cane production in recent years is largely due to the research and development activities conducted by SIRDI and to a (potential) increase in farm investments as a result of increasing cane prices. This owes not to an increase in cane area but rather to better farm practices.

2. **The setup of a sugarcane production database for registration of all sugarcane farmers should have been initiated from day one.** Data should have included field size, soil type, accessibility, the cane variety planted and the status of the crop cycle;

   Validation: Significant progress has been made in this area through the introduction of SIMIS (although SIMIS is not complete due to budget limitations and would need additional funding to become fully operational).

3. **Cane production areas should have been mapped from the start**. Such mapping is crucial to the proper planning of future agricultural activities (production, harvesting and timely delivery of sugarcane to the factory). The absence of data management and mapping makes an industry that is actually relatively simple appear complex and chaotic due to poor communication;

   Validation: Mapping has started under SIMIS but is incomplete (see point 2).

4. **The GoB should have assigned much higher priority to the establishment of its own PEUs at the outset of the AMSP**. The GoB relied too heavily on the expertise and capabilities of the Project Implementation Unit to implement the programme. This was unwise and serious efforts should have been made to establish PEUs at the start (even if this meant overruling the Ministry of Finance in the hiring of local staff);

   Validation: The PEUs have remained weak due to the lack of qualified staff, high staff turnover and a lack of budget to operationalise them. The complete withdrawal of the MNRA from the AMSP in mid-2013 restricted the local capacity needed to direct and manage the AMSP programme and ensure the sustainability of programme efforts, both now and in future.

5. **Feeder roads should have been paved from the start to ensure better value for money**, a case in point being the 91 km of road upgraded during Phase 1. Better value for money would have been obtained under this phase had fewer kilometres of road been better upgraded (i.e. paved). The marl roads that were put in place already show signs of serious deterioration and will now need to be rehabilitated *again* before they are paved;

   Validation: The decision made after Phase 1 to pave future AMSP feeder roads was valid, even though it meant that fewer kilometres could be completed. It would have been preferable to pave the busier roads from the very start to ensure better value for money. This applies to about half of the 91 km completed in Phase 1. Other than a 6-km Phase 1 road where paving is underway, these busier roads are now in mostly poor condition and will require rehabilitation all over again before they can be paved.

9 AMS success stories: a compilation

Although not part of the mission's ToR, in response to a comment made by the EU Technical Support Office in Belize on the draft report, this chapter presents some Accompanying Measures for Sugar Protocol (AMSP) success stories in order to demonstrate how some of the challenges faced by the AMSP programme in Belize have been successfully addressed by other AMSP countries. The information provided could be of great use to the current and future planning of AMSP action in Belize, while underpinning a number of recommendations made in this report (see Chapter 10) with regard to roads (infrastructure and maintenance) and competitiveness.

These success stories have been compiled from various reports prepared by the consultants during previous AMSP evaluation missions to Africa (Kenya, Mauritius, Swaziland, Tanzania and Zambia) from 2011 to 2014. The stories describe how the need to reduce production and transport costs while improving the efficiency of cane production has been successfully addressed by other AMSP countries, as well as how some of them have been responding to the current changes in the EU sugar market. The latter cannot be classified as an AMSP success story as it is an on-going process (with a review of "ACP sugar suppliers to the EU market" in the pipeline), although the information should still be useful to the development of the Belize sugar industry, now and in the future.

Challenge 1: Construction and maintenance of a sugar road network to reduce transport costs

The Tanzania case

Sugarcane out-growers are of great importance to the sugar industry in Tanzania, where it is estimated that there are now over 14,500 sugarcane out-growers who supply around 50% of the cane received by the country's sugar mills. Lowering transport costs is an important requirement of sugar production management if the overall cost of cane production by out-growers is to be reduced. With EU support and as part of its national strategy for the sugar industry, the Government of Tanzania has started the process of improving the access road network in the major sugarcane production areas (Kilombero, Kagera and Mtibwa Districts).

The rehabilitation and construction of access roads in the cane production areas has created a situation where out-growers fall within designated groups or zones in which transport costs are lower, in some cases with savings of at least 30%. Transport rates for each zone within the production area are negotiated each year between the out-growers' associations, the transporters and the sugar mills. Based on the distance from the cane field to the sugar mills four different transport zones per area are established, each with different haulage rates per metric tonne of cane. The reduction in distance travelled due to the improvements in the access road network means that out-growers benefit by falling in a zone where lower rates are applied. As transport costs typically represent about 20% of the total production cost per MT of cane, substantial savings are being achieved (as confirmed by the out-growers).

Maintenance of the access roads is being secured with a common road maintenance fund which is financed from an infrastructure levy on the cane sold by out-growers. This fund is managed by an Infrastructure Committee which includes representatives of the out-growers' associations. The fund is sufficiently large for the out-growers to maintain some 350 km of access road per year within the estate, using two new road graders which were purchased by the out-growers' associations in 2011 (*Source: End-of-Term Evaluation of the Annual Action Programme – AMSP Tanzania, June 2013, Ooijen & Sierevogel*).

Challenge 2: The reduction of production costs through greater economies of scale, synchronised cultivation and harvesting (block farming and synchronised farming)

The Tanzania case

The majority of cane is produced by small growers with farm plots of 0.5 to 2 hectares, all of which are rainfed. Because of the small plot sizes, farmers face high production costs since service providers charge high rates (as displacement between plots and the manoeuvring of equipment within the plots reduces the efficiency of their operations). In addition many small farmers in sugarcane-producing areas are using outdated cane husbandry methods which result in very poor yields. With EU support via the AMSP programme, the concept of block farming was introduced to Kilombero District to reduce production costs through greater economies of scale, synchronised cultivation and harvesting, and the use of improved cane husbandry methods by out-growers to increase sugarcane yields.

The necessary re-arrangement of land was possible since i) maps of the area were available and ii) the farmers knew the exact sizes of their plots. Extension services and Farmer Field School (FFS) training encouraged cane out-growers to use improved farming practices. The result was that the average yields of the block farms increased by 50 to 100% (to between 80 and 100 tonnes per hectare) while production and harvesting costs fell by 20%. As block farming makes lending less risky for financial institutions, commercial banks are beginning to see the out-growers as interesting clients and newly created block farm groups have been offered a group loan to finance their activities and inputs.

"Before we started block farming we had an average yield of 25 tonnes per ha and a low income from sugarcane because our plots were so small. With 37 neighbours we combined all our land in 2010 and now have a block farm of 22 ha. Because we now do everything together and have all received training in new farming methods, we managed to increase the yield to over 80 tonnes per ha and reduce our costs, as a result of which our income went up by at least 50%" (Excerpt from an interview with block farmers in Kitete, Kilombero District). (*Source: End-of-Term Evaluation of the Annual Action Programme – AMSP Tanzania, June 2013, Ooijen & Sierevogel.*)

The Kenya case

Sugarcane is one of the most important crops in Kenya and is mainly produced by small out-growers. Some 250,000 small-scale sugarcane farmers with cane farms of 0.2 to 5 hectares provide 90% of all cane crushed. To reduce production costs, groups of farmers in several of the sugarcane-producing areas (including Mumias and South Nyanza Sugar (SONYSugar)) have started to coordinate their activities. They prepare their lands at the same time, plant the same variety (as advised by the miller) at the same time and harvest and deliver their cane (once matured) at the same time. In doing so they have started what is known as synchronised farming. Groups of 20 to 30 smallholders with areas under cane of 0.3 to 2 ha are now cultivating areas of 40 to 50 ha as a group. By synchronising their activities, these farmers have reduced the cost of service provision, land preparation, inputs, harvesting and transport by up to 30% due to the economies of scale achieved.

By adopting best practices learnt at farmer training sessions and planting higher-yielding varieties created and introduced by the Kenya Sugar Research Foundation (KESREF), the farmers have also managed to increase their sugarcane yields to over 80 tonnes per hectare (*Source: Evaluation of EU support to the National Adaptation Strategy in Kenya, November 2013, Ooijen & Sierevogel*).

The Swaziland case

The sugar industry is of significant strategic importance to Swaziland. It employs over 35% of the agricultural workforce and contributes approximately 11% to the GDP and about 10% of export earnings. Annual sugar production exceeds 600,000 tonnes per year. Under the AMSP programme, the EU supported the establishment of a total of 1,800 ha of block farms under irrigation whereby 24 farmers' associations were created, benefitting some 1,000 small cane producers. With the creation of these block farms (at an average of 75 ha per association), the net incomes of the final beneficiaries have increased, leading to substantial poverty reduction in the target area. Because of the steady influx of "sugar money", the block farms are now considered engines of growth for i) socio-economic development (schools, health centres, regional commerce); ii) the creation of employment; and iii) opportunities for additional income for the farmers' associations by way of diversification (into both farm and non-farm activities). The associations have steadily built up a credit history and stronger relations with commercial banks and development agencies, which should facilitate easier access to loans for sugar and non-sugar business activities (*Source: Mid Term Evaluation of the Support to Smallholder Sugarcane Growers Phase 1 – AMSP Swaziland, December 2011, Sierevogel & Ooijen*).

The Zambia case

The sugar industry plays an important role in the Zambian economy as a source of income, employment and foreign exchange earnings (mostly from exports to regional markets (30%) and the EU market (30%) in 2010-2011[60]). The sugar sector contributes 3-4% of Zambia's GDP and about 6% of total export earnings. As one of the five Sugar Protocol countries of south-eastern Africa, Zambia is a low-cost producer of sugar by international standards and is looking to increase its production and exports[61].

Mazabuka region is the largest producer of sugar in Zambia (>95% of total production) with over 20% of the district's population directly dependent on the sugar industry (including the company Zambia Sugar Plc and both large and small out-growers). Mazabuka region is the only region in which small out-growers' schemes have been established under the AMSP programme. 434 hectares of irrigated land were developed and planted with cane and are expected to produce around 48,000 MT of sugarcane annually (to be delivered to the factory owned by Zambia Sugar Plc). In 2011, 186 hectares (43% of the total project area) were harvested, resulting in the delivery of 21,600 tonnes of cane to the factory. This translates into an average yield of 116 tonnes of cane per hectare. Assuming a slightly lower yield of 115 tonnes per hectare, the total project area of 434 hectares would yield almost 50,000 tonnes of cane to be delivered to Zambia Sugar in the 2012/2013 harvesting season.

From the 21,600 tonnes of cane harvested, the out-growers received a first payment of EUR 2,300 each from the cane sales. A second payment of EUR 600 emerged once the final price was established by Zambia Sugar. With the project in full operation, the out-growers received net payments of USD 2,300 per hectare following all retention payments. As such, with an average of 5 ha under cane, each out-grower may receive around EUR 9,000 per year. This is a tremendous increase compared to what the beneficiaries previously received as subsistence farmers (USD 600 or EUR 480 per year on average). The specific objective of having established an economically viable, equitable and sustainable out-grower scheme has been clearly achieved (*Source: Final Evaluation of Accompanying Measures for Sugar Protocol (AMSP) 2007 for Zambia, September 2012, Ooijen & Sikazwe*).

[60] Communication from Zambia Sugar Ltd, the main exporter of sugar from Zambia
[61] The other low-cost sugar-producing countries are Malawi, Mozambique, Swaziland and Zimbabwe

Challenge 3: A fair and transparent cane payment system

The Kenya case

The efficiency of cane production in Kenya is hampered by a number of weaknesses in the sugar sector, *including* the small plot sizes of the out-growers (which makes the mechanising of operations difficult), low cane yields as a result of poor cane varieties with low sucrose and high fibre content, poor cane husbandry practices, weak out-growers' organisations and a payment system for cane that is based on weight only.

The introduction of a cane payment system based on sucrose content rather than pure weight is expected to encourage the farmers to use better-performing varieties with higher sucrose and lower fibre content. The delivery of better-quality cane will at the same time reduce the processing costs of the cane in the factories and increase sugar output. To move to this sucrose-based cane payment system, farmers' cane has to be analysed on the basis of its sucrose content. Due to small field sizes in Kenya, daily cane deliveries can consist of cane from numerous different farmers. For a fair and comprehensive cane payment system each of these deliveries has to be sampled and analysed individually.

To this effect a test Cane Testing Unit (CTU) financed by the AMSP was installed at the South Nyanza Sugar Corporation (SONYSugar) in 2013 and consisted of cane sampling equipment (a core sampler), cane analysis equipment (including a shredder and near infra-red spectrometer) and electronic data collection equipment for subsequent computerisation into the cane payment system. Simultaneously the cane load identification and weighbridges were linked electronically to the cane payment system.

To ensure farmers and millers of the fairness and accuracy of the cane sampling and testing, the creation of a fully independent Cane Testing Service accepted by both farmers and millers was created via KESREF to incorporate the new CTU. As a result of this coherent combination of cane weighing, testing and payment, the farmers are now receiving their first payment (70% of the sucrose value) within 14 days of cane delivery, when previously this could take up to 3 months.

This test proved so satisfactory to the sugar industry, that in 2014 the Kenya Sugar Board made it compulsory for all sugar factories to install CTUs, a process which is now underway (*Source: Evaluation of EU support to the National Adaptation Strategy in Kenya, December 2013, Ooijen & Sierevogel*; *Support for the procurement and installation of equipment for a Cane Testing Unit at SONYSugar in Kenya, November 2011 to June 2014, Sierevogel).*

The Mauritius case

In Mauritius, cane delivered to the sugar mills by farmers is traditionally sampled (using core samplers) and subsequently analysed using the traditional wet-laboratory method in the factory. In 2011 the Mauritius Sugar Industry Control and Arbitration Committee decided to test two different Automated Sample Analysis Systems (ASAS) with partial funding by the AMSP and using near-infrared technology. One of these systems was the Infracana II from the Australian manufacturer Jeffco, which is entirely automated and specifically designed to analyse cane, sugar, bagasse, cane biomass and molasses (subject to proper calibration).

The test methodology adopted for this study was mainly based on continuous observation and assessment of the two systems by technical staff and other stakeholders in the industry. The evaluation team closely observed the performance of the systems while working with them throughout the season and submitted their views individually. Site visits were organised for representatives of the Control and Arbitration Committee, the Ministry of Agriculture, the millers' and planters' associations and staff of the MCIA (the Mauritius Cane Industry Authority: an amalgamation of several Mauritian sugar industry organisations, the

Cane Arbitration Department and the Mauritius Sugar Industry Research Institute (MSIRI). The views of the Farmer Unions were also obtained. A few representatives of the associations were even posted at Mon Desert Alma (one of the CTUs) to allow them to see the strengths and weaknesses of the two systems for themselves and come up with proposals for the benefit of their members.

The conclusion of the test was that the Jeffco Infracana II fully satisfies the requirements of the Control and Arbitration Committee, staff of the Cane Arbitration Department (responsible for managing the cane payment system, weighbridges, core sampling, ASAS and payment to farmers) and the millers' and farmers' associations. In addition to its good technical performance, the analyser has proven to be robust and user-friendly. It has the advantage of scanning the whole sample contrary to only one kilogramme in the conventional method.

As a result of the tests the Control and Arbitration Committee advised the Sugar Industry Board to make the Cane Testing Unit (comprising a core sampler, the Infracana II and the electronic data collection equipment for subsequent computerisation into the cane payment system) compulsory for all factories from 2013 onwards. All factories have since installed the CTUs and are operating them under the control of the Control and Arbitration Committee (*Source: Summary of the test report of two Automated (Cane) Sample Analysis Systems in the Mauritius Sugar Industry, 2012, Control and Arbitration Committee of the Mauritius Sugar Industry*).

Challenge 4: Current and Predicted Market Developments for ACP Sugar Suppliers to the EU Market

The reform of the 2006 EU Sugar Regime has resulted in several major consequences for suppliers from ACP/Least Developed Countries, who previously benefited from preferential access arrangements. The ending of the Sugar Protocol by the EU in accordance with a ruling by the World Trade Organisation (WTO) – which removed the guarantee of purchase – resulted in a reduction of EU sugar market prices by 36% and a cut in the EU domestic quota for sugar production. By October 2017, all EU sugar imports from Sugar Protocol countries are expected to be quota-free and duty-free without any price support.

In June 2014, the ACP Ministerial Meeting in Nairobi determined the need for a review of the economic and social impacts of the predicted EU sugar market developments on sugar-exporting ACP countries. In December 2015 the Terms of Reference for a *Study on current and forecast market developments for ACP sugar suppliers to the EU market* were published under an EU Framework Contract (Lot 1 Rural Development) with the purpose of acquiring specific data based on which to assess the future of ACP sugar suppliers to the EU market in terms of i) the evolution of the market beyond the EU sugar regime reforms, ii) the benefits of the AMSP support mechanism and iii) the development of alternative markets for ACP sugar. More specifically, the study will describe the likely impact (on prices and volumes shipped) of these EU regulatory changes in ACP sugar-exporting countries from 2006 to 2024 using macro-economic modelling, examine the transition and support mechanisms that have been put in place, and identify the constraints faced or likely to be faced by ACP sugar suppliers.

The study is to start in January 2016 (with the presentation of the draft report by June 2016) and aims to provide policymakers with a comprehensive and structured economic analysis to enable them to make decisions on strategic options in agricultural and sugar policy (*Source: Framework contract beneficiaries: Terms of Reference for a study on current and forecast market development for ACP sugar suppliers to the EU market, Lot 1 Rural Development, Request n^{o} 2015/370301/1*).

The Zambia case

Zambia Sugar Plc, the only official sugar exporter in Zambia (with a milling capacity of 450,000 tonnes and the largest sugar mill in the country) is gradually reducing its sugar exports to the EU and increasing its regional exports to neighbouring countries such as the Democratic Republic of the Congo (DRC) and Angola. Due to a combination of the country's landlocked position, the high cost of land and overseas transport and the drop in the EU sugar market price, it has become less profitable for the Zambian industry to export sugar to the EU. Similar developments have been observed with other sugar industries such as those of Malawi and Swaziland which are steadily increasing their supply of sugar to expanding and more lucrative regional markets (*Source: Final Evaluation of Accompanying Measures for Sugar Protocol (AMSP) 2007 for Zambia, September 2012, Ooijen & Sikazwe).*

10 Conclusions and Recommendations

10.1 Overall Conclusions

1. Programme design

The design of the AMSP programme addresses the issues raised in the National Adaptation Strategy (NAS) and the EC Multi-Annual Assistance Strategy 2006-2013 (MAAS) and is thus considered appropriate. The design clearly responds to the need of the final beneficiaries (sugarcane farmers and poor rural households), to increase their incomes through both cane growing and alternative agricultural (non-cane) and non-agricultural enterprise development. The AMSP is thus consistent with and supportive of the sugar sector development policy and the framework within which it is placed. The design suffered however from limitations in local capacity for absorption and implementation and from the complex aid modality used by the EU to implement the AMSP in Belize, which entailed frequent changes to the implementation period and programme budget.

2. Programme management and implementation

The governance model set up to manage and implement the AMSP programme in Belize is not ideal, but since Belize lacks a more specialised entity such as a National Sugar Board, the consultants agree that the Ministry of Natural Resources and Agriculture (MNRA) would be the best-placed institution to manage and implement the programme with support from a Project Implementation Unit (PIU) which in turn assists Project Execution Units (PEUs) at the MNRA and Ministry of Works and Transport (MWT). This model ultimately failed due to weak performance by the PIU and PEUs, the complex aid modality used by the EU and the full withdrawal of the MNRA from the programme in mid-2013. Following this, the National Authorising Office (NAO) within the Ministry of Finance and Economic Development (MFED) took responsibility for managing the programme, which managed to stay on track, albeit with significant delays to implementation. 25% (EUR 18 million) of total AMSP programme funds remain uncommitted, despite effective closure in April 2017.

3. Programme performance

This refers to the efficiency and effectiveness of programme implementation, which can be considered in terms of planned versus actual expenditures. Efficiency is low, with an overall budget utilisation rate of 75% (2006-2015). At the current rate of budget utilisation (13% per year on average) it is unlikely that the budget will be exhausted unless implementation of the 2013 Financing Agreement is extended. Most disconcerting is the low pay-out rate (amount contracted versus that actually paid) for the Roads component at 73%, which falls below the average total pay-out rate of 77% across all budget lines. This is mainly due to delays in implementation caused by some of the road contractors and concerns an amount of EUR 6.5 million which still needs to be paid out from FA 2010 (due to expire in October 2016[62]).

It cannot be determined whether the programme has generated good value for money due to lack of evidence of the direct and indirect economic benefits incurred by the programme's beneficiaries. Incremental (gross) economic gains are increasing by roughly EUR 20-25 million per year, mainly due to an increase in the value of cane and sugar production since the start of the AMSP programme. Most of these gains can be attributed directly or indirectly to activities carried out by the Sugar Industry Research and Development Institute (SIRDI)

[62] Addendum n° 1 to the FA 2010, signed February 2012

and the Sugarcane Production Committee (SCPC), as well as to investments made by the sugar factory in improving the sugar extraction process.

Despite the above-mentioned problems with programme management and implementation, the achievement of expected results, specific and overall objectives when measured against their objectively verifiable indicators (OVIs) was satisfactory across all three components (Competitiveness, Roads and Diversification) of the AMSP programme. With the exception of the Competitiveness component in which 3 parties were involved (the SCPS, the sugar factory and SIRDI), this can mostly be attributed to the direct intervention of the AMSP programme. In the absence of monitoring data, determination of whether poverty reduction has been achieved had to be based on rough calculations by the consultants, who estimate that achievement against the relevant OVIs is promising.

A persistent problem is that of determining increases in income among sugar households, for which no data are available (and should be provided by the Sugar Industry Management Information System (SIMIS) at a later stage. Strangely, there is no agricultural economist at SIRDI to cover the financial or economic aspects of the Institute's interventions in the sugar industry.

4. Programme monitoring and reporting

The setup of a monitoring system by the AMSP programme was a requirement of the EU Financing Agreements. Technical and financial monitoring has been done well by the NAO office, but monitoring by contractors (Grant Contracts, Contribution Agreements) has mainly focused on outputs. No results-orientated monitoring (ROM) missions were ever carried out, despite being foreseen under the AMSP programme. In addition, for the purpose of this MTE the consultants had to piece together an overall logical framework (logframe) for the AMSP using those of the (total 7) Financing Agreements, which underwent significant changes over the years (including substantial variations in the OVIs, which were better quantified in later FAs). This problem is inherent to the aid modality used by the EU in Belize which insisted on the use of annual FAs. In contrast, the logframes of the AMSP contracts were of good quality, with better quantified OVIs and little (if any) change over time to the expected results or specific objectives.

5. Programme sustainability

The institutional sustainability of the AMSP is secure. Focal institutions in the sugar industry (SIRDI, SCPC, the Sugar Industry Control Board (SICB) and Cane Farmers' Associations) are firmly established and (with the exception of SIRDI) have been in operation for a long time. Their main source of financing is the Sugar Development Fund (SDF) which is in turn financed by a fixed cess (tax) on sugar exports and (in the case of farmers) on each metric tonne (MT) of cane delivered to the factory. Technical sustainability is similarly secure as the new techniques introduced by SIRDI to improve cane farm practices are simple and require low investment by cane farmers.

The medium- and long-term financial sustainability of cane producers in Belize is uncertain due to the unreliability of global market sugar prices. Based on a farm cost/benefit analysis using SIRDI figures, cane farming will not be financially sustainable if farmers are to receive BZD 47/MT cane (as recently proposed by the factory) unless cane yields are significantly increased (from the current 25 to the maximum 40 MT/acre) and overall production costs fall by 30%. There is room to reduce the cost of cane production and particularly harvesting and transport. Climatological conditions in Belize highly favour rain-fed cane production and with the use of improved farming practices and field drainage, it should technically be possible to increase yields to their optimum potential of 40 MT/acre.

10.1.1 Specific conclusions

- Credit Fund for Replanting: The performance of the Credit Fund for replanting and ratoon maintenance has fallen far below expectations and has effectively failed, with 62% (EUR 3.5 million) of the total available credit amount remaining undisbursed. As per an agreement with the Caribbean Development Bank (CDB), the Credit Fund is to close in March 2016[63] and unused funds returned the EU. The main reason for the low rate of loan disbursement is that most of the cane farmers are in deep debt with the commercial banks, which was not anticipated when the project was designed;
- Lack of capacity at the sugar factory: Cane farmers currently produce more cane than the sugar factory (which has a maximum capacity of 1.3 million MT) can handle. The volume of cane standing over in 2015 is substantial at 360,000 MT. This is a significant loss to the cane farmers as the longer the cane is left in the field prior to being milled, the more its quality (sucrose content) will deteriorate (by up to 50%). This understandably discourages cane farmers from investing in the improvement of cane production (i.e. replanting and ratoon maintenance);
- Logistics factory-to-ship: The current logistics involved in the transport of sugar from the factory to ocean-going vessels (OVGs) remains inefficient and costly, hampering efforts by the AMSP programme to enhance competitiveness. Despite the EU having funded two studies on improving transport efficiency, the consultants understand that the investment costs presented in the studies were found to be too high by the sugar factory, which cited low rates of return on investments;
- Diversification efforts: Achievement so far of AMSP's specific objective "*to support an enabling environment for rural recovery and economic diversification in sugar-dependent areas of Belize*" can mainly be attributed to the small-scale enterprise development project implemented by La Inmaculada Credit Union (LICU). This is the second diversification project carried out by LICU under the programme and the entity has performed well and gained much experience in this field. The Agribusiness and Value Chain Development project implemented by FAO is also highly likely to further strengthen diversification efforts, with the first concrete results expected by mid-2016;
- BAHA national sanitary cattle plan: The project is very important to the diversification of Belize's agricultural exports and while there is currently limited linkage with the improvement of the sugar sector, this will become better established in the future via the diversification of income for cane farmers. Livestock is a very promising sector with increasing meat prices and strong demand from neighbouring countries (notably Mexico) and the project has made much progress in cattle registration and animal health certification. However, the project finds itself in a dire financial situation that prevents it from achieving its overall objective of compliance with the requirements of the World Animal Health Organisation for bovine animal health and those established by Mexico for the export of live cattle.

Roads (infrastructure and maintenance)

- Improvement of roads has been an important programme investment, representing some 61% of total programme expenditure. The funding of road improvements is considered to be money well spent as the activity has had a positive impact on cane farmers and the wider rural community. Benefits include:

[63] According to the Contribution Agreement signed in March 2012, the implementation period is 48 months. It is stipulated that the Agreement cannot be extended beyond 11 October 2016

  - Easier transport of cane to the factory and reduced damage to vehicles, although there has been no reduction in the cost of cane transport (possibly because fuel costs have increased and much of the route used by cane hauliers still involves unpaved roads);
  - A decrease in transport costs of at least 25% as reported by non-cane farmers and traders, who can now reach markets using mainly paved roads. Goods also reach their destination in better condition; and
  - Considerable benefits to the wider community from the paved roads and (to a lesser extent) the marl roads in that it is now easier to access schools, health services, places of work, markets and other facilities;
- Road maintenance is vital but underfunded. Over the last 2-3 years maintenance has improved but the GoB still does not allocate adequate resources to the activity. The establishment of a Road Maintenance Unit (RMU) at the MWT and the development of a Long-Term Road Maintenance Strategy were vital first steps. Government support to the proposed Road Maintenance Fund and the identification of means of financing it however remain essential.

Competitiveness

- The observed improvement in cane yields and in the quality of sugarcane delivered to the mill is due largely to the activities of SIRDI, which has greatly contributed to these achievements through the transfer of new technologies and best practices using Farmer Field Schools, demonstration plots and field days. On-going research into i) new and better cane varieties; ii) the introduction of clean seed cane through a well-controlled cane nursery system; and iii) improved mechanical operations should contribute to a further increase in yields in the future;
- The installation of SIMIS, as recommended in the MTE 2010, has proven crucial to the provision of information on land area, land ownership and the variety and cane age distribution of existing cane areas;
- Most sugarcane in Belize is grown by small-scale independent farmers, who manage their own operations and have their own agricultural machinery. There is no umbrella organisation to coordinate cane production, plan the amount or location of land to be replanted or make recommendations as to which varieties to plant and which fertiliser to use, etc.;
- Since 2010 the farmers have been organised into 19 Test Groups, each of which supplies cane to the mill. Each test group is in turn made up of a number of Reaping Groups, whose leaders organise the cutting, loading and delivery of cane for a fixed number of farms. The SCPC is currently responsible for making annual production estimates for each farm, based on which it then allocates daily delivery quotas to the test groups and subsequently the reaping groups. As there is no detailed information on the actual area under cane, the accuracy of production estimates is questionable. There is no umbrella organisation to coordinate the daily harvesting or delivery of the cane;
- The main purpose of the test group system is to combine a number of farms in one area into a fixed group which can supply a sufficiently large batch of cane to the mill to allow first expressed juice (FEJ) sampling for cane quality assessment (delivery by appointment). This system does not allow for field-by-field or farmer-by-farmer cane quality assessment and is furthermore inefficient since it hampers the immediate re-use of transport units (while cane is stocked in them awaiting its appointed time of analysis);

- The economic realities of limited cane production and under-utilisation of expensive machinery have resulted in high production costs and consequent financial difficulties for many cane farmers in Belize and elsewhere. The removal of the preferential price support mechanism by the EU will worsen this situation and is likely to force many farmers in Belize out of cane growing;
- The on-going development of a Sugar Development Plan (SDP) is an opportunity to introduce far-reaching changes to the Belize sugar industry, particularly as regards its regulation and the production, harvesting and delivery of cane. This is needed to place the industry on an internationally competitive and sustainable footing.

10.1.2 Overall Recommendations

In line with the lessons learnt and overall conclusions on the performance of the AMSP programme, the following recommendations are made for continued EU support up to the end of the AMSP in Belize:

1. Extension of the FA 2013: As EUR 18 million still remains to be committed before the effective closure of the FA 2013 in April 2017, it is strongly recommended to extend its implementation by at least 18 months (until October 2018). This would enable the GoB to implement required follow-up actions (see the Specific Recommendations and Chapter 11);
2. Step up the performance of road contractors: A big concern is the low pay-out rate of the Roads component, mainly due to delays in implementation caused by some of the road contractors. EUR 6.5 million[64] still needs to be paid out from the FA 2010 which expires in October 2016 (Addendum 1 to the FA 2010, 22 February 2012). Provisions must be made for specific TA to help the MWT to resolve issues with road contractors and if needed, to revise specific road contracts to clear bottlenecks which were not anticipated at the design stage in order to accelerate implementation;
3. Cost/benefit analysis at cane farmer level: Since the start of the AMSP programme in Belize, there has been a persistent lack of financial information at cane farmer level. This makes it very difficult to accurately determine the financial sustainability of cane farming families susceptible to changing conditions (input and output prices, climate, etc.). A current flaw of SIMIS is the lack of cost/benefit data at farmer level and it is recommended that SIRDI recruit an agricultural economist for a comprehensive cost/ benefit survey (the results of which will be stored in SIMIS and used to develop an econometric model in order to determine which variables are particularly important to the competitiveness of the industry);
4. Results-orientated monitoring: As well as reporting on outputs, contractors under the Grant Contracts and Contribution Agreements should also report on the achievement of the specific and overall objectives set out in the logframes of the contracts and/or agreements. SIMIS should be further developed as a tool for regular monitoring of the financial situation of cane farmers based on the cost/benefit survey mentioned in point 3;
5. Reduction in cane prices: Cane farm cost/benefit models produced by SIRDI suggest that there is ample room to reduce total cane production costs, especially those of harvesting and transport (currently high due to the underutilisation of existing loading and transport equipment). In the next 2-3 years the sugar industry should focus on reducing overall production costs, increasing cane yields per acre and improving

[64] EUR 9.5 million was contracted and so far just EUR 3 million (32%) has been paid out (see also Annex 6: AMS programme budget and expenditures, AMS 2010)

payments based on cane sucrose content. The target at the end of Year 3 should be a reduction in the cost per MT of cane by approximately 50%;

6. Restructuring of sugarcane production, harvesting and haulage: This is crucial if the desired cost reductions are to be achieved and the competiveness of Belize's sugar industry in the international market guaranteed. The restructured cane production environment should be organised on a commercial and efficient footing, with limited or no interference by Government (see Chapter 11);
7. Stepping up diversification: Even if cane and sugar production costs were reduced, it would be difficult if not impossible for farmers with limited acreage to make a living from cane farming. The development of alternative agricultural and non-agricultural enterprises is an option for them to maintain (or even increase) their incomes. The MTE recommends that current diversification efforts under the AMSP programme be stepped up over the next 2-3 years. Commodity value chain development is crucial and developments with the Food and Agricultural Organisation (FAO) Agribusiness and Value Chain Development project need to be closely monitored and (based on project experiences and lessons learnt) replicated for other commodities with good market potential. Equally crucial is non-agricultural enterprise development, including the establishment of service providers (of inputs and machinery) for cane farmers. Such replication should be carried out by local contractors with ample experience in this area (e.g. the La Inmaculada Credit Union (LICU));
8. Reduction of factory-to-ship transport costs: Transportation and shipping costs need to be reduced. This would require a re-appraisal of the 2012 offshore sugar bulk terminal study with the aim of reducing the investment cost of the terminal with a better financial internal rate of return, including a financing plan (to be formulated by the factory, the Inter-American Development Bank (IDB) and the AMSP). In addition the GoB could pay more for the electricity produced by the co-generation plant, thus allowing cane farmers to receive a higher price for their bagasse. Finally, steps should be taken by the factory to improve the current cane testing system with the introduction of an independently operated cane testing unit (CTU);
9. Aid modality: While this will not have much effect on the final years of implementation of the AMSP in Belize, it is recommended that in future, the EU step away from the use of yearly FAs for country programmes. Instead, a four-year multi-annual strategy should be produced on the basis of which Annual Action Programmes (AAPs) are formulated (with the operational implementation period of an AAP being one year rather than four years as with the FAs).

10.1.3 Specific Recommendations

- Replanting Credit Fund: There are 2 options: i) Stop the Credit Fund in March 2016 as per the Contribution Agreement with the Caribbean Development Bank and return the remaining funds to the EU (possibly to be reallocated to other AMSP projects); or ii) extend the Agreement to April 2018 (this being the formal expiration date of the AMSP in Belize) and modify and add credit lines including lower charges to the local financial institutions[65], a 25% ceiling for the refinancing of commercial debts of the applicant as part of the loan, and a new credit line for diversification projects (service providers and alternative agricultural enterprise development). It is recommended that local expertise[66] be contracted to design a broader Credit Fund scheme if Option

[65] They currently pay 3% to the DFC, which they find too high and commercially unattractive
[66] Given their long-term experience in credit programmes linked with MSME development (farm and non-farm) and in the implementation of diversification programmes under the AMSP programme, it is suggested that LICU be approached to provide the local expertise to re-design the Credit Fund Scheme

2 is chosen and that with the assistance of the long-term M&E consultant[67], the Fund's M&E system be incorporated into SIMIS in order to avoid duplication of M&E activities by SIRDI. This would be in line with the mission's specific recommendation (see below under Competitiveness) to complete the installation of SIMIS;

- Lack of capacity at the sugar factory: Equipping of the sugar factory to increase its milling capacity will take at least 2-3 years depending on available funding sources. It is thus recommended to focus efforts to increase cane productivity on yields per acre rather than total production per farm due to current limitations at the factory. Farmers' cane quotas should also be met using less farm acreage, with the extra land used for the production of alternative crops or for livestock production (as part of the Belize Agricultural Health Authority (BAHA) scheme);
- Logistics factory-to-ship: A re-appraisal to be conducted of the 2012 study on the offshore sugar bulk terminal, with the main objective of reducing investment costs in order to produce better returns on investment to external financers, including the EU (e.g. through a parallel financing scheme: BSIL/ASR, IDB, EU/AMSP) and reduce the cost of transport of sugar to ocean-going vessels (with a target of 50%);
- Diversification efforts: It is recommended to closely monitor progress under the FAO project and (if the results are positive) to consider a 6-month extension since the current duration of 30 months (as stipulated in the Contribution Agreement), is short compared to the expected results to be achieved. It is strongly recommended that LICU become involved as a partner of the FAO project in order to launch value chain projects for other commodities with good export potential (such as coconuts, garlic, etc.)[68], despite this entailing a separate (Grant) Contract or Contribution Agreement with LICU. At the same time (and if they are successful), LICU should get involved in the smallholder agricultural projects implemented under the "*Livelihoods Fund for Family Farming*" with which SIRDI and BSIL/ASR are currently in contact; and
- BAHA national sanitary cattle plan: The BAHA project may not be closed for want of financial means. Before any additional funding is considered by the EU, BAHA must present audited accounts to show the project's compliance with the local contribution issues detailed in the Grant Contract.

Roads

- Key cane roads that were rehabilitated under Phase 1, in particular the Remate, Guinea Grass and BSIL M1 roads should be paved;
- Continued pressure should be placed on the GoB to allocate adequate resources to the MWT Road Maintenance Unit (RMU) and the proposed Road Maintenance Fund;
- Support should be provided to the micro-enterprise fund proposed under the Road Maintenance Fund for the contracting of community groups to carry out routine maintenance and minor repairs of local roads;
- The establishment of a Sugar Road Maintenance Fund, financed through a small cess on cane delivered to the factory (e.g. BZD 1/MT) and with works contracted to

[67] The consultants believe that the monitoring of the Credit Scheme can easily be incorporated within SIMIS with the assistance of the monitor (who is very familiar with the Scheme and can provide guidance on which specific elements need to be monitored to determine its effectiveness and impact)

[68] The FAO agribusiness project is limited to three commodities as per the (Action) Grant Contract: sheep, onions and honey. FAO project management informed the mission that requests continued to be received, including from cane farmers, for technical and financial assistance to start up agribusiness projects for other commodities. These however had to be denied as the current contractual financial and technical arrangements would not allow for the inclusion of more than three commodities

community groups (e.g. village groups, cane farmer groups) and overseen by the MWT-RMU should be considered;

- Follow-up should be done on the (as yet unused) EU FA 2012 and FA 2013 budgets of EUR 0.25 million and EUR 1.1 million for the strengthening of road maintenance. It should be considered whether the budgetary allocations to road maintenance could be revised.

Competitiveness

The on-going development of a Sugar Development Plan for the entire Belize sugar industry is an opportunity to introduce far-reaching changes to the existing structure of the industry, particularly as regards its regulation and the production, harvesting and delivery of cane. This is needed to place the industry on an internationally competitive and sustainable footing and has to be wholeheartedly supported by all stakeholders in the sugar industry in order to be successful.

- The introduction of an overall management structure to coordinate the production, harvesting and delivery of sugarcane is crucial to the creation of an internationally competitive and sustainable industry;

- SIMIS so far has started to provide information on land area, land ownership and the variety and cane age distribution of existing cane areas. This first phase should be concluded. The next phase should firstly introduce the beneficiaries of SIMIS to the correct operation of the system. Subsequently a cane harvest programme including burning, cutting, loading and delivery to the factory should be developed. Lastly an accurate cane estimate including both agricultural and economic information (costs and benefits, incomes, etc.) should be prepared during the next phase;
- The creation of larger units for sugarcane production, harvest and delivery is equally essential to the development of the economies of scale required to reduce production costs;
- The training of farmers in best practices and the provision of extension and support services to farmers should be continued and intensified;
- Farmers' Service Centres, as a one-stop shop for farmers to procure inputs (fertiliser and agro-chemicals), identify service providers, etc. should be developed at strategic locations in the Sugar Belt. At these centres ex-farmers could develop such services as cane-cutting companies (grouping cane cutters and hiring themselves out to cane farmers), cane loading and transport companies, etc.;
- The introduction of an incentive for farmers to produce better-quality cane for milling should be pursued (along with technological methods of cane analysis, with financial remuneration for effort);
- Greatly improved communication and cooperation both between millers and farmers and among the farmers themselves is essential to the survival of the industry. Neither side can afford such poor relationships under future conditions of competition with efficient international sugar producers;
- A land use map of the Sugar Belt should be developed to overlay the pre-existing information on SIMIS. This could identify the areas in which sugarcane cultivation would be potentially optimal, as well as areas in which sugarcane cultivation should not be practised. The latter areas should be removed from the Sugar Belt and the landowners encouraged to diversify into other activities;

- Restructuring of the sugarcane-producing environment and the financial pressure exerted due to lower sugar prices will force inefficient farmers to abandon sugarcane farming and diversify into other sugar- and non-sugar-related activities; and
- To endorse and implement these changes the outdated regulatory structure of the sugar industry (as per the Sugar Act 2001 and its 2015 addendum) has to be revised.

More detailed information on the recommended restructuring of the sugarcane industry can be found in Chapter 11 below.

11 Restructuring of the Sugarcane Production Environment in Belize

Present situation

Most sugarcane in Belize is grown by small-scale independent farmers, who manage their own operations and have their own agricultural machinery. While there are 5,440 registered farmers with a total cane area of approximately 70,000 acres (28,300 hectares), many of these farmers are actually individual members of extended families, with the land managed as a single unit by one family member. It is not currently possible to accurately identify the exact number of management units but it is probably in the range of 1,500 to 2,000 farms. Many farmers are uncertain of how many acres they actually have under cane, which is a major obstacle to the accurate planning and management of production and the preparation of crop estimates. The current lack of reliable field data on the amount of land under cane and the general state of the cane (age, condition etc.) makes short- and long-term planning impossible for both farmers and the miller. The new data collection programme (the Sugar Industry Management Information System or SIMIS) should eliminate this problem but will require full cooperation from the farmers. In exchange it will provide visibility and potential for better management and forecasting.

While farmers' associations usually provide some form of input support to their members, there is no umbrella organisation to coordinate cane production, plan the acreages to be replanted (and with which varieties) or make recommendations on the use of fertiliser.

The Sugarcane Production Committee (SCPC) is a sub-group of the Government-led Sugar Industry Control Board (SICB), regulated by the Sugar Act 2001 and, financed by a levy on sugar exports along with Government and international grant finance. The SCPC is currently responsible for making the annual production estimate for each farm, which is then used to allocate daily delivery quotas to the test groups and subsequently the reaping groups. The accuracy of the estimate is however limited due to the lack of detailed information on areas actually under cane.

Since 2010 the farmers have been organised into 19 test groups, each of which supplies an average of approximately 75,000 tonnes of cane per year to the mill (with the largest group supplying 143,500 tonnes and the smallest 51,000 tonnes). The main purpose of the test group system is to combine a number of farms in a specific area into a fixed group which can supply a large enough batch of cane to the mill to allow first expressed juice (FEJ) sampling for cane quality assessment (the "Delivery by Appointment" system). The system does not allow for field-by-field or farmer-by-farmer cane quality assessment, meaning that individual farmers who deliver good-quality cane to the mill are not rewarded for their efforts. This system is also inefficient as it hampers the immediate reuse of the transport units (since cane is stored in them while awaiting its appointed time to offload).

Each test group is in turn made up of a number of reaping groups, whose leaders organise the cutting, loading and delivery of cane for a number of individual farms. Firebreak cutting and cane burning mainly remain the responsibility of the individual farmer. Records in 2015 indicated a total of 269 reaping groups with a mean annual delivery quota of 5,420 tonnes. Each reaping group operates a cane loader and one or more transport units. There is no umbrella organisation to coordinate the daily harvesting of cane or its delivery to the mill.

As is also occurring elsewhere in the world, the economic realities of limited cane production and the underutilisation of expensive machinery have resulted in high production costs and consequent financial difficulties for many small-scale independent cane farmers in Belize. The imminent removal of the price support mechanism (EU preferential prices) will only make this situation worse and threatens to force many farmers out of cane growing.

As part of the negotiations concerning a new Cane Purchase Agreement between Belize Sugar Industries Limited/American Sugar Refineries (BSIL/ASR) and cane farmers, it was agreed that a Sugar Development Plan (SDP) should be drawn up for the industry as a whole. This should enable the introduction of far-reaching changes to the sugarcane industry (particularly as regards the regulatory environment and the processes involved in sugarcane production, harvesting and delivery) that should help place the industry on an internationally competitive, sustainable footing. The SDP will however need to be wholeheartedly supported by all stakeholders in the industry if it is to be successful. This also means that the promotion of better communication and cooperation both between the miller and farmers and among the farmers themselves is essential. Relationships so far have been marred by mistrust and conflict, which can no longer be afforded in the face of imminent competition with efficient international sugar producers.

Recommendations

The following steps are recommended:

1) The introduction of an overarching structure to coordinate the sugarcane production, harvesting and delivery system, which is crucial to the creation of an internationally competitive and sustainable industry;
2) The creation of larger units for sugarcane production, harvesting and delivery, which is essential to the development of economies of scale and the reduction of production costs;
3) Continuation and intensification of i) the training of farmers in best practices; and ii) the provision of extension and support services to farmers;
4) The introduction of incentives to encourage each farmer to produce better-quality cane for milling (including improved technological means of cane analysis), resulting in better financial remuneration for effort; and
5) Revision of the outdated regulatory structure of the sugar industry (based on the Sugar Act 2001 and its 2015 addendum) to endorse and implement these changes.

These steps are described in further detail below:

1) Introduction of an overarching structure to coordinate the sugarcane production, harvesting and delivery system, which is crucial to the creation of an internationally competitive and sustainable industry

To ensure international competitiveness and sustainability an industry has to produce the highest yields of the best quality at the lowest cost. On a sugarcane production area of 75,000 acres with an optimal crop cycle of 1 plant cane and 7 ratoon cane crops, about 9,500 acres will have to be replanted each year. To optimise the sugar yield about a quarter of this area (2,125 acres) should be planted with early-maturing cane varieties, half (4,250 acres) with the main season varieties and the remaining quarter (2,125 acres) with late-maturing varieties. To assure a regular supply of sugarcane to the mill without interruption by weather, harvesting should start and finish on well-drained areas of higher ground.

In order for the mill to operate efficiently, a regular supply of good-quality sugarcane is required. To plan and organise this, a management structure (an example of which is given at the end of this chapter) is required to oversee and direct the activities to achieve the best results. The creation is recommended of 6 Sugarcane Production Zones, each capable of supplying some 200,000 to 250,000 tonnes of cane per year to the factory. Each zone will have a Zone Manager who is responsible for the coordination and execution of the required activities, with the assistance of a Cane Production Supervisor and a Cane Harvesting and Haulage Supervisor. A Coordinating Unit consisting of a General Sugarcane Production,

Harvesting and Haulage Coordinator, assisted by a Sugarcane Production Coordinator and a Cane Harvesting and Haulage Coordinator, will be responsible for the overall planning and organisation of activities in all 6 of the Sugarcane Production Zones.

Detailed information on farms and farmers is essential if cane production, harvesting and haulage is to operate efficiently. The work started by SIMIS should therefore be completed as a matter of urgency.

2) Creation of larger units for sugarcane production, harvesting and delivery, which is essential to the development of economies of scale and the reduction of production costs

This may be achieved by using one of two business models; block farming or synchronised farming.

Block farming is a business model where neighbouring farmers with individual field sizes of under 10 acres merge to form a block farm to build economies of scale. Field boundaries are dissolved to form a single cultivatable field of about 150 acres, with the farmers becoming "shareholders" in the block farm in accordance with the size of the block. Farmers release their land title to the block.

The block is cultivated and harvested by all farmers as a single unit. Manual labour is either done by the member farmers or hired by the "block farm committee". Farmer Field Schools can be a useful tool in this respect since they encourage the farmers to follow the proposed production cycle.

Following the deduction of all cultivation and harvesting costs, the proceeds of the cane harvested from the block farm are divided among the shareholders according to their share.

The advantages of the block farming system are:

- Easier access to finance
- Economies of scale, leading to reduced production costs

The disadvantages are:

- Loss of land title by the farmer
- Loss of farmer identity

Conversely, **synchronised farming** is a business model whereby a group of neighbouring farmers cultivate their cane fields at the same time (in synchronisation). The farmers form a separate "farmers' group management committee" similar to the block farm management structure. In order to achieve efficient use of machinery it is recommended that individual farmer fields be of at least 1 ha. The assembled fields should be able to produce a total of at least 1,250 tonnes of cane per day to the factory. Field activities (land preparation, cane planting, variety selection, fertilising, weeding and harvesting) should be undertaken at the same time by all members of the synchronised farmers' group, who will either do the work themselves or hire labour. As with the block farming model, Farmer Field Schools should encourage farmers to follow the proposed production cycle.

Once the individual group members have synchronised their cultivation, the chances of their cane being harvested increase since a larger amount will be ready for harvesting at a given time, which will in turn reduce harvest and transportation costs and prevent tension (which can arise when other farmers' fields have to be crossed at harvest time).

Proceeds from the cane delivered to the factory are calculated per field and per farmer. Prior to this exercise, the project (in collaboration with both the farmers and the mill) will need to

develop incentives in order to ensure that more efficient harvesting and haulage practices are rewarded.

The advantages of the synchronised farming system are:

- Each farmer continues to operate as an individual
- Each farmer retains their land title
- Economies of scale lead to reduced production costs

The disadvantages are:

- All farmers need finance at the same time
- Individual farmers can find it hard to access finance

3) Continuation and intensification of i) the training of farmers in best practices; and ii) the provision of extension and support services to farmers

Sugarcane yields have to improve if cane farming is to become sustainable in Belize. This will only happen if farmers adopt the best practices advocated by the extension services of the Sugar Industry Research and Development Institute (SIRDI) through its Farmer Field Schools, demonstration plots and field days. New cane varieties, clean cane seed and new cultivation techniques will all be introduced through the efforts of the research departments at SIRDI.

The creation of Farmer Service Centres in each of the production zones to provide farmers with timely, cheaper inputs (economies of scale) and machinery maintenance services should also help reduce production costs and increase yields. Many of the activities at the Service Centre (including the training of existing owners of agricultural equipment) could be supplied by private service providers.

4) Introduction of incentives to encourage each farmer to produce better-quality cane for milling (including improved technological means of cane analysis), resulting in better financial remuneration for effort

Sugarcane should be (burnt and) cut on a basis of 1,250 tonnes per day per Production Zone. This would require 250 active cane cutters per zone per day (each of which would cut 5 tonnes). Cane cutters' groups could be organised as enterprises, contracted by the zone. Should the availability of human resources for cane cutting become an issue, mechanised harvesting by chopper harvesters may be introduced. Cane cutting should be guided by the age and maturity of the cane. Early-maturing varieties on well-drained land should be cut at the beginning of the cropping season, followed by the medium-season cane varieties and finally the late-maturing varieties.

Cane loading and haulage should be organised in harmony with cutting. The daily zonal quota of 1,250 tonnes could be loaded using a team of 3 or 4 Cameco SP1800 cane loaders (each with a loading capacity of 35-40 tonnes per hour), operating continuously for 16 hours (2 shifts). With an average truckload of 16 tonnes, each of 3 loaders would have to load 26 truckloads per 16-hour day (i.e. less than 2 truckloads per hour). Depending on the delivery cycle of the truck, the distance from the loading field to the factory and the required waiting time, one cane loader could be paired with (say) 8 trucks of 16 tonnes per load, or less if larger transport units were used. In conclusion, a zonal loading and haulage team consisting of 3 or 4 Cameco SP1800 (or similar) cane loaders with 24 trucks of 16-tonne capacity could supply the daily zonal quota of 1,250 tonnes of cane per day in a 16-hour operation.

In order to incentivise the farmers to deliver good-quality cane to the mill and to receive remuneration for their efforts, the movement of their cane from the field to the weighbridge

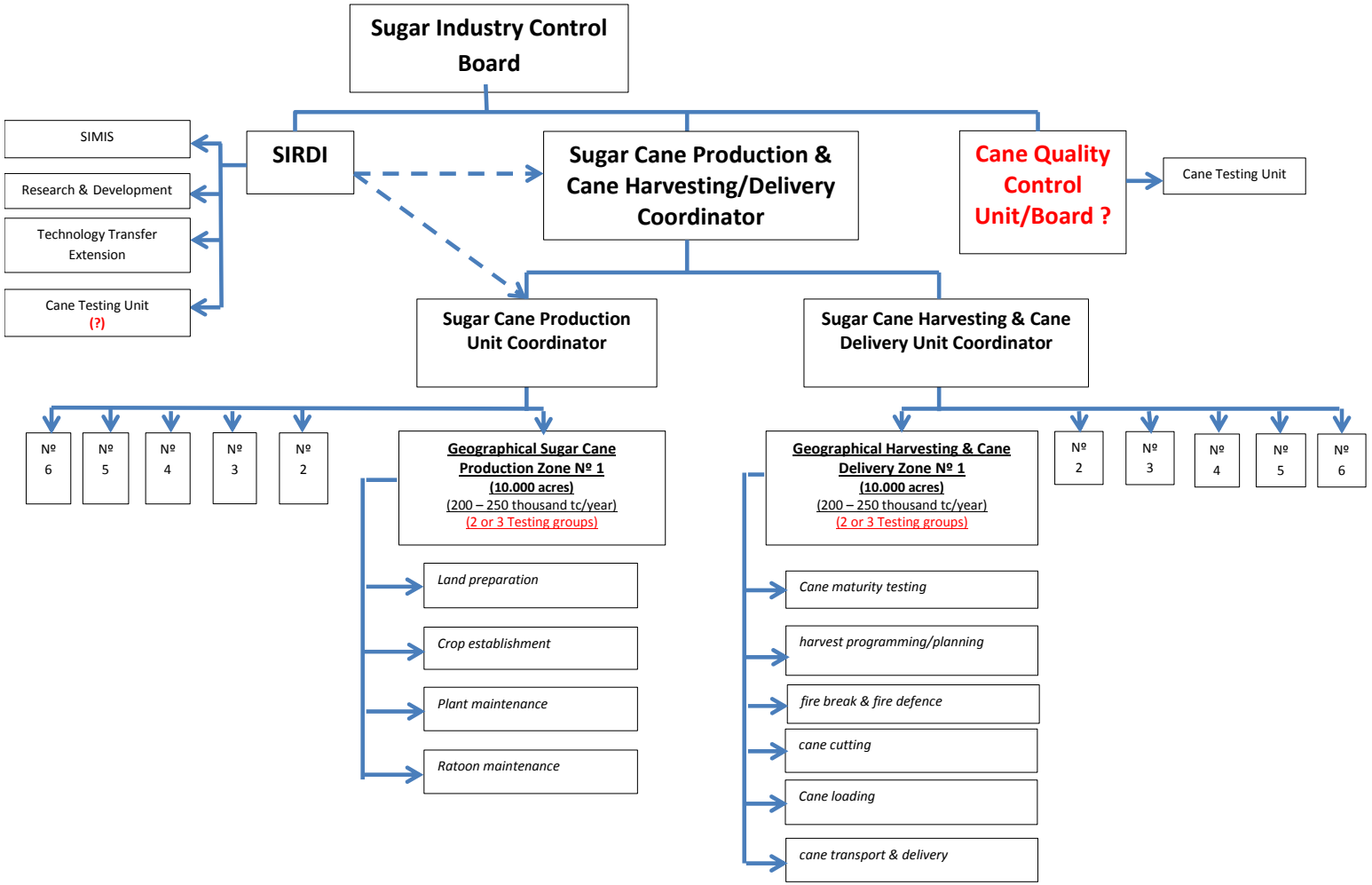
should be tracked and its quality analysed prior to offloading at the mill. This would require the introduction of Farmer ID cards (which feature a barcode), adaptation of the weighbridge to "read" this barcode and transmit the cane weight electronically to the central database, and the introduction of an independently operated Cane Testing Unit (CTU) comprising of a core sampler and a fully integrated Near Infrared (NIR) cane sample analyser. The CTU would also use the barcode to identify the sample.

With the NIR cane sample analyser the cane quality results are available in seconds and can also be transmitted electronically to the database. The database records both the weight and the quality of the cane supplied, based on which the amount of extractable sugar from the specific load of a specific farmer can be worked out. The cane can now be offloaded at the factory or cane carrier. The proposed system would increase the turnaround time of the cane transport units at the factory, allowing them to return more quickly to the field to be loaded again. This type of system is used in many other countries around the world.

5) Revision of the outdated regulatory structure of the sugar industry (based on the Sugar Act 2001 and its 2015 addendum) to endorse and implement these changes

To endorse and implement these far-reaching changes to the structure of the Belize sugar industry it is necessary to revise the existing (outdated) Sugar Act of 2001, along with its addendum of 2015. The need for an international competitive and sustainable sugar industry as the major socio-economic industry of Belize should be recognised above and beyond any partisan political motivation and all operations should be free from political intervention.

SUGAR CANE PRODUCTION AND HARVESTING & DELIVERY STRUCTURE FOR THE SUGAR INDUSTRY IN NORTHERN BELIZE (ORANGE WALK AND COROZAL DISTRICTS



12 EU Phasing-Out Strategy for the AMSP in Belize

As per the Terms of Reference, the conclusions and recommendations of this Mid-Term Evaluation are to be integrated into a realistic EU Phasing-Out Strategy for the AMSP in Belize. The strategy should cover the entire AMSP in Belize and should close at the same time as the 2012 and 2013 AMSP Financing Agreements (FAs) signed in April 2013 and May 2014 by the Government of Belize (GoB).

The Phasing-Out Strategy should be straightforward, easy to implement and based on the principle of good value for money (i.e. good economic returns on the investments made). The consultants interpret the aim of the Strategy to be the removal (or at least the extreme reduction) of any weaknesses or risks in the AMSP programme that may jeopardise its technical, financial and/or institutional performance or sustainability based on the findings of this MTE. In short the Strategy should be seen as the cornerstone of a durable structure for the social, economic and environmental development of Northern Belize, now and in the future, which combines the three components of the AMSP (Competitiveness, Diversification and Roads). Sources of funding for the implementation of the Strategy will be determined by the EU Delegation to Jamaica. The Strategy should consider the following aspects of each component of the AMSP:

Roads

- Technical Assistance (TA) to design a sugar feeder road maintenance programme is recommended. This would be based on a small increase in the cess paid by cane farmers, funding from the GoB and payments by non-cane transporters for the use of some roads;
- The Progresso and Remate roads are key cane roads and very important. Designs need to be completed and the roads tendered quickly so that works contracts can be signed before 22 April 2016 (or else EU funds will be lost).

Competitiveness

- TA is required to develop and implement the restructuring of the sugarcane industry (including of cane production, harvesting and haulage), to develop a synchronised farming business model based on Farmer Service Centres and to revise the existing regulatory framework (the Sugar Act). Estimated value is EUR 1.5 million;
- A Cane Testing Unit (CTU) must be procured for the sugar factory consisting of a core sampler, NIR cane sample analyser and appropriate wet-laboratory equipment. Construction and relevant services (electricity, water, etc.) should be provided by the beneficiaries. Estimated value is EUR 1.5 million;
- SIMIS should be completed (with a contribution of EUR 0.5 million to the IDB project) and TA and financial support provided to SIRDI for managerial and technical capacity building;
- TA and financial support is required to establish an Offshore Sugar Bulk Terminal in the form of an offshore (anchored) vessel with sufficient capacity to load an ocean-going vessel with raw sugar within 48 hours. Estimated value is EUR 1 million.

Diversification

- LICU should introduce the commodity value chain approach for cane farmers in close collaboration with the FAO project and possibly also with the *Livelihoods Fund for Family Farming* programme under SIRDI and BSIL/ASR (EUR 0.5 million).

Annexes (see separate document: Final Report - Annexes)

Annex 1: Terms of Reference
Annex 2: Inception Report
Annex 3: List of persons contacted
Annex 4: Itinerary of the MTE mission
Annex 5: List of literature and documentation consulted
Annex 6: AMSP Programme budget and expenditures
Annex 7: Sugarcane Growers' Situation, 2007-2015
Annex 8: Cost/benefit analysis of sugarcane growers
Annex 9: Yearly cropping season performance of the sugar industry of Belize: 1986-2013