International stakeholders’ consultations on the development and validation of proposed international standards on cocoa quality and flavour assessment

Managua, Nicaragua, 19 – 21 September 2017 and Paris, France, 30 October 2017

Reports compiled by Brigitte Laliberte, Cocoa of Excellence Programme
Bioversity International, Rome, Italy
November 2017
CONTENTS

EXECUTIVE SUMMARY ....................................................................................................................... 3

1. Introduction ........................................................................................................................................ 6
  1.1 Background ................................................................................................................................... 6
  1.2 Proposed next steps – international stakeholders’ consultation ................................................. 7
  1.3 Introduction to the consultation’s programme ............................................................................. 10
  1.4 Collaborative philosophy and strategic framework ................................................................. 11

2. Current situation - protocols used ................................................................................................... 14
  2.1 In-depth review of current practices and protocols................................................................. 14
  2.2 Experience from the coffee sector ......................................................................................... 14
  2.3 Equal Exchange and TCHO ....................................................................................................... 14
  2.4 The Fine Cacao and Chocolate Institute (FCCI) ....................................................................... 15
  2.5 The Centre for the Promotion of Imports from Developing Countries (CBI) ............................ 15
  2.6 The Cocoa of Excellence (CoEx) Programme and International Cocoa Awards (ICA) .......... 16
  2.7 The Heirloom Cacao Preservation Fund (HCP) ......................................................................... 17
  2.8 Iniciativa Latinoamericana del Cacao (ILAC) ............................................................................. 18
  2.9 AMACACAO and CUNAKakaw ............................................................................................... 19
  2.10 Discussion on the current use of standards and protocols ..................................................... 20

3. Towards harmonized international standards ................................................................................. 21
  3.1 Proposal for harmonized international standards for cocoa quality and flavour assessment... 21
  3.2 Review of Chapter 7 of the proposed international standards - Flavour assessment .............. 22
  3.3 Perspectives of cocoa producers ............................................................................................. 25

4. Recommendations and next steps from Managua ........................................................................ 26
  4.1 Proposal to restructure the standards document ..................................................................... 26
  4.2 Coarse powder assessment ....................................................................................................... 27
  4.3 Liquor assessment ...................................................................................................................... 27
  4.4 Chocolate assessment ............................................................................................................... 28
  4.5. Proposed next steps .................................................................................................................. 29
  4.6. Revision of the standards document ......................................................................................... 29

5. Follow-up consultation in Paris, 30 October 2017 ...................................................................... 31
  5.1 Introduction and report from Managua ..................................................................................... 31
  5.2 Consultation on the broader strategy for the international standards ....................................... 32
  5.3 Protocols and standards used by the International Institute of Chocolate and Cacao Tasting . 32
  5.4 Revision of the proposed standards document - process and next steps .................................. 33
  5.5 Agreements and next steps from the Paris consultation ........................................................... 35

ANNEX A – List of participants in the Managua consultation, 19 – 21 September 2017 .......... 36

ANNEX B – Proposed programme of the Managua consultation .................................................... 38

ANNEX C – Elements of harmonized international standards for cocoa quality and flavour assessment ........................................................................................................... 39

ANNEX D – Cocoa of Excellence Programme and International Cocoa Awards – partners, sponsors and contributors ........................................................................................................... 40

ANNEX E - List of participants in the Paris consultation, 30 October 2017 .................................... 41
EXECUTIVE SUMMARY

An International Stakeholders’ Consultation on the Development and Validation of Proposed International Standards on Cocoa Quality and Flavour Assessment was held in Managua, Nicaragua, 19-21 September 2017. The consultation was organized and financed by the Lutheran World Relief (LWR), the Cocoa of Excellence Programme (CoEx Programme), Bioversity International (Bioversity) and the Asociacion Mesoamericana de Cacao y Chocolate Finos (AMACACAO), Catholic Relief Services (CRS) and Christian Aid. It included representations from researchers directly involved in cocoa quality and flavour assessment, cocoa producers’ associations, chocolate makers’ associations, traders’ organizations and processors. A follow-up consultation was held on 30 October 2017 in Paris, organised by the Cocoa of Excellence Programme, Bioversity International and the Salon du Chocolat. This document reports on the information presented, discussed and agreed on, as well as the areas requiring further development, research and discussion from both consultations.

There is an urgent need to establish accepted, credible and verifiable protocols for assessing and communicating about cocoa quality attributes, to facilitate comparison of samples and feedback, with the aim of improving fermentation and drying processes for different cocoa genetics. In September 2015, during an annual seminar of the World Cocoa Foundation in the Americas, a Working Group was set up to explore the development of international standards for the assessment of cocoa quality and flavour and is coordinated by the Cocoa of Excellence Programme (see www.cocoaofexcellence.org for more information on purpose, members and plans).

The goal/purpose of the international standards is to enable a clear communication throughout the value chain (cocoa producers, bean buyers/traders, chocolate makers and other users), using a common language: (1) to identify the intrinsic flavour attributes and characteristics (flavour potential) of the beans when beans are converted into chocolate and (2) to unlock the value of cocoa beans and empower producers and buyers so that users can decide how to use the beans through targeted marketing flavour customisation to meet customers’ needs.

An in-depth review was conducted of existing standards and protocols used by different groups and individuals engaged in the production of cocoa and other commodities such as coffee, wine and olive oil. Based on the review, an initial proposal for international standards and protocols for cocoa quality and flavour assessment was developed for broader consultation. The proposal comprised details on physical bean quality assessment (using recently revised and published material), as well as preparing samples (powder, liquor and chocolate) for flavour assessment; it also listed the principal considerations for sensory panel training, executing tasting sessions, and handling data to improve and optimize current processes and achieve product and process control. The next critical step was a broader stakeholders’ consultation to engage cocoa value-chain actors to review the proposed international standards and obtain feedback with the aim of aligning the different approaches.

During the consultation in Managua, a review of the protocols currently in use was presented by Darin Sukha of the Cocoa Research Centre (CRC) of the University of the West Indies, while experiences of the coffee and cocoa sectors were presented by CRS; Equal Exchange/TCHO and the Cooperative Development Program (CDP) funded by the United States Agency for International Development (USAID); the Fine Cacao and Chocolate Institute (FCCI); the Centre for the Promotion of Imports from developing countries (CBI); the CoEx Programme and International Cocoa Awards (ICA); the Heirloom Cacao Preservation Fund (HCP) of the Fine Chocolate Industry Association (FCIA); the Iniciativa Latinoamericana del Cacao (ILAC) organized by the Banco de Desarrollo de America Latina (CAF); and AMACACAO.

The proposal for harmonized international standards for cocoa quality and flavour assessment was presented. It was acknowledged that establishing such harmonized international standards would be a difficult task. Future developments will need to ensure the consideration of as many existing systems as possible. The industry must be clear on what is needed and what the minimum requirements are, and it must have a clear and common language. Standards should cover all cocoas of all regions.
One particular chapter of the proposed international standards – Chapter 7: Flavour assessment – was reviewed in more detail. The group discussions led to a recommendation to re-structure the information on flavour assessment in the following four thematic areas, which are the main transition points in the value chain: a) fermented, dried bean powder assessment; b) fermented, dried, roasted bean powder assessment; c) liquor assessment; and d) chocolate assessment. These areas have different stakeholders, objectives, capacities and needs, but they also share a number of similarities. Buyers can define at what level they want to assess the flavour quality of the beans based on this thematic layout. An important consideration here is that whatever standard is eventually produced, it recognizes the interconnectivity along the cocoa value chain with the quality and flavour of the finished products.

The group discussed the assessment of fermented and dried beans and liquor. The assessment of chocolate would be further considered in a follow-up consultation in Paris, 30 October 2017. The group also discussed and identified areas of agreement, and areas in which further research and discussions are needed.

From the point of view of cocoa producers, the importance of agreeing on a common language for cocoa quality and flavour assessment was expressed. Producers already use manuals for best practices for harvest and post-harvest activities. There is a clear need for an agreement on standards and protocols to resolve the confusion that exists among producers regarding flavour assessments because of different feedback from buyers. Training, knowledge and tools are needed to generate data to describe in an objective way the characteristics of the beans, and explain how to produce the best quality cocoa possible. Therefore, the most useful feedback is data to interpret and understand what buyers want and how producers can achieve it. There should be a clear understanding of the connections of how an attribute in fermented/dried beans translates into roasted beans, liquor and chocolate. Better definitions are required concerning the types of cacao grown, and how they should be categorized and express their uniqueness and value. Unifying criteria for assessment should involve the producers and the industry, and all actors along the value chain.

The next steps proposed during the Managua consultation were to review the structure and content of the standards document, continue the discussion and involvement of stakeholders through upcoming opportunities for consultation, and discuss the development of training and physical reference samples, certification etc.

As recommended in Managua, a follow-up consultation was held on 30 October 2017, during the Salon du Chocolat in Paris, France, organized by the CoEx Programme, together with Bioversity International and Salon du Chocolat. The revision of the proposed standards document was presented, and the group recommended the following next steps:

1. Move forward with the revision of the standards document based on the proposed reorganization of information and the continued compilation of existing protocols available in the public domain.
2. Identify the protocols ready for use immediately.
3. Identify the protocols for which only limited discussion is needed to come to an agreement.
4. Focus initially on the sections covering sample preparation to build trust and consensus.
5. Initiate work on testing equipment in different locations.
6. Form small technical working groups for specific areas that require discussion for agreement.
7. Keep the collaboration inclusive and open for input.
8. Ensure that the products are global public goods.

The Working Group members, organisers of the consultations in Managua and Paris, partners and sponsors would like to express their gratitude to all the individuals and organisations who have contributed to the development of protocols and standards for bean quality and flavour assessment and participated in the review process and the consultations. Their input is essential to ensure the process is inclusive and builds on existing best practices and research in this area.
<table>
<thead>
<tr>
<th>ACRONYMS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMACACAO</td>
<td>Asociación Mesoamericana de Cacao y Chocolate Finos</td>
</tr>
<tr>
<td>APPCACAO</td>
<td>Asociación Peruana de Productores de Cacao</td>
</tr>
<tr>
<td>Bioversity</td>
<td>Bioversity International</td>
</tr>
<tr>
<td>CAF</td>
<td>Banco de Desarrollo de America Latina</td>
</tr>
<tr>
<td>CAOBISCO</td>
<td>Association of the Chocolate, Biscuit and Confectionery Industries of Europe</td>
</tr>
<tr>
<td>CBI</td>
<td>Centre for the Promotion of Imports from developing countries, the Netherlands</td>
</tr>
<tr>
<td>CDP</td>
<td>Cooperative Development Program</td>
</tr>
<tr>
<td>CIC</td>
<td>Centro de Innovación del Cacao, Peru</td>
</tr>
<tr>
<td>CoEx Programme</td>
<td>Cocoa of Excellence Programme</td>
</tr>
<tr>
<td>CoEx-TC</td>
<td>Cocoa of Excellence Programme – Technical Committee</td>
</tr>
<tr>
<td>CQI</td>
<td>Coffee Quality Institute</td>
</tr>
<tr>
<td>CRC</td>
<td>Cocoa Research Centre of the University of the West Indies, Trinidad and Tobago</td>
</tr>
<tr>
<td>CRS</td>
<td>Catholic Relief Services</td>
</tr>
<tr>
<td>ECA</td>
<td>European Cocoa Association</td>
</tr>
<tr>
<td>FCC</td>
<td>Federation of Cocoa Commerce</td>
</tr>
<tr>
<td>FCCI</td>
<td>Fine Cacao and Chocolate Institute</td>
</tr>
<tr>
<td>FCIA</td>
<td>Fine Chocolate Industry Association</td>
</tr>
<tr>
<td>GEF</td>
<td>Global Environment Facility</td>
</tr>
<tr>
<td>HCP</td>
<td>Heirloom Cacao Preservation Fund</td>
</tr>
<tr>
<td>ICA</td>
<td>International Cocoa Awards</td>
</tr>
<tr>
<td>ICCO</td>
<td>International Cocoa Organization</td>
</tr>
<tr>
<td>IICCT</td>
<td>International Institute of Chocolate and Cacao Tasting</td>
</tr>
<tr>
<td>ILAC</td>
<td>Iniciativa Latinoamericana del Cacao</td>
</tr>
<tr>
<td>INACAL</td>
<td>Instituto Nacional de Calidad</td>
</tr>
<tr>
<td>ISCR</td>
<td>International Symposium on Cocoa Research</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>ITC</td>
<td>International Trade Centre</td>
</tr>
<tr>
<td>LWR</td>
<td>Lutheran World Relief</td>
</tr>
<tr>
<td>MINAGRI</td>
<td>Ministerio de Agricultura y Riego (Ministry of Agriculture, Peru)</td>
</tr>
<tr>
<td>SCAA</td>
<td>Specialty Coffee Association of America</td>
</tr>
<tr>
<td>SDC</td>
<td>Swiss Agency for Development and Cooperation</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
</tr>
<tr>
<td>WCF</td>
<td>World Cocoa Foundation</td>
</tr>
</tbody>
</table>
1. Introduction

1.1 Background

Buyers of cocoa beans seek different quality and flavour profiles, and as such there is an opportunity to tap into the value and flavour potential of different cocoa cultivars from different regions, which would enable farmers to present the value proposition to potential buyers, and also facilitate communication among sellers, buyers and consumers of cocoa and chocolate. To achieve this, there is a critical need to establish accepted, credible, quantifiable, and verifiable protocols for assessing and communicating about cocoa quality attributes, to facilitate comparison among samples, and generate feedback to improve fermentation and drying processes for different cocoa genetics in certain regions (or ‘terroirs’) around the world.

The objectives of international standards are to:

• Enhance transparency and market access for smallholder cocoa farmers through improved quality assessment.
• Develop awareness of buyers, sellers and consumers of cocoa and chocolate, on quality and flavour profiles, and celebrate excellence of high quality cocoa and chocolate related to best agricultural and manufacturing practices.
• Standardize how actors along the cocoa value chain assess and communicate quality attributes of cocoa, to improve transparency and help cocoa farmers better understand and meet quality standards demanded by buyers.
• Develop and document protocols for evaluating cocoa quality and flavours for use by cocoa producers, traders, buyers, warehouse/logistics and chocolate makers that aligns with existing standards and needs.
• Discuss a training and certification programme based on the international standards with the different players involved in quality and flavour assessment.

Discussions on the development of international standards for the assessment of cocoa quality and flavours were initiated by a working group that was set up during the World Cocoa Foundation Annual Seminar on Cocoa in the Americas, in September 2015, in El Salvador. The working group, coordinated by the Cocoa of Excellence Programme (CoEx Programme), guided the initial work of carrying out an inventory of existing standards and protocols used by different groups and individuals involved in the production of cocoa and other commodities such as coffee, wine and olive oil. An analysis of this inventory resulted in the following publication: ‘Steps towards a harmonized international standard for cocoa flavour assessment - a review of current protocols and practices’ (Sukha, D., May 2016).

Based on the review, the first proposal for international standards and protocols for cocoa quality and flavour assessment was developed, for broader consultation. The proposal comprised details on conducting physical bean quality assessments (using recently revised and published material) and preparing samples (powder, liquor and chocolate) for flavour evaluations, and described principal considerations for sensory panel training, executing tasting sessions, and handling data to improve and optimize current processes and achieve product and process control. The proposed standards were developed in English and translated into Spanish. The review and proposed standards were led by Dr Darin Sukha from the Cocoa Research Centre (CRC) of the University of the West Indies in Trinidad and Tobago, with support from Lutheran World Relief (LWR) through its Cacao Movil project, the United States Department of State and the Swiss Agency for Development and Cooperation (SDC), in partnership with the CoEx Programme.

The review of current practices and proposed international standards were presented at a number of international fora, such as the 3rd World Cocoa Conference, which was held in the Dominican Republic, in May 2016. They have been assessed by the six members of the CoEx Technical Committee (CoEx-TC), and piloted for the evaluation of 166 cocoa bean samples received from 40 cocoa-
producing countries, for the 2017 edition of the CoEx Programme from February to June 2017. The CoEx-TC developed a set of physical bean liquor references, and revised in detail the glossary of terms and evaluation form, using a set of more than 40 attributes (referred to as the CoEx extended evaluation form). The CoEx-TC carried out a calibration exercise through a series of face-to-face meetings and conference calls.

The proposed international standards have also been tested in Central America through the Asociacion Mesoamericana de Cacao y Chocolate Finos (AMACACAO), with positive results and benefits for both the farmers and industry. AMACACAO has worked in different sub-regions using an internal quality protocol that is mostly based on the proposed international standards, and which includes good post-harvest practices, flavour development and high-quality end products and exports. AMACACAO is keen to develop a formal pilot project in Central America with agreed proposed international standards.

1.2 Proposed next steps – international stakeholders’ consultation

The next critical step in the development of international standards was a broader stakeholders’ consultation to engage cocoa value-chain actors involved in cocoa bean production, trade and processing, to review the proposed international standards and obtain feedback in order to align the different approaches. The aim was to help cocoa farmers and cooperatives better understand the unique characteristics and qualities of their cocoas and those demanded by the market with a view towards unlocking their value and flavour potential. By optimizing the expression of cocoa bean genetic flavour potential and “terroirs”, this will benefit farmers for niche marketing their beans and origins at best prices.

The International Stakeholders’ Consultation on the Development and Validation of Proposed International Standards on Cocoa Quality and Flavour Assessment, that took place in Managua, Nicaragua, 19 – 21 September 2017, was organized by LWR, the CoEx Programme, Bioversity International (Bioversity) and AMACACAO, with support from Christian Aid and Catholic Relief Services (CRS). Additional financial and in-kind support was provided by the Guittard Chocolate Company (Guittard), the Cocoa Research Centre (CRC) of the University of the West Indies, Valrhona Chocolate (Valrhona), and the Joint Cocoa Research Fund of the European Cocoa Association/Association of the Chocolate, Biscuit and Confectionery Industries of Europe/Federation of Cocoa Commerce (ECA/CAOBISCO/FCC).

Objectives of the consultation

- Provide input into the development of the proposed international standards for cocoa quality and flavour assessments.
- Harmonize current practices and align with key initiatives in this area.
- Identify key research questions and gaps that need to be further addressed.
- Validate the standards, approach and practices.
- Discuss the development of physical cocoa reference samples (liquor and/or chocolate).
- Discuss the development of training and certification programmes targeting all actors of the value chain.
- Agree on the strategy and actions with investors and implementing partners.
- Identify funding for a pilot project for Central America in close collaboration with LWR, AMACACAO, CRS, CRC, the CoEx Programme, Bioversity and others as a field case study for further research and adjustments.

Expected outputs of the consultation

- Clear understanding of current practices in cocoa quality and flavour assessments and status of research in this area.
- Harmonization and validation of the proposed international standards and approach.
• Alignment of all initiatives in cocoa quality and flavour assessments.
• Endorsement and buy-in by the main participating actors in the cocoa value chain.
• Commitment to participate in and support implementation of the international standards on cocoa quality and flavour assessments.
• Linkages with other national and regional initiatives in cocoa-producing countries.
• Agreement on recommendations and follow-up actions.
• Field pilot project to develop international standards in Central America.

Participants

The development of international standards should be carried out in close collaboration with cocoa producers, chocolate makers, traders, processors, related organizations and researchers directly involved in cocoa quality and flavour assessment. It should engage related initiatives such as the Fine Chocolate Industry Association (FCIA), the Heirloom Cacao Preservation Initiative (HCP), the ECA, CAOBISCO, FCC, the International Cocoa Organization (ICCO) and its Expert Panel on Fine or Flavour Cocoa, as well as regional partnerships such as AMACACAO/CUNAKakaw in Central America, and similar initiatives in coffee (e.g. Q Grader Program), wine, and olive oil. The work builds on the recent ECA/CAOBISCO/FCC publication ‘Cocoa beans: chocolate and cocoa industry quality requirements’, September 2015, (End, M.J. and Dand, R., Editors)\textsuperscript{1}, to help improve cocoa quality, including food safety aspects. The consultation also builds on the work of CRC, TCHO/Equal Exchange, the Fine Cacao and Chocolate Institute (FCCI), the Centre for the Promotion of Imports from developing countries (CBI), Iniciativa Latinoamericana del Cacao (ILAC) of the Banco de Desarrollo de America Latina (CAF) and the International Chocolate Awards (ICA).

The consultation involved 62 participants (44 men and 18 women) from 16 countries representing 41 organizations. The list of participants is provided in Annex A.

The distribution of the stakeholders’ group and geographic coverage is illustrated in Figures 1.1 and 1.2 below.

\textbf{Figure 1.1}

\begin{center}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline
Stakeholders represented & Producers & Producers Coop & Buyers/traders & Chocolate Makers & Consumers & Researchers & Investors \\
\hline
\hline
\end{tabular}
\end{center}

\footnotesize{Figure 1.1: Stakeholders represented in the consultation.}

\textsuperscript{1} Available for download at www.cocoaquality.eu (accessed 5 November 2017).
Simultaneous translation was provided (English-Spanish) on the first day. The rest of the meeting took place in English, as participants were divided into small discussion groups. However, any participant wishing to express their views in Spanish could be assisted by the many fluent English and Spanish speakers among the participants.

Background documents and presentations

All background documents were circulated in advance. The presentations made during the meeting, and the notes from the different working groups, are listed below and are available to download from the following Dropbox link: https://www.dropbox.com/sh/4a46rzr8bkaw1n3/AAAmKVWYTDEKNfVlrFIFOfwa?dl=0

Background documents:

- CONSULTATION DOCUMENT – with background, proposed programme and list of participants – version 20 Sept 2017
- Review of current practices and appendices in separate documents - PDF files:
  - REVIEW-Cocoa Quality Flavour Standards - Darin SUKHA sans Appendices-12May2016-ENGLISH
  - REVIEW-Cocoa Quality Flavour Standards - Darin SUKHA sans Appendices-12May2016-ESPAÑOL
  - REVIEW - Appendices 1-7 for Flavour Standard Review (120516)
  - REVIEW - Appendices 8-14 for Flavour Standard Review (120516)
  - REVIEW - Appendices 15-17 for Flavour Standard Review (120516)
  - REVIEW - Appendices 19-21 for Flavour Standard Review (120516)
- Proposed international standards - PDF files:
  - CoEx-Quality-Flavour-Standards-ENGLISH-11Sept2017
Presentations:
First day (1-11); second day (12)

1. Introductory remarks - Rick Peyser, LWR, USA
2. Proposed programme, expected outputs and setting the scene - why this consultation and collaborative philosophy and strategic framework – Brigitte Laliberte, Bioversity and CoEx Programme, Italy
3. Presentation on the current situation – review of practices and protocols – Darin Sukha, CRC, Trinidad and Tobago
4. Experience of the coffee sector – Kraig Kraft, CRS, Nicaragua
5. Equal Exchange - Cristina Liberati and Brad Kintzer, TCHO, USA
6. FCCI - Fine Cacao and Chocolate Institute - Carla Martin, USA
7. CBI - Centre for the Promotion of Imports from developing countries - Jörn Berger, the Netherlands
8. Cocoa of Excellence Programme and International Cocoa Awards – CoEx Programme/ICA – Ines Drouault, Italy
9. HCP - Heirloom Cacao Preservation Fund – Brad Kintzer, TCHO, and John Kehoe, Guittard Chocolate, USA
10. Experience of CAF/ILAC - Giovanni Ginatta, Ecuador
11. Experience of AMACACAO adapting commonly accepted international standards - Juan Francisco Mollinedo, Guatemala
12. Detailed presentation on the proposed international standards - Darin Sukha, CRC, Trinidad and Tobago.

1.3 Introduction to the consultation’s programme

Welcome addresses were given by each of the organizers, namely LWR, CoEx Programme, Bioversity, AMACACAO and CRS. Rick Peyser, representing LWR, USA (connected by teleconference), provided introductory remarks, highlighting the following points:

- This is a historical event that sets the cocoa world on a path to accelerate opportunities for every link in the cocoa supply chain.
- Peyser was invited to speak about coffee quality at the 2015 World Cocoa Foundation (WCF) regional meeting in El Salvador, and asked if the specialty cocoa industry had quality standards. The answer was that no uniform standards for specialty cocoa existed, but that developing standards had been discussed for many years; consequently, the working group was set up.
- Standards will undoubtedly provide everyone in the cocoa supply chain with vital information that will facilitate their ability to conduct their business more successfully – from the plant to the bar.
- Why is this important? Looking back on his 30 years in the specialty coffee industry, Peyser observed that the rapid growth of specialty coffee would not have occurred had a small group of coffee professionals not gathered together in 1982 to found an organization – the Specialty Coffee Association of America (SCAA) – that would provide a forum to share ideas and develop quality standards and protocols.
- Specialty coffee standards formed the basis of the sensory and physical evaluation of coffee, and a common language and protocol that are used in coffee cupping laboratories every day, in every coffee-producing country in the world.
- Those coffee professionals were determined to offer their customers significantly improved taste profiles that would differentiate their coffees. To receive the quality that they required for their customers, they needed to effectively communicate with their suppliers – importers or small-scale farmer cooperatives. The need to communicate their requirements led to the development and refinement of coffee standards and protocols.
- Many companies in the industry now hold live (virtual) cupping sessions, where roasters and farmer cooperative cuppers evaluate the same coffee sample at the same time, to calibrate their...
palates. This cupping exercise provides farmers’ organizations with a target to aim for, to more precisely meet the needs of their customers, by allowing the farmers to see (or taste) the bullseye. This calibration provides the roaster with coffee that contains the precise cup quality characteristics that the business needs.

- SCAA established the Coffee Quality Institute (CQI) promoting the SCAA’s sensory evaluation standards through the Q (Quality) Program, which has over 4,000 certified Q (Quality) Graders around the world.

- As we refine cocoa standards, we must think about the next steps: sharing information on these standards and protocols with all the relevant actors, from farmer to buyer, and providing the necessary training. Effective training will greatly accelerate the dissemination and acceptance of these standards throughout the supply chain.

- Despite the wonderful advances in coffee quality, and in some cases farmers’ earnings, most of the world’s 25 million coffee farmers still live in poverty. There is much to be learned from coffee that will enable cocoa businesses to ‘leapfrog’ over many hurdles. We need to be mindful of cocoa-farming families who are at the foundation of all of our businesses. Let’s do better than coffee by ensuring their equitable participation and a healthy supply chain. Ultimately, the sustainability of our own businesses is directly linked to success on the farm.

- REF – Word Doc title: Introductory remarks - Rick Peyser, LWR, USA

The first part of the consultation focused on providing background information, ensuring that all participants were clear in relation to ongoing initiatives, complementarities and differences, and the inputs required for defining the overall strategic plan.

Brigitte Laliberte, Bioversity International and CoEx Programme Coordinator, presented the proposed objectives and expected outputs of the consultation, as developed by the organization committee (described in Section 1.2 above), and the proposed programme for group endorsement (see Annex B).

1.4 Collaborative philosophy and strategic framework

The collaborative philosophy behind the development of international standards for the assessment of cocoa quality and flavour has to strike a careful balance between the aspirational vision of maximum inclusion, ownership, innovation, impact and sustainability, and the practicalities and constraints of costs, time, logistics, politics and commitment. This will impact on the number of people involved, the amount of attention given to diversity, problem solving capacity (simple or deep), personal growth, relationship building, and the type of decision-making approach used; see Figure 1.3 below.
The aspirational goals proposed:
- Every cocoa producer and cooperative can assess the unique characteristics and qualities of the cocoa they grow.
- Every cocoa producer and cooperative fully understands the characteristics and qualities demanded by the market to unlock their value and flavour potential.
- Expression of cocoa bean genetic flavour potential and ‘terroirs’ is optimized to benefit farmers for marketing beans and origins at the best prices.

The stages of development proposed:
- Stage 1 – defining the problem – outputs:
  - Difficulties explored
  - Constraints identified
  - Best practices in other crops.
- Stage 2 – assessing the current situation – outputs:
  - Scope on current practices and needs
  - Review of methodology
  - Key informants identified
  - Inputs from stakeholders.
- Stage 3 – proposing solution – outputs:
  - Proposed standards developed to cover the range of needs
  - External review.
- Stage 4 – build support – outputs:
  - Broader consultation
  - Adjustments
  - Validation.
- Stage 5 – implementation – outputs:
  - Training deployed/capacity building
  - Standards applied
  - Incentives and sustainability.

REF - presentation title: 01-Brigitte Laliberte-PROGRAMME-19Sept2017.ppt
A summary of comments made in follow-up discussions held after the introductory presentations is provided below:

1. The industry has changed over the last 20 years and there is an increased interest in quality and flavour.
2. The role of the private sector should be included in aspirational goals; it is important that the standards are used by a broader range of companies, otherwise it will not be sustainable.
3. Is the aim to implement the international standards at every farm level?
4. There is a need to define a common and harmonized language between sections of the value chain, to facilitate a shared understanding of attributes for flavour assessment.
5. The standards should include the development of physical reference samples for training and calibration.
6. Several standards already exist - each with its own quality control and certification.
7. Standards need to be right, but there is also the pressure of time – the standards are needed urgently. As time passes, we miss the opportunity to train people and move forward. There is a large education deficit in sensory evaluation.
8. There is a need for both simple and more complex systems, and different types of standards at different levels.
9. We need to define what can be agreed on and implemented immediately.
10. Research should focus on both the industry’s and producers’ needs and pay attention to all the value chain actors.
11. This work requires financial, human and infrastructure resources.
12. We need to learn from mistakes and take actions to generate new questions.
13. We need to learn from the experiences of the coffee sector (what worked and what could be improved) but acknowledge major differences, such as the capacity to evaluate samples in one day (6 samples of cocoa, compared to 50 of coffee); coffee, being liquid, is faster and easier to evaluate.
14. The flavour wheel for cocoa may be more complex and defects may be easier to identify.
15. We need to be careful but creative to overcome issues – that is the key to success (e.g. coffee)
16. Are the standards to be applied to all cocoa, to improve overall quality, or only to fine-flavour cocoa?
17. It is important to understand the point in the value chain at which the quality assessment will be performed, and the different levels of assessment that will be needed (bean, liquor, chocolate evaluation) as costs increase.
18. There is a need to clarify the group’s expectations and communication on the structure – who is going to do the work and provide support and resources. It needs to reach everybody.
19. We need to define the next steps together and get the buy-in of the cocoa industry.
20. There is a clear interest and enthusiasm, but the effort will need consistency and support for the long term.
2. Current situation - protocols used

2.1 In-depth review of current practices and protocols

Darin Sukha from the CRC, Trinidad and Tobago, presented an overview of the practices and protocols currently being used, summarizing the in-depth review he conducted on practices and protocols in 2016. The presentation included background details on a number of initiatives, the review process, data and information gathering. It summarized the stakeholders’ perceptions and the need to step back and objectively review the situation. Sukha interviewed 15 experts representing 13 institutes in February and March 2016, and summarized the common needs, challenges and questions arising from the interviews in 19 points. He outlined the findings from a literature review of practices in coffee, olive oil and wine, and concluded with the following take-home points:

- The time is right for this
- The first positive steps have been taken
- More conversation/consultation is needed
- We need to keep conversations positive, taking elements from everyone to define protocols
- Use lessons learned from the other crops where appropriate to shorten the time.


2.2 Experience from the coffee sector

Kraig Kraft from CRS in Nicaragua gave a presentation on ‘Specialty coffee standards: lessons for the cocoa sector’. Kraig provided some background and definitions. Standards can be great tools for the coffee industry as they are trusted instruments of reference, established by subject-matter experts. An SCAA standard is a high-quality recommendation by the SCAA Standards Committee. It is a quantifiable and qualifiable measure, based upon scientific testing, which sets values and/or ranges of values for coffee. Currently, the SCAA has standards for water, green coffee, and cupping coffee. A protocol is a specific process recommended by the SCAA Standards Committee and Professional Development Department. An SCAA protocol is a qualifiable recommended process that the committee has agreed on and may include individual standards. There are cupping standards and protocols for green coffee. Professional accreditation for grading coffee can be attained through the SCAA’s Q Grader Program; there are over 4,000 licensed Q Graders worldwide. Coffees that use the Q certificate pay a licensing fee of $0.01/lb to the CQI. Kraft also described the evolution of the standards and their interpretations, particularly in the flavour wheel and lexicon. REF- presentation title: 03-Kraig-Kraft-COFFEE-19Sept2017.ppt

2.3 Equal Exchange and TCHO

Cristina Liberati of Equal Exchange and Brad Kintzer of TCHO, USA gave a presentation on the Cooperative Development Project (CDP) of Equal Exchange/TCHO, funded by the United States Agency for International Development (USAID). The project has been working on the development of cooperatives through the implementation of protocols and tools for the evaluation of cocoa quality, since 2010, in Peru, Ecuador, Dominican Republic and Colombia on cocoa, coffee and banana. The vision of the project is to achieve justice for producers and a closer relationship between people and farmers on which we depend. The objectives of the project are to provide cooperatives with quality systems, tools and protocols that support them to innovate and accede to other levels of markets; develop a network of professionals engaged in quality assessment in cocoa-producing countries; increase the market percentage of finished and semi-finished products for cocoa cooperatives; and ensure that the quality cocoa industry is on its way to adopting sensory evaluation standards. Liberati summarized the progress of the CDP, from its inception in 2010 to 2016. Factsheets, a training manual,
training courses, and a guide for the preparation of liquor samples have been developed. The collaborative process includes exchanges and training, virtual meetings, tests and dissemination and material validation. Liberati and Kintzer also introduced the ‘Cacao Sensory Analysis – Tasting Form’, and presented important considerations for an international system, proposing inclusive, objective calibration and verification; a cumulative quality score for multiple attributes versus a global quality score that helps decision making; and a system that 'plays well' with others, as there will always be different approaches. These are available in English and Spanish. REF- presentation title: 04-Liberati-Kintzer-EqualExchange-19Sept2017.ppt

2.4 The Fine Cacao and Chocolate Institute (FCCI)

Carla Martin, of the Fine Cacao and Chocolate Institute (FCCI, USA) presented the institute’s cocoa quality initiatives. The FCCI is a 501(c)(3) non-profit organization that is devoted to identifying, developing, and promoting fine cacao and chocolate through education, research, and community building. The institute offers an intensive course on cacao grading, facilitates the certification process, and provides resources for the specialty cacao and chocolate community and consumer education series. It has research projects on open access, makes available educational development materials, and is working on the development of a digital app for evaluating cacao quality. In addition, the institute supports community building by establishing connections among academics, industry and consumers, and creating a cacao and chocolate museum exhibition. The aim is that the cacao quality grading ranges from producers to consumers, and identifies the problems and advantages of graded cacao, and the components of the fine cacao grading programme. The FCCI cacao grading goals are: (1) the development of a communication tool of cross-cultural relevance for cacao quality that engages supply chain stakeholders in providing objective feedback to enable informed decision making and mitigate rejections and misunderstandings about quality; (2) rigorous training, calibration, and (eventually) certification of cacao graders worldwide; (3) training conducted by instructors in their own countries; (4) cacao quality grading services offered worldwide; (5) price premiums justified; and (6) data generated for research on efficacy and relevance of cacao grading standards. The FCCI evaluation of cacao includes physical and sensory evaluation. Martin described the advantages of the sampling protocol for unroasted beans over the evaluation of liquor or chocolate as being simple; repeatable, with few variables; inexpensive, with equipment costing under $50 US dollars; and highly scalable. She also presented the FCCI Cacao Grader Evaluation form. The FCCI’s course on cacao grading prepares participants to evaluate cacao and chocolate quality with tested, research-based techniques, combining in-depth lectures on cacao and chocolate with intensive hands-on training in the preparation and analysis of cacao and chocolate samples. The FCCI cacao sampling protocol is used in 24 countries, with classes offered in the United States (two classes), Peru and Brazil, and upcoming in Europe, Southeast Asia and Latin America, research study in Brazil and partnerships. Future cacao grading projects include: certification; teacher training; establishment of a cacao quality consortium; conducting of research in Colombia, Ecuador, Papua New Guinea, and the United States; and the development of a cacao quality digital app, with partners Equal Exchange/TCHO through the USAID CDP project. The FCCI-certified cacao graders will be able to use FCCI cacao sampling and grading protocols accurately, to consistently evaluate cacao for basic qualitative traits, provide meaningful feedback relating to improvements that can be made to the graded cacao, and certify that a sample is of excellent quality. REF - presentation titled: 05-CarlaMartin-FCCI-19Sept2017.ppt
The Centre for the Promotion of Imports from Developing Countries (CBI)

Jörn Berger, from the Centre for the Promotion of Imports from developing countries (CBI, the Netherlands), gave a presentation on the development of quality assessment schemes in the fine-flavour cacao and cacao derivatives sector in Peru, as part of the CBI integrated country programme on Specialty Coffee, Fine-Flavour Cocoa and Cocoa Derivatives (Peru; 2014-2018). The vision of CBI is to contribute to sustainable, inclusive economic growth in developing countries through the expansion of exports from these countries. The mission of the centre is to provide expertise in the development and promotion of exports from developing countries; the focus is on strengthening exports, and increasing income, revenue, investment and economic development. The objective of the CBI integrated country programme for Peru is to contribute to the positioning of the Peruvian cocoa and chocolate sector firmly in the European market, and to support an increase in exports from small- and medium-sized enterprises (SMEs) in Peru to the European market. At the micro-level, the programme works with three chocolatiers and three producers’ groups, and provides coaching (including export market planning); technical assistance (production processes, access to finance, etc); and training (European MAR, certifications, website promotion, CSR); and supports participation in market orientation missions (also named EXPRE) and trade fairs (such as BIOFACH, Chocoa, etc.). At the meso-level, the programme addresses bottlenecks/untapped opportunities in exporting to Europe that cannot be tackled individually, but need to be solved collectively by the sector. The expected outputs of the programme include: the implementation of a national programme designed in collaboration with the Ministerio de Agricultura y Riego, Peru (MINAGRI) and other stakeholders, for remediation and monitoring of cadmium levels; establishment of new updated quality standards, developed in coordination with the normalization committees for cocoa beans, fine-flavour cocoa beans, cocoa butter, cocoa liquor and cocoa powder; development of didactic materials for cocoa producers to promote good agricultural practices; enhanced national cocoa taster network; improved service delivery of the Asociacion Peruana de Productores de Cacao (APPCACAO); development and implementation of a national cocoa and chocolate taster accreditation system, by the Centro de Innovación del Cacao, Peru (CIC); development of a proposal for an internationally harmonized cocoa accreditation system, including a standardized system for sensory evaluation; development of a cocoa flavour map for Peru; and facilitation of three cocoa international promotional (e.g. tasting) events for Peru in the European market. Berger provided some background details on cocoa production in Peru, pointing out that Peru is the country of origin of more genetic groups than any other country and has great potential. Commonly used evaluation schemes did not sufficiently differentiate between bulk and fine flavour cocoa and derivatives. Every region has particularities in genetics and post-harvest practices. Fine-flavour cocoa has different criteria with regard to optimum fermentation levels (percentage) depending on the cultivar, and there is a lack of national/international protocols/standard(s) for fine flavour cocoa, especially for Latin America. Berger described the three phases of the development of a Peruvian sensory evaluation scheme. Phase I comprises the screening and review of sensory evaluation systems; comparative analysis of current sensory evaluation systems; design of tasting categories and descriptors for cocoa and chocolate; proposal of protocols for preparation of cocoa liquor samples; validation of protocols for preparation of cocoa liquor samples; and revision of proposal of the Peruvian tasting chart by chocolatiers and national and international specialists. Phase II comprises a proposal of a curriculum for capacity building of tasters; validation in the framework of the national cocoa contest of 2016; adjustment of physical and sensory evaluation charts for cocoa and chocolate; re-adjustment of the training curriculum; validation of sensory evaluation system and first training session (in San Martin); and re-adjustment of sensory evaluation system and training processes. Phase III includes the validation of the sensory evaluation system and training processes (in Cusco); a proposal of physical and sensory evaluation software; re-adjustment of the physical and sensory evaluation of cocoa and chocolate approach, focusing on skills; validation of sensory evaluation system and training processes (in Huánuco, San Martín and Ucayali); design and implementation of physical and sensory evaluation software; re-adjustment to sensory evaluation system and training processes. Berger further detailed the capacity-building and training components, the sensory evaluation of fresh beans, and the flavour wheel for selection of specific
flavours. He presented the forms used for the physical evaluation of fermented, dry cocoa beans; liquor sensory evaluation; physical and sensory evaluation of chocolate bars; and physical and sensory evaluation of filled chocolate bars. Berger outlined the next steps to be carried out with partner organizations as follows: (1) validation of the system with ~10 selected tasters from the tasters’ network; (2) continuous development of harmonized tools and training curricula (more time required for the training modules, precise description of aspired skills, further definition of follow-up activities, training tasks, required daily field work – in hours); (3) international validation of the system with internationally experienced experts; (4) accreditation of a certified training course through the Instituto Nacional de Calidad (INACAL); and (5) further international calibration of the Peruvian tasters’ network. In relation to the international validation of the system, Berger further noted that the evaluation system will be considered by CAF/ILAC for validation at Andean level; ILAC and MINAGRI have approved a work plan to train trainers under the developed system; the system will be reviewed and validated with support from ILAC and international experts; several universities have expressed their interest in integrating the system in their curricula; and the leadership of APPCACAO is in the process of implementing training curricula. REF - presentation titled: 06-JoernBerger-CBI-17Sept2017.ppt

2.6 The Cocoa of Excellence (CoEx) Programme and International Cocoa Awards (ICA)

Ines Drouault, from the Cocoa of Excellence Programme (CoEx Programme), presented the protocols and process of bean quality and sensory evaluation. The CoEx Programme is the entry point for cocoa producers to participate in the International Cocoa Awards (ICA), a global competition recognizing the work of cocoa farmers and celebrating the diversity of cocoa flavours. The vision of the CoEx Programme/ICA is the professionalization of farmers/producers and long-term sustainability of the cocoa supply chain. The purpose of the CoEx Programme/ICA is to recognize, value and preserve cocoa by promoting global recognition of high quality cocoa. The objectives of the CoEx Programme/ICA are to (1) increase awareness and promote education along the cocoa supply chain on the opportunity to produce high quality cocoa and preserve flavours resulting from genetic diversity, ‘terroir’ and the know-how of the farmers who produce cocoa; (2) facilitate communication and linkages between cocoa farmers/producers and operators in the supply chains; and (3) stimulate and increase capacity of producing countries to recognize, seek out and preserve quality and diversity in cocoa. Drouault described the information collected on bean samples – contact details, production, variety, farming practices, propagation techniques, bean process information (fermentation and drying), etc. – via the form that each bean sample provider completes. Upon receipt, each sample is given a unique CoEx code for blind evaluation until the relevant section of the ICAs is completed. All samples are evaluated for physical quality (condition on receipt, weight on receipt and after cleaning, bean count/100g, bean moisture (%), average bean weight); description of external appearance; bean aroma, cut-test description; number of beans; scoring (slate, colour, mouldy, infested, fissuring); cut-test aroma and observation; assessment of bean type; determination of roasting conditions (temperature and time); and according to region, submitter’s information, moisture, cut aroma, cut test and bean weight. Accepted samples are then processed into liquor; weight evolution is monitored during roasting, nib cleaning, liquor and chocolate processing, and percentage of fat in liquor. All samples are processed into liquor and un-tempered chocolate for blind sensory evaluation by the six members of the CoEx Technical Committee (CoEx-TC). Regular exchanges with tasting sessions for calibration and adjustments take place during face-to-face meetings and video conference calls. Drouault described the glossary of terms developed by the CoEx Programme in 2017, which is the result of various meetings and tasting sessions. An extended evaluation spreadsheet is used by the CoEx-TC with 46 attributes, including 39 scored individually and 7 calculated automatically (the ponderation method), representing a total of complex categories. A simplified evaluation form is used by the broader jury for the 50 chocolate samples with 14 attributes. The CoEx-TC developed physical reference samples to define intensity of attributes, and agreed on scores to use prior to evaluation sessions. Results are analysed statistically, and differences are discussed with the aim of coming to agreement. REF - presentation titled: 07-Ines-Drouault-COEX-PROCESS-19Sept2017.ppt
2.7 The Heirloom Cacao Preservation Fund (HCP)

Brad Kintzer from TCHO and John Kehoe from Guittard Chocolate (USA) presented the Heirloom Cacao Preservation Fund (HCP). The goals of the project are to celebrate and support the farmers, their cocoa and their craft; Identify unique cocoa of the highest quality, which represents the rich diversity of flavour and supports the genetic diversity of cocoa; raise awareness on heirloom quality cocoa among producers, cocoa-producing countries and consumers; create market access opportunities for producers; and seek support for further propagation of these important varieties. Kintzer and Kehoe described the Heirloom process as follows: (1) HCP receives an application and bean samples; (2) the HCP database records the applicant, genotype and flavour characteristics; (3) United States Department of Agriculture (USDA) conducts genetic identification and ongoing research; (4) anonymous beans are processed for samples by Guittard; (5) a tasting panel conducts a flavour analysis of anonymous samples; and (6) protection, propagation projects. During the process, all samples are blind coded, and physical evaluation and roasting is carried out based on the CoEx Programme, ECA/CAOBISCO/FCC guidelines, adjusted for bean size, moisture, etc. Clean nibs are ground to liquor in stone melangeurs to a maximum of 20 microns; 68% Chocolate consists of 15 – 20 microns (65% nibs, 5% deodorized butter, 0.2% lecithin, 31.8% sugar). Kintzer and Kehoe described the establishment of the HCP panel, which comprises nine international members with over 250 years of experience. Both liquor and tempered chocolate bars are sent to panel members for private evaluations. Evaluations are conducted in the basic format established by CoEx. A summary is given to panellists for review and their re-tasting, taking into consideration the evaluations of the other panellists. Panel members discuss, via conference call, details of the tasting and re-tasting of chocolates, and confirm their recommendations on HCP designations, offering any suggestions for processing the beans, and providing recommendation to the HCP. Kintzer and Kehoe also showed the geographical distribution of the HCP designations, and described the three most recent designations of 2017: HCP 11 Belize, BFREE; HCP 12 Classico Chunó ™ Ingemann; and HCP 13 Vietnam, Mekong Delta, Mr. Chong. The end goal is to raise awareness on heirloom cocoa and protect the varieties that are being threatened by high productivity beans. Unique to this project is the connection of genetics to flavour. REF - presentation titled: 08-Kintzer-Kehoe-HCP-19Sept2017.ppt

2.8 Iniciativa Latinoamericana del Cacao (ILAC)

Giovanni Ginatta, representing the Iniciativa Latinoamericana del Cacao (ILAC) of the Banco de Desarrollo de America Latina (CAF) in Ecuador presented the work of this programme. CAF was established in 1970 by 19 countries in Latin America and the Caribbean, to promote sustainable development in Latin America. ILAC focuses on the macro-, meso- and micro-scope, with four principles: 1) inclusive development; 2) systemic change; 3) local initiative; and 4) contextualized solutions to achieve significant social and environmental impacts. The main problem identified was the low productivity, quality and profitability of small landholders’ cocoa farms. The working components of the initiative are: 1) to facilitate access to markets; 2) support access to funding; 3) to enhance the cultural value of cocoa; and 4) to develop a regional strategy for systematization and the exchange of experiences. The objective is to catalyse the development of fine-flavour cocoa as a sustainable economic activity. In September 2016, CAF assumed the role of Technical Secretary of ILAC, to support a regional platform of knowledge management, as the framework of the proposal for the development of a harmonized system to evaluate cocoa and chocolate. ILAC’s focal countries are Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Panama, Peru, Dominican Republic, and Trinidad and Tobago. The first expert panel on fine cocoa and organoleptic methodology concluded the following: that a common language was needed for cocoa flavour characteristics at all levels of the value chain; different methodologies have to merge for the benefit of a common proposal; cocoa with a flavour and high quality is necessary to obtain maximum value of the small production volume and target premium markets; it is possible to improve cocoa quality and the economic conditions of small producers in the region, taking advantage of the worldwide interest in the potential of cocoa from Latin-America; technical discussion on experiences in sustainability of fine-flavour cocoa are of vital
importance; and the commitment of ILAC participating countries is needed for the execution of sustainable strategies to ensure the future of the fine-flavour cocoa versus commodities market. Key objectives are: to establish alliances, for example, with the United Nations Conference on Trade and Development (UNCTAD), the International Trade Centre (ITC), and ICCO; search for complementary funding, from the Global Environment Facility (GEF) for instance; and strengthen institutional and regional agenda. The *Observatory of the Latin-American Fine Flavour Cocoa* is responsible for monitoring and analysing the market, contributing information to the value chain, and promoting knowledge management, innovation and the exchange of successful experiences. The study ‘Critical points for the development of a differentiated fine-flavour cocoa market’ highlights the importance of moving forward in the specialization of the offer and creation of a specialty cocoa market, with a valorization of flavour characteristics and properties of cocoa from each region and country. An analysis of strengths, weaknesses, opportunities and threats (SWOT), identified the following strengths: diversity and quality of genetic materials, potential for agro-ecological production and worldwide recognition of regional cocoa quality. The weaknesses identified were as follows: limited technology for the improvement of production/productivity, limited availability of information, beliefs of producers about crops, limited funding, and high number of intermediates in the value chain. In relation to opportunities, the analysis revealed a growth of demand and emergence of specialized niche markets, differentiation of production by organoleptic characteristics and origin, and incentives for organic and environmentally sustainable practices. Threats identified in the SWOT analysis included weaknesses in and abandonment of the productive structure; a lack of investment in the sector; loss of diverse and unique genetic materials and proliferation of hybrids; and a decrease in market prices and climate change. The study concludes that cocoa of Latin America should differentiate itself from conventional cocoa to achieve adequate development. Genetic material and post-harvest processes have to be accompanied by knowledge of their impact on flavour. The goal is to achieve profitability and sustainability for small-scale producers of fine-flavour cocoa. Work should continue on the identification of genetic materials that contribute added value in the market of specialty cocoa. Common regional efforts are needed to face the challenges of entering new markets. A regional platform should be established to facilitate information flow, coordinate regional projects, and facilitate the exchange of experiences among countries with similar origins and problems. The next steps are as follows: consolidate ILAC as the regional platform to exchange experiences and information; organize two annual meetings to exchange experiences; implement direct marketing strategies; and support the commercial linking of high quality cocoa products and buyers. REF - presentation titled: 09-GiovanniGinatta-CAF-ILA-19Sept2017.ppt

### 2.9 AMACACAO and CUNAKakaw

Juan Francisco Mollinedo, from AMACACAO/KUNAKakaw in Guatemala gave a presentation on the experience of AMACACAO on cocoa quality. He talked about the long history of cocoa production in Central America (more than 5,000 years), and presented the map of Mayan Mesoamerica, which included southern Mexico, Guatemala, Belize, El Salvador, Honduras and Nicaragua, and showed present cocoa-production areas overlapping with important archaeological sites in Mesoamerica. Mollinedo provided background information on the AMACACAO members, who come from 15 different companies, and represent medium to large private farms (18%), small producers’ organizations (44%), transformation industry (25%), and buyers/traders (12%). The aim of AMACACAO is to increase awareness on cocoa quality. Mollinedo talked about the KUNAKakaw trademark of fine Mayan origin, representing all the countries involved. He described AMACACAO’s quality development activities, such as the establishment of quality control labs and training of sensory evaluation panels with experts. The training also includes best post-harvest and value-added practices. AMACACAO has learned from exchanges with buyers and tasters, and has realized that buyers are also new to quality and standardized protocols. It started implementing the draft proposed international standards with very positive results; for example, tasting liquor samples made based on the international standards, and receiving feedback from experts, traders and buyers, can open doors to interesting markets for the region. AMACACAO also distributed a small factsheet to all the
2.10 Discussion on the current use of standards and protocols

The following points were made during the group discussion based on the presentations of current initiatives and programmes, and the standards and protocols used.

1. The most important objective of the coming days is to create a common language, harmonizing terms and unifying methods.

2. It will require aligning initiatives towards a common solution, keeping in mind that in each system there are important elements that have taken years to develop. But it is important to step back from our own protocols and to take decisions for the good of the majority.

3. The challenge is to develop protocols for a range of processes, from fermented and dried beans to the final product – chocolate. Each product is different and equipment will vary at each point of the value chain. The first step is a physical evaluation with the screening of beans.

4. The evaluation of coarse powder needs to translate into attributes in liquor and chocolate. Results need to correlate for the same bean sample.

5. All assessments need to avoid health and safety risks.

6. We need to maximize on technology and ensure that information is available for analysis rapidly, reducing paper-based systems.

7. A major constraint at the moment is that there are significant differences among panel members in scoring attributes when tasting the same liquor or chocolate. The use of statistics in sensory evaluation can help but differences are not always consistent for each individual panel member.

8. The evaluation of flavour in cocoa needs to be as objective as possible. This is a difficult task that can be supported by using common physical references for specific flavour attributes, with agreed-on descriptors/glossary of terms to reduce variations.

9. The definition of terms needs to be drawn up with the participation of all stakeholders along the value chain, and in all languages of cocoa-producing regions.

10. Standards need to be linked to good agricultural and post-harvest practices.

11. Standards will define the protocols of the process from beans up to chocolate and evaluate quality, to generate data that can be comparable across the whole value chain.

12. Training in bean roasting is a challenge since it depends on many factors and experiences. Experts can define roasting profiles according to objective measurements for bean size and moisture content.

13. It is important to agree on the objectives of the standards and the cocoa that is targeted. Should the standards be used to define what is fine or specialty cocoa, or should it only objectively describe cocoa and let the users decide? At the moment, there are good examples of the same standards used for different objectives.

14. It is important to communicate the compliance to standards, from producers to customers, to achieve success in the business.

15. Concrete and tangible benefits are needed for successful implementation at farm level.

16. Development agencies have demonstrated an interest in the creation and implementation of standards.

17. The coffee sector is an important model, and its evolution has to be taken into account from the initial focus on physical evaluation of coffee beans to the further development of the lexicon. It has a unique score that indicates overall quality. Is this what we are aiming for in cocoa? The companies were mainly interested in the differentiation of products.

18. The SCAA created the CQI with few members and initial support from USAID.

19. A key lesson learned from the coffee sector is the importance of building consensus.

20. There is a sense of urgency in the cocoa community but sufficient consultation will be needed to ensure inclusiveness, broad ownership, participation and buy-in.
3. Towards harmonized international standards

3.1 Proposal for harmonized international standards for cocoa quality and flavour assessment

Darin Sukha presented the proposal for harmonized international standards for cocoa quality and flavour assessment, which were developed based on an in-depth review of current practices and feedback from a number of experts and stakeholders during regional and international consultations, such as the WCF regional forum in September 2016, the ICCO World Cocoa Conference in May 2016, and several FCIA and ECA/CAOBISCO/FCC discussions over the course of 2016 and 2017. The proposal covers post-harvest processing; criteria for raw cocoa bean quality; specific considerations for flavour profiling; the cocoa liquor and chocolate flavour wheel; specific elements of panellist training, scoring and scales; the broader attribute set of 45 descriptors; a glossary of terms; and a proposed evaluation form based on the existing forms of CRC, FCCI, TCHO/Equal Exchange, the CoEx Programme and others, fissuring scale and cut-test photos. These proposed standards build on the above-mentioned CAOBISCO/ECA/FCC publication ‘Cocoa beans: chocolate and cocoa industry quality requirements’, and the ‘ICCO guidelines on best practices in cocoa production’.

The key principle behind the proposed standards is to put together what is available in a pragmatic way, considering experiences from industry when open to share. Guidelines for agricultural and post-harvest management practices, quality control of beans, transportation and shipping, etc., are not included in the standards as they are published in the 2015 ICCO general guidelines accepted by the European cocoa industry. Standards developed by the International Organization for Standardization (ISO) on managing fermented, dried and unroasted cocoa beans are being revised and will be published at the end of 2017. They are very thorough, with more attention paid to cocoa as a food item, including food safety issues. The ISO structure could be a useful umbrella for the international standards that need to be developed.

Sukha provided some specific recommendations and considerations for flavour profiling, such as:

- The panel should comprise at least six panellists.
- Factorial/statistical design, including hidden reference liquors.
- Calibration should include control samples to taste at the start of each session.
- Sample codes should have at least three digit random numbers.
- Representative and accepted flavour wheels: main and/or ancillary attributes.
- Profiling vs differences testing.
- There should be at least three replications of testing of the samples.
- The timing and number of tasting sessions to be held daily should be defined.
- Global quality scores should be discussed.
- Data analysis of client or panellist feedback or other objectives.
- Panellist training:
  - It is a life process – the ‘initial’ training is just to start the process
  - Panellists should have enough time to taste, and many aspects need to be considered, such as allergies, smoking and tobacco usage
  - Basic taste screenings should be conducted with solutions to determine how sensitive a panellist is
  - Vocabulary of basic tastes to be generated from reference samples
  - Vocabulary of ancillary flavours to be generated from reference samples
  - Vocabulary of off flavours to be generated
  - Kits already exist (such as Le Nez du Vin)
  - Panellists should be exposed to extreme reference samples to have a common reference
  - Ranking and scoring of core attributes.
- At a rapid screening on field, it may not be necessary to taste the beans; the visual analysis may be enough.
- Define what works for different stages of the value chain.
- A broader set of attributes exists, with 45 descriptors, created by Ed Seguine, Darin Sukha, and the CoEx Programme. It includes the ancillary notes made by people from different countries; strong opinions were taken into account. For example, the word ‘panela’ was discovered as a good attribute name, while in a place that smelled exactly as the notes we were detecting in a specific cocoa bean.
- Flavour wheels are only a quick reminder of a glossary.
- With the expression ‘it tastes like’, there has to be a very strong and clear association with what we say it tastes like.
- The evaluation form was thought to be captured quickly in the field where paper is sometimes necessary.

   o REF - presentation titled: 11-Darin Sukha-STANDARDS-19Sept2017.ppt

The proposed standards document comprises the following seven chapters (further details of content are provided in Annex C):

- Chapter 1 - Sampling
- Chapter 2 - Sampling procedures
- Chapter 3 - Sample passport data
- Chapter 4 - Aging and storage of beans
- Chapter 5 - Physical assessments
- Chapter 6 - Coarse powder, liquor and chocolate preparation
- Chapter 7 - Flavour assessment
- Form and annexes.

The follow-up discussion is summarized below:

- It was acknowledged that it is a difficult task to make the first proposal open for group review, criticism and comments.
- It is important to avoid the association of systems with specific groups and the use of logos from programmes and funders.
- The collaborative work needs to ensure appropriate acknowledgement of existing systems.
- The industry needs to be clear on what is needed, with minimum requirements and clear language.
- Standards should cover all cocoa of all regions.
- The most important intention of the standards is not to state what is good but rather to describe what is there and let the buyer make the decision.
- It is most important to standardize the roasting process as it is the key step that connects the assessment points in the value chain.
- Physical reference samples are critical for the success of training and calibration for sensory evaluation.
- The development of international standards is bigger than any of the current initiatives.

3.2 Review of Chapter 7 of the proposed international standards - Flavour assessment

The focus of the second day (20 September 2017) was for all participants to comment in detail on the proposed international standards at the technical and strategic level. Participants suggested reviewing the chapter they find challenging and with possibly the most divergent of opinions. A group vote indicated a priority for Chapter 7 – Flavour assessment – and participants were divided into seven working groups of six-seven people each. Chapter 7 comprised the following elements:

- 7.1. Tasting area and layout
• 7.2. Panellist training
  o 7.2.1. Basic tastes - identification and threshold
  o 7.2.2. Odour recognition with vocabulary generation
  o 7.2.3. Taste training with vocabulary generation
  o 7.2.4. Cocoa liquor assessment
  o 7.2.5. Coarse powder assessment
  o 7.2.6. Chocolate assessment
  o 7.2.7. Intensity scales
  o 7.2.8. Flavour descriptors
  o 7.2.9. Calibration of persons
• 7.3. Sensory statistics
• 7.4. Visualization of results
• Filled ‘pie slice’ plots.

The working groups discussed the parts that (1) could be finalized; (2) may need further work; (3) should be added; and (4) identified any areas for further research.

At each level (fermented/dried beans – roasted beans – liquor – chocolate), there are different stakeholders with different capacities and needs, but there are similarities in sampling. All parts will have requirements for equipment with appropriate calibration instructions. Buyers can define at what level they want to taste the beans. The important point is to provide standards that can then be applied and are connected with the quality and flavour of the finished products.

The feedback reported is summarized below:

General feedback
• There is a need to develop one common language/vocabulary that can be used by all stakeholders, while establishing protocols specific to each part of the value chain, using language that represents the capacities and particularities of each stage in the process.
• Chocolate makers should know the process in the field, and cocoa producers should know how chocolate is produced from their beans.
• Standards should have clear and concrete instructions and methodologies, easy to understand and implement.
• Protocols should be developed for each point in the value chain.
• The document addresses many aspects and assumes that uniformity is needed at all levels.
• Standards should be based on what is done by the majority, focusing on commonalities of all initiatives and not on differences.
• Where possible, they should rely on existing ISO standards.
• Decisions on categories should be collaborative and should draw on the experiences of existing systems.
• Each section should clearly describe objectives and use of information.
• Some protocols will require different levels of training and investment.
• Several practices are already aligned.
• Physical evaluation should be a mandatory prerequisite towards later flavour evaluations.
• It is possible for producers and associations to get funding for basic quality labs with equipment for liquor evaluation.
• Tempering in tropical areas may be challenging where having a reliable power supply is an issue.
• Standards are important for ensuring quality control and fair commercial practices.
• Standards should be used by all in sensory evaluation and for training at all levels: beginner, intermediate, advanced and trainer.
• Sensory evaluation protocol for raw beans must relate to liquor and chocolate protocols, and identify the complementarities and differences.
• More research is required on the relationship between the compounds identified in raw beans and how they translate into liquor and chocolate flavour notes.
• Assessment of unroasted beans should focus on defects.
• Standards should be owned by all with a coordination group.

Flavour attributes
- Common flavour attributes with simplified descriptions are needed.
- Basic flavour attributes are good, and only these should be standardized, not ancillary notes.
- Chocolate and liquor protocols should include more attributes.
- Scale of 1 to 5 proposed for raw beans, and 1 to 10 for liquor and chocolate.
- For raw beans, there should be broad categories of aromas and defects.
- There should be agreement on the importance of calculated and transparent overall scores.
- It is useful to indicate global quality based on scores.
- The scale for the global quality score description should be extended.
- A hedonic evaluation area should be allowed, even if not included in the score.
- In addition to each flavour, an overall sense of the bean/liquor/chocolate can be given with descriptive sentences (e.g. simple or complex).
- There was debate over whether to list defects in detail.
- A question was raised about scoring something as a defect vs. its presence.
- Information about off-flavours affected by roasting needs to be included.
- The question of how to deal with the impact of aging of cocoa beans vs. infield testing of fresh cocoa was also raised.

Tasting sessions and panels
- There was agreement on sections 7.1 Tasting area and layout, and 7.2.1 Basic tastes - identification and threshold.
- ISO standards exist for setting up a jury.
- There was clear differentiation between calibration and tasting sessions.
- The same software needs to be used so that everyone can connect to the same platform.
- There was agreement that liquor should be melted at the temperature specified.
- Agree on the minimum number of people required to taste a sample in order to generate an agreed characterization (six is difficult to gather in the field).
- There needs to be agreement on who is qualified to train panel members.
- It was agreed that there needs to be certification of novices, advanced tasters, and instructors.
- Sensorial fatigue needs to be taken into consideration in the standardization of methods.
- The need to standardize light in labs may be complicated for some.
- Concerns were raised about the repeatability of assessments, getting the right equipment, and having trained panellists.
- It is important to ensure that unroasted bean assessment will lead to same decision from assessing the liquor or chocolate made from the same beans. Each has advantages and disadvantages. Both assessments are important, and correlation between both has to be clarified.

Physical and chemical references
- It is important to have physical references that all agree on, to facilitate training on individual attributes.
- All stakeholders need to be exposed to a wide range of cocoa reference samples.
- A centralized organization to provide these references would be helpful.
- A colour scale reference could also be helpful.
- Further research is required to determine how to produce reference samples (artificial or natural).
Research areas
- Food safety related to unroasted beans evaluation.
- Evidence of connections between unroasted bean quality and flavour, and liquor and chocolate.
- Production of reference samples (artificial or natural)

3.3 Perspectives of cocoa producers

The group discussion generated a lot of useful feedback from the different value chain actors. In order to obtain deeper feedback on the specific needs of the cocoa producers in the group, another session was held and the feedback is summarized below:

- While language already exists, it has not yet been standardized; there should be an entity that monitors, modifies and produces guidelines for the relevant protocols.
- We ask chocolate makers to agree on a common language.
- Producers have already unified their protocols for post-harvest practices. Will chocolate makers unify the way they process the beans?
- Some producers have never spoken about flavour with the cocoa buyers.
- Marketing uses a lot of words like ‘fine cocoa’ and this creates confusion.
- There is a clear need for an agreement on standards and protocols to resolve the confusion that exists among producers because of different feedback from buyers.
- The standards should be clear and meaningful to producers.
- Training, knowledge and tools are needed to generate data to explain in an objective way the characteristics of the beans, and to produce the best cocoa quality possible; it is the basis of the value chain.
- The quality of the cocoa beans needs to be preserved until the end of the chocolate-making process.
- The quality of the beans produced on the farm needs to be well documented/recorded to avoid buyers accusing producers of selling bad quality beans. If a chocolate is not well produced, we have no way to show that we delivered a good cocoa bean.
- The most useful feedback is data to interpret and understand what buyers want and how producers can achieve it.
- The connections between raw beans, roasted beans, liquor and chocolate should be clearly established, and how an attribute in raw cocoa translates into chocolate.
- We need to link cocoa production with the elaboration of chocolate using the same language.
- We need better definitions of the types of cocoa that are grown – how can they be categorized to express their uniqueness and value?
- Coffee likewise did not have a common language to express the uniqueness of coffee beans; now there is such a language and it can be expressed. This is crucial for negotiations. If there are no words or scores to express what a cocoa bean is like, farmers cannot sell it and must depend on the buyers. If it is possible for coffee, it should be possible for cocoa.
- The industry should share the final products with producers.
- We need to unify the language and get chocolate makers to say what characteristics they want in the cocoa beans, for producers to understand how to achieve what is required.
- When someone in one country mentions an attribute or a score, it should be understandable for all countries.
- Scales should take into account the variation of attributes present in all types of cocoa across the world, to score all cocoa with the same scale.
- We already do the physical evaluation of beans, we need to agree on the way to taste liquor.
- Laboratories should be established and people should be trained.
- Equipment in laboratories has to be similar or the same as the equipment in factories, to be able to make decisions in the labs.
- Everybody should be considered when thinking of unifying criteria for assessment – producers and the industry, all along the value chain.
4. Recommendations and next steps from Managua

The following section aims to capture the main areas of agreement, and what requires further discussions and research, and proposes the next steps.

4.1 Proposal to restructure the standards document

The results of the working group that focused on Chapter 7 led to lively discussions in areas in which there were both agreements and disagreements. There are elements of basic language that is common to all, but work is still needed to provide the details of that language to ensure that we understand each word in the same way. Standards should have a different structure compared to the value chain, and should be divided into sections that provide more detailed explanations about the objectives.

The following four main points in the value chain, from the tree to the finished product, emerged as the most useful way to continue the discussion:

- A: fermented, dried, bean-powder assessment
- B: fermented, dried, roasted, bean-powder assessment
- C: liquor assessment
- D: chocolate assessment.

Working groups were formed and included experts in each of these areas (A-B-C-D) to define the criteria and variables for assessing each specific step, the minimum requirements and attributes to be evaluated, variables to be measured, and how A links right up to D. The objective was to define how to communicate the attributes and how to relate to each of the stages. What is of key importance, is that the sample beans assessed are representative of the entire bean lot.

It was acknowledged that cocoa beans may be more complex than coffee beans because of the diversity of flavours that emerge from genetic and post-harvest practices. There is also a wide range of demands that rely on distinctive flavour profile descriptions, as well as an increasing market for cocoa beans at all transformation levels, including raw cocoa with limited roasting, or Sánchez and Hispaniola from the Dominican Republic.

One common methodology is required to describe the different types of cocoa beans, regardless of the stage in the process. Agreement is needed on the basic elements of the standards (a bottom line), and a follow-up consultation must be held to evaluate what has not yet been agreed. It was proposed that a pilot project be initiated in Central America and agreements implemented.

It was suggested that the discussions be continued in working groups, focusing on two points in the value chain: raw cocoa beans (A); and liquor, including a discussion on roasting (C). The discussion on chocolate assessment (D) would be continued in Paris during the events at the Salon du Chocolat, 30 October 2017.
4.2 Coarse powder assessment

Main areas of agreement
- The ISO standards should be the baseline for external and physical evaluation.
- Sampling protocol accepted as designed.
- Evaluation form should use broad categories (fruity, floral, hammy, and smoky) rather than elaborate ones (e.g. fruity-peach, fruity-mango).
- Agreement on flavour attributes for acidity, bitterness, astringency, cocoa, fruity, floral, spicy and nutty. Further discussions needed for agreement on attributes for sweet, roasted, vegetal/green/herbal, buttery.

Areas for further discussion and development
- Agreement on a glossary for a broad category of flavour descriptors common across all the analyses through the value chain.
- Certified physical liquor reference samples with established attribute intensities.
- An evaluation form linking analysis to liquor and chocolate assessment.
- A clear standard for what makes a sample safe to taste.
- A kit with reference samples for tasting and training.
- A repository of resources where members can access relevant documents and information.
- A database to facilitate data collection and processing.
- Appropriate education for calibration and understanding.

Areas in which further research is needed
- Representative sample size for quality assessment (physical or sensory) linked to different bean lot sizes.
- Correlation (or lack thereof) between attribute’s presence and intensity in unroasted coarse powder, liquor and chocolate.
- Food safety in all sample preparation techniques.

4.3 Liquor assessment

The issue of cocoa liquor was examined throughout all of the steps as presented chapter by chapter (except Chapter 7, which was discussed in separate groups). The groups made some edits in relation to sampling and physical analysis, and the main changes dealt with were in roasting. The standards should contain concrete instructions. The key changes and recommendations are listed below:

Ovens
- Recommendation is limited to a forced-air convection system, with narrower parameters for temperature, recovery time, average air velocity, etc.
- Specifications on the thickness of the bean bed in the oven to be included.
- Temperature should be consistent in all the ovens.
- The mention of brand names of equipment to be removed throughout the document; general equipment descriptors to be used. Brand names may be mentioned as examples in the footnotes.

Roasting conditions
- Roasting protocols should be based on bean size and moisture content and not necessarily on genetic types, but these could be considered.
- Further research and validation of this is needed.

Food safety
- This subject should be treated in a separate section.
- Scientific evidence is needed to link roast degree with microbiological counts (yeasts, mould and total plate counts) and the presence or non-presence of salmonella and/or e-coli.
Preparation of cocoa liquors
- Recommendation of equipment to liquefy cocoa beans into liquor will be narrowed to melangeurs.
- An optional pre-grinding protocol should be added; consider using a coffee mill for this step.
- Target particle size 25-30 microns.
- Time range on grinding to be determined based on varying types of equipment to achieve micron size; it is also dependent on quantity.
- No added conching effect to accompany milling will be made explicit.
- Consider the inclusion of specifications for coarse liquor (bigger particle size).
- Further work is needed on how particle size affects tasting.
- Describe exactly what is to be evaluated during cocoa liquor assessment.

4.4 Chocolate assessment

The issue of chocolate assessment was examined by one group (not in plenary) during one group-work session. As mentioned above, it was agreed that the discussion will be continued at the Salon du Chocolat in Paris, 30 October 2017. The group produced the following comments captured by the chair and rapporteur:

Main areas of agreement
- Build a complete system of four standards, each related to the stages of beans, roasted powder, liquor and chocolate, and connected with each other homogenously (by using the same flavour glossary for evaluation). This system could be used by anyone, anywhere in the cocoa world depending on their particular objective; it should be robust and repeatable. Methods to assess beans, liquor or chocolate can be good but will not give the same results if they have different objectives.
- It is important to define the objectives and results clearly, rather than a specific tool or machine.
- The global quality scores should focus on describing cocoa properties without stating if they are good or bad.
- Take advantage of the ISO standard for sensory analysis.
- Eliminate the genetic references for roasting and base them on beans size.

General comments and suggestions
- Clearly define the focus of quality control as being one of the two following options: (1) large-scale/quick/cheap method; or (2) very precise/expensive/final product oriented.
- Define the measuring equipment, including the device to measure particle size: Hegman, micrometer.
- The size of the sample should be based on the quantity needed to make chocolate.
- Give a specification for maximum husk content; US law allows 1.75%.
- Specify that white sugar is to be used to avoid any ‘parasite’ taste.
- Suggested recipe: 80% nibs and 20% sugar, includes enough fat to make it liquid.
- The refiner/conche should comply with European (EU) law, multiple power requirements (100, 110, 220 volts), use airflow, and be able to work in defined environmental conditions (temperature, humidity ranges).
- The tasting procedure should allow methods for both tempered and melted chocolate.
- Molds for the tasting of chocolate pieces should be defined and consistent.
4.5. Proposed next steps

The proposed next steps are to:

- Produce a report of this meeting in Managua capturing the main points of the presentations, discussions, agreements and areas for further development.
- Review the structure of the standards’ document and content.
- Explore the possibilities of having agreed parts ready for implementation by the different stakeholders’ groups (cocoa producers, bean traders, chocolate makers, researchers, etc.) and continue the development of the other parts.
- Continue the discussions and involvement of stakeholders through upcoming opportunities for consultation, meetings and workshops, particularly in the areas of expanding the analysis to include all current practices (if not already captured in the 2016 review), the development of training and physical reference samples, certification etc.
- Clarify definitions of what is meant by standards, protocols, guidelines, specifications etc.
- Propose a platform to exchange information and documents online.
- Proposed technical working groups for the validation of each part of the standards.
- Build trust and consensus, achieve results that will be broadly acceptable and work beyond individual groups.
- Gather all stakeholders from all sectors to maximize involvement and implementation.
- Keep as priority that cocoa producers need to know the specific criteria and data based on which the price can be set to maximum value.

Upcoming meetings and conferences that could be used for consultation on, and validation of, this work include the following:

- 22-25 April 2018, 4th World Cocoa Conference, organized by the ICCO, Berlin, Germany.

4.6. Revision of the standards document

The standards document will be reviewed based on the following recommendations:

- Include a section of acknowledgements that lists all participants, contributors, funding and in-kind contributions.
- Include basic changes such as a list of reference materials in the annexes.
- Include standards that can be used by all value-chain actors depending on their objectives.
- Give priority to protocols that are cost efficient, practical and implementable at large scale, as well as more complex processes for specific objectives.
- Base the structure on the following four main parts – (A) fermented, dried and unroasted beans; (B) roasted beans; (C) liquor; and (D) chocolate.
- Ensure that all four areas are connected to each other and that definitions, equipment and other shared processes are the same and consistent in all four parts.
- Ensure that methods and equipment are aligned and linked from unroasted beans to chocolate.
- Include recommendations and agreements of the Managua and subsequent consultations.
- Clearly cite standards such as ISO and other published methods.
- Collate common considerations together in one chapter.
- Identify areas for further work – research.
- Identify areas of disagreement that require further discussion.
- Identify areas not discussed that will require consultation.
- Include clear next steps of consultation and finalization.
- Revised document circulated to all contributors.
- Consider a phase of testing the proposed standards (components that can be agreed on) for immediate implementation and review for improvements.

It was therefore suggested that the document be reorganized into the following sections:

<table>
<thead>
<tr>
<th>Part A - fermented unroasted beans</th>
<th>Part B - fermented roasted beans</th>
<th>Part C - liquor</th>
<th>Part D - chocolate</th>
<th>Annexes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling</td>
<td>Sampling</td>
<td>Sampling</td>
<td>Sampling</td>
<td>References to published standards</td>
</tr>
<tr>
<td>Physical assessment – cut test, etc. protocols</td>
<td>Roasting protocols</td>
<td>Liquor processing protocols</td>
<td>Chocolate processing protocols</td>
<td>Glossary of terms</td>
</tr>
<tr>
<td>Food safety</td>
<td>Food safety</td>
<td>Food safety</td>
<td>Food safety</td>
<td></td>
</tr>
<tr>
<td>Sensory evaluation protocols</td>
<td>Sensory evaluation protocols</td>
<td>Sensory evaluation protocols</td>
<td>Flavour wheel updated</td>
<td></td>
</tr>
</tbody>
</table>
5. Follow-up consultation in Paris, 30 October 2017

5.1 Introduction and report from Managua

As recommended in Managua, a follow-up consultation was organized on 30 October 2017, during the Salon du Chocolat, Paris, France (08:30-13:00 Salle Amerique). This consultation was organized by the CoEx Programme, together with Bioversity and Salon du Chocolat (partner details are listed in Annex D)

Proposed programme of the Paris consultation – session 08:30-13:00

A. Brief presentation on the first international stakeholders’ consultation on the development of international standards for cocoa quality and flavour assessment, held 19 – 21 September 2017, in Managua, Nicaragua – Brigitte Laliberte.
B. Consultation on the broader strategy for the international standards – goal, stakeholders, collaboration, partnerships and development.
C. Protocols and standards used by the International Institute of Chocolate and Cacao Tasting (IICCT) – Martin Christy and Maricel Presilla.

10:30 – 11:15 – BREAK and launch of the Central America Cocoa Flavour Mapping project and tool, coordinated by Lutheran World Relief (LWR)

D. Revision of the proposed standards document – process and next steps – Dolores Alvarado
E. Agreements and next steps

Participants

The participants represented different sectors of the cocoa value chain in the following proportion

- Cocoa producers and cooperatives: 26
- Chocolate makers: 15
- Researchers: 10
- Development agencies: 8
- Cocoa bean buyers/traders: 4
- Cocoa processors: 4
- Consultants: 3
- Industry association: 1
- Communication and media: 1

The full list of participants is provided in Annex E.

Brigitte Laliberte, coordinator of the CoEx Programme, presented a brief report of the consultation held in Managua, 19 – 21 September 2017. The purpose of the consultation was to agree on international standards for assessing cocoa quality and flavours, from the physical evaluation of cocoa beans, to the sensory evaluation of liquor, powder and chocolate. The objectives of the standards are to:

- Help cocoa farmers and cooperatives better understand the unique characteristics and qualities of their cocoa, and the cocoa demanded by the market, to unlock their value and flavour potential.
- Optimize the expression of cocoa bean genetic flavour potential and ‘terroirs’ to benefit farmers for niche marketing of their beans and origins at best prices.

The presentation summarized the discussions that took place, and the next steps that were proposed, during the consultation (as described above). The participants who were at the Managua consultation agreed that the summary report and proposed next steps were accurate.
5.2 Consultation on the broader strategy for the international standards

The group discussed the broader strategy for the international standards.

The goal/purpose of the international standards on cocoa quality and flavour assessment is to enable a clear communication throughout the value chain (cocoa producers, bean buyers/traders, chocolate makers and other users), using a common language:

1. to identify the intrinsic flavour attributes and characteristics (flavour potential) of the beans when beans are converted into chocolate and
2. to unlock the value of cocoa beans and empower producers and buyers so that users can decide how to use the beans through targeted marketing flavour customisation to meet customers’ needs.

One of the most significant outcomes of the Managua consultation was the rethinking of the way the standards document could be structured, based the following 4 main parts: A - unroasted beans, B - roasted beans, C – liquor, and D – chocolate; with all elements interconnected and feeding into each other, from beans to chocolate.

Ed Seguine further illustrated the information that can be obtained, the resources that are needed and the variability that exists at each level:

**Figure 5.1**

The follow-up discussions included these main points:

- There are already standards such as ISO for some elements.
- There are clear sampling recommendations on the minimum number of beans.
- Quality and flavour starts with good planting materials.
- Transparency in the system does not always push the price up.
- The aim is not to say whether something is good or bad, but just to describe the cocoa.
- No grading system should drive methodologies.
- The more inclusive it will be, the more of a ‘win-win’ tool it can be for all value-chain actors.
5.3 Protocols and standards used by the International Institute of Chocolate and Cacao Tasting

Martin Christy and Maricel Presilla gave a presentation on the protocols and standards used by the International Institute of Chocolate and Cacao Tasting (IICCT). This presentation was planned for the Managua consultation but unfortunately it was not possible for the speakers to travel at the time. So, the opportunity to make a brief presentation in this consultation was offered. Christy and Prescilla introduced the IICCT and International Chocolate Awards (ICA). They then outlined the intuitive neural sensory approach of evaluating cocoa through flavour (elements of fine cocoa), and limitations of current visual systems in terms of predicting how a particular bean will taste, and identifying its unique attributes. The work focuses on how the brain tastes, research by Bonvehí (2005) and Ahn et al (2011), and presents a quality-scoring framework based on flavour, with prototypes being used since 2014 in tasting courses, in Nicaragua, Peru, Papua New Guinea and Solomons. It uses a ‘like/dislike’ expanding decision tree, deployable with any protocol, from dried cocoa beans through to chocolate (always referenced to dried cocoa). The IICCT has applied the quality-scoring framework to the ICA and other chocolate competitions. The prototype visualization (‘Chocolatey’) is based on the main groups of herbal/spicy, fruity, vegetal and dark sweet. It was illustrated with the profiles of dried cocoa samples of Chuncho, IMC 67 and Pacayita, and of chocolate samples of Cacaosuyo Lakuna (70%), Green & Black's (70%), Friis-Holm - Chuno Double Turned (70%) and Omnom (Madagascar 70%). Visualization based on chemical, mineral, bacterial and animal descriptors was also presented. It concluded with suggestions on marketing origin based on flavour and cultural profiling, such as providing a holistic and flexible sensory evaluation approach (intuitive and visual system), archival reference and marketing tool for growers/makers. Quality rating and flavour profiling are only one part of a marketing package for cocoa. The genetic, cultural, social, historical and geographical matrix of each cocoa is just as important in the fine market. Evaluation and profiling exists to help sell quality cocoa for a higher price. New food products without a compelling story to tell have few chances to succeed. The presentation concluded that any evaluation system for cocoa and chocolate should highlight virtues, pinpoint problems for corrections, and provide tools for successful marketing. REF - presentation titled: 12-Christy-Presilla-IICCT-30Oct2017.ppt

5.4 Revision of the proposed standards document - process and next steps

Dolores Alvarado, food technologist at Bioversity International, gave a presentation on the work that has been done on the standards document, together with Darin Sukha, since the Managua meeting. The starting point was the proposed restructuring of the standards into four main steps of assessment – a philosophical reorganization of the standards:

- Part A: coarse powder (unroasted beans)
- Part B: coarse powder (roasted beans)
- Part C: cocoa liquor
- Part D: chocolate
- Cross-cutting elements.

The text in the document presented in Managua was transformed into a bi-dimensional table with the main benefits of:

- Having a better and faster overview
- Working on form and content separately but in parallel
- Spotting duplicate or missing data
- Identifying optimization points, critical steps, options for the same thing, cross-cutting aspects
- Identifying common equipment and materials
- Getting input in an organic way.
The development of the standards starts with the beans, while the protocols separate into physical and flavour assessments. For each of the product stages (coarse powder, liquor and chocolate) there are standards for preparing and assessing samples; both of these require training and include an element of certification. For a sample assessment, calibration is key, and for this the development of physical reference samples is required. Food safety implications were highlighted for the sample preparation and assessment. The elements of the revised structure are illustrated below in Figure 5.2.

**Figure 5.2**

Alvarado showed how the information can be organized in a table, using the examples of unroasted beans, roasted beans and chocolate, and the process, method (with reference if already existing), equipment and control for both the sample preparation and assessment. The proposal for collecting and managing information to agree on procedures ready to use was endorsed by the participants. The first steps are to gather information analysed in expert working groups and develop protocols as ready-to-use outputs. An example of ready-to-use protocols are the physical evaluation of the beans, since most of the content exists in published standards (ISO and ECA/CAOBISCO/FCC).

The process for the development of the procedures is illustrated below in Figure 5.3.

**Figure 5.3**
The standards manual would be a collection of documents with different sections (e.g. Section 1 – sample preparation; Section 2 – sample assessment), and the different procedures would be included in each section; e.g. for Section 1, it would include specific procedures for roasting, breaking and winnowing. Each procedure would include a title, objective, procedure steps, notes on procedure and annexes so that when one single procedure is being performed the information related to it is easily retrievable/accessible.

The following comments and conclusions were made:

- Roasted powder assessment may not add anything significant. The standards should focus on the following three logical stopping points for assessment:
  - Unroasted beans
  - Liquor
  - Chocolate.
- The standards need to be reproducible. If applied in the same way in different locations, it should lead to the exact same results.
- There are many evaluation methods, but the preparation of bean samples is the key starting point for everyone and is likely to be easily agreed.
- The division between sample preparation and sample assessment is very useful, and all agreed that the work should begin with the sample preparation parts.
- Small technical working groups should be formed around each area.
- It was suggested that a ‘ring test’ be carried out, to work on equipment and test it in different locations. This has been done but the information is not available in the public domain. A small group of interested people will be formed that will be representative, and willing to dedicate time and resources to test and correlate results. Agreeing on specifications is easy and low cost.
- The data modelling behind all the different parts of the standards should be developed.
- The standards should help producers talk to chocolate makers and consumers.
- The standards would constitute a tool box to be used everywhere for all types of cocoa.
- There must be clear benefits in applying the standards otherwise they will not be adopted.
- Information needs to be made available to all in the public domain. Anybody interested in collaborating in these efforts should be willing to share their information.

Jean-Marc Anga, Secretary General of the ICCO, joined in for the final conclusion and next steps. He reaffirmed the importance of this work, and the need to speak the same language. ICCO needs guidance on the terminology for the different types of cocoa (fine flavour, bulk, etc.); a meeting of the ICCO Technical Working Group was held directly after the consultation.

5.5 Agreements and next steps from the Paris consultation

The group agreed on the following next steps:

1. Move forward with the revision of the standards document based on the proposed reorganization of data, and the compilation of existing protocols with information in the public domain.
2. Identify the protocols ready for use immediately.
3. Identify the protocols for which only limited discussion is needed to come to an agreement.
4. Focus initially on the parts for sample preparation to build trust and consensus.
5. Initiate the work on testing equipment in different locations.
6. Form small technical working groups for specific areas that require discussion for agreement.
7. Keep the collaboration inclusive and open for input.
8. Ensure that the products are global public goods.
### ANNEX A – List of participants in the Managua consultation, 19 – 21 September 2017

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Affiliation</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cristiano Villela Dias</td>
<td>Centro de Inovação do Cacaú - Bioinnovatech - Brazil Cocoa Innovation Centre</td>
<td>Brazil</td>
</tr>
<tr>
<td>2</td>
<td>Edwin Gutierrez</td>
<td>FEDECACAO- Fondo Nacional del cacao</td>
<td>Colombia</td>
</tr>
<tr>
<td>3</td>
<td>Viviana Medina</td>
<td>Bioversity International</td>
<td>Costa Rica</td>
</tr>
<tr>
<td>4</td>
<td>Roberto Castillo</td>
<td>Comisión Nacional del Cacao</td>
<td>Dominican Republic</td>
</tr>
<tr>
<td>5</td>
<td>Yennnsey Romero</td>
<td>Rizek Cacao</td>
<td>Dominican Republic</td>
</tr>
<tr>
<td>6</td>
<td>Giovanni Ginatta</td>
<td>CAF-ILAC</td>
<td>Ecuador</td>
</tr>
<tr>
<td>7</td>
<td>Jairo Andrade</td>
<td>Catholic Relief Services - CRS - Alianza Cacao</td>
<td>El Salvador</td>
</tr>
<tr>
<td>8</td>
<td>Jon Quiros</td>
<td>Etc</td>
<td>El Salvador</td>
</tr>
<tr>
<td>9</td>
<td>Chloe Doutre Roussel</td>
<td>Chloé Chocolat</td>
<td>France</td>
</tr>
<tr>
<td>10</td>
<td>Regis Bouet</td>
<td>Cocoa of Excellence Programme, Technical Committee member</td>
<td>France</td>
</tr>
<tr>
<td>11</td>
<td>Pierre Costet</td>
<td>Valrhona</td>
<td>France</td>
</tr>
<tr>
<td>12</td>
<td>Daniel Kadow</td>
<td>Cocoa &amp; Hazelnut Research - Storck</td>
<td>Germany</td>
</tr>
<tr>
<td>13</td>
<td>Juan Francisco Mollinedo</td>
<td>AMACACAO - Cacaos de Mesoamerica, S.A.</td>
<td>Guatemala</td>
</tr>
<tr>
<td>14</td>
<td>Roy Fraatz</td>
<td>CACAOVERAPAZ</td>
<td>Guatemala</td>
</tr>
<tr>
<td>15</td>
<td>Dolores Alvarado</td>
<td>Cocoa of Excellence Programme, Bioversity International</td>
<td>Guatemala</td>
</tr>
<tr>
<td>16</td>
<td>Pedro Ochoa</td>
<td>FEDECOVERA</td>
<td>Guatemala</td>
</tr>
<tr>
<td>17</td>
<td>Anibal Ayala</td>
<td>APROCACAO</td>
<td>Honduras</td>
</tr>
<tr>
<td>18</td>
<td>Hugo Hermenlink</td>
<td>Cacaos del Caribe, S.A.</td>
<td>Honduras</td>
</tr>
<tr>
<td>19</td>
<td>Wendy Leiva</td>
<td>Cacaos del Caribe, S.A.</td>
<td>Honduras</td>
</tr>
<tr>
<td>20</td>
<td>Carlos Garcia</td>
<td>COAGRICAL</td>
<td>Honduras</td>
</tr>
<tr>
<td>21</td>
<td>Brigitte Laliberte</td>
<td>Cocoa of Excellence Programme, Bioversity International</td>
<td>Italy</td>
</tr>
<tr>
<td>22</td>
<td>Ines Drouault</td>
<td>Cocoa of Excellence Programme, Bioversity International</td>
<td>Italy</td>
</tr>
<tr>
<td>23</td>
<td>Peter Mc Fadyen</td>
<td>C y B Productos Agrícolas, S.A.</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>24</td>
<td>Giff Laube</td>
<td>Cacao Oro</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>25</td>
<td>John Warringten</td>
<td>Cacao Oro</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>26</td>
<td>Kraig Kraft</td>
<td>Catholic Relief Services - CRS</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>27</td>
<td>Jorge Brenes</td>
<td>Catholic Relief Services - CRS - PROGRESA CARIBE</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>28</td>
<td>Carlos Mann</td>
<td>Chocolates Momotombo</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>29</td>
<td>Olga Duarte</td>
<td>Chocolates Momotombo</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>30</td>
<td>Elizabeth Rizo</td>
<td>Christian Aid</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>31</td>
<td>Moisés González</td>
<td>Christian Aid</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>32</td>
<td>Denis Escoreia</td>
<td>Cooperativa La Campesina</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>33</td>
<td>Ulises Reyes</td>
<td>Cooperativa La Campesina</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>34</td>
<td>Lars Möller</td>
<td>INGEMANN</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>35</td>
<td>Margaux Benitah</td>
<td>INGEMANN</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>36</td>
<td>Nakord Garcia</td>
<td>Lutheran World Relief - LWR</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>37</td>
<td>Alvaro Camacho</td>
<td>Lutheran World Relief - LWR, Nicaragua</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>38</td>
<td>Mauricio Peñalba Nissen</td>
<td>Oficial Nacional de Programas –COSUDE</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>39</td>
<td>Jaume Martorell</td>
<td>Ritter Sport</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>40</td>
<td>Fatima Ismael</td>
<td>SOPPEXCCA</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>41</td>
<td>Roberto Pineda</td>
<td>SOPPEXCCA</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>42</td>
<td>Wilmer Pineda</td>
<td>SOPPEXCCA</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>43</td>
<td>Falguni Guharay</td>
<td>World Cocoa Foundation - WCF</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>44</td>
<td>Nubia Martinez</td>
<td>Universidad Nacional Agraria La Molina, Lima</td>
<td>Peru</td>
</tr>
<tr>
<td>45</td>
<td>Joern Berger</td>
<td>CBI - Centre for the Promotion of Imports from developing countries</td>
<td>Netherlands</td>
</tr>
<tr>
<td>46</td>
<td>Darin Sukha</td>
<td>Cocoa Research Centre of the University of the West Indies</td>
<td>Trinidad and Tobago</td>
</tr>
<tr>
<td>50</td>
<td>Greg D'Alesandre</td>
<td>Dandelion Chocolate</td>
<td>USA</td>
</tr>
<tr>
<td>No</td>
<td>Name</td>
<td>Affiliation</td>
<td>Country</td>
</tr>
<tr>
<td>----</td>
<td>-----------------------------</td>
<td>-------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>51</td>
<td>Cristina Liberati</td>
<td>Equal Exchange</td>
<td>USA</td>
</tr>
<tr>
<td>52</td>
<td>Carla Martin</td>
<td>Fine Cacao and Chocolate Institute - FCCI</td>
<td>USA</td>
</tr>
<tr>
<td>53</td>
<td>Colin Gasko</td>
<td>Fine Cacao and Chocolate Institute - FCCI</td>
<td>USA</td>
</tr>
<tr>
<td>54</td>
<td>John Kehoe</td>
<td>Guittard Chocolate</td>
<td>USA</td>
</tr>
<tr>
<td>55</td>
<td>Carolina Aguilar</td>
<td>Lutheran World Relief - LWR Baltimore</td>
<td>USA</td>
</tr>
<tr>
<td>56</td>
<td>Laura Scandura</td>
<td>Lutheran World Relief - LWR Baltimore</td>
<td>USA</td>
</tr>
<tr>
<td>57</td>
<td>Rick Peyser - by conference call</td>
<td>Lutheran World Relief - LWR, Vermont</td>
<td>USA</td>
</tr>
<tr>
<td>58</td>
<td>Gino Dalla Gasperina</td>
<td>Meridian Cacao</td>
<td>USA</td>
</tr>
<tr>
<td>59</td>
<td>Mark Harman</td>
<td>Mesocacao</td>
<td>USA</td>
</tr>
<tr>
<td>60</td>
<td>Ed Seguine - by conference call</td>
<td>Seguine Cacao, Cocoa and Chocolate Advisors</td>
<td>USA</td>
</tr>
<tr>
<td>61</td>
<td>Virginia Sopyla</td>
<td>Sopyla Consulting LLC.</td>
<td>USA</td>
</tr>
<tr>
<td>62</td>
<td>Brad Kintzer</td>
<td>TCHO/FCIA</td>
<td>USA</td>
</tr>
</tbody>
</table>
ANNEX B – Proposed programme of the Managua consultation

DAY 1 - Tuesday 19 September 2017

- Welcome from organizers and sponsors
- Proposed programme and expected outputs
- Round of Introduction of participants
- Setting the scene, why the need for a consultation, and overall strategic plan – Brigitte Laliberte
- Presentation on the current situation – review of practices and protocols – Darin Sukha
- Experience of the coffee sector – Kraig Kraft
- Equal Exchange - Cristina Liberati, David Contreras and Martin Dominguez
- Fine Cacao and Chocolate Institute - Carla Martin
- Centre for the Promotion of Imports from Developing Countries - Jörn Berger
- Cocoa of Excellence Programme and International Cocoa Awards – CoEx Programme/ICA – Ines Drouault
- Heirloom Cocoa Preservation Project – Brad Kintzer and John Kehoe
- Experience of ILAC/CAF - Giovanni Ginatta
- Experience of AMACACAO - Juan Francisco Mollinedo
- General discussion

NOTE - At this point, all participants should be clear on all initiatives currently ongoing, and on complementarities and differences, and should have inputted on defining the overall strategic plan

DAY 2 - Wednesday 20 September 2017

- Recap of DAY 1 and any issues that may require further discussion
- Detailed presentation on the proposed international standards – Darin Sukha (see Annex C)
- WORKING GROUPS on different parts of the proposed international standards – dive in deeper into each of the main parts of the protocols.
- Group discussion on the recommendations for each part and the overall standards
- Recommendations for the:
  - parts that can be finalized
  - parts that may need further work
  - parts that should be added
  - areas of research.

NOTE - At this point, all participants should have had a chance to comment in detail on the proposed international standards at the technical and strategic level, identifying what can be finalized, further developed and key gaps, including recommendations for research areas.

DAY 3 - Thursday 21 September 2017

1. Recap of DAY 2 and any issues that may require further discussion
2. Conclusion on agreements
3. Recommendations
4. Next steps – action plan

NOTE - At this point, all participants should be clear on the Group’s consensus on the recommendations, the next steps and action plan – the follow-up
ANNEX C – Elements of harmonized international standards for cocoa quality and flavour assessment

A proposal for further consultation - Draft version – 11 September 2017

<table>
<thead>
<tr>
<th>Summary</th>
<th>Chapter 7 - Flavour assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1 - Sampling</td>
<td>• 7.1. Tasting area and layout</td>
</tr>
<tr>
<td>Chapter 2 - Sampling procedures</td>
<td>• 7.2. Panellist training</td>
</tr>
<tr>
<td>Chapter 3 - Sample passport data</td>
<td>o 7.2.1. Basic tastes - identification and threshold</td>
</tr>
<tr>
<td>Chapter 4 - Aging and storage of beans</td>
<td>o 7.2.2. Odour recognition with vocabulary generation</td>
</tr>
<tr>
<td>Chapter 5 - Physical assessments</td>
<td>o 7.2.3. Taste training with vocabulary generation</td>
</tr>
<tr>
<td>o 5.1. Moisture content</td>
<td>o 7.2.4. Cocoa liquor assessment</td>
</tr>
<tr>
<td>o 5.2. Bean count and individual bean weight</td>
<td>o 7.2.5. Coarse powder assessment</td>
</tr>
<tr>
<td>o 5.3. Cut tests</td>
<td>o 7.2.6. Chocolate assessment</td>
</tr>
<tr>
<td>o 5.3.1. Cutting individual beans</td>
<td>o 7.2.7. Intensity scales</td>
</tr>
<tr>
<td>o 5.3.2. The magra bean cutter</td>
<td>o 7.2.8. Flavour descriptors</td>
</tr>
<tr>
<td>o 5.3.3. Aroma</td>
<td>o 7.2.9. Calibration of persons</td>
</tr>
<tr>
<td>o 5.3.4. Cut test appearance and colour</td>
<td>• 7.3. Sensory statistics</td>
</tr>
<tr>
<td>o 5.3.5. Cut test fissuring</td>
<td>• 7.4. Visualization of results</td>
</tr>
<tr>
<td>Chapter 6 - Coarse powder, liquor and chocolate preparation</td>
<td>• Filled 'pie slice' plots</td>
</tr>
<tr>
<td>• 6.1. Roasting</td>
<td>Chapter 8 - All-in-one quality assessment forms</td>
</tr>
<tr>
<td>o 6.1.1. Rapid quality screening</td>
<td></td>
</tr>
<tr>
<td>o 6.1.2. Precise roasting mapping</td>
<td>ANNEXES</td>
</tr>
<tr>
<td>o 6.1.2.1. Ovens</td>
<td>• Annex 1 - Sensory evaluation initial screening questionnaire used at the Cocoa Research Centre, University of the West Indies (CRC)</td>
</tr>
<tr>
<td>o 6.1.2.2. Roasting trays</td>
<td>• Annex 2 - Basic tastes identification and threshold level tasting forms used at the CRC</td>
</tr>
<tr>
<td>o 6.1.2.3. Roasting conditions</td>
<td>• Annex 3 - Cocoa liquor flavour profiling form used at the CRC</td>
</tr>
<tr>
<td>o 6.1.2.4. Cooling after roasting and food safety concerns</td>
<td>• Annex 4 - Chocolate assessment form used at the CRC</td>
</tr>
<tr>
<td>• 6.2. Breaking and winnowing</td>
<td>• Annex 5 – Flavour glossary</td>
</tr>
<tr>
<td>o 6.2.1. Low throughput system</td>
<td>• Annex 6 - All-in-one rapid quality assessment forms</td>
</tr>
<tr>
<td>o 6.2.2. Higher throughput system</td>
<td></td>
</tr>
<tr>
<td>• 6.3. Nib storage</td>
<td></td>
</tr>
<tr>
<td>• 6.4. Preparation of coarse powders</td>
<td></td>
</tr>
<tr>
<td>• 6.5. Preparation of cocoa liquors</td>
<td></td>
</tr>
<tr>
<td>• 6.6. Keeping track of weights</td>
<td></td>
</tr>
<tr>
<td>• 6.7. Chocolate making</td>
<td></td>
</tr>
<tr>
<td>o 6.7.1. Formulation/recipe</td>
<td></td>
</tr>
<tr>
<td>o 6.7.2. Conching</td>
<td></td>
</tr>
<tr>
<td>o 6.7.3. Tempering</td>
<td></td>
</tr>
</tbody>
</table>
ANNEX D – Cocoa of Excellence Programme and International Cocoa Awards – partners, sponsors and contributors
# ANNEX E - List of participants in the Paris consultation, 30 October 2017

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Camille Taper</td>
<td>CAOBISCO</td>
<td>Belgium</td>
</tr>
<tr>
<td>2. Laurent Gerbaud</td>
<td>Laurent Gerbaud Chocolatier SPRL</td>
<td>Belgium</td>
</tr>
<tr>
<td>3. Julien Simonis</td>
<td>Puratos/Belcolade</td>
<td>Belgium</td>
</tr>
<tr>
<td>4. Tom de Winne</td>
<td>ZOTO</td>
<td>Belgium</td>
</tr>
<tr>
<td>5. Zoi Papalexandratou</td>
<td>ZOTO</td>
<td>Belgium</td>
</tr>
<tr>
<td>6. Karine Chrétien Guillemette</td>
<td>Miss Choco</td>
<td>Canada</td>
</tr>
<tr>
<td>7. William Randall</td>
<td>Andean Cacao</td>
<td>Colombia</td>
</tr>
<tr>
<td>8. Xavier Sagnieres</td>
<td>Andean Cacao</td>
<td>Colombia</td>
</tr>
<tr>
<td>9. Mariángela Ramírez</td>
<td>Chibcha Cacao</td>
<td>Colombia</td>
</tr>
<tr>
<td>10. Martino Bonato</td>
<td>Chibcha Cacao</td>
<td>Colombia</td>
</tr>
<tr>
<td>11. Eduard Baquero</td>
<td>Federación Nacional de Cacao (FEDECACAO) - Fondo Nacional del Cacao</td>
<td>Colombia</td>
</tr>
<tr>
<td>12. Oscar Darío Ramírez</td>
<td>Federación Nacional de Cacao (FEDECACAO) - Fondo Nacional del Cacao</td>
<td>Colombia</td>
</tr>
<tr>
<td>13. Yardley Cano</td>
<td>Federación Nacional de Cacao (FEDECACAO) - Fondo Nacional del Cacao</td>
<td>Colombia</td>
</tr>
<tr>
<td>14. Miguel Ángel Vargas Caro</td>
<td>Red Cacaoetera</td>
<td>Colombia</td>
</tr>
<tr>
<td>15. Roger Rodríguez Vega</td>
<td>Red Cacaoetera</td>
<td>Colombia</td>
</tr>
<tr>
<td>16. Juan Pablo Buchert</td>
<td>CANACACAO</td>
<td>Costa Rica</td>
</tr>
<tr>
<td>17. Jairo Andrade</td>
<td>Catholic Relief Services - CRS</td>
<td>El Salvador</td>
</tr>
<tr>
<td>18. Marvin Melgar</td>
<td>Chocolates Melher</td>
<td>El Salvador</td>
</tr>
<tr>
<td>19. Sabine Quintana</td>
<td>CEMOI</td>
<td>France</td>
</tr>
<tr>
<td>20. Chloe Doutre</td>
<td>Chloé Chocolat</td>
<td>France</td>
</tr>
<tr>
<td>21. Eric Garnier</td>
<td>Choca Choba</td>
<td>France</td>
</tr>
<tr>
<td>22. Regis Bouet</td>
<td>Regis Bouet Solutions</td>
<td>France</td>
</tr>
<tr>
<td>23. Florent Coste</td>
<td>Valrhona</td>
<td>France</td>
</tr>
<tr>
<td>24. Pierre Costet</td>
<td>Valrhona</td>
<td>France</td>
</tr>
<tr>
<td>25. Daniel Kadov</td>
<td>August STORCK KG</td>
<td>Germany</td>
</tr>
<tr>
<td>26. Stephen Opoku</td>
<td>Cocoa Research Institute of Ghana - CRIG</td>
<td>Ghana</td>
</tr>
<tr>
<td>27. Aníbal Ayala</td>
<td>Asociación de Productores de Cacao de Honduras - APROCACAHO</td>
<td>Honduras</td>
</tr>
<tr>
<td>28. Hugo Hermenlink</td>
<td>Chocolate del Caribe</td>
<td>Honduras</td>
</tr>
<tr>
<td>29. Wendy Leiva</td>
<td>Chocolate del Caribe</td>
<td>Honduras</td>
</tr>
<tr>
<td>30. Adolfo Martínez</td>
<td>Fundación Hondureña de Investigación Agrícola - FHIA</td>
<td>Honduras</td>
</tr>
<tr>
<td>31. Hector Aguilar</td>
<td>Fundación Hondureña de Investigación Agrícola - FHIA</td>
<td>Honduras</td>
</tr>
<tr>
<td>32. Javier Díaz</td>
<td>Fundación Hondureña de Investigación Agrícola - FHIA</td>
<td>Honduras</td>
</tr>
<tr>
<td>33. Brigitte Laliberte</td>
<td>Bioversity International, Cocoa of Excellence Programme</td>
<td>Italy</td>
</tr>
<tr>
<td>34. Dolores Alvarado</td>
<td>Bioversity International, Cocoa of Excellence Programme</td>
<td>Italy</td>
</tr>
<tr>
<td>35. Francesca Grazioli</td>
<td>Bioversity International, Cocoa of Excellence Programme</td>
<td>Italy</td>
</tr>
<tr>
<td>36. Ines Drouault</td>
<td>Bioversity International, Cocoa of Excellence Programme</td>
<td>Italy</td>
</tr>
<tr>
<td>37. Baptiste Bert</td>
<td>Food and Agriculture Organization of the United Nations - FAO</td>
<td>Italy</td>
</tr>
<tr>
<td>38. José Lopez Ganem</td>
<td>The Culinary Institute of America</td>
<td>Mexico/ USA</td>
</tr>
<tr>
<td>39. Joern Berger</td>
<td>Centre for the Promotion of Imports from Developing Countries - CBI</td>
<td>Netherlands</td>
</tr>
<tr>
<td>40. Kasumi Kikuhashi</td>
<td>Cargill Japan Toshoku Desk under Cargill BV</td>
<td>Netherlands</td>
</tr>
<tr>
<td>41. Axelle Stuber</td>
<td>Olam Cocoa BV</td>
<td>Netherlands</td>
</tr>
<tr>
<td>42. Joni Duin</td>
<td>Olam Cocoa BV</td>
<td>Netherlands</td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
<td>Country</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>--------------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>43. Michiel Kokken</td>
<td>Olam Cocoa BV</td>
<td>Netherlands</td>
</tr>
<tr>
<td>44. Jorge Manuel Brenes Abdalalah</td>
<td>Catholic Relief Services - CRS</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>45. Denis Escorcia</td>
<td>Cooperativa La Campesina</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>46. Lars Saquero Moller</td>
<td>Ingemann</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>47. Francisco Rivas Chamba</td>
<td>Asociación Peruana de Productores de Cacao</td>
<td>Peru</td>
</tr>
<tr>
<td></td>
<td>(APPCACAO)</td>
<td></td>
</tr>
<tr>
<td>48. Luis Mendoza Aguilar</td>
<td>Asociación Peruana de Productores de Cacao</td>
<td>Peru</td>
</tr>
<tr>
<td></td>
<td>(APPCACAO)</td>
<td></td>
</tr>
<tr>
<td>49. Socrates Chambi Apaza</td>
<td>C.A.C. Alto Urubamba</td>
<td>Peru</td>
</tr>
<tr>
<td>50. Carlos Sandoval Caballero</td>
<td>Choba Choba</td>
<td>Peru</td>
</tr>
<tr>
<td>51. Doriza Caballero Mendoza</td>
<td>Choba Choba</td>
<td>Peru</td>
</tr>
<tr>
<td>52. Merly Castillo Tocto</td>
<td>Cooperativa Agraria APPROCAP</td>
<td>Peru</td>
</tr>
<tr>
<td>53. Pedro Angenor Neyra Peña</td>
<td>Cooperativa Agraria APPROCAP</td>
<td>Peru</td>
</tr>
<tr>
<td>54. Rocio Gómez Estrada</td>
<td>Cooperativa Agraria APPROCAP</td>
<td>Peru</td>
</tr>
<tr>
<td>55. Raúl Francisco Calle Pintado</td>
<td>Cooperativa Agraria Norandino Ltda.</td>
<td>Peru</td>
</tr>
<tr>
<td>56. Segundo Jose Rojas Hernandez</td>
<td>Cooperativa Agraria Norandino Ltda.</td>
<td>Peru</td>
</tr>
<tr>
<td>57. Orlando A. Quispe Rodríguez</td>
<td>Cooperativa Agroindustrial Tocache Ltda.</td>
<td>Peru</td>
</tr>
<tr>
<td>58. Michael Ichaccaya Mancilla</td>
<td>Cooperativa del Valle del Río Apurimac - CAVRA</td>
<td>Peru</td>
</tr>
<tr>
<td>59. Abimel López García</td>
<td>Organización Zonal TUMBES &quot;Finca La Kimera&quot;</td>
<td>Peru</td>
</tr>
<tr>
<td>60. Clive Martyr</td>
<td>Academy of Chocolate (AOC)</td>
<td>Switzerland</td>
</tr>
<tr>
<td>61. Nicolas Porchet</td>
<td>Choba Choba</td>
<td>Switzerland</td>
</tr>
<tr>
<td>62. Fabien Coutel</td>
<td>Nestlé</td>
<td>Switzerland</td>
</tr>
<tr>
<td>63. Darin Sukha</td>
<td>Cocoa Research Centre of the University of the West</td>
<td>Trinidad and</td>
</tr>
<tr>
<td></td>
<td>Indies</td>
<td>Tobago</td>
</tr>
<tr>
<td>64. Martin Christy</td>
<td>International Institute of Chocolate and Cacao Tasting</td>
<td>UK</td>
</tr>
<tr>
<td>65. Emily Stone</td>
<td>Belize, Cacao Verapaz</td>
<td>USA</td>
</tr>
<tr>
<td>66. Gregory Dalesandre</td>
<td>Dandelion Chocolate</td>
<td>USA</td>
</tr>
<tr>
<td>67. Carla D. Martin</td>
<td>Fine Cacao and Chocolate Institute</td>
<td>USA</td>
</tr>
<tr>
<td>68. John Kehoe</td>
<td>Guittard Chocolate</td>
<td>USA</td>
</tr>
<tr>
<td>69. Maricel Presilla</td>
<td>International Institute of Chocolate and Cacao Tasting</td>
<td>USA</td>
</tr>
<tr>
<td>70. Carolina Aguilar Duarte</td>
<td>Lutheran World Relief – LWR, Baltimore</td>
<td>USA</td>
</tr>
<tr>
<td>71. Rick Peyser</td>
<td>Lutheran World Relief - LWR, Vermont</td>
<td>USA</td>
</tr>
<tr>
<td>72. Ed Seguine</td>
<td>Seguine Cacao, Cocoa and Chocolate Advisors</td>
<td>USA</td>
</tr>
<tr>
<td>73. Clay Gordon</td>
<td>The Chocolate Life</td>
<td>USA</td>
</tr>
</tbody>
</table>