CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA
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Seventeenth meeting of the Conference of the Parties
Johannesburg (South Africa), 24 September – 5 October 2016

Interpretation and implementation matters

Trade control and traceability

PILOT TESTING OF A GLOBAL TRACEABILITY INFORMATION SYSTEM
FOR REPTILE SKINS

1.   This document has been submitted by Mexico.[*]

Background

1.   At its 16th meeting (CoP16; Bangkok 2013), the Conference of the Parties adopted Decisions 16.102 to 16.108 on snake trade and conservation management (available at https://cites.org/eng/dec/valid16/222). Specifically, Decision 16.105 directs the Standing Committee to:

   a)   *consider the reports and recommendations from the Animals Committee and the Secretariat provided in accordance with Decisions 16.102 and 16.103 and, as appropriate, the results of the ITC study on trade in python snakes in Asia, the UNCTAD Biotrade Initiative's Working Group on reptile skin sourcing, and any other relevant available information;*

   b)   *examine the study undertaken by the UNCTAD Biotrade Initiative's Working Group on reptile skin sourcing, and any other relevant available information concerning:*

   c)   *the socio-economic implications of such a traceability system; and*

   d)   *the potential costs of the system at all levels along the supply chain, from producers to consumers;*

   e)   *make recommendations to the Parties, the Animals Committee and the Secretariat as appropriate; and*

   f)   *report on the implementation of Decisions 16.102, 16.104 and 16.105 at CoP17, with recommendations for consideration by the Parties, if deemed necessary.*

   As a contribution to the implementation of Dec. 16.105, at the 27th meeting of the Animals Committee (AC27, Veracruz 2014) Switzerland presented document AC27 Doc. 19.4 which contained in its Annex the main findings of an international consultation aimed towards defining and documenting the "Requirements for a traceability system for reptile skins". During that meeting under agenda item 19, other documents including studies on trade in python snakes in Asia and an advanced non-edited version of the document "Traceability Systems for a Sustainable International Trade in South-East Asian Pythons" (available at: http://www.biotrade.org/ResourcesPublications/UNCTAD_DITC_TED_2013_6_webonly.pdf) where reviewed.

2.   In compliance with the agreements of AC27, preliminary recommendations on snake trade and conservation management were presented by the Animals Committee and the Secretariat for consideration of the 65th meeting of the Standing Committee (SC65, 2014), under agenda item SC65 Doc. 44. The SC65 took note of the progress achieved, and agreed for the working group on snake trade

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[*]   *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

and conservation management to further consider the matter of snake skin traceability and sourcing intersessionally and report at the 66th meeting of the Standing Committee (SC66, Geneva 2016).

3. At the 28th meeting of the Animals Committee (AC28, Tel Aviv 2015), México and Italy presented document AC28 Doc. 14.2.2 on an *"Identification Carrier for Global Traceability information System for Reptile Skin"*, which included an update of the progress achieved by an initiative led by the Responsible Ecosystems Sourcing Platform (RESP) that put forward a proof of concept of an identification carrier that responded to the system requirements presented at AC27. In light of this development, both the Animals Committee and the Working Group on snake trade and conservation management (Chaired by Switzerland) noted the contribution of the initiative to the development of guidance on traceability systems. Furthermore, AC28 participants expressed their support on the idea of developing a framework on traceability standards, yet suggested this process to proceed with caution in order to avoid moving forward too quickly, and advised the proponents to reflect on how the system proposed by document AC28 Doc. 14.2.2 could be implemented and contribute to the traceability of snake skins.

Outcomes of traceability discussions at the 66the meeting of the Standing Committee (SC66, Geneva 2016)

4. Consequently, at the SC66 (Geneva, 2016), Mexico presented document SC66 Doc. 34.2 on *"Socio-economic considerations in the development of a global traceability information system for reptile skins"*, which provided a summary of the progress made in the development of a traceability system for reptile skins based on the proof of concept presented at AC28, as well as a description of the scheme and main elements for pilot testing of such system. Particularly, the document requested the SC to, inter alia: a) take note of the progress achieved by RESP; provide comments on the proposed scheme for pilot testing; develop recommendations to improve the initiative in preparation for CoP17. The main elements of the traceability system, and recent progress on this is described in paragraphs 8 to 18 below, as well as in detail in **Annex 2** to the present document.

5. The SC66 agreed to consider agenda item 34.2 together with the agenda items of the working group on snake trade and conservation management (SC66 Docs. 54.1 and 54.2). As a result of these deliberations and on the basis of the recommendations of an in-session working group (SC66 WG6, https://cites.org/sites/default/files/eng/com/sc/66/Com/E-SC66-Com-06.pdf) the Standing Committee recognized the contribution of Mexico's report to the discussions of the implementation of Decision 16.105. Regarding the other agenda items, the SC endorsed presenting for consideration of CoP17 a draft resolution on "Conservation, sustainable use of and trade in snakes" (led by Switzerland as chair of the working group), as well as a set of Decisions (led by the Secretariat) on trade, sustainable use and conservation of snakes, also contained in document SC66 Com. 6 (Rev. by Sec.).

6. Furthermore, at SC66 the Secretariat presented document SC66 Doc. 43.1 (Rev. 1) on an overview of trade control and traceability, including in its Annex 2 draft elements for a Decision on traceability. As a result, the Standing Committee agreed to submit for consideration of the 17th meeting of the Conference of the Parties (Johannesburg, 2017) the following set decisions on traceability (SC66 Sum. 4, see par. 34.1):

> *DIRECTS the Standing Committee to:*
> *1. Establish a working group on traceability systems in collaboration with the CITES Secretariat to:*
>   *a) Recommend a working definition of traceability systems to assist Parties in work related to the implementation of such systems;*
>   *b) Encourage that the development by Parties of traceability systems be mutually complementary, supportive and standardized, as appropriate, and that they also meet the unique needs of any CITES-listed species;*
>   *c) Provide general guidance on a governance structure to administer and oversee the development of traceability systems using lessons learned from the development of the global CITES permits and certificates system;*
>   *d) Develop, subject to the availability of external resources, and use umbrella guidelines, and recommend standards, as appropriate, to develop traceability systems for different species that are mutually supportive and that generate standardized data;*
>   *e) Describe the CITES value chain, subject to the availability of external resources, using Unified Modelling Language and identify points throughout the value chain where species must be located, identified and its application defined;*
>   *f) Collaborate with the working group on e-permitting to ensure links between CITES permits and certificates and traceability identifiers;*
>   *g) Collaborate with United Nations and other relevant organizations involved and that have experience in the development and use of traceability standards and systems; and,*
>   *h) Draft a Resolution on traceability for consideration at the 18th meeting of the Conference of the Parties;*

> *INVITES Parties to:*
> 1. *Support the working group in its work on traceability;*
> 2. *Advise the working group on the development of projects and new information related to traceability;*
> 3. *Adhere, whenever possible, to international standards and norms related to traceability systems in the development of these systems;*
> 4. *Use data, as appropriate, generated from traceability systems in activities related to non-detriment findings and monitoring programmes; and,*
> 5. *Collaborate in the provision of capacity-building programmes that promote South-South and North-South cooperation in the development of traceability systems.*
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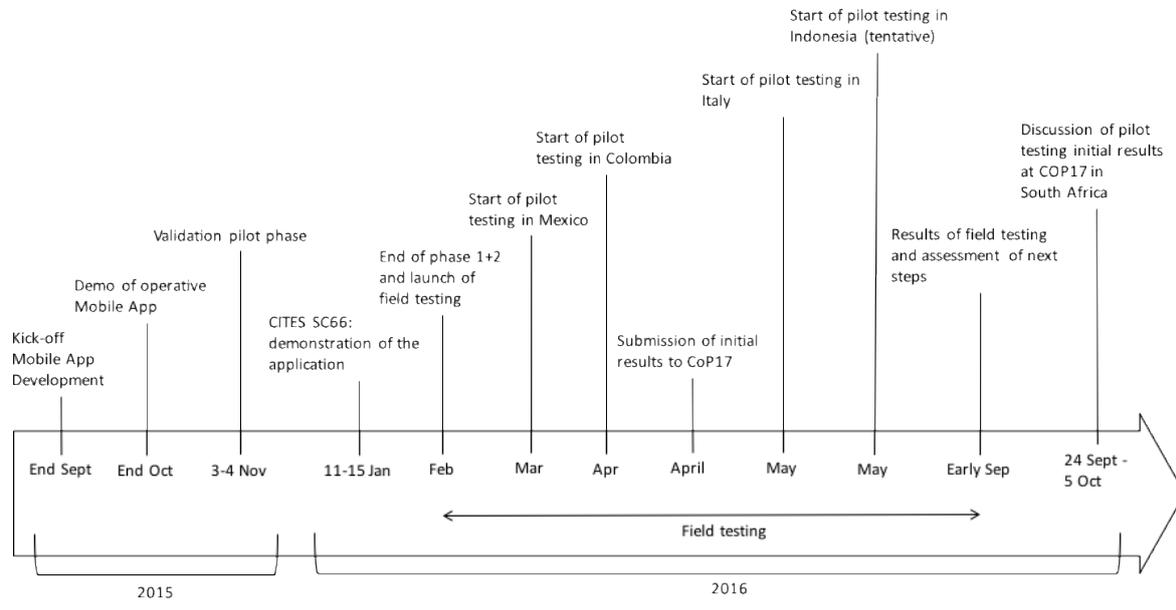> *DIRECTS the Secretariat, subject to the availability of external funding, to:*
> 1. *Develop a portal on the CITES website on traceability to make available:*
>   a) *Recommendations by the working group on a definition on traceability, general traceability guidelines, and other relevant information;*
>   b) *Information on new projects on traceability;*
>   c) *Information on global organizations working on traceability standards and systems; and,*
>   d) *Relevant documents, research papers and guidelines on traceability;*
>
> 2. *In collaboration with the Standing Committee working group established under Decision 17.XX and UN/CEFACT, commission a report by a global organization or expert with experience in the development of standards related to traceability, to:*
>   a) *Describe a possible governance model for use in CITES traceability systems;*
>   b) *Map and describe using Unified Modelling Language or a similar tool, the CITES supply and value chain;*
>   c) *Identify and recommend appropriate information exchange protocols and standards for use in CITES traceability systems;*
>   d) *Describe a generic CITES traceability standard for use as a common model; and*
>   e) *Report on the conclusions of the report at the 69th meeting or the Standing Committee.*

<u>Progress achieved on the traceability system for reptile skins presented to SC66 under agenda item SC66 Doc. 34.2</u>

7. The traceability information system for reptile skins presented by Mexico in document [SC66 Doc. 34.2](#) is being developed considering the main system requirements stemming from those presented and discussed at AC27, mainly:
    a) Be simple, affordable, sustainable;
    b) Operate throughout the whole supply chain from origin (wild, farm or slaughterhouse) to final product;
    c) Be secure, tamperproof and resistant to chemical and mechanical processing;
    d) Be simple and easy to apply and implement at all stages of production;
    e) Be capable to distinguish between species at the individual level of CITES Appendix II reptile species traded for their skins including snakes, crocodilian and lizards;
    f) Provide real-time on-line registration and verification through mobile technology;
    g) Be compliant with relevant ISO standards.

8. Considering the results of an extensive analysis of existing and potential new technologies against the system requirements and additional criteria, a system based on biometric image recognition was defined as the one capable of meeting all system requirements successfully.

9. The system is based on a mobile phone application, linked to a global information system, capable of recognising unique characteristics of individual reptile skins.

10. The proposed system works through the acquisition of an image of a determined area of the skin, which is then analysed by an algorithm that establishes a *Unique Fingerprint Identifier* (UFI) for that area based on macro and microscopic skin appearance identification of wrinkles of the surface of the scales, the shape and relative centre positions of the scales, as well as the spaces between scales. This enables the identification, analysis and traceability of every section of skin or part thereof in legal trade through the accurate and full identification of any part of the skin by verifying and confirming it against the global information system.

11. Currently, this technology is being initially pilot tested in semi controlled commercial environments for the following species:

a) *Crocodylus moreletii* (on-field activities started at the end of February 2016);
b) *Caiman fuscus* (on-field activities started in mid April); and,
c) *Python reticulatus* (on-field activities are scheduled tentatively for May 2016).

12. The pilot testing is being undertaken through a collaborative framework between RESP, Colombia, Indonesia and Mexico as range countries, and Italy as the importing and manufacturing country. The figure below summarizes the timeline and key milestones.

13. The pilot testing is being undertaken throughout the entire supply chain and main commercial and regulatory steps in order to portray as accurately as possible, the real commercial and regulatory environment of reptile skin trade. In order to truthfully simulate the potential future functioning of the system, including testing the different roles and responsibilities of the different stakeholders, the pilot testing phase has secured the active participation of all stakeholders of the system including: local communities, hunters/collectors, farmers and slaughterhouses, traders, tanneries, manufacturers, brands, CITES country authorities, customs authorities, other relevant local authorities and academia.

14. In parallel to the pilot testing, additional studies are being undertaken to assess the feasibility of applying the system to live animals. The methodology is based on the acquisition of images of live animals from hatchlings to adults at fixed periods of time (6 months) in order to evaluate how the scales evolve over time and determine if a distortion factor simulating animal growth can be applied. The first results are expected at the end of 2016. Other biological characteristics and forensic determinants are being studied such as the feasibility of to determine gender, age, and other genetic traits of the animals.

15. The assessment of system costs, as well as its governance and potential socio-economic implications, both positive and negative, are key objectives of the pilot testing. The approach followed is a holistic analysis of the entire system, including assessing benefits for and direct cost implications to key stakeholders. Furthermore, the system is being designed considering economies of scale. Given that no physical device is required, a growing number of skins do not imply a proportional increase of costs.

16. The pilot testing is fully based on existing regulatory and administrative procedures and legal instruments. As such the system should integrate fully with these existing processes and infrastructure without the need for significant changes in these. Nevertheless, some change and adaptations will be necessary including, inter alia, adequately using the mobile application to acquire/control the images, and accessing the information system for more informed decision-making.

17. To the date, more than 830 images and videos have been taken of approximately 330 skins in Mexico and Colombia using 5 different phone models.

<u>Final considerations</u>

18. The progress achieved (and described above) in compliance with Decisions 16.102 to 16.108 adopted at CoP16, regarding on the development of traceability systems for reptiles skins such as the one described in paragraphs 8 to 18 of this document, the outcomes of the UNCTAD/CITES study on Traceability Systems for a Sustainable International Trade in South-East Asian Python; the Annex to document AC27 Doc. 19.4; and the four studies on the snake trade and conservation management that were commissioned by the CITES Secretariat pursuant to Decision 16.102, paragraph a), prove that efforts and resources invested in developing initiatives related to the traceability of reptile skins (including snakes) have yielded valuable results.

19. Furthermore, the set of decisions on traceability endorsed by SC66 (included in par. 7 above) set an excellent stage to ensure progress on these initiatives are considered by all CITES relevant stakeholders from the medium to the long term. Particularly, we believe that the proposed WG will provide a forum to continue the conversation on the feasibility on developing standardized guidelines on traceability for particular groups of species, using as a starting point the concepts and tools developed by current traceability initiatives, with the view of expanding them to other CITES species.

20. However in order for the decisions proposed to be able to increase coherence, reduce duplication of efforts and provide guidance to Parties, they should bear in mind the efforts, invested resources, results and lessons learnt from the progress achieved by all the initiatives derived from the implementation of Decisions 16.102 to 16.108.

21. In this sense, **Annex 1** of the present document includes (in simulated track changes) revisions to enrich the draft set of decisions on traceability endorsed by SC66, in order to guarantee they take in to account the full extent of the progress achieved to the date regarding the development and implementation of traceability initiatives (e.g. snakes and crocodilian), considering (but not limited to) the pilot testing of the traceability system for reptile skins described at length in **Annex 2** of the present document.

22. It is noteworthy to mention a draft of the present document was shared with Parties where similar initiatives are being implemented (Colombia, Indonesia, Italy and South Africa); as well as with the CITES Secretariat who (in consultation with the Chair of the Working Group on Snake trade Conservation Management), has provided useful feedback that has been incorporated in the present document, accordingly.

<u>Recommendations to the Conference of the Parties</u>

23. The Conference of the Parties is encouraged to:
    a) Take note of the progress achieved on traceability initiatives since CoP16;
    b) Support the set of decisions on traceability endorsed by SC66, *with* the revisions proposed in **Annex 1** to the present document, in order to give proper consideration to journey of the ongoing and future initiatives on traceability; and,
    c) Take note of the initiative on traceability of reptile skins detailed in **Annex 2** of the present document as a valid example on traceability systems and identification technologies

COMMENTS FROM THE SECRETARIAT

A. The document provides an update on one of the ongoing efforts to pilot the implementation of a traceability system of products derived from CITES-listed species. It is the fourth multi-country traceability initiative that is known to the Secretariat, which focuses on CITES-listed reptilian - the other three being the scoping study "Traceability systems for a sustainable international trade in South-east Asian python skins", commissioned jointly by the United Nations Conference on Trade and Development (UNCTAD) and the CITES Secretariat; the "Python conservation partnership" established by the International Trade Center (ITC), Kering and the Boa and Python specialist group of the Species Survival commission of the International Union for Conservation on Nature (IUCN); and the studies undertaken by the members of the Crocodile specialist group of the Species Survival commission of IUCN. The international organization GS1 is also scoping out a possible project on python skin traceability, and has invited the Secretariat, among other stakeholders, for consultation on the project.

B. The Secretariat notes that the initiative described in the current document led by the Responsible Ecosystems Sourcing Platform (RESP), and the South-east Asian python study undertaken by UNCTAD point to two different conclusions: while the former describes the physical tagging system as the preferred method, the latter has chosen the biometric system solution. This may be indicative of the breadth of traceability solutions and opinions available, and of the fact that one method might not necessarily pre-empt another. It also points to the need to continue collecting more information regarding existing and ongoing traceability systems across different taxonomic groups and methodologies, in order to study the variety of views and solutions on the ground. In this context, the Secretariat also invites parties to consider CoP17 Doc. 71 on Snake trade and conservation management (Serpentes spp.).

C. As for the proposed revision to the draft decisions on traceability, the Secretariat notes that the proposed revision found in Annex I of the present document should be considered in light of the changes made in the text in the Secretariat's working document on traceability (CoP17 Doc. 45). In particular, the draft decision amended by the Secretariat no longer contains an instruction by the Conference of the Parties to the Standing Committee to establish a working group per se, which would affect the relevance of some of the references suggested in the present document as described below.

D. The Secretariat also notes that the proposed revision to the draft decision on traceability in the present document seems to insert specific references on the work on reptile skins in what is intended to be a general draft decision on traceability of CITES-listed species in trade. The Secretariat is of the view that making explicit reference to a particular taxonomic group seems to counter the main objective of the proposed draft decision, which seeks to avoid the expansion of species-specific efforts and to address traceability in a wider context. The suggested insertion may also appear to overlook other taxonomic groups and commodity sectors, where traceability systems are relatively well established or being discussed in detail. The Secretariat therefore suggests that the insertion of any specific references to reptile skins be removed.

E. The Secretariat notes that the proposed decision has been drafted following the format of a Resolution and notes that it should be revised so that it follows the format of a decision. Regarding the detail of the operative section of the proposed decision, the Secretariat observes the following:

Directed to the Standing Committee:

Para. 1 c): It is not clear whether there is a significance in adding "…among other initiatives developed by Parties (in collaboration with relevant stakeholders)"

Para. 1 h): The proposed change effectively postpones the Standing Committee's efforts to develop of a draft resolution on traceability, which constitutes the main thrust of the Committee's task. The Secretariat recommends that the text remains as per original or add "as deemed necessary" to read: "draft a resolution on traceability, as deemed necessary, to be submitted by the Standing Committee, for consideration…"

Directed to the Secretariat:

Para. 1: While para. 1b) is agreeable, in reviewing para. 1 a), the Secretariat is of the view that this does not need to be included in a CoP decision, as the Secretariat is obligated to issue any Notification at the request of Parties. There is also no need to single out the subject matter of reptile skin traceability.

Para. 2 a) ii): There is no need to single out "work and lessons learned for reptile skins".

F. In light of the above, the Secretariat proposes to make further amendments to the draft decision on traceability, as proposed by the Secretariat in CoP17 Doc.45, with the aim to incorporate the relevant elements of suggestions contained in the present document. <u>The new elements are shown in double underline.</u>

Directed to the Standing Committee

17.AA   The Standing Committee, ~~shall establish a working group on traceability systems~~ in collaboration with the CITES Secretariat ~~to,~~ <u>shall consider the issue of traceability systems</u> and:

a. recommend a working definition of 'traceability systems' to assist Parties in work related to the implementation of such systems;

b. encourage ~~that the development by~~ Parties <u>that are developing</u> ~~of~~ traceability systems <u>to ensure they are</u>~~be mutually~~ complementary, <u>mutually</u> supportive and standardized, as appropriate, and that they ~~also meet~~ <u>are adapted to</u> the unique ~~needs~~ <u>conditions relating to</u> ~~of any~~ <u>trade in</u> CITES-listed species;

c. provide general guidance on a governance structure to ~~administer~~ <u>coordinate</u> and oversee the development of traceability systems using lessons learned from the development of the global CITES permits and certificates system<u>, global information and traceability systems, and other relevant initiatives</u>;

d. ~~Develop,~~ subject to the availability of external resources, <u>develop</u> and <u>make</u> use, <u>of</u> umbrella guidelines, and recommend standards, as appropriate, to develop traceability systems for different species that are mutually supportive and that generate standardized data;

e. ~~describe the CITES value chain,~~ subject to the availability of external resources, <u>describe the CITES value chain</u> using Unified Modelling Language and identify points throughout the value chain where <u>specimens</u> must be located, ~~identified~~ <u>verified,</u> and its application defined, <u>bearing in mind a wide range of production systems and life forms;</u>

f. <u>take into account the work</u> on e-permitting to ensure links between CITES permits and certificates and traceability identifiers;

g. collaborate with United Nations and other relevant organizations ~~involved and~~ that have experience in the development and use of traceability standards and systems; and

h. draft a resolution on traceability<u>, as deemed necessary,</u> ~~to be submitted by the Standing Committee~~<u>, taking into account any relevant conclusions and recommendations of the report resulting from Decision 17.CC, as appropriate,</u> for consideration at the 18th meeting of the Conference of the Parties;

Directed to Parties

17.BB <u>Parties are invited to:</u>

a. support the ~~working group~~ <u>Standing Committee</u> in its work on traceability;

b. advise the <u>Standing Committee</u> ~~working group~~ on the development of projects and <u>on</u> new information related to traceability; <u>in response to the Notification issued by the Secretariat under Decision 17.CC</u>;

c. adhere, <u>as far as</u>~~whenever~~ possible, to international standards and norms related to traceability systems in the development of these systems;

d. use data~~, as appropriate,~~ generated from traceability systems<u>, as appropriate,</u> in activities related to non-detriment findings and monitoring programmes; and

e. collaborate in the provision of capacity-building programmes that promote South-South and North-South cooperation in the development of traceability systems.

Directed to the Secretariat

17.CC <u>The Secretariat shall issue a Notification, requesting Parties information on the development of projects related to traceability</u>

17.DD <u>Subject to the availability of external funding, the Secretariat shall:</u>

a. develop a portal on the CITES website on traceability<u>,</u> to make available:

i. recommendations by the ~~working group~~ <u>Standing Committee</u> on a definition ~~of~~<u>on</u> 'traceability <u>systems'</u>, general traceability guidelines, and other relevant information;

ii. information on new <u>and ongoing</u> projects on traceability, <u>including lessons learned;</u>

iii. information on global organizations working on traceability standards and systems; and

iv. relevant documents, research papers and guidelines on traceability;<u> and</u>

b. in collaboration with the Standing Committee ~~working group established under Decision 17.X~~ and UN/CEFACT, commission a report by a global organization or expert with experience in the development of standards related to traceability, to:

i. describe a possible governance model <u>(or models)</u> for use in CITES traceability systems;

ii. map and describe <u>the CITES supply and value chain</u> using Unified Modelling Language or a similar tool~~, the CITES supply and value chain~~;

iii. identify and recommend appropriate information exchange protocols and standards for use in CITES traceability systems;

iv. describe a generic CITES traceability standard for use as a common model; and

v. report <u>to the Standing Committee</u> on the conclusions of the report ~~at the 69th meeting of the Standing Committee~~.

Revisions proposed to the draft decisions on traceability endorsed by SC66

DIRECTS the Standing Committee to:
1. *Establish a working group on traceability systems in collaboration with the CITES Secretariat to:*
    a) *Recommend a working definition of traceability systems to assist Parties in work related to the implementation of such systems;*
    b) *Encourage that the development by Parties of traceability systems be mutually complementary, supportive and standardized, as appropriate, and that they also meet the unique needs of any CITES-listed species;*
    c) *Provide general guidance on a governance structure to administer and oversee the development of traceability systems using lessons learned from the development of the global CITES permits and certificates system, global information and traceability systems, among other initiatives developed by Parties (in collaboration with relevant stakeholders);*
    d) *Develop, subject to the availability of external resources, and use umbrella guidelines, and recommend standards, as appropriate, to develop traceability systems for different species that are mutually supportive and that generate standardized data;*
    e) *Describe thea generic CITES value chain, subject to the availability of external resources, using Unified Modelling Language and identify points throughout the value chain where species must be located, identified and its application defined, bearing in mind a wide range of production systems and life forms;*
    f) *Collaborate with the working group on e-permitting to ensure links between CITES permits and certificates and traceability identifiers;*
    g) *Collaborate with United Nations and other relevant organizations involved and that have experience in the development and use of traceability standards and systems; and,*
    h) *Draft a Resolution on traceability for consideration atReport progress to the 18th meeting of the Conference of the Parties, and advise on the need to develop a Draft Resolution on traceability;*

2. *Parties that have experience with traceability systems for wildlife, where such systems are being developed, or that trade in CITES listed specimens for which traceability is becoming an important issue, are strongly encouraged to participate in the proposed Working Group.*

INVITES Parties to:
1. *Support the working group in its work on traceability;*
2. *Advise the working group on the development of projects and new information related to traceability;*
3. *Adhere, whenever possible, to international standards and norms related to traceability systems in the development of these systems;*
4. *Use data, as appropriate, generated from traceability systems in activities related to non-detriment findings and monitoring programmes; and,*
5. *Collaborate in the provision of capacity-building programmes that promote South-South and North-South cooperation in the development of traceability systems.*

DIRECTS the Secretariat,
1. *The Secretariat shall, through a Notification to the Parties:*
    a) *Inform Parties and the Working group on the initiatives related to the development of global information and traceability systems, and in particular progress achieved for reptile skins; and*
    b) *Request Parties information on the development of projects related to traceability, for consideration of the working group.*

2. *DIRECTS the Secretariat, sSubject to the availability of external funding, to the Secretariat shall:*
    a) *1. Develop a portal on the CITES website on traceability to make available:*
        i. *a)Recommendations by the working group on a definition on traceability, general traceability guidelines, and other relevant information;*
        ii. *b)Information on ongoing and new projects on traceability, including work and lessons learned for reptile skins;*
        iii. *c)Information on global organizations working on traceability standards and systems; and,*
        iv. *d)Relevant documents, research papers and guidelines on traceability;*

b) ~~2.~~ *In collaboration with the Standing Committee working group established under Decision 17.XX and UN/CEFACT, commission a report by a global organization or expert with experience in the development of standards related to traceability, to:*

i. ~~a)~~ *Describe a possible governance model for use in CITES traceability systems;*

ii. ~~b)~~ *Map and describe using Unified Modelling Language or a similar tool, the CITES supply and value chain;*

iii. ~~c)~~ *Identify and recommend appropriate information exchange protocols and standards for use in CITES traceability systems;*

iv. ~~d)~~ *Describe a generic CITES traceability standard for use as a common model; and*

v. ~~e)~~ *Report on the conclusions of the report at the 69th meeting or the Standing Committee.*

Scheme and main elements for pilot testing

Introduction

1. The International Working Group on Reptile Skins (IWG-RS) of the Responsible Ecosystems Sourcing Platform (RESP) has set a goal to develop, test and implement a global traceability information system for reptile skins and its corresponding information system in a number of pilot countries by the end of 2016, as a contribution to complementing and strengthening the CITES permitting system related to this trade.

2. The system aims to ensure legal, sustainable, stable and continuous supply chains for reptile skins by tracing skins from their origin in the wild or breeding facility up to the final product with controls along the entire supply and regulatory chains, in a biologically feasible and economically viable way.

3. This annex summarises the outcomes of work undertaken in collaboration with RESP technical partners, and with stakeholders in Colombia, Indonesia, Italy, and Mexico.

4. In the period between November 2015 and September 2016, the work focused and will focus on the pilot testing in a semi-controlled commercial environment in four pilot countries – Colombia, Indonesia, Italy and Mexico – for a limited number of pythons (*Python Reticulatus*) and crocodiles (*Crocodylus Moreletii* and *Caiman Fuscus*) skins   with the aim of validating the effectiveness, efficiency and viability of the proposed global traceability information system for reptile skins, and potential governance structure throughout the entire business and regulatory chains, in accordance to following characteristics:
   a. Be simple, affordable, sustainable;
   b. Operate throughout the whole supply chain from origin (wild, farm or slaughterhouse) to final product;
   c. Be secure, tamperproof and resist chemical and mechanical processing;
   d. Be simple and easy to apply and implement at all stages of production;
   e. Be capable to distinguish between species at the individual level of CITES Appendix II reptile species traded for their skins including snakes, crocodilian and lizards;
   f. Provide real-time on-line registration and verification through mobile technology;
   g. Be compliant with relevant ISO standards.

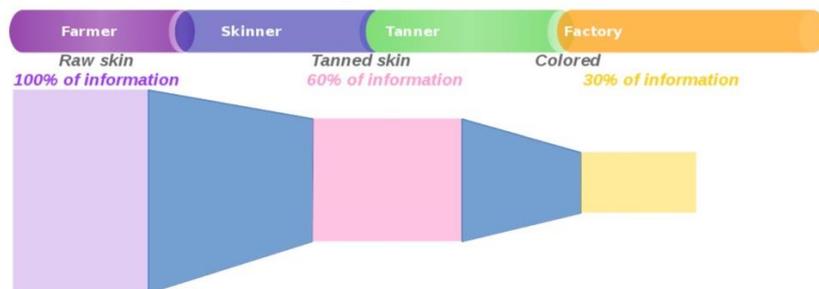The components of the global traceability information system

5. In document AC27 Doc. 19.4, RESP presented the mapping of the reptile skins business chain as illustrated in Figure 1 below:

Figure 1. General schematic representation of reptile skin value chain

6. In the same document, four main components of a global traceability information system for reptile skins were identified:
   a. The identification carrier;
   b. The application device;
   c. The tracking system;
   d. The information system and governance structure.

7. In line with the four components identified through the system requirements analysis contained in document AC27 Doc. 19.4, RESP began the proof of concept and development phases of the four components.

8. Prior to this development, additional comments derived from the global consultation carried out in 2014 involving approximately 130 stakeholders all along the value chain, were taken into considerations:
   a. Most of the participants had a broad experience in using identification tools with 42% having used plastic-loop tags, 21% plastic button tags, 16% paper tags, 16% RFID chips, and 23% other devices. It was however determined that none of these tools were fully effective to track and trace reptile skins.
   b. Some challenges identified included that all of these devices could be easily removed, that none of them were able to identify parts of the skin after it had been cut, that none of them could identify the live animal and follow through to the final product, and that none of them could withstand the mechanical and chemical tanning processes.
   c. With regards to traceability, it was noted that even if the use of the devices usually included a specific alpha/numeric sequence for each skin, this did not result in the ability to trace

skins because most of the documents treated these sequences at the batch level and in very few points of the regulatory chain.

    d. In this regard, the main differentiating factor of the proposed solution is related to effectiveness in that it provides a unique identifier for each skin or part thereof applicable from the live animal and up to the final product without the risk of removing it at any point of the supply chain.

    e. DNA-sampling tools are being used to determine biological traits in reptiles that can support the assessment of the species, its origin, age, gender, among other elements. It has been recognised that these tools provide strong evidence in determining the legal origin of a skin but are not scalable or practical. These tests cost about US$100 per skin, are carried out in laboratories and normally require the destruction of the material being tested. DNA-sampling techniques could complement the use of the proposed solution in case more detailed forensic evidence is needed.

    f. The proposed solution should develop one uniform and standardised global system that provides information in close to real-time, which differentiates it from the current system but at the same time, it is also complements it as it will support the better production of national reports.

9. Regarding the identification carrier, a number of alternative technologies and solutions were analysed and tested. These included labels or tags, RFID devices, patterns of drilled holes using laser technology and biometric identifiers.

10. After analysing these options against a pre-defined set of criteria, the solution based on biometric systems – which exploits the skin as a unique fingerprint – presented itself as the most conclusive in terms of security, simplicity, mobility, applicability, costs, infrastructure requirements, reliability, and efficiency.

11. The solution based on biometric image recognition was further analysed and validated in April 2015, as presented in document AC28 Doc. 14.2.2. as the viable option that compared with several others, better guarantees secure traceability of each skin and parts thereof.

12. The traceability system proposed is based on a mobile phone application, linked to a global information system, that will be capable of recognising unique characteristics of individual reptile skins through biometric image recognition.

13. The system will enable the identification, analysis and traceability of every single skin or part thereof in legal trade through the accurate and full identification of any part of the skin by verifying and confirming it against the global information system.

14. The identification carrier is grounded on a biometric image recognition algorithm that creates a Unique Fingerprint Identification (UFI) for a determined area of the skin based on macro and microscopic skin appearance identification of wrinkles of the surface of the scales, the shape and relative centre positions of the scales, as well as the spaces between scales. The algorithm is capable of analysing approximately 2,000 unique features in a 3x3 cm patch of each skin or part thereof at any stage of the transformation process from the raw skin to the cut pieces incorporated into the final product, as shown in Figure 2 below:

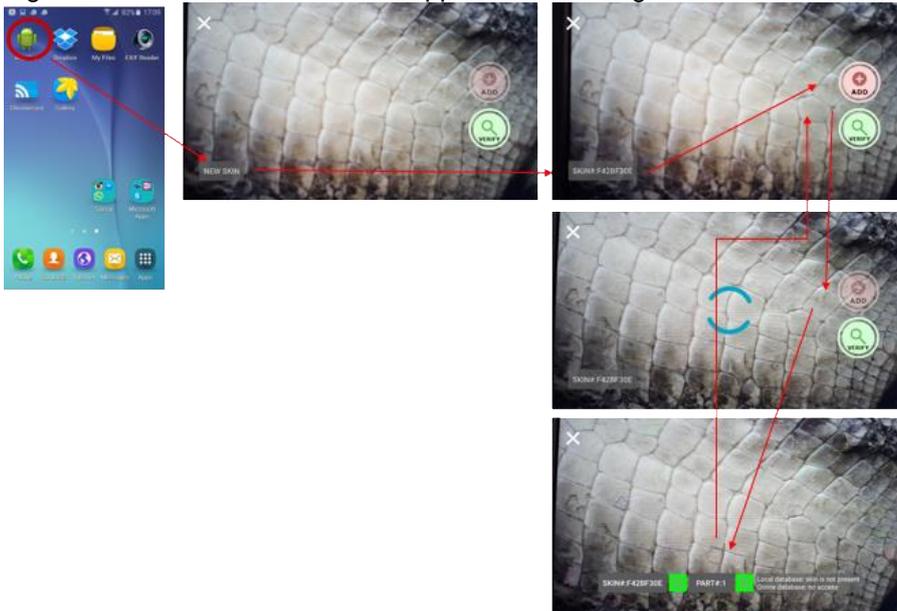Figure 2: Survival of biometric information throughout the supply chain.

15. The application device and the tracking system have been developed as one component configured within a mobile phone application compatible with both iOS and Android platforms that controls all the required parameters for the acquisition of images or videos, the secure capture, sector dedicated

and username and password protected access and management of information at each control point. The unique visible number of the image acquisition of a skin is part of an automatically generated string of information that includes time and location tracking through GPS, operator data. Other relevant meta-data can be added and linked to the skin like, among others, biological data, skin characteristics, document numbers, transport routes.

16. The mobile phone application is compatible with both low and high-resolution phones and inter-phased with international identification information standards that would provide a universal accepted and standardised method for capturing, analysing and confirming legal origin of any skin or part thereof.

17. Figures 3 below provide an example of the current development stage of the mobile phone application used during the pilot testing.

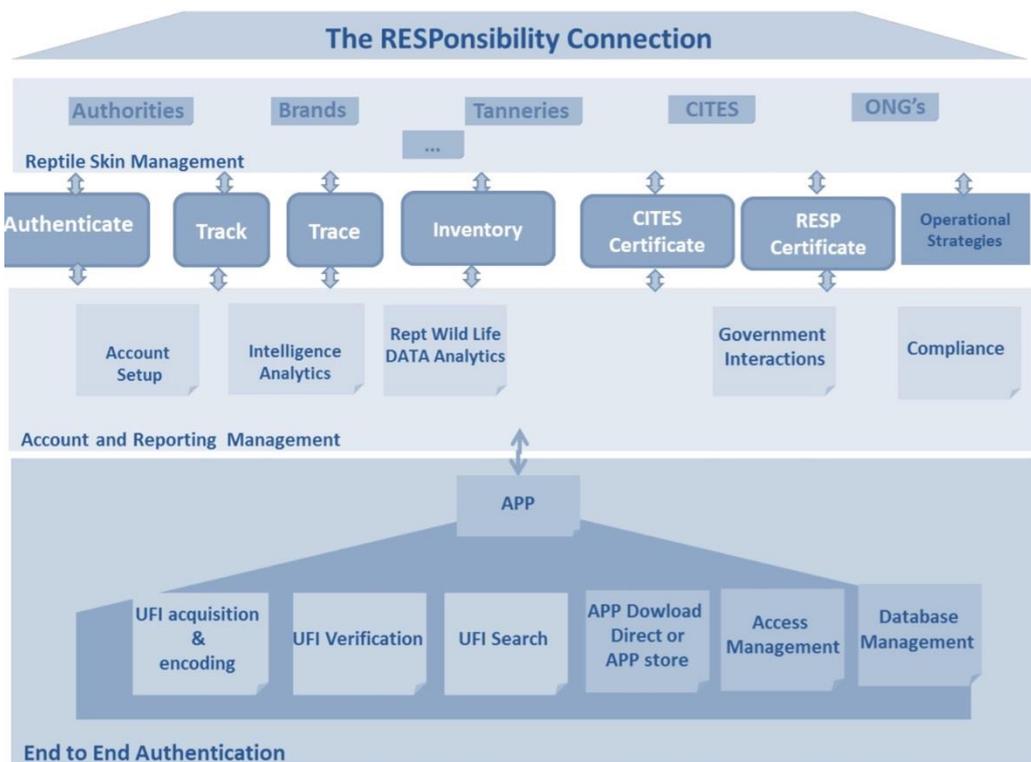Figure 3: Simulation of the mobile application enrolling a new skin.

1. Click on the App icon to start the Application.
2. To start a new skin acquisition, click on new skin. The system will produce a unique number, compatible with international standards.
3. The App allows to introduce meta data eg CITES permit or skin measures

4. Position the phone about 40-50 cm above and parallel to the skin and click "Add" button
5. The system process the image to create an UFI

6. The system saves the image with skin unique number and part
7. In fact, you can repeat point 4 and take more than one pictures of the same skin
8. The system will then process all the acquisitions to create a unique final UFI
9. The application also informs if the skin is already present in the DataBase and if there is internet connection, in which case it will automatically updates the UFI. In case there is internet connection, the UFI will be automatically updated as soon as one is available.

Image verification works by simply opening the App, positioning the phone at 40-50 cm and in parallel to the skin, and by clicking the "verify" button. The system will inform the user if the skin is present or not in the Data Base. Also during this phase, meta-data can be added and associated to the skin.

18. The global, scalable, multi-country information management system will be structured to be capable of linking to transport documentation, national databases and CITES permitting protocols allowing electronic permitting and cross-border sharing of data and monitoring related to wildlife trade and trafficking.

19. Figure 4 below illustrates the traceability and authentication interactions at three levels: the end to end authentication protocols, the account and reporting management, and the responsible reptile skin management.

Figure 4: Traceability and authentication interactions

The RESPonsibility Connection

Authorities	Brands	Tanneries	CITES	ONG's

Reptile Skin Management

| Authenticate | Track | Trace | Inventory | CITES Certificate | RESP Certificate | Operational Strategies |

| Account Setup | Intelligence Analytics | Rept Wild Life DATA Analytics | Government Interactions | Compliance |

Account and Reporting Management

APP

| UFI acquisition & encoding | UFI Verification | UFI Search | APP Dowload Direct or APP store | Access Management | Database Management |

End to End Authentication

20. The authentication level will be managed by the mobile application, in which the enrolment and verification modules will be complemented by a number of other protocols for search, storage, and access and database management and security protocols.

21. The second level refers to the management of user accounts and analytical framework that will serve as a bridge between the authentication protocols and the users of the system. This is the central data base level, where all UFI and meta data are centrally stored and managed. In order to ensure strict compliance and security of the system all users will require a user account and password. The analytical and compliance modules will be managed where the system will be able to analyse and manage the data against a number of criteria and the global and local databases.

22. The third level of final users will be linked to the second level through a number of potential processes. Depending on their roles in the system they might be able to authenticate, verify valid permits, follow the flow of the material throughout the supply chain, access scientific information, etc. The access of the final users will be managed at this level.

Determining the costs points of the system

23. From the socio-economic perspective, the use of low resolution phones in remote areas and of poor communities would be sufficient and information could be uploaded once in range of internet networks.

24. No significant changes to general processes or infrastructure are necessary. The system will use existing infrastructure for species and material handling and processing, information systems, and administrative, customs and law enforcement procedures.

25. Given the existence of the CITES permitting system, it is expected that the processes and habits will not be completely altered as the solution is being developed considering these processes. Nevertheless, some change and adaptations will potentially be necessary including adequately using the mobile application to acquire / control the images, passing from paper to electronic permits, and accessing the information system for more informed decision-making.

26. Since the biometric image recognition system comprises a global information management system and does not require a physical identification carrier (although any type of physical carrier could be added to the initial stages of the supply chain to facilitate trade and controls), a simple cost

estimation based on the price of the physical carrier (e.g. plastic tag or barcode sticker) would not provide an adequate estimation of the costs of the system.
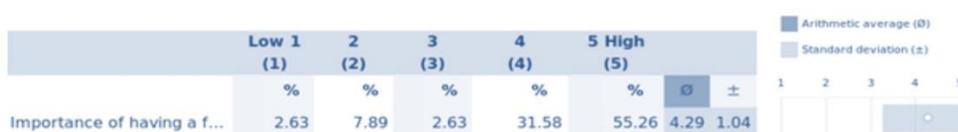
27. For this reason, in order to correctly assess the costs of the system and the potential socio-economic implications – both positive and negative – a holistic analysis of the entire system is necessary, as well as the value it will add for each stakeholder.

28. Nevertheless, it is probable that costs will not be higher or in any case comparable to actual systems because, as stated above, the system does not require a physical identification carrier. In addition, the system does not require specialised equipment as existing and locally available smart phones can be used after downloading the mobile application and no significant changes to general processes or infrastructure are necessary.

29. As a first step, the potential users of the system were identified to include hunters, ranchers, farmers, skinners, collectors, traders, exporters, importers, tanners, manufacturers, retailers, consumers, CITES authorities, enforcement and customs officials, policy-makers, as well as environmental, animal welfare and development organisations.

30. Section 3.4 of the document AC27 Doc. 19.4 outlined the perceived added value and opportunities that an effective and well-structured traceability system could bring if implemented to complement and strengthen the CITES permitting system. Table 1 below presents the main opportunities identified.

Table 1. Summary of perceived opportunities of an effective traceability system.

Opportunities
• Strengthen CITES objectives
• Legalisation of the value chain
• Transparency and credibility of the value chain
• Ethical and sustainable sourcing
• Simplification of bureaucracy
• Real-time verification and controls
• Contribution to biodiversity and sustainability research and actions
• Improvement of animal welfare practices
• Improvement of social and financial conditions of the upstream value chain
• Cradle to grave traceability of reptile products
• Consumer confidence and protection
• Funding wildlife sustainability programs
• Capacity building for human resources
• Trade facilitation

31. It is recommended that the cost assessment of the system considers the attaching a funding scheme to (co)finance conservation and monitoring activities in range states. Graph 1 below, which was originally presented in document AC27 Doc. 19.4, highlights the importance of this dedicated funding where 86.45% of the respondents to the traceability system requirements questionnaire felt that it was either important or very important to have such a funding scheme.

Graph 1. Importance given to having a funding scheme to co-finance conservation and monitoring activities

	Low 1 (1)	2 (2)	3 (3)	4 (4)	5 High (5)	Ø	±
	%	%	%	%	%		
Importance of having a f...	2.63	7.89	2.63	31.58	55.26	4.29	1.04

Arithmetic average (Ø)
Standard deviation (±)

32. Taking into account the considerations outlined above, and building from the proposed system's architecture presented in the section above, a number of price points that could be applied to the system were identified depending on its potential uses. A mix of these different price points would be tested to identify the best formula for financing the entire system, while at the same time generating a benefit that could be used for the dedicated funding and to continue improving the system.

33. As shown in Figure 5, there are three main cost items for the system: 1) the technology, 2) the management of the information system and the third party support, and 3) the management of the user- facing information platform. If the use of a physical carrier to facilitate trade and controls would

be desired, the cost of the carrier would also need to be calculated. However, given that the physical carrier would not be used for ensuring the integrity of the system, the most inexpensive option would be sufficient.

Figure 5. Schematic representation of potential cost items and price points of the system

34. For the technology cost item, which includes the availability and maintenance of the mobile application and its functionalities, three potential price points have been identified: a price for registered user, a price per acquisition of a skin, and a price for search in the database. All of these items would together incorporate the price for the technology services.

35. For the system management cost item, which would include any third party support to manage the information system, a general information technology fee could be applied.

36. The management of the user interface platform, which would allow for the interaction between the users and the system depending on their roles, could enable the production of customised analytical reports.

37. The management of the system and the platform together would incorporate the price for the business services of the traceability information system.

38. The solution is designed considering economies of scale. Given that no physical device is required, a growing number of skins does not lead to a proportional increase of costs.
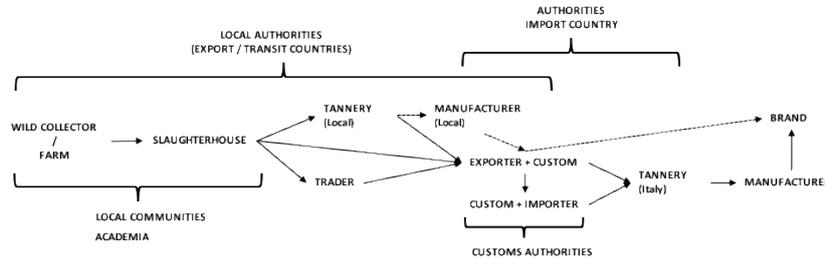
The pilot testing of the system

39. In October 2015, the IWG-RS of RESP launched the pilot testing phase of the global traceability information system for reptile skins with the objective to qualify and field-test the system (mobile application, process, data, tools, resources, procedures, governance) that will allow the actors along the reptile skin value chain and business processes to trace reptile skins from origin to final product.

40. The main objectives of the on-filed pilot testing are:
   a. Develop and field-test in a partially controlled commercial environment the effectiveness, efficiency and viability of the mobile phone application of the Unique Fingerprint Identification (UFI) traceability technology and the corresponding information management system (pilot database) which will be linked to the mobile application during the pilot testing phase. (Note: the development and deployment of a final scalable, multi-country information technology system will start after analysing pilot statistic and results, as well as CoP17 outcomes and recommendations).
   b. Track and trace individual reptile skins movements through various value chain steps.
   c. Draft possible options for linking the traceability system to the CITES permitting system in place in pilot countries.
   d. Analyse and define potential business model and costs. Suggest potential governance structure.

e. Identify potential benefits for key stakeholders.

41. The system is being tested throughout the entire supply chain and main commercial steps, according the following schema, in order to simulate as closely as possible, the real commercial and regulatory environment of reptile skin trade.

Figure 7. Schematic representation of stakeholders involved in pilot testing.

42. In order to truthfully simulate the potential future functioning of the system, including testing the different roles and responsibilities of the different stakeholders, the pilot testing phase has secured the active participation in the kick-off workshops and practical activities of all stakeholders of the system including: local communities, hunters/collectors, farmers and slaughterhouses, traders, tanneries, manufacturers, brands, CITES country authorities, customs authorities, other relevant local authorities and academia.

43. In addition, each participating country has set up a national steering committee to oversee the project.
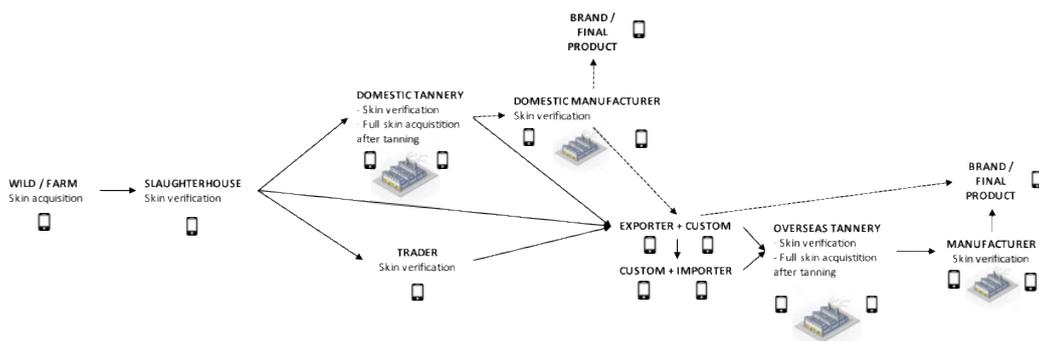
44. The piloting phase will be divided into four specific components that will cover the following elements:
    a. Finalisation of the mobile application for iOS and Android platforms: design, configuration and development of full application for skin image acquisition, identification, processing and verification.
    b. Development of the information system (database) which will be linked to the mobile application during the pilot testing phase.
    c. Perform the field tests.
    d. Development and deployment of the final scalable, multi-country information technology system.

45. The first three of the components should be completed by the 17th Meeting of the Conference of the Parties of CITES (COP17), which will take place in South Africa in 2016, while the fourth component will only start once the field testing results have been validated and comments have been received from a broad range of actors, including inputs and observations received at COP17.

46. The field testing will need to ensure that it simulates as closely as possible the real commercial and regulatory environment of reptile skin trade. Figure 8 presents the commercial and regulatory flow of the traceability pilot projects, as well as the image acquisition, verification and control points that will be included as part of the field testing.

Figure 8. Commercial and regulatory flow of the field testing

47. The skin will be tracked and traced through a number of different commercial channels:
    a. The first will entail a tanning process in producing country and the export of crust or tanned skins that are then exported to the importing country for further processing and manufacturing.
    b. The second will entail the export of non-tanned skins through a trader that exports them directly to the tannery in the importing country.
    c. The third will entail the direct export of non-tanned skins by the producer directly to the tannery in the importing country.
    d. The fourth will entail manufacturing of final products for either domestic or international consumption.

48. To practically test the system, the Unique Fingerprint Identifier (UFI) of the skin is retrieved as soon as possible at wild / farm or slaughterhouse level by the smartphone App through a picture of the head or of the whole skin. A unique automatically generated number, based on time – GPS – and other unique info, is associated to the UFI. This unique number can be compatible and built according to the most commonly recognized international standard protocols (e.g. ISO or similar). The UFI is recorded and associated to the skin in a secured local database on the phone and transferred to a central database as soon as a Wi-Fi or other type of internet connection is available. The advantage of the UFI is that the skin can be easily read by smartphones, without altering in any manner the original skin. No external device is required.

49. Image acquisition can be done in parallel to skin quality control and thus would not add additional time to operational processes.

50. If a complementary physical carrier e.g. plastic tags or barcode stickers will be added to the initial stages of the supply chain to facilitate trade and controls, this can be associated to the UFI through the application interface.

51. The system can also link and associate the needed CITES certificate with the skin, it's UFI and various meta data: GPS, user Account, skin characteristics, etc. This necessary and useful information and meta data records to be associated with the skin / UFI were identified and agreed by all stakeholders participating in the pilot test and a Meta Data Record Form Draft template has been created.

52. After the initial registration of the skins at the point of origin, all subsequent steps are a verifying process where the user takes a picture of the head or any part of the skin (in case it's fully scanned) to ensure its presence in the database and so its legality. The main verifications steps and additional information capture are: slaughterhouse, customs (export and import), tanneries, manufacturers and end consumers. In addition, during receiving and shipment, controls of each skin with the CITES certificate can be performed and specific meta data be associated with the skin.

53. In the case only the head is enrolled at the point of origin, the full skin is scanned at the tannery and the total skin UFI is associated with the initially scanned head UFI. To speed-up and facilitate the full scan of the skin, a complementary scanning device can be potentially integrated in the process. The choice of one particular system is affected by the following factors: cost, interference with the usual processes and handling of the skins, time to scan the skin, accuracy, easy of use.

54. Prior to the tanning processes the skins will be verified and after the chemical and mechanical processes the whole skins can be scanned. This will enable an additional registration process where the full skin scan will be seamlessly linked to the original registration of the initial image acquisitions taken at the point of origin.

55. At manufacturing level, the skin can be cut into pieces. All UFI parts remain associated with the total and original skin. During the product assembly process, the code of each skin section is saved just by reading the UFI code. The full chain of custody of each single part of a selling product can be verified and validated through a determined area of the UFI (currently, approx. 15 cm x 15 cm).

56. Finally, by taking a picture of a determined area of the final product, the brand can know which product is present in each store with its CITES certificate history and the consumer can know the history of the product, from origin to shop. The UFI codes can be potentially used also for product authentication and supply validation.

57. The verification at each control point will be carried out by acquiring images of a selected area of the skins and verifying the information against the database. All of these will be undertaken using the mobile application.

58. All the information generated through the pilot traceability projects will be stored and managed in a dedicated information technology system that has been developed for the pilot testing.

59. In parallel to pilot testing, a complementary study is being developed to assess the possibility take photos of small wild specimens from ranching and link them to the system. The methodology followed is to take pictures of live animals from hatchlings to adults at fixed periods of time (6 months) in order to evaluate how the scales evolve over time and so evaluate if a distortion factor can be applied. The first results are expected at the end of 2016.

60. Other potential biological characteristics and forensic determinants that are being studied in parallel to pilot testing are, among others, the determination of sex, age, and other genetic traits of the animal.