

**KENYA
WILDLIFE
SERVICE**



World Class Parks!

Kenya NPIF Soda lakes project. ABS agreements process and status in context of Nagoya Protocol



Mukonyi. K. W.
Kenya Wildlife Service
(KWS)



Outline

- Kenya Wildlife Service obligation and responsibility
- Kenya's Soda lakes Microbial Project
- Changing Landscape on Policy and Legal status in Kenya
- Case studies
- The Microbial Soda lakes Project/Agreement

KWS Obligations and responsibility under Domestic measures

Established under the Act of Parliament ,Wildlife (Conservation and Management)Act 2013

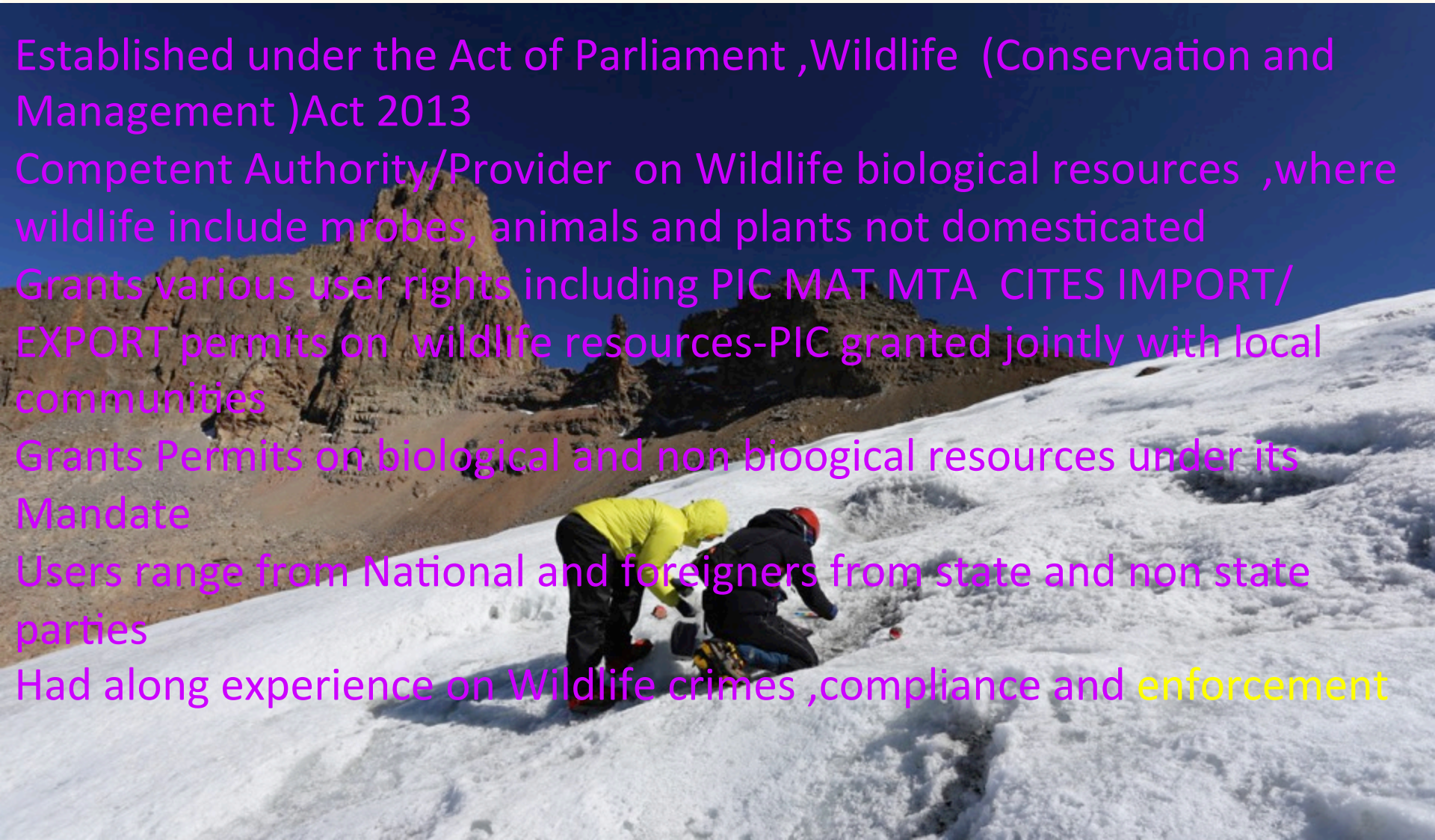
Competent Authority/Provider on Wildlife biological resources ,where wildlife include mrobes, animals and plants not domesticated

Grants various user rights including PIC MAT MTA CITES IMPORT/EXPORT permits on wildlife resources-PIC granted jointly with local communities

Grants Permits on biological and non bioogical resources under its Mandate

Users range from National and foreigners from state and non state parties

Had along experience on Wildlife crimes ,compliance and enforcement

A photograph of two people in winter gear (one in a yellow jacket, one in a black jacket) working on a snowy mountain slope. They appear to be collecting samples or conducting research. The background shows a rocky mountain peak under a clear blue sky.

Kenyas Soda lakes

Varied R&D of ABS interest
including mining, oil and
geothermal

Shared resources with the
East African Rift

Wide range in
Salinity, PH, depth ,extremo
phile diversity

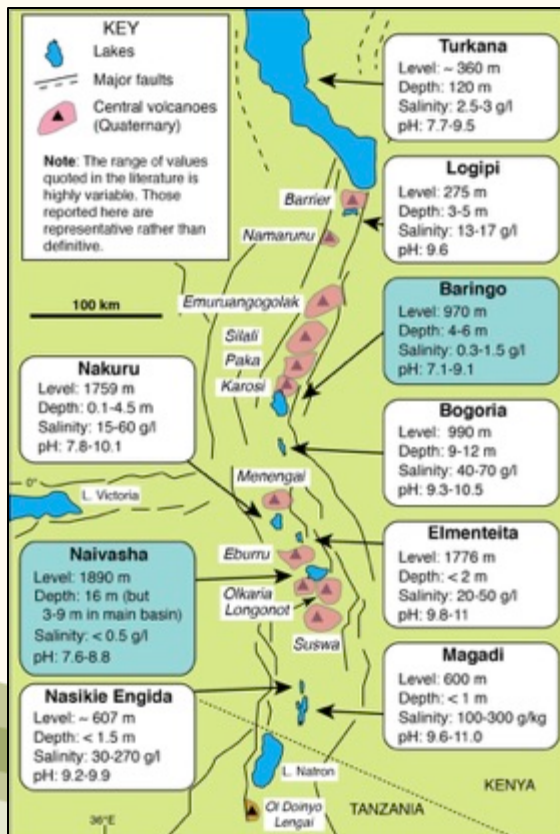


Fig. 1. A photograph of an environmental Microbial Biosphere (MBS) at the sample site, a hot spring in Lake Bogoria, Kenya. The MBS was found growing on a rock surface near the water's edge. The region labelled 1 in the photo is the surface of the spring, close to the water and is yellow in colour, region labelled 2 is the middle and white in colour and 3 is the bottom green in colour. The temperature of the three regions ranges from 45° C to 85° C.



Some Past R&D

December 2013 Soda Lakes Workshop-Kenya



- Over 70 Participants
- 30 papers and six posters
- Wide range of topics ,paleoclimate, biodiversity, geology ,geochemistry, Legislation and community livelihoods
- Recommendation –Formation of East African Soda lakes Platform
- Recent Work by Paul Oldhaim etal indicate various research in Kenya Soda lakes.

The Microbial Soda lakes project

Partners

- Providers –KWS and Soda lakes communities
- Users-Local Partners – JKUAT,UON,KIRDI ,MOI ,RIVATE X
- Main Industrial Partner – Verenium (USA)-Now BASF (Germany)
- Seed Money –GEF –NPIF 2013 began November 2014.

Objectives

- Key out comes –Legislative ,policy and Institutional arrangement in line with Nagoya Protocol
- - The utilization of microbial genetic resources within the protected Kenyan Soda lakes for research, development and commercialization of industrial enzymes and bio-pesticides for improved resource management and livelihoods in compliance with the Nagoya Protocol on Access and Benefit Sharing

Strategic Objectives

- To Enhance legal and regulatory framework in Kenya.
- Systematic discovery of natural products for biopesticides and industrial enzymes
- Technology transfer between resource provider and user operational zed
- ABS agreements developed to build the capacity of the Kenyan Authorities to engage with users of genetic resources

Key achievements

- Outreach- High level stakeholders on Kenya's obligation under Nagoya undertaken ,including academia, community and protected area systems- enhanced awareness, effects on legislative, policy and institutional arrangements being realized. ABS based management plans
- Project SOPS
- PIC and ABS agreements initiated
- Link of in-situ –ex-situ collection systems being initiated
- Compliance and enforcement being felt
- Stakeholder participation in decision making process
- Leveraging support-GIZ-ABS,UN high Commission on Human rights ,County Governments

Changing legislative landscape and impact on protected area systems

- The changes have had impacts on ownership, responsibilities and user rights over time.
- 12% of the countries biodiversity is under protected areas where over 8% is under National parks, 2% under Forest service, 1% under county government, the rest under community and heritage sites under National museums
- Varied management affect user rights and benefits.
- 1898- law controlling hunting
- 1907-Game department established
- 1945-Royal ordinance Establishment of National parks
- Wildlife policy 1975
- 1976 Wildlife (conservation and management) Act 1976 Wildlife conservation and management department –WCMD 1989 –Wildlife Act Amended –KWS created, 2013 new wildlife Act
- 1999-EMCA created, 2015 EMCA reviewed .
- 2001-KIPI
- 2005-KFS-CFA in place
- 2006-ABS subsidiary law-effected 2008



Changes at International level

- CITES 1975-under KWS
- CBD 1992- NEMA/MENR
- WIPO-1984-KIPI
- WIPO-TRIPS 1994-
KIPI,KEPHIS KECOBO
- ITPGRFA-KALRO/KEPHIS
- Nagoya Protocol 2014-
NEMA/MENR
- The Most Significance change has been on the constitution 2010,that create like three tier systems –National Government, County and Community Governance
- Recognition of ratified MEAS - Articles 2 (5) (6)
- Recognition of Community rights, rights to information, equitable share of benefits (articles 11,42,69 ,70-72 ,217.
- All have had effect on governance and granting of user rights on utilization of biological resources.

Case Studies; Genencor /KWS

- The case pending
- Involved Research undertaken over along period since 1988-1999 including before and after CBD.
- No PIC ,MAT but Research permit from NACOST
- Graduated from non commercial to commercial
- Involved Parties and Non Parties to CBD
- Various IP generated including patenting of pure Microbial strain



Biopiracy



Genencor/KWS-Patent and source of GR

United States Patent [19] Jones et al.

- [54] **GRAM-NEGATIVE ALKALIPHILIC MICROORGANISMS**
- [75] Inventors: **Brian Edward Jones**, Leidschendam, Netherlands; **William Duncan Grant**, Leicester; **Nadine Claire Collins**, Dorking, both of United Kingdom
- [73] Assignee: **Genencor International, Inc.**, Rochester, N.Y.



US005733767A

[11] Patent Number: **5,733,767**
[45] Date of Patent: ***Mar. 31, 1998**

Souza et al., "Growth and reproduction of microorganisms under extremely alkaline conditions." *Appl. Microbiol.* (1974) 28(6): 1066-1068.
Tindall, B.J., Prokaryotic Life in the Alkaline, Saline, Athalassic Environment, Halophilic Bacteria, vol. 1, CRC Press, Boca Raton, FL (1988) 33-70.
Horikoshi et al., Alkalophilic Microorganisms, Springer-Verlag, Berlin, Heidelberg, N.Y. (1982).
Horikoshi et al., Superbugs, Japan Scientific Societies Press, Tokyo and Springer-Verlag, Berlin, Heidelberg, N.Y. (1991)



US006420147B1

(12) United States Patent Jones et al.

(10) Patent No.: **US 6,420,147 B1**
(45) Date of Patent: **Jul. 16, 2002**

(54) HALOALKALIPHILIC MICROORGANISMS

- [75] Inventors: **Brian Edward Jones**, Va Leidschendam (NL); **William Duncan Grant**, Leicester (GB)

- [73] Assignee: **Genencor International, Inc.**, Rochester, NY (US)

Zvyagintseva, I.S. and Tarasov, A.L. (1988) "Extreme Halophilic Bacteria From Saline Solis" *Microbiologiya*, 57:664-669.

Morth, S. and Tindall, B.J. (1985) "Variation of Polar Lipid Composition within Haloalkaliphilic Archaeobacteria" *System. Appl. Microbiol.*, 6:247-250.

Upasani, V. and Desai, S. (1990) "Chemical composition of the brines and studies on haloalkaliphilic archaeobacteria" *Arch. Microbiol.* 152:580-593 (Sambhar Salt Lake)

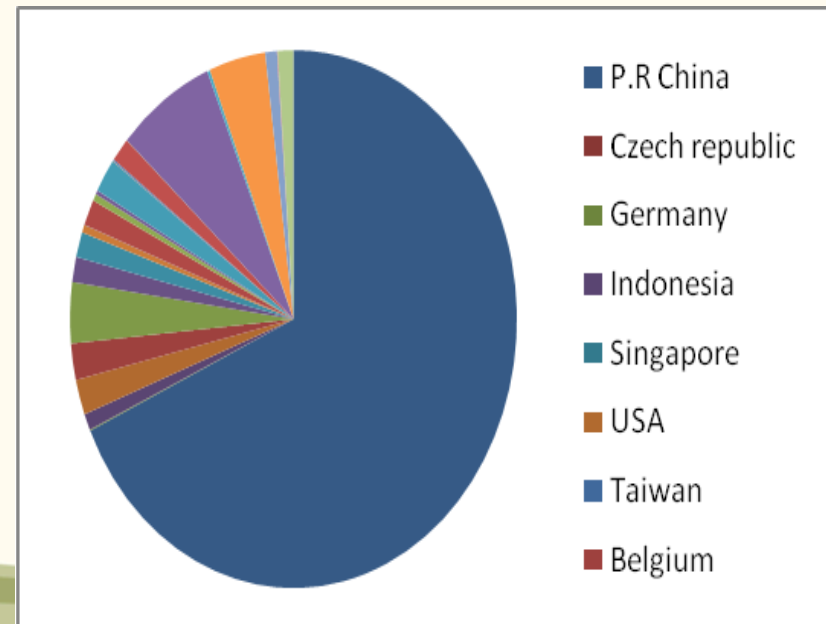
TABLE 3

Origin of the Strains Arranged by Cluster*

SAMPLE						
CLUSTER	STRAIN	LOCATION	pH	Temp. °C.	Conductivity mS/cm	ISOLATION MEDIUM
1	1E.1 ^{CT}	Elmenteita	9.5	35	n.t.	A
1	2E.1	Elmenteita	9.5	35	n.t.	A
1	wB2	Bogoria	n.t.	n.t.	n.t.	A
1	wB5	Bogoria	n.t.	n.t.	n.t.	A
1	wBs4	Bogoria	10.5	n.t.	19	A
1	10B.1	Bogoria	10.5	36	45	A
1	20N.1	Nakuru	10.5	36	30-40	A
1	27M.1	Magadi	11.0	36	100	A
1	<i>Comamonas terrigena</i> ^T (NCIMB 8193)					—
1	wNk2	Nakuru	10.5	n.t.	19	A
1	<i>Pseudomonas putida</i> ^T (NCIMB 9494)					—
2	39E.3	Elmenteita	10-10.5	23	13.9	M
2	41E.3	Elmenteita	10-10.5	23	11.3	N
2	54E.3 ^{CT}	Elmenteita	10	27	11.3	P
2	47E.3	Elmenteita	10	27	11.3	O
2	51N.3	Nakuru	10-10.5	29	40.1	P
2	52N.3	Nakuru	10-10.5	29	40.1	P
2	42E.3	Elmenteita	10-10.5	23	13.9	N
2	50N.3	Nakuru	10-10.5	29	40.1	N
2	<i>Pseudomonas stutzeri</i> ^T (NCIMB 11358)					—
—	wN2	Nakuru	n.t.	n.t.	n.t.	A
—	<i>Pseudomonas betjerinckii</i> ^T (NCIMB 9041)					—
—	4E.1	Elmenteita	9.5	35	n.t.	A
—	5E.1	Elmenteita	9.5	35	n.t.	A
3	6B.1	Bogoria	10.5	36	45	A
3	7B.1	Bogoria	10.5	36	45	A
3	8B.1	Bogoria	10.5	36	45	A
3	38E.2	Elmenteita	n.t.	n.t.	n.t.	B
3	56E.4	Elmenteita	10-10.5	23	13.9	C
3	25B.1	Bogoria	10.5	36	45	A

Novozyme/KWS Partnership

- The Company collect specimen from Kenyan Soda lakes while on tourism
 - Accession after and during CBD no any form of permit/approvals
 - Develops products from two strains and commercializes one from Lake Bogoria
 - The microbes not under patent but held in one of the leading repositories
 - In respect to Company integrity would like to be label as a biopirate
- It sought release from Kenya and after along time ,it was agreed KWS a competent authority takes lead and a settlement is agreed through an Agreement in 2006.



Citizens takes NOVOZYME/KWS Agreement to court

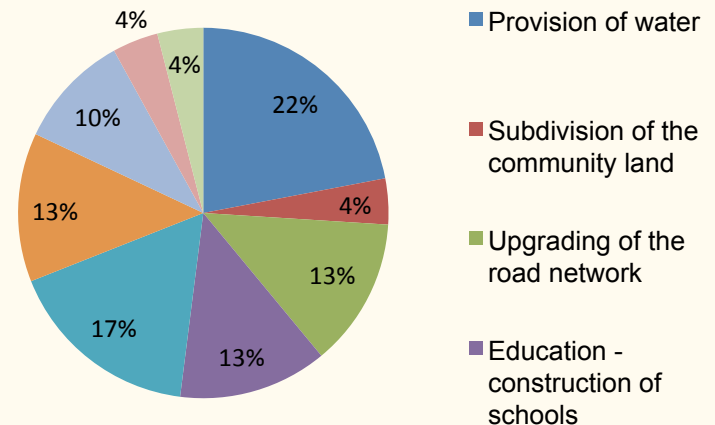
- Key Elements of the Agreement
- Benefit sharing on accessed commercialized microbes ,Monetary -0.6 royalty on Bogoria strain,0.2% royalty on Magadi strain
- A collaborative Project on Coprophilus fungi from protected areas –USD 50,000 for field and lab costs on the project
- Training of Kenyans on Coprophilus fungi techniques
- Kenya to set free Novozyme after fulfilling the benefit sharing.
- The Collaborative partnership between KWS/NOVOZYME never lasted due to court cases since 2008 to 2012. It was dismissed on the fact that the partnership expired in 2012. But the benefit sharing clauses survived.
- Key issues raised-based on Compliance ABS law 2006 and the Constitution 2010,
- Legality of KWS to enter in the agreement
- The Benefits were minimal to Kenya Government
- EIA had not been done
- MOU was not accessible to public
- PIC/MTA not available and no public



Novozyme Royalty hand over

- Under Which laws and structures? for what?
- Handed over in October after ratification of Nagoya
- Handed over to Endorois Community through the County Government
- The Money supports school fee of 247 students and some towards development of the cultural centre.
- The effect County develops a ten % benefits policy and community get a share of gate tourism collection at lake Bogoria
- This informs need for an ABS based management plan for Lake Bogoria

Royalty as at 2014 USD 26,300
Upfront for project USD 50,000 (2007)
Training –USD 42,450
Court cases-28,297
Withholding tax-2656

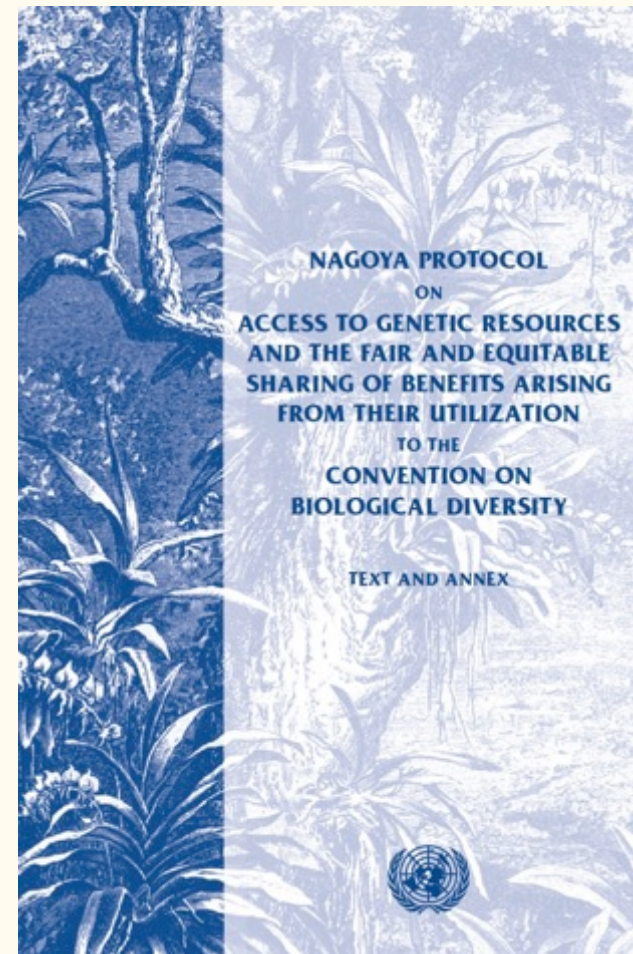


The East African Soda lakes Book



- royalty is fully donated to Medécins sans frontières (Ärzte ohne Grenzen) – if possible, please ask your libraries to purchase some copies.
<https://images.springer.com/sgw/books/medium/9783319286204.jpg>
- Nagoya Article 10 on Mult-lateral benefits
- Permits? PIC MAT MTA?
- Valorization of Soda lakes.

Soda lakes ABS Agreement



KENYA
WILDLIFE
SERVICE



The Process

- Stakeholder Analysis
- Awareness creation
- Through consultative process establish key issues for negotiation and mutual consent consent, Legal entity, representations, significance of the project both broad and intellectual Merit ,benefit sharing ,nature of biological ,genetic ,derivatives, transfer of genetic resources, nature of contractual agreement
- IP audit
- PIC and ABS agreements

The ABS Agreement

- Two sets –Local Partners and Industrial Partners –Provider users
- Parties
- Legal instruments
- Definitions
- Scope, nature objectives
- Administration
- Obligations



The ABS Agreement

- Two sets –Local Partners and Industrial Partners –Provider users
- Parties
- Legal instruments
- Definitions
- Scope, nature objectives
- Administration
- Obligations

Soda lakes Agreement

- Access to genetic resources and associated knowledge
- Benefit sharing
- Local Communities
- Third Parties
- IP rights
- Monitoring and evaluation
- Subsequent agreements
- Enforcement and compliance
- Applicable laws
- Signatories
- Annexes

Thank you

