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‘Socio-economic and livelihood impacts of environmentally
supportive bio-enterprise development for the agro-/pastoral
communities in Samburu Heartland, Kenya’.

by

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A thesis submitted to the University of Plymouth in partial fulfillment for the degree of

DOCTOR OF PHILOSOPHY

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ABSTRACT. *Name of candidate: Susan Alison Wren. Title of the thesis: ‘Socio-economic and livelihood impacts of environmentally supportive bio-enterprise development for the agro/pastoral communities in Samburu Heartland, Kenya’.*

The question of agro/pastoral livelihoods adaptation is gaining attention in the rural development arena but little empirical evidence exists that has examined the performance and impact of diversified enterprises on agro/pastoral livelihoods and the environment in the ASAL, and on how to effectively support such initiatives. Additionally, there has been little evaluation of the type of behavioural patterns that agro/pastoral communities need to evolve in order to engage in such initiatives. This research study endeavours to bridge this knowledge-gap and assist the ASAL communities, NGOs, CBOs and government departments to understand the skills and resources required to develop climate-resilient, environmentally and economically sustainable bio-enterprises. This study examines the roles of bio-enterprise initiatives in enabling agro/pastoralists to develop more resilient livelihoods and incentivising positive community-led natural resource management and draws on different bio-enterprise initiatives located across the drylands of Kenya. In this study data was collected through interviews, focus group discussions and from secondary data. The analysis of four agro/pastoral bio-enterprise initiatives compares the level of success of specifically orientated development-funded support schemes. A more in-depth study was made of one of the initiatives, the BDP. Two surveys were made one year apart and secondary data was collected of the BDP impact. This highlighted the probable factors that influence the communities’ up-take of these bio-enterprises. Results show that this diversification requires stakeholders and support-actors to gain a greater understanding of business development approaches. Other factors such as capacity development to ensure production meets market standards, strong linkages with ethical commercial operators, access to trade-finance and ongoing

mentoring proved to be the main drivers of success in these initiatives. The results show that the outputs of the BDP service-providing activities and the ethical trade facilities have been a major factor in the level of success achieved by the BDP.

The main policy implications that this study has shown are:

- ✚ Agro/pastoralists realise that they can improve their resilience, food security and incomes by developing bio-enterprises. If conducted using conservation practices, this is an effective conservation and drought management tool.
- ✚ Communities do not possess the necessary skills and business acumen to diversify from traditional activities.
- ✚ Due to the lack of market knowledge, business acumen and technical skills many development and government instigated rural enterprise initiatives have failed. The commercial sector has strong transferable skills and will assist in developing bio-enterprises where commercial gains can be attained. This study has shown that where government, development and the private sector work in synergy projects are more socially, environmentally and economically successful.
- ✚ International standards and certification for sustainable harvesting of indigenous plant materials will effectively assist communities to manage their natural resource utilization and market their products more competitively.
- ✚ Women have shown that they have control over small-scale diversified activities and are able to choose how to use the revenue they have raised.
- ✚ Due to the orientation of agro/pastoralists to collective-action a wide ripple-effect can be seen from well-targeted business development assistance such as: mentoring, skills development, access to affordable trade finance/capital, improved market opportunities and value-addition.

LIST OF ABBREVIATIONS AND ACRONYMS

ABRDP: Arsi-Bale Rural Development Project

Agfax: WRENMedia's radio services for African broadcasters.

Agro/pastoral: Agropastoral and pastoral

AGM: Annual General Meeting

AFD: Action for Development

APDA: Afar Pastoral Development Association

ASAL: Arid and Semi-Arid Lands

AWF: African Wildlife Foundation

BDP: Bio-enterprise Development Programme

BfN: *Bundesamt für Naturschutz* (German Federal Agency for Nature Conservation)

CBD: Convention on Biological Diversity

CBNRM: Community Based Natural Resource Management

CBO: Community Based Organisation

CETRAD: Centre for Training & Integrated Research in Arid Lands Development

CFA: Community Forest Association

CGIAR: Consultative Group on International Agricultural Research

CIFOR: Centre of International Forestry Research

CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora

CoP: meeting of the Conference of the Parties to CITES/CBD

CPA: Community Protected Area

DBH: (dbh) Diameter at Breast Height

DE: Desert Edge Bio-Trading Company

DFO: District Forest Officer

DFID: Department for International Development

DRSRS: Department of Remote Sensing and Resource Surveys

EPaRDA: Ethiopian Pastoral Research and Development Association.

ENSO: El Niño/La Niña-Southern Oscillation

FAO: Food and Agriculture Organization

FEWS: Famine Early Warning System

FMP LWF: Forest Management Programme

FORREMS: Forestry Range Rehabilitation and Environmental Management Strengthening

GEF: Global Environmental Fund

GHG: Green House Gas

GL-CRSP: Global Livestock Collaborative Research Support Program

GPS: Global Positioning System

GTZ: *Deutsche Gesellschaft für Technische Zusammenarbeit* (German Society for Technical Co-operation.)

GoK: Government of Kenya

HM: Holistic Management

IBS: Institute of Behaviour Science

ICRC: International Committee of the Red Cross

ICIPE: International Centre for Insect Physiology & Ecology

ICS: Internal Control System

IDS-FAC: International Development Studies – Future Agriculture Consortium

IFAD: International Fund for Agricultural Development

IFOAM: International Federation of the Organic Agriculture Movements

IIED: International Institute for the Environment and Development

IIRR: International Institute of Rural Reconstruction

ILO: International Labour Organisation

IMO: *Institut für Marktökologie*, Switzerland

ISSC-MAP: International Standard for Sustainable Wild Collection of Medicinal, Aromatic Plants

IUCN: International Union for Conservation of Nature

KEBS: Kenya Bureau of Standards

KEFRI: Kenya Forest Research Institute

KFS: Kenya Forest Service

KWS: Kenya Wildlife Service

LWF: Laikipia Wildlife Forum

MAP: Medicinal and Aromatic Plants

MDG: Millennium Development Goal (UN)

MoNK: Ministry of Northern Kenya (and the ASAL)

MRC: Mpala Research Centre

NARC: National Rainbow Coalition NEMA National Environmental Management Authority

NCAR: National Centre for Atmospheric Research

NGO: Non-Governmental Organisation

NKIF: Northern Kenya Investment Fund

NMK: National Museums of Kenya

NRM: Natural Resource Management

NRT: Northern Rangelands Trust
NTFP: Non-Timber Forest Product
ODI: Overseas Development Institute
OSSREA: Organization for Social Science Research in Eastern and Southern Africa
PARIMA: Pastoral Risk Management Project
PIM: Participatory Impact Monitoring
PROTA: Plant Resources of Tropical Africa
PFM: Participatory Forest Management
PFMP: Participatory Forest Management Plan
PPG: Pastoralist Parliamentary Group
SEB: Society of Economic Botany
SNV: Netherlands Development Organisation
SSA: Sub-Saharan Africa
TIPP: Turkana Integrated Pastoral Programme
UN: United Nations
UNDP: United Nations Development Programme
UNESCO: United Nations Educational, Scientific and Cultural Organisation
UNEP: United Nations Environment Programme
UNICEF: United Nations Children's Fund
USAID: United States Agency International Development
WHO: World Health Organization
WRUA: Water Resource User Association
WWF: World Wildlife Fund

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AUTHOR'S DECLARATION

At no time during the registration for the research degree- PhD under the Department of Geography, Earth & Environmental Sciences at the University of Plymouth has the author been registered for any other University award without prior agreement of the Graduate Committee. This study was self financed. Relevant scientific seminars and conferences were regularly attended at which work was presented; external institutions were visited for consultation purposes and several papers prepared for publication.

Publications (or presentation of other forms of creative and performing work):

- Published article in the special edition 'New Avenues for Pastoral Development in SSA' within the European Journal of Development Research. "The struggle to diversify rural livelihoods: Bio-enterprise initiatives and their impacts on agro-/pastoral communities in the drylands of Kenya".
- Editor for the GEFDOC , Global Environment Fund, UN. March 2011 KEN10406: "Sustainable Charcoal Production and Bio energy Technologies to Reduce GHG Emissions and promotion of Income Generating Activities for livelihood improvement in Arid Lands of Kenya". Partners: ICIPE, KFS, Ministries of Agriculture and Livestock Development, CFAs, IFAD loan programmes, Min of Forestry and Wildlife, Min of Energy and the Min of Local Government.
- Published article in the '*Annual Review of Entomology*' "Forest Habitat Conservation in Africa using Commercially Important Insects". Vol. 56: 465–485. Suresh Kumar Raina, Esther Kioko, Ole Zethner, Susie Wren. www.annualreviews.org/toc/ento/56/1
- Published article in the Global Environmental Fund Annual Review. Co-Author. "Commercial Insects and Climate Change Mitigation". ICIPE.
- Published paper "Structural and procedural properties important in promoting bio-enterprises as alternative livelihoods to pastoral and agro-pastoral livelihoods". Chinwe Ifejika Speranza and Susie Wren. 'Future of Pastoralism in Africa' proceedings document, from the conference March 21st – 23rd, 2011, Addis Ababa, Ethiopia. Published on the IDS website. www.ids.org
- Invitation to contribute to the forthcoming Open Access book, "Ecosystem", ISBN 979-953-307-530-2. Published by InTech - Open Access Publisher covering the fields

of Science, Technology and Medicine. The contribution to this book will be based on our paper "Forest habitat conservation in Africa using commercially important insects". Publication of the book is scheduled for mid 2012. It will be abstracted and indexed in the major repositories and indexing databases.

www.intechweb.org/welcome/ee698d03ccce547bc8cdb4f13ebb282/sraina@icipe.org

- Provided an interview for the Agfax service www.agfax.net
- Provided an article for the online magazine New Agriculturist www.new-ag.info.

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- Presentation at the conference 'Development and Pastoral Livelihoods'. Co-funded and hosted by CARE and Save the Children US. Nairobi
- Presentation at the international conference convened by IDS, UK. 'Future of Pastoralism in Africa' Conference March 21st – 23rd, 2011, Addis Ababa, Ethiopia. Topic: "Promoting bio-enterprises as alternative livelihoods to pastoral and agro-pastoral livelihoods". <http://www.future-agricultures.org/index.php>. This is now included in the IDS publication: Catley, *et al.*, (2012).
- Presentation of a paper 'Benefits of conserving bee pollinators for pollination services to boost wild harvest in the forest and crop security in the farmland' at the 'The First Africa-Wide Workshop on Strategic Partnership Networking in Bee Health and Pollination Services For Food Security In Africa' International Centre for Insect Physiology and Ecology (ICIPE). African Insect Science for Food and Health, Nairobi. 10th to 19th October 2011. www.icipe.org
- Facilitate and chair of one session within the conference above. Theme: Bee Health and Pollination Services for Food Security in Africa. Presentation provided.
- Presentation at the introduction and launch of Society of Economic Botany [Kenya Chapter] (SEB-Kenya, 23rd of June, 2011 at the University of Nairobi, Kenya.
- Facilitation and presentation at the workshop; 'Livestock, land the changing political economy of pastoralism in Laikipia: Pathways to strengthen pastoralist livelihoods'. Held in Kenya, September 15-16th 2011. DFID-funded Future Agricultures Consortium (FAC) and Desert Edge (DE). The purpose of the workshop was to critically reflect on the findings of a study on innovative pastoralist responses during the 2009 drought crisis in Laikipia and Samburu.

- Facilitation and presentation at the workshop in Kenya, August 2011, LWF Lecture Series ‘Sustainable Commercialisation of Indigenous Plant Species in Kenya’. 15^h August 2011. Convened by DE and LWF www.biotrade.co.ke
- Presentation to the Ministry of Northern Kenya (MoNK). “The Opportunity for Bio-enterprise Development in the ASAL of Kenya”. March 2011.
- Facilitation and presentation at the policy workshop: ‘Strengthening pastoral livelihoods in Northern Kenya: Exploring the potential of bio-enterprises. Held in Kenya, February 23rd 2012. Focus discussion on the opportunities for increasing socio-economic and environmental benefits from indigenous natural products. The policies and institutions as well as development inputs and commercial sector involvement required to promote the growth of these enterprises. Organised by the FAC, MoNK and DE.

External Contacts:

Some of the central contacts that were established during the study include:

Dr Chinwe Ifejika Speranza

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Dr Christian Borgemeister

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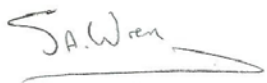
Maria Dodds

Anne Powys

There are very many other contact that were established during the study from government, development, commercial and civil sectors.

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