ESPA ANNUAL SCIENCE CONFERENCE 2013
20th–21st November 2013
Charles Darwin House, London

Day 1: Wednesday 20th November

Plenary 1 – Ecosystem services and the poor on marginal lands: trade-offs and synergies – Edward Barbier

Key reading: Barbier, E.B. 2012. Natural capital, ecological scarcity and rural poverty. *Policy Research Working Paper* WPS 6232, the World Bank, Washington, D.C., October.

Economic development (properly defined) yields many benefits, but we haven't yet managed to do it without resource depletion and altering ecosystems. 1/3 of global rural populations live on Less Favourable Agricultural Land, 1/5 of those are also remote from markets (5+ hours to town of 50k). Poorest rural households have very few productive assets, except land and unskilled labour. As land degrades, agriculture fails, more labour is allocated to outside employment, wages are pushed down, and many households will switch back to agriculture, but only enough to cover subsistence needs.

Financing should be provided directly to poor via PES and other measures that enhance the environments on which the poor depend. Invest in livelihoods, access to markets, institutions and reducing transaction costs.

Overcoming the problem of widespread poverty in low developing economies through reducing ecological scarcity will require new strategies. Policies to eradicate poverty need to be targeted at the poor where they live, especially the rural poor clustered in fragile environments and remote areas. As it is the "assetless" poor who end up most dependent on ecosystem services, targeting and protecting the services which are most important to the poor should be a priority. Equally, it is the economic services that most benefit the poor on marginal and remote lands – access to markets and improved governance – that should be a priority.

Investments need to be wary of distribution of benefits to rich and poor, or elite capture. Countries/economies which have tried to make access to resources more equal have generally done better than those that have not. These discussions need to be happening within development organisations and programs. We also need research into the costs and benefits of investing in either rural poor or urban poor at the expense of the other. A challenge for the ESPA programme will be to make ecosystem services more visible in policy; it's very difficult for individual projects to do.

Session one presentations

ESPA PFG: What types of investment can most cost-effectively ensure ecosystem service provision? A randomised program evaluation – Nigel Asquith

Following ten years of conducting research projects of locally led, designed, implemented and financed programme of development projects to conserve forest and protect water supply, ESPA funding supported a randomised trial of different interventions. The compensation is decided by the individuals involved, with the only constraints being that they had to be environmentally friendly and be a multiplier – provide long-term benefits. Based on precaution principle, without need for data; assume that forests are only conserved if correct institutions are present; currently they are not, so the project is helping to build those local institutions.

Viewing an economic transaction for ecosystem services through a neoclassical/academic lens is not helpful as the users involved do not speak this language. What we call PES and see through

the lens of neoclassical rational economics is not helpful as we're all irrational. But we're predictably irrational, so behavioural economics may be useful in predicting behaviour. PES works on the idea that we have not correctly quantified the value of services and trying to correct for externalities. It may be better to base programs on the institutional needs for governing the commons.

ESPA PFG: Winners and losers in ecosystem management: justice as the critical link – Thomas Sikor

Ecosystem services-based governance interventions often focus on particular trade-offs and build-in mechanisms for (monetary) transfers between involved parties (e.g. PES). Common to these interventions is a certain model of justice. The providers and beneficiaries of ecosystem services benefit from a 'justice community' which can define the optimal level of services provision together and decide on transfers from beneficiaries to providers, to avoid anybody "losing". This model is compatible with utilitarian justice (aggregate benefit increases) and libertarian justice (at least one party is better off, no-one worse off). Real world limits to this model are due to inequalities in the utility derived from money in different places, and power differentials.

The current discourse focuses on two distributive conceptions of justice, but there are also other aspects, e.g. participation and recognition, rights-based approaches, Rawls' Difference principle, Sen's Basic Capabilities approach. Justice is an integral dimension of ecosystem management. Research needs to understand implicit conceptions of justice, examine the operationalisations of justice, and identify other justice effects.

ESPA PFG: Understanding the relationships between ecosystem services and poverty alleviation: a conceptual framework – Janet Fisher

This ESPA project synthesised different conceptual frameworks which looked at the relationship between ecosystem services and poverty alleviation. There are decades of research on environment and poverty but not necessarily in the language of ESPA. The project reviewed 9 frameworks from development science and socio-ecological studies: Environmental Entitlements, MEA, TEEB, Framework for ecosystem services provision, Social Assessment of Protected Areas, Sustainable Livelihoods, Political Ecology, Resilience and Vulnerability literatures.

The review paper is: Fisher, J.A., et al., (2013) Strengthening conceptual foundations: Analysing frameworks for ecosystem services and poverty alleviation research. *Global Environmental Change,* http://dx.doi.org/10.1016/j.gloenvcha.2013.04.002

The project then developed a new conceptual framework, to support an analysis of *how* wellbeing is derived from ecosystem services and *who* derives it. (Fisher et al, in press: *Ecosystem Services*) The framework is a useful interdisciplinary thinking tool, and can be a useful inductive tool to structure enquiry in the field, and prompt thinking, in a similar way to Sustainable Livelihoods. It is relatively qualitatively-orientated, but there may be more quantitative/mixed iterations developed in the future. The systems diagrammatic layout allows it to support the analysis of dynamics. The framework will be applied in the new ESPA ACES project, and the team will develop guidance on how to use it.

ESPA PFG: An application of discrete choice experiments to study Maasai livelihood preferences – Aiden Keane

This project worked in drylands in Kenya and Northern Tanzania, areas with potentially low productivity, but lots of wildlife and mobile pastoralism. Recently there have been significant institutional and economic policy changes, favouring privatisation and/or devolution of resource management. There were lots of concerns raised that the combination of these effects can lead to enclosure, loss of mobility, land degradation, poverty, and biodiversity loss.

The project was initially conceived as a simple modelling project, but faced the difficulty of people not acting as rational agents. The project was therefore supplemented with experimental games and discrete choice experiments to understand what decisions people make and how they value their livelihoods. It became apparent that Maasai value the diversity of livelihoods, and while they support the development of conservancies etc., this must be in addition to existing livelihoods and

should replace them. There were significant gender differences in stated preferences. The games help to unpick genuine preferences, and a next step would be to look at how feasible those options are.

Long-term effects and unintended consequences of payment for ecosystem services programs – Wei Liu

Wolong Nature Reserve: one of the first in China, comprising 10% of the wild panda population and 5,000 local residents with 75% of Tibetan and Qiang ethnic minorities. Many conservation policies have been implemented since the 80s but all have failed, as they did not address the root causes of poverty and degradation.

Under PES schemes, fuel wood sources have changed significantly and there has been a rebound in forest cover. Other socioeconomic changes – completion of a provincial road, sale of cash crops, livestock raising, diversification. Annual household income analysis show increase in net benefits from ecosystem services. It is important to consider the specific contexts and local livelihood structures of any scheme.

Session two presentations

ESPA-2011 Grant: Contribution and long-term future of marine fisheries as providers of food and income in Bangladesh: a modelling study – Manuel Barange

The ESPA Deltas project is working in the Bay of Bengal, one of the most productive coastal areas in the world. There are fisheries in the rivers, estuaries, coastal zone. Fish are one of most important provisioning services in Bangladesh, and is also around 3%–5% of GDP. The project is looking at climate change projections to 2050 (as well as sea-level rise, changes in sediment, water flow, estuary discharge etc.), to explore the impacts on fisheries.

The project is using size-based and species-based production models. There will also be sampling to get data on catches, fish sizes, and prices. Scenarios will look at:

1. maximising total protein production while ensuring sustainability
2. protect long-term income of targeted species and not regulate the rest
3. maximising aquaculture development for undersized/undervalued fish for fishmeal production.

ESPA-2011 Grant: Developing a spatial statistical relationship between land use, ecosystem services and the household measure of poverty – Craig Hutton

Very preliminary results of one component of the socio-ecological model for the Deltas project. Using four major sets of data to understand poverty and links with ecosystem services: land use data, census data, ecosystem services mapping, and household survey data. Currently looking at statistical relationships between economic census data and land use cover. There is a halo effect of wealth around the main settlements, which supports other reports.

There is also a halo of poverty around the mangroves, which the project is now trying to explain. We know that saline water penetrates deep in to mangrove areas, where we anticipate agriculture will be affected by salinity, which in turn increases economic poverty. There is significant investment in shrimping in this area but local people do not benefit. There is one area that has significant wealth in a high salinity area – we think this is because it is a marine fishery area, but this is to be explored.

ESPA-2011 Grant: Potential winners and losers in the agriculture sector of coastal Bangladesh: insights from an integrated modelling approach – Attila Lazar

The project has identified six socio-ecological groups: char land, inland fisheries, settlements, Sundarbans, agriculture, aquaculture; developing an integrated model to quantify ecosystem provisions. The model will be used to explore the impacts of changes in climate and sea level rise, environmental change (e.g. salinization), land use changes (e.g. rice to shrimp farming), external influences (e.g. water and nutrient changes in rivers), etc.

Preliminary simulation results suggest decreasing population over time in many districts as the land will not be able to support the population, and there is migration away from marginal areas. Traditional Boro rice will likely not to be suitable due to salinity increase.

ESPA-2011 Grant: Wellbeing trade-offs across space, time and society: understanding why the poor remain poor despite abundant ecosystem services in the southwest coastal zone of Bangladesh – Helen Adams

Qualitatively looking at the links between ecosystem services and poverty alleviation at a micro-level, collecting a snapshot of current situations. 40 semi-structured interviews conducted which show that links differ depending on the system:

- Sunderban mangrove forests: insecure property rights, commodity chains (wage labourers), Dakoits (outlaws)
- Saltwater shrimp aquaculture: social breakdown (outsiders came in and took over), absentee landlords (when there was farming, farmers had landlords to approach in hard times), salinization
- Freshwater shrimp aquaculture: far more positive, ecosystem services benefits
- Rice agriculture: property rights, sharecropping and irrigation, polder management
- Offshore fisheries: Dadon system and debt, unpredictability
- Charlands: erosion and high mobility, patron client relationships.

ESPA 2011 Grant: Trade-offs in ecosystem services for poverty alleviation on the Bangladesh delta – John Dearing

We want to know about trade-offs, current levels of resilience; the presence of tipping points; possible early warning signals; and plausible future alternate steady states. Long-term time series data show:

- Poverty alleviation is associated with increasing provisioning services where human-driven deterioration of water resources is a major trade-off
- Long term coupling between ecological degradation and economic growth may be weakening but no turning point has been reached
- Significant changes in slow variables (water resources are changing far more quickly than climate) along with rising system interconnectedness are evidence for declining resilience across the regional social-ecological system.

Speed presentations

ESPA 2012 Grant: Can paying 4 global ecosystem services reduce poverty? – Julia Jones

Last year the voluntary carbon market was worth $240m – forestry products are increasingly being traded in markets. But there is real concern about the spread of these and the effect on issues of justice. The aim of this project is to influence the development and implementation of international ecosystem service payment schemes in the interests of poverty alleviation.

How do land use changes incentivized by PES influence human welfare (via impacts on local hydrology)? There is a general belief that forest cover increases water availability, but it actually decreases it. In Mbeya Tanzania, clearing and cropping increased stream flows all year around; but in Indonesia, with advanced soil degradation, deforested areas had lower dry season flows. These dry season stream flows often give the limit for agricultural production, as a decent dry-season flow can allow two crop seasons.

ESPA 2012 Grant: Introduction to the ALTER project. Alternative carbon investments in ecosystems for poverty alleviation: below-ground versus above-ground opportunities for the restoration of ecosystem services – Helaina Black
This project is looking at the role of soils in delivering ecosystem services, to find out whether investment in soil carbon can be used to alleviate poverty. Study sites are in Ethiopia and Uganda with different levels of degradation, climate and social environments. In these areas up to 90% of local people are dependent on soils for wellbeing.

There is lots of information available about investing in above-ground carbon but not about soil, despite soil carbon being fundamental to soil function. Can we use it as a reliable indicator for restoring and enhancing a range of goods and services?

ESPA 2012 Grant: Sustainable poverty alleviation from coastal ecosystem services (SPACES): investigating elasticities, feedbacks and trade-offs – Katrina Brown
Research in Kenya and Mozambique, using the concept of ecosystem-wellbeing chains. Critically looking at elasticities: how sensitive different elements are to change in others elements????.
The project is collecting a large amount of empirical data, then conducting a systems approach analysis of feedbacks, time-lags, thresholds, multiple ecosystem services, trade-offs, trajectories of change and transformation. We are looking to find the points in the system where you can intervene – where you have leverage and can have an impact.

ESPA 2012 Grant: ACES: Livelihoods and land use change in Mozambique – Genevieve Patenaude
Project website which will be regularly updated at: www.miomboaces.wordpress.com

Looking at livelihoods and land use change in Mozambique: deforestation rates as high as 3% per year, and very pronounced poverty in many indicators. We know that rural households are dependent on ecosystem services derived from woodlands, but how woodland loss and agricultural expansion affect the wellbeing of the poorest is not currently well understood.

ACES is examining how woodland loss is changing ecosystem services and the wellbeing of the rural poor in Mozambique. The project aims to integrate this information into land use policy and practice. There has been significant policy change towards agricultural expansion in Mozambique but limited understanding of how it really impacts the poorest.

ESPA 2012 Grant: ECOLIMITS: Exploring the ecosystem limits to poverty alleviation in African forest-agriculture landscapes – Ken Norris
This project is looking at land use change gradients, with sites in Ghana and Ethiopia contrasting a long history of land use change from forest to agriculture, and the use of cash crops as a key route out of widespread poverty. The team are trying to understand where the limits/tipping points are in ecosystem services. Key areas to explore:

- Patterns of ecosystem services change along land use change gradients
- Potential conflict between global and local biodiversity conservation
- Microclimate services
- How social systems drive ecosystem change
- Relationship between ecosystem limits and poverty
- Ecosystem change and response of rural communities.

ESPA 2012 Grant: Adaptive governance of mountain ecosystem services for poverty alleviation enabled by environmental virtual observatories – Zed Zulkafli
Mountain systems are highly susceptible to climate change and increasing pressures, but local ecosystem services are fragile and poorly understood. The project will utilise interactive models of information exchange, knowledge generation and learning; citizen science; Environmental Virtual Observatories (decentralised and open technology platforms for knowledge generation and exchange).

Case studies in Peru, Ethiopia, Nepal and Kyrgyzstan with similar ecosystem services and threats, similar data scarcity and complexity, but different socio-economic contexts. They all have a strong local platform and enthusiasm, with scope for comparative analysis.

ESPA PFG: Settlement ecology, agricultural intensification and hedges in an African landscape – Dan van der Horst

Farmers planning perennials – what, where, why? What does that tell us about niches for agro-forestry innovations? How to extrapolate qualitative fieldwork findings? Village landscapes are all very different. Farmers were asked how and why they engaged with trees and what ecosystem services benefits they got: amenities were mentioned regularly, landscape literacy helps.

1. Local land use organised according to history, culture, ecology geography, law
2. Micro-level processes of degradation, abandonment, enclosure > different future trajectories and diverse impacts on local livelihoods
3. Socio-spatial niches for agro-innovations
4. Ecology-as-technology within the settlement landscape, separating and enclosing ecosystem services
5. Scaling up anything > ecosystem services and livelihoods trade-offs
6. Useful scope for mapping regional landscapes.

REDD+ in Southern Tanzania: the winners and losers of community-based forest-carbon conservation – Andreas Scheba

Research in two villages of an official REDD+ pilot project in South-Eastern Tanzania.
Winners included the village as a legal entity (the owner and manager of the forest), members of agricultural groups (knowledge, inputs, and travel), the village council and committees (allowances, status, and knowledge), recipients of REDD+ payments.

Losers included anyone reliant on selling forest products (farming, timber, hunting), outsiders using the forest informally, those affected negatively by increased wildlife, landless people who may have to pay more for land.

ESPA PFG: Programme Framework Grant: Whole decision network analysis for coastal ecosystems (WD-NACE) – Richard Taylor

Models are very useful for communicating and explaining linked socio-ecological systems. They also help us understand which data we do not have, and which feedbacks of the linked system we understand least. Models can help us to meaningfully explore a set of desired outcome states for a future system.

Bangladesh case study: Trade-off between shrimp and paddy production systems, ecosystems and livelihoods. The modelling work focused on exploring interactions between paddy and shrimp farming, comparing scenarios with different initial numbers of shrimp farms, modelling how land-use transitions may happen, applying parameters gained in Munshiganj (through Shushilan), and developing a food poverty indicator.

Kenya case study: Open fisheries' trade-off between improved distribution of ecosystem services benefits and increased risks. Modelling focused on linking the ecological with the social system in the model, simulations comparing private and collective ownership, configuring different vessels and available gear, developing utility of models for discussing different outcomes.

Day 2: Thursday 21st November

Plenary 2 - Integrating science in policy and practice: knowledge gaps and challenges in the globalizing south – Shrinivas Badiger

Scientists and policy-makers working on the environment-development debate mostly now agree that it is more or less a zero-sum game, and that trade-offs are inevitable. In South Asia, environmentalism has been described as "environmentalism for the poor". There is increasing evidence that science is digressing from real-world problems. Neither natural nor social science has given generalisable answers for how the real world works. The benefits that communities accrue from ecosystem services are highly contextual.

Most poverty initiatives at the poverty-environment nexus in India are focused too much on economic growth, looking for win-wins, not accepting that difficult decisions have to be made. We should start by making easily definable goals based on justice, such as: not to create environmental refugees; not to increase the vulnerability of those who are already vulnerable in the process of development.

Controversy between two assessments in Western Ghats, contrasting efforts by an ecologist to understand the links between culture, ecology, sustainable development agenda; and a space scientist, who used GIS at fine resolution to look at forest cover and did not embed the importance of people. It's about the synergy between the two, how to use spatial context. You can't rely on just one or the other, but together they are stronger than the sum of their parts. One of the values of satellite imagery is the availability of data: it can take years to get hold of census data, but we're looking at how well you can proxy from spatial data. Issues like this where you're looking at very complex relationships need more than a three year project, need coherent research effort over time.

Session three presentations

Global science standards for payments for ecosystem services – Shahid Naeem

Recently a part of COP, where natural science is now secondary to issues of politics and social systems. The MEA approach suggests a linear progression from ecosystem services to wellbeing, but in practice the links aren't being well made.

Broad consensus that we've crossed the biodiversity planetary boundary, becoming less efficient, exhibiting lower levels of functioning, delivering fewer services, becoming less reliable, less resilient, declining human well-being, with the poor and vulnerable being the first to experience the adverse consequences.

Science standards for PES:

- A buyer and seller wish to establish a trade agreement for an ecosystem service for which there is no existing market
- A PES program is designed by a third party, often an NGO, and both parties subscribe to its terms
- Often, neither the buyer or seller understand ecosystem function/service science, so they submit the program's design to a fourth party to evaluate the natural science component
- A fourth party evaluates the program and gives it a gold star
- The gold star rating was met because the program met the global natural science standards for PES.

Local climate: an important ecosystem service in drylands - Aida Cuní Sanchez

Almost 50% of the surface of the earth can be classified as dryland, and 20% of people live in already degraded or desertification-prone drylands. Evergreen remnant forests in drylands provide

essential livelihood resources including fuel wood, food, medicines, water etc., to surrounding communities.

This research looked at Marsabit National Park in Northern Kenya, following severe drought in 2009 which decimated cattle, crops and water sources. Historical changes of forest cover, climate and local perceptions of the environment were studied. Changes in climate included later onset rainy season, drought spells, reduced fog, increased wind and temperatures. Local perceptions centred on the lake drying out in 2009 for the first time in living memory, new seasonality of streams, difficulty in finding forest products.

Action needed includes better legislation and law reinforcement, and alternatives for locals. Some discussion yesterday centred on access to markets and skills training for poverty alleviation, but that wouldn't work in this context, due to cultural barriers to selling cattle or moving. Could insurance be one way to provide people with a safety net without asking people to give up important cultural practices?

ESPA EIRG: Preserving biodiversity is inseparable from fights against poverty. Or is it? An exploration of the evidence base on biodiversity-poverty linkages – Dilys Roe

Research to explore widespread statements from intergovernmental and development agencies, that: if you reduce biodiversity loss this will reduce global poverty and help meet MDGs. The words 'biodiversity' and 'poverty' are used in many different ways, and describe highly interdisciplinary, complex concepts.

Through systematic mapping, 387 studies were identified, with the majority focusing on forests, and most describing abundance/extent of biodiversity as the key factor. Using the ESPA poverty framework, we found studies looked at 11 of the 19 ESPA indicators, and energy was added as an indicator. Income was the most studied indicator, but most studies look at multiple indicators.

Most studies (84%) reported a positive impact of biodiversity on poverty, but only 2/3 qualified that with any measure of impact. The evidence base says very little about how biodiversity use has an impact on poverty. Some components of biodiversity – those that can be traded or used for subsistence – are much better studied than others. Local/traditional knowledge is currently being overlooked. IPBES is actively looking for anthropologists to help with this.

ESPA PFG: Negotiating ecosystem services: making payments for ecosystem services work in the western Himalayas, India – Bhaskar Vira

Village-level study in Palampur, a small town of around 45k people. In the 1950s the town identified an upstream area that was key to water catchment and bought the land rights. There is a clear local narrative that water is the most important regulating service from the forest.

There are agreements to protect the catchment: a 20 year agreement between Municipal Council and the new Village Forest Development Society. The project uncovered various issues with the political economy of the agreements: previous management through women's group, excluded from new executive; jealousy of treatment of executive; exclusion of some groups from decision making; impact on neighbouring unprotected forests.

Trying to ascertain the true value of ecosystem services isn't necessarily possible. Even technical valuation techniques may end up with different amounts, and miss important characteristics. We need to be cautious about reducing social complexity based on what is required by models.

Session 4

ESPA PFG: Engaging with taboo trade-offs in coastal ecosystem services and stakeholder wellbeing. Revealing social-ecological dynamics in a coastal Kenyan fishery – Sarah Coulthard

Using the model ECOPATH we optimised the fishery for different aspects: ecological health, food security and profit; to get a basic idea of the trade-offs. We then conducted wellbeing focus groups and participatory mapping, including the use of a toy model to demonstrate some of the trade-offs. We showed that trade-offs are unlikely to be considered by conventional decision-making, as they are hidden by the system complexity, and often affect already marginalised groups. By having the toy model and scenarios, we helped find new and innovative solutions with the stakeholders, e.g. in the context of potentially banning beach seining, which will negatively affect women traders, policy makers could support the formation of co-ops to protect them.

ESPA EIRG: Community management of floodplain and forest commons: incentives and constraints on ecosystem services for poverty alleviation – Parvin Sultana

Aiming to understand the impact of community based natural resource governance and networks of community organisations in enhancing ecosystem sustainability, and reducing poverty. Based on case studies and synthesis of over 10 years of research on community based floodplain management in Bangladesh and community forestry in Nepal.

Community-based management has brought improvements in ecosystem services beyond the original narrow focus of individual CBOs, improving the lives of poor people in a majority of the cases. Attempts to enhance resource sustainability and poverty reduction outcomes from community-based NRM must link communities with higher scales, both in relation to learning and power.

CBOs and their networks want to use data to improve their management, and generate evidence in support of their struggle to retain rights, but do not know how to generate standardised data. CBO networks need support to improve long term data collection on a range of indicators. Government should recognise and incorporate this in statistics and impact monitoring.

Winners and losers: the case of forest diversion in India – Madhu Verma

Forest Conservation Act of India (1980) – provides restriction on dereservation of forest and its use for non-forestry purposes. The Net Present Value charge is currently collected in a centralized CAMPA fund. Based on proposed activities, the fund is distributed to states; however, this is a mismatch in scale between administration and spending of funds (National/State) and the loss of actual economic value (Local).

Recommended institutional changes include: greater decentralization in management and utilization of funds, recommended activities to be carried out at local level, involvement of Gram Sabhas (most fundamental governance unit) and JFMCs.

Plenary 3 - Trade-offs in Ecosystem Services for Poverty Alleviation in East African Rangelands: Outcomes of Conservation Interventions in Kenya and Tanzania Maasailand – Katherine Homewood

East African Arid and Semi-Arid Lands were studied as they are hotspots of biodiversity, and have populations of iconic pastoralists.

Trade-offs considered: ecosystem services/ecosystem services (e.g. water, land, primary/secondary production, woodland vs. grassland vs. cropland, wildlife vs. livestock, set-aside vs. access/use); poverty alleviation/poverty alleviation (e.g. pastoralism vs. national economic interest, distributional issues); ecosystem services/poverty alleviation (e.g. pastoralism/biodiversity trade-offs, PES mechanisms).

Two ESPA studies:

BEST: How can policy and economic incentives improve the management of East African rangelands through encouraging more economically and ecologically sustainable livelihood choices by pastoralists? Focusing on household-level decisions: Mara/Kenya

PIMA: What are the social and ecological impacts of Wildlife Management Areas?
Choice experiments show a diminishing marginal value of income, conservancy membership and grazing access having high value. Gendered differences in value of cattle vs. small stock, the value placed on cash income.

Generalising from ideas in conceptual model across the border to Tanzania – socialist country since independence. Household decisions are shaped by land tenure, markets and risk management.

There are global trade-offs in African ASALs, resource grab/pressure on ASALs globally. Pastoral socio-ecological systems are incredibly sensitive; people respond quickly to changing drivers.

Panel session – plenary 3 open discussion – Steve Bass, Janet Fisher, Bhaskar Vira, Katherine Homewood, Shrinivas Badiger, Edward Barbier

Key comments from the open discussion are:

- ESPA is demonstrating innovative social science methods. An exciting ~~thing~~ element ~~about~~ seen in the spread of ESPA projects is the innovative methods, and the possibility of triangulating findings across methods~~.~~, ~~New~~ new behavioural tools challenging 'rational actor' from classic economics.

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- There is a battle to have a really clear policy-relevant story of how the world really is; how much can you work through conceptual frameworks with policy makers~~.~~?
- Almost all talks at the ESPA conference had very different approaches to understanding trade-offs.
- Real value of deeply embedded research and how to couple with new innovative methods. Trade-offs tend to be between people, winners and losers. Three way characterisation of ecosystem services/ecosystem services, poverty alleviation/poverty alleviation, and ecosystem services/poverty alleviation – people come through most strongly in all. Lots of what we do in trade-offs miss this detail, e.g. water – who accesses is the real trade-off question, aggregate supply points are less important.
- Is there an inherent contradiction and trade-off in ESPA, by putting ecosystem services and poverty alleviation together? People coming from a natural science background focus on ecosystem services and social scientists focus on poverty alleviation.
- Most work in BEST was individual and household. Moving up to implications for multiple households at community level. Had policy makers played the same games as pastoralists to really see the trade-offs made?

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- Results translating into policy – is the political ecology such that whatever government or anyone says, profit-driven elites take over?

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- There is a~~l~~ limitation of when you can apply participatory methodologies. But participatory methods are transforming into a kind of citizen science that we can harness. Could have significant power – similar to social networks – to effect change. “Extreme citizen science” that allows data collection and change management even for those with little or no literacy. Note that there is a new ESPA project on citizen science.

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