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1. Overview
The International Ecoagriculture Conference and Practitioners’ Fair was convened from 27 September to 1 October 2004 at the World Agroforestry Centre in Nairobi, Kenya. The purpose of the Conference was to assess the state of ecoagriculture systems and practices, and to develop a strategy to promote and support ecoagricultural development worldwide. The meeting brought together 210 of the world's leading innovators in ecoagriculture: community leaders, farmers, conservationists, policymakers, researchers, technical advisors, land-use planners, business and industry. Conference organization was lead by Ecoagriculture Partners, with generous support from a broad group of ecoagriculture collaborators.

This volume, Volume 3, accompanies the main Conference report (Volume 1) and provides comprehensive notes on Farming and Theme group discussions, recommendations and proposed actions. To download full texts of the Proceedings, as well as Conference presentations and posters, please visit the Ecoagriculture Partners website: www.ecoagriculturepartners.org

2. Farming Groups Discussions: Detailed summaries
On Monday 27th September, participants divided into 10 Farming Focus Groups. Each group focussed on ecoagriculture within a particular farming system, providing participants an opportunity to share their experiences and review ongoing activities.

In the context of their farming system, each group reviewed and reflected upon:
- The innovations being employed to implement ecoagriculture
- Their vision of ecoagriculture at a landscape scale- what it would look like, what has taken place to enable this, how might the approach / strategy work?
- The key challenges and opportunities for scaling up ecoagriculture over the next 10 years
- Critical issues to be addressed within subsequent Theme Group discussions.
### 2.1 Aquaculture

<table>
<thead>
<tr>
<th>What is currently happening and why?</th>
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<tbody>
<tr>
<td>• Impact of dams on fisheries, agriculture and wetlands (Pongola River – irrigation dam, Republic of South Africa–Swaziland – Mozambique)</td>
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<td>• Food security concerns with loss of fish production</td>
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<td>• Fishers have weak voice, can’t enforce existing policies</td>
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<td>• Environmental flows interrupted</td>
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<td>• Governance is a constraint: Multiple competing interests (agriculture, health, energy)</td>
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<tr>
<td>• Global aquaculture issues:</td>
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<tr>
<td>- Alien species</td>
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<td>- Need to know more about use of indigenous species</td>
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<td>- Fish feed: impact on human food security; food safety</td>
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<tr>
<td>- Cage culture: sustainability, conflict with fisheries, source of pollution</td>
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<tr>
<td>- Re-thinking the economics / benefits of water use</td>
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<tr>
<td>- Aquaculture to be understood in context of aquatic biodiversity</td>
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<tr>
<td>- Genetic management of aquaculture resources (risk management)</td>
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<tr>
<td>- Spreading risk through small-scale seed production</td>
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**Ongoing initiatives:**

- **Bangladesh:** River linking program - Ganga water channelled to other rivers, Bengal flood plain ecosystem, intricate links between agriculture water management, aquaculture; Rice-fish production systems; Interface with coastal ecosystem; Embankment, infrastructure development has impact on fish diversity, fish production, fish migration, natural stocking of ponds; Dry season irrigation in flood plain; Inland capture fisheries under threat from road / embankment infrastructure; Mangroves – fisheries interface; River basins as ecosystems; fishers as a component of this

- **Malawi:** High biodiversity of Lake Malawi; Use of alien species for aquaculture (e.g mirror carp) leads to risk of escapes; Use of indigenous species from Lake Malawi but further research / development needed to improve production; Breeding programs to improve growth rates of aquaculture species; Public health risks from fish ponds (Schistomiasis); Stocking of Tilapia ponds with molluscivorous fish in polyculture; Aquaculture to release fishing pressure on lakes; Integrated aqua-agriculture

**Coastal zone fisheries, Mozambique:** declining catches, decreasing fish size; Indications of over-fishing; Livelihood impacts; Loss of breeding habitats (mangroves); Back-flow of sea water into freshwater system, due to silting etc; Genetic modification of Tilapia; Opportunities through artisanal processing; Targeting local markets → lower intensity production

<table>
<thead>
<tr>
<th>Vision / Elements of desired future</th>
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<tbody>
<tr>
<td>- Sustainable source of feeds for aquaculture</td>
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<tr>
<td>- Recognition of ‘real economics’ of aquaculture production, including use of natural fisheries resources</td>
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<tr>
<td>- ‘Real economics’ of water uses established, and rational management systems developed.</td>
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<tr>
<td>- Increased use of indigenous species.</td>
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<tr>
<td>- Mix of species across and within production systems, to utilise available inputs.</td>
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<tr>
<td>- Integrated research, planning, investment processes across ecosystems and sectors.</td>
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<tr>
<td>- Improved strategies and skills for genetic management in aquaculture</td>
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<tr>
<td>- Targeting of local markets (for the poor) through aquaculture and fisheries → balanced supply to different markets</td>
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<tr>
<td>- Public investment in policy and infrastructure</td>
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5

### Consumer education campaign
- Rich aquatic ecosystems still exist
- Rich knowledge base about aquatic ecosystems
- Aquaculture as an efficient user of water

#### Challenges
- Planning of water management is narrow, simplistic, excluding aquatic biodiversity
- Increased competition over water will aggravate need for more integrated planning

#### Critical issues
- Ecogriculture includes aquatic biodiversity, aquaculture and fisheries
- The role of water in agriculture goes far beyond irrigation, entailing a paradigm shift from water a physical entity towards ecological understanding of water
- Review of water management planning and investment; impacts on aquatic biodiversity, and fisheries dependent livelihoods?
- Sustainable aquaculture to be researched, developed and promoted, including species selection, feeding regimes and integration with agriculture.
- To secure livelihoods of fisherfolk and other communities whose livelihoods depend on aquatic biodiversity

### 2.2 Irrigated Production Systems

#### Vision
- Biodiversity increase (key stone species, including soil biodiversity, number of species per area, natural / sustainable ecosystems)
- Higher productivity per unit water
- Improved (ecosystem) health, water quality, reduced agrochemical use
- Ground water / surface water, rainwater use
- Water use management – community to national level
- Water-culture-community: Community culture and values around irrigation agriculture, not just for economics but more broadly. Community based management but able to be integrated at larger scale ie. Top down and bottom up
- Crop diversity for risk management and livelihood opportunities / security
- Agriculture providing good livelihoods- increasing security of agriculture for livelihoods
- Appropriate balance of technology driven agriculture vs rate of technology adoption sustainable to the environment
- Technology and employment opportunities
- Reverse trends of over-abstraction of rivers / groundwater– ground water depletion and river water use
- No more conversion of wetlands for agriculture
- Greater use of natural resources in combination with agriculture systems – balanced natural resource use /management for crops / natural forest etc
- Reduced production costs
- Increased rural livelihoods (economic upliftment)
- Reduced use of agrochemicals

#### Challenges
- Providing livelihood opportunities– especially with increasing populations
- Making ‘alternative’ agriculture more productive
- Systems should be based more on locally sustainable production – rather than market driven (market driven more risky and makes people more vulnerable).
- Shifting from market driven to community driver sustainable agriculture (value systems)
- Pervasive subsidies in developed countries, keeping prices low, lost livelihood opportunity in developing countries
- Special incentives in developing countries distorting agriculture (e.g. subsidisation of paddy, cultivated sugarcane production etc in areas where they should not be)
- Fair trade practices
- Changing mindsets – perceiving people as assets not liabilities
- Need to increase community self-sufficiency
- Redesign agriculture to respond to multiple objectives rather than only being market driven. Markets oppress producers and support consumers more.
- Recognising the value of natural environmental systems (e.g. wetlands) and services
- Maintaining ecosystem resilience
- Climate change
- Reverse trend of increasing water stress → wetland conversion, rivers going dry etc
- Mitigating water related issues (ground water depletion)

**Opportunities**

- Humans should be perceived as assets, not liabilities
- Provide better information to farmers, for example about markets
- Information based, knowledge intensive practices
- Subsidies for environmental friendly methods of agriculture, reduce perverse subsidies – e.g. reward water saving technologies
- Systems management to consider multiple users (including environmental)
- System of Rice Intensification (SRI) - biologically based, less chemically dependent. Food systems that require less water.
- Innovations

**Critical issues**

- ‘Re-biologise’ agriculture – take an ecological approach in agriculture (Sustain the ecological condition of natural resources base, maintain hydrosphere integrity, enhance water quantity / quality)
- Multiple objectives
- Diversification of production systems
- Awareness raising (water quality, water quantity, watershed integrity, ecological condition of resource base)
- Enhance incentives for improving water productivity
- Improvement of cost effective technologies – technology dissemination and adoption (More crop per drop, appropriate, cost-effective technologies, participatory adaptation / dissemination)
- Understanding markets (maximising benefits for people and environment, minimise costs / negative externalities)
- Participatory research
- Systems for water allocation / sharing

### 2.3 Dryland Farming Systems

**Vision**

- Farmers, scientists, policymakers sensitised, trained and educated/well informed
- Farmland has a least 25% tree cover
- All farmers/populations in drylands food-secure all year round
- Cropland covered 80% by mulch or land cover crop
- Prove robust economic viability at community level
- Farmers are self-sufficient in locally obtained farm-inputs
- Production systems with low risks (biodiversity, water-harvesting, decentralised, storage systems)
- Dynamic functioning marketing systems
### Enabling environmental policy

#### Challenges
- Global warming
- People and livestock pressure (space, resources). NB Livestock per capita has decreased over last 40 years, more livestock is better or more desired due to contribution to farm productivity
- Conflicts over resources (nomads, pastoralists v/v farmers)
- Educating farmers
- Maintaining farmers’ varieties
- Reduced food aid
- Declining interest in farming (need to popularize dryland farming
- Crop diversification
- Movement of farmers to drier areas – crop failures
- Genetically modified crops
- Continued use of traditional foods

#### Opportunities
- Crop/ livestock integration
- Better communication – internet, e-communication etc.
- Reduced food aid (dependence)
- Shortage of water (crisis of agricultural water) to lead to rainfed agriculture
- Genetically modified crops
- Eco-markets

#### Critical issues
- Reduced control of farmers over their seeds and agriculture → less control over markets
- Creating awareness among farmers, scientists, policy maker on linkages / synergies between agricultural production and environment/ resources
- (Re-) creating link between culture and agriculture
- Making ecoagriculture rewarding in the market (locally, internationally) → food security and income generation
- Increasing productivity using alternative methods – e.g. trees c.f animals
- Adding value to local resources / products
- Putting appropriate legislation / policy frameworks in place
- Funding – conversion needs support (making credit available to farming)
- Reduced productivity in arid lands, due to reduced animals etc
### Vision
- Increasing adoption / use of Management-intensive grazing (MIG) to 50% of agricultural land in dairy belt states of the USA.
- Broader understanding by stakeholders of interactions between agriculture and ecosystems
- 50% of pasture on small farms in improved pasture management
- 100% adoption of Best Management Practices (BMP) on degraded land, land prone to eroded soils, riparian lands and adjacent vegetation in recuperation
- Move from current agricultural system to more sustainable farming system in order to stem rural migration
- Reconnecting agriculture, environment and religion to enhance sustainability

### Challenges
- Education and training of farmers
- Restructuring of farm debt
- Quantify market and non-market benefits of the system
- Increased production could drive down prices
- Gaps in education and science
- Need for financial support for education and development

### Opportunities
- Develop incentives for expanded adoption
- Already a small numbers of farmers who have adopted environmentally farming practices
- A good base of producers to mobilise support for policy change
- Good profitability for sustainably produced agriculture (inputs from private sector)
- Have power to unite to achieve dream

### Critical issues
- Must consider stocks as well as flows
- Need to measure landscape impact of ecoagriculture practices
- Connection between policy and practices – incentive for environmental performance or practice
- Need global perspective on policy for ecoagriculture
- Pay attention to environmental consequence of increasing global demand for livestock products
### 2.5 Production systems within humid and sub-humid lands

| Vision | - Comprehensive data on ecoagriculture systems  
| - Food security  
| - Integration of traditional and improved technologies  
| - Functioning tree-seed production systems  
| - More use of improved fallows  
| - Crop diversity  
| - Stable income from perennial crops  
| - Markets for tree products  
| - Biodiversity conservation outside protected areas  
| - Natural forests not threatened – low rates of deforestation  
| - Integration of ecoagriculture into educational curricula  
| - Strong community organisations  
| - Globally financed incentives for ecoagricultural practitioners  
| - Policy recognition of agrobiodiversity knowledge |

| Challenges | - Undervalued environmental services  
| - Complexity of scaling up ecoagriculture systems  
| - Balancing ecoagriculture in low and high productivity areas  
| - Non-agricultural income sources  
| - Market access  
| - Smallholder farmer dependency upon unsustainable international markets  
| - Uncertain land tenure / legal systems  
| - Inequitable access to information  
| - Expansion of mono-crops / agribusiness  
| - Lack of functional mechanisms for rewarding environmental services  
| - Difficulty of grades / standards for ecoagriculture production benefits  
| - Lack of ‘good’ data |

| Opportunities | - Diversity of ecoagriculture  
| - Decentralised extension services  
| - Increased consumer interest in ‘healthy’ food  
| - Private sector response  
| - Market development for environmental services  
| - Political ‘buy-in’  
| - Demonstrated concern of donor agencies  
| - Partnerships of scientists, farmers and donors  
| - Partnerships / associations of producers for greater economic gain  
| - Information technology available at decreasing cost  
| - Methods / tools being developed and tested for measuring and valuing ecoagriculture  
| - Protect diversity of agriculture and life  
| - Model of organic agriculture for ecoagriculture |
## 2.6 Forest Landscape Mosaics

| Vision | - Multi-functional (biodiversity and livelihoods) landscape level management is mainstreamed and adopted with the recognition of agencies and institutions to support this approach  
- Policies developed that recognise the involvement of local communities  
- Clear cut policies  
- Education access to the rural poor  
- Enhanced capacity of communities’ capacity to take up ecoagriculture  
- Non-timber Forest Product (NTFP) market rewarding indigenous peoples  
- Consumer products come from ecoagriculture practices and principles  
- Increased agricultural practices in harmony with critical / fragile rainforest  
- Multi-sectoral partnerships to coordinate and monitor ecoagriculture innovations  
- International regulations on protected areas management to include inhabitants  
- Decentralised natural resource management  
- Community / traditional knowledge on innovations integrated into modern technologies  
- Balance between conservation and development – institutional legal framework  
- Indigenous technology ↔ indigenous knowledge  
- International networking across the world established |
| Challenges | - International regulations on agriculture to meet ecoagriculture standards  
- Lack of inter-disciplinary approach – conservation / development divide  
- Stove piping, sector based perspective, planning and interests  
- Lack of government interest in conservation led by communities |
| Opportunities | - National and international agricultural policies will be based on ecoagriculture practices and principles  
- Measured increases in species inventories and habitat contiguity |
| Critical issues | **Science**  
- Biases in the science-based systems  
- Insufficient knowledge of viable technologies due to agrochemical bias in research and technology development  
- Training and education - still following Green Revolution model  
- Bias on science and technology – definition of superior science  
**Management**  
- Lack of landscape level perspective with community participation  
- Weak institutional arrangements at community level  
**Community**  
- Policies and programs do not reflect community interests  
- Communities not aware of environmental opportunities  
**Policy**  
- Policies supporting economic development paradigm  
- Need to harmonise policies and respective executing agencies  
- Agency support to anti-environmental programmes  
- Top-down centralised policy formation  
- Weak incentives  
- Inappropriate land tenure policies – lack of security |
### Markets
- Multinational corporate interests affecting smallholders
- Need to establish feasible market for ecosystem services
- Trade liberalisation – impact of globalisation on smallholder products
- Export crops – subsidies for monoculture cash crops
- Prohibited cost of certification to smallholders

### 2.7 Temperate Cropping Systems
#### Vision
- Erosion control
- Reduced pesticide usage
- Reduced nutrient lost reduced
- Enough healthy food produced
- Water quality improvements
- Increased perennial cover
- Agricultural policies and agreements that recognise and reward ecoagriculture practitioners
- Markets that value ecoagricultural products
- Farmer willingness to make change
- Changes in mindset amongst all stakeholders
- Attractive landscapes and rural areas / communities
- Better understanding of ecosystems

#### Challenges
- Population growth
- Economic grown
- Consumption patters
- Lack of science and understanding of agriculture / ecosystems
- Determining the value of ecosystem services
- Lack of farmer knowledge and support systems for positive change and during transition period
- Shared vision by stakeholders

#### Opportunities
- World Trade agreements – policy / subsidies aimed at environmental services
- Growing market demand for organic / sustainable products
- Growing awareness of relationship between ecosystems and agriculture
- Technology developing ecoagriculture production systems

#### Critical issues
- Supportive policies that recognise ecosystem value
- Identify viable ecoagriculture systems for temperate zones – transfer of technologies to scale
- Transfer of knowledge and management systems for ecoagriculture
- Consumer support and awareness - influence consumer patterns
- Identify new agricultural frontiers – proactively promote ecoagriculture systems in these regions
# 2.8 Mountain Agroecosystems

<table>
<thead>
<tr>
<th>Vision</th>
<th>- No more shifting cultivation, more organized slope land agriculture</th>
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<tr>
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<td>- Wider appreciation and application of ecoagriculture systems</td>
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<td>- Increased demand for ecoagriculture products</td>
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<td>- Reduced conflict among competing land use systems</td>
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<td>- Harmony in policy and action</td>
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<td>- Concrete policy and management plan for realising vision of ecoagriculture in various countries and regions</td>
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<td>- Thriving subsistence agriculture in future</td>
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<td>- Mobilised communities to better understand limits of development in mountain ecosystems (land degradation) through</td>
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<td>- Less soil erosion and multi-story mountain agroecosystems</td>
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<td>- Better understanding about the value of mountain for sustainable livelihoods</td>
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<td>- More small scale initiatives for bridging conservation and livelihoods</td>
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| Challenges                                                             | - Clarity of ecoagriculture concept                                |
|                                                                      | - Strengthen stakeholders’ capacity to promote ecoagriculture      |
|                                                                      | - Lack of understanding and commitment from government             |
|                                                                      | - Generating political that will promote and support ecoagriculture|
|                                                                      | - Increasing the decision making process of mountain communities   |
|                                                                      | - Provision and allocation of resources                           |
|                                                                      | - Peoples’ mind sets                                              |
|                                                                      | - Recovering lost agrobiodiversity                                |
|                                                                      | - Soil erosion                                                     |

| Opportunities                                                          | - Existing research work on ecoagriculture, but this needs elaborating and broader acceptability |
|                                                                      | - Resources – local and global                                    |
|                                                                      | - Sharing of Indigenous knowledge and experiences                  |
|                                                                      | - Synergies                                                       |
|                                                                      | - Contribute to natural resources conservation                    |
|                                                                      | - More research on management technologies                        |
|                                                                      | - The multi-strata nature of diverse mountain agroecosystems      |

| Critical issues                                                       | - Clarify ecoagriculture                                          |
|                                                                     | - Gap between theory and practice of ecoagriculture              |
|                                                                     | - Policy gaps in ecoagriculture promotion and practice           |
|                                                                     | - Extent of corporate agriculture hindering adoption of ecoagriculture systems |
|                                                                     | - Capitalisation of small-scale farming initiatives              |
|                                                                     | - Dichotomy between productivity enhancement and use of local resources (minimising external input) |
|                                                                     | - Balancing economic and conservation goals in rural communities |
|                                                                     | - Mountain community empowerment                                  |
|                                                                     | - Changing consumer behaviour                                    |
### 2.9 Pastoral and Ranching systems

| Vision | - Herding to concentrate animals  
|        | - Planned grazing  
|        | - Water availability  
|        | - Secure rights – in terms of access, timing, ownership (communal / individual – managing overlapping rights)  
|        | - Availability of land, by land type  
|        | - Mobility  
|        | - Effective conflict management  
|        | - Awareness  
|        | - Political and economic recognition (tie rangelands to key issues, e.g water, carbon)  
|        | - Availability of effective support services and infrastructure  
|        | - Incentives through markets or compensation – lack of perverse incentives  
|        | - Recognition of the importance of social / cultural roles  
|        | - Empowerment and involvement in decision-making structures / processes  
| Challenges | - Education at all levels  
|            | - Openness to change / political will  
|            | - Informed land use planning across sectors  
|            | - Demonstration of benefits  
|            | - Conflicting interests, particularly with respect to land use  
|            | - Strengthening and empowering communal resource management e.g. water  
|            | - Strengthening the voice of pastoralists  
|            | - Getting consensus on what to do and conveying consistent messages – there is a current gap in knowledge  
|            | - Inter-sectoral co-operation (from health to forestry)  
| Critical issues | - Synthesize existing information and knowledge – generate new knowledge based on best science to develop short and long-term objectives in a strategic plan  
|                | - Create awareness (policy maker, national economic planning level, researches, communities / pastoralists, consumers)  
|                | - Improve regulations and institutions to support community management (rights and governance, incentives, accountability, better monitoring and enforcement)  

### 2.10 Perennial Cropping Systems and Home Gardens

| Vision | Major changes that have taken place  
|        | - Companion crops will all be domesticated and producing AFTPs (Agroforestry Tree Products) which are processed and marketed to meet a series of new markets.  
|        | - Certification that pays for real services that are adequate and self-driving and low cost  
|        | - Clean, green food  
|        | - Life full of plentiful food, food security and sustainable production  
|        | - Elimination of perverse incentives and subsidies  
|        | - Sustainability of ecoagriculture approaches  
|        | - Reversing certification schemes to make polluters pay instead (create disincentives for unsustainable practices)  

- Recycling of agricultural waste
- Better linkages between producers and consumers
- Markets driven by quality, not commodities (commoditization not the driving force)
- Strong local organizations with negotiation power
- Ecoagriculture accessible to many communities
- Recognition and payment for local knowledge
- Increased consumer awareness
- Linkage of food production to health issues
- Mainstream linkages between agricultural production and health (recognize rights for healthy systems and foods)
- Ecoagriculture must be profitable
- Policy interventions to promote Ecoagriculture from local to global
- Promote learning before adoption
- Networks of Ecoagriculture to promote learning
- Sustainable systems based on ecological integrity
- ‘Big’ farmers adopt ecoagriculture
- Subsidize knowledge on IPM and similar strategies (rather than chemical use)
- Certification no longer necessary to promote organic agriculture
- Design and management of systems by local people
- Millennium development goals met
- Capacity building for policy makers achieved
- At least 25% of agricultural research budget devoted to ecoagriculture
- Incentives created to domesticate indigenous crops
- Ban pesticides
- Understand the role of ecoagriculture in ecosystem function

**Challenges**

- Lack of political and public awareness of opportunities;
- Inadequate donor support;
- Markets for AFTPs need to expand
- Population increase
- HIV and health issues
- Powerful corporations and corporate agriculture
- Inappropriate public policies
- Need to expand markets
- High cost of research
- Effects of climate change and natural disasters
- Information gap between researchers and farmers
- Political systems supporting subsidies
- Incidence of land degradation
- Poverty
- Influence of capitalists on small farmers
- Education and training and lack of capacity in all sectors
- Demise of extension systems
- Difficulty of managing change in attitudes
- Poor relationships between timber companies and farmers
- Desertification and land degradation
- Lack of long-term information on the impact of GMO’s and pesticides
- Lack of money to fund this research
- Intensification of farming systems with increased inputs
- Land tenure problems and unequal land distribution
- Lack of coordination between socioeconomics, ecology, agronomy and other disciplines
- Prices don’t internalize costs
- Loss of genetic resources, ethnic identity and local knowledge
<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Critical issues</th>
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<tbody>
<tr>
<td>- Promote, domesticate and commercialize companion crops; Understand the</td>
<td>Research</td>
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<tr>
<td>value of species diversity in agroecology</td>
<td>- Develop R&amp;D priorities</td>
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<tr>
<td>- Quantify economic and environmental benefits vis à vis the Millennium</td>
<td>- Verify scientific basis</td>
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<tr>
<td>Development Goals (MDGs)</td>
<td>- ecoagriculture’s</td>
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<tr>
<td>- Ecoagriculture is a unique selling point for marketing</td>
<td>contribution to economic,</td>
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<td>- Public policies could be changed</td>
<td>social and environmental</td>
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<td>- Changes in political systems and subsidies possible (e.g. farm bills that</td>
<td>benefits</td>
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<td>reward environmental services)</td>
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<td>- Huge opportunity for biodiversity conservation</td>
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<td>- Alliances between conservation groups, farmers and agricultural groups</td>
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<td>- Promote ecoagriculture in education</td>
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<td>- Use local knowledge to design systems</td>
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<td>- Implement on-farm research</td>
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<td>- Greater involvement by communities in management</td>
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<td>- Expansion of food basket with indigenous crops</td>
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<td>- Reduce pollution</td>
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<td>- Use media to promote ecoagriculture</td>
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<td>- Narrow gaps between farmers and agricultural scientists (e.g. learning</td>
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<tr>
<td>alliances)</td>
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<tr>
<td>- Increased openness to ecoagriculture and willingness to learn from change</td>
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<td>- Opportunity to reduce support for pesticide</td>
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<td>- Intensification of areas could lead to conservation of natural areas</td>
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<td>- Coordination and integration of disciplines</td>
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<td>- Governments can accept millennium goals</td>
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<td>- Opportunity to grow food in new areas due to global change</td>
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<td>- Conserve genetic resources</td>
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<td>- Conserve local knowledge and ethnic identity</td>
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<td>- Implement Kyoto protocol and other conventions</td>
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<td>- Develop computer simulations and models</td>
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3. Theme Groups:
Summary of Discussions, Recommendations and Proposed Actions

Theme 1: Understanding Ecoagriculture – the Scientific Foundations

Theme 1 reviewed current understanding of biological and ecological interactions, as well as conflicts and synergies of jointly managing landscapes for agricultural productivity, biodiversity and ecosystem services. Participants assessed the knowledge base for ecoagriculture – from science, local innovation, and technology, identified barriers, gaps and opportunities for developing improved ecoagriculture systems; reviewed policy implications for agricultural and conservation research; and discussed the need to ensure ecoagriculture research reaches and benefits farmers.

Key message
Knowledge is the basis for more equitable decision making & negotiation at all levels. An improved knowledge base is required that integrates the different aspects of ecoagriculture, including:
- The importance of agro & wild biodiversity & their interactions;
- The context of land use in the wider ecological landscape (tradeoffs, goods & services); &
- The social construct that ecoagriculture is (local knowledge, institutions for management, decision making processes & trade-offs made).

Recommendations from Theme 1

Recommendation 1: Establish a research initiative on the links and tradeoffs between agricultural production, wild biodiversity &/ or livelihoods.
Purpose: To provide managers & resource users with information that will reduce negative & enhance positive interactions between wild biodiversity & agricultural production systems & agro biodiversity.

Recommendation 2: Undertake an analysis of ecoagriculture case studies
Purpose: To build a convincing and scientifically credible case for the benefits of ecoagriculture through an objective & rigorous analysis of case studies.

Recommendation 3: Develop a participatory and adaptive programme for stakeholders to design and implement, by experimenting on future ecoagriculture landscapes to achieve the sustainable provision of agricultural & ecological services.- Achieve the recommendation in a number of selected landscapes representing different socio-biological contexts

Recommendation 4: Urge stakeholders at all levels, including resource users, researchers, policy makers etc, to support, adopt and advance ecoagriculture while
using holistic decision making frameworks that embrace the complexity of a multi-disciplinary approach.

**Rationale**

Conventionally, it has been assumed that productivity and conservation objectives were in competition and that serious trade-offs were involved; hence these land uses were segregated into farming areas where productivity was maximized (at the expense of the environment) and protected areas where farming was not allowed. Ecoagriculture, by contrast, is defined as land use systems that jointly achieve agricultural productivity/producer livelihood and ecosystem/biodiversity goals at a landscape scale. Ecoagriculture approaches demand synergy between these diverse objectives. Science has tended to follow practice, and relatively little research has been done to understand—or to generate innovations for—ecoagriculture systems. Nonetheless innovation has proliferated in places around the world where pressures are high to achieve both productivity and conservation objectives. Scientific advances in ecology, agronomy, wildlife biology, etc. have revealed unexpected opportunities for synergy. New methods of observation and analysis at multiple scales enable much greater scientific rigor in studying complex agro-ecosystems. However, the research as been done has been poorly disseminated across highly specialized scientific communities, and little of farmers’ and conservationists’ innovation on the ground has been documented or rigorously evaluated. Interactions among key components of agro-ecosystems, in space and across time, have been poorly studied and thus potential synergies are unrecognized. Thus the lessons from even successful ecoagriculture systems are poorly understood. The mainstreaming of ecoagriculture demands a systematic understanding and development of its scientific foundations.

**Theme 1 presentations**

- Managing Genetic Diversity in Agro ecosystems: The State of the Art and Implications for Ecoagriculture - *Kwesi Atta-Krah, International Plant Genetic Resources Institute*
- Pollinators in the Landscape: Preventing Losses, Promoting Persistence - *Dino Martins, African Pollinator Initiative, and Environmental Liaison Centre International*
- Domesticating Tree Crops for Ecoagriculture systems and Marketing of Novels crops for Ecoagriculture - *Roger Leakey, James Cook University*
- Developing Perennial Grains for Ecoagriculture Systems: Necessity, State of the Art and Next Steps - *Lee de Haan, the Land Institute*
- Pastoralism: Ecoagriculture par Excellence - *Edmund Barrow, IUCN*
- Co-evolution with natural disturbance: polyculture and other ecological strategies to adapt to variability- *Jan Sendzimir, IIASA*
- From Agricultural Pest Management to Ecosystem Sustainability Enhancement: The Way Forward - *Hans Herren, ICIPE*
- Crop Protection in Ecoagriculture Systems - *Keith Jones, CropLife International*
Key Questions addressed by Theme 1 Working Groups

**What?**
- What is the state of current understanding about ecosystem functions in ecoagriculture systems?
- What are the linkages between agro-biodiversity, wild biodiversity and ecosystem functions?

**So What?**
- What are the most significant challenges for developing and improving ecoagriculture systems?
- What are the most promising scientific and technical opportunities to strengthen synergies between agricultural productivity and ecosystem service functions?
- What are the social, economic and political challenges for developing and improving ecoagriculture systems?

**Now What**
- What are priorities for future ecoagriculture research?
- What are promising ongoing research activities already to generate relevant knowledge?

Working Group Discussions

Three working groups addressed:
- **Agrobiodiversity and Wild Biodiversity** exploring the linkages between crop/livestock genetic diversity, wild biodiversity and ecosystem functions (e.g., species-specific dependence, pollination). Discussions also addressed how to choose and improve genetic components of agro ecosystems to improve ecosystem functions and productivity (e.g., domesticating wild species, perennializing annual species)

- **Ecosystem services (and role in ecoagriculture)** reviewing the impacts of agricultural production on biodiversity, watershed and other ecosystem services, and the impacts of those services on agricultural productivity and sustainability;

- **The Social basis for Ecoagriculture**, focused on local knowledge of ecosystem services, building upon farmer innovation and research, and natural resource valuation at the local level.

Key Points

**Agro- and Wild Biodiversity**
- What are the **interactions** between wild and livestock especially in grazing systems such as in pastoralism e.g. how are the resources shared and what is the conflict between wild and domesticated stock.
- What are **units** for measuring biodiversity? What criteria do we use to measure biodiversity in eco agricultural systems? Is it the intrinsic value of biodiversity, threatened species, keystone species, useful taxa? What are the indicators to be used to assess biodiversity?
- What is the focus for conservation in these systems? Is it all biodiversity or selected components?

- How will new introductions (exotics vs indigenous) affect existing ecosystems e.g. through use of AFTPs (Agroforestry Tree Products), NTFPs (Non-timber forest products), organic farming etc? What is the potential for invasiveness and how do we measure potential negative effects? The need for risk assessments is critical.

- What are the most effective genetic resources for use in ecoagriculture systems? Have they been identified, e.g. cultivars, genotypes etc? Have they been characterized? Are they available? Can they be used to create incentive for farmers to implement ecoagriculture

- How do we address the lack of taxonomic information and capacity? There is disparity between north and south in taxonomic capacity and resources.

- Pollinator taxonomy and other kinds of taxonomy (fungal, pests, biodiversity monitoring), aquatic and below-ground systems, especially.

- Knowledge about species and associated micro flora that are important for restoration in diverse systems/locations

**Beyond the farm to the landscape, ecosystem trade-offs**

- How do we implement landscape analysis when farmers operate at individual or site level? These have policy implications and communities need incentives in order to consider the broader perspective.

- There are alternate models on ecoagriculture with a focus on conserving both agro and wild biodiversity that have been developed in the temperate zones. We need therefore a broader focus and not just the tropics.

- What are the conflicts and synergies e.g. disease control; competition vs. compensation; benefits of integrated systems such as pastoralism.

- Hydrologic and nutrient cycle/functions: relationships between agricultural and natural ecosystems, especially at the meso-scale of landscape-level processes. How do we apply our knowledge to designing systems?

- How to maintain yields of grain crops without damaging the environment with pesticides and fertilizers.
  - Biological pest controls?
  - Slow-release fertilizers?
  - Perennial crops and/or cover crops?

- What is the role of biodiversity in agroecosystems function?
  - How much of what type do we need to do what?
  - Consider across all scales, and the need for an experimental approach

- Effect of landscape structure on patch diversity, interpatch distances and connectivity on the spread of contagious agents such as alien invasive animals, plants, diseases.
  - How do we bring these factors of conservation biology into ecoagriculture?
  - What are the effects on ecosystem services?

**The social basis for Ecoagriculture**

- Our knowledge about local perceptions of ecosystem services, and how do we capture that knowledge to help solve problems?

- Understanding of decision making processes of farmers and land users and how they manage and negotiate trade-offs

- Valuing the natural resources and biodiversity at a local level and demonstration
- How to create incentives for farmers to increase the value of natural resources, e.g. domestication of AFTP (Agroforestry Tree Product) species?
- How can land users, farmers, pastoralists knowledge and systems be integrated and be part of research teams
- How can we build on farmer innovation and research be used as a building block
- Understanding of farmers strategies for land use – logic they use, strategies for management, risk and resilience, safety nets, flexibility
- Importance of understanding inter- and intra community dynamics – power relations, decision making processes, equity, politics, information access and so forth. How do outside changes and interventions changes these relations and so forth
- Understanding of institutions for management at local levels; building on local institution values as basis for local ownership – and also for planning and negotiation trade-offs at the landscape levels
- Local and Indigenous Traditional Knowledge – a building block for change and understanding, recognize that it is not necessarily perfect
- Whose knowledge counts and why?
- Integrating the importance of adaptive management (learn by doing), importance of learning lessons
- How can local and traditional institutions be integrated into ecoagriculture as a basis for decision making, negotiation etc. at the landscape level
- Understanding markets for ecoagriculture products – whose markets, flows of products (and profits), value adding
- Who owns new knowledge and how can it become internalized and owned? How does such knowledge get changed, adapted or altered by farmers and land users to suit local needs.

Valuing Ecoagriculture – whose and for whom?
- What is the value of biodiversity? Intrinsic / utilitarian / or rarity.
- What are the effects of agro biodiversity on wild biodiversity and vice versa?
  What are the trade offs and how do we measure them?
- What are the true benefits of wild biodiversity for farmers? Can we document cases of the positive interactions between agro- and wild biodiversity.

General Issues
- How we do we deal with the lack of inter-sectoral analysis and cooperation? Museums, Ministry of Envt., Min of Lands and Min. of Agriculture are often very independent with different policies, priorities and programmes.
- Ecoagriculture models are not recognised in policy frameworks, e.g. the contribution of pastoralism not often indicated in national GDP.
- Because the holistic nature of ecoagriculture (such as pastoralism) leading to diversity in both agro biodiversity and wild diversity is not appreciated and encouraged; there are deterministic losses in both systems operating independently.
- The importance of aggregated systems that fuse agro and wild biodiversity such as home gardens is not recognised and encouraged as means for in situ conservation of wild relatives and progenitors. Yet what are the economic considerations should we loose these?
- How do we measure the capacity and capability of the soils to hold organic matter such as in organic farming systems? What are the thresholds? What is the
impact of this manipulation on above ground biodiversity for below ground biodiversity?
- How do we do introductions safely, and what are the effects of introductions?
  • When is it safe to do an introduction; what factors contribute to a safe and effective introduction?
  • What kinds of global transportation safeguards are required to prevent alien introduction?
  • What is the niche interaction in native systems that will tell us about vulnerability?
  • How do changes at the site level influence ecosystem services at the landscape scale?
- How to protect prime farm land from development?
- How to influence government to facilitate change?

Detailed Minutes

1. Agrobiodiversity and Wild Biodiversity

What are the gaps in our knowledge and understanding?
- What are the interactions between wild and livestock especially in grazing systems such as in pastoralism e.g. how are the resources shared between the herbivores and what is the conflict between wild and domesticated stock.
- What are units for measuring biodiversity? What criteria do we use to measure biodiversity in eco agricultural systems? Is it the intrinsic value of biodiversity, threatened species, keystone species, useful taxa? What are the indicators to be used to assess biodiversity?
- What is the focus for conservation in these systems? Is it all biodiversity or selected components?
- How will new introductions affect existing ecosystems e.g. through use of AFTPs, NTFPs, organic farming etc.? What is the potential for invasiveness and how do we measure potential negative effects? The need for risk assessments is critical.
- What are the most effective genetic resources for use in eco agriculture systems? Have they been identified, e.g cultivars, genotypes etc? Have they been characterized? Are they available?
- How do we address the lack of taxonomic information and capacity (the taxonomic impediment)? There is disparity between north and south in taxonomic capacity and resources.
- How we do we deal with the lack of inter-sectoral analysis and cooperation? Museums, Ministry of Envt., Min of Lands and Min. of Agriculture are often very independent with different policies, priorities and programmes.
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should we loose these?

- How do we implement landscape analysis when farmers operate at individual or site level? These have policy implications and communities need incentives in order to consider the broader perspective.
- There are alternate models on ecoagriculture with a focus on conserving both agro and wild biodiversity that have been developed in the temperate zones. We need therefore a broader focus and not just the tropics.
- What is the value of biodiversity? Intrinsic/utilitarian / or rarity.
- What are the effects of agro biodiversity on wild biodiversity and vice versa? What are the tradeoffs and how do we measure them?
- What are the true benefits of wild biodiversity for farmers? Is it just e.g pollination.? Can we document cases of the positive interactions between agro- and wild biodiversity?
- What are the conflicts and synergies e.g. disease control; competition vs. compensation; benefits of integrated systems such as pastoralism.
- How do we measure the capacity and capability of the soils to hold organic matter such as in organic farming systems? What are the thresholds? What is the impact of this manipulation on above ground biodiversity for below ground biodiversity.

**Critical Needs**
- To recognise Indigenous Knowledge.
- To balance quest for ecological integrity in eco agriculture systems with sustainable livelihoods and income generation
- To promote ecoagriculture initiatives such as the models in place in Bolivia

**What are the main challenges?**
- What is the impact of agro biodiversity on wild biodiversity and vice versa? How do we models in one component affect the other? How do we measure benefits? How do we optimise on all the three legs of the three legged stool model? What is the indispensable backbone in these three??
- If whatever options in eco agriculture mean that we win some and loose some, then what do we sacrifice and what criteria do we use for selection/justification.
- How we build on previous actions and research? Do we know the other existing complementary research, projects, initiatives?? What is the baseline – is it zero?

**What are the constraints?**
- Sectoral approach to management yet different sectors never talk to each other
- Requirement for landscape level planning, analysis and management
- We are perpetually conceptualising: new themes, new ideas but never getting to actual implementation. Could ecoagriculture be one of these: recycling old concepts and not actually getting the basics achieved. No more discovery of new terms, it is time for action.
- What is the baseline? The need to build on the past rather than reinvent the wheel
- Absence of private sector partners who often affect or effect implementation
- Too many hidden institutional agendas, we need all the cards to be put on the table.
What are the promising research activities to generate relevant knowledge?

Examples include the following:

- **Guatemala:** IPGRI/GTZ project on home gardens for in situ conservation of agro biodiversity; USAID project to demonstrate diversity in capiscums and other selected crops in on farm conservation projects; Characterization projects
- **Bolivia:** Synergies between government and academia projects based on smaller farmer needs assessments.
- **INBio, Costa Rica** on cataloguing biodiversity, training of par taxonomists, private /public sector partnerships such as with MERCK pharmaceuticals for bioprospecting;
- **ICIPE:** ARRPIS programme, capacity building for taxonomy
- **Philippines:** IRRI and Philippines Rice Research Institute on rice diversity as a means of managing pests (China and Philippines); Role of non rice habitats on rice pest management
- **Switzerland:** Effect of silvicultural systems in tree lines with a focus on the interactions between trees, grazing, herbs; Role of biodiversity on natural hazard management e.g. forest roles in preventing avalanches
- **Convention on Biological Diversity:** Policy guidance on agro and wild diversity e.g. thematic work programmes on agricultural biodiversity; forest biodiversity; dry and sub humid lands; marine and coastal biodiversity; protected areas; mountain biodiversity and also the global taxonomy initiative; the global strategy for plant conservation, alien invasive species; and the 2010 biodiversity target, Article 8j on traditional knowledge; access and benefit sharing and the Biosafety protocol. FAO /CBD collaboration on the forest and agricultural biodiversity work programmes – thus case studies; global assessments on plant and animal genetic assessments; Projects on best practice in agro and wild biodiversity; Tools and toolkits such as the ecosystem approach and indicators for biodiversity assessments.
- **The Millennium Ecosystem Assessment:** Assessment of the status of the world’s wild biodiversity in selected ecosystems; Data sharing platforms for taxonomy such as the Global Biodiversity Information Facility (GBIF) and BioNET International – the Global Network for Taxonomy
- **Various GEF Projects on:** interactions between wildlife and livestock; LUCID project on assessment of land use change in drylands of Kenya and Tanzania; SABONET capacity building project for plant taxonomy in Southern Africa; ICIPE/IPGRI on Gramineae and Arthropod interactions; IPGRI/IUCN/BGCI project on wild crop relatives; IPGRI – On farm management of genetic resources
- **FAO:** The Pollinator Initiative e.g. the African Pollinator Initiative
- **Australia:** CSIRO projects on nitrogen cycling and biodiversity quantification in rice

What would an effective knowledge generation programme look like?

Possible Elements:

- A consortium – no single organisation would have the skills, capacity and capability
- Multi-disciplinary – with a focus on social, community and livelihood components
- A global partnership programme aimed at strategic research and/or action based on thematic issues and /or models.
- Need to define characteristics of programmes
- Organise and bring together experts on thematic issue such as interactions between agro and wild biodiversity
- Structuring of the groups: what would be the parameters
- What are the criteria for site selection for projects
- Promote cross regional sharing of experiences
- Case studies approach to develop generic methodologies vs. hard science basis to develop replicable projects at different sites based on scientifically rigorous methodologies such as statistical design etc. Bolivia would provide good case studies
- Level of operation to include local, regional and global

Suggested Model example: The Global Forum on Agricultural Research which has established a funding partnership and through it, thematic areas that would benefit from cross regional sharing have been identified and projects developed based on this. but where would the information generated be housed? And will there also be a forum for local, regional and global exchange?

2. Ecoagriculture Services

What is our current understanding of ecosystem services?
- Ecosystem services include pollination, shade, clean water, nutrient cycling--organic matter decomposition, storage and regulation of water, healthy soil, pest management.
- Three main types: provisioning, regulating, supporting (climatic regulation, biodiversity, carbon sequestration, cultural aspect/services)
- Consider maintenance, restoration, rehabilitation
- These services function at many different scales from site to global

Critical Needs for Knowledge and Understanding
- Pollinator taxonomy and other kinds of taxonomy (fungal, pests, biodiversity monitoring)
- Aquatic and below-ground systems, especially hydrologic and nutrient cycle/functions: relationships between agricultural and natural ecosystems, particularly at the meso-scale of landscape-level processes. How do we apply our knowledge to designing systems?
- What is the role of biodiversity in agroecosystem function? How much of what type do we need to do what? Consider across all scales
- Knowledge about species and associated micro flora that are important for restoration in diverse systems/locations
- How do we do introductions safely, and what are the effects of introductions?
  - When is it safe to do an introduction; what factors contribute to a safe and effective introduction?
  - What kinds of global transportation safeguards are required to prevent alien introduction?
  - What is the niche interaction in native systems that will tell us about vulnerability?
  - How do changes at the site level influence ecosystem services at the landscape scale?
- Effect of landscape structure on patch diversity, inter-patch distances and connectivity on the spread of contagious agents such as alien invasive animals,
plants, diseases. How do we bring these factors of conservation biology into ecoagriculture? What are the effects on ecosystem services?
- How to protect prime farm land from development?
- How to maintain yields of grain crops without damaging the environment with pesticides and fertilizers (biological pest controls?; slow-release fertilizers?; perennial crops and/or cover crops?)
- How to influence government to facilitate change--particularly in China
- Our knowledge about local perceptions of ecosystem services, and how do we capture that knowledge to help solve problems?

What are promising research activities to generate relevant knowledge?
- Alternatives to Slash and Burn (ASB), ICRAF
- PLEC Programs
- Integrated Nutrient Management in Switzerland and elsewhere
- Pollinator Initiative (small scale)
- International Center for Integrated Mountain Development Pollination Program
- CEPLAC Neldar fan study
- Flow paths of water and nutrients in agricultural and natural systems and environmental water requirements (a major new area of research)
- Belowground Biodiversity
- GLOF in Nepal
- Lake Victoria Basin Project

3. What are the social challenges associated with developing and improving ecoagriculture systems?

Gaps in our knowledge and understanding
Local Communities as researchers:
- Need to understand the priorities of local communities, as many farmers do very good research, but it’s documented in their head. They are, in fact, generating knowledge. The problem is how science is coming to the community. Scientists always have goals in mind, but seldom make social considerations of the community. There’s indigenous knowledge and outside knowledge. This provides many options, in a cycle of learning and doing, keeping in mind the objectives set by the community.
- Tension between traditional knowledge and so-called scientific institutes, as people can come up with solutions to the problems. Who’s knowledge counts? Lack of trust between traditional knowledge and scientists – what is the affect of this? Need to recognise indigenous knowledge, especially in relation to equity and democracy in science.
- Changes may be perceived by individuals as a threat. Are farmers prepared to take the risk of doing something new? Strategies not just a matter of adopting the techniques, but rather, why, for example, are pastoralists, doing what they are doing?
- The community has to be organized in some way, but it’s important to have the right groups. If the idea comes from the community and the project is flexible, it can work.
- People have constraints and needs – identifying these is the entry point. From there you can build things up, feeding more research into the projects. (In Africa, farmers will adopt a little bit of research at a time). People have a lot of economic
sense. What do they know? What are there needs? Some will use targets, but it’s ultimately their choice.

Critical Needs and Main challenges

- Need for research gathering on people’s priorities and needs - often research is done for its own sake, not for the benefit of the farmers, thus research results often difficult to apply. Need to better understand the research user’s priorities and tap into their knowledge.

- Important to consider the power dimensions and social implications. Landscape vision implies more than a negotiated landscape – impossible to plan a landscape, where big corporations are very powerful and small farmers aren’t in a position to negotiate things. Ultimately, changes to relationships will occur on different levels. We use the term community very loosely. Who do we talk to first? Who is at risk of being marginalized? We tend to assume understanding power relationships is easy. It’s not. Need to understand priorities and constraints, and social diversity (e.g. not all farmers are equal and / or the same in term of knowledge levels). What can we say that pushes the envelope? Have to be proactive in seeking out diversity from the community. The less powerful are being pushed to deteriorated areas.

- Need to think about cost benefit models. Who’s going to be paying for and benefiting from gains (related to costs and opportunities)? A lot of the problems come from economics. People exploited what they have. At some point, we have to have a new economic model.

- Not just talking about developing countries? Need to consider dumping of heavily subsidized commodities from the U.S. and Europe on developing countries. The main problem of sustainability lies in the developed countries.

- Consider the influence of models and approaches and methodologies – conventional in the sense that rationale for doing this kind of research is purely biophysical, but there is a social dimension and logic to it. Social and biological sciences need each other.

- Need to recognize and integrate traditional knowledge – consider changing team composition, utilize sociology and anthropology, integrating traditional and scientific knowledge. Engagement of social scientists to look at perceptions and logic of the population. How to make more scientific knowledge available? The issue is the coming together of knowledge systems. How do we bring local knowledge to the table in a manner that is treated with equity, without romanticizing?

- Scientists are more predisposed to innovative thinking.(?) Need thinkers who an use indigenous knowledge as a section of the matrix - community leaders and opinion leaders. (Often have to go through only community leaders, not necessarily a democratic process).

- Wrong to say all scientists and farmers are the same. The challenge is to get the best scientists and the best farmers. The problem is not the dichotomy. The challenge is to create knowledge that can change the situation of small farmers, ecosystems and people and stop environmental damage. For traditional knowledge, it’s important to not that it is not homogeneous. What knowledge is useful for ecoagriculture? Is this term a new concept? This implies to break with the industrial agricultural model. It has political consequences and consequences for the future.

- One of the problems is the issues are related through project and financed by NGOs and international programs. The technical assistance they are brining comes from the research of civil society – most research that incorporates communities is
done by NGOs. Issue of knowledge generation by NGOs - Each one adds complexity and how do we integrate these things, build on individual strengths, identify other partners - Otherwise the model is to demonstrate something and hope they integrate it.

- Organic agricultural research institutes all over the world have the primary goal of performing research that can be readily applied by farmers, foresters, ranchers, pastoralists and so forth. Organic agriculture is one of the only systematic and verifiable approaches that utilizes a synthesis of traditional knowledge and scientific innovation to achieve socially, economically and ecologically sustainable outcomes, in so-called developing and developed countries. The institution of organic agriculture is a grassroots model, and governments and intergovernmental agencies are just beginning to recognize the significance of organic agriculture, certified or not, and are beginning to create supportive policies and allocate the necessary resources.

- In terms of the ecoagriculture concept, we need the biological and social sides, e.g what are the social implications of having a landscape with an industrial plot downstream. What are the governmental structures necessary to allow interaction between groups / land users within a landscape?

- ‘Ecoagriculture’ implies organic agriculture in many languages. There is a need to explicitly discuss the concepts and implications.

- There’s a fundamental lack of technological assessment in agriculture. The only effective office for technological assessment in agriculture – the Office of Technological Assessment of the U.S. – was eliminated back in 1996. Today, there is essentially no systematic assessment of agricultural technologies. They’re just thrown into the fields without consideration. For example, nanotech sensors are already being exploited by sugar beet farmers in North Dakota, and can monitor all aspect of the crop’s growth rate, nutrient levels and pesticide, and will likely eliminate the need for farmers on the ground. What effect will this and other technologies have in making already highly mechanized systems virtually completely mechanized?

**Theme 1 Recommendations and Actions Points**

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<td>Establish a research initiative on the links &amp; tradeoffs between wild biodiversity &amp; agricultural production, wild biodiversity &amp;/ or livelihoods.</td>
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<td>Provide managers &amp; resource users with information that will reduce negative &amp; enhance positive interactions between wild biodiversity &amp; agricultural production systems &amp; agro biodiversity.</td>
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<td>- Obtain information on the meaningful benefits of wild biodiversity for agricultural production &amp; / or livelihoods &amp; the tradeoffs with the other goals of ecoagriculture (production, livelihoods)</td>
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<td>- Identify the benefits of agricultural systems &amp; agro biodiversity for wild biodiversity</td>
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Recommendation 2:
Undertake an analysis of ecoagriculture case studies

Purpose:
To make a convincing & scientifically credible case for the benefits of ecoagriculture through an objective & rigorous analysis of case studies.

Actions:
- Develop a consistent set of protocols for the assessment of the three outcomes of ecoagriculture (Landscape dimension, multi-stakeholder processes, community, interactions, policy and institutions)
- Analyze a representative set of case studies – which demonstrate both good and bad experiences as well as the trade-offs
- Identify the key drivers of success
- Communicate the outcomes of case studies & analyses to stakeholders.

Recommendation 3:
Develop a participatory & adaptive programme for stakeholders to design & implement, by experimenting on future ecoagriculture landscapes to achieve the sustainable provision of agricultural & ecological services.

Purpose:
Achieve the recommendation in a number of selected landscapes representing different socio-biological contexts

Actions:
- Redefine inputs to existing EA systems at a broader systems (above-farm) level, to include ecological “inputs” e.g. Pollination, & Socio-cultural contributions, e.g. institutions that allow sustainable sharing & use of resources.
- Recognize intact (non-degraded) soil as an ecological service & other ecological services affected by land degradation, & identify ways in which such services can be used in the restoration of landscape integrity.
- Ensure that the landscape paradigm of ecoagriculture includes aquatic & terrestrial systems & the flow of ecological services, including biodiversity, across the landscape mosaic at different scales of landscape structure.
- Facilitate the transition to EA by farmers, by identifying ecological services that rapidly benefit farmers & by negotiating alternatives & tradeoffs in the longer-term.

Activities:
Subject- evel expertise and disciplines which need to be involved include: landscape ecology, hydrology, agronomy, natural resource and environmental economics, social sciences, understanding institutional dynamics (community involvement and
participatory processes), soil sciences (soil biology, land degradation, soil fertility), agroforestry and forest ecology, aquatic ecology, plant pathology and entomology (pests and diseases), systems modelling (GIS modelling, tradeoffs)

Next Steps include:
1. Ecoagriculture Partners to facilitate building of consortium of both donors and partners; and identify an organization to host this programme, institutions to be involved (system wide initiative), but probably not to host it. Alternatively, ecoagriculture partners to help/host (organization analogue to SANREM CRISP programme)
2. Location of sites – high and low lands, humid and dry zones, tropical and temperate areas

Existing initiatives to build on and link to:
- Godaraki (ICIMOD test and demonstrate site) – highlands, humid, tropical and temperate
- Embu, Kenya (Bioprospecting company project)
- TWNSO/LADA (Third world network for scientific organization) dryland, tropics
- Shinyanga, Tanzania – lowland, dry
- Nagykoru, Hungary – temperate, lowland
- ASB Sites (Brazil or Indonesia) – lowland and wet
- Hunan Province, China (Nature Conservancy) Upland and temperate
- Catskill mountains (New York, USA) – New York city watershed Initiative – temperate, highland

Recommendation 4:
Urge stakeholders at all levels (resource users, researchers, policy-makers) to support, adopt & advance ecoagriculture while using holistic decision making frameworks that seriously embrace complexity

Purpose:
Facilitate stakeholders to fully take into account the diversity of drivers of natural resource degradation & the multiplicity of dimensions involved in poverty alleviation & biodiversity conservation

Actions:
- Develop & test interdisciplinary ecoagriculture curricula & programmes that incorporate social, economic, biophysical & conservation ecology sciences
- Develop a fund for partnerships (researchers, NGO’s, resource users) to develop ecoagriculture concepts & methodologies for more holistic planning
- Understand local knowledge systems (traditional & “modern”), institutional dynamics (inter- & intra-community), & decision & negotiation processes (equity, power) as a basis for improved ecoagriculture at the landscape level
Theme 2: Managing Ecoagriculture at a Landscape Scale

Theme 2 participants assessed lessons learned from managing landscapes to achieve productive and profitable farms within land-use mosaics that achieve biodiversity and ecosystem service objectives. Issues included ecosystem design principles for agricultural landscapes; institutions that enable collaboration and coordination among farmers, conservationists and land-use planners; methods for monitoring and conducting impact assessments at a landscape scale; and implications for land-use policy.

Recommendations from Theme 2

Recommendation 1: Create a web-based platform on current ecoagriculture practices, projects and research.
Purpose: To build a communication platform accessible to ecoagriculture stakeholder groups, particularly practitioners.

Recommendation 2: Identify and document enabling and constraining policy and institutional environments for ecoagriculture to emerge.

Recommendation 3: Define specific, measurable outcomes that the ecoagricultural movement should seek to achieve.

Recommendation 4: Compile an inventory of current ‘measurement’ tools
Purpose: Evaluate existing measurement tools & methods (ecological, agricultural, socio-economic) appropriate to ecoagriculture in order to focus future research/work efforts – analyse gaps and plan to address these

Recommendation 5: Define ways to integrate measuring methodologies between different spatial and temporal scales, actors (e.g. communities, scientists, government etc.) and disciplines, including socio-economic, ecological and agricultural.
Purpose: To improve the way we design and use measurement and monitoring systems for ecoagriculture

Rationale

Realising impacts at a landscape-scale is key to ecoagriculture. Plot- and farm-level practices are critical components, as is the management of public and private protected conservation areas. However, ecoagriculture requires that these elements be coordinated across the landscape mosaic, to ensure that conservation goals (e.g., water quality or wildlife habitat protection) are actually met, while also enhancing productivity and livelihoods for different groups of producers and communities within the landscape.

There are major practical challenges of achieving ecoagriculture goals at a landscape scale. Stakeholders need to identify which mixes of land uses will deliver landscape-scale environmental benefits (and then the issue of whether it would actually be possible to modify management practices to achieve this ideal mix – i.e. need for
further stakeholder collaboration). Farming practices should recognise and capitalise upon the inherent benefits and services provided by ecosystems. Similarly, conservation management must be integrated within landscape-scale approaches that enhance productivity and profitability, with minimum top-down controls. Institutions must be established that can effectively catalyze compatible land uses across the landscape, with many different actors. Impacts must be monitored in ways that land use can continue to respond dynamically to social, economic and environmental changes. The mainstreaming of ecoagriculture will require widespread institutional innovation by diverse stakeholders to achieve these aims, as well as better understanding of where and how land users can intervene most strategically in a landscape to achieve common, or negotiated, goals.

**Theme 2 Presentations**

**Integrated management at a landscape scale**
- Ecosystem Services in Tropical Forest Landscape Mosaics: An Overview from the Millennium Ecosystem Assessment - Tom Tomich, World Agroforestry Centre
- Managing Agricultural Landscapes for Watershed Services - Meine van Noordwijk, World Agroforestry Centre, Indonesia
- Managing Irrigation Systems for both Agriculture and Environment - David Molden, International Water Management Institute, Sri Lanka
- The Role of Agroforestry in Biodiversity Conservation in the Tropics - Götz Schroth, CIFOR

**Monitoring and impact evaluation at a landscape scale**
- Managing Agriculture and Biodiversity at Landscape Scale: Results and Implications of The Nature Conservancy Audit - Tim Reed, The Nature Conservancy
- Lessons Learned by Cocoa Producers’ Networking - Howard Yana Shapiro, Mars Company
- Methods for Monitoring Ecoagriculture - Aaron Dushku, Winrock International
Key Questions addressed by Theme 2

What?
- What have we learned about managing trade-offs to achieve multiple objectives at a landscape scale?
- What types of innovations have effectively engaged local stakeholders in ecoagriculture management at a landscape scale?
- What have we learned about monitoring and assessing ecosystem productivity and livelihoods impacts at a landscape scale?

So What?
- What are the major barriers to managing ecoagriculture at a landscape scale?
- What are the major opportunities for better management?
- What are the social, economic and political challenges to achieving ecoagriculture at a landscape scale?

Now What?
- What are your recommendations to improve planning and management of ecoagriculture at a landscape scale?
- What are your policy recommendations to encourage ecoagriculture management at a landscape scale?

Working Group Discussions

Theme 2 working groups addressed four key issues:
- **Managing trade-offs to achieve multiple objectives at a landscape scale**, with respect to ecology, livelihood and productivity goals
- **Multi-stakeholder engagement** – how to empower local stakeholders to arrive at negotiated agreements
- **Multiple dimensions** – how to measure (quantitatively) trade-offs and outcomes from the perspective of different stakeholders, to enable landscape-scale management
- **Empowering local stakeholders** to scale up ecoagriculture, including effective participation in land-use decisions, arriving at negotiated management agreements that address multiple interests and incentives to implement landscape-scale management approaches.

Key Points

**Capitalising upon synergies and balancing trade-offs requires integration of three goals:**
- Need to quantify trade-offs and measure outcomes to enable adaptive management
- Require better monitoring techniques
- Process: Community based monitoring: “tools used by the people, not with people”

**Institutions:**
- Train institutions from those at the community level to policy makers
- The key issue: how to reshape government department and civil service culture to support truly participatory landscape scale land and water management
- Use existing institutions where possible - some may not actually exist and so have to be created
- Government institutions need to understand and buy into ecoagriculture. Where do we start?
- Universities should look at revising curricula to integrate ecoagriculture. They have to be aware.
- Decentralization has opportunity
- Limiting factors: Funding and capacity for both governments and civil society
- Empowering community based institutions
- Emphasize training of community based organisations, e.g. at village level, in the management of biodiversity
- Common cross border institutions to be established to ensure implementation of internationally agreed ecoagricultural measurements
- Institutions for planning and coordination
- Work with institutions to get them to subsidize projects with food companies that are actually sustainable for biodiversity, economically and socially;
- Develop/strengthen local institutions for ecoagriculture planning and coordination

Capacity
- Lack of capacity at global level for planning and coordination. Need a strong (international) network
- Build capacity amongst stakeholders in the design, implementation, and evaluation of projects

Multi-stakeholder participation
- How to strengthen institutional and policy arrangements to enable local stakeholders to meaningfully participate in landscape management and land use decision making?
- Stakeholder analysis to map different objectives
- Involve all institutions from local to national to regional, so as to solicit ideas from all for synthesis (partners in ecoagriculture)
- Public/private partnerships are essential
- Policymakers and scientists need more interaction on designing the way forward for maximum benefits
- Everybody agrees on participation negotiation, but why does this not happen? Approaches experimented and failing for the last two decades?
- Improve exchange and communication between stakeholders projects etc.
- Rational time expectation for all parties
- Involvement of local communities in the management, monitoring of biodiversity conservation activities and impact assessment, with special emphasis on ecological local knowledge

Policy
- Challenges – lack of enforcement policies and conflicting jurisdictions
- Conflicting policies and interests that lead to land degradation
- Link ecoagriculture with international policy forums, e.g Convention on Biodiversity, FAO
- ‘People friendly’ legislation
- Global functionality
- Coordinated global affairs for technology and funding

**Incentives, Rewards, Costs and Benefits**
- Farmers incentives for preserving wild species and managing the environment positively
- Despite technical evidence and all good intents, decision making is made on socio-political grounds. Implementation involves allocation of human and financial resources. Who will bear extra cost? Who pays incentives?
- Rewards for those who maintain agroecological principles
- Characterization and understanding of landscape productive and biodiversity functions with various stakeholders
- Context assessment approaches to integrate conservation outcomes – costs and incentives
- Different options for farmers, communities and institutions
- Incentives for rural poor to nurture land and forests – women youth and marginalized groups
- Incentives as regulations, e.g buffer strips along rivers
- Adaptive management to maximize benefits
- Trade-offs and negotiating solutions

**Negotiation and Conflict Resolution**
- Accommodating / balancing multi-interests require negotiated agreements and empowerment of local stakeholders to effectively participate in land use decisions.
- Focus on negotiation process
- What was learned? Win-win or loose-loose depends on history of landscape (context) and perspective of stakeholder
- Balancing ‘top-down’ landscape planning with focus on strengthening local capacity to manage this systems (improving access to technology, information, extension)
- Need clear definitions for landscape and dealing with the potential conflicts that might arise due to present institutional landscape
- How much responsibility can be devolved to local institutions?
- Relationships between disciplines and impacts need to be better understood
- Learn and share successful experiences and initiatives
- Potential Tools: Learn from Integrated Crop Management (ICM), map different stakeholder interests; set realistic time expectations for stakeholders

**Landscapes, scaling up**
- Need a clear understanding of ecoagriculture: understanding patterns and processes at different scales, from plot to landscape. Question assumptions.
- Maintain undisturbed patches as part of the puzzle in the landscape in addition to the maintenance of ecological processes within natural ranges of variation (e.g. hydrological regimes). Need to have sources of biodiversity
- Scaling up of landscape management for ecoagriculture. Transboundary considerations for landscape management of ecoagriculture
- What are the implications of land use? The outcome needs landscape scale research to understand trade offs?
- How to understand processes at different scales (plot-landscape) and how to scale up activities from the farm to the landscape level so that they have an impact at the landscape level?
- The limits of our understanding of complex systems are real, yet we need to take action quickly. This requires solid, strategic design of projects, mitigation, restoration, including measuring success.
- Securing existing services through conserving existing ecosystem is safe bet; Re-establishing services by re-habilitating ecosystem is a much more complex and less clearly understood link.
- How does science need to be organized to effectively contribute to ecoagriculture?
- Move away from species to ecosystem integrity and sustainability
- Incentives (rewards) are needed for local stakeholders to scale up ecoagriculture at a landscape level – conducive environment within a broad range of rules
  - Requires understanding of cost-benefits from farmer perspectives
  - Land tenure security is an important incentive
  - Markets: Some progressive agro-companies, need to apply / replicate model to other companies

**Water**
- Important to see waterscapes as part of landscapes and to account for aquatic systems in agriculture landscapes
- Waterscapes have specific considerations (Increase water productivity; Reverse unsustainable water use trends); questions underlying link between watershed protection and water services; include hydrology and water efficiency
- Waterscapes need more attention in design and management – change trends in water use
- Take stock of integrated coastal management programmes
- Technologies that allow efficient and effective use of water on farms
- Water a good entry point for ecoagriculture – people understand the need for management
- Different views on degradation and hydrology by local people and scientists

**Planning, Monitoring, Outcome mapping, Measuring Impact**
- Objectives for ecoagriculture – bigger space and bigger time. Define landscape. Test first at smaller scales. Design participatory initiatives
- Parameters to be measured: indicators and monitoring, participatory/ local
- Land tenure systems to be improved.
- How are outcomes identified and quantified and measured?
- Design studies at various spatial and temporal scales to understand ecoagriculture relationships
- How to measures success? What is measure of success and from whose perspective?
- A clearer definition of the biodiversity conservation outcomes continuum needs to be clarified before the criteria for defining their relationship to agricultural systems can be articulated and tested across a broad spectrum of sites.

**Traditional and Local knowledge**
- The scope of ecoagriculture is not just crops and natural elements but also systems with rich biodiversity across the land, in particular extensive livestock and traditional systems.
- Respect/maintain traditional systems and indigenous knowledge, and mobile pastoral systems
- Local knowledge needs to be integrated into monitoring
- Understand what aspects of traditional cultivation/livestock systems are likely to lead to positive ecoagriculture results
- Traditional agricultural systems mimic natural systems
- Rigor: also apply critically to traditional systems – which enhance biodiversity and livelihoods, which do not?

**Data Collection, Monitoring, Criteria and Indicators**
- Requires understanding of context– what assessment tools do we have?
  - Tools for analysis and monitoring at the landscape level: Better monitoring techniques required
  - Need tools for measuring ecological functionality
  - Tools need to be available and cheap and usable by non-experts
- Data collection and analysis in ground projects
- Cost effective and measurable indicators are needed
  - Establishment of nationally and internationally agreed indicators for ecoagricultural practices
- As the landscape is managed by farmers, farmers should be the ones to identify outputs and indicators
- Monitoring may have to address: focus at many levels; agroecosystem functioning; activities of farmers, management of plans and methods; motivation objectives and earning and adjustment
- Community based monitoring tools and manual GIS
- Need quantitative and statistical detail for measuring and monitoring
- Application of state of the art technology for quick outputs ad high resolution results. Packaging of results in a more understandable language format.
- How effective is monitoring of biodiversity by farmer and land users vs. scientists.
- Consider environmental management systems and certification systems as a monitoring tool especially with large commercial land users
- Institutionalization of biodiversity monitoring system at all levels with practical tools and indigenous knowledge systems
- GIS-Satellite is a good tool but is it cost effective, look at alternatives and improve existing monitoring sustainability
- GIS promising more than it can deliver. Data limits, costs etc

**Theme 2 Recommendations and Actions Points**

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<tr>
<th><strong>Recommendation 1</strong></th>
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<td>Create a web-based platform for practitioners on current ecoagriculture practices, projects and research</td>
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**Purpose:**
To have a communication platform accessible to ecoagriculture stakeholder groups (i.e. practitioners (the primary target) and accessible to local communities/farmers and policy makers).

**Actions:**
- To develop a communication platform for Ecoagriculture practitioners;
- To make that platform inter-active so that practitioners can exchange ecoagriculture knowledge/experiences;
- To make that platform user-friendly; allowing for easy dissemination and translation of information to end users.

**Recommendation 2**
Identify and document enabling and constraining policy and institutional environments for ecoagriculture to emerge e.g., minimum standards vs. designing planning; incentives, constraints

**Purpose:** To influence policy makers/decision makers and thus enable the implementation of ecoagriculture on large scale

**Actions:**
Identify enabling framework [key policy and institution incentives, constraints, and minimum standards] and understand impact of policies and regulations on ecoagriculture.

**Recommendation 3: Measures of success**
Define specific, measurable outcomes that the ecoagriculture movement is trying to achieve

**Actions:**
- Define specific metrics/indicators which would indicate progress/success
- Define actors (i.e. users of this information)
- Define timeframes

**Next steps:**
1. Convene a preliminary working group (including experts in Agriculture, Conservation Biology/Ecology, Social-Scientists/Economists, etc.)
2. Develop a work plan
3. Consider preliminary funding needs (with a plan to re-assess after the pilot phase)

**Recommendation 4:**
Compile an inventory of current ‘measurement’ tools

**Purpose:**
Evaluate what measures tools & methods (ecological, agricultural, socio-economic) appropriate to ecoagriculture exist already in order to focus future research/work efforts – analyse gaps and plan to address these

**Actions:**
Logistics / Infrastructure
- Develop a working group
- Conduct quick survey of Ecoagriculture Partners’ experiences
- Develop a contact list of practitioners with relevant experience
- Develop Terms of Reference (ToR) and Funding Plan
- Fundraising
- Research & Development Phase
- Hire interdisciplinary team of consultants to conduct inventory

**Existing initiatives to build on and link to:**
Biosphere Reserves Integrated Monitoring (UNESCO-MAB), Winrock International Habitat Assessment projects provide good examples – Long-term, comprehensive monitoring of selected ecoagriculture projects

**Recommendation 5:**
Define ways to integrate measuring methodologies between different spatial and temporal scales, actors (e.g. communities, scientists, government etc.) and disciplines, including socio-economic, ecological and agricultural.

**Purpose:** To improve the way we design and use measurement and monitoring systems for ecoagriculture

**Actions:**
- Set up working group, including experts in agriculture productivity, conservation biology / ecology, social scientists, economists, foresters etc.
- Develop a work plan to produce end products (guidelines)
- Consider preliminary funding needs (with a plan to re-assess after pilot phase)
- Use combination of consultancies, working groups and workshops – canvas existing experience.
- Development of cross-disciplinary guidelines and principles
- Various scales for different actors, for practitioners, actors etc
- Link to types of tools, use of case studies to illustrate ‘tool box’
Theme 3: Valuing Ecoagriculture for Livelihoods and Business

Theme 3 evaluated existing livelihood and financial incentives for farmers, other land managers and investors to develop and invest in ecoagriculture systems. Participants questioned what the social, economic and environmental values of ecoagriculture were, for local to global beneficiaries, and examined how these values could be realised for farmers, land managers and investors, and through building on local and indigenous knowledge. Discussions reviewed evidence of livelihood benefits and economic profitability in existing ecoagriculture systems; changes in agribusiness and the food industry; (financial and non-financial) incentives for ecosystem services and products; how to build upon existing local and indigenous knowledge systems and implications for economic, business and rural development policies.

The development of appropriate indicators to assess the impact of actions was examined at all levels. The institutional changes in society, agribusiness and the food industry that could shift incentives in favour of ecoagriculture were also explored.

Recommendations from Theme 3

To assess and monitor the economic, environmental and social performance of ecoagriculture:

Recommendation 1: Carry out a stakeholder analysis on who has the power, interests, and legitimacy for ecoagriculture implementation.

Recommendation 2: Develop broad and robust set of indicators that include the environmental, economic, social and spiritual aspects of ecoagriculture. The indicators should be developed and employed using acceptable methods and reporting mechanisms.

Recommendation 3: Link indicators with policy action. Develop instruments, implement, and measure the impacts of policy change.

Recommendation 4: Developing incentives for ecoagriculture-innovations in product markets. Facilitate the engagement of the entire food chain to achieve transparent, market-driven incentives consistent with the principles of ecoagriculture, using the power of the market to create and sustain ecoagriculture practices.

Recommendation 5: Developing incentives for ecosystem services. Pilot, promote and enhance incentives for ecosystem services in agricultural landscapes. Purpose: To demonstrate the feasibility of incentives for ecosystem services in landscape including terrestrial, aquatic and other ecosystems.
Rationale
For ecoagriculture to be adopted on a scale that is globally meaningful, land users must find these systems and practices to be economically competitive with conventional systems. Ecoagriculture systems must contribute significantly to rural livelihoods, as well as conservation. There are two broad ways for this to occur: 1) by developing systems that significantly reduce production costs or risks, or that significantly increase yields without increasing costs or reducing prices; 2) by rewarding producers financially for the additional ecosystem services they are providing, through new (retail or wholesale) markets for eco-labelled products or through direct payments to farmers. The international food industry is beginning to address consumer and regulatory demands for ecoagriculture. Initiatives to support farmer and community “green” enterprises are encouraging ecoagriculture, as are changes in the structure of agricultural subsidies. Many communities and farmers agricultural producers value the local ecosystem service benefits, wild product uses, and aesthetic and cultural services provided by ecoagriculture.

But there remain many questions and challenges. Economic and market policies often present disincentives for farmers and communities to practice ecoagriculture. Information on the economic and production benefits of ecoagriculture system is lacking. Most of the negative environmental “externalities” resulting from conventional agriculture are not internalized as business costs, with little financial rewards for producing positive environmental externalities, especially when ecosystem-damaging systems are heavily subsidized by governments. The polycultures that are often desirable for ecosystem management require markets for multiple products, and may require special marketing processes to achieve economies of scale. Market supply chains are undergoing major changes in many countries that disadvantage small-scale producers who are not adequately organized. Highly-populated agricultural regions in developing countries face rapidly growing demand for food and other agricultural products, so that ecoagriculture strategies must deliver joint production, livelihood and conservation benefits that meet future, as well as present demands. There are important gender differences in ecoagriculture priorities. Planning and investing for ecoagriculture thus requires new approaches to economic analysis that examine both trade-offs and synergies over time, at a landscape scale. Understanding and measuring the social and private values of ecoagriculture systems is fundamental for scaling up ecoagriculture.

Theme 3 presentations

Economic & livelihood benefits from ecoagriculture
- Evaluating the Economic Viability of Ecoagriculture Systems - Steve Vosti, University of California – Davis

- Economics of Ecological Ecoagriculture for Smallholders in Ecuador – Mary Ross Borja, Ecuador

- Organic Product Markets: State of the Art and Implications for Ecoagriculture - Bernward Geier, IFOAM
Developing new markets for ecoagriculture
- Developing Markets for Ecoagriculture: Experience of CELB - Edward Millard, Conservation International
- Rainforest Alliance’s Sustainable Agriculture Program: Pioneering Certification in American Tropics - Luis Fernando Guedes Pinto, IMAFLORA and Sustainable Agriculture Network, Brazil
- Payments to Agricultural Producers for Ecosystem Services - Mira Inbar, Forest Trends, USA
- Payments for Pastoralists for Biodiversity Conservation: The Experience of Maasai and the Nairobi National Park - David Nkedianye, International Livestock Research Institute (ILRI)
- Biodiversity and Wine Initiative - Tony Hansen, Biodiversity and Wine Initiative

Key Questions Addressed by Theme 3

What?
- What are the values of ecoagriculture?
- How can these values be realised?
- What we have learned about successful approaches to enhance the business and livelihood values of ecoagriculture

So What?
- What are the major barriers to realising profitability and livelihood benefits from ecoagriculture?
- What are the major opportunities to mobilize new livelihood and market incentives for ecoagriculture?
- What are the social, economic and political challenges to achieving financial and livelihood incentives for scaling up ecoagriculture?

Now What?
- What are your main recommendations for producers, agricultural enterprises and agro-industry to enhance the livelihood and business values of ecoagriculture?

Working Group Discussions

Three Working Groups addressed
- Assessment and monitoring of the economic, environmental and social performance of ecoagriculture, focussed on measuring and monitoring progress towards meeting the social and environmental objectives associated with ecoagriculture. Discussion reviewed the need for stakeholder analysis on who has
the power, interests, and legitimacy for ecoagriculture implementation; considerations that ecoagriculture indicators should take into account, i.e. environmental, economic, social and spiritual aspects; the characteristics of the indicators that different groups of stakeholders would need to guide their actions; and the information and methods required to ‘translate’ from one set of stakeholder-specific indicators to another.

- **Incentives in agricultural product markets**, particularly engaging the entire food chain in achieving market-driven incentives consistent with the principles of ecoagriculture – using the power of the market to create and sustain ecoagriculture practices, and strengthening local organisations that can provide producers with the necessary support services to strengthen their position in the market – enabling incentives for ecoagriculture to become operational at the producer level.

- **Developing stakeholder-driven incentives for ecosystem services** within agricultural landscapes, especially identifying and demonstrating the feasibility of financial and non-financial incentives for ecosystems services in landscapes, as a catalyst and support for ecoagriculture. Particularly focus on identifying and building upon on-going activities to pilot, promote and enhance incentives for ecosystem services in agricultural landscapes.

**Key Points**

**Valuing Ecoagriculture**

- What is valuing ecoagriculture and what does it mean for each stakeholder group / institution’s activities?
- There is evidence of livelihood benefits and economic profitability of existing ecoagriculture systems relative to conventional agricultural systems. Examples from Theme 3 presentations include:
  - Consolation schemes for livestock lost to predators in a context of migratory land conservation. (*David Nkedianye*)
  - Biodiversity guidelines within wine production to minimize the loss of threatened natural habitat and contribute to sustainable wine production practices. At the same time, it may be economically profitable to use the marketing angle of sustainable production and conservation of natural heritage (*Tony Hansen*).
  - Practical methods for identifying synergies, trade-offs and strategies for policy action in the context of agricultural production systems. (*Stephen Vosti*)
  - With respect to Institutional changes in agribusiness and the food industry, there is growing demand for food products with social and environmental value (*Edward Millard*).
  - Several companies, e.g Starbucks, are adopting more customized approaches that define and reward best practices through their supply chain. Potential for large-scale impact on farming practices because they are integrated into core corporate strategies affecting the whole business operation. A strong motivating factor is securing the long-term supply of good-quality material for their brands while maintaining a healthy landscape and satisfied farmers.
  - Necessity for sustainable production - food industry relies on the long-term supply of agricultural raw materials in quality and quantity and that consumers’ confidence depends on the quality and safety of the food supply chain. (*Maryline Guarimand*)
• Organic agriculture occupying growing percentage market share is another example of market and society evolution (Bernward Geier)
• Work of the Sustainable Agriculture Network in South America to pioneer biodiversity conservation certification for the American tropics market (Luis Fernando)
• Mechanisms of payments for ecosystem services that could shift incentives in favour of ecoagriculture (Mira Inbar), reward owners for good forest and agricultural practices include:
  • Fiscal incentives for biodiversity protection (income tax deductions, tax credits);
  • Payments to restrict agricultural use (e.g. set aside in Europe or the Cordao de Mata project in Brazil);
  • Payments for biodiversity conserving use or management (e.g. ecological compensation areas’ in Switzerland or Wildlands Program in Mexico);
  • Payments for private access to wildlife and ecotourism (permits to hunt, fish, gather on private lands).

What are the values of ecoagriculture?
- Social, economic and environmental outcomes
- Local to global beneficiaries
- Impacts and tradeoffs

How can these values be realized?
- Financial and non-financial incentives at all levels
- Build on local and indigenous knowledge

1. Assessing and Monitoring the Economic, Environmental and Social Performance of Ecoagriculture:

Critical Needs:
- Stakeholders Analysis (Who? Power, Interests, Legitimacy)
- A Broad and Robust Set of Indicators and Benchmarks
  • Environmental, Economic, Social, Spiritual
  • Trade-offs and synergies among them
  • Acceptable Methods and Reporting
- Links with Policy Action
- Suggest Instruments and Implementation
- Measure Impacts of Policy Change

Effective indicators must:
- Identify Clear and Consistent Spatial Units of Analysis
- Establish a Time Frame for Evaluation
- Identify the Context-Setting Parameters (Agroecological, Policy, Market)
- Measure ‘Success’
- Not Take Scale Neutrality for Granted
- Consider Speed of Change
- Generate Timely Output

Effective indicators can:
- Be Qualitative or Quantitative
Focus on Inputs, Processes and/or Outcomes
- Report Values, or Just Physical Quantities (the latter avoids the need to ‘value’ all elements of ecoagriculture)

There was also a felt need to:
- Establish a time frame for evaluation;
- Identify the context-setting parameters;
- Measure ‘Success’;
- Not take scale neutrality for granted; and
- Consider speed of change and generate timely output.

What are the challenges?
- Many dimensions (cultures, politics, food etc) require measurement/comparison, using farmers, science etc, in context of changing settings / circumstances, temporal needs etc.
- Identify clear and consistent spatial units of analysis;
- Trade-offs across regions at the ‘land-use system’ level, sensitive to local stakeholders
- Varying perspectives of ‘success’ in protected areas, and other areas
- Identifying stakeholders for regional initiatives to ensure buy-in, especially from government
- Technology choices and livelihood implications, including exit from agriculture
- Qualitative indicators, from people’s voices, linked to measures of concrete benefits (economic & ecological) for enabling policy change
- Food security, income, biodiversity, health are some of major elements, that vary with different agriculture systems, and that are affected deeply by policy changes
- High-level indicators that make sense to local people
- Different indicators for different applications, including policy implementation at local & national that can also assess non-agricultural benefits (i.e school access)
- How to identify stakeholders in a domain? Power; Economic interests; Legitimacy
- Indicators: Typically driven by non-farmer stakeholders
- Farmers decision is what determines outcome

Now what?
Considerations that indicators should take into account include:
Social change/community transformation; New initiatives/activities; Speed of change; welfare/ health improvements e.g. schooling; Including all stakeholders e.g. those losing and those gaining land; Gender issues; Packages of Social Services;
Community participation (Measures, involvement, benefits); Community needs;
Sustainability (Environmental, Social and Institutional); Land tenure/land use;
Stakeholder acceptance; Measures of policy implementation/effectiveness; Solidarity among stakeholders; Representativeness of actors/activities/outcomes; Stakeholders accountability; Sharing within stakeholders groups; Inter-institutional trust; Processes as well as products; Time dimension; Policy changes as a result (impact assessment of outcomes); Spillovers to neighbouring activities; Spin-off economic activities; Infrastructure improvement; Replicability; Spirituality/cultural; Uncertainty (risk / cost sharing)

- Indicators need to be used in conjunction with acceptable methods and report
- Need for reference points for measuring impact
- Indicators need to be linked with policy action, to measure impacts of policy change
How could such indicators be comparable across different regions so that policy makers can understand and make informed decisions?
- Need to avoid indicator proliferation – nested indicators are best, i.e. indicators that meet the need of multiple stakeholder groups.
- Even attaining a ‘perfect’ set of indicators would not preclude the need to take difficult policy decisions
- How to ‘weight’ the value of indicators in the decision-making process – all indicators would have to be ‘weighted’ in some way to be useful to decision makers

2. Product/Market Incentives for Ecoagriculture

What are the existing initiatives and opportunities?
- Support services: financial support, market information on prices
- Corporate social responsibility
- Improved coordination among initiatives
- Market Opportunities
- Linkages—strong local organization that can collect products, scale products and quality control
- Role of government: buyers, regulations
- Role performed by intermediary—added value
- Transparency in the chain
- Differentiate by farming structure (small, medium, large)
- Value added possibility at farm level
- Supply of inputs adequate & affordable
- Programmes promoting intercropping
- Public incentive promote products

What is required to mobilize new livelihood and market incentives for Ecoagriculture?
- Strong policy instrument to facilitate the adoption, e.g. Fiscal instrument
- Consultation of grassroots people for policy design & incentives
- Encourage private sector to engage in Corporate Social Responsibility (CSR) and transparency
- Building credibility in the process from farm to consumer
- Vital to develop producer-consumer alliances where consumers accept fair prices for products as a consequence of raise awareness of social, quality and environmental benefits of paying such premiums.

3. Incentives for Ecosystem Services

What Ecosystem Services are we talking about?
Watershed services: Water quality, Flood control and Salinity control; Erosion control; Biodiversity conservation; Greenhouse gas reduction; Carbon sequestration & storage; Pollination/seed dispersal; Landscape preservation and beauty

What incentives already exist?
Payments for watershed services, carbon sequestration, organic farming, biodiversity conservation; Legal Frameworks, regulatory schemes and other policy mechanisms; Voluntary carbon buyer; Bundled environmental services, Public investment in community and social enterprises.
What do we know / what have we learnt?
- Market failures: lack of demand; no prices for these services
- Property rights - who has the right to own the land, sell the services, etc?
- Taxes on payments
- Incentives vs. holistic gains
- Equity: who benefits from the ecosystem services?
- Weak institutions and lack of institutions
- Indirect payments – consider the provision of alternative livelihood and technology options as payment for ecosystem services and / or ecosystem derived services
- Make people realize value of ecosystem services in order to generate a ‘willingness to pay’
- Valuation problems— need to know the value of alternative
- Farmers should be well informed first about the payments – facilitate the design of their own implementation, monitoring and evaluation strategies
- Political action needs to be rooted in local actions
- Include identification of viable ‘payments transfer schemes’ at various scales

Opportunities for developing incentives:
- **Payments for ecosystems services:** Fiscal incentives; Payments to restrict agricultural use; Payments for biodiversity conserving management; Payments for private access; Trading schemes; Biodiversity conserving business (eco-labelling)
- **Payments for practices:** Most common, lots of good pilots and legislation in various countries, growing interest and confusion; Carbon market most mature, least with biodiversity; Disappointment with bio prospecting
- **Payments for performances:** Very problematic due to monitoring but theoretically superior;
- Scale of payments too small to really reward land-owners for good management
- Trade offs between command, control, and market mechanism
- **Gaps and obstacles:** Still unclear on implementation; Lack of transparent mechanisms; Lack of marketplace for exchanging information

Critical needs / actions:
- Pilot and promote incentives for ecosystems services in agricultural landscape
- Use networks and other appropriate forms of information exchange for farmers.
- Engage to right stakeholders to enable management at a landscape scale
- Investigate livelihood options as incentives for ecosystems services

Theme 3 Recommendations and Action Plans

Assessing and monitoring the economic, environmental and social performance of ecoagriculture

**Recommendation 1:**
Carry out a stakeholder analysis regarding who has the power, interests, and legitimacy for ecoagriculture implementation.
**Recommendation 2:**
Developing a broad and robust set of indicators that would include the environmental, economic, social and spiritual aspects of ecoagriculture. The indicators should be used through acceptable methods and reporting.

**Actions:**
- Identify case studies on developing community-driven indicators to test stakeholders’ claims regarding the performance of land use systems
- Derive from these case studies a set of **best practices** for identifying stakeholders’ interests and robust sets of indicators
- Expand the scale of analysis to include additional stakeholders, issues and ‘spillovers’

**Recommendation 3:**
Link indicators with policy action. Develop instruments and implementation, and measure the impacts of policy change.

**Incentives for ecoagriculture innovations in product markets.**

**Recommendation 4:**
Facilitate the engagement of the entire food chain to achieve transparent, market-driven incentives consistent with the principles of ecoagriculture.

**Purpose:** Use the power of the market to create and sustain ecoagriculture practices

**Goals:**
- Producers: to adopt & sustain ecoagriculture practices
- Traders: to operate a transparent purchasing system that transfers the benefits of the incentive system to producers
- Processors: to adopt ecoagriculture practices at processing stage
- Retailers: to implement systems of buying preference, store placement policy, consumer information & awareness building in support of ecoagriculture products
- Institutional consumers: to set purchasing policies in support of ecoagriculture
- Consumers: To change buying behaviour to purchase ecoagriculture products

**Activities:**
Each participant in the value chain to commit to education on ecoagriculture practices to peers, suppliers and customers.
- NGO’s to seek private sector partners to collaborate on eco-agicultural initiatives.
- Companies & producer associations to introduce operational systems for incentive structures.
- Create structures to inform all actors about ecoagriculture practices and to design incentive systems.
- Build an advocacy group for proposing mechanisms to reform policies in support of ecoagriculture.

### Incentives for ecoagriculture innovations in product markets.

**Recommendation 5:**
Strengthen local organizations that can provide producers with the needed support services and strengthen their position in the market.

**Purpose:** To enable incentives for ecoagriculture to become operational at the producer level

**Goals:**
- Strengthened producer organizations
- Create new producer organizations where none exist
- Participants committed to support producer organizations

**Activities:**
- Develop information systems on ecoagriculture
- Build network for information & dissemination to partners in producing countries
- Produce and disseminate locally adapted information materials

N.B It will be vital to develop producer-consumer alliances where consumers accept fair prices for products through awareness of health, social and quality benefits

### Incentives for Ecosystem Services

**Recommendation 6:** Pilot, promote and enhance incentives for ecosystem services in agricultural landscapes

**Purpose:** To demonstrate the feasibility of incentives for ecosystem services in landscape including terrestrial, aquatic and other ecosystems

**Goal:**
The emergence of working landscapes that provide adequate livelihoods for their inhabitants while providing critical ecosystem services, such as water quality, the conservation of natural resources, and the protection of biodiversity.

**Objectives:**
- To bring representatives of all relevant stakeholder groups (i.e. local, national, and international) together to design and develop appropriate incentive mechanisms in selected sites.
To facilitate pilot incentive mechanisms that will produce and protect ecosystem services from agricultural landscapes.
- To develop an expert network to support and enable such projects by conducting research, facilitating monitoring, and sharing lessons-learned.

**Actions:**
- Use the ecosystem marketplace and other mechanism to exchange information and learn from existing opportunities
- Do more field research on ecosystem benefits of ecoagriculture and market opportunities
- Develop policy and guidelines to create incentives at landscape scale
- High-level political action and engagement of private sector

**Activities:**
- Identify potential sites - develop criteria for selecting sites and a list of sites
- Convene stakeholders in each pilot site – build consensus on participation, meetings to plan intervention
- Conduct necessary research - baseline information on site; guidance on monitoring, data collection, document pilot experiences
- Implement pilot projects – develop operational schemes in selected sites; ongoing monitoring; and impact assessment and capacity building
- Share lessons learned: internet database; training and implementation manuals; policy guidelines; model contracts; case study reports; monitoring and assessment
- Replicate and mainstream through education and outreach – set targets (national governments and local leaders, corporate leaders, investors, consumers)
Theme 4: Mobilizing Community Ecoagriculture

Theme 4 built upon outcomes of the Community Shamba preparatory meetings, focusing on community-level action to develop, implement, manage and scale up successful ecoagriculture. Participants examined barriers and obstacles to community development; strategies for achieving community action at a meaningful scale; and implications for capacity-building, investment and policy.

Recommendations from Theme 4

Recommendation 1: Build peoples’ capacity to engage in holistic policy development through education, training, networking, public awareness and negotiation at all levels.

Recommendation 2: Create mechanisms/framework/platforms to institutionalize ecoagriculture friendly policy and program development with full and active participation of all stakeholders.
Purpose: To build capacity and institutionalise a mechanism that effectively engages multi-stakeholder participation in policy development for ecoagriculture outcomes.

Recommendation 3: Enhance local communities’ knowledge, skills and awareness through effective learning processes such as community-to-community learning, field training, exchange visits etc and provide resources to upscale good / adaptive practices on ecoagriculture.

Rationale
In areas that must be managed as ecoagriculture, local agricultural producers and communities are recognized as the foundation for rural land stewardship, even though the supporting roles of public sector and NGO conservationists remain essential. Local land managers will determine “success”, if this requires transformation at a landscape scale, rather than just designating a number of publicly-managed protected areas. Fortunately, communities in many parts of the world have demonstrated that they can and will take a leadership role to develop, organize and scale up ecoagriculture.

Nonetheless, to expand community action in ecoagriculture will require a massive effort by community organizations, as well as a re-shaping of the policy, investment and technical assistance support from other institutions involved in rural land and resource management. New approaches to capacity-building, extension and organization-strengthening are required. Policy, legislation and decision processes must empower local communities to play a central role in setting ecoagriculture objectives, designing ecoagriculture systems at local and landscape scale. Financing for agriculture, rural development and conservation from the public sector, donors, and financial institutions must be re-shaped to support community-led initiatives. Local communities must be linked into international conservation and rural development initiatives. The mainstreaming of ecoagriculture will be crucially dependent upon mobilizing local communities to become champions and leaders in
Economically healthy local enterprises will be essential to ensure long-term economic viability and independence from external financing.

**Theme 4 presentations**

- Farmer Movements for Ecoagriculture: Experience of Bangladesh - *Farhad Mazhar, UBINIG, Bangladesh*

- The Landcare Model for Mobilizing Farmers to Promote Ecoagriculture - *Delia Catacutan, Landcare Philippines*

- Promoting Policies that Support Communities - *Periyapatna Satheesh, Deccan Development Society*

- International Investment in Land and Ecosystem Restoration: Lessons Learned - *Erick Fernandez, The World Bank*

- International Initiatives to Promote Ecoagriculture - *Walter Lusigi, Global Environment Facility*

- Farming with the Wild: Transformations at Farm, Watershed and Regional Levels - *JoAnne Baumgartner and Dan Imhoff*

**Key Questions addressed by Theme 4**

**What?**
- What is the scale of community-led ecoagriculture around the world?
- What do communities need in order to plan, promote and support ecoagriculture?
- What have we learned about successful approaches to support community-led ecoagriculture?

**So What?**
- What are the major barriers preventing community action to promote ecoagriculture?
- What are the major opportunities which could help to mobilize and support community ecoagriculture?
- What are the social, economic and political constraints to communities mobilizing and scaling up ecoagriculture?

**Now What?**
- What are your main recommendations for communities?
- What are your main recommendations for other key actors?

**Working Group Discussions**

Working groups addressed the two overarching priorities of:
- **Building peoples’ capacity** to engage in holistic policy development through education, training, networking, public awareness and negotiation of various levels. Issues addressed including the identifying, documenting and disseminating locally adaptive technologies, harmonizing modern and indigenous knowledge to improve the livelihood and conserve the environment ecosystems; enhancing local communities’ knowledge, skills and awareness through effective learning processes such as community-to-community learning, field training exchange visits etc. and provide resources to upscale good/adaptive practices on ecoagriculture;

- **Creating mechanisms** to institutionalize ecoagriculture friendly policy and program development with full and active participation of all stakeholders, developing and institutionalising mechanisms that effectively enable multi-stakeholders participation in policy development.

### Key Points

- Farmers to be involved in landscape management
- Natural resource management should be community centred
  - Community mobilisation is pivotal
  - Community foundations / participation
  - Government policies formulated with active involvement of communities
- Seed and land tenure systems to be controlled by communities – secure land tenure systems is vital
- Food security needs – role of home gardens
- Women empowerment
- Recognise and reward local farmers for successfully conserving diversity
- Tap into the synergies that exist, at the Conference and beyond
- Promote systems that do not destroy the environment: Work with nature, alternatives to chemical pesticides and fertilisers?
- Use and integrate traditional (indigenous knowledge) systems - Rehabilitation of landscapes with indigenous knowledge
- Importance of planning, design and implementation
- Address issues like monocropping
- Regulation of prices to support small farmers
- Inform local communities
- Donor apathy
- Lack of productivity vs distribution of resources vs unsustainable consumption patterns.

### Capacity development

- Identify, document and disseminate locally adaptive technologies, harmonising modern and indigenous knowledge to improve livelihoods and consider the environment/ ecosystems.
- Provide incentives to successful farmers, making available funding for community exchange visit programmes amongst interested groups
- Awareness campaigns for indigenous knowledge and systems
- Enhance access to ecoagriculture information
- Document and include information on indigenous local / traditional knowledge in school curricula
- Community based research and development programmes, rather than working with individual farmers
- Capacity building and sharing for all men, women and youth
- Development of locally adaptive technology - harmonising modern and indigenous knowledge
- Community training should mostly be at field level and not theoretical – catering for those that can’t read / write

Policy
- Inclusive land tenure policy – survival practices of farmers acknowledged
- Decentralised (pro-community) funding mechanisms
- Government to recognise ecoagriculture as important element in sustainability of agricultural production systems – embed this in policy
- Government should enforce policies that address critical issues such as water catchment management
- Policies to support community based organisations – enhance capability of the community to be organised to make decisions, Community involvement in decisions affecting them (Bottom-up approach)
- Implementation of policies to protect farmer seeds
- Identify best practices and upscale them

Practices
- Balance food production and income generation with nature protection
- Invest in research and educational extension – research based on local knowledge

Empowering local communities
- Platforms for sharing (technical, local / indigenous) capacity
- Placing value on local knowledge and skills
- Creation of learning network amongst communities on sustainable ecoagriculture practices (problem and solution identification); knowledge management
- Building of network to develop critical mass – recognising the different levels of organisation within communities, building networks among them, offering different types of knowledge but united when approaching government
- Women’s empowerment to develop economic initiatives based on traditional knowledge, e.g. cultivation of traditional roots, local processing artesanry, markets
- Importance of organisational autonomy
- Direct market access is a major obstacle – documentation of local development processes, learning from mistakes and growing strong as a result.
- Importance of collaboration: Don’t go alone, learn from others to be stronger (eg cooperatives) - stronger negotiating power with organised communities and networks, federations, unions, resulting in better prices (local, regional, national, international). For example Central America ecological farmers; movement (farmer-farmer exchange for water and land conservation) - The people of the community are central, horizontal communication, voluntary farmers, farmer experimentation, promoting extension and sharing success with other farmers. Tends to community self- management of resources (assessment of strengths and strategies), services, and shift from monocropping to diversified systems.
- Integrated systems from cultivation to processing to use are based on family knowledge and labor

Challenges and key constraints
- Policy makers are not necessary knowledgeable (on all issues)
- Lack of policies which involve people at national, global, local levels / solutions designed with the input of people
- Top-down pressure
- People don’t have tenure rights
- Evolution of property rights from top down
- Lack of recognition of synergies between agricultural systems and preservation /conservation
- Policy needs are context specific
- Assumption that indigenous people do not know or can not – inferior feeling evolved
- Transboundary harmonisation is not happening
- Lack of systems for co-ordinating national level policies / decision making with local or global levels
- Inherent weakness of extension systems
- **Need for holistic policies. Ecoagriculture encompasses policies related to:** Food Sovereignty and security; Markets and trade; Property right (land and intellectual); Resource access to protected areas; Extension; Benefit sharing; Education; Transboundary; Indigenous knowledge

Possible interventions
- Facilitate communication in policy discussions, multi-stakeholder policy forums
- Information needed on communication to articulate proposals for change
- Mainstream indigenous knowledge
- Need for people- centred interventions, programs and policies
- Sensitization at all levels
- Start with ourselves (ecoagriculture innovators) then policymakers, donors etc
- Educate facilitators of process
- Take a real look at timescales of interventions, flexibility of project designs etc
- Peoples rights must be defended – build more small-scale capacity to negotiate
- Review policies: Link local level initiatives
- Integration with education systems
- Redefine extension systems: further investment, enhance their accountability to the people they serve
- Create a space for media

**Theme 4 Recommendations and Action Plans**

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**Goal 1:**
Develop stronger linkages to existing mechanisms at various levels

**Actions:**
- Scan for existing mechanisms (partners, organisations) that we can plug into, for example National CSD groups/commissions (pilot projects)
- Scan and document gaps in policy
- Identify and link to existing or developing platforms
- Build alliance with policy researchers, sympathisers, supporters and advocates

**Goal 2:**
Identify timelines and targets for planning, giving communities time and space for mobilisation

**Goal 3:**
Promote greater and active participation of local and indigenous communities in policy formulation, development and implementation

**Actions:**
- Create awareness and build upon existing awareness initiatives
- Identify potential institutions and actors locally
- Joint training activity involving media and other stakeholders
- Train and facilitate empowerment process
- Design monitoring and evaluation tools to ensure desirable actions are taking place

**Recommendation 3:**
Enhance local communities’ knowledge, skills and awareness through effective learning processes such as community-to-community learning, field training, exchange visits etc and provide resources to upscale good / adaptive practices on ecoagriculture

**Actions:**
- Identify, document and disseminate locally adaptive technologies, harmonizing modern and indigenous knowledge to improve the livelihood and conserve the environment ecosystems - generate new ecoagriculture technologies and practices incorporating local knowledge together with research based on modern methods.
- Provide incentives to successful farmers, making available funding for community exchange visit programmes
- Develop awareness campaigns for indigenous knowledge and systems
- Document and include information on indigenous local/traditional knowledge in school curricula
- Community based research and development programmes - should not work with individual farmers as has been in the case
- Capacity building / sharing for all men, women and youth
- Community training should mostly be at field level and no theoretical – catering for those that can’t read/write.
- Invest in community-to-community learning through identifying, documenting,
promoting community good ecoagriculture practices and facilitating exchange visits
- Identify priority community problems related to ecoagriculture, document possible solutions, relevant experiences and diffuse this knowledge to help solve problems.

Activities:
- Encourage Ecoagriculture Partners to develop guidelines for the implementation of ecoagriculture
- Document case studies on successful ecoagriculture practices
- Ensure participation is real and not mere consultation
- Peoples’ concern must be taken seriously in policy formulation, programme design and project implementation.
- Create a core team
- Create national focal areas
- Create regional focal areas e.g. African, Asian and American regions