



Role of Higher Education in Agriculture and Environmental Sciences in Post-Conflict Countries: A Review of the Literature

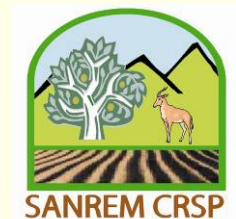
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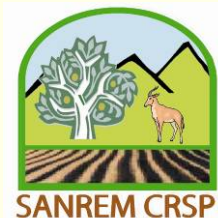
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“One of the strongest factors conditioning post-conflict reconstruction and setting it apart is the pervasive sense of urgency. Yet peace building is a long-term activity”

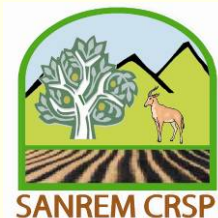
(Buckland, 2004)

- I. Changing priorities of higher education in overall development strategies
- II. Priorities of higher education in post-conflict
- III. Priority of agriculture and environmental sciences in post-conflict countries
- IV. Post-Conflict strategies for higher education in agriculture and environmental sciences
 - Zamorano Model
- V. Tentative Conclusions



I. Changing Priorities for Higher Education in Overall Development Strategy

- General Agreement: Higher Education institutions are a necessity for developing countries
 - What priority for higher education when trying to deal with multiple, serious development challenges?
 - Post-Colonial Sub-Saharan African and now
 - Problem of extremely scarce resources often limits quality of education



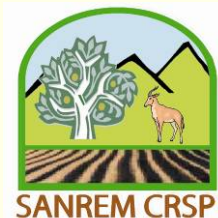
I. Changing Priorities for Higher Education in Overall Development Strategy (Cont)

- 1980s – Support declined significantly
 - Led by World Bank based on early rate of return on investment studies
 - 1986 study – returns to higher education 13% lower than primary
 - 2002 study – Primary education – ROI of 19%; higher education < 11%
 - Also – concern over decreasing enrollments in primary education – 81.7% in 1980; 75% in 2000
 - **Conclusion: Limited funds were best spent on primary education**



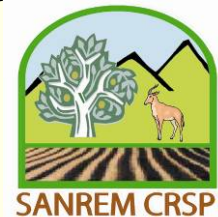
I. Changing Priorities for Higher Education in Overall Development Strategy (Cont)

- Consensus now: higher education must become a higher priority for developing countries
 - Primary important but recognition that previous ROI studies were faulty
 - Used easily quantifiable data to determine returns
 - Broader social values omitted
 - Increased entrepreneurial abilities
 - Enlightened leaders
 - Value of informed population (democracy, expanding choices)



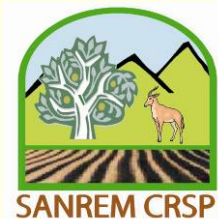
I. Changing Priorities for Higher Education in Overall Development Strategy (Cont)

- World Bank has come around to support it
 - 1994 study – higher education should not have much of a priority
 - 2000 study – higher education “cannot guarantee rapid development but sustained progress is impossible without it”
 - 2006 study – increasing higher education just 1 year
 - Increased national income 0.63% in year 1
 - 3% increase by year 5



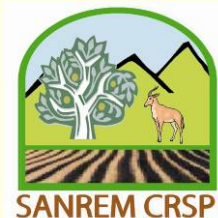
I. Changing Priorities for Higher Education in Overall Development Strategy (Cont)

- World Bank now:
 - Without more and better higher education, developing countries won't be able to compete in the global knowledgebase society
 - Developing countries must
 - Provide more students with specialized skills
 - Students also need a general education – flexibility
 - Find means to keep knowledge up-to-date
 - Increase in-country research – adapt, create new knowledge



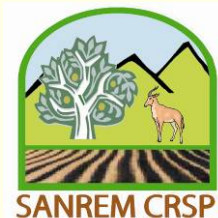
II. Priority of Higher Education in Post-Conflict Countries

- Case for higher education in **post-conflict** countries more problematic
 - Where is this priority when infrastructure is largely in ruins?
 - Stock of human capital seriously reduced
 - Challenges more daunting – Paramount challenge: Keeping the Peace
 - **USAID paper: 40% of post-conflict countries return to conflict in 10 years**



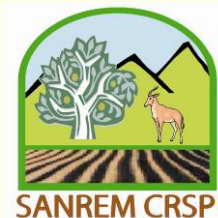
II. Priority of Higher Education in Post-Conflict Countries (Cont)

- Re-establishing of education system in some form is a central strategy of post-conflict countries
 - Recognition that it is fundamental to social and economic growth
- **But – Where to begin?**
 - Different countries, different:
 - Cultures
 - Skill levels
 - Resource endowments
 - Government policies
 - One strategy doesn't fit all



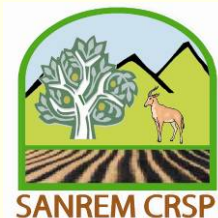
II. Priority of Higher Education in Post-Conflict Countries (Cont)

- Three main factors contribute to returning to conflict
 1. Low levels of per capita income
 - Country with income of US\$ 250 – 15% chance in 5 years
 2. Stagnation in per capita income
 - Likelihood decreases to 7.5% if income rises to \$600, 4% if \$1,250
 - If income **drops** 5%, likelihood increases by 12% the next year



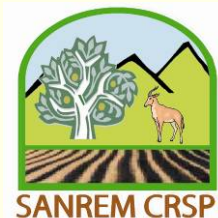
II. Priority of Higher Education in Post-Conflict Countries (Cont)

3. High dependence on primary commodity exports (e.g., oil)
- If dependence decreases 10%, likelihood of conflict decreases 10%
 - “Dutch disease” problem for long-term growth
 - **Conclusion: highest priority must be stimulating diversified economic growth if peace is to be maintained**
 - Such growth depends on an educated population



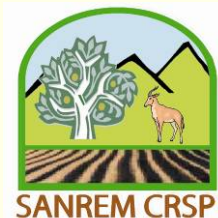
II. Priority of Higher Education in Post-Conflict Countries (Cont)

- Primary education – stagnates during conflict and is more resilient during post-conflict
- Secondary and, especially, tertiary education - collapses rapidly and re-establishes slowly
- Donors and governments seemingly for good reason put primary education as the very highest priority
 - Fast and relatively cheap
 - Millennium Challenge Goals emphasis
 - Secondary and tertiary – expensive and subject to wastage



II. Priority of Higher Education in Post-Conflict Countries (Cont)

- Big Problem: youth of military age
 - Without other opportunities, more likely to return to conflict or crime
 - Can use skills to stimulate economic growth over long term
- Consequently, clear need to focus on all education sectors – comprehensive strategy
 - Includes primary and accelerated learning programs
 - Also, secondary and tertiary



II. Priority of Higher Education in Post-Conflict Countries (Cont)

- What is the demand for post-secondary educated labor?
 - Some high-level skill training not needed in post-conflict situations
 - Scarcity of well-trained teachers
 - Need for public sector leadership and management
 - Other needs based on circumstances of the country but, in general:
 - Continued dominance of jobs in agriculture
 - Self-employment (entrepreneurs) and unpaid family labor extremely important
 - Strong science and technology foundation essential



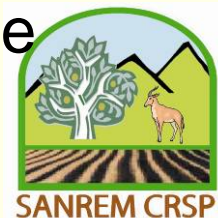
III. Priority of Agriculture and Environmental Sciences in Post-Conflict Countries

- Agricultural development and NRM
 - Essential for economic growth and development
 - ‘Urban bias’ has caused stagnation and mass poverty
 - Low productivity leads to stagnation in other sectors
- Even more important for post-conflict countries?
 - 80% of employment growth due to agriculture and its multipliers
 - Drives rural non-farm employment
 - Agricultural services: essential for perception of good government



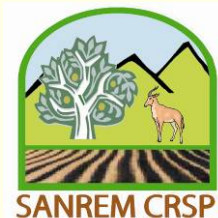
III. Priority of Agriculture and Environmental Sciences in Post-Conflict Countries (Cont)

- Agricultural development: “vital to reconstruction”
 - Both subsistence and commercial sectors
 - Gender considerations particularly important
 - Links between environment and agricultural productivity are clear
 - Maintaining, improving soil and water resources
 - Other natural resources – Forestry, Wildlife
- Claim made that post-conflict period offers extraordinary chance for fundamental change
 - “clean slate”



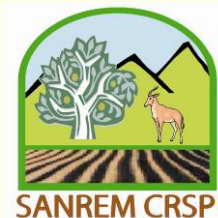
IV. Post-Conflict Strategies for Higher Education in Agriculture and Environmental Sciences

- Priority directions?
 - Literature offers little guidance
 - However, given the importance of:
 - Economic growth for maintenance of peace
 - Importance of agricultural and NRM sectors to economic growth and welfare
 - Holistic view of education sector
 - And, a “clean slate” ...



IV. Post-Conflict Strategies for Higher Education in Agriculture and Environmental Sciences (Cont)

- Strategic opportunity - examine different models and curricula within the context of the long-term role higher education is expected to play in agriculture and a “new” emerging country
 - Role of the university is evolving beyond classical roots: “Entrepreneurial University”
 - Adds “economic development” to role
 - “Land Grant” model – Teaching, Research and Extension pillars
 - “Agricultural knowledge system”



III. Priority of Agriculture and Environmental Sciences in Post-Conflict Countries (Cont)

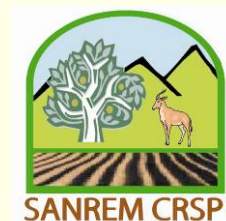
- Strategic question: ‘how can the university best catalyze or reinforce the three pillars?’
 - What are the ‘best’ models, curricula, and sequencing of programs?
 - External models seldom import well
 - High-level coordination essential role of government
 - Other pre-conditions: basic infrastructure, willingness to risk and innovate, respond to existing and emerging labor markets



III. Priority of Agriculture and Environmental Sciences in Post-Conflict Countries (Cont)



El Zamorano – Pan American Agricultural School



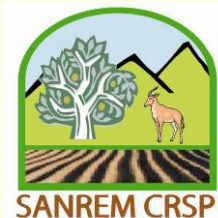
III. Priority of Agriculture and Environmental Sciences in Post-Conflict Countries: Zamorano (Cont)

- Zamorano today
- History
- First steps
 - Visionary leader (Labor Omnia Vincit)
 - Support of regional governments, donors and private sector (initial donor)
 - Strong disciplinary system in a 3-year residential program to produce “hands on – learn by doing” extension agents and modern farmers



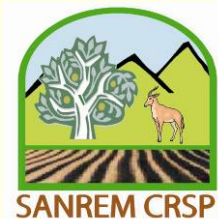
III. Priority of Agriculture and Environmental Sciences in Post-Conflict Countries: Zamorano (Cont)

- Initial curriculum
 - 3 broad departments: General Studies, Crop Science, Animal Science
 - Half day in the field, half day in the classroom
- First students – no fixed academic background: sought students with a passion for agriculture
- Production of the school fed the students and provided school income from student-run store
- Always strict discipline



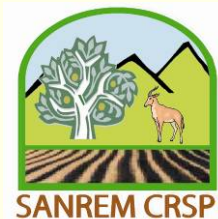
III. Priority of Agriculture and Environmental Sciences in Post-Conflict Countries: Zamorano (Cont)

- Curriculum today
 - BS in four areas
 - Agribusiness Management
 - Food Agro-Industry
 - Agricultural Science and Production
 - Socioeconomic Development and Environment
 - Joint MS program with Cornell and Purdue



III. Priority of Agriculture and Environmental Sciences in Post-Conflict Countries: Zamorano (Cont)

- Curriculum today (Cont)
 - University Enterprises – 3 units
 - Agricultural production (horticulture, forestry, grains and seeds)
 - Livestock production (dairy/beef cattle, swine, irrigation and machinery)
 - Processing plants (dairy, meat, animal feed and seed, horticulture, wood processing)
 - University store
 - Provides ‘on-the-job’ training



III. Priority of Agriculture and Environmental Sciences in Post-Conflict Countries: Zamorano (Cont)

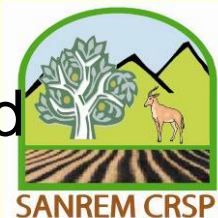
- Daily life of students
 - Classes or field work begins at 6:30
 - 18:30 – 21:30 (lights out) enforced study time
 - Weekends: clubs, athletics, campus clean-up
 - Uniforms and discipline
- Result: highly marketable graduates for agriculture, business, government, and universities
- Zamorano's road toward excellence
 - Sequence: Teaching -> extension -> research
 - Limited broad programs done very well



VI. Conclusions

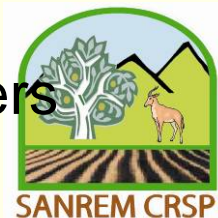
Although each country and post-conflict situation is unique, some generalities concerning strategies for rebuilding agricultural and environmental sciences are apparent

- Higher education, even in post-conflict developing countries, IS a high priority
 - Role in economic growth and maintenance of peace
- Higher education in agriculture and environmental sciences also a high priority
 - Predominant size of ag sector
 - Essential to food security
 - Links between sustainable agriculture and environment



VI. Conclusions (Cont)

- “Clean slate” resulting from conflict may offer a unique opportunity for countries and universities to plan strategically and build more efficient and effective institutions
 - Plan and implement the “entrepreneurial university” for the global knowledge-based economy
 - Create/reinforce strength within the three pillars of the agricultural knowledge system necessary for faster economic development: teaching, extension, research
 - Careful coordination and sequencing is important
 - Need to rely on willing international partners to assist



Thank you

Questions or Comments?

