Keynote Address

Management of Resources in Research

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INTRODUCTION

Science and Technology (S and T) can be a prime mover of social change and development. This is the obvious reason why the government and private sectors in many developing countries allocate greater amount of resources for research and development (R and D).

Nevertheless, the success or failure of any country's R and D investment depends greatly on how it effectively and efficiently manages its own resources. Managing research is very important in giving the country's national reseach system a sense of direction. It is also very helpful in the proper allocation and controlling of resources to spur productivity in research.

Some concepts and principles of managing research can be outlined as follows:

CONCEPTS/PRINCIPLES INVOLVED

I. Levels of Research
   - Fundamental
   - Basic
   - Strategic
   - Applied
   - Adaptive

II. Organizational Structure of Research Systems
   - Public
     - National Agricultural Research Systems (NARS)
     - Universities
     - Ministerial research units
     - Provincial/Regional units
   - Semi-Private, NGO-Related
     - International research institutions

- Government financial research association
- Cooperatives

- Private
  - Private companies
  - Consulting firms
  - Foundations

III. Research Values
- Independence
- Target group orientation
  - Beneficiaries
  - Donors
  - Adversaries
- Sensitivity
  - Economical
  - Social
  - Environmental
  - Cultural
- Quality Orientation
  - Efficiency
  - Effectivity

IV. The Dilemma (External)
- Growing
  - Complexities
  - Uncertainties
  - Risks
  - Mistrust
  - Urgency
  - Duration
- Rising
  - Costs
- Stagnant
  - Budgets
- Questionable donor interest

V. Quantitative Indicators of Productivity (Sample)
- Number of:
  - patents
  - licenses
  - products sold
  - new varieties planted
  - farmers using IPM, direct-seeding, etc.
  - new jobs created
  - publications in specific journals
  - international awards received
- Amount of certified seed sold

VI. The Situation
- What are we doing well?
- What is acceptable (under the circumstances)?
- What needs changing?

VII. Principles for Diagnosing Research Constraints
- Cost effectiveness
- Replicability
- User friendliness
- Action orientation
- Time and resource limitations

VIII. Qualitative Indicators of Productivity
- Image of the organization (external)
  - Donor
  - Customers
  - Public
- Image of the organization (internal)
  - Motivation
  - Attitude
  - Morale
  - Tone
- Quality of work
  - Accuracy
  - Completeness
  - Timeliness
  - Usefulness
  - Professionalism
  - Recognition received

IX. Management Objectives in Research
- Encourage: responsibility, openness, fairness, critique, creativity, dynamism, professionalism, collegiality
- Establish: goals, objectives, performance, standards, self control mechanisms
- Delegate: authority, responsibility, control and accountability
- Be open for: new concepts, ideas, warnings
- Encourage: innovation, risk-taking, ``crazy thinking''
- Strengthen: interdisciplinary collaboration between different age groups, disciplines, sectors
- Ensure: transparency, collegiality, fair competition, fair compensation
- Balance: personnel and operational cost
- Maintain: open dialogue

X. Control Techniques in Research
- Develop interest in success
- Stimulate user's interest in:
  - Self control
  - Monitoring and control system development
- Keep controls
  - Reasonable
  - Least time consuming
  - Systematic
  - Simple
  - Effective
- Identify peer groups for in-house review participation
- Assess
  - Long-range effect
  - Profitability
  - Side effects
  - Potential new risks, losses, gains
- Hold people accountable, irrespective of position, status, etc.
- Review control systems regularly
- Inform staff about review outputs

XI. Planning Research (Key Practices)
- Ensure participation by all involved
- Build small competitive working groups
- Examine all possible:
  - alternatives
  - risks
  - trade offs
- Ensure flexibility – openness for change
- Pursue realistic estimates
  - Time
  - Personnel
  - Cost
- Avoid overplanning
- Develop decentralized responsibility for:
  - plan adjustment
  - cost consciousness
  - accountability
- Establish a monitoring and review system
- Maintain openness for change

XII. Counter Productive Factors within R and D Organizations

- Ineffective planning, direction, and control
- Bureaucratic organizational structures
- Overstaffing
- Lack of management interest in:
  - Productivity
  - Elimination of bottlenecks
- Poor communication
- Poor performance appraisal
- Politics and gameships
- Provincialism and misemployment
- Technical obsolence and poor maintenance

XIII. Basic Characteristics of Research Programs

Public	*Private*
process oriented	product oriented
less cost control	cost controlled
timeless limiting	time limited
general budget driven	project bound
success independent	success dependent
independent	dependent
scientist oriented	company oriented
unflexible	flexible

Resources

- personal (human)
- financial
- physical

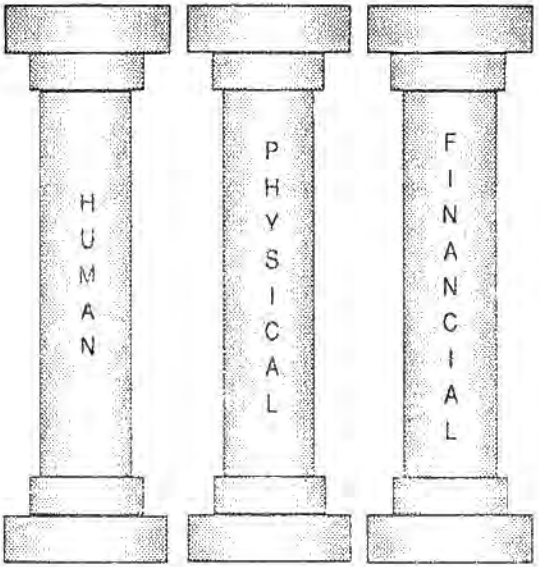

Fig. 1. The classical troika.

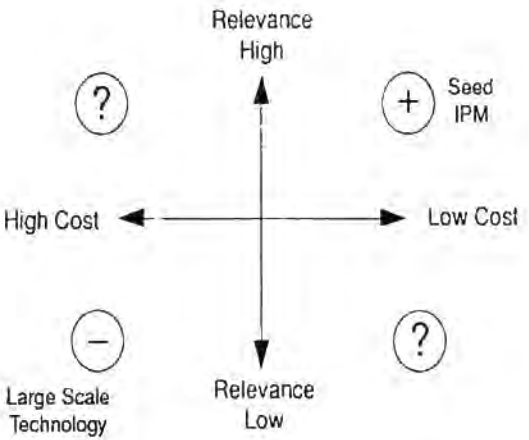

Fig. 2. Relevance-cost-diagram.

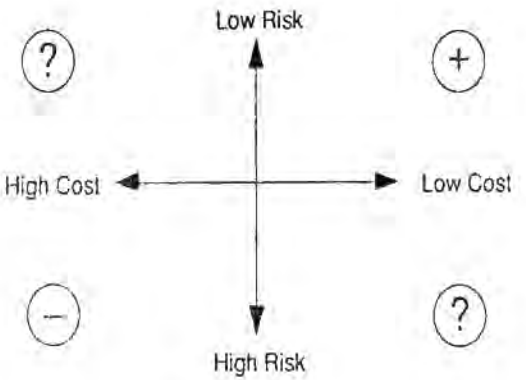

Fig. 3. Risk-cost diagram.

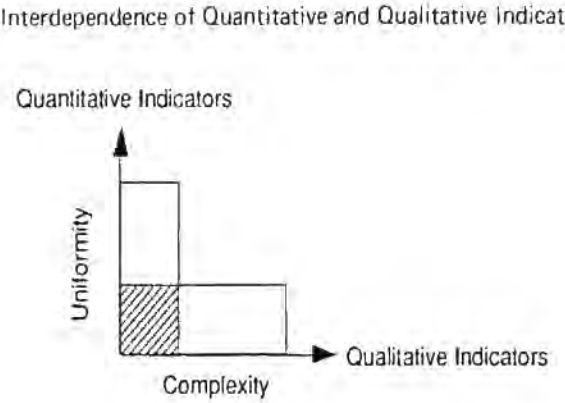

Fig. 4. Evaluation of research programs.

Fig. 5. A problem solving model.

Source: CGIAR Research Management Program 1987

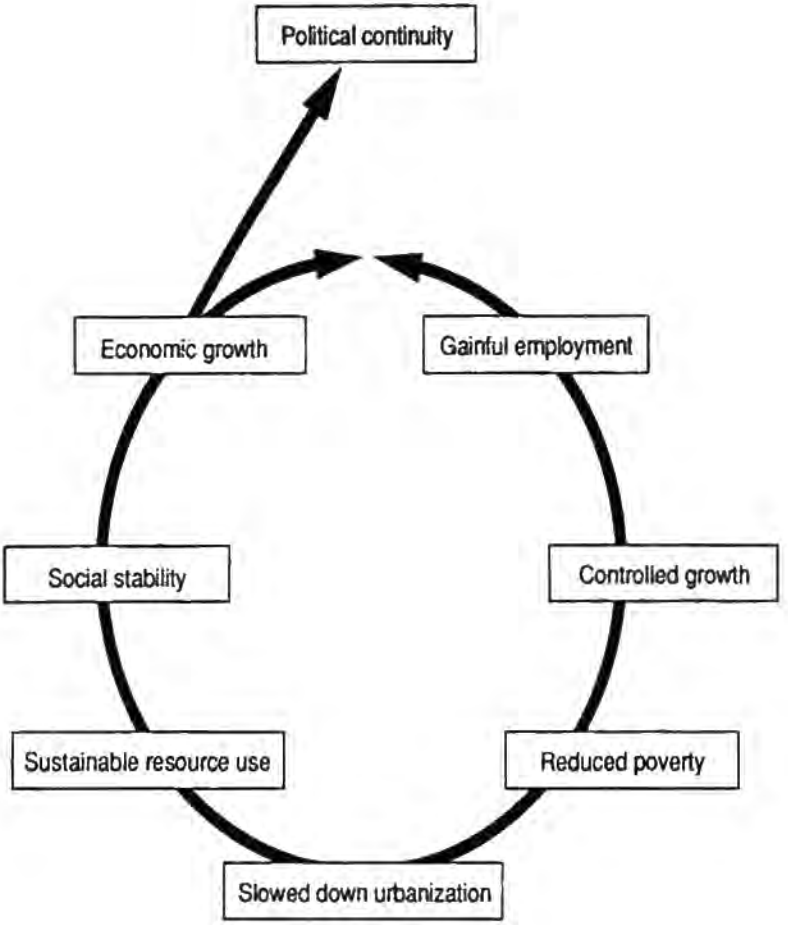

Fig. 6. Donor-oriented objectives.