

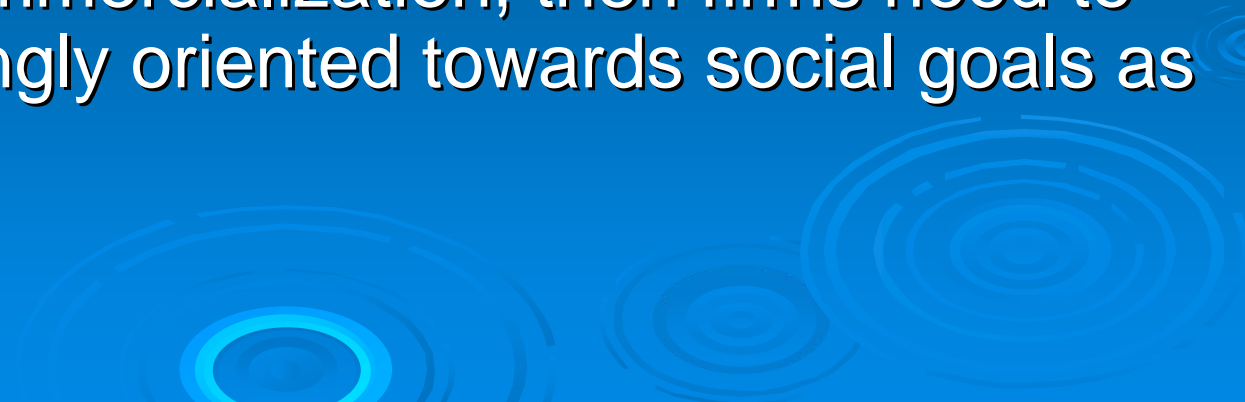
Maximizing Social Impact through Science and Technology: Carson's Quadrant

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The Challenge

- Economic growth is a good thing, but it does not automatically achieve all the goals we have for society.
 - To achieve sustainable societies, research policies need to preserve social orienting mechanisms and develop new ones.
 - If research is going to be oriented increasingly towards commercialization, then firms need to be increasingly oriented towards social goals as well.
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Outline

- Concept of basic research
 - How to analyze social impacts of research
 - U.S. biomedicine
 - Agricultural biotechnology
 - Examples of programs that incorporate social cohesion goals
 - Design principles involved
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Basic Research?

➤ Adapted from Don Stokes:

Consideration of use?

Quest
for
basic
knowledge?

	Yes	No
Yes	Carson	Franklin
No	Jones	Peterson

Quality of Life Returns from Basic Research

- What has basic research contributed to the quality of life as we define it today?
- How can we judge whether current efforts are succeeding by these criteria?
- How can we set goals and manage research to achieve the returns in quality of life that we want?
 - Cozzens, “Quality of Life Returns from Basic Research,” in Smith and Barfield 1996

Quality of Life

- Applies to the way all the world's people live, including work, family, home, and community lives.
- Objectives with importance above and beyond economic exchange value.
- Refer as much to the way we do science and use technology as to the content of science or the characteristics of technology.

Two kinds of goals

➤ What goals

- Health
- Education
- Environmental quality

➤ How goals

- Equity
- Democracy
- Community

A new kind of analysis

- Bringing people back in
 - Frees us from thinking about targeting research
 - Focuses on building capacity
- Three dimensional model
 - Knowledge
 - Practice
 - Education

Outcomes Tracing Analysis

- Track change in desired outcome area with a mix of indicators.
- Attribute portions of the change to research
 - Through expert judgment
 - Through timing of change
 - Through direct causal connections
- Examine both How and What goals

Biomedical Research: 100-year perspective

- Gap opened between scientific medicine and general medical practice
- Medical profession grew more uniform in social composition
- Disparities in distribution of medical schools
- Researchers taken away from undergraduate teaching
- Average health improved, but more as a result of public health improvements

50-year perspective

- Huge growth in biomedical research, including growth in number of people, institutions
 - But minority communities still under-represented
- Harder for doctors to keep up with new research knowledge
 - Patients relatively disempowered because of gap in knowledge
 - Gap between biomedical knowledge and high school biology knowledge growing
- Overall life expectancy still rising, but health disparities not going away

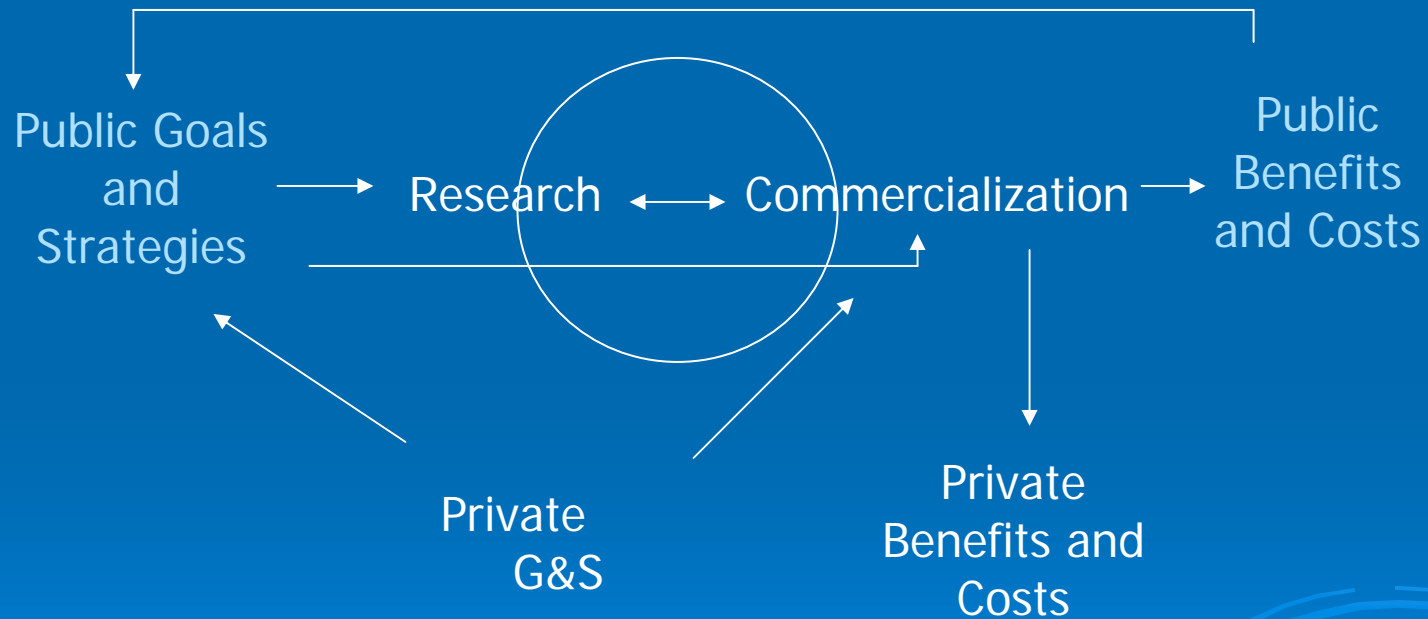
Next 20 years perspective

- Goal setting
 - Healthy People 2010
 - Links to NIH programs were not strong at that time
- Program planning and evaluation
 - Era of accountability
 - Indicators of success are in demand
- Main steps forward
 - Put researcher back in the center of evaluation concepts
 - Put the public back in evaluation and planning processes

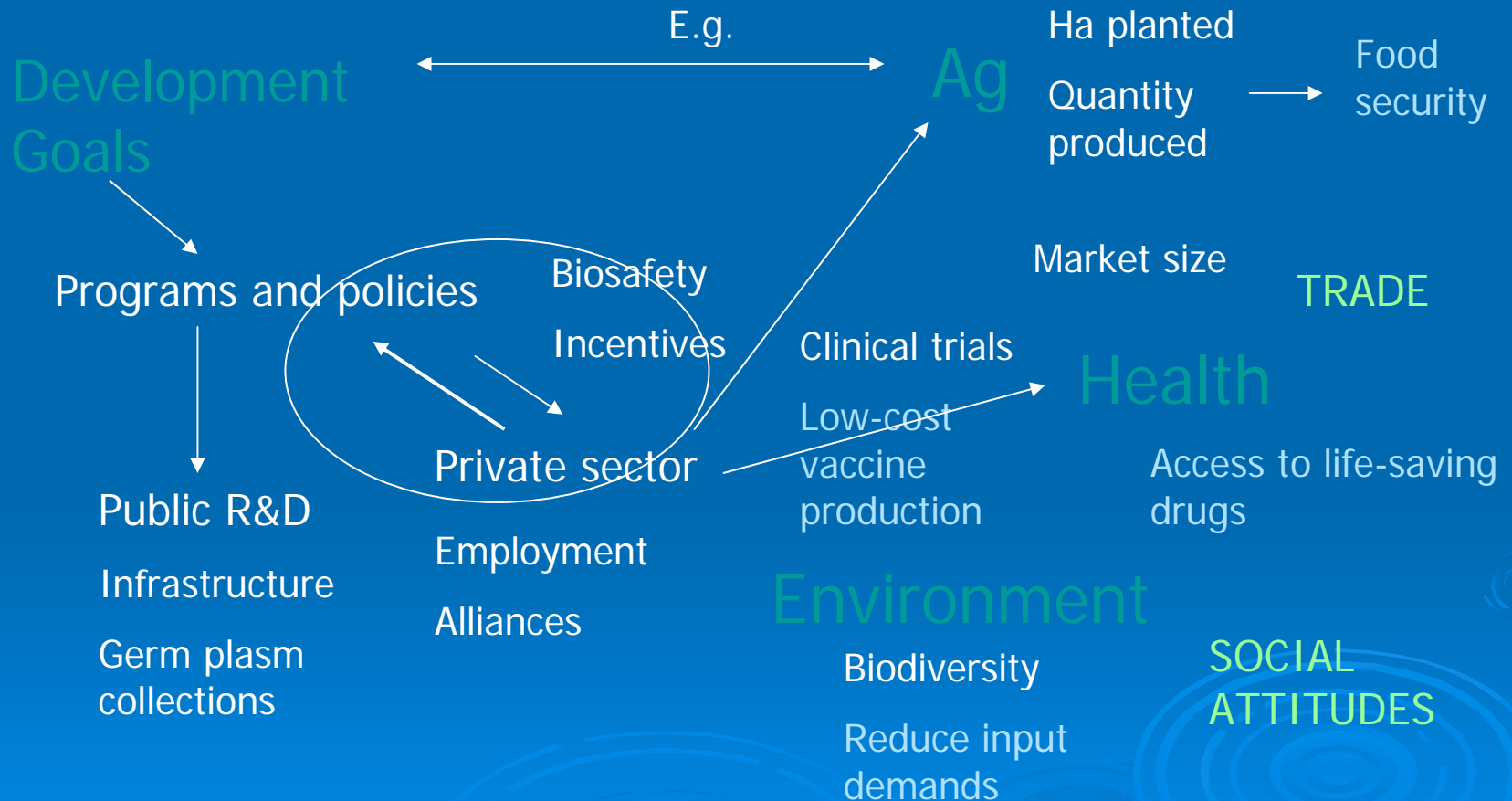
The Cozzens Thesis

- It is a myth that outcome indicators for research are difficult or rare.
- Dozens of indicators are available in relation to the public goals for research.
- What we lack is not outcome indicators, but the logic that connects research and innovation to the outcome indicators.
 - Taken from Cozzens, “Impact Indicators for the 21st Century,” presented at “Workshop on Measuring the Impacts of Science,” Montreal, June 17-18, 2004

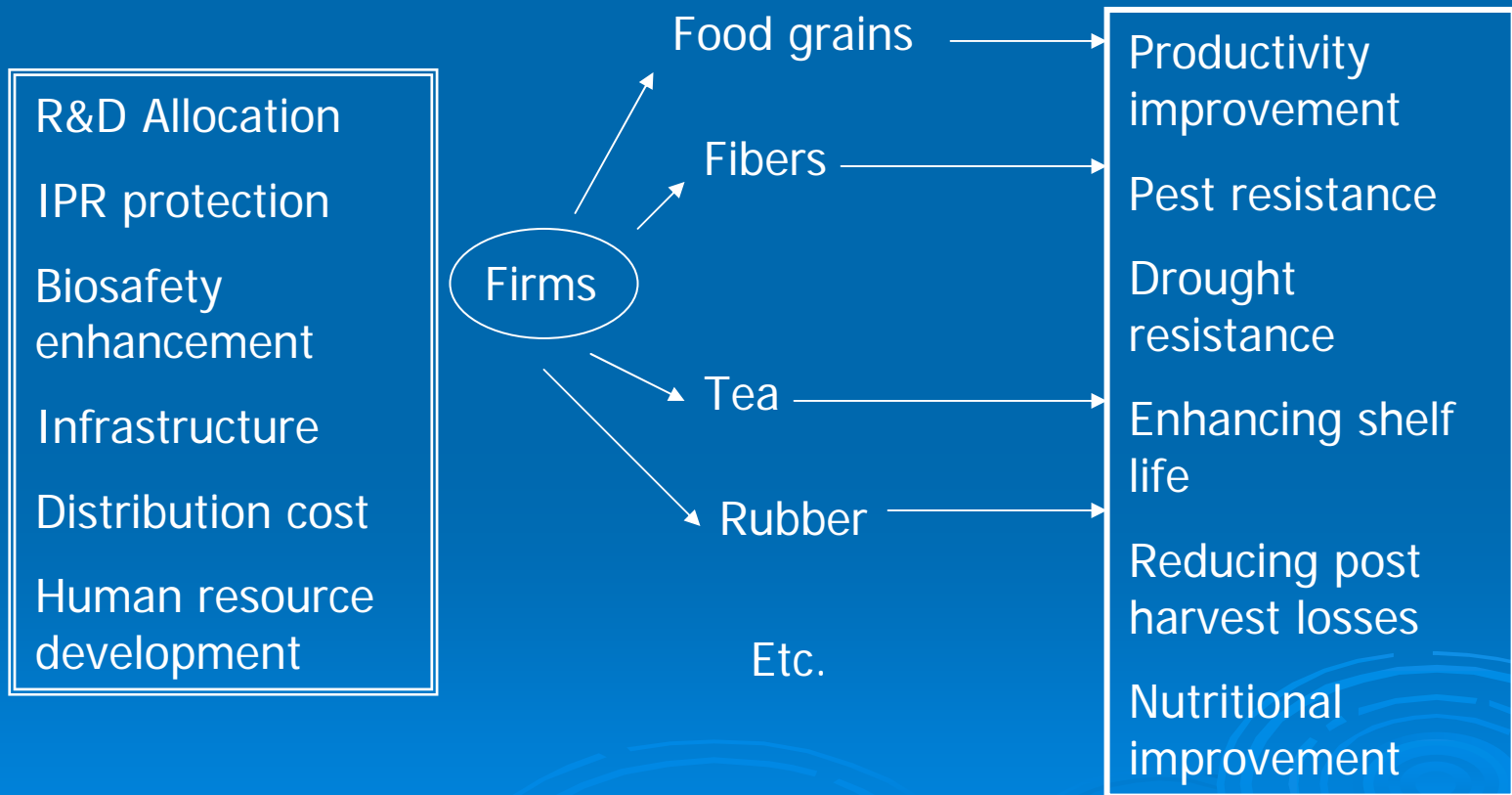
Logic Model



One Logic Model for Biotech



Crop Detail



Strategy is crucial

- Main priorities have been to reduce production costs in high productivity areas.
- In the meantime, inequality increases.
- “... the direction and intensity of public investments in biotechnology will play a critical role in how benefits reach small farmers.”


Redistributive policies

- Pro-poor
 - To reduce poverty or alleviate its conditions
- Egalitarian
 - To reduce vertical inequalities
- Fairness
 - To eliminate horizontal inequalities

Fairness interventions

- Research agenda: NIH Women's Health Initiative
 - Human resources: Women in science programs
 - Missing: innovation policies
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Fairness interventions

- Health Disparities
 - Strong human resource elements
 - Institutional capacity building
 - Linked to community-based research
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Fairness interventions

- Maori research policy (New Zealand)
 - By Maori
 - For Maori
 - With Maori
- Based on “The Treaty”

Pro-poor interventions

- Access to essential medicines
 - Patent policies, high drug prices
 - International civil society takes action
 - Undermined by further international trade agreements

Pro-poor interventions

- Advance purchase commitments
 - Donor coalition promises to buy a drug at a certain price.
 - Cost of developing it paid by company.
 - Recent example: pneumonia and meningitis vaccine, GSK + Canada, Italy, Norway, UK

Pro-poor interventions

- African agriculture
- Modern agricultural research
 - Looking for locally helpful strains
- Community-based innovation approaches (ProLinnova)



Pro-poor interventions

➤ Micro-enterprise

- “Mobile phone ladies”
- Kick start pump: “Income is Development”




Egalitarian interventions

➤ EPSCoR

- Experimental Program to Stimulate Competitiveness in Research
- Eligibility gradually expanded
- Focuses on building human resources and institutional capacity

Egalitarian interventions

- Industrial policies, e.g.
 - Korea
 - Finland
 - Ireland
 - Add good-wage jobs to an economy in large numbers based on export
 - Reduce unemployment to a minimum
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Egalitarian interventions

- Rural development strategies
 - Bring the Internet to the countryside
 - Commercialize rural innovation
 - E.g., fish-drying technique
 - Encourage rural entrepreneurship
 - E.g., latrine emptying businesses

Types of interventions

- *Participatory approaches*
- *Capacity building*
- *Public research*
- *Private sector stimulation*

Vary by:

- Breadth of participants
- Locus of problem definition
- Control over solutions

POWER is the key variable.

Design principles

- The affected group should set the priorities.
- The affected group should be central in the learning process.
- The affected group should end up more competent and confident.

A combination of What and How goals

Selected References

- S. Cozzens, "Quality of Life Returns from Basic Research" in Technology, R&D, and the Economy, edited by Bruce L. R. Smith and Claude Barfield. Washington, DC: The Brookings Institution and the American Enterprise Institute, 1996, pp. 184-205, plus 208-209.
- S. Cozzens and I. Bortagaray, "S&T Policy for Human Development – the logic of outcomes indicators," Proceedings of the Fifth International Ibero-American and Inter-American Conference on Science and Technology Indicators, edited by RICYT, 2002.
- S. Cozzens, "Impact Indicators for the 21st Century," presented at "Workshop on Measuring the Impacts of Science," Montreal, June 17-18, 2004.
- Other papers on this topic available on request.
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More information

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