



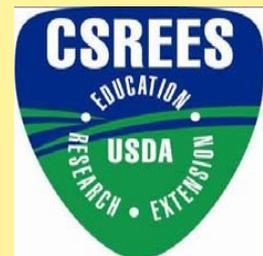
***INTEGRATING INVASIVE PLANT SPECIES DATA
IN THE MIDWEST: SOLUTIONS FOR DATA
COLLECTION AND MANAGEMENT***

**INCREASING IMPORTANCE IN FEDERAL
GRANT PROGRAMS OF DOCUMENTING
IMPACT OF RESEARCH AND EDUCATION**

MICHAEL A. BOWERS

National Program Leader

Cooperative State, Research, Education & Extension Service



CHASING KNOWLEDGE



***GOVERNMENT PERFORMANCE AND
RESULTS ACT (GPRA)***





PERFORMANCE BASED BUDGETING

FROM THE BUDGET UPDATE IN APRIL 2001.

Bringing about a better linkage between performance and budget information will be a priority of this Administration. Over the coming year, the Administration will take a number of steps to strengthen the linkage between budget decision-making and program performance.

PERFORMANCE BASED BUDGETING

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PERFORMANCE BASED BUDGETING

Strategic Objective 6.3	Protect Forests and Grasslands
Program Name	Invasive Species
Current Rating	<ul style="list-style-type: none">• Results Not Demonstrated (Adequate)
Lead Agency	<ul style="list-style-type: none">• Forest Service
Major Findings/ Recommendations	<ul style="list-style-type: none">• The Forest Service has implemented a cohesive national strategy for invasive species management that encourages coordination within the agency. Additional work is needed to ensure states and other cooperators link their proposed activities to the Forest Service's Strategic Plan or annual performance measures.
Actions Taken/Planned	<ul style="list-style-type: none">• Continuing to implement the integrated invasive species strategy based on input from the Regions and other customers; improving outreach and delivery of research and management information.

PERFORMANCE BASED BUDGETING



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DETAILED INFORMATION ON THE FOREST SERVICE: INVASIVE SPECIES PROGRAM ASSESSMENT

- [View this program's assessment summary.](#)
- [Visit ExpectMore.gov](#) to learn more about how Federal Government programs are assessed and their plans for improvement.
- [Learn more](#) about detailed assessments.

Program Code	10002022										
Program Title	Forest Service: Invasive Species Program										
Department Name	Department of Agriculture										
Agency/Bureau Name	Department of Agriculture										
Program Type(s)	Direct Federal Program Research and Development Program Competitive Grant Program										
Assessment Year	2006										
Assessment Rating	Adequate										
Assessment Section Scores	<table border="1"><thead><tr><th>Section</th><th>Score</th></tr></thead><tbody><tr><td>Program Purpose & Design</td><td>100%</td></tr><tr><td>Strategic Planning</td><td>70%</td></tr><tr><td>Program Management</td><td>73%</td></tr><tr><td>Program Results/Accountability</td><td>40%</td></tr></tbody></table>	Section	Score	Program Purpose & Design	100%	Strategic Planning	70%	Program Management	73%	Program Results/Accountability	40%
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Program Funding Level (in millions)	<table border="1"><tbody><tr><td>FY2006</td><td>\$118</td></tr><tr><td>FY2007</td><td>\$122</td></tr><tr><td>FY2008</td><td>\$109</td></tr></tbody></table>	FY2006	\$118	FY2007	\$122	FY2008	\$109				
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FY2007	\$122										
FY2008	\$109										

- [Program Improvement Plans](#)
- [Program Performance Measures](#)
- [Questions/Answers \(Detailed Assessment\)](#)

Program Improvement Plans

Year Began	Improvement Plan	Status	Comments
2006	Continue to implement the integrated invasive species strategy based on input from the Regions and other customers; improve outreach and delivery of research and management information; and work to ensure states and other cooperators link their	Action taken, but not completed	Key scientists and Forest Service staff have written twelve ?? visionary papers?? that identify major issues forest managers will be facing, in the next 20-50 years, and the best strategies for research to address them. The visionary papers cover both invasive species and assess putting the map. They are based on the

PERFORMANCE BASED BUDGETING

Program Performance Measures

Term **Type**

Long-term Outcome **Measure:** Percent of acres at risk of mortality due to insect pests and diseases, or of infestation by invasive plants on which risk is reduced.

Explanation: Target is to reduce risk on 15% of 25 million "at risk" acres over the next 5 years. "At risk" acres are those which face 20% mortality over the next 15 years due to invasive insects and diseases. Risk is reflected in an insect and disease mortality risk map using updated predictive models, soil and climate condition layers, and improved inventory composition data for forested stands (a single consistent framework with 1 plot per 6,000 acres nationwide). This is useful for broad scale assessment, allows the program to establish priorities nationally among pests and across regions, so funding is focused on pests that contribute the most to risk of mortality.

Year	Target	Actual
2005	Baseline	3.7%
2006	6.9%	7.16%
2007	8.7%	
2008	11%	
2009	13%	
2010	15%	

Annual Output **Measure:** Number of priority acres successfully treated for invasive species annually.

Explanation: Acres to treat are selected by science-based risk maps, risk assessments, forest plans, and other scientific methods. Success is measured as completing treatments in accordance with applicable scientific and regulatory standards.

Year	Target	Actual
2005	Baseline	948,932
2006	610,800	981,242
2007	645,702	
2008	655,912	

Annual Efficiency **Measure:** Cost per acre treated to reduce risk.

Explanation: This measure reflects the ratio of total program costs to the number of priority acres successfully restored or protected.

Year	Target	Actual
2007	93.88	
2008	95.20	
2005	Baseline	90.07
2006	91.79	86.12

MEASURABLE OUTCOME

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Oregon Progress Board

- Board Meetings
- Board Results
- Government Results
- Internships
- Links and Resources
- Oregon Shines
- Reports and Studies
- Slide Shows
- Sustainability

Progress Board Home

From the 2005 Benchmark Report

Achieving the Oregon Shines Vision: The 2005 Benchmark Performance Report
Report to the Oregon Legislature and the People of Oregon

Released April 2005

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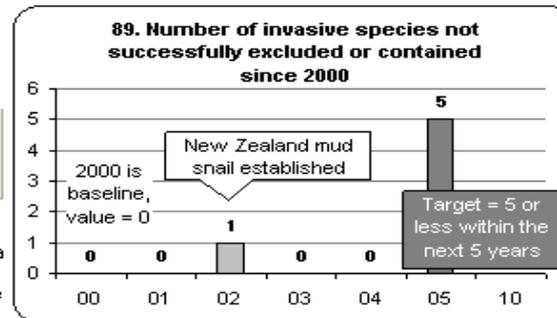
Chart and Analysis

Invasive Species: Number of most threatening invasive species not successfully excluded or contained since 2000.

IS OREGON MAKING PROGRESS?

YES

Oregon has done a good job preventing invasive species from becoming established. The target is a ceiling, aimed at limiting the rate of increase to one species per year or less. The Oregon Invasive Species Council maintains a list of the 100 most dangerous invaders threatening Oregon.



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How Oregon Compares

National comparator data are not available.

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Benchmark Data

1992	1993	1994	1995	1996	1997	1998	1999

GAO

United States General Accounting Office
Report to Executive Agency Officials

October 2002

INVASIVE SPECIES

Clearer Focus and
Greater Commitment
Needed to Effectively
Manage the Problem



GAO-03-1

... many of the actions in the plan call for federal agencies to take certain steps rather than to achieve specific results and do not have **measurable outcomes**. For example, the plan calls for the Council to work with relevant organizations to “expand opportunities to share information, technologies, and technical capacity on the control and management of invasive species with other countries.” The plan also calls for the Council to support international conferences and seminars. These types of actions are more **process-oriented than outcome-oriented**; taken individually, the actions may be useful, but judging whether they are successful and have contributed to an overall goal, will be difficult.

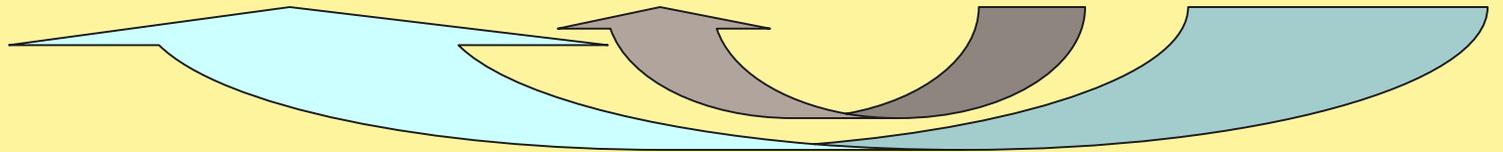


LINEAR & NON-LINEAR MODELS FOR PROGRAM PLANNING

\$ → ACTIVITIES → OUTPUTS

\$ → ACTIVITIES → OUTPUTS → OUTCOMES

\$ → ACTIVITIES → OUTPUTS → OUTCOMES





LOGIC MODEL DEFINITION

A LOGIC MODEL IS A TOOL THAT CAN BE USED TO DEFINE AND DESCRIBE PLANNING STRATEGIES

LOGIC MODELS ARE OFTEN DISPLAYED IN FLOWCHARTS OR TABLES WHICH ILLUSTRATE HOW SPECIFIED ACTIVITIES CONNECT TO THE EXPECTED OUTCOMES/IMPACTS.

SOME TERMINOLOGY

GOAL = IMPACT

IMPACT = LONG-TERM OUTCOME

OBJECTIVES = OUTCOMES

ACTIVITIES = OUTPUTS

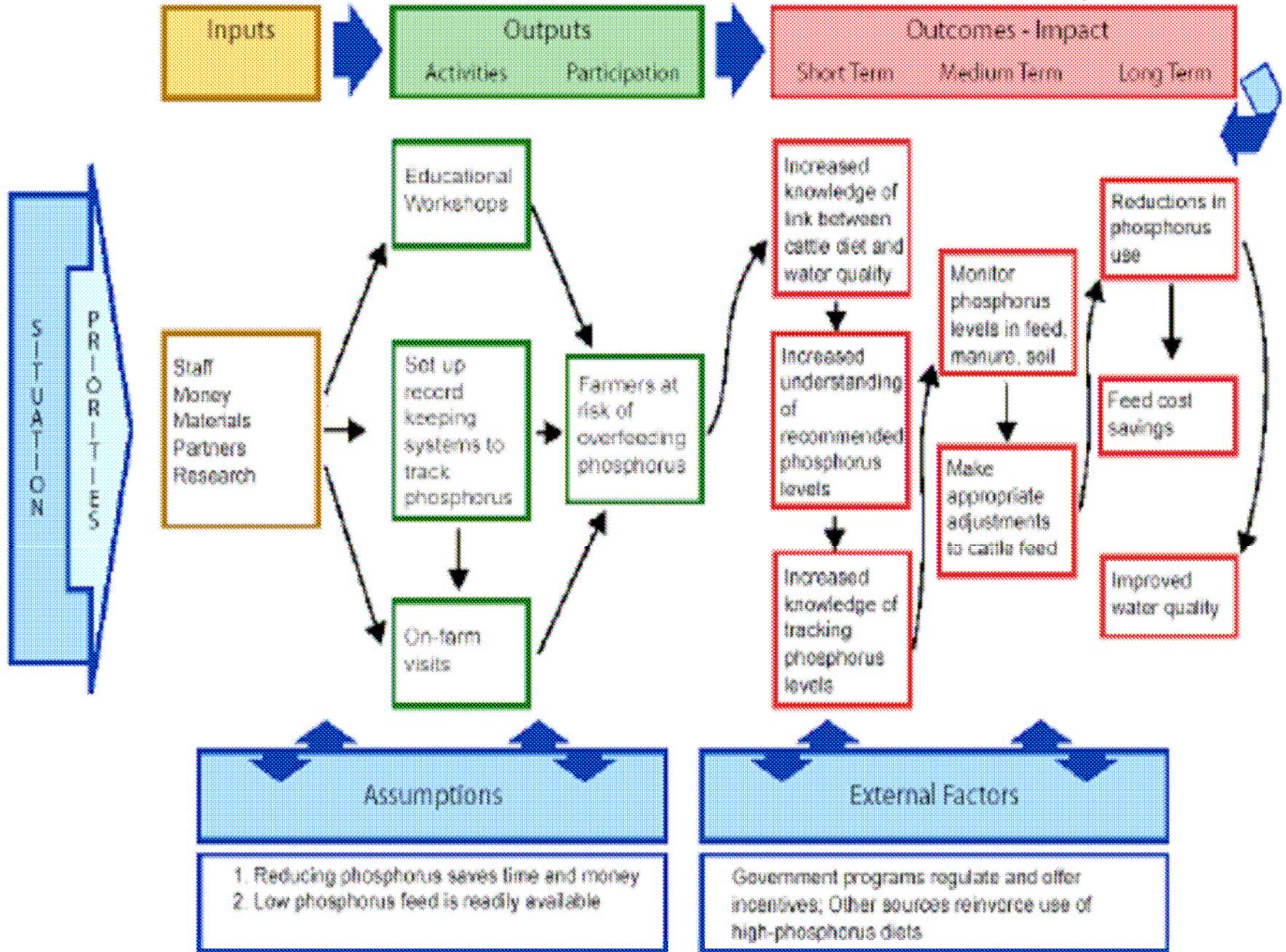
- OUTPUTS MAY SIGNIFY "TANGIBLE" ACCOMPLISHMENTS AS A RESULT OF ACTIVITIES**

LOGIC MODEL BENEFITS

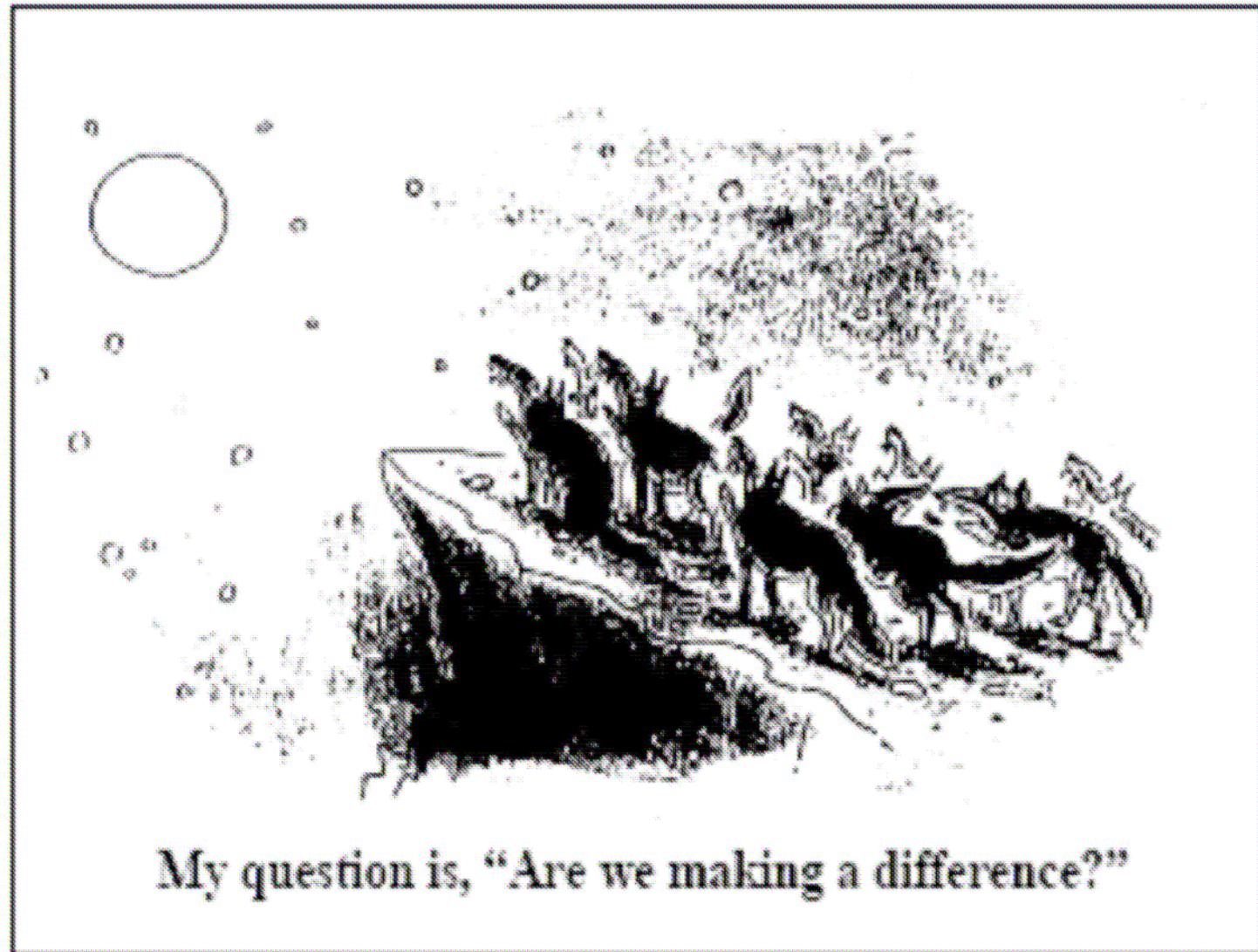


- SERVES AS A BLUEPRINT (OR ROADMAP) FOR SOLVING PROBLEMS**
- HIGHLIGHTS THE ANTICIPATED OUTCOMES OF IMPLEMENTING STRATEGY AND ALLOWS PLANNERS TO DETERMINE THE FEASIBILITY OF IMPLEMENTING THE STRATEGY**
- ILLUSTRATES THE RELATIONS BETWEEN THE PROBLEM, INFLUENCING FACTORS, RELATED STRATEGIES AND ACTIVITIES AND THE EXPECTED OUTCOME**
- ALLOWS PLANNERS TO MAKE INFORMED DECISIONS ON HOW TO IMPROVE THEIR ACTIVITIES**

LOGIC MODEL: WATER QUALITY



OUTPUTS VERSUS OUTCOMES



Long-term Integrated Project-Agroecosystems

Primary Productivity



Energy use



Soil Carbon



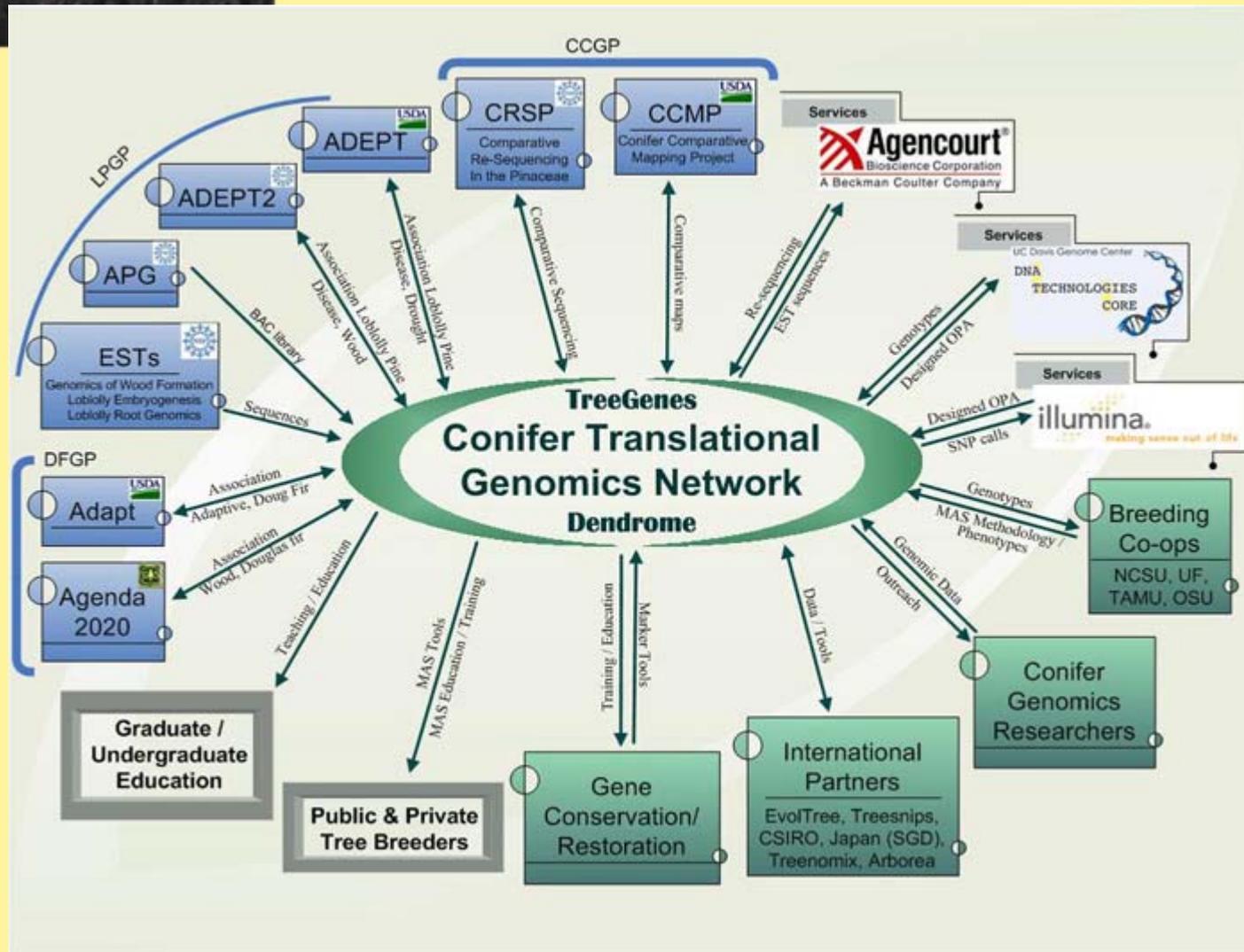
Water



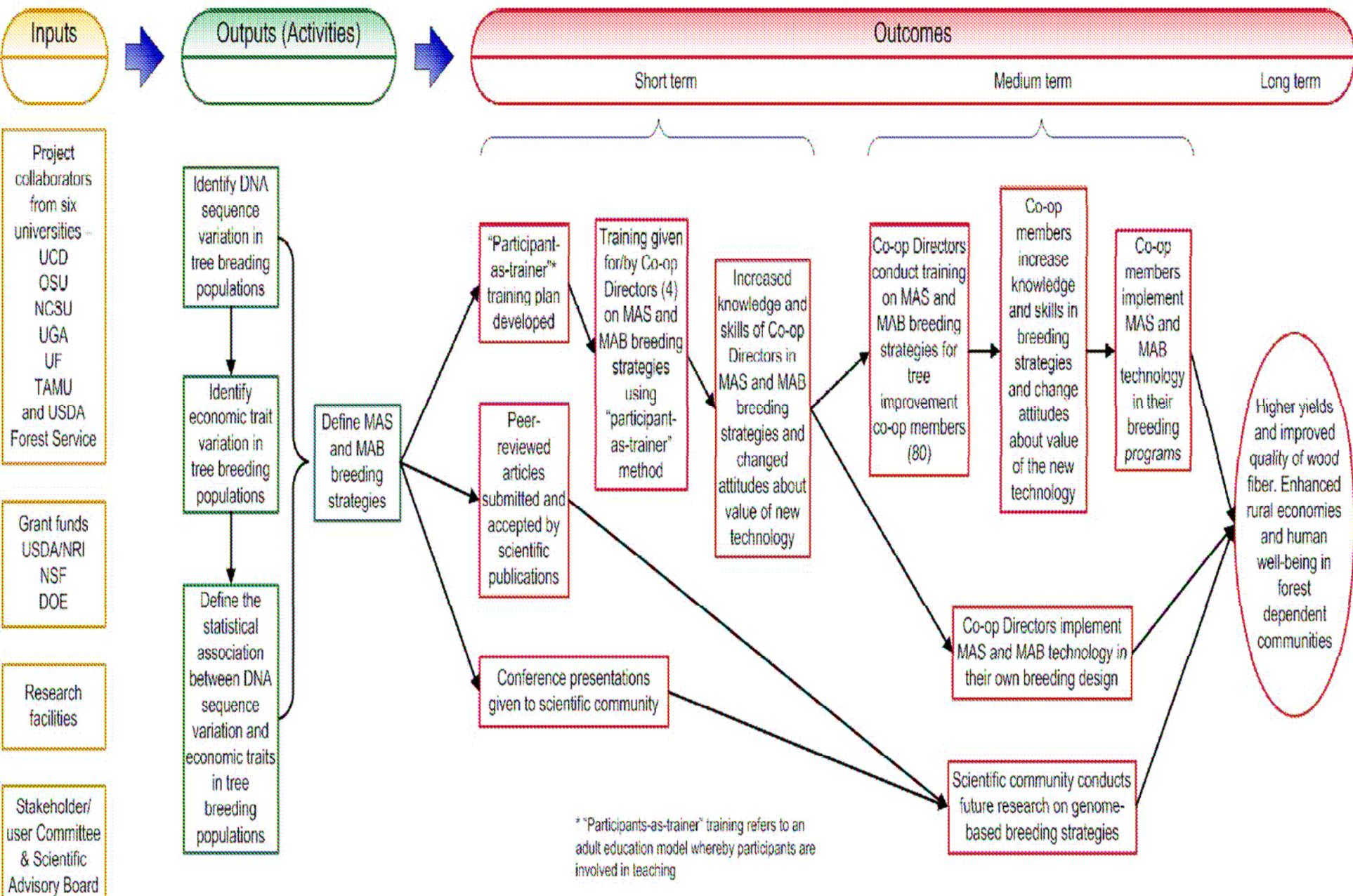
Invasive Species

Goal 1. Agricultural resilience; Goal 2. Ecosystem services; Goal 3. Community vitality;
Goal 4. Biodiversity; Goal 5. Climate change;
Goal 6: Social and Behavioral Constraints to change

Situation	Inputs	Outcomes				
		Activities	Outputs	Knowledge	Actions	Conditions
<p>Production agriculture has markedly depleted soil carbon stocks. Soil carbon is a key in determining soil, crop and environment quality, food security, prevention of erosion and desertification and is an important factor in managing the effects of drought and climate variability. Improved management practices could enhance people's food- and livelihood security while simultaneously mitigating global warming.</p> <p>Accurate scientific knowledge about long-term soil carbon dynamics is necessary for sound soil management and carbon sequestration programs, but it is not sufficient.</p> <p>A solid understanding of perceptions, knowledge, values, and processes that determine land use and management decisions are needed to develop viable and sustainable solutions to food and environmental challenges.</p>	<p>\$\$\$</p> <p>Students to be trained</p> <p>understanding of soil-carbon, soil-atmosphere dynamics</p> <p>understanding of farm economics</p> <p>Knowledge about different sets of management practices</p> <p>Multiple farms with detailed land use history</p> <p>Attitudes, values, social networks of landowners</p> <p>Students to be trained</p>	<p>Assess local practices and integrate into scientific knowledge</p> <p>Develop new practices for farming that focuses on soil carbon management</p> <p>Conduct comprehensive carbon audits for farm operations</p> <p>Develop models and standards for assessing soil-carbon credits</p> <p>Develop knowledge of how behavior, decisions, and choices affect soil carbon management</p> <p>Study the importance of changing demographics and social networks on soil carbon management</p> <p>Transdisciplinary education</p>	<p>Optimized practices for carbon management</p> <p>Number of farmers trained to use best management practices</p> <p># of models and standards allowing carbon credits from agricultural systems to be traded on carbon marketplace</p> <p>Information about possible incentives (legislation, administration, financing) that could be used to improve soil carbon management</p> <p>Number of students trained in interdisciplinary systems approach to farming</p> <p>Number of interdisciplinary studies completed.</p>	<p>New production practices that increase soil carbon while reducing green house gas emissions</p> <p>New science that informs policy addressing regional and national issues</p> <p>Creation of a new sociology of farming that links soil carbon management to wise land stewardship</p> <p>New Interdisciplinary approaches to problem solving</p>	<p>Farmers adopt practices that are economically, behaviorally, and ecologically sustainable relative to soil carbon</p> <p>Focus of farming broadens to include carbon sequestration</p> <p>Adoption of soil management practices that promote a closer working relationship within local communities</p> <p>Formation of teams to study the ecological, economic, and cultural processes impacting production systems</p>	<p>Managing for soil carbon improves land stewardship and enhances water and air quality, and minimizes weeds and pests</p> <p>Increased yield with limited adverse effects on soil.</p> <p>Reduction of greenhouse gas</p> <p>Increased Economic value of farmland</p> <p>Increased soil carbon</p> <p>Establish viable farming communities</p> <p>New research agenda for understanding and managing soil carbon becomes part of land grant system</p>

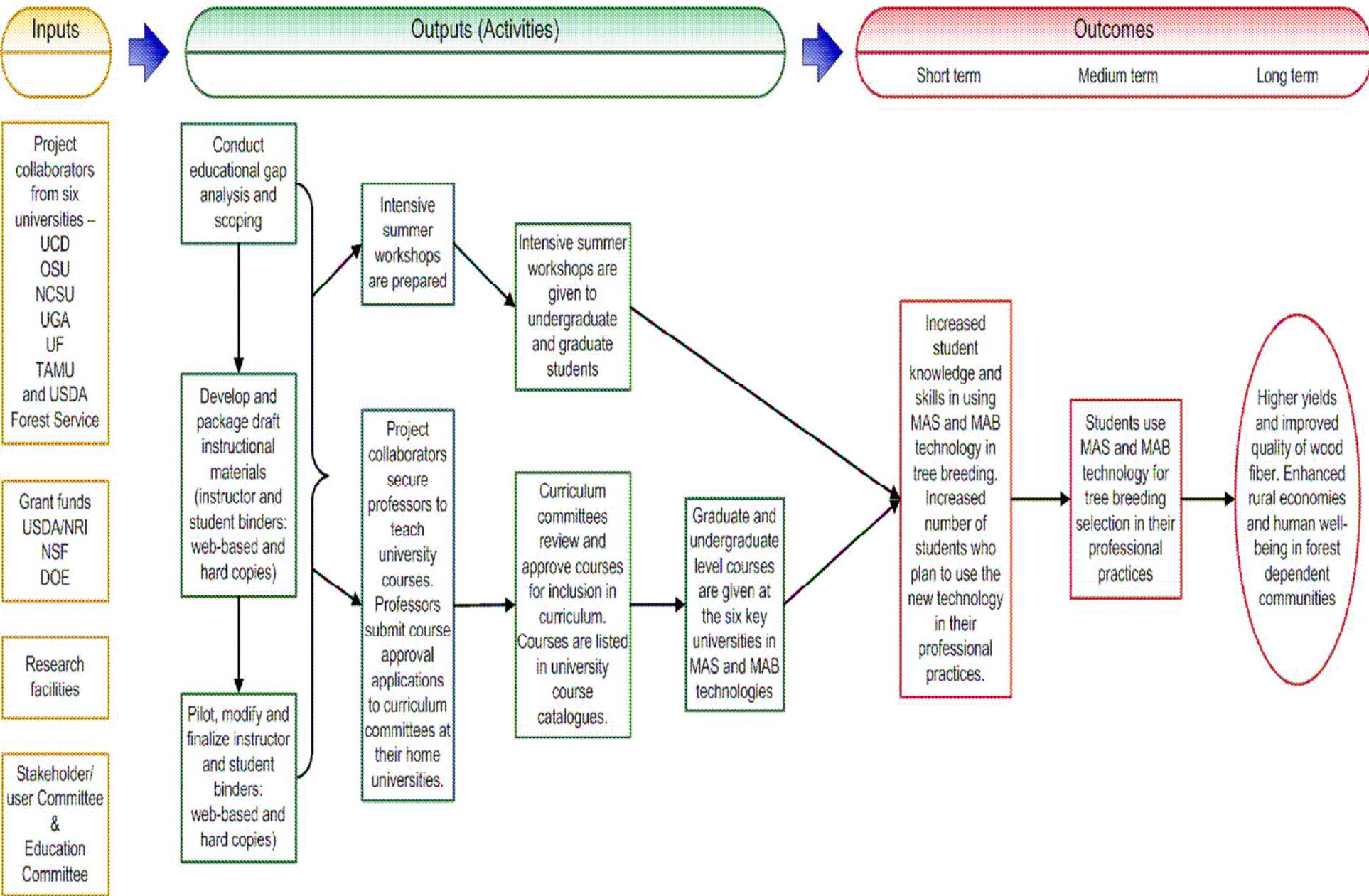


CTGN Research – Logic Model

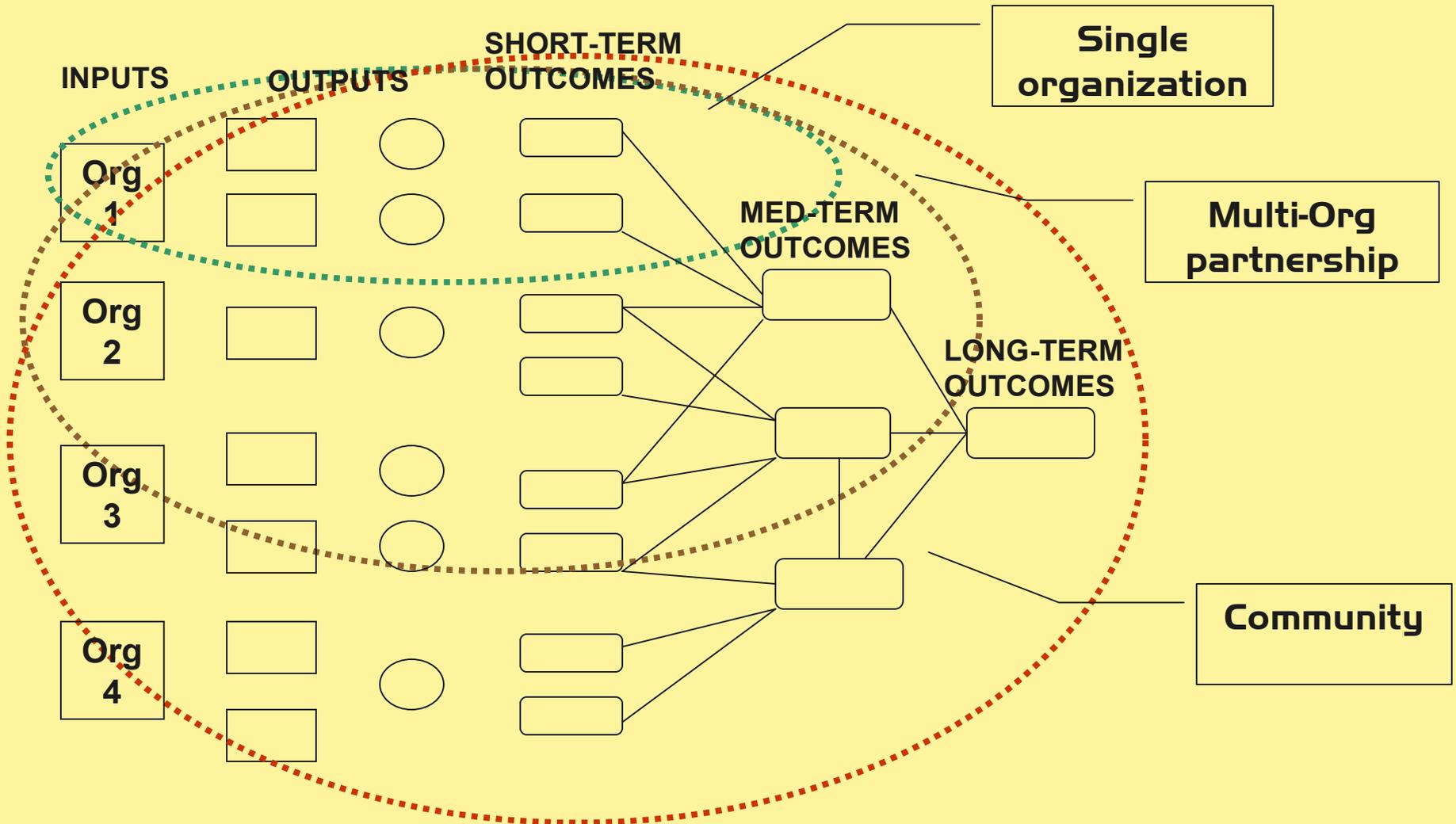


CTGN Graduate and Undergraduate Education – Logic Model

For intensive summer workshops and university courses



PROGRAMS AS A "SYSTEM"



DRAFT LOGIC MODEL FOR INVASIVE PLANT SPECIES DATA IN THE MIDWEST

Situation	Inputs	Activities	Outputs	Outcomes		
				Knowledge	Actions	Conditions
<p>Invasive alien species (IAS) are one of the main causes of biodiversity loss and threats to agriculture. Successful early detection, prevention, and management of IAS and their impacts require cooperation and sharing of information, technology, and tools. IAS information is often nonexistent, unavailable, inaccessible, or incompatible with other data sets.</p> <p>With direct access to knowledge bases throughout the region, those addressing the invasive species challenge can obtain data on which species are invasive or potentially invasive in particular habitats, and use this information in their planning efforts. Agencies responsible for pest control could quickly determine if a species of interest has been invasive elsewhere. Land managers could learn about control methods that have been useful in other areas, reducing the need to commit resources for experimentation and increasing the speed at which control efforts can begin.</p>	<p>\$\$\$</p> <p>Students to be trained</p> <p>NISS resources</p> <p>Existing data</p> <p>Existing expertise</p> <p>Past research</p> <p>Weed management programs</p>	<p>review of existing data on IAS</p> <p>review of monitoring protocols at the local, regional, and national levels</p> <p>Review of commonly used PDA field tools</p> <p>Review of citizen science input and training</p> <p>Review of resources to facilitate data sharing, including online data management</p>	<p>identification of regional data gaps</p> <p>recommendations about standardized monitoring protocols are made</p> <p>Identification of PDA field tools and their strengths/limitations</p> <p>BMP Protocols for managing volunteers established</p> <p>Identification of resources to facilitate data sharing, including online data management</p>	<p>More comprehensive data on IAS</p> <p>A better understanding of abundance/distribution patterns of IAS</p> <p>Improved real-time understanding of IAS distributions</p> <p>More informed public about IAS issues</p> <p>A better understanding of which IAS distributions and management methods</p>	<p>Improved forecasting of IAS invasions</p> <p>IAS Programs adopt standardized monitoring protocols</p> <p>PDA data becomes part of a IAS data base</p> <p>BMP Protocols for managing volunteers adopted</p> <p>More coordination in the management of IAS</p>	<p>Number of new invasions is reduced</p> <p>More effective IAS management (prioritization, cost, etc)</p> <p>Real-time data allows more effective IAS control and management</p> <p>(1) An army of volunteers improve control and management efforts</p> <p>(2) A more informed public about IAS</p> <p>Data sharing improves local efforts to control/manage IAS</p>



HOW WOULD YOU KNOW IF YOU HAD ACHIEVED YOUR GOAL ?

MEASUREABLE OUTCOMES

OUTCOMES/ CONDITIONS

Number of new
invasions is reduced
More effective IAS
management
(prioritization, cost,
etc)

Real-time data allows
more effective IAS
control and
management

(1) An army of
volunteers improve
control and
management efforts
(2) A more informed
public about IAS

Data sharing
improves local
efforts to
control/manage IAS

MEASUREABLE OUTCOMES

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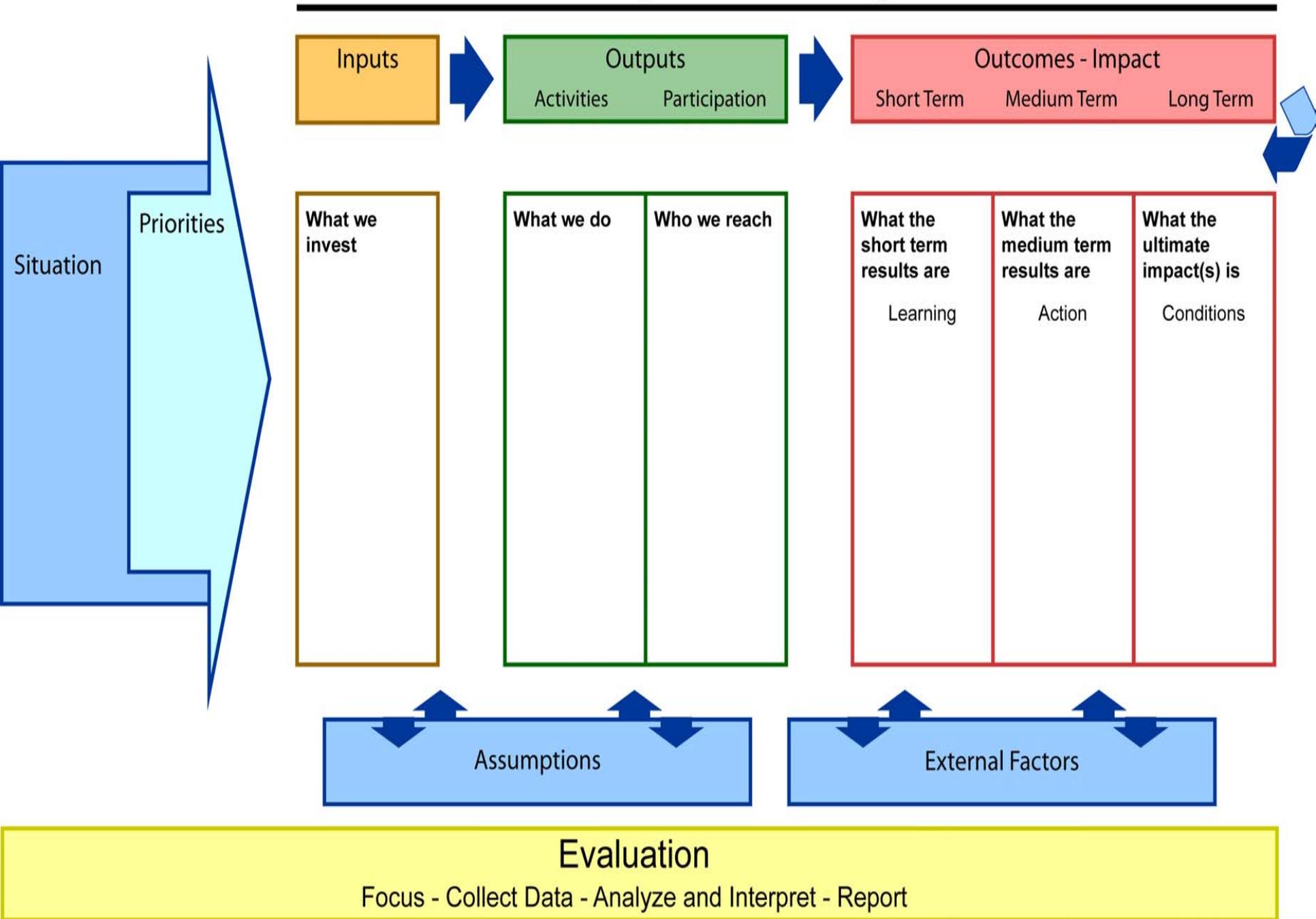
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***INTEGRATING INVASIVE PLANT SPECIES
DATA IN THE MIDWEST: SOLUTIONS FOR
DATA COLLECTION AND MANAGEMENT***

- Focus planning on both outcomes and outputs
- Identify **measurable outcomes** where you can

Program Action - Logic Model





REE-NET

A NEW TYPE OF PROPOSAL FOR THE NRI

RESEARCH, EDUCATION AND EXTENSION NETWORKING GRANTS (REE-NET)

Coordinated networking activities around a common research, educational and/or extension theme/question across disciplinary, organizational, institutional, and/or geographical boundaries. Goals include:

- *moving a field forward or to create new research directions or opportunities through increased coordination, networking and synthesis; foster communication and promote collaboration among REE faculty with common interests across disciplinary, geographical, and organizational boundaries*
- *establishing networks and collaborations between faculty at Tier 1 and 2 institutions, and faculty at small, mid-size, and minority serving institutions (1890s, HSI, 1994)*
- *minimizing isolation and maximize cooperation so as to eliminate unnecessary duplication of efforts*
- *the development of new tools and methods and generate community resources such as databases.*

Note: REE-net proposals must address one of the program's priorities for either research and/or integrated activities and are expected to be no more than \$50,000/yr for three or four years.

QUESTIONS - ???????

COOPERATIVE STATE RESEARCH,
EDUCATION & EXTENSION SERVICE



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