Structural Analysis Worksheets and Templates for 7 Element Structure Framework

Tool 1: Master 7ES System Mapping Worksheet

System Identification

Field	Input
System Name	[Enter system being analyzed]
System Type	Biological / Technological / Economic / Social / Ecological
Analysis Date	[Current date]
Analyst	[Your name]
System Scale	Micro / Meso / Macro / Global
Analysis Depth Level	1 (Surface) / 2 (Standard) / 3 (Deep Recursive)

Core 7ES Element Analysis

Element 1: INPUT

Input Category	Description	Source	Type	Quality/Sustainability	Quantity/Rate
Material Resources	[What physical materials enter]	[Where from]	Renewable/Finite	[Assessment]	[Amount/time]
Energy	[What energy forms enter]	[Energy source]	Renewable/Finite	[Assessment]	[Amount/time]
Information/Data	[What information enters]	[Information source]	[Type]	[Accuracy/completeness]	[Volume/frequency]
Human Resources	[What human inputs]	[Source]	[Skill type]	[Availability/quality]	[Hours/people]
Financial	[What financial inputs]	[Funding source]	[Capital type]	[Sustainability]	[Amount/period]
Regulatory/Legal	[What rules/constraints enter]	[Authority source]	[Requirement type]	[Clarity/reasonableness]	[Frequency]

Input Vulnerability Assessment:

- **Single Point of Failure Risk:** [High/Medium/Low]
- **Sustainability Concerns:** [List main concerns]
- **Dependency Issues:** [Critical dependencies identified]

Element 2: OUTPUT

Output Category	Description	Destination	Beneficiary	Value Type	Quantity/Rate
Primary Products/Services	[Main system outputs]	[Where they go]	[Who benefits]	[Economic/social/environmental]	[Amount/time]
By-products	[Secondary outputs]	[Where they go]	[Who benefits]	[Value/waste classification]	[Amount/time]
Waste/Emissions	[Undesired outputs]	[Disposal/environment]	[Who bears cost]	[Environmental impact]	[Amount/time]
Information/Data	[Information outputs]	[Recipients]	[Who uses]	[Value/privacy impact]	[Volume/frequency]
Social Impacts	[Social effects]	[Communities affected]	[Impact on whom]	[Positive/negative]	[Scope/scale]
Economic Effects	[Economic impacts]	[Economic actors]	[Winners/losers]	[Distributive effects]	[Financial scale]

Output Assessment:

- **Value Distribution:** [How fairly distributed]
- **Negative Externalities:** [Uncompensated harms]
- **Regenerative Potential:** [Outputs that become inputs elsewhere]

Element 3: PROCESSING

Process Category	Description	Method/Technology	Efficiency	Bottlenecks	Control Points
Core Transformation	[Main value-adding processes]	[How it's done]	[Performance level]	[Limiting factors]	[Critical control points]
Quality Control	[How quality is ensured]	[QC methods]	[Effectiveness]	[Failure points]	[Monitoring systems]
Decision-Making	[How decisions are made]	[Process/hierarchy]	[Speed/quality]	[Delays/errors]	[Decision authorities]
Communication	[How information flows]	[Communication channels]	[Clarity/speed]	[Breakdowns]	[Information gatekeepers]
Resource Allocation	[How resources are distributed]	[Allocation method]	[Optimization level]	[Inefficiencies]	[Allocation authorities]
Innovation/Learning	[How system improves]	[Learning mechanisms]	[Adaptation rate]	[Learning barriers]	[Innovation drivers]

Processing Efficiency Analysis:

- **Overall System Efficiency:** [%]
- **Main Bottlenecks:** [List primary constraints]
- **Improvement Opportunities:** [Highest-impact changes]

Element 4: CONTROLS

Control Type	Description	Authority Source	Effectiveness	Flexibility	Enforcement Method
Formal Rules/Policies	[Written rules]	[Rule-making authority]	[Compliance level]	[Adaptation ability]	[How enforced]
Informal Norms	[Unwritten expectations]	[Cultural/social origin]	[Influence level]	[Evolution capacity]	[Social pressure]
Technical Constraints	[System-imposed limits]	[Technical/physical]	[Absolute/flexible]	[Modification ease]	[Automatic/manual]
Economic Incentives	[Financial motivators]	[Economic structure]	[Behavior influence]	[Adjustment capacity]	[Market/administrative]
Legal/Regulatory	[External legal controls]	[Government/authority]	[Compliance level]	[Change difficulty]	[Legal enforcement]
Cultural/Ethical	[Value-based controls]	[Cultural/religious]	[Adherence level]	[Evolution rate]	[Social sanctioning]

Control System Assessment:

- **Control Balance:** [Over/under/appropriately controlled]
- **Rigidity Issues:** [Areas too rigid for adaptation]
- **Control Gaps:** [Areas lacking sufficient guidance]

Element 5: FEEDBACK

Feedback Type	Description	Source	Frequency	Quality	Response Mechanism
Performance Metrics	[What gets measured]	[Measurement system]	[How often]	[Accuracy/relevance]	[How used for improvement]
Stakeholder Input	[External feedback]	[Stakeholder groups]	[Regular/sporadic]	[Representativeness]	[Integration process]
Market Signals	[Economic feedback]	[Market mechanisms]	[Real-time/delayed]	[Signal clarity]	[Business response]
Environmental Indicators	[Ecological feedback]	[Natural systems]	[Various]	[Early/late warning]	[Environmental response]
Internal Monitoring	[Self-assessment]	[Internal systems]	[Continuous/periodic]	[Objectivity level]	[Corrective actions]
Crisis Signals	[Emergency feedback]	[Various sources]	[Irregular]	[Urgency/clarity]	[Crisis response protocols]

Feedback Loop Analysis:

- **Feedback Completeness:** [Comprehensive/gaps exist]
- **Response Speed:** [Fast/slow to act on feedback]
- **Learning Integration:** [How well feedback drives improvement]

Element 6: INTERFACE

Interface Type	Description	Interaction Pattern	Quality	Bottlenecks	Design Issues
User/Customer Interface	[How users interact]	[Interaction design]	[User experience]	[Access barriers]	[Usability problems]
Supplier Interface	[How suppliers connect]	[Supply chain design]	[Relationship quality]	[Supply constraints]	[Integration issues]
Regulatory Interface	[How regulations apply]	[Compliance interaction]	[Regulatory clarity]	[Bureaucratic delays]	[Regulatory burden]
Community Interface	[Community interaction]	[Engagement methods]	[Relationship health]	[Communication barriers]	[Trust/transparency issues]
Technology Interface	[System interconnections]	[Technical integration]	[Interoperability]	[Technical barriers]	[Compatibility problems]
Environmental Interface	[Natural system boundary]	[Environmental interaction]	[Ecological health]	[Resource limits]	[Sustainability concerns]

Interface Assessment:

- **Interface Efficiency:** [Smooth/friction in interactions]
- **Accessibility:** [Inclusive/exclusive access]
- **Integration Quality:** [Well/poorly integrated with other systems]

Element 7: ENVIRONMENT

Environmental Factor	Description	Influence Level	Stability	Change Rate	System Response
Economic Environment	[Economic conditions]	[High/medium/low impact]	[Stable/volatile]	[Rapid/slow change]	[Adaptation capability]
Political Environment	[Political context]	[High/medium/low impact]	[Stable/volatile]	[Rapid/slow change]	[Political adaptation]
Social Environment	[Social context]	[High/medium/low impact]	[Stable/volatile]	[Rapid/slow change]	[Social responsiveness]
Technological Environment	[Tech landscape]	[High/medium/low impact]	[Stable/volatile]	[Rapid/slow change]	[Tech adaptation]
Ecological Environment	[Natural systems]	[High/medium/low impact]	[Stable/volatile]	[Rapid/slow change]	[Environmental response]
Cultural Environment	[Cultural context]	[High/medium/low impact]	[Stable/volatile]	[Rapid/slow change]	[Cultural adaptation]

Environmental Analysis:

- **Environmental Sensitivity:** [How vulnerable to environmental changes]
- **Adaptation Capacity:** [Ability to respond to environmental shifts]
- **Environmental Impact:** [How system affects its environment]

Tool 2: 7ES Structural Vulnerability Assessment

Vulnerability Scoring Matrix

Element	Vulnerability Level (1-5)	Risk Factors	Impact if Failed	Mitigation Priority
Input	[1=Robust, 5=Critical risk]	[List main risks]	[Cascade effects]	[High/Med/Low]
Output	[1=Robust, 5=Critical risk]	[List main risks]	[Cascade effects]	[High/Med/Low]
Processing	[1=Robust, 5=Critical risk]	[List main risks]	[Cascade effects]	[High/Med/Low]
Controls	[1=Robust, 5=Critical risk]	[List main risks]	[Cascade effects]	[High/Med/Low]
Feedback	[1=Robust, 5=Critical risk]	[List main risks]	[Cascade effects]	[High/Med/Low]
Interface	[1=Robust, 5=Critical risk]	[List main risks]	[Cascade effects]	[High/Med/Low]
Environment	[1=Robust, 5=Critical risk]	[List main risks]	[Cascade effects]	[High/Med/Low]

System Resilience Analysis

Overall Vulnerability Score: [Average of element scores] **Critical Vulnerabilities (Score 4-5):** [List elements requiring immediate attention]
Cascade Risk Assessment: [How failures might propagate]

Single Point of Failure Analysis

Critical Node	Element Category	Failure Probability	System Impact	Backup Systems	Mitigation Strategy
[Node 1]	[7ES element]	[High/Med/Low]	[Catastrophic/Severe/Moderate]	[Yes/No + details]	[Specific actions]
[Node 2]	[7ES element]	[High/Med/Low]	[Catastrophic/Severe/Moderate]	[Yes/No + details]	[Specific actions]

Tool 3: 7ES Recursive Analysis Worksheet

Subsystem Selection

Parent System: [Name of main system being analyzed] **Selected Element for Deep Dive:** [Choose weakest/most critical element] **Justification for Selection:** [Why this element needs recursive analysis]

Recursive 7ES Analysis

Treat the selected element as a complete system and map its 7ES structure:

Sub-Element	Description	Quality Assessment	Relationship to Parent
Input (to selected element)	[What enters this subsystem]	[Strengths/weaknesses]	[How it affects parent system]
Output (from selected element)	[What this subsystem produces]	[Strengths/weaknesses]	[How it affects parent system]
Processing (within selected element)	[How this subsystem transforms inputs]	[Strengths/weaknesses]	[How it affects parent system]
Controls (governing selected element)	[What controls this subsystem]	[Strengths/weaknesses]	[How it affects parent system]
Feedback (within selected element)	[How this subsystem learns/adapts]	[Strengths/weaknesses]	[How it affects parent system]
Interface (of selected element)	[How this subsystem connects]	[Strengths/weaknesses]	[How it affects parent system]
Environment (of selected element)	[Context for this subsystem]	[Strengths/weaknesses]	[How it affects parent system]

Multi-Level Integration Analysis

Level 1 (Parent System) Insights: [Key findings from main analysis]

Level 2 (Subsystem) Insights: [Key findings from recursive analysis]

Cross-Level Interactions: [How levels influence each other]

Leverage Points Identified: [Where small changes could have big impacts]

Intervention Recommendations

Level	Element	Problem Identified	Proposed Intervention	Expected Impact
Parent	[Element]	[Issue]	[Solution]	[Predicted outcome]
Sub	[Element]	[Issue]	[Solution]	[Predicted outcome]

Tool 4: 7ES System Design Template

System Design Specifications

Design Objective: [What the system should accomplish]

Success Criteria: [How success will be measured]

Constraints: [Limitations and requirements]

Stakeholder Requirements: [What different stakeholders need]

Element Design Framework

Input Design

Required Input	Source Strategy	Quality Assurance	Sustainability Plan	Backup Sources
[Input type 1]	[How to source]	[Quality control]	[Long-term viability]	[Alternative sources]
[Input type 2]	[How to source]	[Quality control]	[Long-term viability]	[Alternative sources]

Output Design

Desired Output	Target Recipients	Value Proposition	Quality Standards	Distribution Method
[Output type 1]	[Who receives]	[Value created]	[Quality measures]	[How delivered]
[Output type 2]	[Who receives]	[Value created]	[Quality measures]	[How delivered]

Processing Design

Process Function	Method/Technology	Efficiency Target	Quality Control	Improvement Mechanism
[Function 1]	[How to do it]	[Performance goal]	[Quality assurance]	[How to optimize]
[Function 2]	[How to do it]	[Performance goal]	[Quality assurance]	[How to optimize]

Controls Design

Control Type	Implementation	Authority	Flexibility	Enforcement
[Control 1]	[How implemented]	[Who controls]	[Adaptation ability]	[How enforced]
[Control 2]	[How implemented]	[Who controls]	[Adaptation ability]	[How enforced]

Feedback Design

Feedback Type	Data Source	Collection Method	Analysis Process	Response Protocol
[Feedback 1]	[Where from]	[How collected]	[How analyzed]	[How acted upon]
[Feedback 2]	[Where from]	[How collected]	[How analyzed]	[How acted upon]

Interface Design

Interface Type	User/System	Interaction Design	Accessibility	Integration Requirements
[Interface 1]	[Who/what uses]	[How interaction works]	[Inclusive design]	[System compatibility]
[Interface 2]	[Who/what uses]	[How interaction works]	[Inclusive design]	[System compatibility]

Environment Integration

Environmental Factor	Monitoring Plan	Adaptation Strategy	Impact Mitigation	Enhancement Opportunity
[Factor 1]	[How monitored]	[How to adapt]	[Harm reduction]	[Positive impact potential]
[Factor 2]	[How monitored]	[How to adapt]	[Harm reduction]	[Positive impact potential]

Tool 5: 7ES Comparative Analysis Framework

Multi-System Comparison Matrix

Systems Being Compared: [List 2-5 systems] **Comparison Purpose:** [Why comparing these systems] **Analysis Date:** [When comparison conducted]

Element	System A	System B	System C	Best Practice	Key Differences
Input	[Description]	[Description]	[Description]	[Which is best]	[Main variations]
Output	[Description]	[Description]	[Description]	[Which is best]	[Main variations]
Processing	[Description]	[Description]	[Description]	[Which is best]	[Main variations]
Controls	[Description]	[Description]	[Description]	[Which is best]	[Main variations]
Feedback	[Description]	[Description]	[Description]	[Which is best]	[Main variations]
Interface	[Description]	[Description]	[Description]	[Which is best]	[Main variations]
Environment	[Description]	[Description]	[Description]	[Which is best]	[Main variations]

Performance Comparison

Performance Metric	System A	System B	System C	Ranking	Success Factors
Efficiency	[Score/rating]	[Score/rating]	[Score/rating]	[1st, 2nd, 3rd]	[Why top performer succeeds]
Resilience	[Score/rating]	[Score/rating]	[Score/rating]	[1st, 2nd, 3rd]	[Why top performer succeeds]
Sustainability	[Score/rating]	[Score/rating]	[Score/rating]	[1st, 2nd, 3rd]	[Why top performer succeeds]
Adaptability	[Score/rating]	[Score/rating]	[Score/rating]	[1st, 2nd, 3rd]	[Why top performer succeeds]
Stakeholder Value	[Score/rating]	[Score/rating]	[Score/rating]	[1st, 2nd, 3rd]	[Why top performer succeeds]

Learning and Improvement Recommendations

System	Main Weaknesses	Improvement Opportunities	Best Practices to Adopt	Implementation Priority
System A	[Weaknesses]	[Opportunities]	[Practices from others]	[High/Med/Low]
System B	[Weaknesses]	[Opportunities]	[Practices from others]	[High/Med/Low]
System C	[Weaknesses]	[Opportunities]	[Practices from others]	[High/Med/Low]

Integration Guidelines

Using 7ES Tools in Sequence

1. **Start with Master System Mapping** - Complete structural analysis
2. **Conduct Vulnerability Assessment** - Identify weak points and risks
3. **Apply Recursive Analysis** - Deep dive into problem areas
4. **Use Design Template** - For new systems or major improvements
5. **Employ Comparative Analysis** - Learn from other systems

Quality Assurance Checklist

- All seven elements thoroughly analyzed
- Quantitative data included where possible
- Stakeholder perspectives considered
- Environmental impacts assessed
- Improvement recommendations provided
- Implementation priorities established

Documentation Standards

- Save completed worksheets with date and analyst identification
- Include data sources and methodology notes
- Attach supporting evidence and calculations
- Note assumptions and limitations
- Provide executive summary of key findings

These 7ES tools provide the structural foundation needed to conduct rigorous systems analysis that reveals leverage points for transformation toward regenerative and distributive systems aligned with Regenerative Economics principles.