

Developing Laws to
Facilitate a Circular
Economy
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I. An Overall Framework

A. What New Laws to Facilitate a Circular Economy Can Achieve

1. *Not* commercial law of supply chain transactions – *But can be* facilitation of new forms of and more extensive collaboration so that sustainable closed loop value chains can be formed
2. *Not* formation of public-private partnerships for infrastructure development– *But can involve* embedding the explicit contemplation of overall closed loop public-private value chain collaboration in public procurement and regulatory direction of performance of services
3. *Not* mandated private internalization of “external costs” resulting from the from public oversight of linear private linear commercial activities– *But can be* introduction of closed loop sustainability valuation metrics which are a basis for financeable private commercial undertakings,

In short, discrete legal measures facilitating collaborations among parties which comprise closed loop systems which create value and contribute to long term societal sustainability

Framework (contd.)

B. Legal Change as Active Facilitator of Circular Economy Approaches

1. Modifying transactional practices to better maximize use of available **resources** – closed loop supply chain collaboration possibilities on an economically and environmentally sound basis
2. Optimizing resource use compatible with government socioeconomic and **sustainability objectives** –e.g. maximized materials use, minimized required end use waste disposal, stimulation of technological initiatives, decarbonization of societal activities
3. Introducing closed loop collaborative arrangements in a manner consistent with locally applicable **political principles**, e.g. public governance institutional arrangements , methodologies for infrastructure acquisition and supervision, roles of private and public sectors;

Framework (contd.)

C. Legal Change as Vehicle for Incorporation of Disruptive Technologies into a Circular Economy:

1. New Industrial Revolution" Trends – make possible new organizational/thought patterns
 - a. Internet of Things;
 - b. Cloud Computing;
 - c. Big Data Analytics;
 - d. Artificial Intelligence;
 - e. 3D Printing
 - f. Possible Interfaces with Circular:
2. Communications ,information and analysis and control networks technologies:
 - a. Enlarge scope and network of services integration
 - b. Greater types of materials and process integration possibilities
 - c. Responsiveness to accelerating social trends - urbanization; increased distributed service delivery capability; globalization

II Key Legal Areas for Change.

A. Property Rights

B. Governance

C. Finance

A. Property Rights

1. **Ownership** of and extent of risk/ liability responsibility for assets and services in (present and on-going) supply or usage chain: associated implications for meaning of “ legal title.”
2. Allocation of rights to supply chain participants for “**value added**” creation through services, materials, products. Taxation and applicable regulation of supply chain products and participants
3. Responsibility for “**internalization of costs**”; degree of correlation to ancillary benefits
4. Ramifications for multi-party “**shared value** ” of idle, partial, underutilized or unexplored capacity at different times, locations, operating circumstances. Backstop for ‘trust” in different types of circular arrangements as basis for build-up of critical mass of consumers
5. Structuring of “**joint ventures**” – characteristics of liability, cash flow distribution in partnerships and other legal models for multiparty collaboration in integrated circular business collaboration.

A. Property Rights (contd.)

6. **Intellectual Property** – Embedded rights and responsibilities
 - a. Rights to technological innovations (network improvement; system controls management) when incorporated in larger Circular Economy production and distribution system
 - b. Rights to system and product redesign effected to facilitate potential for Circular Economy and closed loops
 - c. Rights to “waste” utilization and disposal technologies – e.g. rights to value created by alternative applications e.g. conversion into higher value products

B. Governance

B. Governance

1. Extent of government intervention in transactional and manufacturing activities;
 - a. Definition of proper or mandatory permissible behavior, e.g. industrial system restructuring
 - b. Enforced collaboration; direct or restrictions with respect to enterprises
 - c. Use of public facilities;
 - d. treatment of wholly or partially owned state enterprises
2. Direct legal responsibilities of government - property, regulatory systems, natural systems resiliency protection
 - a. Responsibilities enforced for compliance mechanism for environmental safety, treatment and disposal; potentially harmful activities attendant on Circular Economy adaptation
 - b. Allocations of responsibilities for consequences of social or economic disruptions arising from supply chain modification or new integration requirements, e.g. stranded costs redundant labor use; urban management
 - c. New roles for public providers of risk management to deal with (i) disruptions; (ii) protection of financing and system liquidity; (iii) facilitation of third party financing

Governance (contd.)

- d. Creation, administration, definition of and proactive management of environmental and other market-based mechanisms for regulation-extent of government participation in process: e.g. extensions or modifications of trading mechanisms: and similar rights to encourage circular economy, e.g. in U,S, setting, .RECs; RINs; RFS

3. **Performance and Measurement Indices: a Key to Evaluation of the Circular Economy Operations and Finance**

- a. Substantive emissions laws - emission standards evolution
- b. Traditional and life cycle costing
- c. Emergence of new voluntary standards and potential for future creation of legal constructs
- d. Introduction of, new environmental efficiency / effectiveness standards: linkage use of "blockchain" currency
- e. "Scorecards" –meeting specifically designed Circular Economy Standards to receive government procurement benefits
- f. Possible other metrics applications for oversight, improvement protection against disruption of supply chain, cf. demand response

B. Governance (contd.)

4. Public – Private Partnerships

- a. Use of **government properties** – innovations in types of infrastructure and support services
- b. Use of **government authority** to facilitate realization of Circular Economy benefits: eminent domain; procurement; zoning; use of public spaces; government disposal systems; permitting; management of credit trading mechanisms
- c. Creation of **corresponding private responsibilities** in P3s- costs, risk assumption; payment government charges
- d. **International** collaborative and multi-lateral transactions

Governance (contd.)

5. Globalization Through Enhanced Corporate Collaboration

- a. Emerging new interactive technology clusters – localized as well as international possibilities
- b. Cross-border allocation of risk by private parties
- c. More efficient relationships among raw materials use; Need for governing bodies to coordinate oversight over supply over phases of materials integrated processes
- d. Relationship to emerging global environmental protocol standards and infrastructures; Specialized proposed globalized systems: Carbon trading raw Materials Recycling
- e. Management of other “Common Resources” (even if private title) to facilitate circular economy

C. Finance and Risk Management

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1. Trends: Opportunities and Challenges

- a. Need to provide capital to support greater financial creation opportunities: integration of many types, e.g. supply chain; service supplier – customer; multiple uses of wastes and byproducts of processes; excess products made possible by savings
- b. Pressure on use of conventional financial tools to achieve these results
 - i. Purchase & sale;
 - ii. Hedging;
 - iii. Direct assumption of risk by financial providers;
 - iv. Assessment of net credit strength of integrated phases &/or components of process
 - v. Uses of government incentive and credit as component of overall private finance plan

Finance and Risk Management (contd.)

- c. Difficulty of credit evaluation of individual players in circular economy
 - i. Actual strength of cash flow
 - ii. Value of secured interests in transactions
 - iii. Capitalization or deferral of changes; deferral of costs; liabilities – not reflected
- d. Rights and extent of tax benefit capture from circular economy cash flows
 - i. Asset vs. service
 - ii. Completion vs. progress payment
 - iii. Entitlement vs. incorporation of benefits
- e. Treatment of contingent and firm rights to environmental credits; charges from process operation or net environmental effects of benefits
- f. Overall treatment on balance sheet and income statement of individual participants in Circular Economy may be more complicated

Finance and Risk Management (contd.)

2. Specific impacts of trends on finance and risk management
 - a. Difficulty in assessing present and future financial statements for asset backed lending
 - b. Leasing – issues with respect to treatment of improvements contractual rights, security interest rights in intangibles:
 - c. Risk areas – greater risk undisclosed liabilities from other places on supply chain or as consequence of its operation; (risks to balance sheet; cash flow)
 - d. “Sharing” Joint Ventures; Joint Ownership – Property Rights; governance; indemnification
 - e. New types of decision making for risk management – possible new insurance products
3. Finance Areas Potentially Affected; Feasibility of Transactions
 - a. Leasing; asset and cash flow backed Financing; residential property rights
 - b. Asset-backed lending
 - c. Pooling of multiple credits – including those of participants in supply/service chain and those providing risk management

Finance and Risk Management (contd.)

- d. Credit enhancement; guarantees; L/C; third party credit sources
- e. Status of contracts in bankruptcy
- f. Project financing based on performance of contracts and security interests

4. Illustrative Circular Economy Energy Cases:

- a. Renewables
 - i. Input finance pricing experiences – variability of pricing
 - ii. Barriers to use in fully integrated engineering of system delivery
 - iii. Output utilization experience – use of tolling; securitization of user charges
 - iv. Barriers to grid purchases – existing central institutions: timing; level of charges for infrastructure use
- b. Energy Efficiency Technologies – Use of Storage and microgrids
 - i. Capture and pricing of value, e.g. demand response
 - ii. Record for contribution to overall system operations
 - iii. Stranded costs – whose responsibility
 - iv. Conversely, consequences of stranded capacity – costs and potential benefits

Finance and Risk Management (contd.)

- c. Notable examples of effective use of networking technology – storage; microgrids; community energy systems
 - i. Proactive use of otherwise “idle capacity”
 - ii. Community Energy/Regional Systems
 - iii. Military Bases
 - iv. Key Question – Price valuation of avoided expenditures e.g. demand responses savings
- d. Key roles of regulation in affecting financeability
 - i. Delineation of Property rights
 - ii. Multi-state jurisdiction
 - iii. Interests of current institutional providers

IV. Conclusions

A. Sources of Legal Change are Created/Required by Circular Economy Developments

1. In an environment of scarcer resources, more powerful tools for materials and space management, operations integration & risk management, there is increasing need and pressure in the governance and the legal system to be supportive of the Circular Economy, whether in a free, regulated or mixed economy.
2. The ramifications of this impetus a Circular Economy will affect many aspects of the traditional elements (a) the supply chain; (b) use and conservation of materials and idle capacity; (c) transfers of liability for risks created; (d) contrast security arrangements to support financing
3. They also offer the opportunity to affect governance and finance by introducing the possibility for new measures of decolorization performance measurement and out put management and value creation, and regulation through procurement and publicly-owned enterprises.

Conclusion (contd.)

B. Considerations in Developing Law for a Circular Economy

1. New legal concepts must be developed to respond to effective Circular Economy implementation, where technology has made integrated systems management closed loop materials conversion and recycling of materials used in renewable energy and other resources and products both profitable and a key to sustainability
 - a. Definition of property rights and accounting for them: recycling of renewable energy and other resources and products
 - b. Forms of business organization (possible roles for non-profit entities)
 - c. Treatment of capital investment, return and risk allocation, financial metrics
 - d. Roles of government: public - private partnerships and common resource sharing
2. These developments will vary depending on the political and economic foundation of the political entities and collaborative bodies which provide the commercial context or the forum for them.

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