

SUSTAINABLE AND RESILIENT SUPPLY CHAINS WITH EMERGING TECHNOLOGIES

Workshop Synthesis: Future Needs and Opportunities for Sustainable and Resilient Supply Chains

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Key Themes from Workshop I: Global Value Chains

- Global value chains remain a critical component of disaster response
 - There is no rationale for governments to push for de-globalization or reshoring. Trying to lessen dependence on global value chains would put the world's population at risk by reducing access to essential supplies or by making them significantly more expensive
- Collaboration is key
 - Governments and civil society need to collaborate, coordinate and communicate
- We need a change in mindset to create a culture of disaster resilience
 - Governments need to be responsive (ready for everything) and proactive (get everyone involved)
 - Employ systems thinking to ensure short-term (hunger) and longer-term (employment) needs are met

Key Themes from Workshop II: Resilience and Risks

- Industry reports an average of 1 -2 months of Supply Chain disruption every 3.7 years. COVID accelerated an ongoing trend of industry investment in balancing resilience with growth and cost.
- Trade policy data shows that government controls disrupted health sector GVCs during the pandemic based on unsubstantiated assumptions of overdependence on single countries or that repatriation would reduce risk.
- Management of climate change risks requires collaboration between scientific and operational groups to provide actionable knowledge.
- The response of food supply chains to pandemic disruptions demonstrated how technology can enable resilience, e.g., digital marketplace platforms, last mile capacity, automation, etc.
- Readily available, quality data and public-private collaboration are essential to Supply Chain resilience planning and policy decisions.

Key Themes from Workshop II: Sustainability

- A resilient Supply Chain does not guarantee a sustainable Supply Chain (and vice versa)
- The two biggest pressures upon sustainable Supply Chains are regulations and competition
 - Each needs to be tracked and incorporated into investment decisions
- In order to make sustainable investment decisions (especially pertaining to the environment), investors need transparency that enables them to track materials throughout the Supply Chain, from origin to destination
- Transformations within the highway system are “paving the way” for more sustainable Supply Chains
 - Expansion of Electric Vehicles and charging services
 - Connected and Automated Vehicles
 - Renewable roadway materials

Key Takeaways from Workshop III: Emerging Technologies

- Techno-nationalism, extreme reshoring, and deglobalization in response to supply chain disruptions to enhance sustainability and resilience are counterproductive.
- Technology has made value chains even more global, encompassing extensive networks of networks of suppliers.
- Extreme reshoring or bifurcation of the global technology economy are not feasible and could slow innovation and competitiveness as well as stunt economic growth.
- We need to re-globalize rather than de-globalize, including redesigning global supply chains and advancing the use of emerging technologies of the 4th industrial revolution and biotechnology to achieve greater sustainability and resilience.
- Companies need to do much more to seriously address sustainability and resilience, and especially to reduce global carbon emissions.
- Some experts maintain that sufficient reduction of emissions will require capturing carbon from the air if global warming is to be successfully mitigated.

Key Takeaways from Workshop III: Emerging Technologies (cont.)

- Less pessimistic experts maintain that emerging technologies offer the potential to enhance supply chain transparency, environmental sustainability, and resilience in the face of future disruptions.
- There is also a new localism that can reduce supply chains and environmental impact, including of food production and distribution such as vertical farms and plant-based and cultured meats.
- In the longer term, bioengineering offers the potential to build with biology to create a sustainable, resilient world of abundance, including energy abundance.
- To realize the potential of biotechnology, new food production technologies, and the emerging technologies of the 4th Industrial Revolution will require regulatory reforms and greater government funding for R&D.

Primary Messages from Workshop IV: Consumers and Civil Society

- We can anticipate more custom-built technologies and vehicles to meet increasing variation in demand.
- Low cost and now delivery are continuing drivers for supply chains.
- There is need for a data clearing house for public and private sector so public agencies can meet the needs of the private sector and serve the public good.
- Consider urban municipal air space in managing supply chains. “Focus on the urban sky to solve problems on the ground.”
- Socially equitable infrastructure decision making leads to comparable benefits and impacts across sectors.
- Make value focused thinking and objectives explicit at the outset of transportation planning and investment decisions.

Take-aways

1. Global supply chain networks have demonstrated remarkable resilience in the face of global supply and demand side disruptions.
2. Disruptions will be a recurring fact of life. In drawing lessons and building support for improving preparedness, it is important to separate facts from fiction.
3. Supply chain networks are here to stay. Data at center stage for improving visibility & transparency: shared agenda for corporate accountability, consumers, public interest.
4. Many technologies are already available – but are not a one-size-fits-all panacea. Just as important as technologies are incentives for collaboration, decision-making under uncertainty, the flexibility to adjust, and the vitality of supply chain ecosystems.
5. Exciting frontiers for innovation: synthetic bioeconomy, circular economy, integrated decision-models that incorporate impacts on climate & bio diversity along supply chains, scalable initiatives and business models (energy, transport, agriculture, air)
6. Sustainability approaches as opportunities for redesigning supply chains from ground up.
7. Where will change come from? Long-term finance, monitoring of corporate commitments, shift in consumer choices, job prospects for green competitiveness
8. Role of government? Investments to ‘build-back-differently’, social equity agenda, increased funding for R&D, public-private-community partnerships