JUST AGRICULTURE
multidisciplinary e-Newsletter

Harnessing the Potential of Interpretive Structural Modelling (ISM) for Future Agricultural Policy Frameworks

Niranda Sharma Leihaothabam*, R.J. Singh[1] and Wangshitula Longchar[2]

College of Post-Graduate Studies in Agricultural Sciences, CAU (I), Umiam, Meghalaya
*Ph.D Scholar, College of Post-Graduate Studies in Agricultural Sciences, CAU (I), Umiam, Meghalaya.
[1]Associate Professor, College of Post-Graduate Studies in Agricultural Sciences, CAU (I), Umiam, Meghalaya.
[2]Ph.D Scholar, College of Post-Graduate Studies in Agricultural Sciences, CAU (I), Umiam, Meghalaya.

ARTICLE ID: 28

Introduction:

As the global agricultural landscape evolves, policymakers face mounting challenges in designing policy frameworks that promote productivity, sustainability, and equity while addressing emerging threats such as climate change, resource depletion, and socio-economic disparities. Traditional approaches to policy design often struggle to capture the complexity and interdependencies inherent in agricultural systems. However, the advent of Interpretive Structural Modelling (ISM) offers a glimpse into the future of agricultural policy formulation, promising a more nuanced and holistic understanding of the factors at play.

Future Approach:

Utilizing Interpretive Structural Modelling (ISM) for designing effective agricultural policy frameworks entails several key components:

1. **Enhanced Data Integration:** Future applications of ISM will leverage advances in data collection, analysis, and integration to construct more comprehensive models of agricultural systems. Integration of diverse data sources, including satellite imagery, sensor data, socioeconomic indicators, and expert knowledge, will provide a more nuanced understanding of system dynamics.
2. **Machine Learning and Artificial Intelligence:** Integration of machine learning and artificial intelligence techniques will enhance the predictive capabilities of ISM models, enabling policymakers to anticipate future trends, identify emerging risks, and evaluate

JUST AGRICULTURE
multidisciplinary e-Newsletter

policy interventions in real-time. By incorporating adaptive learning algorithms, ISM models can evolve dynamically in response to changing conditions.

3. **Multi-stakeholder Engagement:** Future approaches to ISM in agricultural policy design will prioritize multi-stakeholder engagement, fostering collaboration between policymakers, researchers, farmers, industry representatives, civil society organizations, and other relevant stakeholders. Co-creation processes will ensure that diverse perspectives and local knowledge are integrated into policy frameworks, enhancing their relevance and effectiveness.
4. **Scenario-based Policy Analysis:** ISM will enable policymakers to conduct scenario-based policy analysis, exploring a range of potential futures and evaluating the implications of different policy interventions. By simulating various scenarios, policymakers can identify robust policy options that are resilient to uncertainty and mitigate potential risks.
5. **Adaptive Governance Mechanisms:** Future agricultural policy frameworks informed by ISM will embrace adaptive governance mechanisms that facilitate iterative learning, experimentation, and adaptation. Flexibility in policy design and implementation will enable policymakers to respond proactively to changing circumstances, feedback loops, and unintended consequences.

Implications and Challenges:

While the future application of Interpretive Structural Modelling (ISM) holds great promise for designing effective agricultural policy frameworks, several implications and challenges must be addressed:

1. **Capacity Building:** Policymakers and stakeholders will require training and capacity building to effectively utilize ISM tools and methodologies. Investment in human capital development and knowledge exchange platforms will be essential to ensure widespread adoption and implementation.
2. **Data Governance and Privacy:** The integration of diverse data sources raises concerns regarding data governance, privacy, and ethical considerations. Future approaches to ISM must prioritize robust data governance frameworks that protect sensitive information while facilitating data sharing and collaboration.

JUST AGRICULTURE
multidisciplinary e-Newsletter

3. **Interdisciplinary Collaboration:** Successful implementation of ISM in agricultural policy design will necessitate interdisciplinary collaboration across diverse fields, including agronomy, economics, sociology, environmental science, and computer science. Strengthening collaborative networks and fostering interdisciplinary research will be critical to overcoming disciplinary silos and harnessing the full potential of ISM.

Conclusion:

The future of agricultural policy design lies in harnessing the transformative potential of Interpretive Structural Modelling (ISM) to navigate the complexities of agricultural systems. By integrating advanced data analytics, machine learning, multi-stakeholder engagement, scenario-based policy analysis, and adaptive governance mechanisms, ISM offers a pathway towards more effective, equitable, and sustainable agricultural policy frameworks. While challenges remain, the vision of leveraging ISM for future agricultural policy design holds promise for shaping a resilient, inclusive, and thriving agricultural sector in the years to come.