

The role of FPOs in developing socially responsible supply networks

Dr Tomás Harrington

Senior Lecturer in Digitalisation and Operations Management

Innovation, Technology and Operations Management Group

Norwich Business School, UEA

tomas.harrington@uea.ac.uk

Flagship Project 5 (FP5)



Supply Chains:

Modelling Water Use for Sustainable Livelihoods



Motivation



- Focus on **relational elements** and the processes key to **network integration** within **supply networks**
- Informing **set of operating principles and protocols**—applicable to all stakeholders ‘cooperating’, within a ‘shared’ environment
- **Advanced Manufacturing Technologies; Product-Service Systems**
- **Economic impact**

- Focus now on how **digital technologies** and **societal needs** may influence **future operating philosophies**


- **Practical Solutions** - ***Economic and Social*** impacts



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Your map

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mapbox

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Cork, Ireland [Edit](#)



<https://www.nytimes.com/interactive/2019/02/15/upshot/british-irish-dialect-quiz.html>

FP5 research focus

Design of socially responsible supply networks

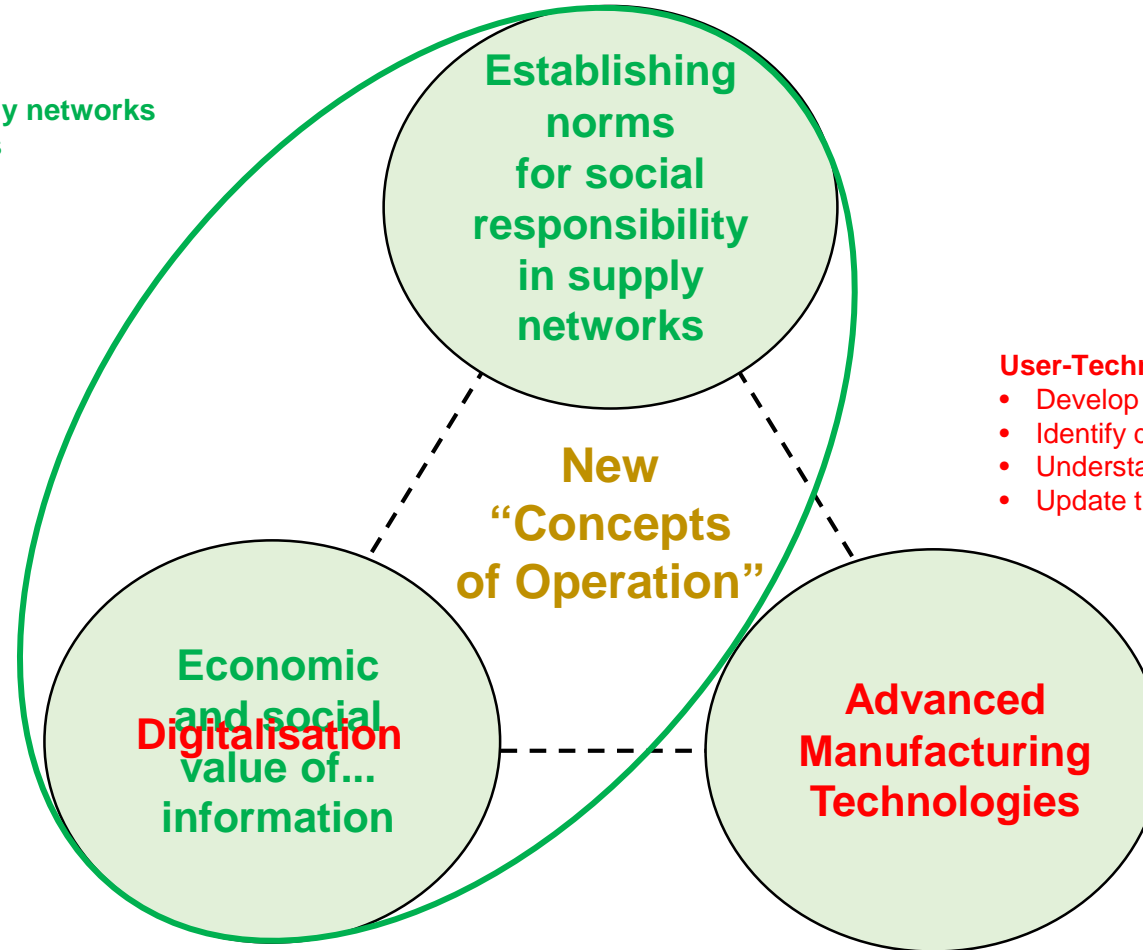
- Nascent research area in operations management (Tang, 2018)

FPO contexts - constraints

- Lack of access to finance...
- Lack of access to market...
- Low productivity...

ERG Theory

- **Existence** e.g., Health & Wellbeing
- **Relatedness** e.g., Social cohesion; Ecological health
- **Growth** – Purpose & expression; Influence & respect; Freedom & autonomy



User-Technology Adoption Matrix

- Develop a portfolio of resource-efficient technology interventions
- Identify different user profiles
- Understand potential application of technology interventions
- Update the matrix and document case studies

Digitalisation and Societal Needs - impacting the creation and workings of the FPO?



- This research examines societal needs, social impacts, and strategic behaviours of **FPOs**, and their potential role in developing socially responsible supply chains in India.
- A key issue this research looks to address is ***how to balance*** the often conflicting pressures created by the need for sustainable development e.g.,

Overall industry and FPO-level economic performance

v.

**Environmental degradation and social disruption
(and other unintended consequences...)**



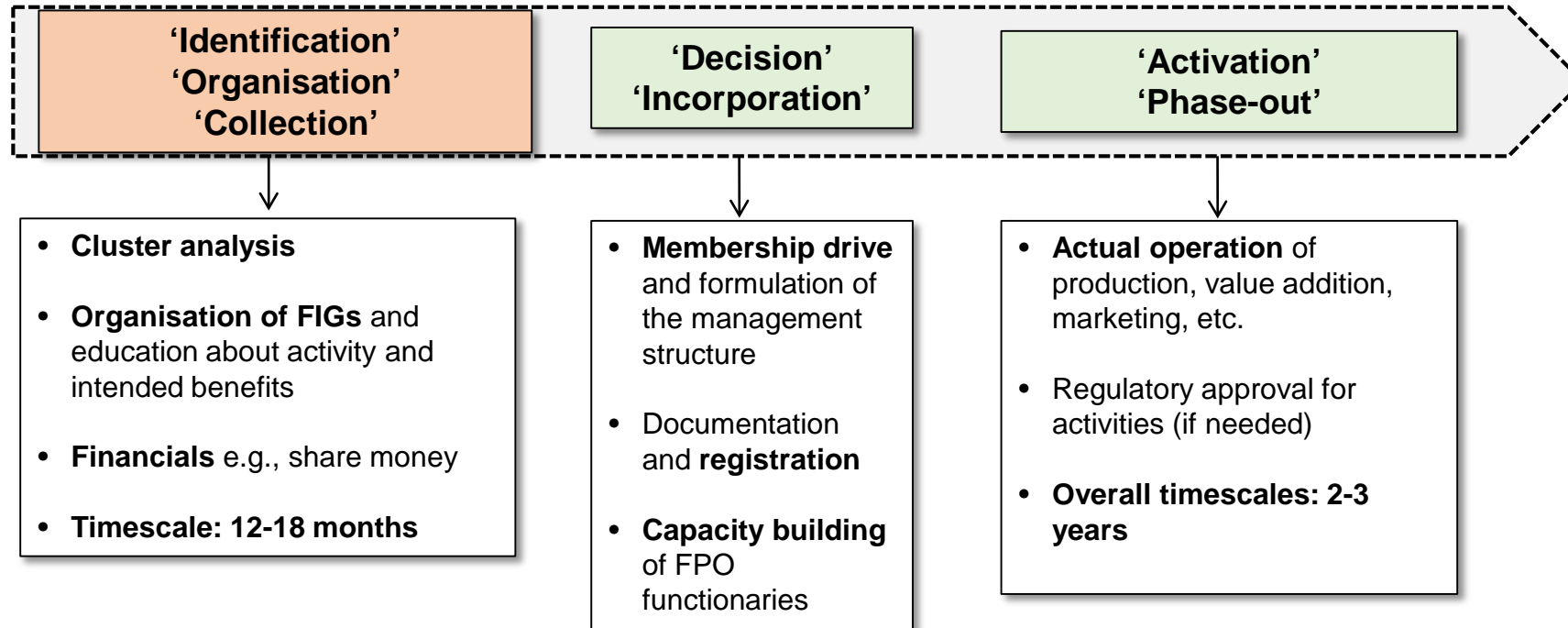
4 stages of FPO success?



- **...Communicating** a compelling vision of a potentially successful enterprise with significant rewards to farmer-members
- **Creating** (and registering) the member organisation **best designed** to deliver...
- Utilising early success to institute **rules/norms** that reinforce **patronage cohesiveness, governance effectiveness, and operating performance...**
- At **'maturity'**, utilise the strength from enterprise growth to enhance member, patronage and domain **centrality**

Stages of FPO emergence - traditional

- Pre-formation – Formation – Implement



Leveraging next-generation supply networks...

...that demonstrate technology platforms, new routes to market, new markets...



- **Maritime** - Fragmentation of Vertically Integrated **Clusters** – globalisation
- **Built-Environment** - New **Sustainable** Supply Networks – policy generated
- **Industrial Biotechnology (IB)** - Platform Technology with **multiple intermediate/end users**
- **Photovoltaics (PV)** - Multiple generations of **co-existing** supply networks
- **Last Mile (LM) Logistics** - **Customer/Information driven** multi-echelon supply networks
- **Defence Aerospace** - **Servitization/** Service Supply Networks - revenue driven

Srai JS, Harrington TS, Tiwari MK (2016) 'Characteristics of redistributed manufacturing systems: a comparative study of emerging industry supply networks', *International Journal of Production Research*, Vol. 54, No. 23, pp. 6936–6955. DOI: 10.1080/00207543.2016.1214765

- **Plastic electronics** - Commercialisation of new technologies, **nascent supply networks**
- **Pharma** – Digital Factory concepts, continuous technologies, business transformation, personalised products, new therapy areas...**alternative Supply Network models**...

Harrington TS, Phillips MA, Srai JS (2017) 'Reconfiguring global pharmaceutical value networks through targeted technology interventions', *International Journal of Production Research*, Vol. 55, No. 5, pp.1471–1487. DOI: 10.1080/00207543.2016.1221541

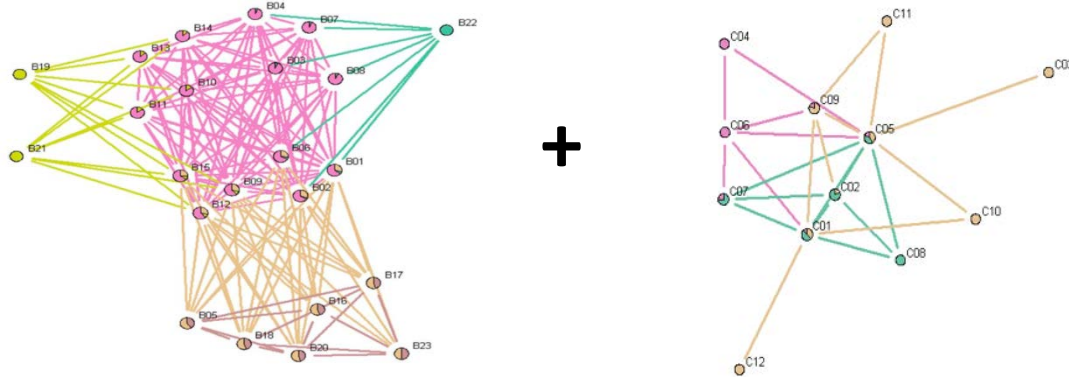
Harrington TS, Srai JS (2017) 'Understanding stages of supply network emergence in technology commercialisation', *Int. J. Manufacturing Technology and Management*, 31(1-3), 4–36. DOI: 10.1504/IJMTM.2016.1000001



Network evolution – research focus

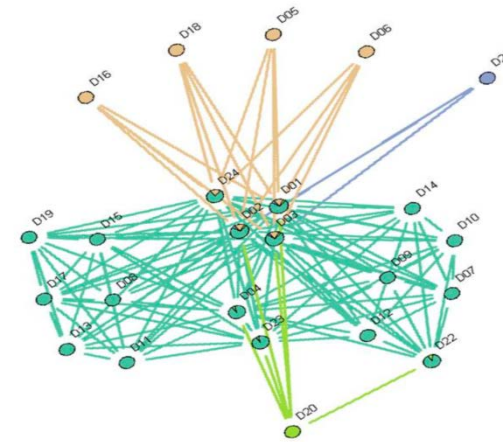
‘Inside-out’ network effects

- The path to ‘**maturity**’ is usually long, and needs supportive investment through a range of planned and **sequenced** business services (Poole and Frece, 2010)
- No ‘one size-fits all’, and no guarantee that individual successes can be up scaled and replicated (ibid)
- **Fragmentation** - Leveraging **legacy systems**



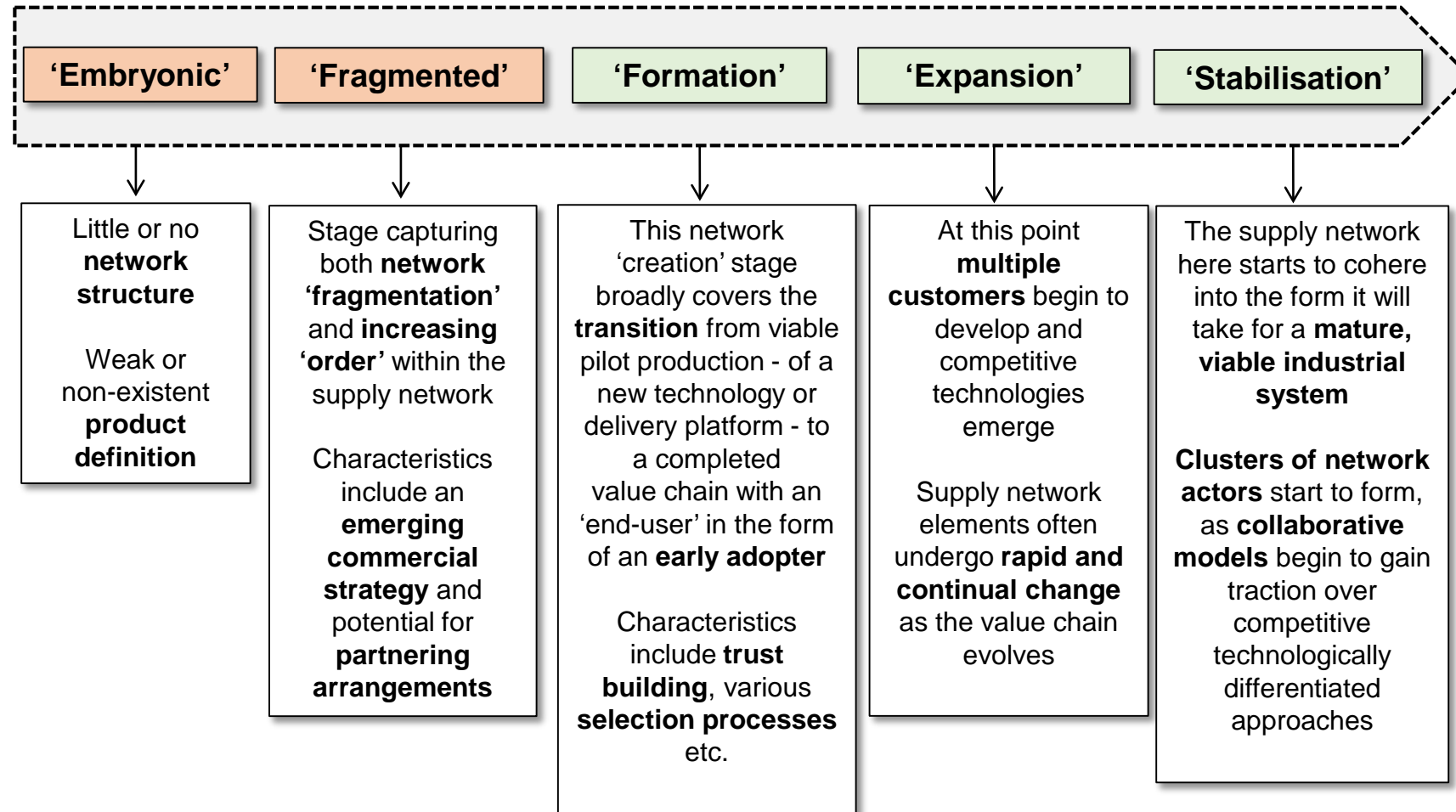
‘Outside-in’ network effects

- Networks mutually dependent on their surrounding environments and constantly adapting to it
- Coupling internal and external ecosystems
- **Network integration** - **New systems and new regulations**

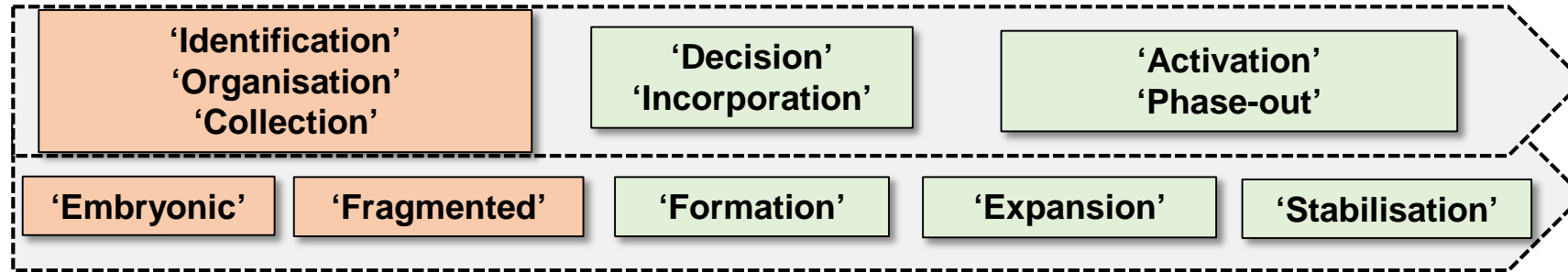


Stages of supply network emergence - revisiting

- Nascent – Emerging – ‘Mature’
- Conventional – Digital



'Institutional-SRSN' framework - outcome



Inclusive design

- How should **SR supply networks** be configured that deliver *specific FPO* objectives and mission statements?

Ethical norms

- How can **FPOs** establish ethical norms as they collectivise and grow?

Measures of Fairness

- If **FPOs** really create shared value, how should/can this created value be shared between its members?

Platform Thinking

- How can **digital platforms** promote the creation of both economic and social value?

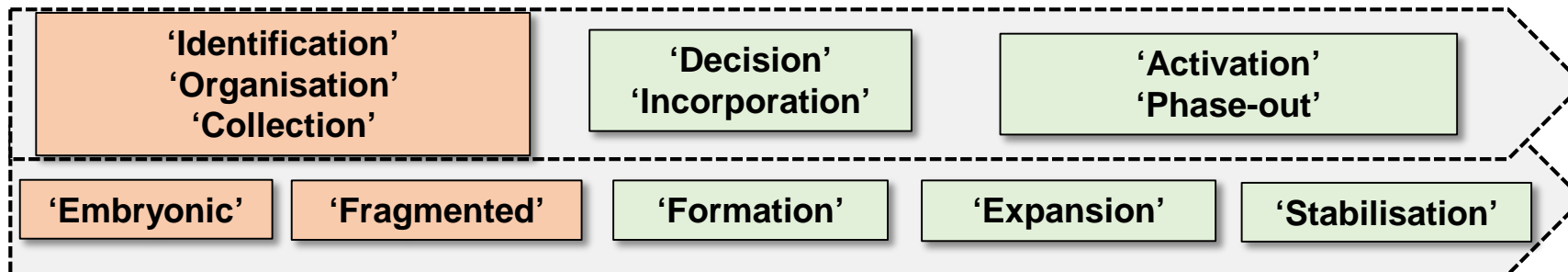
Information Provision

- How can **FPOs** expand product portfolios to include e.g., information services?

Market Decisions

- How can **FPOs** use market information to make crop planning and selling decisions?

'Institutional-SRSN' framework – cases...



Inclusive design

Ethical norms

Measures of Fairness

Platform Thinking

Information Provision

Market Decisions

FPO	OMM	UMANG	VAPCOL	MAAHI
Context	FP6	FP6	Exemplar	Exemplar
FPO Stage	'Identification'	'Activation'	'Activation'	'Phase-out'
Supply network stage of emergence	'Embryonic'	'Expansion'		
Societal needs ideology		'ERG' discourse evidenced		
Mission statement	Local eco-system			
State	Odisha	Uttarakhand	Maharashtra	Gujarat
Data collection	2019+	2019+	2008	2015
Turnover (M)	n/a		34	9793
Size	Large	Small	Medium	Large
Basis of Organisation		Female collective	Individual farmer families	Members
District	14	Almora		
Block/Region/Mandal	72	Kumaon	Mokhada	
Cluster/Panchayat			Mokhada	
# villages	100s		23	
# participating	31,099 farmers	1,000 members	1685 families	86,938 individuals
Female membership as % of total		100		20
Total ha			562	
Sub-sector	Agriculture	Agriculture	Horticulture	Animal Husbandry
Target commodities	Millets	Millets; Pulses	Mango; cashew nuts	Milk
Commodity-wise value addition				Diary products
Services				
Major stakeholders		Aajeevika (NRLM)	Resource Support Agency	FPO Promoter (NDS)
Organiser/facilitator		SHGs	Private sector	
Problems/contraints		Scale; Taxation/VAT @ 18%		

“New Gold” - The ‘digital’ FPO?

Characteristic	Co-operative	Producer Organisation	'Digital' FPO?
Registration	Co-op societies Act	Amended Companies Act (2012)	Hybrid forms, each with discrete ConOps
Membership	Open to any individual or co-operative	Only to producer members and their agencies	By design e.g., open or closed network
Board	Not provided	Can be co-opted	Experts co-opted by design
Area of operation	Restricted	Throughout India	Unrestricted
Relationships	Transactional	Joint ventures and alliances possible	Local legitimacy – informal & formal
Shares	Not tradable	Tradable within membership only	Tradable within a defined network
Member stakes	No linkage with no. of shares held	Articles of association can provide for linking shares and delivery rights	New measures of fairness
Voting rights	One person one vote, but e.g., government have veto power	One member one vote	Devolved sub-networks (coalitions)
Reserves	Can be created if profit made	Mandatory to create reserves	Co-opted scenarios linked to services
Profit sharing	Limited dividend on capital	Based on patronage; reserves a must and limit on dividend	New incentives & gain share mechanisms
Role of government	Significant	Minimal	Enabling (legal, digital infrastructure)
Disclosure and audit requirements	Annual report to regulator	Very strict as per the Companies Act	Digital audit capability; Blockchain?
Administrative control	Excessive	None	Governance based on local laws
Borrowing power	Restricted	Many options	Multiple including community-based options
Dispute settlement	Through co-op system	Through arbitration	Platform governance protocols as per CoOps

Adapted from Raju et al (2017). FPO in Andhra Pradesh: A Scoping Study. ISBN 978-92-9066-592-2 (ICRISAT)

Conclusions – next steps

1st basis for understanding current and future **'socially responsible' supply network configurations**

- critical interconnections between industry actors and selected FPOs
- overall industry structures for specific regions

FP5: The framework will be applied in the case of selected FPOs in the Punjab region of India and for region-specific crops (e.g., wheat and rice)

- Using **scenarios** based on changing customer demand profiles, emerging technologies, and adoption of innovative cropping systems for sustainable water use

Other FPs: FPO cases **piloting intervention models** that aim to balance the interests of farmers, the food industry, and consumers in other regions of India

Overall Goals:

- Inform industrial policies and strategies to support nascent, emerging and 'mature' FPOs
- Enable FPO capability development in specific regional contexts