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Framework for measuring inclusion in Value Chains: a rangeland perspective

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Abstract

Literature on inclusion within value chains often tends to focus only on the economic understandings and ignores the values, the social context and the priorities of an environment-specific value chain, for instance the rangeland systems. In response to this, value chain analysis has shifted its agenda to developing value chains that are pro-poor, creating the need for new dimensions of inclusion that define how poor smallholder farmers, women, and youth can be incorporated into rangeland value chains. This study aimed to develop a comprehensive framework to assess inclusion in rangeland value chains through a literature review that helped incorporate the relevant dimensions and indicators. The developed framework, described in three parts, first, provides a background for inclusion answered through three questions: the basis for inclusion, instruments that can achieve inclusion; and what changes in institutional arrangements can be achieved through the interventions. The second part of the framework adds further dimensions of empowerment, stakeholder engagement, and gender to the existing framework with indicators. The last part of the framework develops some outputs that can be used to measure the improvements from the interventions. The framework emphasizes inclusiveness by addressing marginalized groups, gender-sensitive issues, participatory governance, capacity building, and local empowerment. Since value chains have been touted to be the vehicle for development in agriculture for developing countries and smallholder farmers, this framework will be effective in assessing how the horizontal dimensions of the value chain interact within and across the value chain's vertical dimensions and produce the existing power dynamics that can be corrected if found to be facilitating inequality. The framework could also be useful in designing inclusive interventions specific to rangelands such that resilient value chains are created.

Keywords: Value chains, Inclusion, Gender, Smallholder farmer, Women, Youth

Introduction

Value chains can be defined as the spectrum of activities and services that are integral to bring the product from its conception to final sale at the end market. However, such a linear definition cannot capture the different intricacies that are associated with agricultural value chains. The entire network of operations and actors that are involved in the stages of input supply, production, processing, marketing and consumption are encompassed in the value chain. Important dimensions of value chain analysis include governance and upgrading which often has focused only on the economic incentives and ignored the critical role of social inclusion. Thus, the value chain analysis is criticized because of its inability to capture the historical, institutional, and social context in which the chains are embedded (Lowitt et. al, 2015) and that are

instrumental in affecting the performance of the value chain (Gereffi, 1995). In response to this, there is a change in the agenda of value chain analysis such that many new studies have tried to focus on increasing opportunities for pro-poor value chain development. This concern has raised new dimensions of inclusiveness in value chain that define how poor smallholder farmers, women and youth can be made a part of the value chain by enhancing their competitiveness. The dimensions of poverty should be analysed not only based on exclusion from the value chain but also the terms of participation (Bolwig *et al.*, 2010). A farmer may be included in the value chain yet be marginalized due to local power relations. Thus, exclusion may not always be disadvantageous and thus it is important to understand the different dimensions of inclusion, encompassing both competitiveness and equity issues.

Rangeland value chains include all rangeland actors involved from production to the end user who transact a specific product as it moves through the value chain, including input, farmers, traders, processors, transporters, wholesalers, retailers, and final consumers. However, rangeland value chains are more complex, as the input and output chains may include more than one channel, supplying to more than one final market (Lutta *et al.*, 2024; Omolo and Mafongoya, 2019). Moreover, livelihoods in the rangelands depends primarily on livestock rearing which is integral to accumulate social capital and as an insurance against climate risks (Jode, 2014). The ability to access, control and own productive assets such as labor, land, finance and social capital creates inclusive and sustainable value chains. In the face of water scarcity, erratic rainfall patterns and increased frequency of extreme weather conditions that particularly make the rangelands vulnerable, understanding the inclusive strength of these value chains from the perspective of competitiveness and equity holds primary importance.

Literature on inclusion more often tends to focus only on the economic understandings and fails to consider the values, the social context and the priorities of an operational value chain in a specific local backdrop that focuses on the market, society and environment. Some literature on inclusion tries to measure the pro-poorness of value chains using quantitative and qualitative studies (Tobin *et al.*, 2016); some also try to evaluate the inclusion of labour in global value chains from a human security point of view (Pegler, 2015); while others may try to assess the effects on gender through incorporation in the value chain (Tallontire, 2005). However, all of

this associates the effect of value chains on fragmented issues that bears consequences for inclusion. A comprehensive framework with guidelines that can measure the strength of inclusion in an agricultural value chain is lacking from the literature.

Thus, the objective of the paper is to develop a framework that is comprehensive on all the dimensions of inclusiveness within the rangeland value chain. It is expected that this comprehensive framework that includes dimensions on gender, social status, and local stakeholder engagement among others can be effective in assessing how the horizontal dimensions of the value chain interact within and across the value chain's vertical dimensions and produce the existing power dynamics that can be corrected if found to be facilitating inequality.

Since this framework talks about measuring inclusiveness in agricultural value chains, it can also be applied to specific contexts of value chains such as rangelands. The dimensions included under the developed framework on gender, local stakeholder engagement and empowerment are also relevant for rangeland value chains. The rangeland value chains are an integral part of the dryland ecosystem, and hence also cater to the smallholder farmers in the drylands. Understanding the value chain linkages between the different players and the products of rangelands from production stage to market stage is essential to identify so that inclusive and resilient value chains are created in the face of land degradation and climate change (Mwende and Bosma, 2019).

Methodology

The framework has been developed by reviewing literature on inclusion in value chains. Since the focus of the paper is on agricultural value chains, literature review included only those papers that concentrated its study on value chains in agriculture. Journal articles were found using keywords pertaining to inclusion, inclusion in value chains, smallholder inclusion, upgrading, governance and inclusion, and gender among others.

A summary table on the keywords used and the different concepts used from such literature has been presented below in Table 1

Table 1: Keywords and concepts used from comprehensive literature review

Keyword	Authors	Concepts used	Indicators identified
Inclusion	Gupta, 2015 Gough & McGregor, 2007	Inclusive development	Empowerment
Inclusion in Value chains	Sjawn Koen Fa et. al., 2016 Jordaan et.al, 2014 Haggblade et.al , 2012 Gereffi, Humphrey and Sturgeon, 2005	Characteristics of the value chain Upgrading Governance	
Smallholder inclusion	Dunn, 2014 Fernandez-Stark & Bamber, 2012 Markelova et.al, 2009	Instruments to achieve inclusion Four Pillars Model Collaboration	
Upgrading	Vicol, 2018 Gereffi & Lee, 2016 Pegler, 2015 Dolan and Humphrey, 2000 Barrientos et al., 2011	Social downgrading	
Governance+inclusion	Haggblade et al., 2012 Helmsing & Vellema, 2011 Bitzer, 2009	Importance of coalitions and local terms of participation	Degrees of local stakeholder engagement
Gender	Pyburn et al., 2015 Quisimbing et.al., 2015 Alkire et.al., 2013 Meinzen-Dick et al., 2011 Adebayo, 2010 Tallontire, 2005 Barrientos, 2001	Relation between gender and promotion of inclusive agricultural value chains	5 Dimensions of empowerment Representation Access to chain, differential jobs and rewards

These articles were then studied to select the dimensions on which the paper based the framework. The basis of the framework and the outcome measures were also researched from the literature and thus the framework was developed.

Measurement of the indicators developed in the framework

Using the method proposed by Bitzer et. al, (2009) to rank the degree of the local stakeholder engagement, we extend it to include the other dimensions of inclusiveness as identified from literature. Since all of the dimensions are equally important, we do not need to assign separate weights to measure the score of inclusiveness. Since there are twenty indicators in total, a completely inclusive value chain can score a total of 40 points. The value chain can be scored by an external body of experts once the value chain is operationalized. The experts who will be engaged in scoring the value chain will be selected based on their experience in the field of value chains. They may be working professionals who have prior experience in related fields. Table 2 below shows the scoring pattern based on the indicators.

Table 2: Scoring Pattern based on Indicators

Criteria	2	1	0
Empowerment			
1. Power to	Sell to higher number of markets Undertake processing Invest in new equipment	Undertakes processing	Has no access to markets Cannot undertake processing
2. Power with	Number of active SHGs, FPOs, Cooperatives for the value chain as well as other value chains Representation on village bodies	Forms SHGs, FPOs and Cooperatives	Has no representation No SHGs/FPOs are active
3. Power from within	Number of entrepreneurs within the value chain Leadership positions Educational improvements		No leadership positions emerge No entrepreneurs emerge No educational improvement is seen
4. Power over	Assets in the name of the farmer	Higher bargaining power	No bargaining powers

	Assets in the name of the cooperative Higher bargaining power	Assets in the name of the cooperative	No assets in the name of either the farmer/cooperative
Degree of Local stakeholder engagement			
5. Degree of formalization of the partnership	Common objectives, budget and planning decided among all actors	Only some actors of the partnership are included in broad objectives and planning	Ad hoc planning and implementation
6. Degree of producer organization involvement	Participation of PO vital from design to implementation	Participation of PO only during implementation	No involvement
7. Degree of domestic government involvement	Participation integral to execution, financial access and policy outcomes	Participation only for financial access	No involvement
8. Degree of private sector involvement	Buying arrangement with the PO, helps in provision of inputs and technology	Buying arrangement with the PO	No private sector actors involved
9. Degree of handholding agency involvement	Involvement with respect to design, training and capacity building; facilitating finance	Involvement with respect to design and implementation	No handholding agency
Gender			
Production	Input in productive decisions Autonomy in production	Autonomy of production	No input in productive decisions No autonomy in production
Resources	Ownership of land and assets Access to and decisions about credit Transactions related to assets	Ownership of land and assets Transactions related to assets	No ownership No decision-making power with access to credit and assets
Income	Control over use of income	Takes decisions regarding income	No control over use of income
Leadership	Participation in collective action Speaking in public	Participation in collective action	No participation in collective action No speaking in public
Time	Balanced Workload And Leisure	Partially high workload	No leisure

Access to the chain	Women as employees Women as entrepreneurs	Women as employees	No women either as entrepreneurs or employees
Governance structures	Higher bargaining power for women Provision of non-wage benefits	Non-wage benefits	No bargaining power No non-wage benefits
Representation of women	Adequate representation for women workers Women members in managerial positions	Representation of women workers	No representation No women in managerial positions
Differential rewards and opportunities	Wage equality across gender Upgrading opportunities for women	Equal wages	Unequal wages No upgrading opportunities for women
Segregation of activities	Formal modes of employment for women Balance provided between work and household	Formal modes of employment	Informal modes of employment

Conceptual Framework for Inclusiveness

Inclusiveness as a concept needs to be distinguished from inclusive growth and inclusive wealth and defined in terms of inclusive economics. Inclusive economics helps understand the multi-disciplinary notion of inclusiveness as it focuses on role of institutions, capability approach of the participants and the equity issues departing from the concentrated focus on economic performance indicators in the case of inclusive growth and inclusive wealth that measures physical, human and natural per capita wealth. (Gupta, 2015).

-The motive of the first part of the framework is to provide a background for the concept of inclusiveness in a value chain. The characteristics of the value chain provides a basis for the interventions, the instruments provide the ways in which we can achieve inclusion and what changes in institutional arrangements can be achieved by pursuing inclusion in the value chain. The second part of the framework delves deeper into the subject of inclusion by adding further dimensions of empowerment, stakeholder engagement, and gender to the existing framework

with indicators. The third part of the framework includes the indicators that can be used to measure the outcomes of an inclusive value chain.

The diagrammatic representation of the conceptual framework has been provided at the end of next section that explains the framework (Figure 1).

Explanation of the framework: Part I

Once the definition of inclusiveness has been set, we attempt to develop the background of the framework based on three questions:

1. What is the basis of intervention for inclusiveness?
2. How to achieve inclusion in the value chain?
3. What can be changed through the interventions to bring about inclusion?

We try to answer these three questions before developing the dimensions of inclusion in the framework.

1. What is the basis of intervention for inclusiveness?

To answer the first question, we need to understand the characteristics of the value chain to suggest effective inclusive value chain interventions. The characteristics of the value chain thus help us to strengthen the definition of ‘inclusiveness in the value chain’.

- **Suitability of the value chain for inclusion:** The selection criteria for introducing changes in value chains for inclusiveness include provision for current large-scale employment, potential of growth for women, youth and poor and low barriers to entry. (Haggblade *et al.*, 2012). The farmers need to be market-oriented and capable of adapting upgrading interventions (Sjawn Koen-Fa, 2016).

- **Upgrading in the value chain:** What kind of upgrading opportunities exist for the participants of the value chain and how those are being achieved should be important to consider for the analysis of the value chain. The type of upgrading can include process upgrading (producing output using inputs by transforming the production system); product upgrading (diversifying into sophisticated production lines); functional upgrading (incorporating new

functions in the chain); chain upgrading (movement into inter-sectoral upgrading). Whether the movements into any of these upgrading can hinder inclusion in the value chain needs to be analysed and remedial steps taken for such situations. Commercially viable upgrading opportunities must be prevalent to make the value chain inclusive across women, poor and youth (Haggblade *et al.*, 2012)

- **Governance in the value chain:** Gereffi (2005) developed his framework on governance on the basis of three factors: complexity of information and knowledge required; extent of codification of knowledge and information; capabilities of supply base. According to him, these three factors determine the type of governance structure (market, modular, relational, captive, and hierarchical) that should be adopted in the value chain. The governance type will determine the kind of buyer-seller relations that should be prevalent in the value chain to make it more inclusive and the intervention should drive cooperative relations. (Haggblade *et al.*, 2012) The key is to identify the most efficient governance structure for the value chain that will promote inclusiveness (Jordaan *et al.*, 2014).
- **Vertical integration:** The process by which the value chain actors link up with the vertical market can be a source of inclusion. When the power relations within the value chain are exploited indiscriminately, then the risks and the costs are borne by the farmers whereas the rents or the profits are earned by the lead firms (Swinnen & Maertens, 2007). Thus, the value chain should be facilitated to distribute the rents from the value chain equitably. If the process of vertical integration is based on the principle of collective action, by forming strong effective horizontal linkages through producer organizations, then the value chain can be inclusive (Sjawn Koen-Fa, 2016).

Rangelands are a suitable value chain for designing interventions targeting inclusion as there are economic benefits from improved grassland and livestock productivity. They hold the potential of unlocking commercially viable opportunities, such as production and marketing strategies including women, youth and smallholder farmers. Moreover, there are complex power dynamics at play within the rangeland value chains, that can be simplified to give rise to effective vertical integration based on collective action (Lutta *et al.*, 2024).

2. How to achieve inclusion in the value chain?

Farmers' behaviour change is characterised by two general categories of factors: opportunities and capabilities. Opportunities refer to the 'pull incentives' that motivates farmers to undertake upgrading or enter new markets. Capabilities refer to the access to knowledge, skills and resources available to the farmer household. It also includes knowledge, resources, skill and agency. The inclusiveness of the model is enhanced when there is a lowering of the 'opportunities bar' and the raising of the 'capabilities' bar such that there are certain objectives that are fulfilled (Dunn, 2014).

- Suitable profitable opportunities available to the farmers
- Farmers can have the requisite information to evaluate the options so that they can make the correct choice aligned with his activities
- Access to resources and capabilities that facilitate their participation

Thus, in order to make the value system inclusive, three focus areas should be:

- **Information:** Constant efforts should be made to facilitate increase in the quality and types of information available to the farmers. It is of paramount importance to address information bottlenecks so that there is a continuous information flow from the market as well as that of other technical information to the farmers.
- **Inputs:** Scale appropriate technologies well matched to the farmers' risk and resource profiles need to be developed and facilitated. Improved inputs can be provided with the help of the producer associations or the supporting markets.
- **Investments:** Improvement in infrastructure, communications and regulatory environment are needed to expand the capabilities of the smallholder farmers. Thus, strategic investments must be made in these fields to enhance the benefits from the project.

In order to achieve inclusion, there are certain instruments that we can use apply in the context. The instruments may be procedural, management and cooperative. (Gupta, 2015)

- Procedural instrument includes that of **stakeholder participation**. There must be a higher engagement of stakeholders in policy making. The challenge remains as to include stakeholders but not at the cost of rights holders. (Gupta, 2015)
- Management instruments include that of **community management**. Monitoring and liaison functions must be maintained between the value chain participants and the support institutions on a regular interval so as to enhance inclusion. (Haggblade *et al.*, 2012)
- Cooperative instruments include **technology transfer, financial assistance and capacity building** (Gupta, 2015). These instruments are majorly responsible for building the capabilities bar of the people in the value chain so that they undertake inclusive upgrading opportunities.

It is expected that following these instruments based on a particular social context, inclusiveness in the value chain can be achieved.

Rangelands face multiple challenges and thus these services or instruments are crucial in assisting nature-based value chains. The capacities of the value chain actors need to be strengthened through appropriate information, knowledge, and resources (Sala, 2019).

3. What can be changed through the interventions to bring about inclusion?

Productivity growth by smallholders cannot be achieved only with respect to technology supply push. An enabling institutional context is necessary for the farming system to generate productivity by adoption of innovations (Hounkonnou *et. al*, 2012). Most smallholder farmers face constraints with respect to access to technology, capital, markets and farmer organization (Bitzer *et al.*, 2009). Thus, value chain development should be focused on asset-based approach (endowments and changes in human, social, physical and financial capital) to be effective in reducing poverty (Stoian *et al.*, 2012).

Following Fernandez-Stark and Bamber (2012), we use the Four Pillars Model to identify the changes required in the institutional arrangements:

- **Access to market:** This will increase the competitiveness of the farmers as they will be able to maintain relations with the producers independently and they will also be protected from

the problems arising from asymmetric information. Thus, providing networks for establishing of such linkages is of utmost importance.

- **Access to training:** Value chain inclusion must be facilitated by the provision of training on the fronts of awareness building, technical training, entrepreneurial training and social skills training. Awareness building is important to gain the trust of the farmers and communicate to them the reason for adapting change. Technical training is defined by providing access to better agricultural practices with a focus on increasing productivity. Entrepreneurial training requires learning the skills of planning, financial literacy, client management, timely infrastructure and equipment investments etc. To achieve economies of scale, the farmers must learn the soft skills of leadership, communication, teamwork and conflict management.
- **Access to credit:** Since farmers are often constrained by the availability of capital to participate in the value chains, the interventions should be directed to help the farmers access finance through different models. Influential supporting funding institutions and other agencies should coordinate with the banking sector to provide assistance in developing specific financial instruments for the benefit of the farmers.
- **Access to collaboration:** Collaboration should occur at the horizontal level within the farmers. Producer organizations formed as a result of collective action can be instrumental in reducing transaction costs, tapping into high value markets, increasing bargaining power and thus reduce barriers to entry (Markelova *et al.*, 2009). The group characteristics (group cohesion, sharing norms and social capital); institutional arrangements (organizing structure and rules, of monitoring and enforcement); types of product and markets and external environment (linkages with the market and the state) are the factors that matter for collective action or formation of a producer organization (Markelova *et al.*, 2009). The government and the private sector must play enabling and complementary roles for the formation of the producer organizations. Levels of trust in the community can lead to higher participation in the value chain and such trust levels as part of the social capital can be achieved due to the formation of the producer organizations. The institutional context should be made such that the formation of such producer organizations based on collective action is facilitated.

Thus, the drivers of inclusion must be capable of transforming some of these institutional arrangements to improve the value chain. A holistic model of intervention for smallholder inclusion in rangelands value chain based on these provisions will be accessible.

Explanation of the framework: Part II

Though this model for inclusion appears to be holistic, studies have also shown that these are not the only factors that are affected by the process of inclusion. Fragmented studies based on research on relations between gender and inclusion, stakeholder participation and inclusion exists, but no single framework addresses these relations comprehensively. Thus, in this paper we aim to bring four further dimensions under the ambit of inclusion.

A. Empowerment

To incorporate empowerment in inclusion, we must follow a relational perspective to inclusion. It is important to understand the factors and actors that create inequalities at the local and the global level and the interactions across these levels. A relational approach to inclusiveness would examine how policy processes and outcomes can be manipulated in the favour of few actors (Oxfam, 2014b). This relational analysis also helps us determine how the deprived can be empowered and the conflict between the wealth at the local and global level solved.

Empowerment is ‘gaining mastery over one’s affairs’ (Rappaport, 1987). We can use the principles of inclusive development to analyse the inclusivity of the value chain. An inclusive value chain thus will encompass the four principles of empowerment (Rowlands, 1997; Narayan, 2002; Ibrahim and Alkire, 2007; Quaadvlieg *et al.*, 2014):

- **Power to:** Create and benefit from new opportunities.
- **Power with:** Collective action, having a voice based on representation and social organization
- **Power from within:** Increased self-esteem and self-confidence in one’s ability to effect change

- **Power over:** Ability to resist manipulation and power over assets.

A value chain must be able to satisfy the above principles of empowerment. Some possible indicators to measure the extent of empowerment in the value chain is shown in Table 3.

Table 3: Indicators to measure empowerment

Empowerment	Indicator
Power to	○ Sell to higher number of markets ○ Undertake processing ○ Invest in new equipment
Power with	○ Number of SHGs, FPOs, ○ Cooperatives for the value chain as well as other value chains ○ Representation on village bodies
Power from within	○ Number of entrepreneurs within the value chain ○ Leadership positions ○ Educational improvements
Power over	○ Assets in the name of the farmer ○ Assets in the name of the cooperative ○ Higher bargaining power

Following Bitzer *et al.*, 2009 we can measure the degree of empowerment on a scale of 2 to 0. If all of the indicators are satisfied within each ‘power categories’, then the category can be assigned a value of 2 and if none are satisfied, they can be assigned a value of 0.

Empowerment in rangeland value chains is not only an individual process, but also relates to the development of the community as a whole since it is a communal activity. Thus, the capacity-building initiatives, collaborative governance for the value chains and social cohesion can be regarded as the pull factors for empowerment in a rangeland value chain. The role of empowerment in inclusive rangeland value chains must be to revert the existing power inequalities and promote equitable participation (Slayi *et al.*, 2024).

B. Degree of local stakeholder engagement

Researchers note a general absence of local stakeholder involvement in partnerships, be it farmers, producer organizations, communities, or local governments (Rein and Stott 2009).

Local stakeholders need to be included in any partnership project for it to succeed. The local stakeholders must be involved in the partnership from the planning and designing stage instead of just being depended upon in the implementation stage. This will lead to more effective partnerships and encourage a higher degree of participation from the local stakeholders.

Since individual farmers are limited by scales, a producer organization can act on their behalf to make the partnership more effective. But it is to be noted that local stakeholder engagement is not related to the farmer participation alone but it is also related to the involvement of local governments, businesses and NGOs.

Thus, we can evaluate the degree of local stakeholder engagement on the following dimensions using the method proposed by Bitzer *et al.*, 2009. We have also added a new criteria under the dimension of degree of local stakeholder engagement.

The following measure can be used to rank the degree of engagement.

Table 4: Measurement of degree of engagement of stakeholders

Criteria	2	1	0
Degree of formalization of the partnership	Common objectives, budget and planning decided among all actors	Only some actors of the partnership are included in broad objectives and planning	Ad hoc planning and implementation
Degree of producer organization involvement	Participation of PO vital from design to implementation	Participation of PO only during implementation	No involvement
Degree of domestic government involvement	Participation integral to execution, financial access and policy outcomes	Participation only for financial access	No involvement
Degree of private sector involvement	Buying arrangement with the PO, helps in provision of inputs and technology	Buying arrangement with the PO	No private sector actors involved
Degree of handholding agency involvement	Involvement with respect to design, training and capacity building; facilitating finance	Involvement with respect to design and implementation	No handholding agency

It is important to take into consideration the costs of formation of the farmer organizations at the local level according to the institutional context of the value chain model. The important question to consider is who will bear the cost of forming the farmer organization as the costs of new arrangements may sometimes be responsible for exerting downward pressure on prices of the product (Neilson, 2014).

Varied stakeholders play multiple roles in the rangeland value chain, determining their position and influence in decision-making along the chain. Key stakeholders in rangeland value chain must work in coordinated approaches to harmonize their contributions and avoid duplications of efforts towards enhancing commercialization of activities among the smallholder producers. Also, there is need for investment in innovating and developing models that will not only enable easy access to information but also facilitate participatory stakeholder engagement at all levels of the value chain (Omollo *et al.*, 2019).

C. Gender

A high level of feminisation in agriculture is noticed around the world, however this has not resulted in women enjoying the benefits of labour or having control over their income (Pyburn *et al.*, 2015). Problems of rural wage gap between men and women and difference in other benefits are problems that plague agricultural societies. Since social and structural inequalities exist to prevent women from gaining access to resources and make productive contributions, it limits agricultural opportunities as well as the amount of food produced that is related to food and nutrition security. Advancing gender equality in all spheres of the economy would add US\$12 trillion to global annual GDP by 2025 (Woetzel *et al.*, 2015). Addressing gender equity and women's empowerment can be an effective measure to promote development and hence also finds a place in this framework on inclusion.

The growth of modern supply chains involves certain issues with respect to gender. Since women have less access to land, credit, technology and they are also bound by the cultural norms, they may be excluded from production contracts. Even if they are included in the modern supply chains, the contract conditions may have gender biases with respect to wages, work conditions etc. There are also chances of women facing higher work intensity when the work

structure is gendered. Lower access to the contracts may hinder gender equality by relegating women to the tasks that yield lower productivity in agriculture. The bargaining and the decision-making power of the women may increase if they have direct access to the modern value chain contracts. The higher control over the additional income by the women has better outcomes for their empowerment (Maertens and Swinnen, 2012).

Gendered use, control and ownership of assets affect the participation in the value chain and the benefits of participation. (Quisumbing *et al.*, 2015) When there is an unequal distribution of ownership, the benefits are also skewed in the favour of the majority owner. Thus project designs should be deliberate to include the change in the distribution of benefits across genders. The project should also focus on creating intangible benefits (human and social capital) based on the local contexts and institutions. The changes brought about in the existing value chain must ensure that equitable relations across gender are maintained during its different stages (Adebayo, 2010). Interventions and policies that reduce the gender gap in assets are better able to achieve development outcomes related to food security, health, nutrition, and other aspects of well-being related to agency (Meinzen-Dick *et al.*, 2011).

Once we have justified the importance of gender in the framework, we need to identify its indicators. Following the Women's Empowerment Index in Agriculture and its 5 Dimensions of Empowerment (Alkire *et al.*, 2013) and some other domains identified from literature (Tallontire, 2005; Barrientos, 2001), we have come up with the following indicators to measure inclusion for gender in the value chain.

Each domain will be awarded a point of 2 if all the indicators are satisfied. If some of them are being satisfied, it will be awarded a point of 1 and if none are being satisfied, they will be awarded a point of 0.

Women also play a critical role in the rangeland value chains. Known as the 'hidden hands', since their role is often overlooked, the pastoral women engage in cultural activities, socio-economic conservation and management of natural resources. They are also responsible for rearing the animals, milking, milk processing and marketing, thus justifying the inclusion of gender in the inclusiveness measure of a rangeland value chain (Omollo and Mafongoya, 2019).

Table 5: Indicators to measure gender inclusion in value chains

Gender equity	Indicator
Production	○ Input in productive decisions ○ Autonomy in production
Resources	○ Ownership of land and assets ○ Access to and decisions about credit ○ Transactions related to assets
Income	○ Control over use of income
Leadership	○ Participation in collective action ○ Speaking in public
Time	○ Workload ○ Leisure
Access to the chain	○ Women as employees ○ Women as entrepreneurs
Governance structures	○ Higher bargaining power for women ○ Provision of non-wage benefits
Representation of women	○ Adequate representation for women workers ○ Women members in managerial positions
Differential rewards and opportunities	○ Wage equality across gender ○ Upgrading opportunities for women
Segregation of activities	○ Formal modes of employment for women ○ Balance provided between work and household

Explanation of the framework: Part III

The second part successfully established the different domains along with its indicators that can analyse the strength of inclusiveness of a value chain. However, the success of an operational value chain cannot be measured only by the strength of its inclusive property. We also need to analyse whether the inclusion is driving improvements on the ground. To measure how the outputs of inclusion are improving the value chain, we used literature to establish two domains- project outreach potential and the farmers' ability to capture value.

I. Project outreach potential

Three categories of project outreach beneficiaries can be identified (Dunn, 2014):

Direct contact: The participants who directly interact with the project funded activities, materials and personnel as part of the facilitation process.

Indirect contact: These participants are vertically linked to the direct contact participants. Project interventions reach these farmers through their vertical linkages with direct contact participants like input suppliers and lead firms like exporters and supermarkets. Indirect contact can be defined in different ways for the project in questions.

Imitators: Project demonstration effects of successful practices and the business models of the value chain may reach these beneficiaries through spill-over effects. However, these effects will not be easy to quantify and will achieve a cumulative effect over time.

A positive association is expected between the numbers of different forms of participation and inclusion. Though direct contact beneficiaries are easier to quantify, efforts should also be made to quantify the number of indirect and imitator participants to gauge the strength of the intervention.

Another way to categorise the value chain participants is borrowed from Roduner (2007) as cited in (Jordaan *et al.*, 2014).

- **Value chain players:** The ones who are directly active in converting the physical product into the final product. The relationships between the different levels of the value chain players become important in this structure.
- **Value chain influencers:** The operations within the value chain are influenced by not only the regulatory and administrative conditions, but also the social and physical environments.
- **Value chain supporters:** Value chain supporters are the ones who provide the requisite information and training in order to help the players thrive in the environment specified by the influencers.

In this case, a higher number of value chain players will indicate the strength of inclusion in the value chain. Improvement in the influencers including infrastructure and collaboration will lead to more inclusive outcomes. To make an inclusive value chain sustainable, the number of

supporters to the value chain should be decreasing with time as the players should be able to maintain the value chain operations on their own.

II. Farmers' ability to capture value

Since the farmers are engaged in product and process upgrading, the question arises whether the farmer is able to capture part of the value that is being created as a part of the upgrading. An inclusive value chain will always enable the farmer to capture the created value most effectively.

There can be four kinds of changes that can be noticed in an effective value chain intervention that can be used to understand the strength of inclusion (Bolwig *et al.*, 2010):

- **Inclusion of new participants:** This refers to the inclusion of the actors in a modified value chain or in a newly created value chain. If the value chain takes into consideration all the domains of inclusion and creates conducive environment for participation, this number should increase.
- **Continued participation under new terms:** An inclusive value chain can change the terms of the existing structure for the better. The new terms can be conducive for participation when the value chain is inclusive.
- **Expulsion of participants:** This results from a change in restructuring of the value chain as well as change in external factors. However, an inclusive value chain should strive to keep the phenomenon of expulsion to a bare minimum.
- **Non-participation:** A truly inclusive value chain will structure the percolation of benefits of value chain to the non-participants as well who will be the indirect beneficiaries of the value chain intervention.

The other aspect that strengthens the need for inclusion is the outcomes associated with inclusion that needs to be evaluated. The outputs as discussed above are only part of the picture. They only explain that a higher participation in the value chain and a lower attrition from the restructured value chain will be a more inclusive value chain. However, the influence of inclusiveness in the

bigger picture should imply that the value chain affects the social context through the dimensions of livelihoods, gender and nutrition.

With this, we bring a close to the discussion on the framework for inclusion. The aim of the discussion has been to identify the background for inclusion in the first part, identify the domains and indicators for inclusion in the second part and the third part discusses the variables that can be used to measure the outputs from inclusion in the value chain.

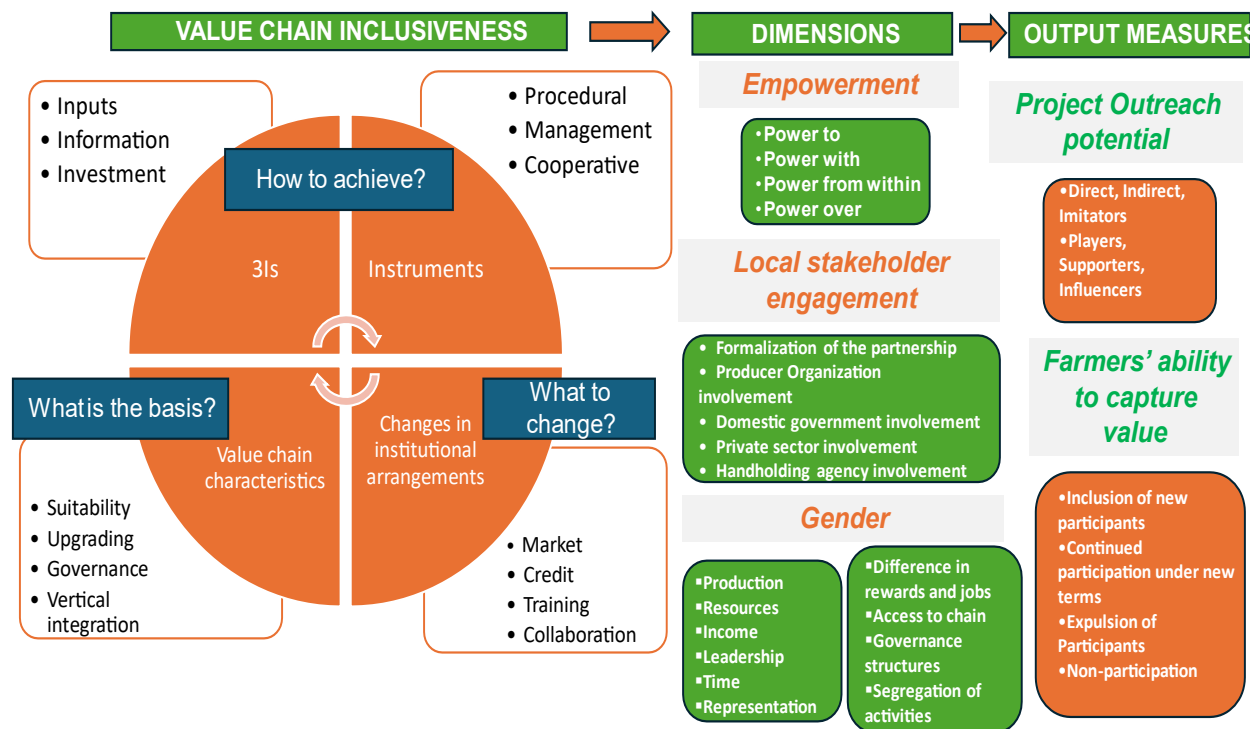


Figure 1: Framework for measuring inclusiveness in value chain

Conclusion and Implications

Though the model has tried to be comprehensive, care must also be taken to ensure that a value chain intervention that is aiming at inclusion must also be sustainable from the economic, social and environmental viewpoints (Fernandez-Stark & Bamber, 2012). Thus, the exit strategy should include important questions on linkage with the buyer; provision of technical assistance; maintenance of horizontal and vertical linkages and access to credit. The continued participation

of the farmers in the intervention effectively will depend on the development of their technical, entrepreneurial and interpersonal skills.

Social sustainability includes upholding the issues related to inclusion and can be addressed by the interventions that aim at improving the different domains under inclusion. Social sustainability should ensure that inclusion in the value chain should have a positive social impact for all the family members of the smallholder family: men, women and children. Gender quality and provision of economic opportunities to prevent urban migration are touted as the most serious issues that are encountered while designing value chain interventions. However, the social issues are context specific and may need a different approach.

Value chain affects the environment by its utilisation and interaction with the local resource base. Since smallholders already have limited land-holdings, they must be technically trained to keep the land arable and use the resources judiciously. It is expected that an inclusive value chain must not have detrimental effects for the environment. The limitation of the framework lies in the fact that it fails to include environment as a dimension in the framework. It is expected that incorporating this domain could be an idea for future research. Environmental sustainability must focus on the issues that promoting inclusive agriculture does not affect the resources adversely.

Further, this framework does not consider the significant risks posed to nature-based value chains such as rangelands arising from climate change effects such as reduced water availability, increased temperature variability, and changes in precipitation patterns (Lutta *et al.*, 2024). Future research could include dimensions of inclusion in the framework that call for active collaboration and investment in information, research and extension services related to climate change. This will not only enhance the adaptive capacity of the value chain actors but also promote sustainable development.

Another potential limitation arises from the fact that the framework was not applied to any value chain intervention to test its applicability and utility. The next steps of research can further be to verify whether these dimensions and indicators are suitable for nature-based value chains such as the rangelands and pastoral systems. The strategies to improve inclusion in the value chains,

must be rooted in the unique ecological and socioeconomic setting under which nature-based value chains, such as rangelands, operates.

Despite its limitations, the framework could be helpful to analyse the inclusion strength of a value chain intervention, from a policy perspective. The framework could also be useful in designing interventions specific to a local context such that all the dimensions under inclusion are satisfied. Such testing and validation will enable the replication of successful value chain interventions and generate positive outcomes for sustainable development.

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