

## Multiple inequalities: women and livelihoods in the Koshi river basin

Foran T<sup>1</sup>, Lahiri-Dutt K<sup>2</sup>, Sugden F<sup>3</sup>, Neupane N<sup>4</sup>, Gurung Goodrich C<sup>4</sup>, Wahid S<sup>4</sup>

1 CSIRO Land and Water Flagship

2 Australian National University

3 International Water Management Institute

4 International Centre for Integrated Mountain Development

### Introduction

The Koshi river basin extends from the Tibetan plateau through the Himalaya into the Eastern Gangetic Plains (EGP). Home to 300 million people, the EGP is the world's highest concentration of rural poverty, with strong dependence on agriculture for food security and livelihoods. The work presented here is a contribution to the Koshi Basin Programme, a research-for-development project funded by the Australian Government. CSIRO's work in the program aims to develop capability in river basin modelling, with aspirations to link that to scenario analysis of how changes in water resource availability may impact on livelihood outcomes, including outcomes for women and girls.

In this paper, we compare the findings of three recent, independently designed and executed studies which focus on the constraints and opportunities facing women in upland and lowland zones of the Koshi Basin in Nepal and India (Khadka, Rasul, Bennett, Wahid, & Gerlitz, 2014; Lahiri-Dutt, 2014; Fraser Sugden, et al., 2014). We focus on a comparative analysis of the policy and strategic recommendations in the three studies, based on a novel conceptual framework, the Scope-Argument-Implementation framework (Nelson, Foran, & Bourgoin, in prep).

The 40 million people in the landscapes of the Koshi basin face a number of development challenges that are both socio-political and biophysical. Biophysical challenges include landslides that occur in the middle mountains. In the flood plains, the Koshi's very high sediment load, exacerbated by human structures including embankments and road and rail lines, leads to water-logging and vulnerability to embankment failure. A 2008 breach of the embankments impacted on several million people, with 100,000 households recognized by the state as eligible for assistance, but as of 2015 compensation and rehabilitation is still ongoing. As a social science contribution to Koshi Basin Programme, we asked: *What strategic and policy recommendations do three independent studies focusing on gendered vulnerability to climate change? What opportunities exist to improve specificity of policy advice?*

The motivation of this analysis is to enhance the policy relevance of academic studies. It is typical for academic analyses to offer very detailed problem definitions (and indeed the signal contribution of academic social science work is problem re-framing). Many academic studies also offer strategic or policy recommendations, but these are usually much shorter than the problem analysis, and may not deliver policy advice that a responsible actor could implement. For example, Erenstein and Thorpe (2011), based on a 72-village study across the Gangetic Plains, noted that the prevalence of flooding & water-logging in Eastern plains

reduces opportunities for low-risk diversification. The quality of education, roads, and other services is low. Their strategic recommendations include stimulating labour-intensive economic growth and enhancing primary rural education to support non-farm livelihoods, without elaboration as to what sectors should be targeted for stimulus or how delivery of education could be more effective.

A study looking at two villages in Bihar tracked over three decades, found that men in Manisham, the more remote village, located in a flood and drought prone area in north Bihar (population 6300), had disengaged from agriculture to seek non-farm work, with a majority absent more than eight months (Datta, Rodgers, Rodgers, & Singh, 2014). The authors found that:

“once migration had become established . . . labour was not necessarily available when it was needed . . . discouraging agricultural investment and innovation. In other words, higher migration and agricultural underdevelopment fed on one another.”

(Datta et al. 2014: 1201)

Datta et al. (2014) conclude that as a development model migration leaves behind "a rural backwater without strong economic base." They argue, without further elaboration, for state intervention to increase and diversify agricultural and non-agricultural production for men and women.

More specific policy advice appears in a World Bank study focusing on the impacts in Bihar of India's National Rural Employment Guarantee Scheme (Dutta, Murgai, Ravallion, & van de Walle, 2014). The NREGS is India's (and possibly the world's) largest antipoverty public employment program, designed to offer every household 100 days of employment at minimum wages on local projects, intended to maintain or create sustainable assets to promote future livelihoods (ibid, 2). Recent guidelines for permissible projects under the Scheme include watershed, agriculture, livestock, fisheries, forestry, and sanitation-related works (ibid, 225). The implementation of NREGS in Bihar has increased public works expenditures, with high rates of participation by lower caste people and by women. For example, person days of employment increased from 60 to 160 million between 2006/07 and 2010/11. Women filled 28% of the days employed, while scheduled caste or scheduled tribe people filled 47% in 2010/11.<sup>1</sup>

The Scheme however has had a modest impact on poverty reduction in Bihar: impacts would have been greater had it not been implemented in a way that (1) did not ration access to work and (2) paid all beneficiaries the wages they were entitled to (i.e. did not suffer from “leakages”). Diagnosis reveals that more effective implementation requires attention to both “supply-side” issues such as weak financial management and work scheduling processes, as well as “demand side” issues such as people's lack of awareness of entitlements, particularly in villages with higher inequality and greater inter-group tension (Dutta et al. 2014). Dutta et al. (2014) recommend enhancing government administrative capacity; increasing public

---

<sup>1</sup> Expenditures per households provided employment increased from 442 Rs in 2006-07 to 1526 Rs in 2010-11, while households provided employment increased from 1.7 to 4.7 million during the same period.

mobilization and awareness; and developing grievance mechanisms. Although the study offers detailed policy advice, focusing on implementation, and draws on an array of economic and development studies literature, it does not provide an explicit conceptual framework aimed at improving on policy formulation or implementation.

## **Methodology**

The Scope-Argument-Implementation (SAI) conceptual framework is a tool we have been developing to analyze academic and applied development discourse (Nelson, et al., in prep). It is intended to help policy analysts improve policy specificity and remedy some of the gaps identified above.

“Scope” refers to the topic of the discourse (that is, how it defines or frames issues). For example, what aspects of the political economy of making a living are defined as problems, and for which of these components is policy advice being offered? Scope can be analysed against the topics of any relevant conceptual framework: we have begun to analyze the scope of the three studies, against the components of the sustainable livelihoods framework (Ellis, 2000), working in NVivo.

For “argument” we synthesized two frameworks, that of Fairclough & Fairclough (2012), and the institutional grammar framework of Crawford & Ostrom (1995). Fairclough & Fairclough (2012) show how political discourse can be analysed in terms of values – statements about what matters (or should matter) to an actor; circumstances – definitions of the problem or issue; goals – descriptions of future states, in which values are realized; and means-to-goal arguments (actions designed to move the situation from current circumstances to the goal, in accordance with the actor’s values). The benefit of doing this is to allow claims for action by different authors to be compared, for example in terms of the different values upon which they are based, or the different formulation of goal statements. It also allows sequences of actions (that is, means-goal arguments) to be further studied.

Figure 1 about here

From Crawford and Ostrom (1995) we use the concept of “strategy,” which we define as combinations of goals, actions, agents (i.e. responsible actors), and references to policy processes or instruments. Their concepts of “norms” and “rules” allow analysts to describe the strength of a discourse: norms refer to normative language that may be in policy discourse, such as an actor “should,” or “must” perform a certain action. Rules here refers to sanctions that apply if an action is not performed (i.e. language such as “or else”).

The third element in the framework, “implementation” refers to a range of topics such as: budget, coordination, capability, institutional capacity, participation, transparency, and accountability. Implementation also includes key concepts from Ostrom’s Institutional Analysis and Design framework (Ostrom, 2007), such as boundary, position and aggregation

statements. The idea is that development discourse that anticipates implementation needs to contain these kinds of topics.

In this conference paper however I will focus on the strength and scope of policy argument in the three studies. Again, the purpose of such analysis is to make the different components of policy argument more visible, so as to allow them to be reflected on, debated, and elaborated.

### *Studies reviewed*

Our selection criteria for literature to be analysed using the SAI framework consisted of recently published, independently designed studies, with findings based on quantitative and gendered livelihoods data. We selected three highlighted studies in Table 1 for review, supplemented additional relevant publications by the co-authors (Sugden, 2009; F. Sugden, et al., 2014).

Table 1 about here

### **Findings: policy advice in three studies**

#### *Issue definitions*

Overall, the three studies offer compatible issue definitions. The bold text in Table 2 emphasizes an issue that is emphasized in one study but not necessary others.

Table 2 about here

*Khadka et al. (2014)* describe the Koshi as a river basin with complex social (caste) and physical stratification. Based on a multidimensional poverty index (Gerlitz, et al., 2014) they find that people in the plains (Terai) are generally more deprived than hill or mountain groups, and that lower caste people and Muslims are more deprived than higher caste people. Approximately 50% of deprivation from lack of access to electricity, improved drinking water, and improved sanitation (Khadka, et al., 2014: figure 2). Dalits in the Terai experience the highest levels of multi-dimensional poverty, with low education and social capital. Muslims and Dalits reported a difficulty in influencing even local decision making (Khadka, et al., 2014: 100). Khadka et al. (2014) also describe socio-cultural institutions that discriminate against women. These include early age of marriage, patrilineal land inheritance, and a strong gendered division of labour: women focus on domestic work which includes collecting water and fuelwood (e.g. 4.2 vs. 1.5 hours respectively). Terai socio-cultural institutions such as preference for male children, the custom of *purdah* (which stigmatizes work for wages) contribute to lowering women's economic and political participation.

One of the objectives of the Khadka et al. (2014) study was to review Nepal's climate change adaptation policies. The authors find that Nepal's National Adaptation Programme of Action lacks specific strategies to include women, or ensure that women benefit, from areas prioritized for adaptation (such as agriculture and food security). Nepal's national climate change policy states that women, the poor, and marginalized groups need to participate in implementing relevant programs, but the authors found no clear mechanisms in the policy to benefit marginalized groups (2014: 16-17).

In her study of women-headed households (WHH), *Lahiri-Dutt (2014)* attributes the feminization of agriculture to a combination of globalization and environmental change, resulting in livelihood diversification and male outmigration. Although wage inequality persists, the strongly gendered division of labour has blurred (e.g. women can work pesticide sprayers, but ploughing is considered men's work) and women's participation as wage workers and own-account farmers has increased. Women headed households have relatively low levels of productive capital (e.g. livestock, grain silos, irrigation pumps, labor-saving machinery). Labour shortages impact on all WHH, however, landless households or those with marginal access to land are unable to derive rental income and are therefore most severely impacted by labour shortages. Lahiri-Dutt emphasizes the fact that time constraints on land-poor WHH lead to a lack of capacity to diversify livelihoods (2014: 7, 55), a point echoed by Sugden et al. (2014).

Informed by a critical political economy perspective, *Sugden et al. (2014)* emphasize the importance of class and caste in conditioning vulnerability to climate change and ongoing socio-economic change. Class is evidenced by inequality in land holdings, and the marginal size of land holdings. For example, in the three districts surveyed the proportion of households (n=99) classified as either landless or having access to <0.5ha of land ranged from 67% to 81% (2014: table 2).

Sugden et al. (2014: 262) argue that economic surplus is appropriated from this "marginal farmer, tenant, and labouring class" through relations such as paying approximately 50% of the harvest as land rent (sharecropping) as well as usury (including high cost of pumped irrigation water, required for subsistence production [2014:265]). Social relations are described as "pre-capitalist," referring to the presence of a significant class of absentee landlords (high caste groups or groups otherwise privileged under earlier political regimes), as well as the lack of re-investment of rents in more intensified commercial farming.

Marginal and tenant farmers diversify their livelihoods through wage labour and male outmigration. Outmigration (whether longer term or during the dry season) is not, however, accompanied by immediate remittance benefits (because of time lags in receiving remittances) and is thus a possible cause of household grain shortages, and a certain cause of increase in women's farm labour burdens and stress, which prior to male outmigration already included the most labour intensive work, such as transplanting, weeding, and harvesting (2014: 262). Women left behind engage in agricultural wage labour, while also preparing their land for the next crop (2014: 267). For most households, male outmigration increases women's vulnerability.

### *Policy Argument*

Informed by compatible sets of values and issue definitions, the three studies have compatible overarching *goals*. Khadka et al. (2014) refer to empowering women, Sugden et al. (2014) refer to climate justice, and Lahiri-Dutt (2014) refers to delivering gender-equitable resilient development projects. The three studies include strategic or policy recommendations (i.e. *means-goal argument*) which are diverse, broad, and often radical. Khadka et al. (2014), writing in fairly general terms, focus on policy reforms to mainstream gender. Lahiri-Dutt (2014) makes a crucial point about the need for male support, to enable women to realize their capabilities in agriculture. Sugden et al. (2014) assert the need for redistribution. Table 3 shows the diverse array of recommendations in increasingly transformative order with respect to the status quo.

Table 3 about here

Table 3 also shows the distribution of recommended actions, from each of the three studies, against the components of a livelihoods framework. Sugden and colleagues emphasize changing institutions and social relations, including some fundamental reforms. Khadka et al. focus on policy processes aimed at institutional reform. Lahiri-Dutt provides the greatest diversity of recommendations across the livelihoods framework, with a focus on enhancing access to assets.

### **Discussion and conclusion: improving specificity of policy advice**

Motivated by an interest in distilling policy advice on the topic of women's adaptation and vulnerability to change in the Eastern Gangetic Plains and Koshi Basin, we conducted a comparative analysis of three independently designed and executed studies published in 2014. The studies focus on the constraints and opportunities facing women in upland and lowland zones of the Koshi River Basin and EGP. We found an important convergence on the policy objectives of gendered empowerment and equity, as well as climate justice. Notwithstanding differences in theoretical orientation, the studies exhibit highly compatible issue definitions. The situation facing poor people – and most women – in this South Asian region is bleak and of grave concern. The three studies point to inequality in land ownership as well as a range of institutions which discriminate against women and restrict their mobility as problems which deserve to be addressed – but exactly how?

Although the three studies contain an extensive array of recommendations, they are framed in very general terms, with a notable focus on reforming institutions and social relations. Casting a broad net that implicates many institutions and actors may be necessary, but of course dilutes the claim for action (i.e. the policy advice). To improve the specificity of such advice, it will be necessary to specify role of government (what can *governments* do to induce

action, given that capacity of governments is limited); identify responsible non-state actors; identify effective policy processes and instruments; and importantly, identify opportunities to link with existing policy or development interventions in the region.

A variety of relevant rural development policies and programs already exist. India for example has local watershed management programs, the Backward Regions Grant Fund, the Village Disaster Management Plan, a previous public works scheme in Bihar (*Sampoorna Grameen Rozgar Yojana*) and the NREGS (Dutta et al. 2014: 223). A secondary objective of the NREGS is to build community assets to improve future livelihoods. Under the Scheme, north Bihar has received notable investments in flood control and water conservation (28% of expenditures in 2008/09), and assets have been built on private land belonging to lower caste groups. However, in a context where planning has been described as fragmented and top-down (Dutta et al. 2014: 223), how such assets will impact on the livelihoods of poor people and women remains to be understood.

Meanwhile, ICIMOD and IWMI have proceeded to mobilize resources to further some of their own recommendations. ICIMOD and Helvetas (Nepal) have established a partnership to develop local water use “master plans” in 12 localities (VDCs) in the Koshi basin, where such participatory plans are described as a pragmatic approach to integrated water resources management. IWMI has begun to collect baseline data and mobilize farmer groups with potential interest in collective leasing of land, allowing more economic use of tube wells and pump sets (Sugden, 2015).<sup>2</sup>

In conclusion, addressing the multiple inequalities facing women and poor people requires massive and concerted effort. Applying methods of the kind outlined in this paper may improve the soundness of policy argument and the specificity of policy design.

## Acknowledgements

This conference paper is an output of the Koshi SDIP project, funded by Australia’s Department of Foreign Affairs and Trade and CSIRO’s Land and Water Flagship. An earlier version of this paper was presented at the Institute of Australian Geographers 2015 Conference.

## References

- Crawford, S. E. S., & Ostrom, E. (1995). A Grammar of Institutions. *American Political Science Review*, 89, 582-600.
- Datta, A., Rodgers, G., Rodgers, J., & Singh, B. (2014). Contrasts in Development in Bihar: A Tale of Two Villages. *The Journal of Development Studies*, 50, 1197-1208.
- Dutta, P., Murgai, R., Ravallion, M., & van de Walle, D. (2014). Right to work? : assessing India's employment guarantee scheme in Bihar. In. Washington DC: World Bank Group. <http://documents.worldbank.org/curated/en/2014/02/19165417/right-work-assessing-indias-employment-guarantee-scheme-bihar> Accessed 28/7/15.

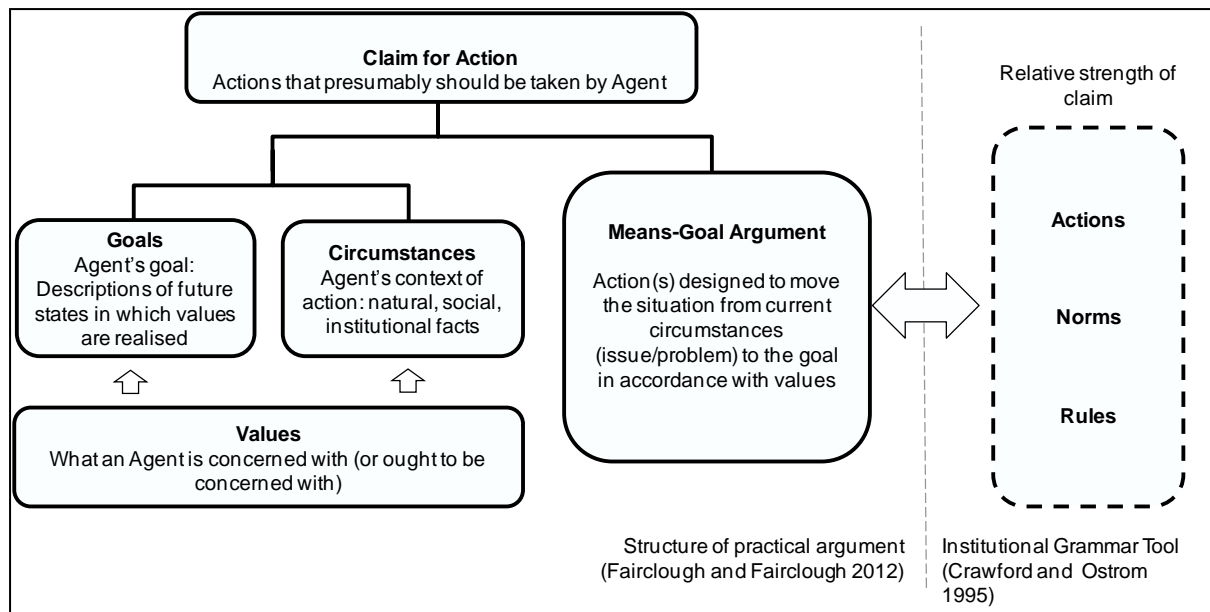
---

<sup>2</sup> ICIMOD is funded by the DFAT-funded Koshi Basin Programme and IWMI by the ACIAR project ‘Improving Dry Season Agriculture for Marginal and Tenant farmers in the EGP.’

- Ellis, F. (2000). *Rural Livelihoods and Diversity in Developing Countries*: Oxford University Press.
- Erenstein, O., & Thorpe, W. (2011). Livelihoods and agro-ecological gradients: A meso-level analysis in the Indo-Gangetic Plains, India. *Agricultural systems*, 104, 42-53.
- Fairclough, I., & Fairclough, N. (2012). *Political Discourse Analysis: A Method for Advanced Students*: Taylor & Francis.
- Gerlitz, J.-V., Banerjee, S., Hoermann, B., Hunzai, K., Macchi, M., & Tuladhar, S. (2014). Poverty and Vulnerability Assessment – A survey instrument for the Hindu Kush Himalayas. In Kathmandu: ICIMOD.
- Khadka, M., Rasul, G., Bennett, L., Wahid, S., & Gerlitz, J.-Y. (2014). Gender and Social Equity in Climate Change Adaptation in the Koshi Basin: An Analysis for Action. In W. Leal Filho (Ed.), *Handbook of Climate Change Adaptation*. Berlin: Springer-Verlag.
- Lahiri-Dutt, K. (2014). Experiencing and coping with change: women-headed farming households in the Eastern Gangetic Plains. In Canberra: Australian Centre for International Agricultural Research.
- Nelson, R., Foran, T., & Bourgoignie, J. (in prep). Policy pathways for Food Security in West Africa I: an analytical framework to support participatory policy development. In Canberra: CSIRO Land and Water Flagship.
- Ostrom, E. (2007). Institutional rational choice: an assessment of the institutional analysis and development framework. Chapter 2. In P. A. Sabatier (Ed.), *Theories of the Policy Process* (pp. 29-71). Boulder: Westview.
- Sugden, F. (2009). Neo-liberalism, markets and class structures on the Nepali lowlands: The political economy of agrarian change. *Geoforum*, 40, 634-644.
- Sugden, F. (2015). Tenancy in the Eastern Gangetic Plains: Collective action to overcome agrarian stress. In *2015 World Bank Conference on Land and Poverty*. The World Bank - Washington DC, 23-27 March 2015.
- Sugden, F., Maskey, N., Clement, F., Ramesh, V., Philip, A., & Rai, A. (2014). Agrarian stress and climate change in the Eastern Gangetic Plains: Gendered vulnerability in a stratified social formation. *Global Environmental Change*, 29, 258-269.
- Sugden, F., Shrestha, L., Bharati, L., Gurung, P., Maharjan, L., Janmaat, J., Price, J. I., Sherpa, T. Y. C., Bhattarai, U., Koirala, S., & Timilsina, B. (2014). Climate change, out-migration and agrarian stress: the potential for upscaling small-scale water storage in Nepal. (IWMI Research Report 159). In (pp. 38). Colombo, Sri Lanka: International Water Management Institute (IWMI).



**Figure 1 Components of argument**



Source: Nelson, Foran and Bourgoign (in prep)

**Table 1 Relevant studies**

Study Title / Design	Authors /Institutes	Date published
Socio-economic-livelihood study and policy analysis on Koshi River Basin in Bihar (1800 households in Bihar)	D. M. Diwakar et al. A.N. Sinha Institute of Social Studies (Patna)	in progress
<b>Poverty, vulnerability and adaptive capacity assessments</b> (PVAT & VACA) (5383 households in Nepal Koshi Basin)	M. Khadka et al. ICIMOD	2014
<b>Experiencing and coping with change: women-headed farming households in the Eastern Gangetic Plains</b> (263 women heads of households)	K. Lahiri-Dutt ACIAR	2014
Sustainable and Resilient Farming Systems Initiative (480 focus group discussions across eight districts in Eastern Gangetic Plains)	CIMMYT/Bangladesh Agricultural Research Council	in progress
<b>Agrarian stress and climate change in the Eastern Gangetic Plains</b> (66 interviews, 10 focus groups, 427 household survey in Koshi basin)	F. Sugden et al. IWMI	2014

Source: Authors

**Table 2 Issue Definitions**

<b>Khadka et al. (2014)</b>	<b>Sugden et al. (2014)</b>	<b>Lahiri-Dutt (2014)</b>
Complex social and physical stratification	<b>Marginal size of holdings &amp; inequality in land holdings</b>	Feminization of agriculture (~70% of agricultural workers are women)
Socio-cultural institutions discriminate against women	Gendered division of labour	Blurring of gendered division of labour
<b>No clear mechanisms in Nepal's national climate change policy to benefit marginalized groups</b>	<b>Usury</b>	Women's increased participation as wage workers and own-account farmers
<b>Increased reliance on surface water</b>	<b>Increased cost of inputs &amp; living</b>	Wage inequality
<b>Some locally resilient agroecological practices</b>	Differential access to government subsidies based on class (& caste)	<b>Major time constraints on women-headed households</b>
	Different household-level adaptive strategies based on class	<b>Lack of capacity for diversifying livelihoods</b>

Source: Authors

**Table 3 Means-Goal Arguments**

<b>Khadka et al. (2014)</b>	<b>Sugden et al. (2014)</b>	<b>Lahiri-Dutt (2014)</b>
(1) <i>Understand and recognize</i> differential vulnerability & adaptation [policy process]	(1) End discriminatory <i>laws</i> [institutions]	(1) Enhance <i>social capital</i> [social capital]
AND	AND	AND
(2) Integrate gender & social dimensions into climate change <i>policies</i> [policy process]	(2) Help women “engage in <i>bureaucracy</i> ” [institutions + gender]	(2) Support <i>small livestock development</i> [physical & natural capital]
AND	AND	AND
(3) <i>Monitor outcomes</i> using gender-disaggregated data [institutions]	(3) Improve access to low-cost <i>irrigation (for women &amp; young men)</i> [physical capital + gender + age]	(3) Make timely <i>field labour</i> available [human capital]
AND	AND	AND
(4) <i>Recognize NRM knowledge</i> of rural women, local people, indigenous people [institutions]	(4) Provide subsidies for <i>agricultural inputs</i> [physical capital]	(4) Improve <i>access to information, markets and transport</i> [markets + physical capital]
AND	AND	AND
(5) Facilitate access to knowledge & technologies [human capital]	(5) Reduce risks in agriculture [institutions]	(5) <i>Recognize difference</i> in women’s needs based <i>on land ownership</i> [policy process + class]
AND	AND	AND
(6) Change governance systems to <i>enhance access &amp; entitlement</i> of women & socially marg groups to resources [institutions]	(6) Experiment with new social relations of production (such as co-op farming and collective access to infrastructure) [social relations]	(6) <i>Build capacity of women-headed households</i> [human capital]
	AND	AND
	(7) Undertake land reforms to <i>dismantle pre-capitalist inequalities</i> [social relations]	(7) Mainstream gender in all <i>agricultural development projects</i> [organisations]
		AND
		(8) <i>Enlist male support</i> for greater resources, benefits & responsibilities for women [gender]
		(9) <i>Enhance understanding</i> of role of remittances [policy processes]

Source: Authors; emphasis added