Analyzing the Food System of Nepal

Foresight for sustainable food systems in the Eastern Gangetic Plains (EGP)
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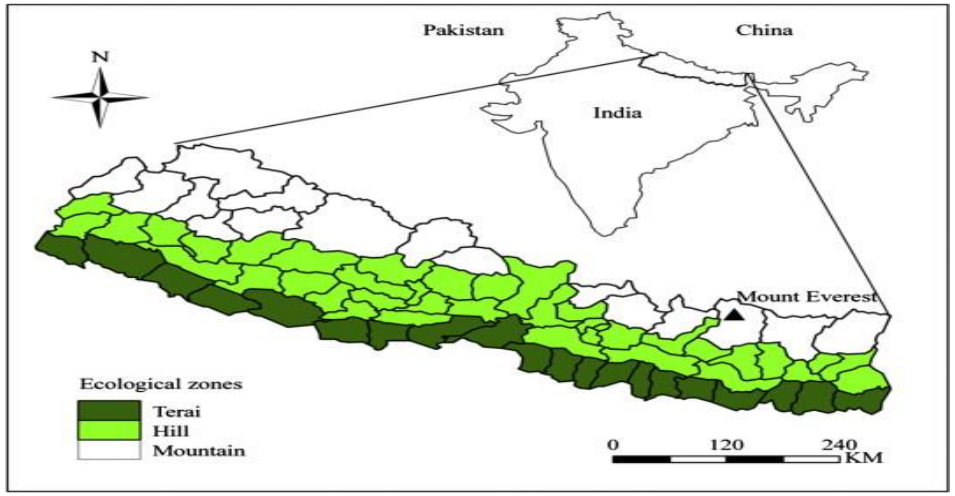
Madhav Karki, Research Leader &
Sarba Raj Kahdka, Research Dy. Leader
Pawan Paudel & Archana Dhakal; Research Associates



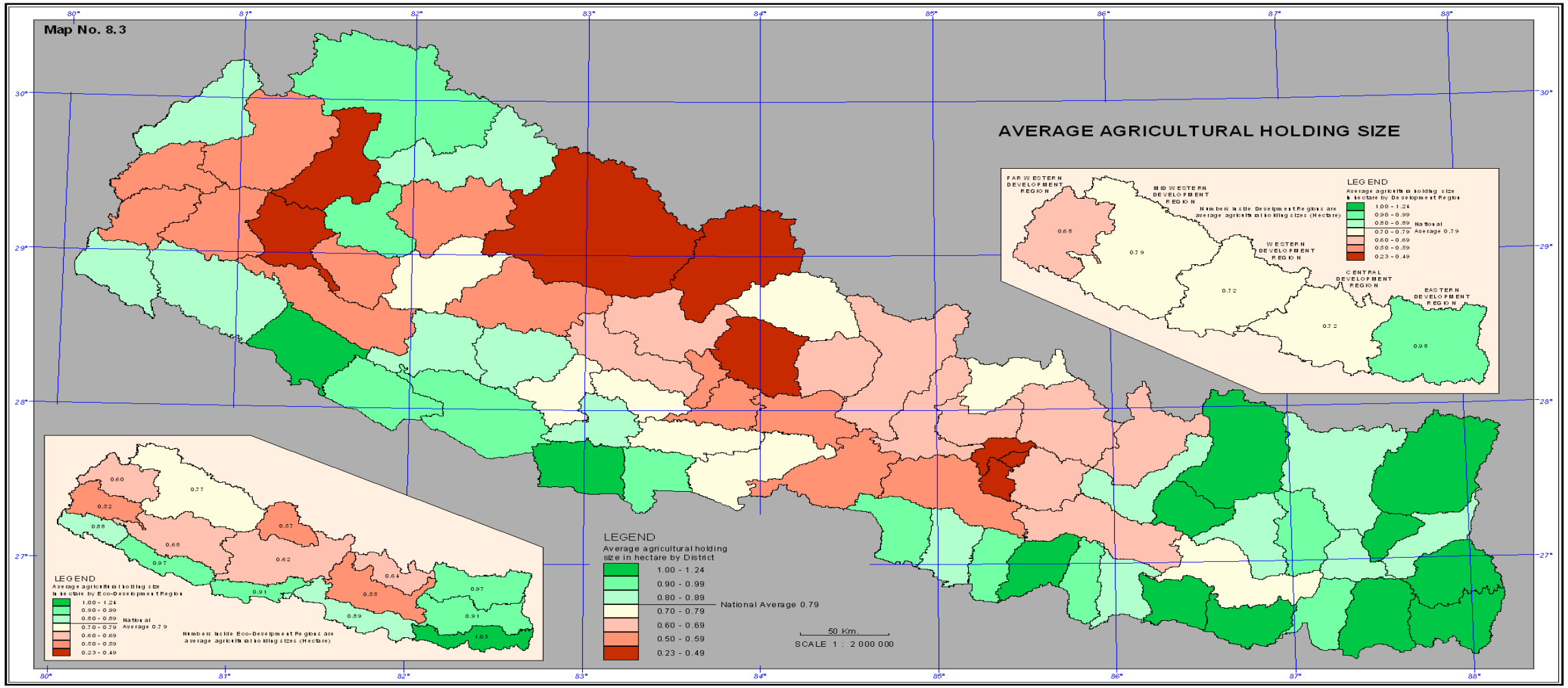
Outline

- Understanding the food security and food systems in Nepal
- Food-water-energy nexus framework
- Major drivers impacting food system now and in future
- Framework for analysing food system in Nepal
- Source of knowledge, information and data
- Testing and validation of methods and assumptions
- Community of practice to support foresight and scenario analysis

National contexts

- Population growth and pressure on land (1.35% per annum, 180/sq km; average farm size 0.79 ha)
- Land area vis a vis agricultural land
  - Arable land: 41,210 sq km (28%) of total land
  - Cultivated land: 30,910 sq kim (75% of arable land)
  - Irrigated land: 13,310 sq km (43% of cultivated land); monsoon dependent
- Agricultural situation (subsistence to semi-commercial farming)
- Governance and service delivery system – currently in a restructuring process due to federalization
- Heavy out-migration of youths (males and females) leading to heavy burden to women and elders (labour shortage)

Distribution of Farm Holdings



AVERAGE AGRICULTURAL HOLDING SIZE

Average agricultural holding size is the ratio of total area of holdings to the number of holdings.

At National level, the average agricultural holding size was 0.79 hectares in 2001.

At District level, Kapilbastu had the highest (1.24 hectares) and Bhaktapur had the lowest (0.23 hectares) average agricultural holding sizes.

At Eco-Development Region level, Far Western Hill had the lowest (0.52 hectares) and Eastern Terai had the highest (1.03 hectares) average agricultural holding sizes.

At Development Region level, Far Western had the lowest (0.68 hectares) and Eastern had the highest (0.98 hectares) average agricultural holding sizes.

SN	DISTRICT	TOT	NHOL	AHS	SN	DISTRICT	TOT	NHOL	AHS	SN	DISTRICT	TOT	NHOL	AHS	SN	DISTRICT	TOT	NHOL	AHS	SN	DISTRICT	TOT	NHOL	AHS
1	ACHHAM	18647	42388	0.44	16	DARCHULA	17508	19873	0.88	31	KAILALI	67839	77082	0.88	46	MYAGDI	13189	21537	0.61	61	SALYAN	29534	35900	0.82
2	ARGHAKHANCHI	34858	39124	0.89	17	DHADING	35871	58749	0.61	32	KALIKOT	15311	15512	0.99	47	NAWALPARASI	58753	82825	0.71	62	SANKHUWASABHA	25201	28227	0.89
3	BAGLUNG	33016	48694	0.68	18	DHANKUTA	24800	28374	0.87	33	KANCHANPUR	46749	53558	0.87	48	NUWAKOT	30480	49775	0.61	63	SAPTARI	77797	75512	1.03
4	BAITADI	22008	38989	0.56	19	DHANUSHA	76792	87464	0.88	34	KAPILBASTU	70909	57332	1.24	49	OKHALDHUNGA	31494	29019	1.09	64	SARLAHI	86260	85084	1.01
5	BAJHANG	13696	27607	0.50	20	DOLAKHA	27406	40396	0.68	35	KASKI	22816	51811	0.44	50	PALPA	31624	44406	0.71	65	SINDHULI	30493	46295	0.66
6	BAJURA	9093	19557	0.46	21	DOLPA	2511	5399	0.47	36	KATHMANDU	13285	53624	0.25	51	PANCHTHAR	28187	34100	0.83	66	SINDHUPALCHOK	34929	57360	0.61
7	BANKE	45792	49375	0.93	22	DOTI	17687	33286	0.53	37	KHOTANG	33676	41373	0.81	52	PARBAT	14141	28498	0.50	67	SIRAHA	65229	78893	1.08
8	BARA	53617	62280	0.86	23	GORKHA	32943	54638	0.60	38	LALITPUR	9959	32594	0.31	53	PARSA	52422	55222	0.95	68	SOLUKHUMBU	20664	20246	1.02
9	BARDIYA	48428	47520	1.02	24	GULMI	41420	54436	0.76	39	LAMJUNG	19059	31914	0.60	54	PYUTHAN	26562	37887	0.70	69	SUNSARI	80411	81680	0.98
10	BHAKTAPUR	6000	25745	0.23	25	HUMLA	6379	6762	0.94	40	MAHOTTARI	67870	72632	0.93	55	RAMECHHAP	32419	38000	0.84	70	SURKHET	27611	48314	0.57
11	BHOJPUR	33641	37042	0.91	26	ILAM	52890	48490	1.09	41	MAKAWANPUR	34256	59071	0.58	56	RASUWA	5449	7731	0.70	71	SYANGJA	30393	55914	0.54
12	CHITAWAN	42113	71429	0.59	27	JAJARKOT	16697	23671	0.71	42	MANANG	1131	1470	0.77	57	RAUTAHAT	66372	67003	0.99	72	TANAHU	29326	54221	0.54
13	DADELDHURA	12224	20620	0.59	28	JHAPA	109532	104654	1.05	43	MORANG	116529	115162	1.01	58	ROLPA	30166	36830	0.82	73	TAPLEJUNG	23541	22870	1.03
14	DAILEKH	22978	38830	0.59	29	JUMLA	8184	14875	0.55	44	MUGU	6454	7633	0.85	59	RUKUM	18117	32499	0.56	74	TERHATHUM	19412	19293	1.01
15	DANG	65981	68500	0.96	30	KABHREPALANCHOK	44219	64570	0.68	45	MUSTANG	1253	2685	0.47	60	RUPANDEHI	77322	86303	0.90	75	UDAYAPUR	32518	45082	0.72

TOT Total area of holdings in hectare, NHOL Number of holdings, AHS Average holding size in hectare.

Cereal balance sheet 2016/2017; (000 M.ton)

Geographic Regions	1. Paddy	2. Maize	3. Finger millet	4. Buck wheat	5. Wheat	6. Barley	Available	Requirement	Surplus or Deficit
High hills	77.37	136.8	40.71	4.27	55.79	4.32	319.27	356.59	**-37.32**
Hills	692.27	1,319.38	184.14	3.71	459.27	3.16	2,661.93	2,479.12	182.82
Tarai	2,087.93	325.59	7.74	1.31	996.42	0.352	3,417.14	2,664.52	752.62
Nepal	2,857.57	1,781.78	230.38	9.30	1,511.49	7.83	6,398.35	5,500.23	898.11

General Food Security Situation

- National household food security is only 48.2% whereas in rural areas the percentage is only about 38.8%

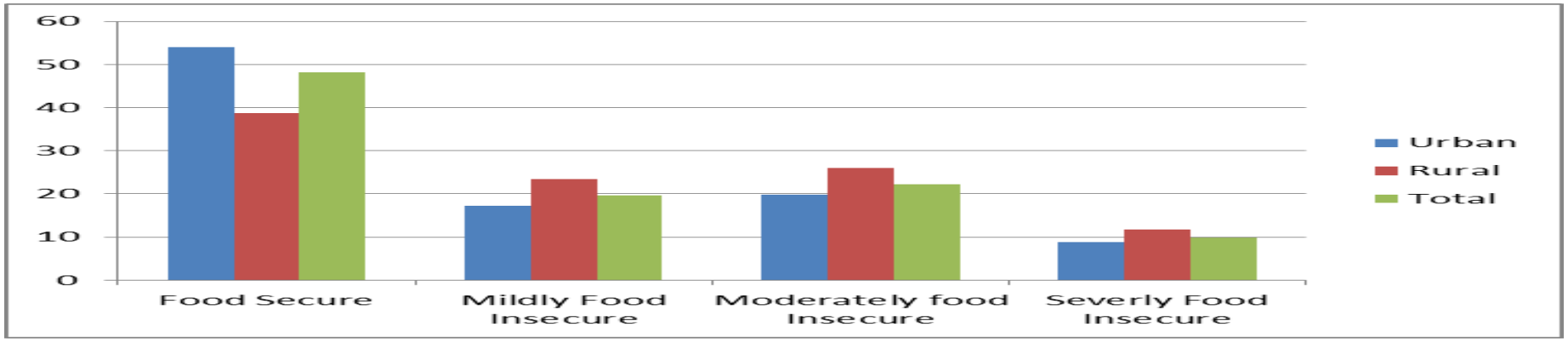


Figure 1. Percent distribution of household food insecurity of Nepal(Source: NDHS, 2016)

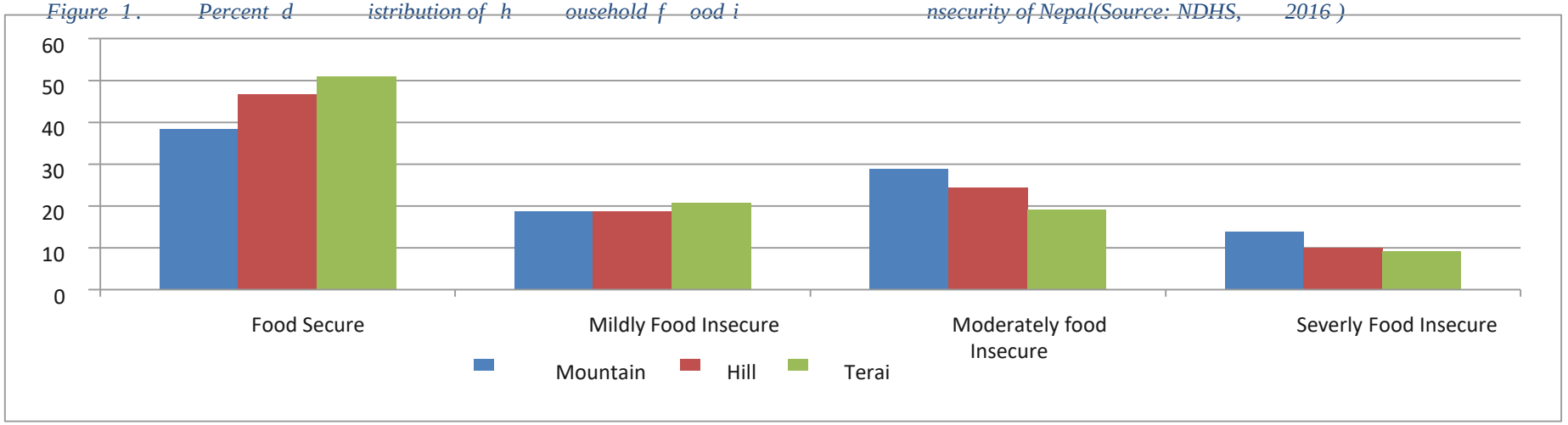


Figure 2. Percent distribution of households food insecurity by geographical regions

Key challenges of food systems in Nepal

- Low levels of production and productivity
- Fragmented land holdings and scattered production
- Subsistence farming and increased population pressure
- Food habit change - increasing consumption of processed food
- Weak climate resilience, frequent climatic shocks and damages
- High costs of production and soaring food prices
- Transportation and distribution problems
- Inadequate food buffer stocks & poor distribution system
- Decreasing food diversity; low awareness on the need to address food and nutrition security
- Poor collaboration and cooperation between research, academia and extension.

Vision of the Agricultural Development Strategy (ADS) - 2015-2035

- "A self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth and contributes to improved livelihoods and food and nutrition security leading to food sovereignty."

Targets and indicators of ADS: food and nutrition security

Vision Component	Indicators	Existing situation (2010)	Target short term (5 years)	Target Medium term (10 years)	Target long term (10 years)
Food and nutrition security	Food poverty	24%	16%	11%	5%
	Nutrition	41.5% Stunting; 31.1% underweight 13.7% wasting 18% women with low BMI	29% stunting; 20% underweight; 5% wasting; 15% women with low BMI	20% stunting; 13% underweight; 2% wasting; 13% women with low BMI	8% stunting; 5% underweight; 1% wasting; 5% women with low BMI

Existing food systems in the 11 EGP districts (Province 1 and 2)

- Most populous districts in the country
- Considered as food basket or granary of the country
- Average land holding size is higher than the national average of 0.79 ha ~ 1 ha/HH;
- Subsistence and semi-commercial agriculture, mostly based on peer learning, intuition and traditional knowledge systems
- Semi-commercial; early-consumer stage (e.g., cereals and pulses are produced partly for markets; vegetables and cooking oil is purchased from the markets; agro-biodiversity in decline;
- Highly prone to flood and drought disasters including inundation

Food, water, energy lenses (Source SEI, 2011)

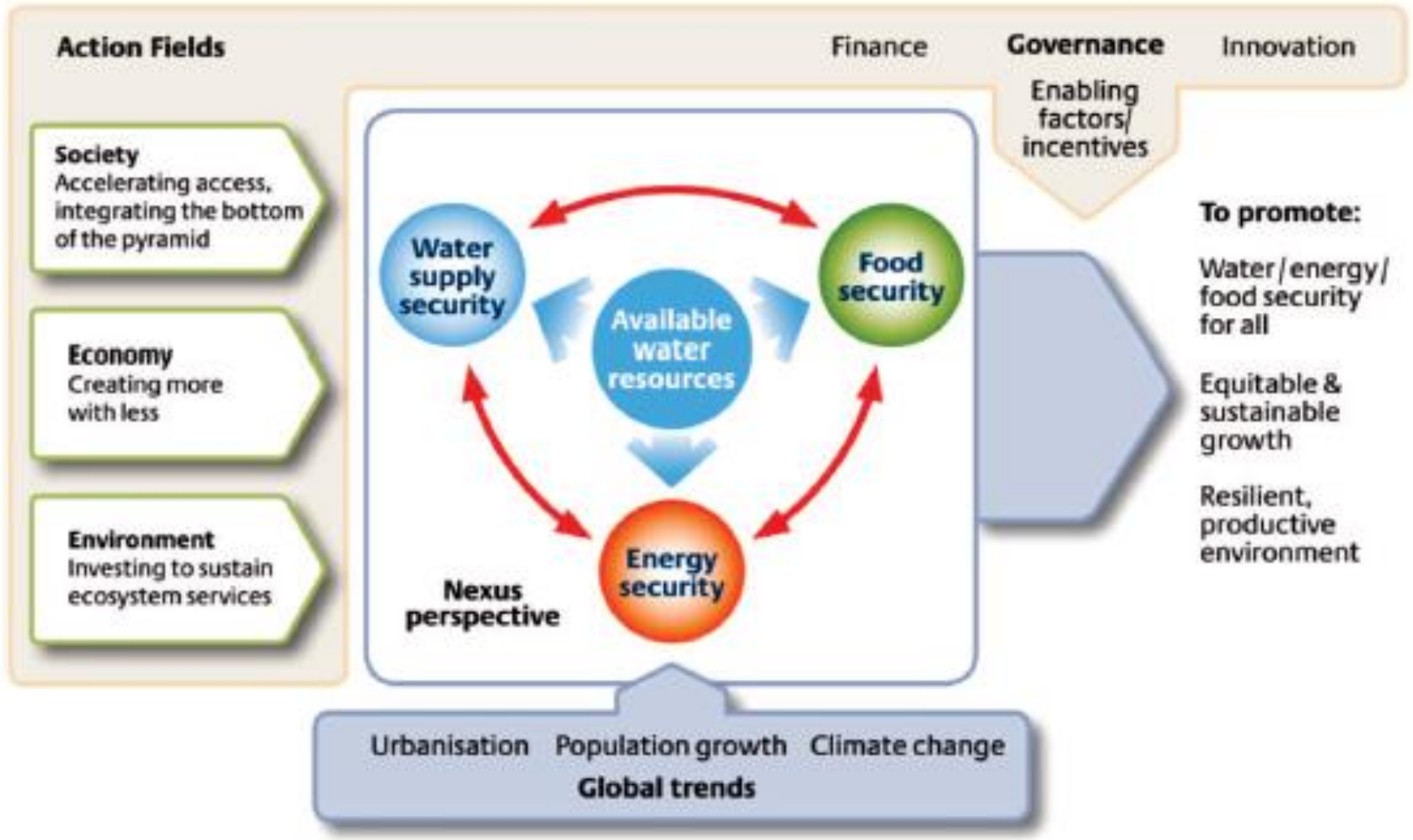


Figure 1. Water-Energy-Food Security Nexus from Hoff (2011). Source: Understanding the Nexus: Background paper for the Bonn 2011 Nexus Conference, Stockholm Environment Institute 2011. Reprinted with permission.

Key drivers of food systems

- Climate Change (erratic precipitation, landslides, floods, droughts, inundation, siltation, damage of infrastructures and crops an animals). Tarai, particularly Province 2 is more vulnerable to CC impacts (about 0.8% of agricultural GDP is being lost annually due to climate change and extreme events, CDKN)
- Socio-economic change (increase of middle income population and food habit.)
- Land use change in Churia foot hills (encroachment, quarrying, deforestation, flooding and siltation in the Tarai rivers)
- Institutions and governance system (3 tiers with more power to local government but now not well organised and institutions weak)
- Science and technology (high yielding varieties, agricultural implements, availability of Ag. inputs and technology, etc.)

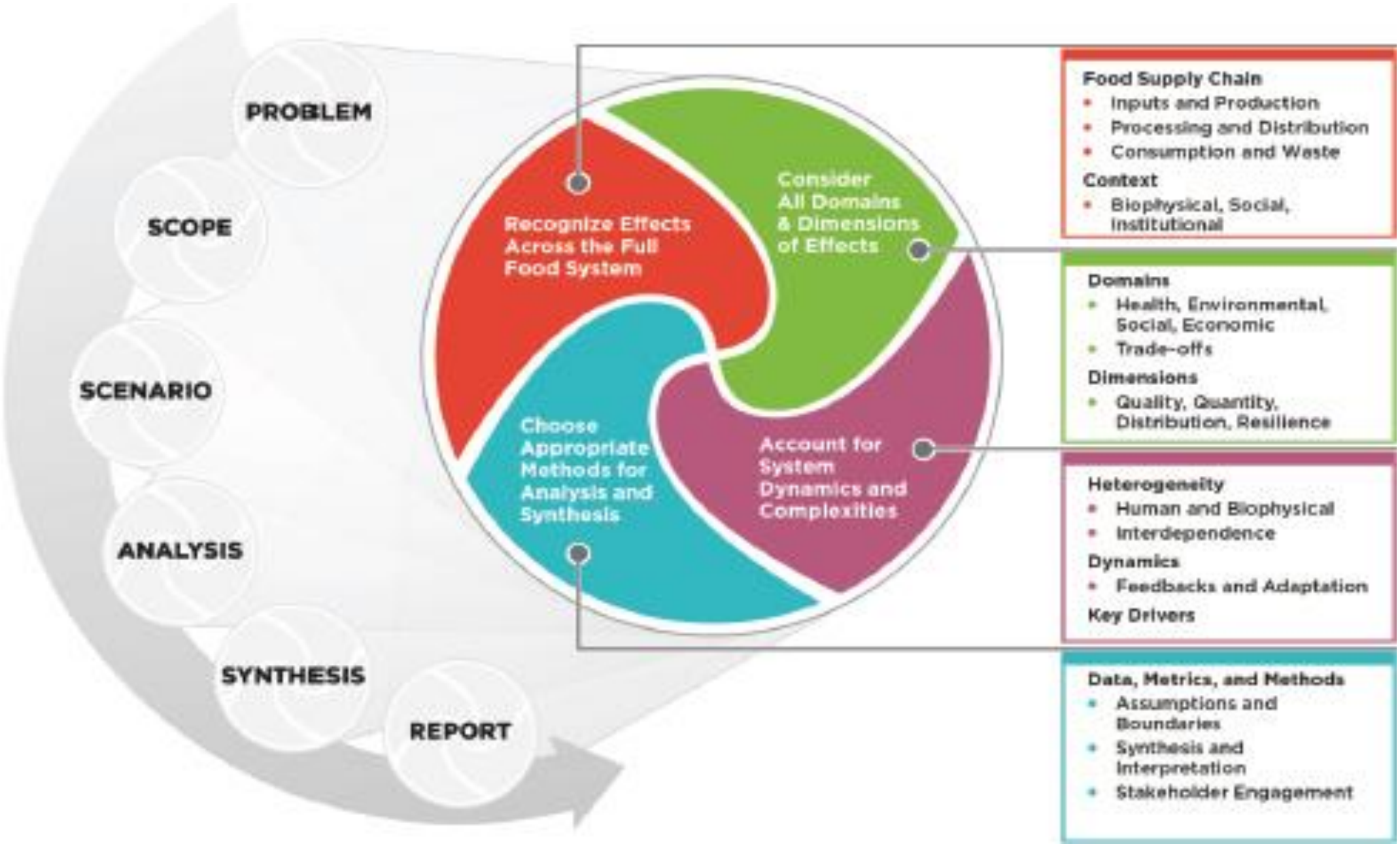
Proposed framework for Nepal's EGP food system scenario analysis

Our framework for assessment of the food system follows six steps for doing the food system scenario development; these are based on 4 principles (figure in next slide explains)

They are:

a. *identify the problem,*
b. *define the scope,*
c. *identify the scenario,*
d. *conduct the analysis,*
e. *synthesize the findings, and*
f. *Write the report to share with stakeholders including policy makers*.

Proposed Framework (adapted from National Academic Press, US)



Assumptions for food system scenario in EGP

- Things are likely to change due to the better use agriculture technology including high yielding varieties and inputs
- Improvement in government and private sector provided input supply and extension services;
- Local governments are expected to respond to the needs of farmers by providing both technical support and input delivery
- Improved coordination and collaboration among stakeholders
- Improvement in agriculture price policy and marketing support by all the 3 tiers of governments

Proposed approach and methodology

- Literature review –desk top study of existing policies, regulations and laws (problem & scope)
- Stakeholder consultation – farmers' groups; local govt. institutions, provincial and federal ministries and departments (problem and scope)
- Interactive analysis of the role of drivers at different levels in order to understand synergistic effects of the drivers (identify the scenario)
- Organisation of workshops (2-4) for scenario planning of the EGP Food System
- Selection of 2 Palikas in Mohattari district (taking river basin or watershed approach as the interactive role of drivers can be better analyzed using food-water-energy nexus), one close to Churia range and the other bordering to Indian plain area (probably Bardibas and Jaleshwar)
- Training/capacity enhancement of research staff
- Workshop with policy makers and political leaders to share the outcomes of the research

Outputs and Outcome

- Food system mapping and collection and collation of data and information for foresight in Nepal
- Scoping report on the Scenario Analysis project and 2 case study proposals;
- Knowledge-to-policy workshop report

Thank you

- Questions and Answers

Major policies, plans, strategy and programmes

Major policies, plans, strategies and programmes related to food and nutrition security :

- Constitutional guarantee for right to food
- Agricultural Development Strategy (ADS), 2015-2035;
- Agro-biodiversity Policy, 2007;
- Dairy Development Policy, 2007;
- Trade Policy, 2009;
- National Agricultural Policy, 2004;
- Multi-sectoral Nutrition Plan (MSNP) I & II; 2013-2017 & 2018-2022
- National Seed Policy, 2000;
- Agri-business Promotion Policy, 2006;
- Nepal Food Security Monitoring System (NeKSAP); and
- Agriculture and Food Security Project (AFSP) 2013-2018.