DS RESEARCH QUESTIONS

A. **How to identify best entry or leverage points for change in Agricultural Livelihood Systems, through integrated science-based diagnosis of socio-economic, gender, political, ecological drivers and trends and resulting constraints, opportunities, and options in context?**

B. **How to promote a transformative environment through innovation mechanisms, processes and capacity that optimally use natural, physical, human, financial, social capital to reduce vulnerability and sustainably intensify agriculture?**

C. **How to catalyze development at scale through prioritization of investments, impact assessment and strategic alliances between the CRPs and public and private sector development stakeholders?**

Main general questions driving the Dryland systems research

I. **Diagnosing Agricultural Livelihood systems and identifying entry points**
   1. How to apply science –based diagnosis of Dryland systems constraints, and opportunities with full account of the contextual and historical trends of the ecological, social , economic and political factors

II. **Transforming through innovation mechanisms/processes**
   1. How to build the capacity of men and women farmers and livestock keepers in dry areas to innovate for improving their livelihoods
   2. How to combine the limited natural resources with policy and intuitional support to optimally uses these resources and reduce the vulnerability to water scarcity in dry areas
   3. How to combine natural resources with market opportunities to sustainably intensity and increase farm income in the more favorable dry areas

III. **Catalyzing development at scale**
   1. How to apply science in assessing the scalability and measuring the potential impacts of innovations at scale for supporting decision-making in development investment
   2. How to develop effective and strategic alliances with development community (national governments and international development investors) and secure long term joint commitment to out-scale proven research outputs to larger number beneficiaries.

Diagnosing ALS and identifying entry points

1. How to implement diagnostic analysis with all partners
2. How can the different inter-related factors and incentives contributing to ecological, economic, social resilience in dryland systems contribute to sustainable livelihood options?

3. What the alternative options to improve system performance and what policy instruments are need to operationalize these alternatives?
4. Within the action sites how do we most effectively <u>prioritize</u> investments in drylands development to address diverse, nested constraints and opportunities
5. Once an investment is made what are the key constraints/incentives to changing/optimizing the dryland systems (system analysis)
6. What re the potential consequences of removing those constraints?
   a. Socio-economic and bio-physical
   b. Action site level
   c. ALS and interrelations
7. How to use emerging social, technological trends in addressing dryland systems (constraints, trends, context, options)
8. Farmer income/well-being: how can the dryland system increase of secure farm income and other assets so that farmers are better positioned to improve their livelihoods(health, education, nutrition, shelter etc)

Transfer examples through innovation mechanisms/processes (adaptation, PTD)

1. How to develop technical, social, economic, institutions, innovations to increase resilience to ecological and economic need shocks and diversify/improve livelihoods and equitable benefits
2. How to transform current dryland agricultural livelihood systems into more resilient and productive and sustainable system
3. How to bring innovation s to make dryland systems more resilient to drought and climate change
4. How can agricultural research for development (AR4D) in dryland systems reverse trends of natural resource degradation while improving livelihoods
5. Within action sites – how do we effectively incorporate local knowledge and perspectives with global scientific approached and policy
6. How to improve water management in the context of dryland systems
7. How to influence policy to improve efficiency of ALS in the drylands
8. Why is agriculture increasingly not attractive to the rural youth? How to provide options and incentives to attract them?
9. Natural resource management: considering IDOs of intensification and resilience enhancement how to achieve sustainable and equitable use of natural resources considering social and gender inequity, resource limitation and over utilization as drivers of change and options to change for the thorough innovation and an enabling environment

Catalyzing development at scale

1. How to assess scalability of technological processes across countries
2. What is the extrapolation for scaling out of an intervention (scenario analysis)
3. Agree impact is aimed at (who, where, when)

4. Within the action sites: how do we nurture the emergence of global relevant outcomes from place based research?
5. How to measure and quantify the impact of a system research including potential trade offs
6. Within the action sites: how do we effectively work across public and private sectors to speed up innovations and scale out benefits?
7. Adoption: how do we promote adoption while taking a livelihood perspective and understanding farmer decision making regarding adoption, capturing farmer perspectives including benefits, synergies, constraints, tradeoffs and risks – using a multiple constraint approach in problem solving
8. How to promote adoption within livelihoods context
9. How to analyze systems in the context of dryland