



RESEARCH
PROGRAM ON
Dryland Systems



Photo: CIAT / G. Smith

2014-2017

CGIAR Research Program on Dryland Systems

Youth Strategy

Acknowledgments

This Strategy was written by Jennie Dey de Pryck (Global Forum on Agricultural Research/Gender in Agriculture Partnership) in collaboration with Courtney Paisley and Marina Cherbonnier (Young Professionals' Platform for Agricultural Research for Development) and numerous colleagues who participated in the Dryland Systems Gender and Youth Strategy Design Workshop (Malawi, 20–21 September 2013) and the Dryland Systems First Science and Implementation Meeting (Amman, Jordan, 30 June–4 July 2014).

Key words

youth, youth in agricultural research, gender mainstreaming in research, drylands, CGIAR Research Program on Dryland Systems, CGIAR Consortium, research for development, systems research, ICARDA, sustainable intensification of production systems, crop improvement, natural resources management.

ISBN: 92-9127-455

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CGIAR Research Program on Dryland Systems
c/o ICARDA, P.O. Box 950765
Bldg. 15, Khalid Abu Dalbough St., Abdoun
Amman 11195, Jordan

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Abbreviations and acronyms

AR4D	Agricultural Research for Development
CA	Central Asia
CRP	CGIAR Research Program
ESA	East and Southern Africa
HH	Households
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRAF	World Agroforestry Center
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDO	Intermediate Development Outcome
ILRI	International Livestock Research Institute
IWMI	International Water Management Institute
M&E	Monitoring and evaluation
NARS	National agricultural research systems
NAWA	North Africa and West Asia
SA	South Asia
SLO	System Level Outcome
UN	United Nations
VC	Value chain
WAS&DS	West African Sahel and Dry Savannas
WG	Working group

Foreword

This Youth Strategy is the first to be issued within the CGIAR system, setting a precedent that we hope will stimulate serious attention to this critical stakeholder group among other CGIAR Research Programs (CRPs) and inspire joint efforts with other CRPs and partners to engage youth in innovative agricultural development.

Why are efforts to involve today's youth in innovation mechanisms and processes to improve agricultural livelihoods proving more daunting – yet at times more rewarding – than working with previous generations? A significant part of the reason stems from the rapid changes taking place in today's globalized world that is typified by migration, urbanization, technological innovations, increasing educational levels and aspirations, and the IT and social media revolution linking youth to global information and change movements.

On the one hand, these changes are leading to new opportunities for better-paid and higher-status work outside agriculture that cream off some of the best talent among the rural youth. However, these changes also create unrealistic aspirations of a better life in the cities that entice other young people to escape their grueling and often unrewarding agricultural work, especially in the marginal drylands, only to find their dreams dashed. With the exit of these young people, the agricultural labor force is ageing in many countries, *raising serious questions as to how future populations will be fed.*

On the other hand, young people with better educational, technical and entrepreneurial skills, and more diversified social networks than their elders are proving to be dynamic change agents in agriculture. This is the young talent that Dryland Systems is working with, to help these young women and men attain their aspirations – which will be studied in more detail in different regions – through piloting the CRP's technological innovations, diversifying into new profitable (niche) enterprises, and developing value-adding activities and enterprises along agricultural value chains. These young people, in partnership with CRP scientists and development actors, are also experimenting with ways of scaling up these innovations through proactive membership and leadership roles in agricultural marketing organizations and cooperatives, input production/distribution companies (e.g. of certified seeds), machinery manufacture and maintenance (e.g. farm equipment, solar energy), and, by extension, financial and IT services. The strategy is primarily aimed at these innovative women and men.

The strategy is anchored around two mandates of Dryland Systems:

- Youth, which is one of the four cross-cutting themes: gender, youth, biodiversity, and capacity building, and
- The fifth of the six Intermediate Development Outcomes (IDO 5), which is devoted to gender equality and youth inclusiveness.



Photo: IWMI/N. Palmer

DRYLAND SYSTEMS YOUTH STRATEGY

The Strategy was developed through a participatory, multi-stakeholder process that was initiated in the Gender and Youth Strategy Design Workshop (Malawi, 20–21 September 2013). It also draws on rich discussions at the Dryland Systems First Science and Implementation Meeting (Amman, Jordan, 30 June–4 July 2014).

Since we are treading on new ground, we see this strategy as a living document, to be elaborated and enriched in the light of fresh insights and experiences among our many partners and stakeholders, as well as the evolving CGIAR reform process.

Richard Thomas

Director, CGIAR Research Program on Dryland Systems

Executive summary

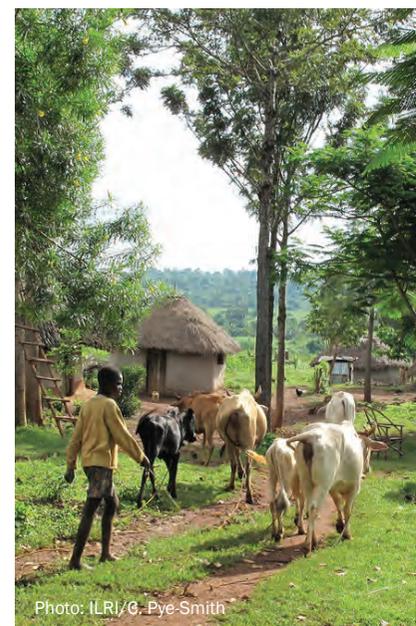
This is the Youth Strategy for Dryland Systems. It sets out the challenges and targets for including youth as a core target group in the activities and outcomes of Dryland Systems.

The Strategy's **overall goal is to engage youth in creating their future in agriculture** by benefiting from dynamic, innovative agricultural development processes that enhance young women and men's access to, and control of, agricultural assets, technologies, services, products and income, and decision-making power in dryland livelihood systems; thereby improving the status, influence, and commitment of young farmers, agro-entrepreneurs, and professionals to develop profitable farm, agriculture-related and agro-processing enterprises, as well as service enterprises that are environmentally and economically sustainable and socially just.

The approach set out here centers on three youth-responsive objectives:

1. Contribute to developing and implementing more effective interdisciplinary *ex ante* diagnostic methods for the integration of youth issues (by class and gender) in systems research to identify the best entry points to catalyze the youth's engagement in improving dryland agricultural livelihood systems
2. Promote a transformative environment through innovation mechanisms, processes, and capacity development to attract young women and men to engage in entrepreneurial crop–livestock-related livelihood activities
3. Work with policy-makers and public and private development partners to catalyze at scale investments, policies, institutional reforms, incentives, and capacity development to engage youth in agricultural entrepreneurial activities.

The Strategy focuses on delivering **youth-responsive, integrative systems research** in order to understand the factors that drive the adoption of agricultural innovations by young people; the participation of young couple in critical decision making processes and their involvement in mitigating vulnerabilities against economic shocks and climate change; the realization of agricultural and agro-business livelihood opportunities for young people; and the social interrelations that affect the equitable distribution of resources and benefits. In this way, youth-responsive systems research will enable changes in knowledge and mindsets, social institutional innovations, technical and biophysical innovations with positive transformations in young people's outlook and livelihoods. The Strategy is aligned with and contributes to the overall strategic goals of Dryland Systems and the Program's Intermediate Development Outcomes shown in Figure 2.



1. Dryland Systems: a brief overview

The CGIAR Research Program (CRP) on Dryland Systems uses an integrated systems approach to develop technology, policy, partnerships, and institutional innovations to improve the food security and livelihoods of poor and highly vulnerable populations. It addresses each of the three CGIAR System Level Outcomes (SLOs) outlined in the CGIAR Strategy and Results Framework that was issued in May 2015 by the CGIAR Consortium Office.

The program is implemented by eight partner CGIAR Centers: ICARDA (lead), ICRAF, ICRISAT, ILRI, Bioversity International, CIAT, CIP, and IWMI (see abbreviations table for full names). Our partnerships combine scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes, non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for dryland farming communities.

The dry areas of the developing world occupy about 41% of the earth's land mass and approximately two-thirds comprises rangeland. The dry areas are home to 2.5 billion people (more than one-third of the world's population), of which about 16% live in chronic poverty. Smallholder production systems, based on complex combinations of crops, vegetables, livestock, trees, and fish, are constantly adapting to climatic conditions. Dry areas face serious challenges, including rapid population growth, high urbanization, youth-skewed age distributions, the low status of women, the world's highest unemployment rates, and major environmental constraints, which are likely to worsen as a result of climate change.

The program addresses a spectrum of production systems that fall into **two broad categories**:

1. Those with the **deepest endemic poverty and most vulnerable people**, and
2. Those with the potential to contribute to **food security and growth out of poverty** and **into economic well-being**.

1.1 Objectives and goals

The overall **strategic objective** of Dryland Systems is to improve food security, natural resource management, and livelihoods in rural dryland communities of the developing world.

The strategic goal is to improve the lives and livelihoods of 1.6 billion rural people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas through integrated agricultural systems research.



Photo: IWMI/N. Palmer

By 2025 we expect to see that our research work has contributed to improved food security, increased incomes and opportunities, and a more equitable and sustainable management of land and natural resources for:

- 137 million people living rurally in the West African Sahel and Dryland Savannas (WAS&DS)
- 191 million people living rurally in North Africa and West Asia (NAWA)
- 237 million people living rurally in East and Southern Africa (ESA)
- 39 million people living rurally in Central Asia (CA)
- 978 million people living rurally in South Asia (SA).

1.2 Conceptual framework

To reach its goal, the CRP follows a conceptual framework in which **six intermediate development outcomes (IDOs)**¹ are used as steps in the impact pathway to measure progress:

- **IDO 1: Resilience** – more resilient livelihoods for vulnerable households in marginal areas
- **IDO 2: Wealth and well-being** – more sustainable and higher income and well-being of per capita for intensifiable households
- **IDO 3: Food access** – year-round access to a greater quantity and diversity of food sources for women and children
- **IDO 4: Natural resources management** – more sustainable and equitable management of land, water resources, energy, and biodiversity
- **IDO 5: Gender (women) empowerment** – better access to, and control over, productive assets, inputs, information, and market opportunities for women and young people so that they can obtain a more equitable share of increased income, food, and other benefits
- **IDO 6: Capacity to innovate** – increased and sustainable capacity to innovate within and among low-income and vulnerable rural communities, allowing them to seize new opportunities and meet challenges to improve livelihoods, and bring solutions to scale.

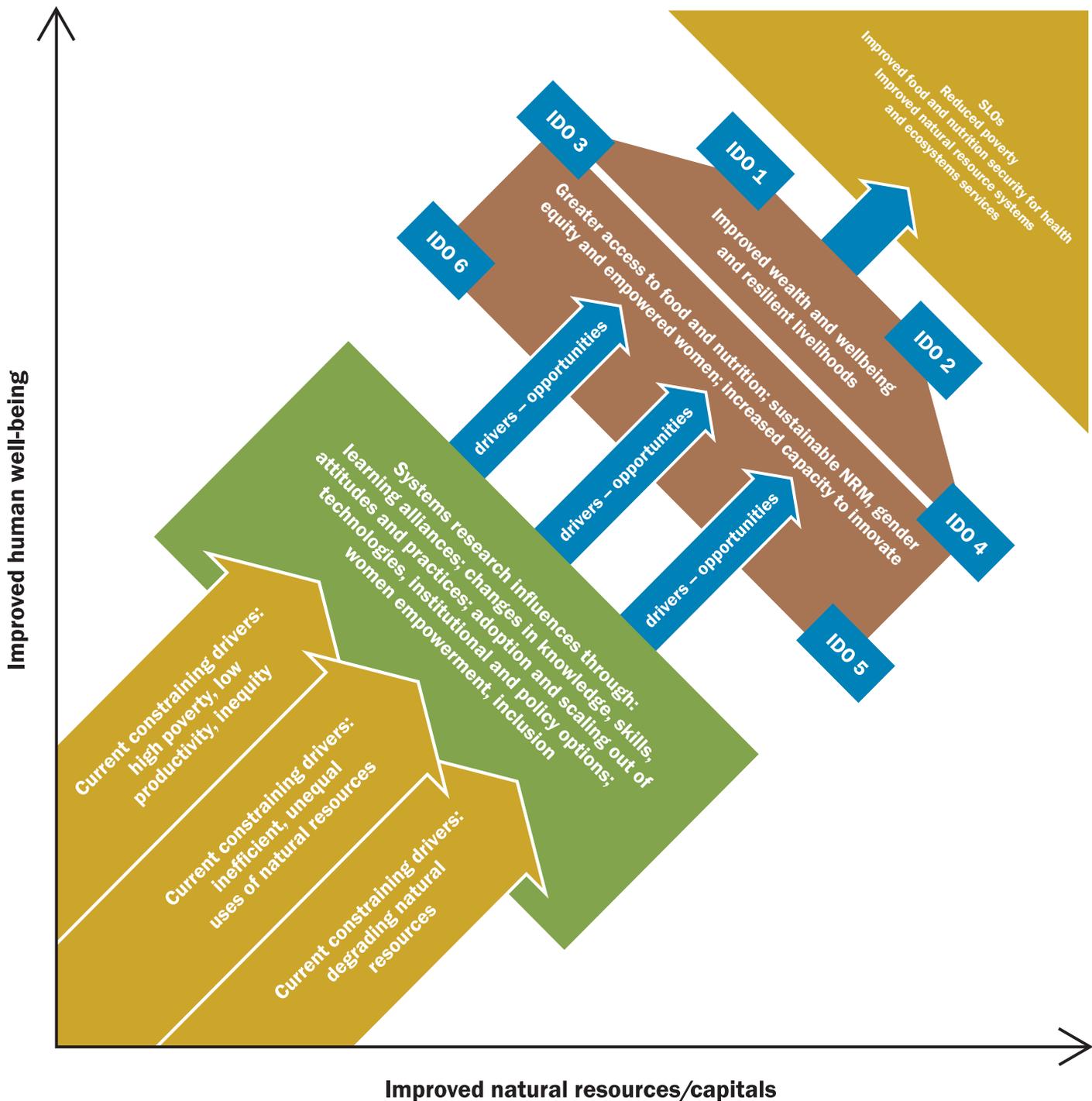
Four cross-cutting themes are mainstreamed throughout the program: **gender, youth, biodiversity, and capacity building.**

¹ “IDOs represent changes that occur in the medium term that are intended to affect positively the welfare of the targeted population or environment, and which result, in part, from research carried out by the CGIAR and its partners. The IDOs are attributable to CRP-level activities and are necessary precursors and logically linked to the SLOs” (Independent Science and Partnership Council 2012).

1.3 Impact pathway and theory of change

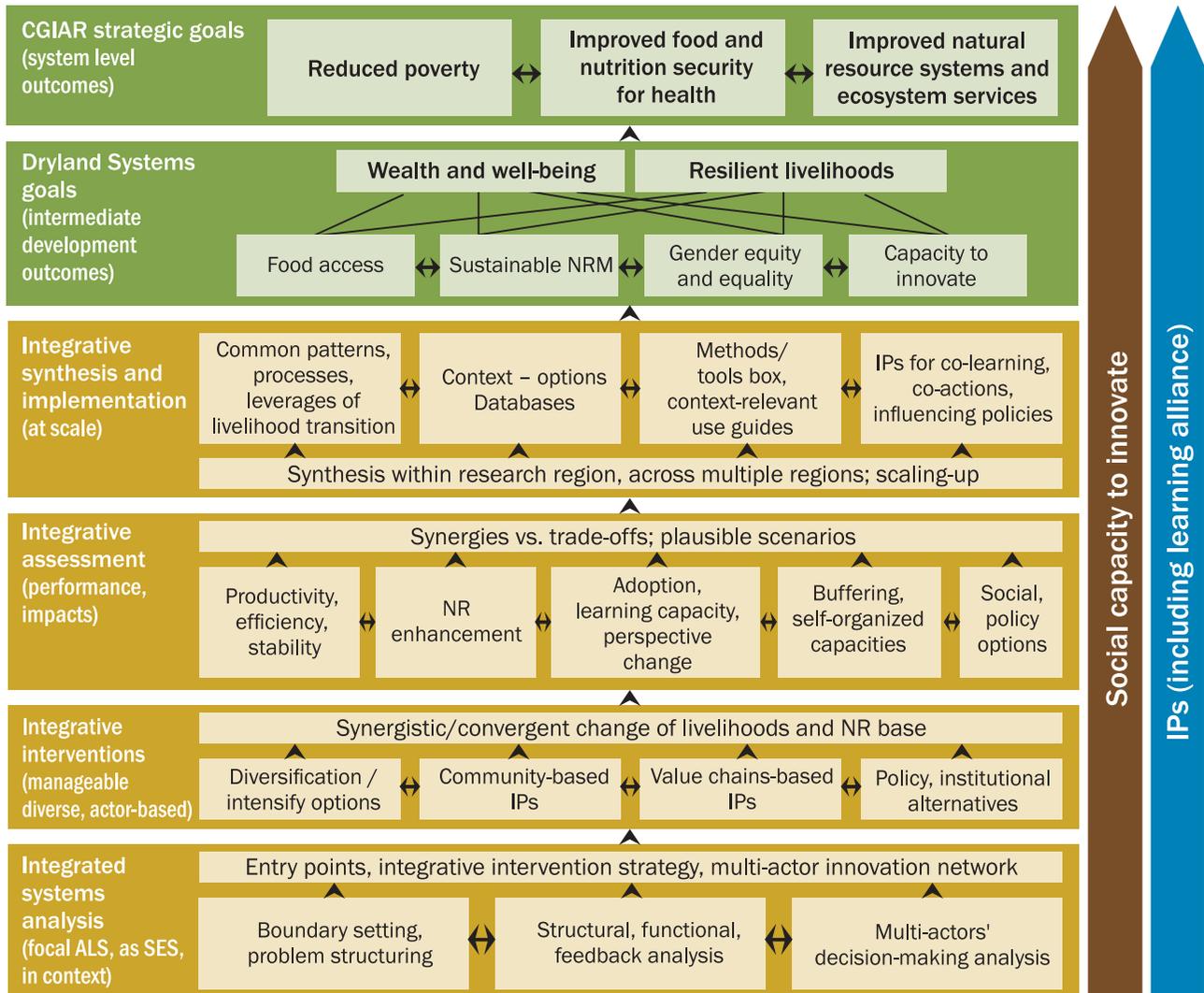
Based on a theory of change (Figure 1), the impact pathway provides the interconnected non-linear causal linkages and systems dynamics through which a technical or process intervention connects research outputs and outcomes through one or more IDO² (Figure 2) to help achieve the strategic goal and SLOs.

Figure 1: Generic theory of change for Dryland Systems



IDO: Intermediate Development Outcome; NRM: Natural resource management; SLO: System Level Outcome

Figure 2: Dryland Systems impact pathway



ALS: Agricultural livelihood system; IP: Innovation platforms; NRM: Natural resources management; SES: Socio-ecological systems.

Boxes in gold shows activities and outputs of interrelated phases of integrated systems research. Boxes in green show development outcomes driven from integrated systems research-in-development.

The first two IDOs are overarching and target two broad population groups³:

1. Those with the **deepest endemic poverty and most vulnerable people** and
2. Those with the potential to contribute to **food security and growth out of poverty and into economic well-being.**

Since these two groups often co-exist within the same community, attention is given to potential synergies and/or conflicts of interest between them.

The starting point of the Generic Impact Pathway of Dryland System is to analyze the problems of dryland agricultural production and livelihoods, and establish integrative intervention strategies in a holistic yet structured way. This is a fundamental difference between the analytical-reductionist approach in commodity-based agricultural research programs and the systems approach in Dryland Systems.

The *integrated systems analysis* involves the identification of performance gaps of representative agricultural livelihood systems across dryland regions, and key drivers including constraints and opportunities for closing the performance gaps. The analysis further identifies interactions between material/technical farm components and the human/social construction (actor roles, social relations and adaptive decision-making) determining the system behavior and performance. The result of this integrated system analysis is to identify context- and system-specific entry and leverage points for initiating positive system transitions, and to envision integrative intervention strategies. The envisioned integrative intervention strategies involve the identification of not only complementary interventions themselves, but also of a multi-actor innovation network, which works to develop, test and adaptively disseminate options.

System-based knowledge together with established functioning innovation platforms enhance societal co-learning in coping with problems, trade-offs and synergies among deeply systemic issues (e.g., climate change, land degradation, gender inequities, and youth unemployment) at the expected scale of impact (millions of farmers across millions of hectares of dryland areas). This will also strengthen the science–policy interface that has prevented governments and international bodies from delivering changes on the ground to rural people, by identifying diversified opportunities for the agricultural sector that can reverse the lack of investment in rural areas.

³ In practice, households lie along a continuum of poverty, vulnerability, and potential to innovate, and the cut-off point between these two categories is not always easy to define.

2. Rationale for mainstreaming youth

2.1 A generation at risk

The world is beginning to wake up to the realization that it is sitting on a time bomb by neglecting the youth of today. These young people, who are generally much better educated than their parents, are increasingly disillusioned and frustrated because so many cannot get secure, stable, and rewarding jobs. In 2013, global youth unemployment reached 73.4 million, representing a youth unemployment rate of 12.6%, **with young people almost three times more likely than adults to be unemployed** (Table 1). The situation is particularly critical in developing regions because this is where 90% of the global youth population lives. As shown in Table 1, unemployment rates have worsened between 2008 and 2013 in the developed economies and the European Union (EU), and in the Middle East and North Africa. While most developing regions have rates similar to the global averages, the Middle East and North Africa regions (which are among the Dryland Systems regions) stand out with rates that are at least double the averages for young men and more than 3–3.5 times the average rates for young women. The rates are also well above the global averages in Central and South-Eastern Europe (non-EU) and Commonwealth of Independent States countries, although the rates for young women are only slightly higher than for their male counterparts.

Appendix Table 1, which consolidates data available for some of the Dryland Systems target countries, shows that there are marked variations in youth unemployment rates and the percentage of young people not in school or at work among countries within some of the program’s five flagship regions (for example, ESA). Some countries (Ethiopia, Malawi, Mozambique, and Kazakhstan) show a dramatic drop in the percentage of youth not in school or at work. Although the results need to be treated with caution, this appears to be a positive development. In the NAWA region⁴, youth unemployment rates are extremely high, especially for women, with rates for 2010 ranging from about 20% in Morocco to 46% in Jordan.

These results reflect structural labor market problems. In North Africa, there is a skills mismatch, with unemployment rates for persons with tertiary-level education among the world’s highest, at 21.4%, 18.9%, and 17.4% in 2010 for Algeria, Egypt, and Morocco, respectively. In Algeria and Egypt the rates are higher for those with primary or secondary education, indicating a mismatch between the supply of and demand for skills and education (ILO 2013b). Many graduates in these and other developing regions aspire to public sector jobs that are stable and considered high status. In Tunisia, for example, there is a



Photo: Bioversity/Y. Wachira

⁴ The terms “Middle East and North Africa Region” or “West Asia and North Africa Region” are preferred by different organizations, and are used synonymously in this strategy while respecting the CGIAR system’s preference for NAWA.

Table 1: Youth unemployment rates (%) in 2008 and 2013 by region and gender

Region	2008	2013*
World	11.7	12.6
Male	11.5	12.4
Female	11.9	12.9
Developed economies and European Union (EU)	13.3	17.9
Male	14.0	18.9
Female	12.4	16.8
Central and South-Eastern Europe (non-EU) and Commonwealth of Independent States	17.0	18.0
Male	16.7	17.6
Female	17.5	18.6
East Asia	9.1	9.8
Male	10.7	11.5
Female	7.3	7.9
South-East Asia and the Pacific	14.4	13.3
Male	14.0	12.7
Female	15.1	14.2
South Asia	8.5	9.4
Male	8.3	9.2
Female	8.9	10.2
Latin America and the Caribbean	13.5	13.2
Male	10.9	11.1
Female	17.4	16.3
Middle East	25.3	29.1
Male	21.7	25.2
Female	39.3	43.5
North Africa	20.3	23.9
Male	16.8	18.6
Female	29.1	36.7
Sub-Saharan Africa	11.8	11.7
Male	11.1	11.0
Female	12.6	12.5

*Provisional
Source: ILO 2013a

reluctance to engage in self-employment and entrepreneurship. At the same time, companies complain that universities are not providing students with the applied skills the companies need (Bohlander 2013).

The relatively low unemployment rates among young people in South Asia and Sub-Saharan Africa (although they are twice as likely to be unemployed than adults) reflects poverty, as they are forced to engage in vulnerable and low-paid work. Sub-Saharan Africa has the highest rate of working poverty, which was estimated at 40.1% in 2012 at the US\$1.25 per capita per day level. Thus, youth employment in Sub-Saharan Africa is as much a qualitative as a quantitative problem (ILO 2013b).

The difficulty in obtaining stable, decent work⁵ is resulting in frustration that is increasingly expressed in civil strife and engagement in extremist movements and/or illegal activities. The threat, as the World Bank exemplified with regard to the NAWA region, is that, “the Arab Spring was not merely about employment. But disappointment, especially among youth, about the lack of job opportunities and frustration with the allocation of jobs based on connections rather than merit echoed across countries” (World Bank 2013a). Similarly, the World Economic Forum notes: “high youth unemployment can reduce social cohesion and incur significant economic and social costs” (WEF 2013a). The World Economic Forum findings show that countries at the top of the competitiveness rankings also performed best in many areas of sustainability, suggesting the need for countries to balance economic progress with social inclusion (which puts a spotlight on youth) and effective environmental stewardship (WEF 2013b).

2.2 The challenge of engaging youth in Dryland Systems

Very little quantitative or qualitative research has been carried out on youth issues in agriculture (Proctor and Lucchesi 2012; Paroda et al. 2014). National statistical databases on employment, agricultural labor (total or by sub-sectors or value chain [VC] nodes) or land and livestock holdings, rarely disaggregate by age (adult/youth/child) or gender. Even household surveys carried out by CGIAR or other researchers usually fail to collect data on “youth”. Case studies on “vulnerable” or “excluded” groups in agricultural systems tend to focus on women, indigenous peoples or child laborers. Thus, the discussion below of the issues facing rural youth draws on information culled from reports on broader agricultural development issues and trends.

⁵ Decent work is captured in four strategic objectives: promoting full and productive employment; developing and enhancing social protection and social security; promoting social dialogue and tripartism; and respecting, promoting, and realizing fundamental principles and rights at work (ILO 1999). Reconfirmed by the landmark Declaration on Social Justice for a Fair Globalization and adopted by the International Labour Conference in June 2008, these objectives form the core of a strong social dimension of globalization to achieve improved and fair outcomes for all, while reflecting the imperative of vibrant, sustainable enterprises.

2.2.1 Definitions of Dryland Systems “youth” stakeholders

Since the Dryland Systems research is based at the level of agricultural livelihood systems and communities, this strategy uses the term “youth” primarily as a social category and the program’s researchers are encouraged to identify and use the prevailing local definition of “youth” in their action sites. Where appropriate, the United Nations (UN) definition is also used (see Box 1). Thus, for operational purposes, the strategy distinguishes between:

- National, legal definitions of “youth” and local, customary concepts of and roles for “youth”
- The teenager youth group aged 15–19 and young adults aged 20–24 (to include young women and men up to 30 years for specific research and development projects), since the two age groups differ in terms of physical strength and maturity, and the younger group could face more serious health and other risks if they use hazardous equipment or agro-chemicals, and
- Female and male young people, as they have different gender roles in agriculture, the domestic sphere, and the market, and in most (if not all) developing countries young women suffer greater discrimination (Levine et al. 2008; Bertini 2011).

Box 1: Social and official definitions of “youth”

Historically, the concept and age range of “youth” have been socially defined in different countries and even by communities/ethnic groups, depending on their purpose. In traditional rural societies, “young people” often contrast with the “elders”, performing different roles and responsibilities. For example, Gambian male elders allocate uncleared land and handle relations with public and tribal authorities while, at the elders’ request, the “youth” age grade (aged approximately 15–35) perform community services such as building or mending village bridges and roads, and irrigation infrastructure (Dey 1982).

However, governments and the international community need an age-related definition of “youth”, for example, for establishing a national minimum age for employment or for undertaking certain types of hazardous work, determining eligibility for social benefits, and/or for statistical purposes. Definitions that are adopted vary between countries, depending on needs and circumstances, making it difficult to agree a universally relevant and applicable definition of the term “youth”. For practical purposes, the UN adopted the definition of youth “as those persons between the ages of 15 and 24”. This definition is used in UN statistical data collection and analysis, as well as in UN system Conventions and Recommendations, for example, on labor issues. There is often an overlap in the UN or national definitions of “youth” and “children” (see Annex 2).

2.2.2 The context: youth-related challenges in dryland agricultural livelihood systems

Although the issues highlighted below go far beyond the scope of Dryland Systems, they form the critical context within which the program is working and need to take the following into account:

- Rural youth in developing countries (especially the better educated) are increasingly exiting agriculture, leaving behind an ageing and, in some cases, predominantly female agricultural population. With the exception of the CA flagship region, in which most farmers are young with little experience in agriculture (Dryland Systems 2012a), this is a major concern in all the other flagship regions, particularly NAWA. The Dryland Systems Inception Phase Report, for example, refers to the “rejection of the pastoral way of life by the young generation” in NAWA rangeland systems, and “migration of youth to urban areas”, with particular reference to Jordan and Syria (Dryland Systems 2012b). Youth who remain in rural areas often (but not exclusively) include those who are less educated and enterprising, are HIV/AIDS orphans who have inherited subsistence farms and responsibilities for their siblings and grandparents, or are war victims forced to drop out of school and support their families, for example, many Syrian youth and child refugees. Young girls/women remaining in rural areas are often married very young according to social traditions and whatever their potential to run agricultural businesses may have been, spend their time raising children and undertaking domestic chores.
- Although many of those who leave for the cities end up eking out a precarious living in the informal economy, perpetuating a cycle of poverty and frustration, others find reasonably paid work and send remittances to their families for investment in agriculture or to smooth consumption.
- Other migrants use their savings to start modern agricultural enterprises. This group can form a key target group for Dryland Systems, together with the enterprising young people who remain in rural areas.

2.2.3 What are the costs of neglecting youth?

While no estimates have been made of the costs of neglecting youth in agriculture⁶, they are likely to be very high.

- The overriding cost to countries is that with an expected world population of 9 billion by 2050 and declining interest of youth worldwide to remain in rural areas and take up agriculture, **many countries will suffer serious shortages of agricultural labor. Who will feed this growing population? How will the long-term sustainability of dryland agricultural livelihood systems be assured?**

⁶ See the Food and Agriculture Organization of the United Nations' estimates of the COSTS of failing to close the gender gap in access to agricultural assets, inputs, and services (FAO 2011). A similar exercise is needed to estimate the costs of excluding youth.

- The departure of the youth is resulting in an ageing and sometimes female-predominated agricultural population. This is particularly marked in some regions and countries (e.g. the NAWA region; Srivastava and Srivastava 2009; FAO 2011; ILO 2013). Local societies and socio-economic systems usually do not prepare young women to take on new types of roles. Since the young people leaving the rural community are generally the most fit and active, their departure often leaves many small family farms with specific labor shortages, for example, for physically demanding tasks of plowing, harvesting, and transporting. This can force families to change to less labor-intensive crops that might be less nutritious and/or bring in lower incomes (e.g. cassava).
- Since these young people are generally better educated than their elders, their absence deprives their families of reading, writing, numeracy, and IT skills, for example, to read instructions on pesticide packets, keep accounts or acquire timely market information.
- The failure to mobilize the youth's talents in agriculture results in lost opportunities to develop a vibrant, modern agricultural system based on entrepreneurship, IT, connecting up partners, markets, and innovative value-added enterprises.

2.2.4 How can Dryland Systems engage the youth in agricultural innovations and entrepreneurship?

The program will seek to build on the strengths and opportunities of the youth, and reduce constraints. Two outstanding strengths are that:

- Today's youth are the best-educated generation so far. They are also more likely to be computer and Internet savvy, and be linked to social media and networks, contributing valuable skills that they are much better at than their elders. They are able to search for up-to-date information on the Internet about new technologies and markets, and to keep computerized records and accounts. Their social networks bring them knowledge of positive development experiences as well as the frustrations experienced by young people in other regions and countries
- Through social media and also because many young people have travelled more than their elders (even abroad for work, for example, in the Gulf States or Europe), many young people are more ready to question traditional norms and practices – an essential quality to embark on entrepreneurial enterprises and innovations.

However, the program recognizes that not all young people (or adults) are entrepreneurial by nature and will endeavor to reach out to those who are not, with respect to their ideas, thinking, interest, education, and aspirations. Successful entrepreneurship in agriculture requires a combination of technical and business skills and a certain type of personality that is willing to experiment, innovate, and take calculated risks, as well as develop “soft” personal skills.

Some of these techniques and qualities can be taught or encouraged and developed among those who are willing to learn and innovate. Other young people may shun risky enterprises or leadership roles, preferring to work as family or wage labor.

The program will also seek to understand and develop creative ways of addressing constraints facing the youth (Box 2), often in partnership with policy-makers and development partners.

Box 2: Constraints faced by youth in agriculture

1. Agriculture has a bad image in many countries in which it is seen as an out-dated field with minimal financial returns, and ways to achieve a more stable income and respected livelihood from agriculture are not seen and shown.
2. Limited access to land and finance by the youth is a perpetual challenge, severely limiting their enhanced engagement in the agricultural sector.
3. Young people often have limited control of their own labor and its products, although this varies by region/country/culture depending on social norms and practices. In many dryland systems the youth are expected to work as unpaid labor on family farms or pastoral enterprises in exchange for their accommodation, food, clothing, marriage payments, and maybe some pocket money. Sub-Saharan Africa tends to give young people greater opportunities as they often enjoy traditional rights to cultivate their own small plots. However, in all regions, working young people generally have to give some of their earnings to their parents or support the education of a sibling (in lieu of the traditional obligation to help on the family farm) – a socially important practice that reduces their chances of accumulating capital to expand their enterprises.
4. Rural youth are often unaware of or are unable to access emerging opportunities in agricultural value chains through, *inter alia*, a lack of information or access to capital/credit.
5. Community-based organizations are commonly dominated by elderly men, and even commercial organizations such as cooperatives are often managed and led by mature men. The youth's minimal decision-making roles tend to be demotivating, which results in a loss of useful input to communities.
6. Although today's youth is the best-educated generation to date, their schooling and professional/vocational training rarely provides them with the essential practical agricultural, business, planning, communication, and "soft" skills needed to operate effectively in agricultural enterprises and professions (veterinary science, agricultural research or extension), and policy analysis and reform. Youth-targeted capacity development to remedy these lacunae is urgently required for stronger youth engagement in the agricultural sector.

2.3 Gaps in knowledge and practice on youth in dryland agricultural livelihood systems

Very little research has been carried out on youth in dryland agricultural livelihood systems, so Dryland Systems is breaking new ground by filling gaps in knowledge and practice.

2.3.1 Knowledge gaps

Key knowledge gaps in dryland agricultural livelihood systems that the strategy aims to address include the following:

- Although many center and Dryland Systems baseline surveys collect gender-disaggregated data, these data are rarely disaggregated by age or socio-economic class, ethnicity, etc.⁷ Such data are frequently collected with little regard to social dynamics, historical context, and the broader socio-economic, political, and institutional change processes in which they are collected. Since it is not the program's mandate to undertake an in-depth analysis of these change processes, it will draw on the work of other centers and CRPs⁸ in its activities to identify implications for young people (differentiated by gender where appropriate) of global, regional or national processes for agricultural resource access, technological innovations, development opportunities, and livelihoods in the program's flagship regions (especially IDOs 2, 4, 5, and 6, and also IDO 1 with regard to youth living in very poor and vulnerable areas).
- The limited research on youth in dryland systems has generally treated these young people as a homogeneous category and has failed to give adequate attention to identifying the varying and sometimes conflicting interests and aspirations of individuals in different socio-economic, ethnic, religious or occupational groups, as well as their gendered characteristics referred to below. The program will not only set out to identify and address the respective needs and demands of these different groups, but also to balance potential **conflicting** interests, as in the case of wage laborers compared to owner-operators who hire labor for crop or livestock production or to provide added value (especially IDOs 1, 2, 4, and 5).
- The identification and analysis of the ways in which social norms, values, and practices in different Dryland Systems flagship regions (and countries/ areas within these) affect the access of youth (by gender) to agricultural assets such as land, inputs, labor, finance, decision-making power over production and marketing processes, and control of the product/income, as

⁷ See, for example, the report of the Target Region Implementation and Partnership meeting in South Asia, August 2013 (Dryland Systems 2013).

⁸ In particular, Dryland Systems will draw on the Policies, Institutions and Markets program's work in identifying the implications of global processes (such as global food price fluctuations, the expansion of multinational and national agro-processing enterprises, the development of contract farming, climate mitigation, and adaptation, and migration/remittances) on resource access, livelihoods, and opportunities for youth.

well as other resources such as knowledge and status. In traditional dryland systems the youth generally face significant disadvantages, including obligations to provide unpaid labor on family farms and in pastoral enterprises, and a lack of voice and decision-making power within their households, as well as in community and agricultural organizations. Since these norms and practices affect the incentives and opportunities of youth to adopt new technologies and engage in entrepreneurial activities, the program will investigate ongoing change processes that can provide entry points for Dryland Systems work, including the development of youth-responsive and -transformative participatory action research (PAR) to catalyze change to meet the youth's aspirations (especially IDOs 2, 5, and 6).

- Social norms often legitimize the inequitable distribution of food (especially nutrient-rich foods) within resource-poor households, commonly discriminating against women and children/youth (especially girls), as well as inequitable access to health services. These inequities have serious and often irreversible effects on the physical and mental development and health of children and young people, and translate into poorer academic potential and performance, less physical strength, stamina and agility, greater risk of debilitating or life-threatening illness, and, in the case of teenage mothers, serious difficulties or even premature death during pregnancy or giving birth, and a poorer capacity to feed and nurture their babies. The CRP will investigate these social norms and practices to improve the understanding of equity issues in household food security and nutrition, and to incorporate nutritional considerations in the program's research agenda (complementing similar research in the context of the Gender Strategy) (IDO 3).
- Most research and informed discussions of youth issues in dryland agricultural livelihood systems have failed to take account of gender differences, while gender research has commonly neglected issues specific to youth. This is particularly important because evidence shows that social and cultural norms affecting gender roles often lead to discrimination against rural girls and young women (Levine et al. 2008; Bertini 2011). As Bertini writes, "While boys are often coveted because of their expected roles as household heads and providers, girls may be seen as temporary family members because they join another household when they marry. When family resources are strained, boys are often seen as more valuable and worthy of investment." Girls and young women generally have heavier domestic work burdens than boys and young men, tend to drop out of school earlier, marry at a younger age and start childbearing, are less mobile (particularly in traditional societies), and have less access to land, other productive assets, services, finance, information, and skills training. The CRP will identify/analyze the gender issues among the different youth cohorts with which it works in its flagships/action sites. Since these are often context-specific, this will permit comparative cross-regional analyses as well as location-specific findings to guide the research in each action site (especially IDOs 2 and 5).

- Little is known of the shared and different aspirations of young rural men and women in dryland agricultural livelihood systems and the types of incentives that would attract them, respectively, to adopt improved agricultural technologies and methods, and/or diversify into new value-added activities (Proctor and Lucchesi 2012). Dryland Systems will give priority to studying these aspirations and the implications for engaging youth in scaling up the CRP's innovations (especially IDOs 2 and 5).
- There is a lack of knowledge on youth decision-making roles in (a) community organizations that manage land and water resources in dryland pastoral, agro-pastoral, and mixed cropping areas, and the implications for sustainable and equitable management and benefits, and (b) agricultural organizations including cooperatives and the implications for the youth's adoption of technological innovations to build profitable enterprises. The CRP will contribute to filling this gap through strategic research and its participatory action research in specific action sites (especially IDOs 2, 4, and 5).

2.3.2 Gaps in practice

The CRP will address two major gaps in practice by:

1. Integrating youth issues into the *ex ante* definition of the research questions and research design. This will require developing/testing more effective multidisciplinary, gender-sensitive methods for youth analysis⁹ to inform *ex ante* diagnosis and planning. Since other CRPs are also working on filling this gap (for example, the Humidtropics CRP), Dryland Systems will draw on their experiences and, where possible, develop joint activities.
2. Carrying out *ex post* assessments of the impacts of innovative technologies, processes or market opportunities developed by the CRP on young people. These will take account of gender differences and identify, *inter alia*, the complementary role of public policies and programs, and institutional arrangements on youth participation and the implications for scaling up.

⁹ Youth analysis refers to the study of different roles, responsibilities, assets, and agency of young men and women (compared with older men and women), including their differential access to, control over, and use of natural, financial, social, political, and infrastructure-related resources.

3. Consultative process for developing the Youth Strategy

The consultative process involved multi-stakeholder Implementation and Partnership workshops held for each of the program's five Flagship Regions¹⁰, which identified, *inter alia*, region-specific youth issues and related strategic research areas. Subsequently, a two-day Gender and Youth Strategy Design Workshop (Malawi, 20–21 September 2013) enabled a number of senior CGIAR biophysical, social scientists and economists to come together with representatives of NARS, civil society organizations, the Young Professionals' Platform for Agricultural Research for Development and the Global Forum on Agricultural Research to discuss and agree on a few major key cross-cutting youth-responsive research themes.

Preliminary discussions were initiated with the Humidtropics CRP to explore opportunities for collaboration, including setting up an informal cross-CRP youth network. This strategy also draws on discussions at the Dryland Systems First Science and Implementation Meeting (Amman, Jordan, 30 June–4 July 2014).



Photo: CCAFS/C. Schubert

¹⁰ NAWA (Tunisia, 26–28 July 2013), WAS&DS (Ghana, 1–2 August 2013), CA (Uzbekistan, 12–14 August 2013), SA (Nepal, 26–28 August 2013), and ESA (Malawi, 17–19 September 2013).

4. Target beneficiaries

As explained in section 1 Dryland Systems addresses a spectrum of agricultural livelihood systems and two broad stakeholder groups: those with the **deepest endemic poverty and most vulnerable people** (IDO 1); and those with the potential to contribute to **food security, growth out of poverty and into economic well-being** (IDOs 2 and 3). While this Youth Strategy addresses both groups, it focuses on youth in the second category who are better placed to exploit new opportunities developed by the program to create/expand entrepreneurial activities.

Baseline surveys will be used to identify and develop typologies of the most appropriate youth groups with which to work, and these will be reviewed regularly as part of the program’s monitoring and evaluation (M&E) activities. These typologies will incorporate the distinctions among the youth categories identified in section 2.2.1 and summarized in Table 2. CRP scientists (in collaboration with other stakeholders) will identify *criteria* for building these typologies (that will permit both comparative inter-regional and local context-specific research), which will include, *inter alia*, the level and types of access to agricultural assets and markets, educational and skill levels, level/form of engagement in different types of social networks/agricultural organizations, cultural and social norms and practices, and personal characteristics (aspirations, incentives, attitudes to risk). All these are likely to vary by gender.



Photo: Bioversity/B. Sthapit

Table 2: Different categories of youth addressed by Dryland Systems

Target beneficiaries	Definitions of youth		Age groups		Gender
	Legal	Customary	15–19	20–24+	F/M
Agricultural entrepreneurs	●	●●	●●	●●	●●
Young professionals	●●		●	●●	●●

F: Female; M: Male; ●: Some interest; ●●: Major interest

5. Youth-responsive goal and objectives

5.1 Overall goal

The strategy's overall goal is:

To engage youth in creating their future in agriculture

by enabling them to benefit from dynamic, innovative agricultural development processes that enhance young women's and men's access to and control of agricultural assets, technologies, services, products, income, and decision-making power in dryland livelihood systems. This will improve the status, influence, and commitment of young farmers, agro-entrepreneurs, and professionals to develop profitable farm, agriculture-related and agro-processing enterprises, as well as service enterprises that are environmentally and economically sustainable and socially just.



Photo: CCAFS/P. Vishwanathan

5.2 Overall objectives

The strategy's overall youth-responsive objectives are to:

1. Contribute to developing and implementing more effective interdisciplinary *ex ante* diagnostic methods for the integration of youth issues (by class and gender) in systems research to identify the best entry points to catalyze the youth's engagement in improving dryland agricultural livelihood systems
2. Promote a transformative environment through innovation mechanisms, processes, and capacity development to attract young women and men to engage in entrepreneurial crop–livestock-related livelihood activities
3. Work with policy-makers and public and private development partners to catalyze at scale investments, policies, institutional reforms, incentives, and capacity development to engage youth in agricultural entrepreneurial activities.

5.3 Research questions

Since Dryland Systems is in the process of developing a “systems” approach, research questions are presented as broad “open questions” for the concerned multidisciplinary research teams to refine further and identify precise activities, outputs, and outcomes. The aim is to identify two or three themes across all the flagship regions that will permit robust context-specific and comparative agricultural research for development (AR4D) to inform policy and future research design. The initial generic research questions are:

Regarding objective 1:

1. What are the *specific* youth-related gaps in access to resources, knowledge, and practice (especially technology development and adoption) to become successful farmers and agro-entrepreneurs in the flagship regions?
2. What are young women's and men's aspirations, preferences, constraints, and opportunities with regard to agricultural innovations and processes? How are these affected by trends in social norms, cultural and religious values, class characteristics, and economic incentives, and what are the commonalities and differences across flagship regions that are significant for up-scaling?
3. What are the targeted crop–livestock systems' socio-cultural and ecological elements, structures, social interrelations, and dynamics that deter or attract youth to making a life in agriculture (including related population centers/ towns as growth points)?
4. What are the best entry points to integrate young women and men effectively in selected CRPs to enhance their well-being and improve the profitability and sustainability of dryland ALS?

Regarding objective 2:

1. How can the CRP build and enhance the capacity (including knowledge, information, access to and endowment with production assets, financial and social capital) of young female and male farmers and livestock keepers to innovate to improve their livelihoods?
2. How can the CRP combine the limited natural resources with policy and institutional support to provide youth incentives to use these resources optimally and reduce vulnerability to water scarcity in dry areas?
3. How can the youth combine opportunities for innovation with market opportunities to sustainably intensify and/or diversify production and add value, and increase farm income in more favorable dry areas?

Regarding objective 3:

1. How can the CRP develop effective and strategic alliances with the development community (governments, national/international investors, development practitioners) to up-scale proven research outputs with the youth to larger numbers of beneficiaries?
2. How can the youth be involved and engaged early on to act proactively, for example, to participate in crop–livestock-related VCs?

6. Theory of change and impact pathway

6.1 Theory of change

The theory of change (Figure 3) is based on a model of social change whose explicit aim is to reduce social inequalities and poverty, and to support the marginalized in their struggle for “empowerment”. While focusing on youth, it recognizes that poor adults may also be disempowered. The theory builds on the concept of social, cultural, economic “institutions” (Box 3) contained in system elements, Kabeer’s definition of “empowerment” (Box 4) contained in feedback loops on social interrelations and social roles stimulated by research interventions, and Rowlands’ typology of power or agency (Box 5) captured in social roles and interrelations¹¹. Rowlands’ typology is included in the CGIAR and Dryland Systems concept of capacity to innovate with its related IDOs and measurement (indicator, rationale, and target). It is also consistent with the CRP’s overall theory of change (section 1.3).

Socio-cultural and ecological elements constitute the system and determine, for example, social status, informal and formal social networks, and gender roles. Emotional, cultural, social, economic, political **costs, benefits, and trade-off of decisions and behavior** (actions) depend on the different social roles,



Photo: Dryland Systems

Box 3: Social relations in agriculture and “institutions”

Social relations in agriculture are determined by “*institutions*” that are social norms, values, beliefs, attitudes, rules, and practices.

These *institutions* are country-, community- or farming-system specific, reflecting their particular combination of social, cultural, ethnic, economic, religious, and historical factors. Within a community with diverse ethnic, religious or class groupings, each population group may have different (or overlapping) sets of *institutions*.

These *institutions* determine access to resources, decision-making over production and marketing processes, control of the products/income, and what is considered appropriate behavior for young and adult men and women.

Despite context-specific variations, these *institutions* invariably legitimize subordination and disempowerment of youth and women in all the Dryland Systems target countries.

Source: Muñoz Boudet et al. 2013; World Bank 2013

¹¹ Adapted from Kabeer’s and Rowlands’ definitions that were applied to gender issues.

status, and networks of people interacting in the system. These decisions and behaviors establish the system's ability to manage socio-ecological vulnerability risks, equitable distribution of resources and benefits, and equitable access to agricultural livelihood opportunities – all of which are pivotal for the sustainable development of a society, economic growth, and sustained well-being of all stakeholders.

Box 4: Definition of “empowerment”

Power: people's capacity to make choices and exercise influence – in relation to themselves as well as others.

Empowerment: processes by which capacity is acquired by those who have been denied it.

Agency: the capacity to exercise choice and pursue goals. Agency gives people the power to challenge or renegotiate unequal power relations. It operates by providing:

- **Voice** – to seek ways to bring about desired change either individually or collectively, and
- **Exit** – to withdraw from or withhold cooperation in an unfavourable situation.

Source: Kabeer 2010

Box 5: Typology of power or agency

Power from within (change) – growing self-awareness, confidence, assertiveness, motivation, and a desire for change that can influence individuals to make/strive for change (even if they fail).

Power to do or to withdraw or withhold cooperation (choice) – growing individual capacities, especially through sharpening required knowledge, know-how and skills, opportunities to access economic/agricultural resources and social contacts/networks, to make decisions, exercise authority, and solve problems.

Power over (control) – changes in access to underlying agricultural resources (including labor, jobs, and income) and power relations, and the ability to benefit from these new opportunities and/or overcome power inequalities and constraints.

Power with (community) – collaboration, solidarity, shared vision and goals, and joint action with others, including in challenging social norms and practices, negotiating to tackle constraints or abuses, and action to defend common interests.

Source: Rowlands 1997

Change is driven by a change in socio-cultural elements or ecological elements of the system, which results in a change in the interrelations of the system's elements. Such a change can be driven by external influences, such as climate change, plant, animal or human diseases, conflicts, migration, economic booms, crises, and international agreements, or by cultural and philosophical stimuli. Internal changes, often inspired by external influences, can be brought about by government policies, education and capacity building, socio-political movements, and research. Individual agents of change, building on their social roles, status, and networks determined by a system's elements, inspire internal changes, but rarely bring them about alone. Dryland Systems researches the areas of livelihood opportunities, distribution of resources, and vulnerability. These research interventions feed back into the system and stimulate small changes and system adaptations, initially in terms of social relations and social roles and later relating to elements such as socio-cultural institutions, which exponentially grow through repercussions and more feedback loops in the system, culminating in empowerment of young women and men. In the program, these feedback loops are partly steered by learning alliances such as innovation platforms.

As Figure 3 indicates, the root causes of inequality, exclusion, and disempowerment are the underlying social and power structures, and societal norms, values, attitudes, customs, and practices. These interrelated factors determine access by age and gender (and socioeconomic class) to agricultural livelihood assets (Box 6), services, information, voice, and decision-making power, as well as the ability to seize new opportunities to improve production, incomes, and welfare.

Access to these various agricultural resources and voice in turn affects, and is affected by, three clusters of interrelated factors: vulnerability and risk¹²; opportunities for improved livelihoods and welfare; and who controls the benefits of adopting agricultural innovations and/or engaging in other development opportunities, and who enjoys (some of) the benefits (may be different people). This is important to the CRP as the ability to control (or enjoy) benefits affects *incentives* to adopt program innovations.

These factors are not static but change in response to external events (external drivers) that can be violent shocks (such as earthquakes, floods or major food price hikes) or slower processes such as desertification or climate change, to public action (policies, laws, administrative procedures) and/or popular demand voiced through protests and strikes, e.g. against increased food prices or the young demanding jobs or by more peaceful social movements and campaigns.

¹² From a systems perspective, some of the most vulnerable systems are pastoralist and smallholder farmer systems in dry areas, whose vulnerability is expected to worsen with climate change (HLPE 2012). In this strategy we view vulnerability through a social lens and consider the vulnerability of communities, households, and individuals with a focus on youth.

The theory of change as shown in Figure 3 suggests a role for the CRP in supporting youth-responsive and/or youth-transformative interventions (Box 7) that are consistent with the role of Reeler’s “change agents”. These two types of intervention are not mutually exclusive: “responsive” interventions may have some immediate or longer-term transformative impacts. To avoid potential resistance, it may be pragmatic to start with less threatening youth-responsive interventions to build a community’s confidence before trying out a more transformative intervention. The options for Dryland Systems are:

Box 6: Types of livelihood assets for agriculture (illustrative examples)

Human capital – household members, active labor, education, knowledge and skills, health and nutritional status.

Physical capital – livestock, irrigation pumps, equipment, houses, factories, cold storage, vehicles.

Natural capital – access to land, forests, water, grazing, fishing, wild products and biodiversity.

Financial capital – savings/debt, gold/jewelry, income, credit, insurance.

Social capital – kin networks, group membership, cooperatives, agricultural producers, employers and workers’ organizations, socio-political voice, influence.

Source: Adapted from Carloni 2005

Box 7: Responsive and transformative development

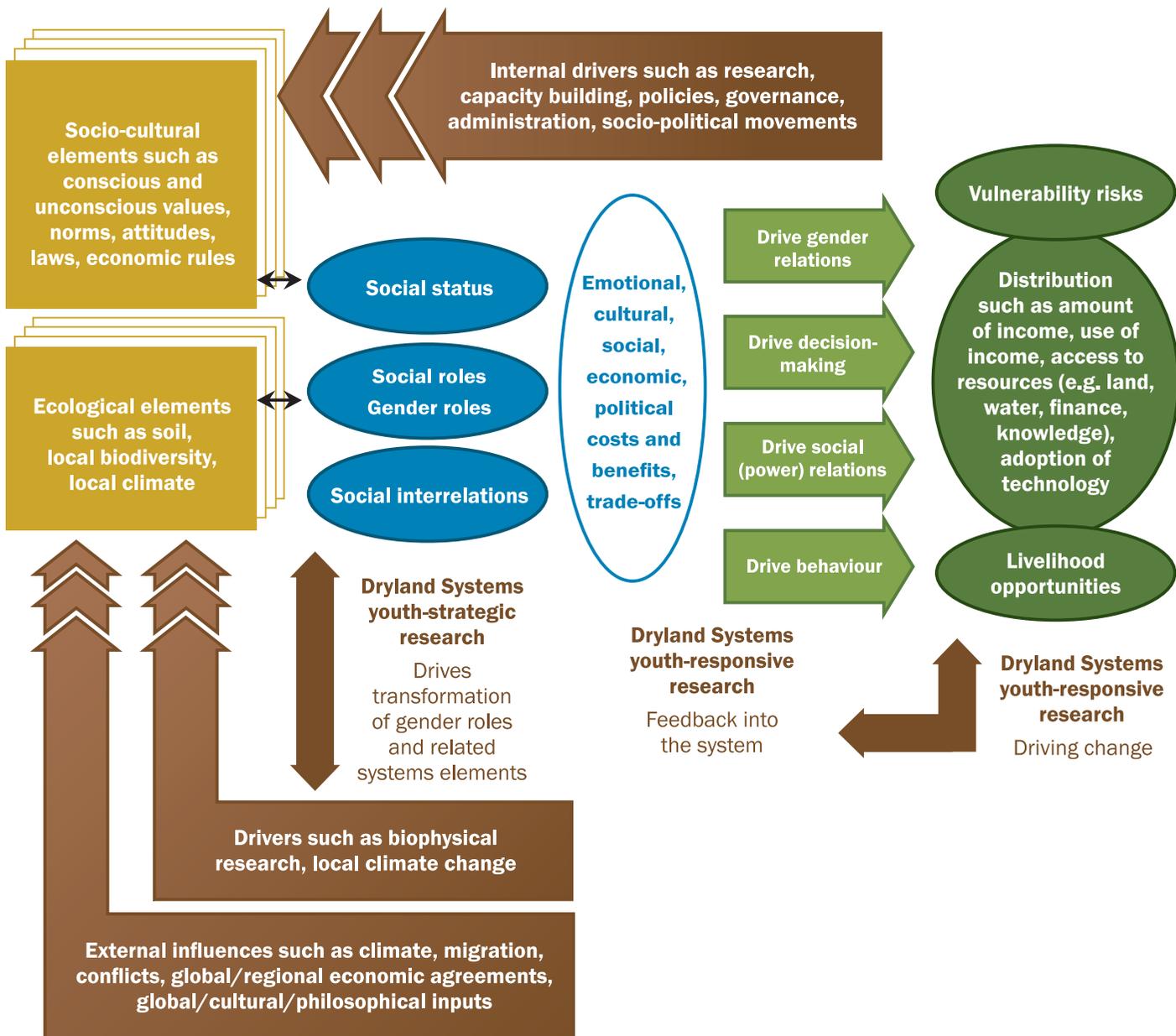
Youth-blind development – excludes youth or brings them in on terms that reproduce their secondary status.

Youth-responsive development – brings economic and welfare benefits to youth and their families but does NOT challenge the status quo (can lead to unanticipated transformations).

Youth-transformative development – promotes structural changes to address exclusion and power inequalities.

Source: Adapted from Kabeer 2010

Figure 3: Theory of change – Dryland Systems for youth



- Youth-responsive development: taking account of youth constraints and needs (differentiated by gender if appropriate) in designing and implementing AR4D.** For instance, the CRP will integrate youth considerations into the design of its programs to develop improved community-based water harvesting/control methods, soil conservation methods, and crop and livestock productivity-enhancing technologies. It will also collaborate with development partners (including extension, finance, and marketing organizations) to ensure young people’s access to and training and information in the use and maintenance of these technologies. These partners will in turn provide feedback on the effectiveness and acceptability of these technologies, to help the CRP refine the design of its next round of research activities.

- **Youth-transformative development: promoting AR4D for young women and men as independent farmers, managers, or entrepreneurs.** The CRP will have greater success if it is working in situations of ongoing transformative changes, such as public policy reforms that enable young people to buy or rent land, take out bank loans without their parents' signature, join skills-training programs, and/or enforce quotas for youth in decision-making roles in community and agricultural organizations and cooperatives. Such propitious environments facilitate opportunities for youth to enter new VCs or VC nodes, such as dairy processing, raising chickens for eggs and meat, or growing/selling aromatics and medicinal plants. At the same time, the CRP's work to increase young women's and men's incomes can also have a transformative effect by increasing their self-confidence and decision-making power within the family and community.

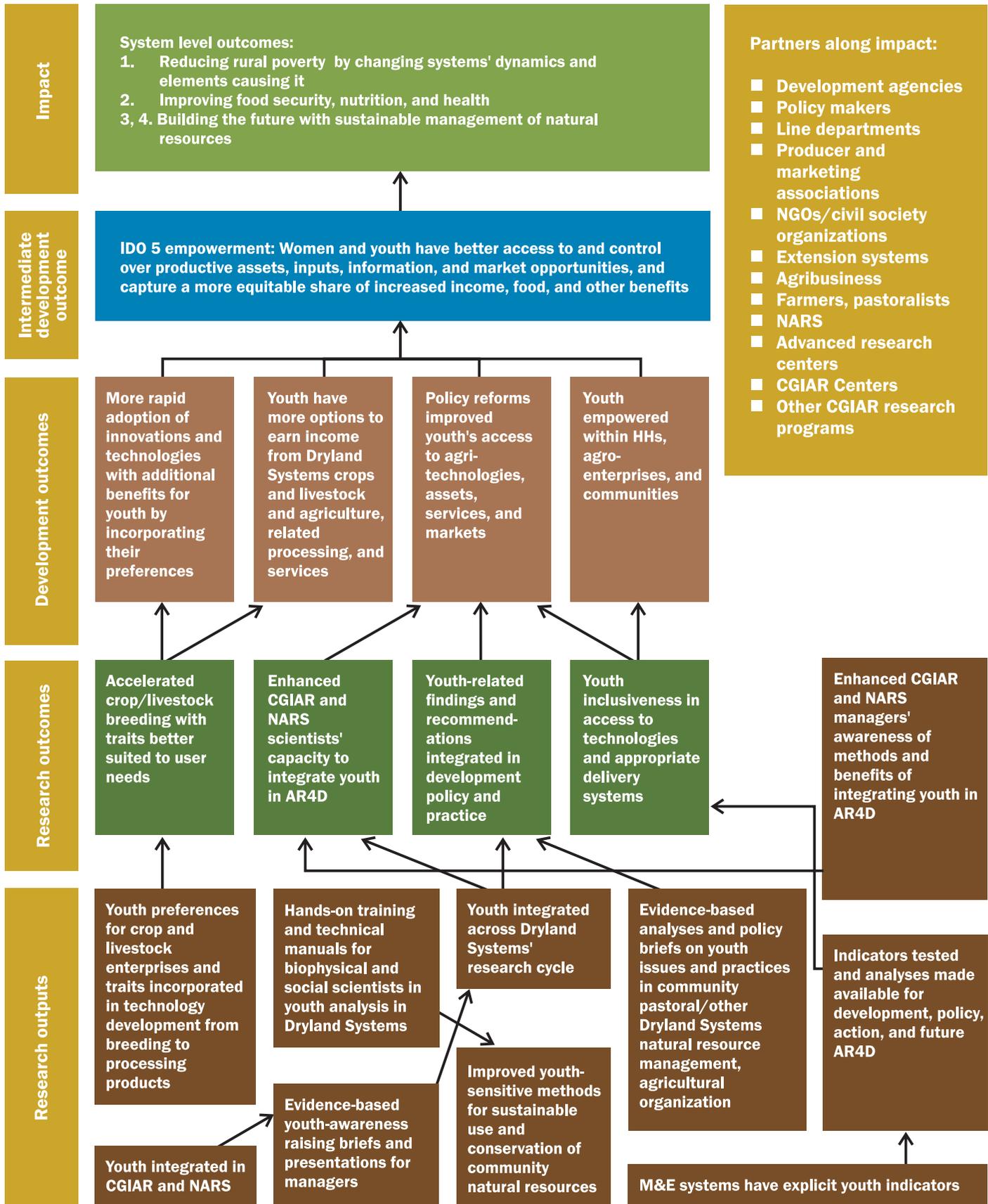
Implicit is the belief that external actors, such as researchers, cannot (and should not) impose transformative change on the program's youth stakeholders. The CRP will therefore use participatory action research to engage young people in their own process of reflecting, learning, and acting to improve their lives. This iterative process will also enable these rural stakeholders to identify with the program researchers the areas in which they would welcome help. While such demands will doubtless include requests for technological innovations to solve youth-differentiated needs and priorities, the theory of change also indicates that technology alone is not enough to effect youth-responsive or youth-transformative change. First, there is a need for an appropriate enabling environment (policies, information, markets, services, finance, capacity building). Secondly, there is need for the program's activities to be grounded within a broader process of social change that should be driven primarily by the rural youth themselves (e.g. youth uniting in their own organizations to rent land, negotiate better produce prices, etc.) although also (hopefully) facilitated by public policy (e.g. laws on land titling and rental markets).

6.2 Impact pathway

The strategic pathway for achieving impact on youth's livelihood in drylands has been planned following a logical framework structure as well as a projected impact pathway.

The logical framework (Figure 4) is designed to flow from the initial research output to the overall development goal, the achievement of which is reflected in the wider longer-term "impact". The strategy's theory of change informs and explains the rationale behind the assumptions that specific "outputs" will lead to specific "research outcomes" and "development outcomes", resulting in the "impact", if not clearly attributable to the interventions. The logical framework also acknowledges the critical role of CGIAR partnerships with NARS and other development actors (policy-makers, public, private and civil sector development practitioners, donors, media, and farmer/pastoralist advocacy organizations) to realize desired impacts on the ground, so that technologies do not "remain

Figure 4: Dryland Systems logical framework for youth



AR4D: Agricultural research for development; HH: Household; IDO: Intermediate Development Outcome; M&E: Monitoring and evaluation; NARS: National agricultural research systems

on the shelf”. This entails linking the CRP’s research processes, outputs, and outcomes to the broader goals of achieving wider behavioral, policy, and institutional change¹³. The proposed **outputs and research and development outcomes** in the logical framework are generic. They will need to be “unpacked” in more detail, and in some cases expanded, by the flagship/action site research teams when they design/implement specific activities. Some generic examples are given in Table 3.

The projected impact pathway (Figure 5) demonstrates the interrelations of effects of research and actions by Dryland Systems. Youth-responsive research on drivers and influencers, which drive the involvement of youth in the management of vulnerability, the adoption of agricultural innovations by youth as well as their seizing of agricultural and agro-related livelihood opportunities, and the equitable distribution and access to resources by youth will effect youth in the researched context through systemic feedback loops. Strategic research on female and male youth’s social roles and systems element, which determine social interrelations and decision-making, are directly affecting the social structures of the system and create direct feedback loops between the research and system’s components. Affecting the drivers of livelihood, vulnerability management, distribution, social interrelations, and decision-making influences mindsets, social-institutional innovations, and technical biophysical innovations, and contributes to their transformation; this then contributes to the achievement of the development outcomes and impact of the overall strategy.

¹³ See, for example, contributions by Mark Holderness (Global Forum on Agricultural Research), Christian Hoste (Agreenium), Richard Hawkins (Centre International pour la Recherche Agricole orienté vers le développement) and Wellington Ekaya (Regional Universities Forum for Capacity Building in Agriculture to the CGIAR Consortium Workshop: Towards a CGIAR Strategy on Capacity Development (Nairobi, October 2013) (CGIAR Consortium 2013; GFAR 2014).

Figure 5 : Dryland Systems impact pathway for youth

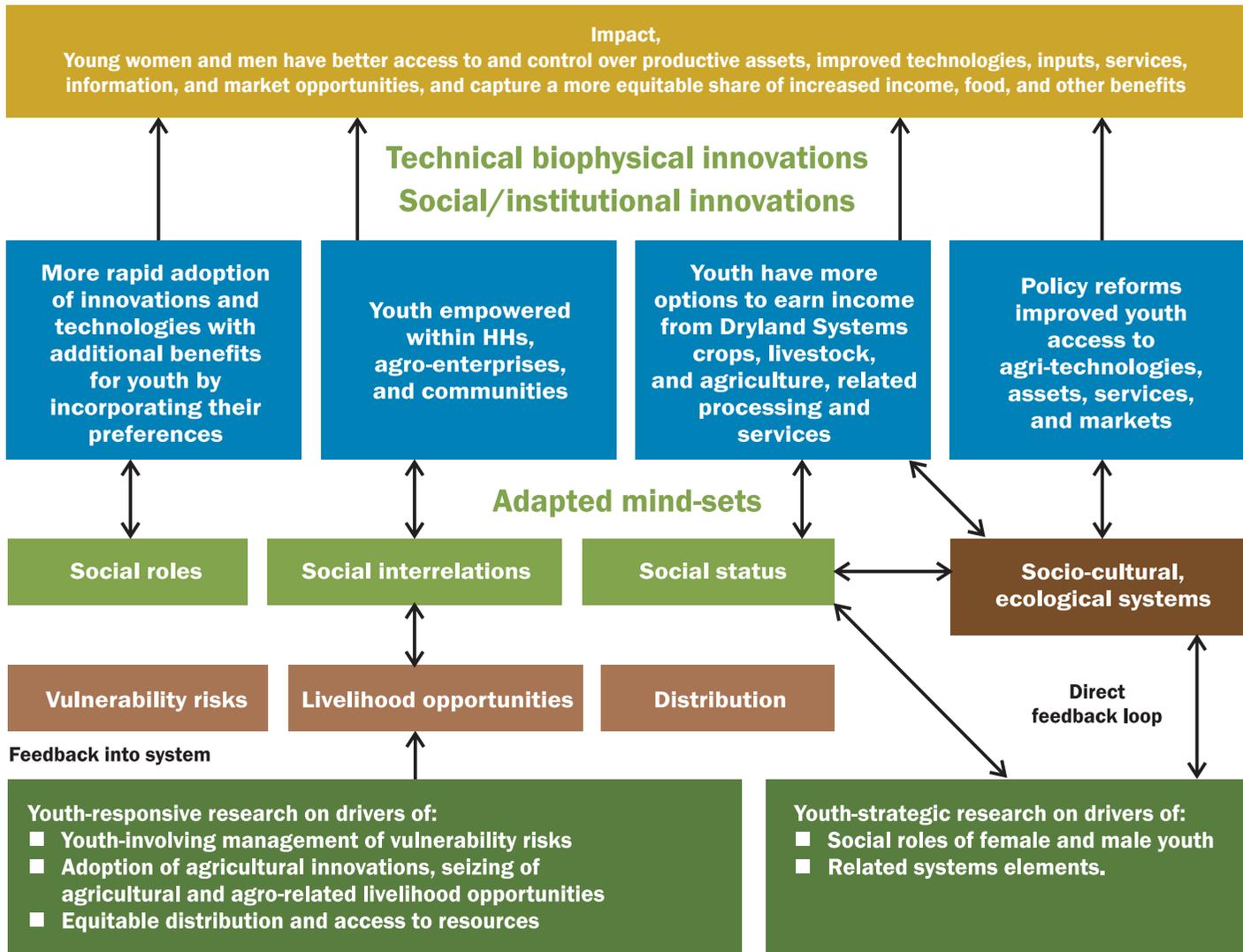


Table 3: Generic research questions, activities, outputs, and research outcomes

Research question	Activity	Output	Research outcome
Objective 1			
What are the <i>specific</i> youth-related gaps in knowledge and practice for demand-driven technology development and adoption?	Disaggregate baseline surveys and studies by age (cross-cut by gender and class); add youth-specific questions to identify gaps.	Improved database with detailed data by age, gender, and socio-economic status.	More refined and accurate problem diagnosis; better targeted research design and implementation by CRP scientists.
	Undertake discussions with focus groups (female/male youth, mixed youth/adults), research/development partners and key informants.	Toolbox for quantitative and qualitative data collection and analysis on youth (by class, gender, etc.). Short report on most salient and strategic gaps (through discovery, proof of concept, piloting, up-scaling phases).	More nuanced and accurate problem diagnosis identifying most critical issues for AR4D by Dryland Systems and other scientists.
What are young women's/men's aspirations, preferences, constraints, and opportunities vis-à-vis agricultural innovations and processes?	Surveys and focus group discussions to capture aspirations, preferences, constraints, opportunities of female and male youth to engage in CRP agricultural innovations/processes, including attitudes to risk.	Report published to guide CRP problem diagnosis and research cycle.	Sharper problem diagnosis capturing real youth demand; more effective implementation taking account of real constraints and opportunities.
How are these aspirations etc. affected by trends in social norms, cultural, religious values, class characteristics, and economic incentives (costs, benefits, trade-offs)?	Surveys to identify youth access (by class/gender and HH typology) to assets including land, labor, inputs, finance, services, markets, cooperatives, improved technologies, and decision-making (if possible by different nodes in crop, livestock, and tree value chains in each ALS).	Report on differences and inequalities within/between HHs in access to agricultural resources, decision-making power, and development benefits and implications for youth incentives and capabilities to participate in AR4D.	More realistic problem diagnosis and research cycle with potential to lead to up-scalable innovations and processes.
What differences and commonalities across flagship regions are significant for up-scaling?		Report published to guide CRP problem diagnosis and research cycle.	Sharper problem diagnosis and more precise targeting of entrepreneurial youth to engage in CRP research for development.

Table 3: Continued...

Research question	Activity	Output	Research outcome
	<p>Surveys and focus group discussions to identify trends in norms, values, and practices that affect ability of female and male youth to engage in agricultural innovation and entrepreneurship.</p> <p>Undertake comparative analysis of results of above surveys, studies, and focus group discussions.</p>	<p>Publish article in peer-reviewed journal on methodology and results of above research and recommendations.</p>	<p>Practical CRP-defined strategy for up-scaling youth-related AR4D; community of practice benefits from shared experience and lessons.</p>
<p>What are the best entry points to integrate young women and men effectively in selected CRP research programs to enhance their well-being/improve the profitability and sustainability of dryland ALS?</p>	<p>Focus group discussions (by ALS) to identify youth's priorities and incentives, enabling institutional mechanisms (such as group renting of land/wells, production and marketing cooperatives, extension, veterinary services, group financing) to engage in CRP PAR, with focus on selecting promising crops, livestock and trees, and especially innovative value addition to increase incomes and maintain sustainable natural resource management.</p>	<p>Report on best entry points to engage youth in CRP research cycle.</p> <p>Guidelines on <i>ex ante</i> diagnostic analysis for integrating youth in AR4D.</p> <p>Methods and tools to identify youth issues for technological development and adoption, and actionable entry points.</p>	<p>Effective design/ implementation of CRP research, including choice of most appropriate phase to involve youth (to be decided – probably testing/up-scaling phases).</p> <p>CRP and other scientists benefit from guidelines and piloted methods and tools.</p>
<p>Objective 2 How can the CRP build young men and women farmers'/livestock keepers' capacity to innovate to improve their livelihoods?</p>	<p>Surveys and focus group discussions to identify:</p> <ul style="list-style-type: none"> ■ Capacity needs (technical, information and communications technology, business and soft skills) 	<p>Report on youth capacity needs and best practices in building such capacity to inform future CRP work.</p>	<p>X youth (by gender) adopting CRP innovations (by innovation type).</p> <p>X US\$ equivalent increase in income per youth (female/male).</p>

Table 3: Continued...

Research question	Activity	Output	Research outcome
	<ul style="list-style-type: none"> ■ Available partners to complement CRP capacity building (continuing education, vocational training in agricultural technical skills, extension, mentoring) ■ The role of youth groups/cooperatives to increase solidarity and technical/managerial skill mix, reduce risk/anxiety, and share experiences and lessons ■ CRP's comparative advantage to provide direct capacity building: what, for whom, and how. 	<p>Article for peer-reviewed journal on successful experiences and lessons in enhancing youth capacity to innovate, based on evidence from CRP case studies.</p>	<p>X % increase in incomes.</p> <p>Methodology and results of studies and capacity building used by scientists in Dryland Systems and other CRPs/NARS, development partners.</p>
<p>How can the CRP combine the limited natural resources with policy/institutional support to provide youth incentives to use such resources optimally and reduce vulnerability to water scarcity in dry areas?</p>	<p>Undertake PAR with young women/men groups/cooperatives owning or renting land, wells, irrigation equipment, livestock, processing equipment, trees, etc. to pilot CRP innovations to enhance natural resource use, including scarce water resources.</p> <p><i>(Precise innovations and youth groups to be identified by CRP research teams).</i></p> <p>Through the PAR, build on and harness youth groups' social action and networks to:</p>	<p>Report followed by article in peer-reviewed journal on methodology, findings, and recommendations.</p> <p>Methods and tools to characterize youth roles and decision-making power in Dryland Systems ALS's and community NRM organizations.</p> <p>Guidelines, policy briefs: methods, results, lessons, and recommendations to enhance NRM and related benefits</p>	<p>Innovative methodology and findings used by scientists in Dryland Systems and other CRPs/NARS, development partners to up-scale youth involvement in using natural resources more sustainably and effectively to increase incomes and well-being.</p> <p>Methods and tools used by CRPs, NARS, and other partners to increased youth decision-making power in agricultural groups/community-based organizations.</p>

Table 3: Continued...

Research question	Activity	Output	Research outcome
	<ul style="list-style-type: none"> ■ Increase youth’s voice and decision-making power in community water management, pastoral, fuel wood lot, tree/forest groups ■ Mobilize youth networks to negotiate with local and national policy-makers needs for policy, legal and administration reforms (e.g. to facilitate their access to land, water, finance, etc.)Involve youth in CRP innovation platforms and learning alliances. 	through greater youth decision-making and negotiating roles.	National/local policy-makers and administrators, CGIAR and NARS scientists, and development partners use guidelines/briefs to exploit youth’s potential and eliminate their constraints.
How can youth combine available natural resources and opportunities for innovation with market opportunities to intensify/diversify production and value addition, profitably and sustainably, to increase incomes in more favorable dry areas?	<p>Surveys, studies, focus group discussions, PAR to:</p> <ul style="list-style-type: none"> ■ Identify opportunities (specific crops, livestock, trees, and innovations for enhancing productivity and value addition), and ■ Remove/circumvent constraints (land and finance access, social norms influencing mobility/market roles, especially for young women). <p>PAR to pilot selected innovations with youth groups, in partnership with:</p>	<p>Report on findings, challenges, options.</p> <p>Report on results, challenges, solutions, recommendations (followed by peer-review article).</p>	X additional young women + men successfully accessed markets (accessible marketing points, post-harvest technologies [including refrigeration and better storage], marketing information, and marketing processes and institutions that encourage inclusiveness).

Table 3: Continued...

Research question	Activity	Output	Research outcome
	<ul style="list-style-type: none"> ■ Community-based organizations and community leadership to facilitate youth access to land, etc. and ■ Public, private organizations to improve youth access to relevant markets, inputs, services, information, and finance. 		

Objective 3

How can the CRP develop effective and strategic alliances with the development community (governments, national/international investors, development practitioners) to up-scale proven research outputs with youth to larger numbers of beneficiaries?	Pilot PAR with (female/male/mixed) youth groups on selected proven innovative research outputs, in partnership with development actors, assessing net benefits, synergies, and potential trade-offs; estimate <i>requirements</i> for up-scaling, including investment, youth-inclusive policy/administration reforms, upgrading market infrastructure, facilities, and information, improving youth access to finance.	Reports, briefs for scientists, policy-makers, investors, and development partners to highlight successes, opportunities, and requirements in terms of policy and administration reforms, and cost estimates for investments, improving vital agricultural services, etc.	Enable policies, administrative measures to incentivize youth to engage in agricultural innovation and development put in place. Agricultural extension, adoption of veterinary and other agricultural service delivery systems policies and programs to explicitly reach young women and men at scale and disaggregate their monitoring statistics of their outreach by age and sex.
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AR4D: Agricultural Research for Development; CRP: CGIAR Research Program; HH: Household; NARS: National agricultural research systems; NRM: Natural resource management; PAR: Participatory agriculture research.

Some examples of promising areas for engaging youth in CRP technology innovations and institutional processes are given in Boxes 8 and 9, respectively.

As the starting point, the several outputs recognize that while CRP managers and scientists express a strong commitment to integrating youth considerations throughout the IDOs, practical methods are needed to translate this into reality. This is largely because many biophysical scientists do not have the disciplinary “tool kit” to analyze the complex socio-economic and power relations that underlie youth exclusion and alienation from dryland (family) agriculture, and thus to devise youth’s inclusion. This is in no way a criticism but underlines the vital need for multidisciplinary teams to include social (and political) scientists who have this expertise.

Box 8: Examples of potential outputs for youth in crop and livestock technology development

Improved water management systems for crops, livestock, trees, horticulture (NAWA, WAS&DS).

Improved quantity and nutrient quality of feed/fodder for small livestock through the CRP’s improvement of feed/fodder, e.g. by breeding improved (multipurpose) crop/legume varieties, oilseeds (sunflower, sesame, safflower), fodder (alfalfa, esparsit, and management of crop/legume rotations and crop–livestock interactions with labor-saving technologies, especially For weeding and harvesting (especially CA, NAWA, WAS&DS).

Improved methods to increase productivity in and incomes from milk, meat, and skins processing by youth accessing improved technologies developed by CRP.

Improved cereal/legume/vegetable seed systems with greater youth involvement in seed production and distribution, and access through improved delivery systems (SA, ESA).

Improved conservation agriculture methods to increase resilience and benefit both young women and men without increasing gender inequity in workloads – datasets on results/trade-offs analyzed (NAWA, SA).

Improved post-harvest, storage and processing technologies developed/tested by young women and men, especially for crops, vegetables, fruits, and dairy, and constraints to adoption identified/addressed.

Box 9: Examples of potential outputs for youth-inclusive institutional change

Technologies and tools for identifying/addressing youth-specific roles and knowledge, and strengthening their voice and decision-making power (by gender/class) in pastoral organizations to improve resilience of pastoral systems including adaptation to climatic variability.

Improved water harvesting methods to enhance water availability for youth-owned crops, fruit trees (e.g. olives in NAWA), and livestock (taking account of competition with domestic needs).

Improved methods for soil conservation to combat land degradation including through deep-rooted plants and/or crop rotations, to minimize fallow periods, soil surface cover, soil and water management, and mulching, through harnessing youth knowledge, labor roles/skills and incentives (NAWA, CA, WAS&DS, ESA).

Improved youth-inclusive community-based methods for irrigation for control of salinity and waterlogging, and among nomadic peoples for water resources for fodder production and livestock watering (CA).

Decision-tool developed for youth-inclusive (responsive and/or transformative) collective action to improve land, pasture, and water management (SA).

Analyses of youth constraints (differentiated by gender/class) to market access, networks, and cooperatives, and good practices to strengthen young women's and men's roles in, and benefits from, marketing organizations (SA).

6.3 Timeline

This Youth Strategy is valid from 2014 to 2017, with yearly strategic reviews and work plans.

- **Years 1–3** – *ex ante* diagnostic analysis, including adapting multidisciplinary methods and tools to identify youth issues (by gender, socio-economic class, ethnicity, etc. and by flagship region/ALS, as appropriate), specific knowledge gaps and entry points, and improve targeting (all IDOs).

Piloting some imaginative transformative approaches, especially using participatory action research methods in collaboration with partners (NARS, CGIAR researchers, other partners, and ultimate beneficiaries), to involve youth in testing/adapting demand-driven technology innovations (mainly IDOs 2, 4, 5, and 6). Developing indicators to measure change.

- **Years 4–6** – up-scaling phase; sharing and capturing of benefits; improved participation and leadership by youth.

7. Core staffing and institutional capacity

7.1 Core staffing

All the centers have considerable expertise in youth issues, mainly among their social scientists. Since many of these scientists are also working on gender issues as well as other social issues, the time they will be able to dedicate to youth issues is relatively limited. Thus, this expertise will be supplemented through partnerships with scholars in universities and consultants. Focusing on inclusiveness issues, the gender program coordinator of CRP Dryland Systems is charged with coordinating research on youth issues as well, under supervision of the CRP Director.

7.2 Collaboration with other partners

The CRP proposal stressed a strong commitment to developing strategic partnerships with non-CGIAR specialist institutions. A number of these are already under way. The following deserve mention:

- **Gender in Agriculture Partnership** (www.gender-gap.net), a multi stakeholder partnership catalyzed by the Global Forum on Agricultural Research, also addresses youth issues (with a focus on their gender dimensions). It thus provides a rich network of existing and potential partnerships between youth specialists among scientists and development practitioners from the CGIAR system as well as from the UN, national and regional AR4D organizations, extension agencies and networks, civil society, non-governmental organization and private sector development organizations, donors, and the media. Dryland Systems' partnership with Gender in Agriculture Partnership will bring benefits from synergies in AR4D efforts – collaboration in developing and testing research tools and methods, and indicators for impact assessment, piloting innovations on the ground, disseminating findings and engaging policy-makers in evidence-based advocacy at the global, regional, and national levels for youth-inclusive development that is also gender-equitable.
- **Young Professionals' Platform for Agricultural Research for Development** (www.ypard.net): will help Dryland Systems leverage the participation of young professionals in AR4D in all five target regions. The initial focus of their contribution will be to help the program's scientists and their partners identify *ex ante* youth issues, including gender differences between young men and women that need to be addressed in the research design for all six IDOs; contribute to the Young Dryland Scientists program, including internships and post-doc fellowships for young researchers; and participate in local on-ground events and activities.



Photo: IWMI

- **Africa Harvest:** the Africa Harvest Biotech Foundation International (www.africaharvest.org) will partner with Dryland Systems to build on their rich experiences in youth-inclusive (and gender-equitable) field work to drive greater uptake of innovations from farms to markets and reap equitable benefits for all, including higher agricultural productivity and incomes.
- **World Farmers' Organization:** this global organization can play an important partnership role in disseminating the research findings to policy-makers and civil society actors who are advocating for policy changes at global, regional, and national levels to increase youth inclusiveness (that is gender-equitable) in agriculture.
- **The International Labour Organization** has long-standing experience in working with (rural) youth regarding employment and entrepreneurship, and has the ability to bring research results on youth to fruition in development projects globally. A global network of specialists on youth is working in the technical departments across the International Labor Organization at its headquarters in Geneva and in more than 60 offices around the world. Currently, the International Labor Organization has two main programs on youth, the Youth Employment Program and the Work4Youth Project.

Dryland Systems social scientists already collaborate with social and youth specialists in other CRPs. There is considerable scope to expand collaboration with other complementary CRPs, particularly with the Humidtropics program that is also developing a youth research program, and with the Policies, Institutions and Markets program with regard to understanding the broader change processes affecting youth.

8. Management system

The management system for the youth cross-cutting theme is integrated within the overall CRP Governance and Management system and thus in all regions of Dryland Systems (see Annex 1). Since the CRP Director and scientists have many demands on their time, only a “light” management system for the youth theme is envisaged.

8.1 Youth focal points

The overarching responsibility for stimulating and giving direction to integrating youth issues in the CRP, including in the dedicated IDO 5 on gender and youth, lies with Dryland System’s Director. Due to resource constraints, the appointment of a youth coordinator (even part-time) in the Director’s Office is not foreseen at present. However, as a temporary measure, the Director may need to co-opt a Youth Focal Point (in rotation) to help with some coordination functions.

Since the main thrust of the work on youth will be at the field level, each region will appoint a part-time Youth focal point to assist the Flagship Coordinator. These focal points, who could be drawn from any of the participating centers, will be selected on a rotating basis from among interested/experienced scientists engaged in some youth-related Dryland Systems research. They will also share responsibility for catalyzing and coordinating, within and across the flagships, the integration of youth issues in multidisciplinary field and participatory community action research programs relating especially to IDOs 2, 4, 5, and 6.

8.2 CRP working group of youth focal points

The focal points will form a cross-CRP working group (WG), to be convened by the CRP Director or on a rotating basis by one of the focal points. The WG will coordinate the development of common or complementary methods and approaches for mainstreaming youth issues within the regions and IDOs, and, as appropriate, design/coordinate strategic research on youth issues. The WG will draw on the experiences and good practices of other CRPs shared through the informal CGIAR Youth Network that Dryland Systems and Humidtropics CRP envisage setting up with other interested CRPs in the coming year or so. In addition to virtual communications, the WG will meet at least once a year (back to back with another CRP meeting if possible) to discuss/agree emerging issues and priorities.



Photo: IWMI/D. Brazier

9. Monitoring and evaluation

An M&E system is in place and relies on existing mechanisms developed in collaboration with partners. Reporting will be nested within the overall CRP M&E strategy that is currently being developed. As relatively little work exists in the community of practice on youth indicators in AR4D, any work that the CRP does in this area (in collaboration with other CRPs and partners) will be breaking new ground.

Drawing on the impact pathway (Figure 5), the M&E framework will focus on using quantitative and qualitative methods to monitor youth integration at two levels.

9.1 Expected outputs and outcomes

The M&E framework will include reporting on:

1. The extent to which youth issues are integrated into research design through:

- Collection and use of age- and sex-disaggregated data (e.g. from baseline surveys)
- Application of youth analysis, in the context of wider socio-economic structures and relationships and the changes/trends these are undergoing
- Analysis of trends in social norms, attitudes, and behaviors that can influence young women's and men's aspirations and needs, and preferences for and adoption of innovations.

2. The extent to which the outputs reach the intended outcomes, i.e. the extent to which the outputs:

- Are based on sound age- and sex-disaggregated data
- Are disseminated through partners and networks to reach a wider range of young producers/processors and entrepreneurs, and incorporate feedback from communities and from young women and men of different household typologies
- Influence policy-makers and the AR4D community.

9.2 Impact analysis

This will focus on the extent to which the research has achieved the Youth Strategy's overall goal: **to promote more youth-inclusive development in dryland systems that enhances well-being and resilience**. This is also seen as a building block to achieving the CGIAR SLOs: reduced rural poverty, improved food security, improved nutrition and health, and sustainably managed natural resources. Indicators will be used to measure, *inter alia*:



Photo: ILRI

- Young women's and men's increased (or reduced) access to productive assets, services, and technological innovations
- Young women's and men's empowerment, including increased control over their own labor and its products/income
- Youth inclusiveness in decision-making processes in community and agricultural organizations
- Changes in agricultural policies (including incentives), laws (e.g. on land ownership/use rights, inheritance rights, labor market reforms), and agricultural services and administrative procedures (e.g. agricultural extension, food quality and safety standards, insurance, market information)

10. Budget

No separate budgetary allocation has been made for research on youth under Windows 1 and 2 for 2014. In 2015 the program has an allocated youth budget to explore collaborations with strategic partners and generate new bilateral project proposals.

No Window 3 or bilateral funding is currently foreseen for youth research in 2014–2016. As the youth program starts to show results there may be more opportunities to mobilize such funding for 2016 and beyond.

A small budget will be needed to cover the costs of the Youth Focal Points' Working Group meetings, probably from the Director's budget for Regional Coordination. If the meetings are arranged back to back with other CRP meetings, the costs could be kept low.

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Annexes

Annex 1: Action sites in Dryland Systems five regions

Region (flagship)	Target countries	#	Action site/transect
West African Sahel and Dry Savannas	Burkina Faso, Ghana, Mali, Niger, Nigeria	1	Kano–Katsina–Maradi Transect (Nigeria and Niger)
		2	Wa–Bobo-Dioulasso–Sikasso Transect (Ghana, Burkina Faso, and Mali)
East and Southern Africa	Sudan, South Sudan, Ethiopia, Eritrea, Kenya, Somalia, Tanzania, Zambia, Malawi, Mozambique, Zimbabwe	3	Marsabit–Yabello–East Shewa Transect
		4	Chinyanja Triangle (Changara–Ntcheu–Dedza) Transect
North Africa and West Asia	Morocco, Algeria, Tunisia, Libya, Egypt, Mauritania, Syria, Occupied Palestinian Territory, Jordan, Iraq, Saudi Arabia, Iran, Yemen, Oman, Turkey, Afghanistan	5	Béni Khedache–Sidi Bouzid (Tunisia)
		6	Saïss (Morocco)
		7	Nile Delta (Egypt)
South Asia	India, Pakistan	8	Jodhpur, Barmer and Jaisalmer districts, Rajasthan (India)
		9	Chakwal (Pakistan)
		10	Bijapur district, Karnataka (India)
		11	Anantapur and Kurnool districts, Andhra Pradesh (India)
Central Asia	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan	12	Aral Sea Region (Turkmenistan, Uzbekistan, and Kazakhstan)
		13	Fergana Valley (Kyrgyzstan, Tajikistan, and Uzbekistan)

Source: Dryland Systems Plan of Work and Budget approved by the Steering Committee in December 2014.

Annex 2: Definitions of “youth” and “children”

Youth

The UN defines “youth” as those persons between the ages of 15 and 24 years, without prejudice to other definitions by Member States. This definition was made during preparations for the International Youth Year (1985), and endorsed by the General Assembly (see A/36/215 and Resolution 36/28, 1981). All UN statistics on youth are based on this definition, as illustrated by the UN system’s annual yearbooks on demography, education, employment, and health. By that definition, therefore, children are those persons under the age of 14. However, Article 1 of the UN Convention on the Rights of the Child defines “children” as persons up to the age of 18. This was intentional, in the hope that the Convention would provide protection and rights to as large an age group as possible, especially because there was no similar UN Convention on the Rights of Youth. Many countries also draw a line on youth at the age at which a person is given equal treatment under the law – often referred to as the “age of majority”. This age is 18 in many countries, and once a person passes this age, he or she is considered to be an adult. However, the operational definition and nuances of the term “youth” often vary from country to country, depending on specific socio-cultural, institutional, economic, and political factors. Within the category of “youth”, it is also important to distinguish between teenagers (aged 13–19) and young adults (aged 20–24), since the sociological, psychological, and health problems they face may differ (United Nations Department of Economic and Social Affairs – Economic and Social Council 2015).

Child labor prevention

The International Labour Organization Minimum Age for Employment Convention No. 138 (1973) sets the minimum age for children to work at 15 years of age in general (the Convention allows for certain flexibilities in specific circumstances). Where the economy and educational facilities of a country are insufficiently developed, it may be initially reduced to 14. For work considered hazardous, the age is 18. The International Labour Organization Worst Forms of Child Labour Convention No. 182 (1999) defines worst forms of child labor as all forms of slavery, trafficking of children, forced recruitment for armed conflict, use of children in illicit activities, sexual exploitation, and hazardous work.

Hazardous work

This is work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children. The International Labour Organization Convention No. 182, which defines the worst forms of child labor, does not define what hazardous work includes, leaving it to the countries to define this. However, the International Labour Organization’s Worst Forms of Child Labour Recommendation, 1999 (No. 190), the non-binding guidelines that accompany Convention No. 182, gives some indication as to what work should be prohibited. It urges Member States to give consideration to:

- Work that exposes children to physical, emotional or sexual abuse
- Work underground, under water, at dangerous heights or in confined spaces
- Work with dangerous machinery, equipment, and tools, or that which involves the manual handling or transport of heavy loads
- Work in an unhealthy environment, which may, for example, expose children to hazardous substances, agents or processes, or to temperatures, noise levels or vibrations damaging to their health
- Work under particularly difficult conditions such as work for long hours or during the night or work that does not allow for the possibility of returning home each day¹⁴.

¹⁴ ILO (2011)

Appendix

Appendix Table 1: Percentage of youth unemployment and young people not in school or at work (by gender) for Dryland Systems target regions/countries

Region/country	Youth unemployment*						Young people not in school or at work**					
	Male			Female			Male			Female		
	1995	2005	2010	1995	2005	2010	1995	2005	2010	1995	2005	2010
West Africa												
Burkina Faso		4.6			2.9		5.8	5.7		17.5	15.0	
Ghana								12.9			20.8	
Mali							10.2	26.7		19.8	47.6	
Niger							15.2			45.3		
Nigeria							7.2	22.2		43.4	36.1	
East and Southern Africa												
Botswana	33.5			42.4					25.7			38.9
Ethiopia		4.1			11.2		7.5	1.8		43.6	10.9	
Kenya							24.5	16.3		36.8	31.6	
Malawi							19.4	5.4		44.9	11.1	
Mozambique							15.3	9.0	5.9	19.7	11.5	8.3
Namibia	29.6	36.7	54.6	33.8	47.0	63.8	20.4			29.2		
South Africa		42.7	47.2		54.7	54.6	18.0	27.4		27.0	36.8	
Tanzania		7.4			10.1		3.2	5.3	9.5	17.5	9.1	16.9
Zambia								21.8			22.4	
North Africa and West Asia												
Egypt		23.3			62.2			15.2			45.7	
Iran		21.2	20.2		34.0	33.9		21.6			55.1	
Jordan		23.7	22.6		47.9	45.9						
Morocco		16.2	22.8		14.4	19.4						
Syria		12.7	15.3		46.1	40.2		13.3			55.4	
Tunisia	33.3	31.4		29.0	29.3							
Central Asia												
Azerbaijan		18.2	13.4		10.4	15.5	49.3			57.8		
Kazakhstan		13.1	6.8		15.7	8.2	54.0	13.8		56.9	14.9	
Kyrgyzstan		13.3			16.2		24.9			36.7		
Tajikistan								26.9			43.4	
Turkmenistan								3.8			13.5	
Uzbekistan												
South Asia												
India	8.3	9.9	9.9	8.0	10.3	11.3	9.7	10.0	10.0	56.1	51.8	50.5
Pakistan	7.6	11.0	7.0	18.1	14.9	10.5		11.4	9.9		65.8	59.6

* Percentage of the labor force aged 15–24 that is unemployed

** Percentage of the population aged 15–24 that is not engaged in education, employment, or training

Regional averages are not available

Source: World Bank 2013b





RESEARCH
PROGRAMON
Dryland Systems

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas.

Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centers and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Center for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

For more information, please visit
drylandsystems.cgiar.org

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