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CENTRAL ASIAN COUNTRIES INITIATIVE ON LAND MANAGEMENT – KNOWLEDGE SHARING PLATFORM

Policy Brief

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## Repositioning agricultural innovation systems in post-Soviet Central Asia

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### Summary

Transforming a centrally planned system of agricultural production to one where individual farmers are accorded choice in crop mix and land use management practices is much more than a structural change. Embedded within this process is a fundamental shift in how knowledge is generated, disseminated and adopted. Upon dissolution of the Soviet Union, one immediate priority was the privatization of state farms and thereby relaxation of policies for collective production. Little attention was accorded to developing systems of innovation, which would be necessary in the provision of services and support to a new generation of private farmers. To be sure, the dismantling and distribution of collective farm structures turned doctors, engineers, accountants and other non-farm professionals into a cadre of farmers overnight. In a number of cases, this was merely on paper given significant delay in official transfer of land and supporting policies, but for the most, many non-agriculture professionals adopted a new career as

farmers given relatively dismal opportunities for income generation within their professions. In the early years of independence, therefore, the need was for knowledge and support in understanding the tenets of privatized farming as well as in forging linkages with local markets. Some twenty five years after independence, the need for knowledge and innovation systems continues to be of significant priority for agricultural and rural development but for a different reason. Given lower relative uncertainty over land tenure and political systems, contemporary needs are for knowledge and support in the development and delivery of new and improved technologies and best production practices which enhance the ability for farmers to cope with both environmental and economic shocks.

A continued lack of resources for public provision of knowledge and support to farmers has led to a heavy reliance on international donors and NGO's for the delivery of project funded extension and advisory services in the Kyrgyz Republic and

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Tajikistan. This reliance on the provision of knowledge, technical support and access to new technologies leads to questions of sustainability given that services generally end with the cessation of project funding. In Uzbekistan, national mandates for key strategic crops ensure reasonable access to machinery services, knowledge and technical services for contracted farmers producing cotton and wheat for the state. The same level of access to public services is not guaranteed for private farmers who suffer from both limited and affordable provision of market based machinery services and technical support. Despite these contemporary challenges, a set of options for enhancing inclusive access to agricultural innovation do exist:



1. Reform of agricultural education within the region must be given serious consideration. In addition to the revamping of curriculum and pedagogy, introducing a mandate of research into educational systems, which did not exist in the Soviet Union, is likely to lead to greater efficacy of national systems of innovation, with broad (inclusive) uptake of knowledge and best practices across a range of farm types and landscapes;

2. In conjunction with (1), the introduction of degree programmes in agricultural extension, a theme which did not exist in Soviet educational systems, is of immediate importance in terms of developing a cadre of trained (national) professionals, able to sustain the delivery of knowledge and

advisory services to farmers within the region;

3. Liberalization of import regulations and restrictions (duties, currency, quotas) on machinery and equipment in order to enhance access to, efficiency of, as well as productivity potential of mechanization for sustainable farming systems with enhanced profitability.

### **Agricultural extension and advisory services in post-Soviet Central Asia**

Agricultural extension is widely understood as a system of provision of out of school adult education, which delivers knowledge gained through research, and for direct application in the improvement of productivity on farmer fields. In the United States, this is largely provided through universities and land grant colleges which, in addition to core mandates of research and teaching, have a mission to provide extension. In large parts of South and South-East Asia, as well as the Middle East and North-Africa, agricultural extension has historically been provided through technical advice aimed at ensuring the production of exportable crops, deemed to be strategic to colonial powers, and with limited attention to small (subsistence) farmers. On independence, state directed (often subsidized) crop production plans were implemented through formalized delivery of technical assistance to farmers and inclusive of all farm sizes and types. A concerted push for broad uptake in new and improved seed varieties and technologies over the course of the 1970's 'green revolution' led to an advocacy for a paradigm shift, away from (commodity based) state centered extension models, to more participatory approaches for knowledge delivery and acquisition. While some countries and regions have embraced this direction, others continue to tie together technical advice with monitoring and enforcement of state directed mandates for agricultural production.

In post-Soviet Central Asia, some twenty five years after dissolution of the Soviet Union, a significant number of





regional initiatives funded by international organizations and multilateral agencies are promoting the revival of agricultural extension. Yet, the notion of agricultural extension, as contemporarily understood globally, did not exist in the Soviet Union. What did exist was a focused and elaborate system of agricultural innovation, driven by ideology, informed by the application of science, and delivered to state farms as a centralized service. Specialized institutes dominated agricultural research within the USSR, and this was purposefully separated from the system of higher education. The former was placed under the aegis of the state, within the Academy of Sciences and Agricultural Sciences, while the latter was placed under the People's Commissariat for Education (Narkompros) which was later transformed into the Ministry of Education.



Regional branches and departments managed the flow of communication and outreach of research outputs to state farm structures within the republics, with edict rather than choice ensuring delivery and adoption of new technologies and crop mix choices on Soviet state farms. With increasing contemporary freedom accorded to land use management practices and crop mix choices for private post-Sovi-

et farmers, the extension of research outputs to privatized farms – in the form of knowledge and access to information – requires more contemporary approaches and participatory avenues for bridging the separation between research, education and knowledge dissemination.

Innovation – as a process of generating new knowledge, inventing new or improved technologies and fostering adoption – would appear to be of significant concern to rural communities in contemporary Central Asia. Yet, conceptualizing a sustained and effective process for generating, delivering and supporting knowledge in the form of agricultural innovation has been slow and with at least four factors underpinning this challenge:

1. Nationalism and language considerations are increasing placing limits on the sharing of knowledge regionally. In Tajikistan, the adoption of a language law in 2009, regulating all official correspondence within the republic to be undertaken in Tajik – albeit with allowance for parents to choose the medium of education within which their children study - is steadily eroding the dominance of Russian within rural areas. In the Kyrgyz Republic, nationalistic fervour has favoured Kyrgyz language in rural areas, the dominance of Uzbek language in urban centres of the south, and more generally Russian within the capital and urban centres of the north. The importance of communicating knowledge in a number of languages is therefore of critical importance and highlights the need for national systems of innovation which are responsive to priorities within local rural communities. This is different from a historical system of centralized communication across the region and delivery of knowledge in one unified language – Russian – with clear implications for resources in the ability and desire to synthesize, translate and contextually deliver lessons learned within the region, in Russia and within ex-Soviet republics more generally;





2. Geography constraints to the provision of technical advice for isolated agricultural communities in Central Asia. With only eleven percent of its land area arable in Uzbekistan, seven percent in The Kyrgyz Republic and six percent in Tajikistan, commercialized agricultural production



is largely concentrated on land in close proximity to the Amu Darya and Syr Darya rivers, with subsistence (rain-fed) production undertaken on small plots in areas with limited access to irrigation water. Mountains dominate the region. Lack of reliable (scheduled) transportation, due to weather and generally poor infrastructure given difficult terrain exacerbates relatively weak linkages between urban centres and rural communities. Globally, the popularity of information and communications technology (ICT), proven to be effective in the delivery of timely knowledge and information, is still limited within the region given rugged terrain and the need for significant capital investment in communication infrastructure within remote mountainous communities. Taken together, limited interactions

(physical and virtual) between ‘knowledge and service providers’ and small farmers reduce the effectiveness of knowledge transfer mechanisms for productivity improvements and in mitigating post-harvest loss. Equally important is conventional wisdom which promotes the notion (rightly or wrongly) that fragmentation of land, both in terms of size and contiguity, limits the potential of productivity gain, even in the presence of ‘perfect’ technology transfer and largely due to limited (economic) incentives for broad uptake?;

3. Land privatization is still incomplete, with each republic travelling on different paths and at differing speeds; therefore a range of support services are required in order to ensure equitable access to knowledge. Transfer of land from the state to individuals has been progressing since independence, with the Kyrgyz Republic having shown significant progress in this regard. In Tajikistan, early progress in distributing small parcels of ‘Presidential’ land to households in order to ensure production of vegetables and staples for household consumption was promising, with the divesting of larger parcels of state land having been much slower. In Uzbekistan, a number of revisions to land reform policies and codes have achieved some success in the privatization of land, but this has largely been in terms of leasing arrangements with the state and much progress still requires to be made in terms of private ownership. Contracting relationships between the state and farmers dominate agricultural relationships in Uzbekistan with declining (though still significant) interest for cotton production in Tajikistan and a limited role for the state in cotton production and marketing within the Kyrgyz Republic. Where cotton production persists, support in the





provision of machinery services, productive inputs and technical advice continues to be delivered by the state - including on lands where wheat is grown in rotation with cotton.



However, access to machinery services for smaller (non-cotton) producing farmers is more difficult and suffers from both issues of affordability and efficacy in service provision. Cotton is a state crop, and generally viewed by many (within and outside of Uzbekistan) as an impediment to completing the process of land privatization and reform. On privatized land where wheat and other non-cotton crops are produced, support in the provision of advisory services is limited to fee for service market-based provision, research based support from international agricultural research centres, or through time bound project based donor support. These forms of support are generally restricted in areas where they are available, through agreements with regulatory authorities, or constrained by institutional mandates, geography and funds. Few, if any, international organizations and international research centres are directly involved with initiatives aimed at enhancing total farm productivity on lands producing a range of commodities within a system of cotton production. One aspect of this lack of engagement with national systems of cotton production is caution in terms of state sensitivity to a national crop, as well as potential concerns (founded or

unfounded) of political activism through farmer organization and external financial support.

4. Where the dominance of cotton in agricultural production has been reduced, provision of technical advice and support to private farmers has been filled through externally funded time bound project based support, thereby raising concerns over sustained processes for innovation. The role of international organizations and NGO's in providing project based advisory services is prominent and growing in both Tajikistan and the Kyrgyz Republic. Largely delivered along the lines of strengthening value chains for vegetables and animal sourced food products, there is an equally growing concern for delivering knowledge and technologies aimed at fostering sustainable land use management practices. In the Kyrgyz Republic, a more medium term initiative supported through international donor funds seeks to institutionalize a national system of rural advisory services through fee for service provision. Despite issues related to small farmer willingness to pay and ability to pay for services, initial outcomes in the Kyrgyz Republic would appear to be encouraging. Yet, sustainability in the process of developing, testing, disseminating and adapting contextually relevant technologies remains unclear. Linkages between the (i) national network of rural advisory services (RAS), (ii) national institutes of higher education and (iii) national systems of research remain informal and would appear to be afflicted by a general lack of resources (financial and human capital). A dependence on international donors and international centres of research continues, therefore, and with seemingly little pressure on the state to provide an enabling environment for a nationally driven process which is able to generate and sustain agricultural innovation. Equally important for all countries within the region is oversight on the delivery of technical advice and assistance to farming communities on access to new technologies, more contemporary animal health practices as well as sustainable land use management paradigms. While nation states play an active role in monitoring activities undertaken by international organi-





zations and NGO's, a process for oversight in service provision is generally missing. Relative to ministries of health and education, there is little precedence in the ministries of agriculture and environment accrediting NGO's and international organizations in the delivery of services where potentially harmful practices may unwittingly and unknowingly be transferred without technical oversight from national regulatory agencies. These include services in the area of animal health and breeding but are also inclusive of services which impinge upon human and environmental health as well as natural resource degradation.

5. While notable and significant reforms have been undertaken at primary, secondary and tertiary levels of education within the region, the reform of agricultural research institutes and higher agricultural education has been slow. In large part, this reflects the reality of a tension between a historical philosophy of higher education as a public good and a contemporary reality of the need for fee based provision of education through privatization. With relatively greater affluence, Kazakhstan has led the way in terms of privatization of higher education with the Kyrgyz Republic following closely behind. Tajikistan and Uzbekistan have taken the middle ground with a mix of private and public partnerships, but each continuing to suffer from the ability to revamp pedagogical practices, to provide adequate teaching and learning resources, as well as to invest in appropriate infrastructure to support student centered learning. With close to 65% of its population in rural areas, and given the importance of agriculture for regional economies, a general lack of prioritizing investment and reform of agricultural (higher) education - including consideration of a narrower focus through reduction in size and breadth - has potential long term consequences for effective agricultural

innovation and rural development. Chief among these is a continued reliance on project based support to agricultural development, funded through international donor support, but with a general lack of institutionalized national capacity. More concerning perhaps is the natural inclination for international organizations, and NGO's supported thereby, to attract staff from national research institutes or ministries to join as consultants or technical advisors. In and of its self, the provision of employment opportunities at attractive salary scales, higher than prevailing national norms, is positive from an economic perspective. However, when these staff represent the best of national talent, a circular argument is likely to prevail wherein national systems are claimed to be weak and ineffective; and thereby the continued need for international donors to support the provision of technical assistance and support to agricultural communities. The fundamental issue is not the loss of existing staff to alternative employers but rather the lack of new talent coming onboard with skills which are relevant to the dynamic challenges faced by the agricultural sector today and in the years to come.

### **Emerging opportunities for enhancing national systems of agricultural innovation**

1. Capacity development and skills upgrading are cornerstones of international development and research organization mandates. Often delivered in the form of short courses or through scholarships for national students to study abroad, these initiatives are largely provided in order to build a small cadre of professionals to deliver on organizational mandates. Whether national systems for agricultural innovation, and allied extension and advisory services are able to respond to contemporary challenges faced by the agricultural sector will be determined by how agricul-





tural universities within the region respond to the need for fundamental changes in pedagogy and curriculum. Yet, the reform of agricultural education within the region is likely to proceed at a slow pace given issues of finance, political economy and competing priorities.



Equally important is an assessment of the demand for agricultural education in Central Asia and whether capacity within existing agricultural universities should be rationalized. While much attention has been devoted to an analysis and undertaking of reform of science, technology, engineering and math (STEM) fields, these issues do not appear to have been adequately addressed in Central Asia; and with seemingly little attention devoted to analyzing the merits of fusing together agricultural research with agricultural education. Reform of higher agricultural education, introduction of research into educational systems, and an educational focus on developing a cadre of agricultural extension and advisory services would significantly improve the ability for national systems of innovation to enhance measures for quality of life, with anticipated impact on livelihoods and quality of life for rural communities.

2. In an environment where privatization of state assets and land reform continues, albeit slowly and at different speeds within the region, the ability for innovation to affect productivity gains (and mitigation of production loss) will require a paradigm shift - away from technologies which are based on historical norms of size and scale - and with more attention to relatively smaller parcels of land where the constraints of agricultural labour (both in terms of number and capacity of skills) are present. Reasonable investment in the manufacture of machinery and water conveyance infrastructure, suitable to a post-Soviet landscape, continues to be limited within the region. The import of motorized and non-motorized machinery, as well as pumps and pipes, to support efficiency in water conveyance will require an exemption of existing state policies on currency controls and relaxation of import regulations within a number of republics. Equally important will be a supportive environment for the adoption of sustainable land use management practices, through (non-subsidized) approaches for managing risk, in the form of index based weather insurance for crop and livestock producers, as well as in more efficient and inclusive systems for access to credit and finance.

3. Outcomes in relation to improved productivity and profitability through the introduction of sustainable land use management practices have been encouraging on privatized farms. Yet, the impact of introducing improved land use management practices on cotton producing entities has been relatively limited and slow within the region. Engagement with nation states on testing proof of concept for improved land use management practices (conservation agriculture, optimized crop rotations) within cotton production systems can deliver notable environmental health outcomes as well as improved food and nutrition security.





As a case in point, national statistics indicate that irrigated areas under wheat in Uzbekistan have increased by 400% since 1991 while irrigated cotton area has decreased by only 15% over the same period. Much of this increase in wheat production has come about through substitution of forage legumes and other cereals and this has gone a long way towards meeting a state desire for self-sufficiency in wheat production. Yet, there has been a lost opportunity for incorporating a rotation of

food and forage legumes into cotton production systems, able to enhance food and nutritional security, while concurrently improving soil health and the provision of environmental services. Political sensitivity over cotton production has limited the introduction of diversity in crop rotations on state contracted cotton farms. A necessary role for international agricultural research systems in affecting a reduction to this sensitivity would appear to be both appropriate and timely.



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