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Report on the status of ICM in the CAC Region

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CAC region includes 5 countries of Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) and 3 countries of the Caucasus (Armenia, Azerbaijan, Georgia). Their total population is more than 75 mln and total area exceeds 4 mln sq. km. As a result of multiplicity of climatic zones and other natural conditions in this vast area, agricultural activities of CAC countries comprise great variety of agricultural directions, plant and animal species, etc. All countries have recovered from the economy collapse of 1990s and currently enjoy annual economy growth of about 10% or more.

Background - Recent changes in STI sector

Nevertheless, as compared to 1985, about 30-fold decline in use of STI, including agricultural information is observed, as a result of a dramatic reduction of R&D funding in the all post-Soviet area. This situation, if not changed for the better, will have a negative impact on the future development of these countries.

Status of Telecommunications in the Region

Telecommunications is the most rapidly growing sector in the CAC countries. The most rapid development is observed in mobile phone services (up to 50% annually). Internet services are growing less rapidly. Degree of monopolization influences their prices – the most expensive in Kazakhstan, where state-owned Kaztelecom dominates the market. The dial-up service is charged 0.59 USD/h in Georgia, 0.83 USD/h in Kazakhstan; limitless access - from 25 USD/month in Georgia, >45 USD/month in Kazakhstan.

Cheap wire phone availability in cities is from 40 to 60% dependent on the country (the highest is reported in Armenia), in rural areas ~ 4-5%, in mountainous areas ~ 0.2 %. Consequently, in rural areas prevailing communication means are expensive mobile phones, which cover up to 80% of countries’ inhabited parts. However, bandwidths are narrow. Therefore, in mountain rural areas internet could be based only on very expensive satellite connection (installation costs ~USD 2,000, monthly fee - ~ USD 200). In practice, this is a rare solution. It could become more common through integration of government-supported programs of internet for schools, libraries, extension, etc. School programs are the most common, the rest - not reported.

In Armenia, Azerbaijan and Georgia there is a World Bank project of rendering combined telecommunication services in mountain provinces.

Status of RTV in the Region

Currently in some country's capitals, there are up to dozen public and private TV channels. Usually from 1 to 3 of them are covering almost all the national territory, having thereof the national statute. Often they are also available on satellites and in internet. In the all countries there are also a number of provincial TV channels, some of them are available via satellites and cables on the all national territory. In the cities, up to 50% of residents have access to dozens of international channels via cable TVs. Satellite receivers have become popular, though for the majority of inhabitants they are still not affordable.

FM radio stations operate in many provincial cities and towns. In the capitals, their number could amount to 20. Some of them are available via satellites and internet. However, the situation varies from country to country. In all countries population living in remote villages
has access to radio broadcasting. Nevertheless, radio is not used widely for disseminating in agro information.

**Problems in Using ICT**

a. As a rule there are no officially adopted comprehensive National Policies and Strategies for ICT use. In some countries (i.e. Uzbekistan), there are ICT development programs targeted at reforming Government regulations in the area. More usually, there are limited strategies, exemplified by slogans such as “All telecommunication companies should be privatized” or “Internet for all secondary schools”, etc.

b. Enough capacity (hardware, software and skills, except internet and telephone access in rural/mountain areas) can be allocated in the majority of countries for execution of ICT projects. Availability of certain software (i.e. for large DBs management) could depend mainly on financial capability of organizations. Many non-profit organizations use free software.

The problem of implementation of information related projects in agriculture sector is that abovementioned capacity is not concentrated in agricultural R&D organizations.

**ICT use in agricultural research and development in the Region**

ICT is used practically in the all below listed activities.

i. In scientific and technical information (see details below).
ii. In research data management (for preparing data for publication, for other tasks - NA)
iii. In research management (NA)
iv. In agricultural extension and outreach (few extension workers have access to internet, some use computers for office purposes)
v. In agricultural market related information (is used for preparing printed publications, in some cases for dissemination via internet)
vi. In agricultural education (is used in all universities for teaching computer skills, not other subjects)
vii. In ARD organization and management such as financial and personnel management (is widely used)
viii. In messaging and communication (widely used)
ix. In publicity and mass communication (not intensive manner, because of financial limitations, not technical)

**ICT use for STI**

**A. Agricultural information**

1. Access to international information

   - FAO Depository Libraries – are established in almost all countries, with acquisition of books, CD-ROMs, etc.
   - Agricultural Libraries, agricultural collections of National Libraries and ST libraries everywhere are poor with international publications (books, journals)
• All agriculture researchers may have access free to Web resources, including:
  * FAO resources, American NAL resources, AgroWEB, etc. (free)
  * Through AGORA project to a number of international fee DBs and journals (free)
  * Through EBSCO Consortium project to EBSCO full-text e-journal DB and some others (for a symbolic fee).

- Access to other fee electronic resources (Dialog, STN International, CABI, etc.), as well as to printed international journals is very limited because of financial and organizational weaknesses.

2. Input to International and National DBs

In a number of CAC countries Agricultural Research Data (journal publications, R&D reports, etc.) are collected and processed with purpose of input to FAO AGRIS/CARIS DB. A shortcoming is the irregular and incomplete manner of work, ascribable to abovementioned changes in STI systems.

In some countries more comprehensive multidisciplinary DB on R&D outputs are developed, comprising the National flow of publications, R&D reports, books, patents, dissertation thesis, etc. Part of it is agriculture research outputs. Irregularity is a shortcoming in this case too.

Input to International AgroWeb Network through development of the National AgroWeb sites may become a promising instrument of the regional agricultural data collection and exchange. The quality and future efficiency of the Network depends mainly on a choice of organizations responsible for National AgroWeb sites. The principles are a) in choosing organizations already possessing a considerable part of information to be exchanged and b) having permanent governmental support. Technology issues are easier to solve (using international assistance as well),

Recently some of CAC countries announced development of DBs on plant species collections. This sort of DBs is a good opportunity to enrich ICT-based National, as well as Regional information resources.

B. Information services and modes

Use of ICT for Modernization of traditional modes of information services like Question-answer, Selective dissemination, printed and CD-ROM publications can be possible for researchers in the region. More difficulties exist in implementation of a Research-to-Farmer mode. In spite of some reported achievements in Armenia, Georgia and Kazakhstan (publications for farmers, agro market information sites), an overall situation in the Region is unsatisfactory. The cause is weakness or absence of Extension services. An intensive international support to the development of Extension networks was efficient for training people and accumulation of knowledge. But, usually, after projects' close-out established Extension units do not get financial aid neither from central nor local authorities. Some of the countries (i.e. Kazakhstan, Azerbaijan) announce plans of Extension strengthening. Extension networks seem to be a key for efficiency of both research and information services. Nevertheless in some CAC countries it is not considered as an integral part of research and innovation.

The case of a particular interest is the use of the National and local TV and Radio for agro information dissemination (including information for farmers) in Armenia. In contrast to many
countries experience, community radios are not used for agro information purposes in the CAC region.

An important but currently absent part of information services are also Subject-focused information centers.

**Information Systems Organization and Management**

The background difficulties mentioned at the start of report affect agriculture information services in CAC.

The above listed available resources, functions and services (see ICT use for STI) are, as a rule, scattered among quite a few organizations responsible for them and poorly coordinated. It is rare case, when access to international DBs, development of national DBs, AGRIS-CARIS, R&D reports, FAO depository libraries, AgroWEB, etc., are based on a single organization (Georgia seems to be closer to such model than others). Even those National AgroWEB sites, which used to be based on the properly chosen institutions, in some cases have been recently transferred to informal working groups. All these make a negative influence on the quality of work and create considerable problems for users. Higher concentration of activities concerned with access to international DBs, development of national DBs, AGRIS-CARIS, R&D reports, FAO depository libraries, etc., is desirable.

Also, it is important to develop small, but standard for all countries part of the National agriculture information resources in the form of DB (DBs), which then can be placed in the any of existing network of agro-information sites, creating good exchange environment. Bibliography of ARD products (articles, reports, patents, etc.) is the best subject to start with. The technology used in AGRIS-CARIS can be applied to this task. It also will help CAC countries to establish order in the AGRIS-CARIS input, and to develop ICT- based resource for extension activities.

The level of stakeholders’ awareness of the available services is low. For example, almost all the Ministries of Agriculture in the Region have Internet sites. Most of them do not have links to the National AgroWEB sites, etc.

Weak extension networks confine more intensive use of information resources, including ICT-based ones. Need in networks further development is evident. It is important to coordinate extension networks and information services development

There is an exigency of recommendations for the top level managers of agriculture sphere on the development of ICT-based agroinformation systems.

Desirable is establishing of subject-focused information centers in agriculture fields of a common interest for CAC countries, where these countries possess very high expertise.

Alongside with high-tech tools and solutions, more "traditional " instruments like national, local and community radio stations use for information services should be widened.