# UNESCO's Action in Landlocked Developing Countries (LLDCs)

Education

According to estimates by the UNESCO Institute for Statistics (UIS), 125 million young people of primary and secondary school age live in LLDCs – approximately 9% of the world's population in this age group. In 2012, a child of primary school entrance age could expect to spend nearly 10 years in education at the primary, secondary or tertiary levels. Although there has been a substantial rise in the school life expectancy in recent years from just over 6 years in 1990 and 7 years in 2000, the current school life expectancy is more than 2 years shorter than in the world as a whole. Both the primary/secondary and tertiary life expectancies are approximately 1 year shorter than the global averages.

Figure 1: School life expectancy (primary to tertiary) in LLDCs, 1990-2012
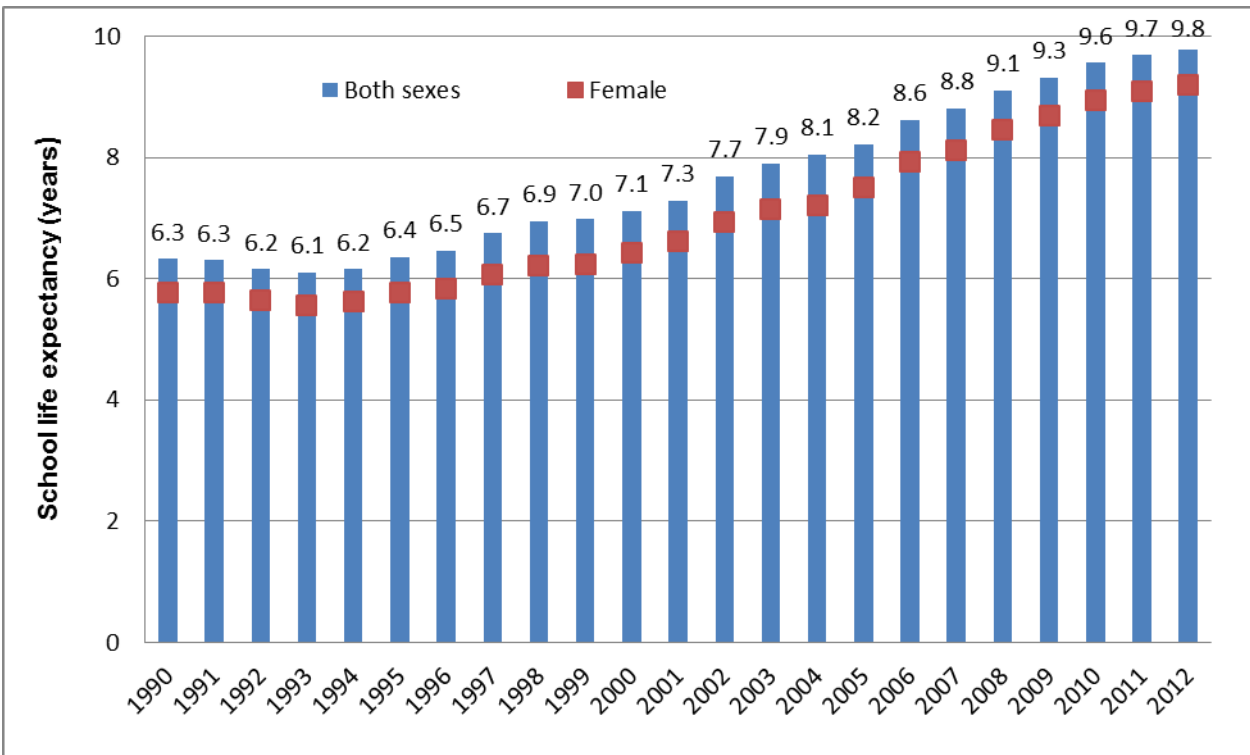
Source: UNESCO Institute for Statistics, May 2014.

The LLDCs as a group are still far from achieving universal primary education. Although the adjusted primary net enrolment rate has risen nearly 20 percentage points from 64% in 2000 to 83% in 2012, there are still nearly 11 million children of primary age not in school.

Figure 2: Out-of-school children of primary age in LLDCs, 1990-2012
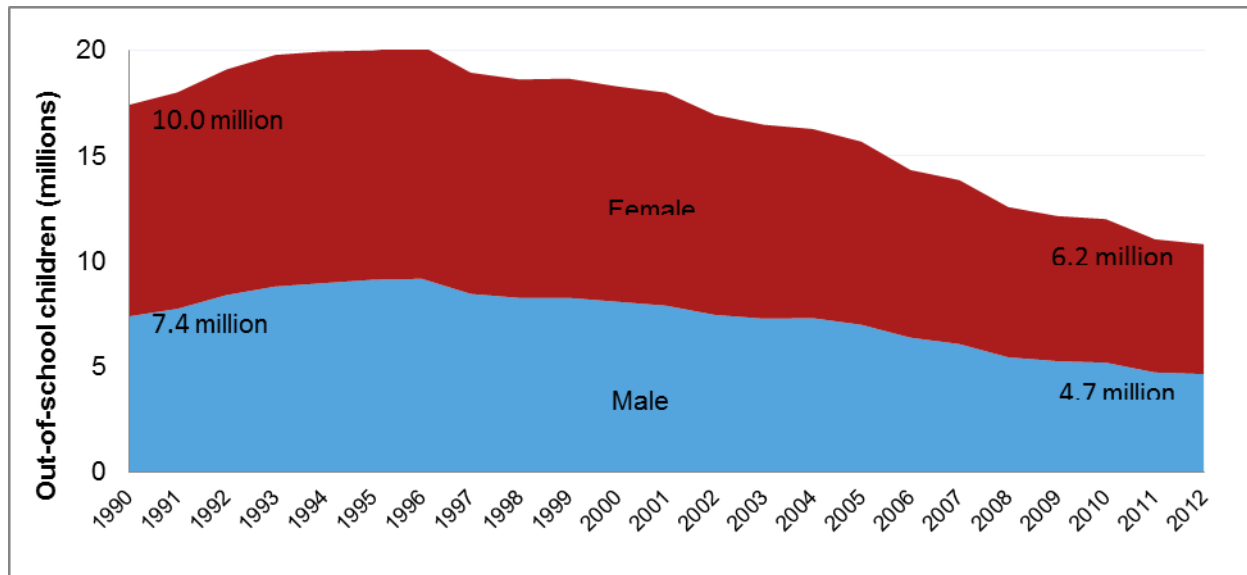
Source: UNESCO Institute for Statistics, May 2014.

Furthermore, nearly 10 million adolescents of lower secondary age are also out-of-school. In total, more than one-in-six of all out-of-school children and adolescents are in LLDCs. Three countries in the group account for more than half of the out-of-school children of primary age: Ethiopia 4 million and Niger and South Sudan with 1 million each. In addition, Ethiopia has nearly one-third of the out-of-school adolescents of lower secondary age in the LLDCs (3 million).

Figure 3: Out-of-school adolescents of lower secondary age in LLDCs, 2000-2012
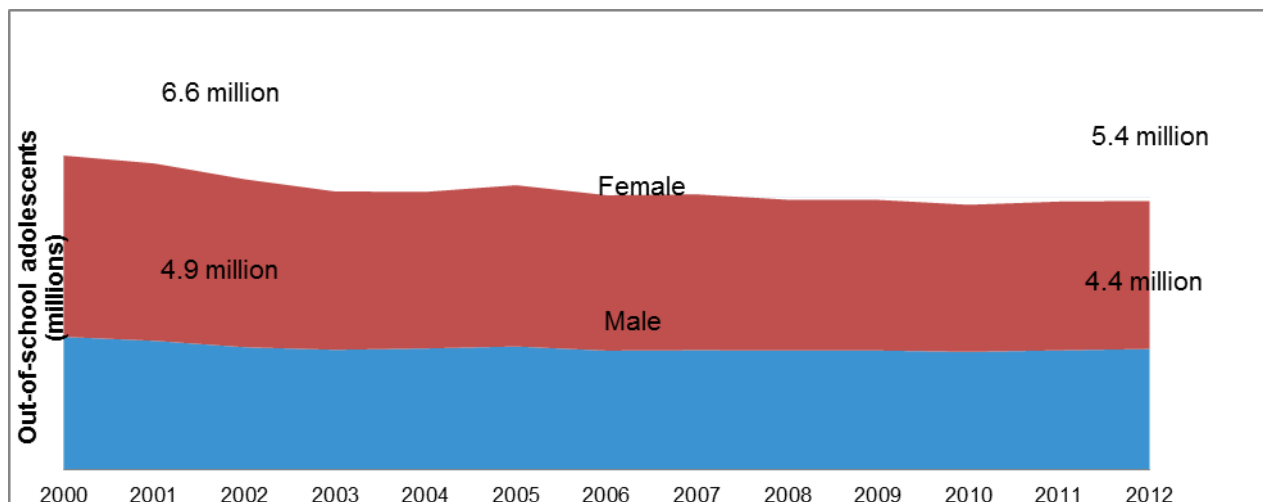
Source: UNESCO Institute for Statistics, May 2014.

Enrolments in primary and secondary education in LLDCs have increased by two-thirds from 59 million in 2000 to 98 million in 2012. Teacher numbers have largely kept pace over the same period with this rapid expansion resulting in the maintenance of pupil-teacher ratios just below 39 pupils per teacher in primary education and at 19 pupils per teacher in secondary education.

There has been little progress on gender parity, however. At the secondary level, the gender parity index of the gross enrolment ratio – the ratio of the female to male enrolment ratios – was no higher in 2012 than it had been in 1990 at 0.88 which is far from gender parity. At the tertiary level gender disparities against women have increased with the gender parity index of the gross enrolment ratio falling from 0.85 in 1990 and in 2000 to 0.75 in 2012. Only at primary level has there been some reduction in disparities. The gender parity index in 2012 was 0.93 – still short of the range 0.97-1.03 in which it is assumed that gender parity has largely been achieved. About half of the LLDCs have achieved gender parity at the primary level but only six at secondary level and none at tertiary level.

Education for Sustainable development

In Uzbekistan, the UNESCO Chair on Education for Sustainable Development (ESD) established at the Urgench State University, contributes to the promotion of an integrated system of research, training, information and documentation in the field of education for sustainable development. It has also promoted contacts between high-level, internationally recognized researchers and teaching staff of the Urgench University and other institutions in Uzbekistan within the framework of train-the-trainers module on education for sustainable development in Central Asia and beyond.

Science, technology and innovation

As the Draft Programme of Action for Landlocked Developing Countries for the Decade 2014-2024 (A/CONF.225/PC/L.4) rightly notes, "science, technology and innovation play a critical role in the alleviation of poverty as well as the rapid development of landlocked developing countries, in particular for achieving structural transformation, improving agricultural productivity, promoting energy access and developing information and communication sectors" and that "'landlocked developing countries should promote investment in science, innovation and technology for sustainable development."

In order to promote investment in science, technology and innovation (STI), policy makers need to know the state of their STI systems in order to establish, benchmark, assess and monitor effective STI policies. As the UN agency responsible for the collection and dissemination of internationally comparable STI data, the UNESCO Institute for Statistics (UIS) maintains a database with research and (experimental) development (R&D) and innovation indicators for all countries in the world.

Research and development (R&D)

Since its establishment as an institute in 2001, the UIS has completed five rounds of its biennial R&D survey, collecting data on the human resources and expenditure devoted to R&D for the time period 1996 to 2011. Data availability for the LLDCs is mixed. For six of the 32 LLDCs (Chad, Swaziland, South Sudan, Afghanistan, Bhutan and Turkmenistan), the UIS has no R&D data at all in the database. For four of the remaining 26 countries (Botswana, Niger, Zambia and Lao People's Republic), the data are outdated (although they are included in the analysis). Furthermore, for seven countries (Central African Republic, Malawi, Mali, Niger, Rwanda, Zimbabwe and Uzbekistan), no expenditure data are provided, only

personnel data. In addition, there are methodological issues, such as partial coverage, no information on full-time equivalents, incomplete time series, etc.

The most widely used R&D indicator is the amount of R&D expenditure as a percentage of GDP. The global average for this indicator is 1.8%, but this this hides a wide variation between developing and developed countries. For the developed countries, the average is 2.3%, while for developing countries (excluding the least developed countries – LDCs) this number drops to 1.1% and for the LDCs, it stands at 0.2% only. Figure 3 shows that in terms of expenditure, all of the LLDCs cluster around the LDC average, or at least are closer to the LDC average than to the developing countries excluding LDCs average. Many developing countries have set a target of reaching at least 1% of GDP devoted to R&D, and it can be observed that the LLDCs are quite far away from this target.

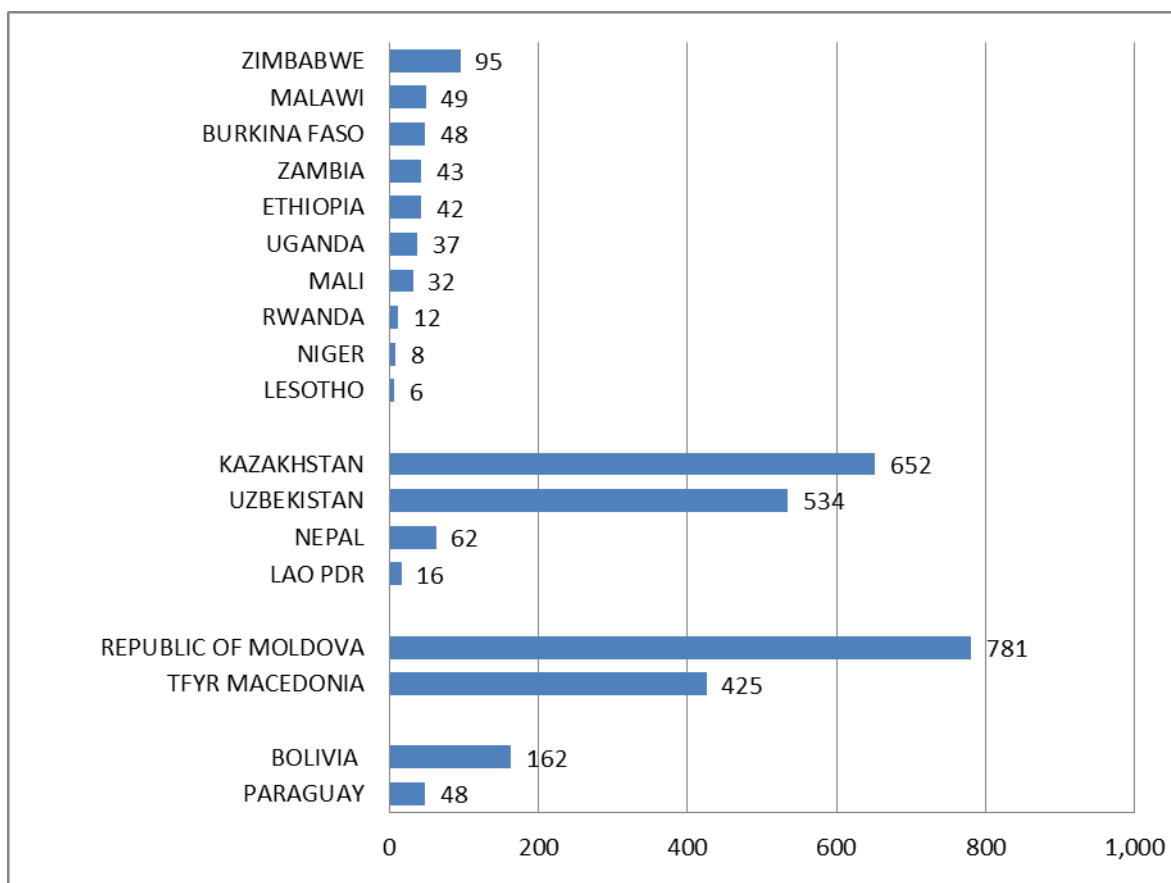**Figure 3: R&D expenditure as a percentage of GDP, latest year available**
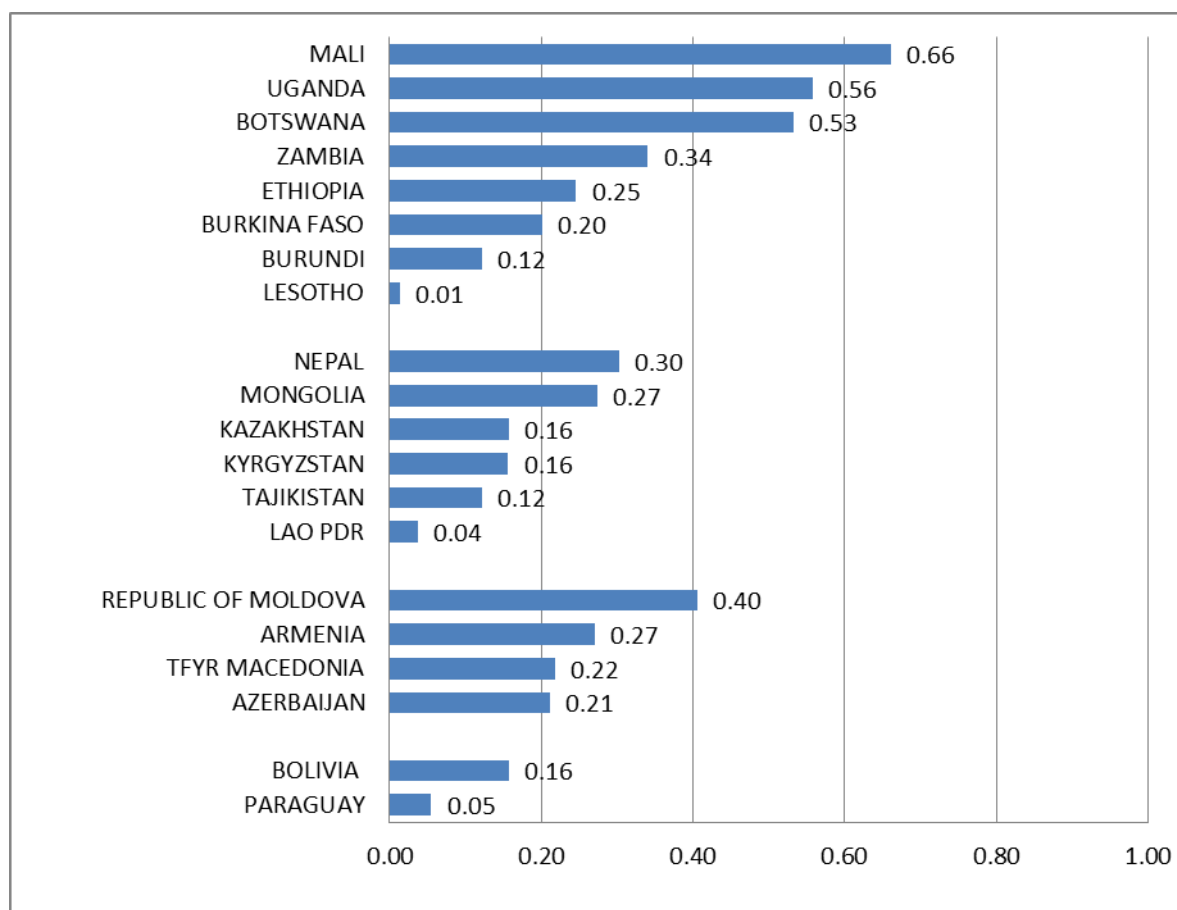
Source: UNESCO Institute for Statistics, October 2014

Notes: Lesotho: Higher Education only; Mali: excluding Business enterprise sector; Lao PDR: partial data.

Shifting the focus from expenditure to personnel, Figure 4 shows the number of researchers in the LLDCs relative to the population of each country. Data are expressed in full-time equivalent, which can be considered as the true volume of the effort devoted to R&D. The global average for this indicator is somewhat more than 1000 researchers per million inhabitants. In developed countries, the number stands at more than 3600, while in developing countries (excluding LDCs), the number stands at just over 500 and in the LDCs, this indicator doesn't reach 50. Figure 4 shows that many of the LLDCs indeed belong to the LDCs, in particular in Africa. The data for the Asian and European LLDCs hover more around the average for the developing countries excluding the LDCs.

Figure 4: Researchers per million inhabitants (in full-time equivalent), latest year available
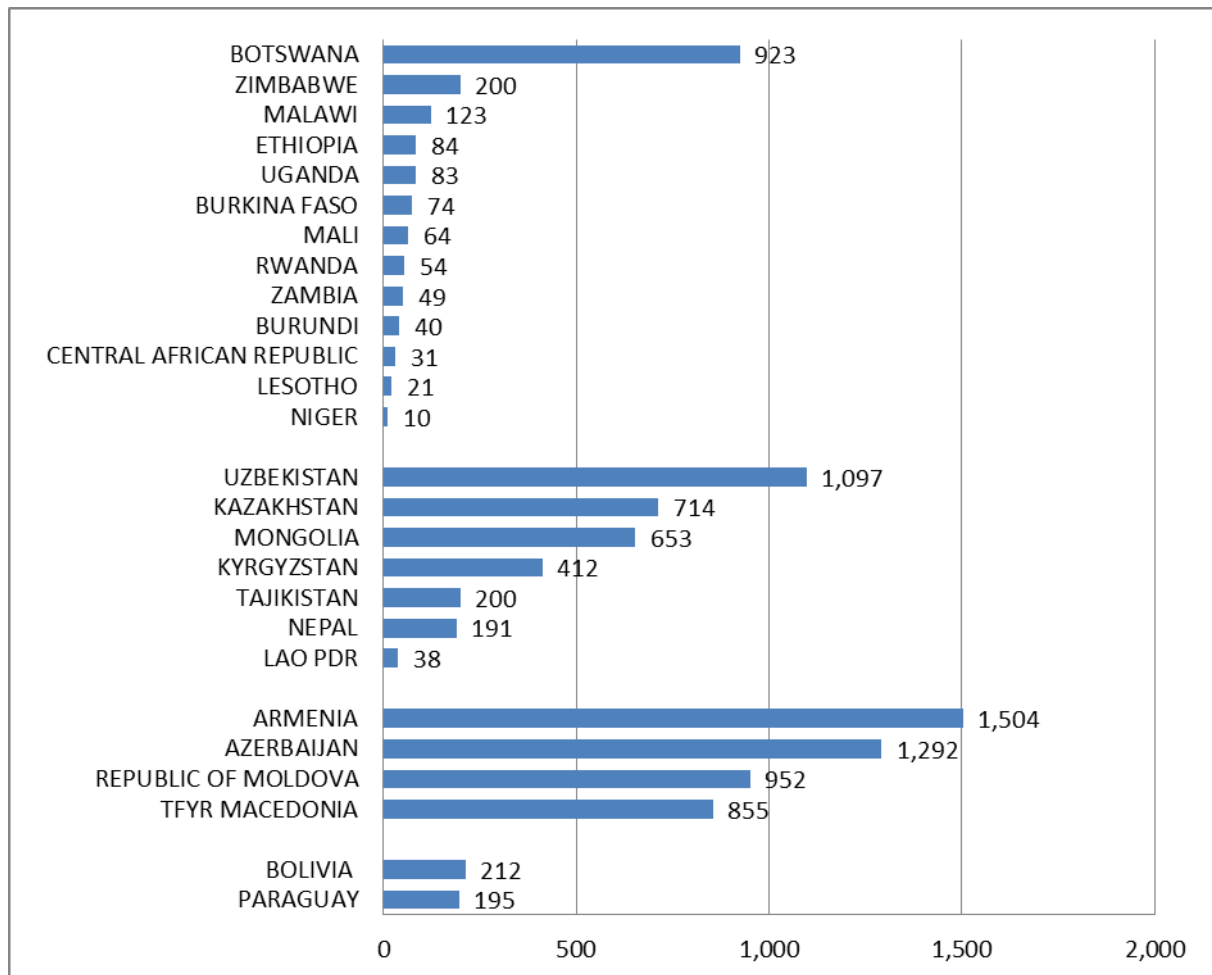

Source: UNESCO Institute for Statistics, October 2014

Notes: Lesotho and Rwanda: Higher Education only; Malawi and Zimbabwe: excluding Business enterprise sector; Niger and Lao PDR: partial data; Uzbekistan: overestimated or based on overestimated data.

Headcount data simply count the number of people active in R&D, without taking into account their time allocated to R&D, as opposed to other tasks (such as teaching, for example, in a university setting). Therefore, headcount data generally overestimate the true amount of research carried out. The advantage of this indicator though is that it is easier to collect, leading to a greater data availability, which can be seen from Figure 5. This figure presents the same indicator as Figure 4, except that the data are expressed in head counts. The picture remains the same, but more countries are shown. Notable additions are Armenia and Azerbaijan, which have the highest relative numbers of researchers of the LLDCs.

Figure 5: Researchers per million inhabitants (in headcount), latest year available
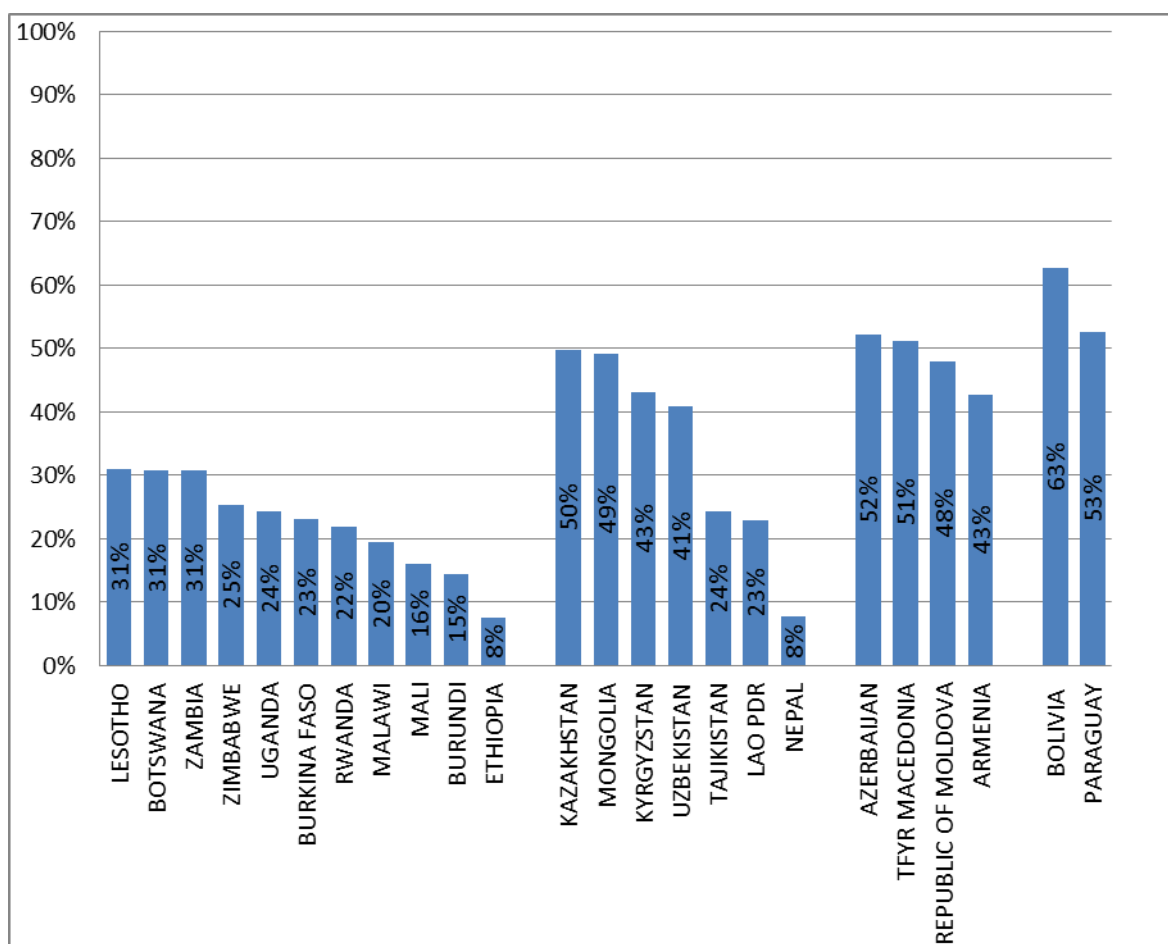

Source: UNESCO Institute for Statistics, October 2014

Notes: Botswana, Niger and Lao PDR: Partial data; Lesotho and Rwanda: Higher Education only; Malawi and Zimbabwe: excluding Business enterprise sector.

Globally, around 30% of researchers are female. Figure 6 shows that all African LLDCs are around or below this average, while in many of the other LLDCs gender parity (defined as a share of female researchers between 45 and 55%) is reached. In the case of former communist and the Latin American countries, this pattern is observed region wide, and is not restricted to the LLDCs.

Figure 4: Female researchers as a % of the total (in headcount), latest year available

Source: UNESCO Institute for Statistics, October 2014

Notes: Botswana and Lao PDR: Partial data; Lesotho and Rwanda: Higher Education only; Malawi and Zimbabwe: excluding Business enterprise sector.
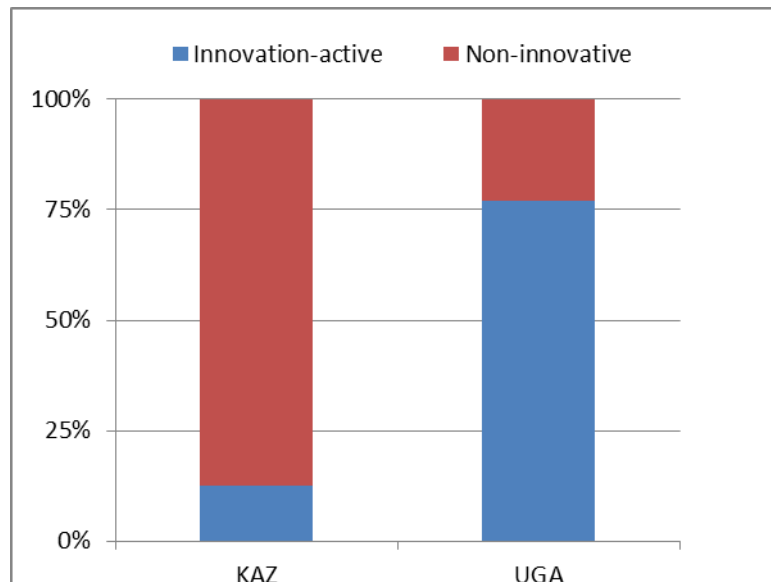
Innovation

R&D, although important, is only part of innovation activities; innovation is a much broader concept. Innovation is how firms bring new products to market, or how they improve their internal processes to bring products in a more efficient or effective way to market. Diffusion is a key word. Priority 4 of A/CONF.225/PC/L.4 highlights the importance of innovation, by saying that "structural transformation requires the process of creating new areas of activities and the shifting of resources from lower value-added and low productivity activities to higher value-added and high productivity activities. (…) This includes a targeted action for LLDCs to encourage innovation and industrial entrepreneurship and

enterprise formation, including for small and medium-sized enterprises, and promote foreign direct investment with strong backward and forward linkages as well as value retention."

The UIS has recently conducted its first global data collection of innovation statistics, to which two of the LLDCs have responded, Kazakhstan and Uganda. Brief results for these countries are presented in the following Figures.

Innovation-active firms are those firms that either implemented an innovation or had abandoned or ongoing innovation activities for innovation, where we focus only on product and process innovation (and ignore marketing and organisational innovation, which is usually part of an innovation survey as well). Figure 7 shows the results for Kazakhstan and Uganda. The figure shows a low share of firms that implemented or were developing product or process innovations in Kazakhstan, while the share in Uganda is remarkably high. Uganda's share of innovation-active firms is heavily composed by firms that in fact implemented product or process innovations, with a relatively lower participation of firms that only had abandoned or ongoing innovation activities.

Figure 7: Share of innovation active firms
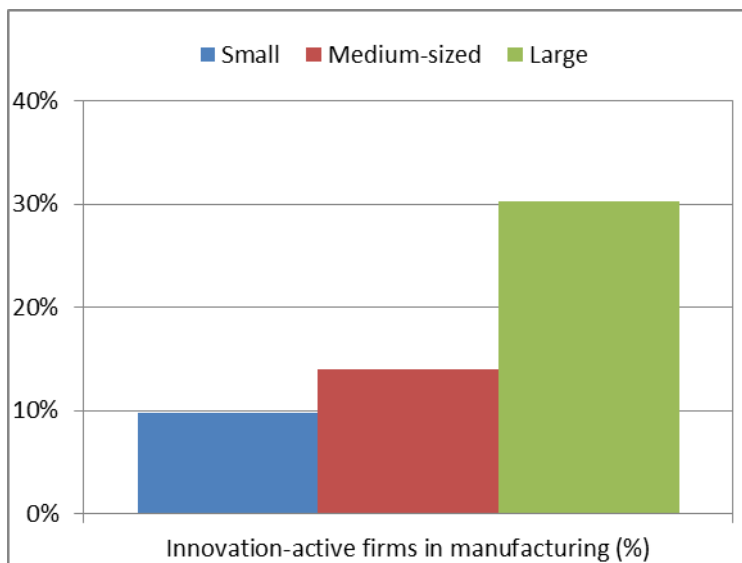

Source: UNESCO Institute for Statistics, October 2014

Notes: Data for Kazakhstan cover manufacturing only and data for Uganda cover mining, manufacturing and services.

Size matters when it comes to innovation: the larger the firm-size, the higher the share of innovators. This is not different in Kazakhstan, particularly in product or process innovation-active firms (see Figure 8).

Figure 8: Share of innovation-active firms by size class, Kazakhstan

Source: UNESCO Institute for Statistics, October 2014

Figure 9 highlights that innovation goes beyond R&D. Although there is a relatively large share of firms engaging in in-house R&D in Uganda, when compared with other countries in the UIS database, there are still many firms that innovated without carrying out R&D activities, which goes to prove that innovation is a broader concept. The most important categories are training and the acquisition of machinery, equipment and software, which is a result we find in many countries.

Figure 9: Engagement in innovation activities of mining, manufacturing and services firms in Uganda
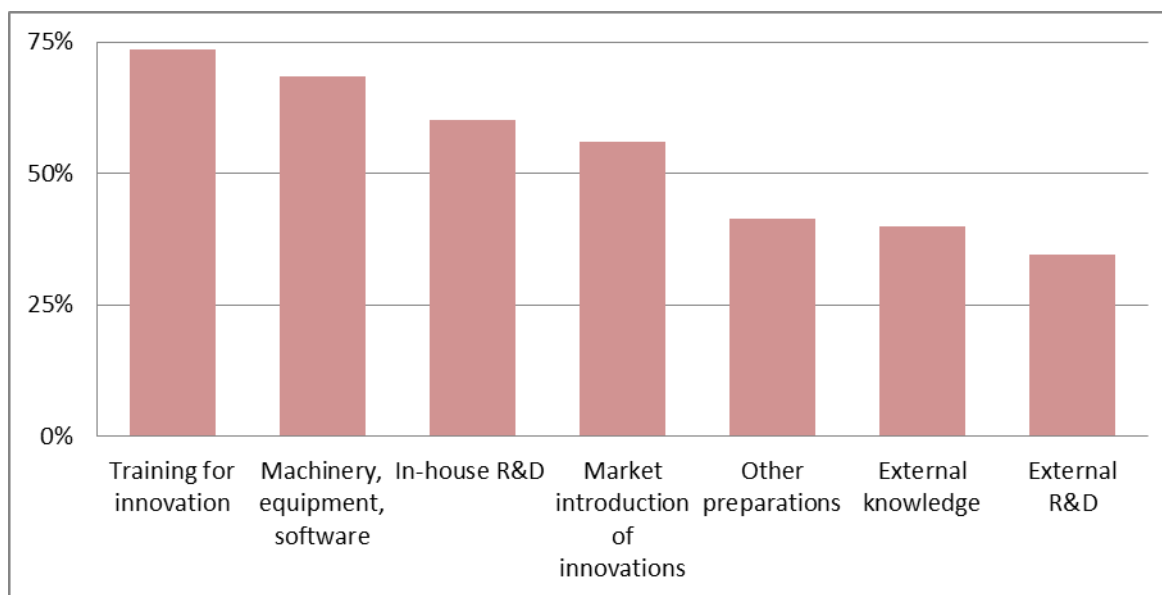
Source: UNESCO Institute for Statistics, October 2014

Figure 10 provides information about the factors that firms in the two countries rated as highly important obstacles to innovation. In Uganda, a lack of funding from internal and external sources was the obstacle most frequently rated as highly important by firms that innovated. In the case of the firms that did not innovate, these obstacles were a lack of external funding and the fact that the market was already dominated by another enterprise. For Kazakhstan, data on hampering factors are available only for firms that did not innovate, which stated that there was no need to innovate due to the lack of demand for innovations. This requires deeper examination but could be an explanation for the low shares of innovators observed in the country.

Figure 10: Highly important hampering factors
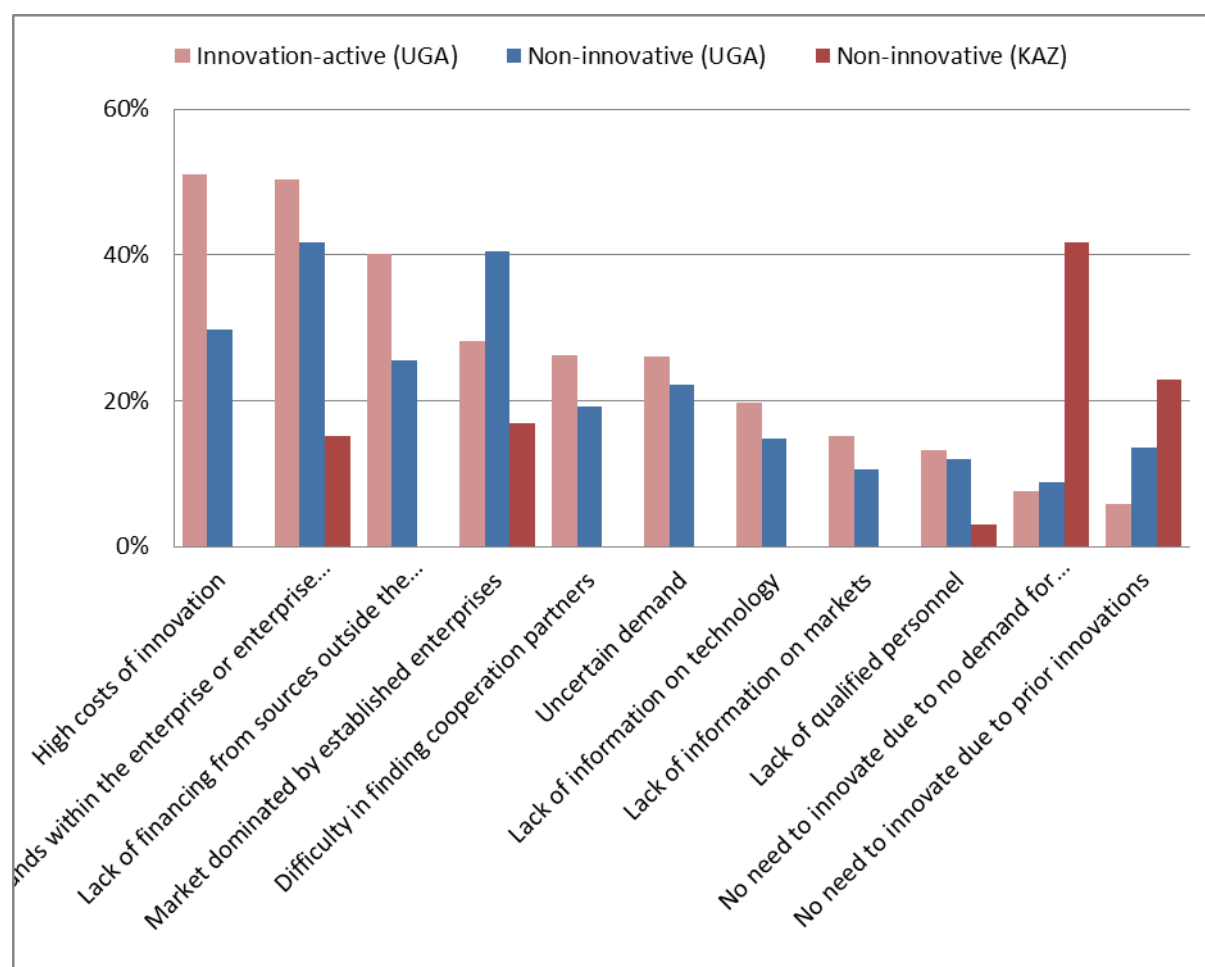
Source: UNESCO Institute for Statistics, October 2014
Notes: Data for Kazakhstan cover manufacturing only and data for Uganda cover mining, manufacturing and services.

Water Sciences

In the framework of UNESCO's Project 'Climate Change Impacts in Major Mountainous Regions of the World', the International Hydrological Programme (IHP) organized three regional workshops in Asia, Africa and Latin America which led to the identification of research needs, vulnerable areas, adaptation practices and their importance at community level, and to the establishment of a multidisciplinary network on climate

change impacts in mountain regions. Moreover, the recommendations made on the occasion of the UNESCO-IHP Synthesis Science-Policy Workshop on Climate Change Impacts in Major Mountainous Regions of the World (23-24 January 2014, Paris), will be brought to the attention of governments and UN agencies to feed into the processes of the Post-2015 Development Agenda, as well as contribute to other processes such as the World Mountain Forum and UNFCCC COP 20 in Lima, Peru in 2014.

IHP will attend the side event 'How to facilitate Sustainable and Resilient Infrastructure Development in Landlocked Mountain Countries - the Post -2015 Development Agenda/ Sustainable Development Goals Dimension' to be held on 5th November 2014 during the 2nd UN Conference on Landlocked Developing Countries 3-5 November 2014, Vienna, Austria.

A major challenge in *Uzbekistan* concerns the Aral Sea. UNESCO's addresses the environmental challenges facing Uzbekistan through awareness-raising, research as well as mapping cultural and natural resources as part of an interdisciplinary project in the Aral Sea basin, and capacity-building efforts. In cooperation with the Center for Development Research (ZEF) of the University of Bonn and with funding from Germany (totalling 10 million Euros), a research project on land and water management in the Aral Sea region was conducted between 2002 and 2011. 50 PhD and 70 MSc students at the Urgench University conducted research on the various aspects of the project. Different varieties of innovative and salt-resistant crops, plants and trees were tested at a nursery. Capacities of NGO Khorezm Rural Advisory Support Service (KRASS) were developed to provide information and extension services to farmers as regards the introduction of innovative salt-resistant crops and tree varieties in Karakalpakstan. A series of interventions is conducted to support the local communities in the framework of the UN Joint Programme for Sustaining Livelihoods Affected by the Aral Sea Disaster (2012–2015) that aims to improve economic, food, health and environmental security of the population of Karakalpakstan. UNESCO conducts capacity building activities in order to promote green technologies; economic efficiency and ecological sustainability, while improving the natural ecosystem and its services in the Aral Sea Region

UNESCO's intervention also focused on addressing the problems related to land degradation, salted aquifers which harmed the development of a viable agriculture and raising awareness on clean environment, as well as the management of irrigation water.

Regional cooperation in the Central Asia, especially on transboundary waters, should be strengthened and focused more on environmental protection and the rational use of natural resources. In the development of the regional environmental action plan, a more integrated approach to the regional problems should be considered. Further efforts should be made to promote regional and international cooperation through regional programmes in thematic areas of interest and relevance to Uzbekistan, such as transboundary waters, higher level science and technology education or science linkages through UNESCO chairs and category-2 centres in other ASPAC countries.

Ecological and Earth Sciences - MAB programme

- In *Bolivia*, support and technical assistance provided by UNESCO led to the formal presentation to the MAB Programme of a proposal for a new Biosphere Reserve (BR) in the Santa Cruz region. Bolivia has already 3 sites inscribed in the World Network of Biosphere Reserves: Pilón-Lajas (nominated in 1977),

Ulla Ulla (1977) and Beni (1986). The UNESCO Chair on South-South Cooperation, hosted by the University of Pará, Brazil, implements in collaboration with the MAB Programme Secretariat an extrabudgetary project with funds from the Government of Spain to strengthen the interactions and impact of the Network of Amazonian Biosphere Reserves, with components in Bolivian biosphere reserves and on-going projects on conservation of biological diversity. Support is also provided to the possible establishment of transboundary biosphere reserve between Bolivia and Peru on the Titicaca Lake and to the possible launching of Geopark processes in Bolivia. Support was given to the participation of a Bolivian geoscientist to the XXXII edition of the UNESCO-SEG-SGA Latin American Metallogeny Course (Ecuador, May 2014).

- *Ethiopia* has submitted a new BR proposal in the Tana region to be reviewed in 2015 by the MAB ICC.
- *Uganda* and Kenya are finalizing the proposition for a transboundary BR in Mont Elgon.
- In *South Sudan*: prospective seeking to use the integrity approach of the biosphere reserve concept to promote the appropriate management of the Sudd to foster sustainable development in South Sudan
- *In Rwanda*, prospective activities are seeking to support the establishment of a centre of excellence in biodiversity and the use of solar energy in remote villages of Volcanoes BR.
- *Transboundary initiative*: a current initiative aims at promoting peace and sustainable use of natural resource in the lake Chad basin (between Tchad, Niger, Cameroun and Nigeria) by applying transboundary biosphere reserves and world heritage sites models.

Science Policy and Partnerships

UNESCO has cooperated with 11 of the 16 African Landlocked developing countries in the field of Science, Technology and Innovation (STI) policies and strategies (Botswana, Burkina Faso, Burundi, Central African Republic, Malawi, Niger, Rwanda, Swaziland, Zambia, Zimbabwe and South Soudan). Technical assistance was provided through the project entitled "Capacity-Building in Science Policy in Africa", funded by the government of Spain for the formulation/review of such policies and their implementation, as well as in the reform of STI systems. Capacities of STI managers, decision-makers and parliamentarians in charge of the development of STI policies and their implementation were strengthened (e.g. workshop in Burkina Faso in February 2014).

UNESCO has launched the UNESCO Global Observatory on STI Policy Instruments (GO-SPIN) to provide STI stakeholders with information on the current STI policies, legal frameworks, and instruments in place. Botswana was the first country to be launched in the GO-SPIN series in 2013, followed by Zimbabwe and Malawi SETI profiles.

In Uzbekistan, UNESCO should further develop the regional dimension in its science-related programme by integrating the country into some regional activities conducted by UNESCO Regional Bureau for Sciences in Asia and the Pacific based in Jakarta, such as the Network of Asian River Basin Organizations (NORBO) or SWITCH-in-Asia (Sustainable Water Management Improves Tomorrow's Cities Health).

Social and Human Sciences

Social Inclusion

UNESCO is undertaking activities in a number of LDCs to support policymaking processes that foster social inclusion.

- In *Burundi*, UNESCO will implement a project called "Strengthening the empowerment and engagement of young women and men in democratic processes in order to promote intercultural dialogue and social inclusion". This project involves the organization of training sessions on citizenship education, conflict resolution, promotion of human rights, gender equality, youth participation in decision-making process, democracy and good governance. In partnership with the Ministry of Youth, Sports and Culture, the project aims to contribute to peaceful elections in Burundi with the active participation of youth.

- In *Mongolia*, UNESCO will support formulation of new innovative public policies in line with the International Convention on the Rights of Persons with Disabilities (CRPD) and further to the recommendations emanating from the review of the 2006-2012 Mongolian National Programme for persons with disabilities (conducted in December 2013). Special attention will be paid to women with disabilities who are among the most disadvantaged and the most excluded and often victims of discrimination and violence, to ensure that their social inclusion needs are addressed in the improved policy and legal frameworks with a view to respect their human rights, reduce poverty and improve their livelihood situation.

- UNESCO is also conducting the project on "Mainstreaming vulnerability in public policies to promote the social inclusion and the fight against poverty and discrimination of the most disadvantaged groups, including women and men with disabilities in West Africa" which aims at developing harmonized and innovative framework for public policies in Burkina Faso and Mali conducive to social inclusion and equal access to opportunities for powerless groups, particularly the most disadvantaged and the poorest women and men.

- Also in *Mali*, UNESCO, in collaboration with the National Commission for UNESCO, is supporting the government to conduct a review of the policy framework promoting social inclusion. The exercise would lead to a set of recommendations to address eventual policy gaps and challenges.

Youth

UNESCO, in collaboration with ILO, UNICEF, UNFPA and with the endorsement of the UN Country Team in *Zambia*, provided technical and financial support to the Ministry of Youth and Sport to revise the 2006 National Youth Policy. The policy review process (2012-2013) applied a participatory and inclusive methodological approach building on, and feeding into national and development priorities. The two-year process engaged Government, civil society, multilateral donors and agencies, academia, as well as young women and men. Youth engagement and participation was enabled from the design of the policy review process throughout its implementation and finalization: the national Youth Development Council, as well as representatives of youth NGOs and association were directly involved in all stages of the process, and extensive consultations were conducted with young women and men in all provinces of Zambia. The new National Policy on Youth is accompanied by a detailed Action Plan identifying key actions and related responsibilities among all stakeholders engaged in the process and concerned by the implementation of the policy.

Communication and Information

1. *Basic data on ICT in education*

The UIS conducted regional data collections on ICT in education in Latin America and the Caribbean (2010), Arab States (2011), Asia (2012), and sub-Saharan Africa (2012/2014). However despite increasing demand for evidence-based, policy-relevant statistics, the systematic collection of ICT in education data does not currently exist in many LLCDs. In others, data collection efforts are in their infancy as countries are in the process of adapting national school census forms to include key ICT-related items to shed light on ICT integration and use in schools.

In developed countries, where ICTs are more or less ubiquitous in education, data on participation, progression, usage, and outcomes for ICT-assisted programmes are increasingly available. Typically in LLDCs, the only data that are available describe the ICT infrastructure and will thus form the basis of this analysis. More specifically, it will include three UIS core indicators on ICT in education: i) proportion of educational institutions with electricity (i.e. reference indicator)[1]; ii) the learner-to-computer ratio; and the iii) proportion of schools with Internet, by type. The latter two indicators are used within the statistical framework of the *World Summit on the Information Society (WSIS)* to track progress in the integration of ICTs in schools[2].

Electricity as a precursor to ICT in education

While newer battery-operated ICTs are emerging, in addition to mobile devices that may be recharged off-site, the majority of ICT requires a more stable energy source. In other words, the integration of ICT into schools requires electricity (e.g. grid/mains connection, wind, water, solar or fuel-powered generator, etc.) that is regularly and readily available. In most developing countries, the key determining factor for electricity is location. Rural, remote and mountainous regions are frequently neglected in building up national infrastructure, resulting in a lack of power supply to support ICT in education.
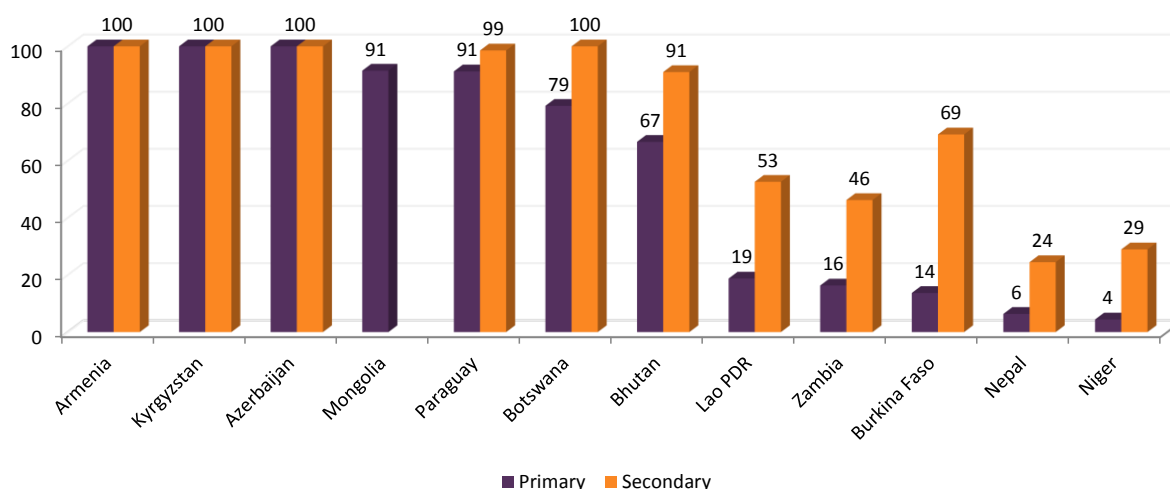
According to Figure 11, there is substantial variability in the proportion of schools with electricity in LLDCs. Electricity is universal in countries in Central Asia including Armenia, Kyrgyzstan and Azerbaijan, but scarce in some countries in sub-Saharan Africa and South and Western Asia including Niger and Nepal where it is available in 6 per cent and 4 per cent of primary schools and 24 per cent and 29 per cent of secondary schools, respectively. Botswana on the other hand provides an example of an LLDC in sub-Saharan Africa where the majority of schools are electrified—79 percent and 100 per cent of primary and secondary schools, respectively.

Where electricity is not universal, higher proportions of secondary schools are equipped. This is most evident in Burkina Faso where 14 per cent of primary schools have electricity compared to approximately two thirds (or 69 percent) of secondary schools. Substantial differences between education levels are also seen in Lao PDR and particularly in Zambia where secondary schools are approximately three times more likely to have electricity.

Figure 11: Proportion of educational institutions with electricity in primary and secondary education, 2012

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1 The indicator proportion of educational institutions with electricity is a UIS core reference indicator. Since electricity is essential to operate many ICTs, data to calculate this indicator is systematically collected by the UIS.
2 Target 2 of the WSIS statistical framework aims to "Connect all secondary schools and primary schools with ICTs".
http://www.uis.unesco.org/Communication/Documents/measuring-wsis-targets-statistical-framework.pdf

Bar chart showing Primary and Secondary values by country:

Country	Primary	Secondary
Armenia	100	100
Kyrgyzstan	100	100
Azerbaijan	100	100
Mongolia	91	
Paraguay	91	99
Botswana	79	100
Bhutan	67	91
Lao PDR	19	53
Zambia	16	46
Burkina Faso	14	69
Nepal	6	24
Niger	4	29

■ Primary ■ Secondary

Source: UNESCO Institute for Statistics, October 2014

Notes: Data for Mongolia reflects both primary and secondary levels combined. Data for Botswana, Burkina Faso and Niger reflect 2013; data for Nepal reflect 2011; and data for Paraguay reflect 2010.

Building computer infrastructure: Learner-to-computer ratios (LCRs)

In order to provide advanced forms of ICT-assisted instruction, including computer-assisted instruction (CAI) and Internet-assisted instruction (IAI), sufficient computer resources must be established, keeping pace with demand based on enrolment. The learner-to-computer ratio (LCR) refers to the mean number of total learners sharing a single computer available for pedagogical use in national, aggregate education systems. In summary it is calculated based on total enrolment and the total number of computers available for pedagogical purposes nationally. [3]

While the LCR indicator does not provide information on the intensity of computer usage, it may be considered as a proxy, since there is a relationship between LCR and individual learner time. For example, the higher the ratio, the less time each pupil has access to a single computer.

While the LCR sheds light on current infrastructure to support the integration of CAI or IAI, national-level LCRs mask sub-national differences, which may referred to as the internal digital divide. LCR values are frequently low in urban centers indicating greater access, but high in rural and remote areas indicating scarcity of resources.

Figure 12 shows the LCR in fourteen countries across all regions. It shows that LCRs are very high (i.e. 500:1 or more) in Nepal in South and West Asia and in Niger and Zambia in sub-Saharan Africa. In contrast, there are relatively fewer learners on average sharing a single computer in Botswana (52:1).

LCRs are also relatively low in the Central Asian countries of Azerbaijan (33:1), Armenia (25:1), Kazakhstan (18:1), and Mongolia (17:1).

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3 Computers for administrative purposes are excluded from calculating the LCR

Finally, in the Latin American countries of Paraguay and Bolivia, the LCR in primary and secondary education is 75:1 and 56:1, respectively.

Figure 12: Learner-to-computer ratio in combined primary and secondary education, 2012
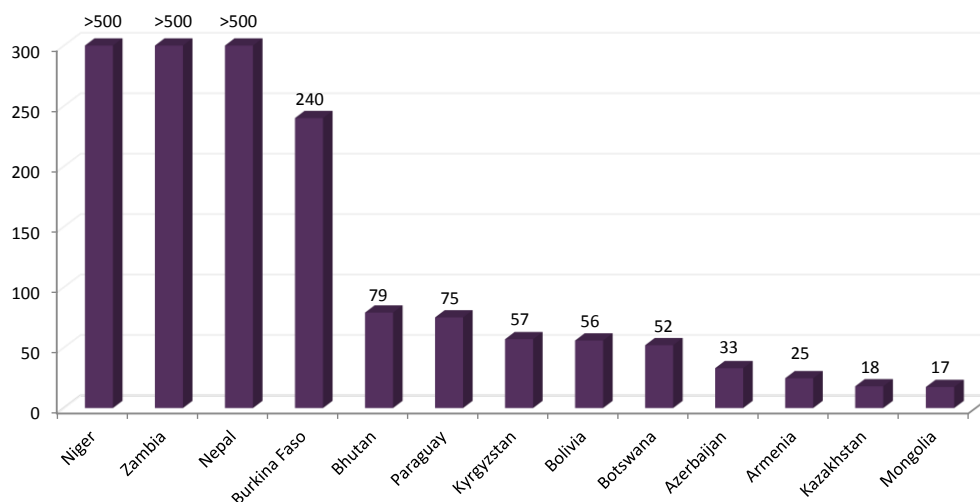
Source: UNESCO Institute for Statistics, October 2014

Notes: Data for Kazakhstan and Azerbaijan represent public sector schools only. Secondary data for Botswana and Zambia refer to lower secondary. Data for Niger, Burkina Faso, and Botswana reflect 2013; data for Nepal and Kyrgyzstan reflect 2011; data for Paraguay reflect 2010; and data for Bolivia reflect 2009.

Connecting schools to support Internet-assisted Instruction

The proportion of schools with Internet access is central to understanding connectivity. Internet access may be through any wired or wireless device (PCs, laptops, PDAs, tablets, smartphones etc.) using fixed broadband, fixed narrowband or mobile broadband connections. Internet connectivity within schools via privately owned mobile phone networks is excluded. Internet in schools does not however shed light on the intensity of use for educational purposes since Internet may be used only for administration in some schools.

At the most basic level, electrification is a key concern for countries where many schools may not be connected to a reliable source. However, even where there is an electricity supply, ministries of education in some countries often have little or no control over Internet connectivity in schools, which depends on the national telecommunications infrastructure (World Bank, 2010). In some countries, Internet service providers (ISPs) are unwilling to operate in difficult geographic terrain or in rural areas with low population density (ADB, 2012).

Given the vital importance of broadband access, the UIS also measures connectivity according to the type of Internet connection. The proportion of schools with fixed broadband Internet[4] access provides a good indicator of the quality of Internet connections and the potential to use ICTs for educational purposes.

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4 Fixed broadband Internet refers to high-speed connectivity for public use of at least 256 Kbit/s in one or both directions (downloading and uploading). It includes cable modem Internet connections, DSL Internet connections of at least 256 Kbit/s,
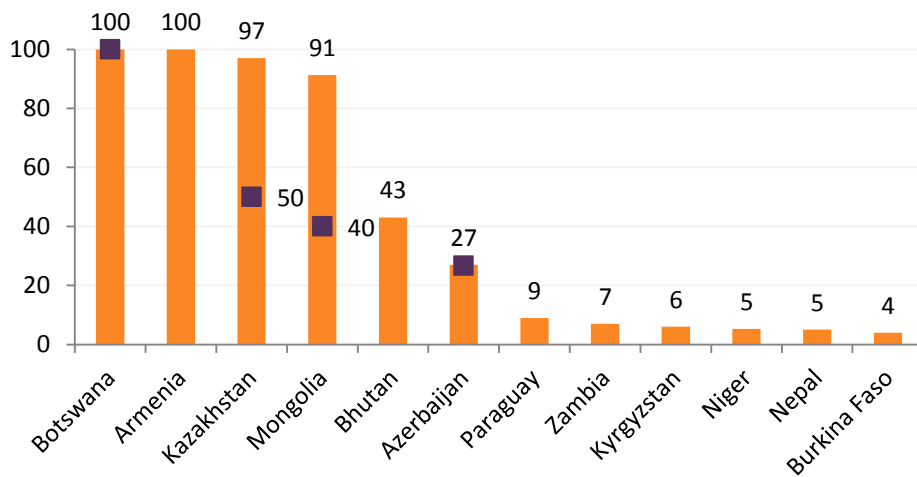

Recognizing the importance of broadband Internet to effectively access online resources, the Broadband Commission for Digital Development, whose membership includes UNESCO, ITU and private industry, recently adopted the goal of Broadband for All, particularly for women, girls and marginalized groups. By defining practical ways in which countries, at all stages of development, can achieve broadband connectivity in cooperation with the private sector, the Broadband Commission for Digital Development promotes the importance of universal broadband on the international policy agenda to accelerate progress towards achieving the MDGs by 2015 (Broadband Commission for Digital Development, 2013).

Figure 13 shows that Internet availability varies among educational institutions in twelve LLDCs. For example, while data is unavailable for primary schools in Botswana, Internet is universal amongst its secondary educational institutions. Similarly, 100 per cent of schools in both primary and secondary education in Armenia have Internet, while it is also present in the majority of schools in other Central Asian countries including Kazakhstan (97 per cent) and Mongolia (91 per cent).

Internet is rare in schools in LLDCs in sub-Saharan Africa including Zambia, Niger and Burkina Faso where it is present in 7 per cent, 5 per cent and 4 per cent of schools, respectively. Also, despite full electrification of schools in Kyrgyzstan (i.e. 100 per cent), Internet is available in just 6 per cent of educational institutions. Internet is also uncommon in schools in Paraguay and in Nepal where 9 per cent and 5 per cent of schools, respectively, are connected.

Information on the type of Internet access can inform policies and decisions to expand and/or upgrade Internet connections in schools. Yet data for type of Internet is not typically available in LLDCs. Figure 3 however shows that fixed broadband Internet is available in all Botswana's secondary schools as well as in all 27 per cent of educational institutions in Azerbaijan that are connected to the Internet. In contrast approximately half of schools that are connected in Kazakhstan (50 per cent) and Mongolia (40 per cent) have a fixed broadband connection.

Figure 13: Proportion of educational institutions with Internet and fixed broadband in primary and secondary education, 2012

fibre and other fixed broadband technology connections (such as satellite broadband Internet, Ethernet LANs, fixed-wireless access, Wireless Local Area Network and WiMAX).

Source: UNESCO Institute for Statistics, October 2014

Notes: Data for Botswana only reflect secondary education. Data for Botswana, Bhutan and Azerbaijan only reflect public sector educational institutions. Data for Botswana, Niger and Burkina Faso reflect 2013. Data for Nepal reflect 2011. Data for Paraguay refer to 2010.

2. *Flagship Communication and Information activities taking place in LLDCs during the current biennium*

Geared towards the achievement of two main lines of actions identified within the Major Programme V of the Organization, UNESCO has developed and implemented activities in the Landlocked Developing Countries (LLDCs) aimed at promoting freedom of expression, media development and access to information and knowledge. Although UNESCO has not developed a specific strategy for/focus on the LLDCs, these countries benefit from UNESCO's expertise in the four priorities under the Major Programme V:

• Strengthen the environment for press freedom, journalistic safety and self-regulation, for both on-line and off-line media, especially in PCPD, though favorable policies and support to national media institutions including through IPDC;
• Facilitate pluralistic media institutions, including by adopting gender-sensitive policies and through support for strengthened community media policy and practice, while citizens, and particularly youth, are empowered through enhanced media and information literacy (MIL) competencies;
• Promote in Member States the Open Solutions for Knowledge Societies programme (Open Educational Resources, Open Access, Free and Open Source Software, Open Training Platform, Open Data, Open Cloud) and ICT accessibility including disabilities and multilingualism;
• Enhance universal access to information and preserve documentary heritage in all its forms through a strengthened Memory of the World Programme, and support Member States in implementing the WSIS outcomes, including through the Information for All Programme (IFAP).

Using its substantial expertise, during the first year of the current biennium (2014-2015) and as part of its mandate to promote an enabling environment for freedom of expression, press freedom and journalistic safety, to facilitate pluralism and participation in media, and to support sustainable and independent media institutions, the sector is implementing global scope activities under the framework of programmes such as Press Freedom including the safety of journalists. Within the framework of this mandate, in LLDCs, UNESCO has developed flagship activities such as the project entitled "Empowering local radios with ICTs" with the support of Sweden which builds the capacity of 32 local radios to provide public service and enable the poor, especially women and girls, to participate in locally in 7 African countries including two LLDCs (Lesotho and Zambia).

As part of its mandate related to the implementation of UN Plan of Action on Safety of Journalists and the Issue of Impunity, UNESCO has implemented activities through its Work Plan on the Safety of Journalists and the Issue of Impunity. Already, Nepal and South Sudan are among the first countries to have begun developing a national plan with the support of UNESCO.

Under the framework of the International Programme for the Development of Communication (IPDC), during the period 2012-2013, a total of US$ 2,331,934 was received from 8 donor countries which was used for the financing of the 143 projects approved in 2013-2014. Among the 143 projects approved, 123 were national and 20 were regional projects, benefitting 77 countries in total to which US$ 2,287,340 was channeled. Over US$493,000 were allocated to develop 32 projects in 20 of the listed LLDCs.

Launched during the last biennium to promote gender equality and women's empowerment, the first ever Global Alliance on Media and Gender gave UNESCO the lead in the implementation of the priorities defined by Member States including LLDCs.

In its intent to enable Universal access and preservation of information and knowledge UNESCO has been given the mandate to Promote universal access to information through Open Solutions, to support the digital preservation of documentary heritage through the Memory of the World Programme (MoW), and support efforts to ensure follow up of WSIS outcomes and implement activities under IFAP's priorities.

Gender and Youth Empowerment through Mobile Apps for Sustainable Development – to empower young people to resolve local issues of sustainable development, UNESCO launched the YouthMobile Initiative in South Sudan in August 2014[5]. Over 100 youth were given high-quality, advanced training on mobile apps development for smart phones by a young female trainer from Kenya in true South-South cooperation. The Hon Ms Rebecca Joshua Okwachi, Minister of Telecommunication and Postal Services, South Sudan was delighted to award the winning prizes to Ms Muyou Charity Lady[6]. UNESCO aims to empower at least 25,000 young people worldwide, especially young women who are disproportionately represented in this high-end ICT field to upload at least 5,000 apps for sustainable development by 2017.

In the context of a rapidly-changing Internet environment during the past four years, UNESCO has taken the lead in fostering discussions on Internet Governance, with a total of around 20 events joined by over 800 stakeholders across all continents, in the annual global conferences of the World Summit on the Information Society (WSIS) process and the Internet Governance Forum (IGF). These efforts are complemented by a number of normative publications on Internet freedom and stakeholder consultations on a draft concept "Internet Universality".

Since the adoption of its Open Access Strategy during the 36th General Conference, UNESCO has pursued Open Access (OA) as a means of bridging the global knowledge divide. UNESCO has published the guidelines on Open Access for Scientific Research and held a number of open access awareness programmes and regional consultations. Moreover, UNESCO succeeded in supporting a number of countries to establish their OA policies and initiatives. 13 national level institutes have developed mandates and policies on OA with UNESCO's support. Three sets of OA curriculum have been developed including a self-directed learning tool which will be deployed both within UNESCO as well as shared with Member States. A series of five publications on OA concepts, research and tools were completed in order to assist Member States in understanding OA principles and benefits. In February 2014, UNESCO along with the International Centre for the Registration of Serial Publications (ISSN) launched the ROAD Directory of OA scholarly resources.

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[5] www.youthmobile.org

[6] http://www.unesco.org/new/en/communication-and-information/resources/news-and-in-focus-articles/all-news/news/youthmobile_initiative_successful_in_hosting_app_development_training_in_south_sudan/#.VEaJ4xZTfTo

Efforts to ensure persons living with disabilities can access information and knowledge is evident from the publication of World Report 2013 which includes recommendations for Member States on the applications of ICTs with persons living with disabilities.

The Memory of the World Programme (MoW) which celebrated its 20th anniversary during the last biennium, intend to increase visibility will be pursued in the coming years to expand its impact even more.

The intergovernmental Information for All Programme (IFAP) has been consistently undertaking activities within its five strategic priority areas and its cross-cutting theme in concert with the Secretariat and external partners.

There is now significant awareness of OER in many countries within the Ministries of Education and key educational institutions as a result of the many capacity-building workshops. As a follow-up to the Paris OER Declaration 2012 which has become the de facto global standard, several activities were undertaken including the launch of the OpenupEd project to support OER MOOCS involving 30 African universities. Over the last biennium, work on the ICT Competency Framework for Teachers (ICT-CFT) has been considerably developed by UNESCO by notably the development for the ICT CFT Toolkit. A series of workshops were also conducted to support the adoption of elements from the ICT-CFT and the use of OERs in several countries including Rwanda. As far as the development of the new ICT-CFT Strategy is concerned, a stakeholder's consultation with high-level representatives from Microsoft, Intel, and CISCO was organized to examine the possible revision of the ICT-CFT.

UNESCO is developing a project entitled "OER Declaration Follow up: Support for Advocacy, Policy and the ICT CFT" which is a follow-up activity to the Paris OER Declaration adopted at the World OER Congress 2012.

UNESCO promoted the use of Free Open Source software (FOSS) through focusing on an assessment of the use and adoption of FOSS, Open systems, standards and data.

3. *Future planned activities of strategic importance for the LLDCs, in particular in the priority areas mentioned above.*

UNESCO's Work on the internet issue:

- As per decision of the 37th General Conference UNESCO is engaged in a multi-stakeholder consultations aimed to design and then implement a Comprehensive study of Internet in the fields of access to information and knowledge, freedom of expression, privacy and ethical dimensions of the information society. UNESCO organized eight consultation meetings with Member States as well as multiple consultation meetings in other forums[7]. UNESCO also launched an online consultation process through the website[8]. The concept notes, including the questionnaire and the lists of actors to be consulted has been published online. UNESCO is mapping the research gaps which will need to be

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[7] Including the inter-governmental council meetings of IFAP and the IPDC, the WSIS High Level Review Events, the Freedom Online Coalition Meeting, the Stockholm Internet Forum, Eurodig, APC – Association for Progressive Communications and at the Global Cybersecurity Capacity Center, etc.

[8] www.unesco.org/new/internetstudy

flled in order to cover all the areas of the study and are exploring partnerships for the various components of the study. Funding is still needed for research, consolidation & compilation of the findings as well as for the multi-stakeholder conference (planned for February 2015) to review the findings.

- UNESCO, in partnership with Open Society Foundation and Internet Society, has commissioned new research to identify good practices aimed to protect right of freedom of expression of the end users online by the Internet intermediaries (i.e.: search engines and portals, Social media networks, telecommunication, cable and mobile operators, cloud computing services, etc.).

- UNESCO recently joined UN Steering Committee for the Development of a Coherent UN-wide Strategy on Cybersecurity/Cybercrime and Policies on Information. UNESCO will contribute to this strategy by reinforcing the aspects on empowering users to protect themselves online and providing assistance to Member States in promoting a human rights and rule of law-based approach to cybersecurity and cybercrime within the framework of "Internet Universality" principles. To this end UNESCO will develop a policy framework aimed to reconcile the need for privacy and transparency in conducting their work. UNESCO is supporting multiple activities of media, self-regulatory bodies, civil society and governments aimed to combat the phenomenon of online hate speech.

The UNESCO YouthMobile Initiative will expand to Zambia in 2015 in partnership with the Standard Chartered Bank and the MTN mobile telecompany organization. UNESCO will ensure the trainers are from Africa and that the training materials are openly licensed for free and legal adaptation by other Member States.

Culture

UIS Feature film survey

UIS carries out a biennial Survey on Feature Film Statistics. Feature films are one of the most popular cultural expressions worldwide, with an audience of approximately 7.5 billion people per year. National cinema is part of an international marketplace, characterized by a cross-border flow of talent and a global circuit of festivals and awards. However, in recent years, the cinema sector experienced structural changes in the production of its movies and greater diversification of its access modes. The vitality of this creative sector is measured in terms of revenues (gross box offices) and attendance (admissions and attendance frequency per capita), production (number of films produced) and access (cinematographic infrastructure).

Bhutan Mongolia, Kazakhstan are the main film producers among the LLDCs. In most cases, these countries mainly produced documentaries.