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“GCRF COMPASS Leadership Winter Training School on Solving Global Challenges”

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Working proceedings

GCRF COMPASS: Comprehensive Capacity-Building in the Eastern Neighbourhood and Central Asia:
research integration, impact governance & sustainable communities (GCRF UKRI ES/P010849/1)



UK Research
and Innovation



‘GCRF COMPASS Leadership Winter Training School on Solving Global Challenges’

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Table of Contents

Preface.....	2
SABINA AMIROVA – Transforming universities into research universities in Azerbaijan	3
ABBAS BABAYEV – Prevention of youth exclusion in Azerbaijan: Policy recommendations to integrate NEETs into society	8
PAVAN BHASIN -Indian Youth towards a Sustainable Future.....	15
IVO BEREZIANKO – Polymers and everyday life.....	20
POLINA BISHENDEN – What do the concepts of global and local mean in the context of women’s activism across Central Asia?	22
SHERRY LAM – Can the food industry help saving the environment?	26
MAVLUDA NURMETOVA – Public administration reforms in Uzbekistan: Listening to citizens and public consultative councils	29
MATLUBAKHON SALIKHOVA – Science - for sustainable and state development in Tajikistan, or how to involve young general in scientific activities	32

The [GCRF COMPASS project](#) (ES/P010849/1, 2017-21) is an ambitious UK government capacity-building funding initiative, aiming to connect UK research with regional global scholarship, to address the challenges of growth and sustainability in the developing countries. Notably, the COMPASS project led by the University of Kent, together with the University of Cambridge as its partner, seeks to establish ‘**the hubs of excellence**’ at the top-level HEIs in Belarus, Azerbaijan, Uzbekistan and Tajikistan, to enable them to become the centres of knowledge sharing and transfer for **research integration, impact governance, and sustainable communities**.

Preface

The Leadership Programme on Global Challenges was held at the University of Cambridge between the 9-19 February 2020. It was a unique opportunity for students and professionals over the age of 18, to discuss and understand the challenges facing the global economy, environment, and public health sectors, and to design and implement path-breaking solutions. This Programme was organised under the auspices of the GCRF COMPASS project. Faculty and participants from the GCRF COMPASS project teams of the Universities of Cambridge and Kent in the UK, and ADA University, Azerbaijan; Belarusian State University, Belarus; Tajik National University, Tajikistan and University of World Economic Diplomacy, Uzbekistan in partnership with BrainGain Academy in India participated in this exciting multi-stakeholder programme, and made it a truly unique experience. The Leadership Programme in Solving Global Challenges Training School was an intensive winter training school for emerging young leaders. A select group of local and international participants engaged with research cultures, interdisciplinary research, and methodologies of research while considering the most current concerns globally.

The training school was designed to provide a platform for researchers and students working on and in the region to exchange ideas and information on critical issues of global transformation processes; to engage key stakeholders throughout the world in the development of and participation throughout the programme, especially those most engaged in educational processes, research and renovation; to stimulate creative dialogue among scholars and students; and to engage students in research world and show opportunities to improve their skills and knowledge (capacity-building).

The programme included specific project activities: the participants worked on a project of their choosing and presenting it at the end of the 10 days programme in front of colleagues, academics and researchers. After getting the feedback on their projects the participants were tasked with writing policy recommendations. These proceedings are a result of the policy papers that came out of the exercise in the programme. They are a set of papers which deal with a wide ranging of topics including education, climate change and other global challenges. In addition to the papers from young researchers, there are also papers from entrepreneurs and business owners in India and Australia; and an NGO worker. The main aim of the programme was to engage with a variety of stakeholders and broaden the field of community engagement of the COMPASS project. These papers taken together offer recommendations to policy-makers and government officials in Central Asia and wider Eurasia to (re)consider education curriculums so that the world's most pressing challenges can be taken on directly. Global challenges are universal in nature and the participants from different countries (Australia, Azerbaijan, Belarus, India, Tajikistan, United Kingdom, and Uzbekistan) worked on projects that they considered most pressing in their countries and shared their findings and recommendations.

The papers are solely the work of the authors, and presented in an alphabetical order.

SABINA AMIROVA¹ – Transforming universities into research universities in Azerbaijan

Introduction

In knowledge intensive societies the research university is a key institution for social and economic development. Research universities focused on the discovery of new knowledge and the development of the next generation of scholars are rapidly becoming more international in their focus. These kinds of universities are committed to research as a central part of their mission. They can be public or private and are often well-known. Research universities are distinguished by the quality, breadth and depth of their commitment to research. Nations increasingly rely upon research universities to drive national development and wellbeing. Everyday higher education institutions are being recognised as valuable centers for research and teaching in support of entrepreneurship, innovation, competitiveness, and economic growth. While research universities also educate undergraduates, train professionals for a wide range of positions, provide service to society, and engage in applied work and technology transfer, their distinguishing feature is the production of new knowledge especially (but not exclusively) in science and technology areas.

To achieve this mission, research universities must provide the necessary infrastructure — libraries, laboratories, technicians, and administrative support — for conducting scholarly work at the highest levels. Higher education institutions are the hub of knowledge and creativity in all nations, and it is in Azerbaijan’s strategic interest to focus on enabling higher education institutions to contribute to and drive dynamic economic rejuvenation. Many higher education institutions in Azerbaijan, however, lack the capacity to serve as effective dynamic hubs for such enterprising efforts, limiting Azerbaijan’s ability to collaborate and compete with other nations in the global economy. This paper presents key obstacles and some recommendations for transforming universities into research universities in Azerbaijan.

Recommendations to Accelerate the Research and Development of Azerbaijan’s Higher Education Institutions

Recommendation 1: Give autonomy to universities in Azerbaijan. An autonomous university typically refers to a university that exercises independent control over its day-to-day operations and curriculum as opposed to a university in which the government or a government agency controls academic programmes. The main dimensions of university autonomy are academic, organisational, financial and staff autonomy. Autonomy is not a

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goal to be pursued in itself, but a fundamental pre-requisite for universities to be able to develop strategic profiles, operate in a competitive environment and deliver on important societal duties. In other words, an autonomous university separate from the control of government bureaucracy but subject to government regulations and the state constitution can boost research and help develop Azerbaijan's national policies. Autonomy and academic freedom are crucial to the well-functioning of universities and are essential pillars of the future sustainability of institutions. Importantly, they are key to securing the right research conditions that lead to scientific progress benefiting society at large.

Recommendation 2: Expand the use of competitive funding to increase the quality of research in Azerbaijan. Research universities have always been expensive but the new demands of international competition raise the costs of research to unimaginable levels. Even in the most affluent countries maintaining high quality programmes in many disciplines is challenging. The size of funding of research universities that top most of the ranking systems of higher education institutions worldwide determine in large part their success in research output and global reputation. While the competition for outside support is intense, successful research institutions have greater flexibility as they free themselves from the potential heavy hand of centralised control from a single funding source. So, it is very crucial to diversify and attract competitive funding for boosting and enriching research in universities of Azerbaijan as it will have huge impact on diversification of the national economy as well.

Recommendation 3: Increase publications by Azerbaijani researchers in collaboration with foreign researchers. Governments tend to encourage both domestic and international research collaborations between authors, including it in the funding conditions, in an attempt to increase the country's scientific output. Especially international collaborations are preferable over domestic ones as they seem to have a positive correlation with the number of publications and the publications' impact. So, an increase in the number of joint international research collaboration and research projects can lead to access a diverse range of skills, expertise, knowledge and can foster and increase the capacity of research publications in Azerbaijan.

Recommendation 4: Adopt a worldwide recruitment strategy in universities in Azerbaijan. It is proved that when faculty and administrators come from different academic traditions, the institutions gain a wider range of ideas for development and reform. Especially for universities newly entering international competition in research, personnel with specialised experience to manage such issues as patents, international cooperation, and assessment are essential. Most of them have been trained on campuses with more highly developed research infrastructure and can bring that experience to ambitious universities elsewhere. Recruitment of international professors, researchers, experts and faculty members can play crucial role in transforming universities into research-based universities in Azerbaijan.

Recommendation 5: Promote research internationalisation and globalisation in universities of Azerbaijan. These two terms are clearly overlapping but also distinct. Internationalisation of the university can be seen as a series of policies and decisions within the control of the inhabitants of the institution — new curricula, international recruitment, joint ventures, and so on. In contrast, globalisation tends to be something beyond any institution's control — the flow of technology, economy, knowledge, people, values, and ideas across borders. Internationalisation of higher education is the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of post-secondary education. It is very important to commercialise research and post-secondary education, and international competition for the recruitment of foreign students from privileged countries in order to generate revenue, secure national profile, and build international reputation. So, attention should be paid to recruitment of international students, development of international branch campuses, students, staff and scholars exchange programmes, internationalisation of the curriculum and research and education partnerships between institutions regionally and internationally.

Universities measure their global reach in several ways. The number and percentage of foreign citizens provide evidence of internationalisation. Universities in economically developed nations encourage students to participate in short-term study abroad programmes. Many developing countries send students and faculty to leading institutions to gain the most up-to-date learning skills to contribute to their home countries' national growth. Establishment of formal agreements with universities and research institutes in other countries is another indicator of an institution's international scope. Research universities give special attention to international Ph.D. students, seeking the best minds worldwide to contribute to the research agenda as part of their doctoral studies. In addition, research universities can develop partnerships, often in research rather than degree programmes, with top institutions abroad which is one way to expand influence and intellectual capital without building campuses in other countries. The same experience needs to be applied and promoted further as university participation in international research programmes is low in Azerbaijan. Moreover, such participation is obstructed by the lack of capacity and expertise due to limited experience in developing complex, multidisciplinary project proposals, shortage of resources for networking, developing global links and promotion of young researchers in Azerbaijan. Increasing sponsorship and grants for Azerbaijani PhD students to study abroad can have a huge impact in this regard as well.

Recommendation 6: Create and develop stimulating start-up centers, laboratories, and business incubators, and give them funding, help with legal matters, accounting, computer services and other prerequisites in Azerbaijan. Increasingly, research universities are developing science parks, research incubators, technology transfer offices, and spin-off businesses to carry products to the market. When research implementation is a high priority, those disciplines most closely aligned with the market and the needs of society often have the greatest influence within research universities, often at the expense of more

traditional disciplines focused on cultural legacies. Business incubators could become dynamic tools for fostering new ventures across a variety of sectors by linking talent, technology, capital, and know-how in a single facility. It is important for universities in Azerbaijan to share their experiences with industry on the development of analysis and to promote joint research projects.

Recommendation 7: Increase overall public investment in research and development with more funding directed towards higher education institutions and promotion of applied research. By shifting the balance away from mainly financing fundamental to applied research, the public research and development budget can more effectively promote research that is of greater relevance to the industry. Encouraging and incentivising research partnerships that bring together higher education institutions, public research institutes, and private enterprises can be beneficial; while ensuring that a greater share of the research and development funding is directed at higher education institutions.

Conclusion

Society's benefits from the research and innovations of higher education are priceless. The research, both fundamental and applied, holds great promise for many aspects: promoting economic vitality, protecting life and property and improving quality of life. Major research universities in Azerbaijan are facing a huge issue with aging research strategy and infrastructure.

First, innovation has to be a core priority. Second, we need to ensure that innovation deliberately drives job creation, economic development and student career success by bringing research discoveries to the marketplace. We must develop a culture that rewards entrepreneurship, not just in STEM, but also in the arts, health and human development, education and more. Third, we need to foster the power of partnership with local and international government leaders, legislative representatives, communities, and business leaders.

Therefore, the following trends are crucial for shaping education and research and transforming universities into research-based universities in Azerbaijan: (i) Increased international mobility in tertiary education which is giving rise to new modes of competition within higher education and research; (ii) Economic competition, which is now playing a key role in higher education and research; (iii) Competition amongst academic and research institutions which is impacting concentration, diversification and modernisation. Universities must embrace a balanced effort between research and teaching, and basic and applied research and reward effort accordingly. As with all change in higher education, transformation will occur only gradually.

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ABBAS BABAYEV¹ – Prevention of youth exclusion in Azerbaijan: Policy recommendations to integrate NEETs into society

Introduction: Context and importance of the problem

Today, we live in a world populated by the largest ever generation of youngsters, defined by the United Nations as people aged between 15 and 24 years.² According to the latest World Youth Report, issued in 2018, the above-mentioned population group included 1.2 billion people, comprising 16% of the global population.³ Youth represents both opportunities and challenges for any government. On the one hand, it has been globally acknowledged that young people, who are a source of new ideas and are enthusiastic, should be provided with better opportunities to live in a way that they aspire and contribute to the development of their societies. On the other hand, this population group faces various transitions like from family care to independent living, from education to employment, which are associated with risks and vulnerabilities, particularly if not properly supported. Considering all this, the 2030 Agenda for Sustainable Development, comprising of the 17 Sustainable Development Goals (SDGs), have recognised young people as one of the key stakeholders in the implementation of the global development goals.⁴

In this context, the Republic of Azerbaijan has been recognised by the UN as one of the countries demonstrating continuous support and commitment to youth issues, with well-established legal, institutional and policy frameworks for national youth policy.⁵ However, in spite of this recognition and commitment to youth development, there are still some significant problems concerning youth that policy-makers face in Azerbaijan. They are especially expressed in the form of youth exclusion, stemming from the poor educational and economic conditions of some youth groups. In this regard, it is worthy to note that the issue of youth unemployment is acknowledged by the government and emphasised as one of the major problems of the country's labour market.⁶ The situation is further exacerbated by the significant share of youth that are not in employment, education or training (the so-called 'NEET youth'). The Asian Development Bank identified Azerbaijan as one of the countries with the highest percentage of 15-25-years old NEET youth.⁷ Indeed, in 2017, according to the information given in the National Employment Strategy of

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² United Nations Youth Strategy, 2018.

³ World Youth Report, 2018.

⁴ Transforming Our World: 2030 Agenda for Sustainable Development, 2015.

⁵ Report of the Secretary-General, 2017.

⁶ National Employment Strategy of the Republic of Azerbaijan for 2019-2030, 2018

⁷ Asian Development Bank, 2019.

the country for 2019-2030, the share of NEET youth was 23%.⁸ In this regard, reducing the share of NEETs to 15% by 2030 has been determined as one of the strategic objectives (objective № 3.3.3) of the above-mentioned Employment Strategy.

The considerable share of NEETs among the country's youth population raises alarming trends about youth exclusion in the country. The situation is disturbing considering the fact that the NEETs have been demonstrated by various studies to be particularly vulnerable to marginalisation and disengagement from community life, originating from their poor educational background and lack of social networks, which consequently hinder their ability to access proper employment opportunities.⁹ Obviously, it would be an exaggeration to mark all NEETs as disengaged and vulnerable as the group is heterogeneous. However, the concept of NEET has been recognised as a well-established indicator of youth exclusion.¹⁰

Moreover, the issue of youth exclusion is particularly sensitive for Azerbaijan in the context of the “youth bulge”, observed in the country (see Figure 1 on the next page).¹¹ The “youth bulge”, which is a very popular concept, describes the situation when the percentage of young people as a share of total population grows and youth constitutes a significant share of the population.¹²¹³ To avoid confusion, it must be highlighted that the “youth bulge” becomes sensitive to governments when young people are not utilised, i.e. they are left out of education and employment, or have poor levels of education which is associated with poor job quality and income insecurity.¹⁴ In this regard, there are various academic studies on countries, experiencing a “youth bulge”, which reveal strong relationships between youth exclusion originating from unemployment and poor education, and political instability.¹⁵ In this regard, if the problems concerning national youth, 23.3 % of the country's population (Figure 1), are not addressed by the policymakers in a timely manner the country may face significant risks from excluded groups of young people.¹⁶ The demographic projections of the UN demonstrate that the “youth bulge” will continue to be relevant for Azerbaijan at least until mid-2030s, especially in light of the considerable share of today's children, aged between 5 – 9 years, who will enter the youth group by that time.

⁸ National Employment Strategy, 2018.

⁹ Varshavskaia, 2017; The World Bank Group, 2014.

¹⁰ The International Labour Organization [ILO], 2015.

¹¹ The State Statistical Committee of the Republic of Azerbaijan, 2020.

¹² Although, its numerical terms may vary across countries, i.e. which age groups – usually it is 15-24 or 15 – 29 – should be considered as youth, or which percentage should be considered as large enough to be termed as “youth bulge”, it is commonly considered as when 20 % or more is made up of people from above-mentioned youth age groups;

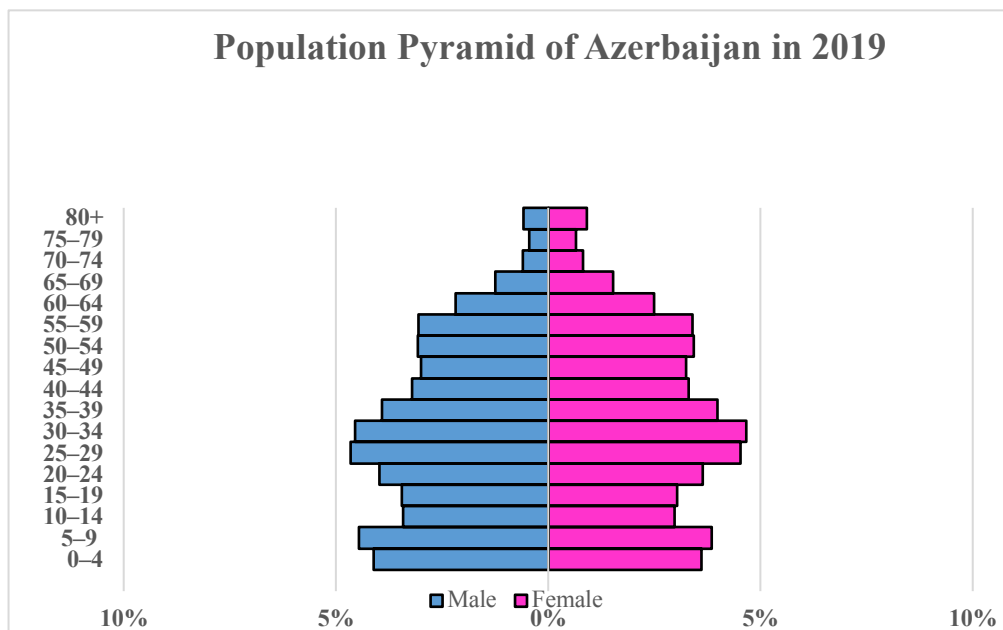
¹³ World Youth Report, 2018.

¹⁴ Urdal, 2012; World Youth Report, 2018.

¹⁵ Azeng & Yogo, 2013; WB, 2014.

¹⁶ According to the national Law on the “State Youth Policy”, adopted in 2002, youth in Azerbaijan are defined as people, aged between 14 and 29 years.

Figure 1. Population pyramid of the Republic of Azerbaijan in 2019



Source: *World Population Prospects - Volume II: Demographic Profiles, 2019*

In the light of above-mentioned circumstances, this paper aims to find out the causes behind the existing problem that may help policy-makers to identify the gaps in the design and implementation of the national youth policy, and offer preliminary policy recommendations based on the review of studies on countries experiencing the relevant challenge.

Literature Review: Identification of Possible Factors behind the Problem

The identification of potential causes behind the existing problem and their analyses have been conducted through in-site work by studying academic resources and reports about the countries, facing similar or same challenges.

In the first instance, it should be noted that governmental actions have received less focus on the relevant agenda, in spite of recognition of the public authorities as the major actors, responsible for designing, legislating and implementing youth policies and the fact that some measures such as the systematic targeting of prevention of youth exclusion can only be provided via public policies.¹⁷ The study of the literature reveals few studies that are specifically concerned with the analyses of national youth policies of governments, especially in non-European countries.

¹⁷ Soler, Planas, & Feixa, 2014.

The scarcity of literature on youth issues is particularly evident in the case of Azerbaijan. In this regard, there are a few reports by international organisations that have singled out some problems potentially hindering the effectiveness of the national youth policy.¹⁸ In terms of administrative and institutional problems in the implementation of national youth policy, these reports have pointed to the absence of monitoring and evaluation mechanisms to assess discrepancies between projected outcomes and actual results of policy interventions; lack of proper engagement of some key stakeholders, especially the private sector; and lack of mechanisms to ensure effective inter-agency coordination of various state and non-state institutions, involved in the implementation of the youth policy.¹⁹

The above-mentioned potential causes can be supplemented by the findings of studies focusing on other countries, but which can be also important for Azerbaijan as additional areas for consideration. In this regard, the problem of improper level of communication and collaboration originating from the lack of coordination among various state institutions, such as employment agencies, employers, education and social protection systems, youth agencies and other external actors, have been recognised across several studies to be a serious impediment affecting effectiveness of youth policy.²⁰ For instance, according to one study, in Sweden, the municipal decision-makers responsible for youth policies had little knowledge of the scope of problems experienced by youngsters at school level and the quality of interventions undertaken by policy-makers responsible for the education system.²¹ Other studies point out to problems such as a lack of adequate funding for youth policies and a shortage of trained and professional specialists who work with youth.²²

However, the most cited reason as potentially leading to entrance into the NEET category and exclusion has been cited to be the educational disadvantage of young people originating from their poor education and/or early school leave. Dozens of studies have confirmed that poor education increases the probability of unemployment or risk of falling into the NEET category, or associated with income insecurity, poor job conditions and/or employment in the informal sector.²³

The issue has been found out also to be very relevant for Azerbaijan, especially in terms of skills shortage of young people.²⁴ The STEP Employer Skills Survey, conducted in Azerbaijan in 2013, demonstrated that the education system does not

¹⁸ Council of Europe, 2011; UNESCO Moscow Office, 2007.

¹⁹ Council of Europe, 2011.

²⁰ Lundahl & Olofsson, 2014; Soler, Planas, & Feixa, 2014.

²¹ Lundahl & Olofsson, 2014.

²² Soler, Planas, & Feixa, 2014.

²³ Mcgrath, 2002; Soler, Planas, & Feixa, 2014; Tamesberger & Bacher, 2014; Varshavskaia, 2017; World Youth Report, 2018.

²⁴ Rutkowski, 2015.

address the needs of the majority of employers by not equipping young people with required technical, cognitive and socio-behavioral skills.²⁵

In light of the above-mentioned potential causes, the following section will contain recommendations on how to prevent youth exclusion in Azerbaijan and support integration of excluded youth into society.

Preliminary Policy Recommendations

The literature review demonstrated that the bulk of interventions to prevent youth exclusion include policies to facilitate school-to-work transition of young people.²⁶ Upgrading the skill and knowledge levels of young people through education and training activities constitute the core part of transition policies.²⁷ However, while proposing any intervention, special consideration must be paid to the role of structural constraints, defined as the scope of options available to the policy actor in any given circumstance.²⁸ For instance, the structural constraints can take the forms of the lack of sustainable employment options in rural areas, low paid jobs, lack of an industrial base of economy, lack of quality education and others which are not at the direct disposal of the policy-makers responsible for youth policies and require structural transformation of country's economy, educational system and other related areas which may take years and even decades to address. Therefore, no policy recommendation should or can be made in vacuum.

In the light of these realities, the following preliminary policy recommendations can be proposed:

- Institutionalisation of counselling in all educational institutions, especially in secondary education for students from higher grades in order to identify the interests and career aspirations of youngsters and help them to be aware of the needs of the labour market (particular emphasis should be placed on identification of potential youngsters, who are less attached to education and may quit school and design special professional trainings oriented towards skills-development in order to promote their transition to labour market);
- Conducting large-scale research and launching a comprehensive database containing detailed information about profile of NEETs, including their socio-economic backgrounds, age groups, rural-urban and gender differences, education levels, disability status and other information, which may allow policy-makers to derive conclusions about which groups of young people are vulnerable to falling into the NEET groups;

²⁵ Rutkowski, 2015.

²⁶ Lundahl & Olofsson, 2014.

²⁷ Lundahl & Olofsson, 2014.

²⁸ Mcgrath, 2002.

- Simplifying the requirements for application for grants (provided by the Youth Foundation of Azerbaijan in order to support individual or youth NGO-initiatives) and / or encouraging youth NGOs to present projects targeting NEETs and other excluded youth groups so as to integrate those excluded youth groups into society;
- Strengthening communication between private sector and educational institutions, especially vocational schools and training centers in order to design programmes to better address the labour needs of private sector and integrate NEETs into those programmes.

The above-mentioned are the preliminary policy recommendations based on the lessons derived from the experiences of other countries. They have two major dimensions: 1) integration of already excluded young people, especially NEETs, into society by providing them with education and training opportunities; and 2) the prevention of possible exclusion of young people at risk of quitting their education.

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PAVAN BHASIN¹ - Indian youth towards a sustainable future

Introduction

India constitutes almost one fifth of the world population with its 1.35 billion people and is the second most populous country in the world, after China. India's Central Statistics Office provides further data: "As per India's Census 2011, Youth (15-24 years) in India constitutes one-fifth (19.1%) of India's total population. India is expected to have 34.33% share of youth in total population by 2020. The share reached its maximum of 35.11% in the year 2010."² This paper will provide a picture of India's youth and the challenges it faces today. The main argument put forward is that the youth of India needs to be supported to make decisions that will help the nation develop; improve the lives of the youth; and still be sustainable in the larger global context.

The motivation here is to identify ways to make India a safe, just and ecologically balanced country through its largest natural resource: its youth. Youth are crucial to nations' development as they are the leaders of tomorrow. The future of our country, communities and families lies in their hands. They will also be responsible for the advancement of mankind through education, sustainable development and technology while protecting our culture.

A sustainable human capital pool is one which is "*conscious of integrating ecological limits of planet Earth, with the social and economic needs of the planet's human inhabitants*"³ The sustainable human capital in India is rapidly decreasing and steps need to be taken to develop the sustainable human capital pool. Education plays a very critical role in this process. It is:

"the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Educational methods include storytelling, discussion, teaching, training, and directed research. Education frequently takes place under the guidance of educators, however, learners may also educate themselves. Education can take place in formal or informal settings and any experience that has a formative effect on the way one thinks, feels, or acts may be considered educational."⁴

Methodology

This research is based largely on first hand experiences in interacting with students and other stakeholders such as their parents, schools, teachers, school principals, policy-makers and academics in India and beyond. This interaction took place through

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² Central Statistics Office Government of India (2017).

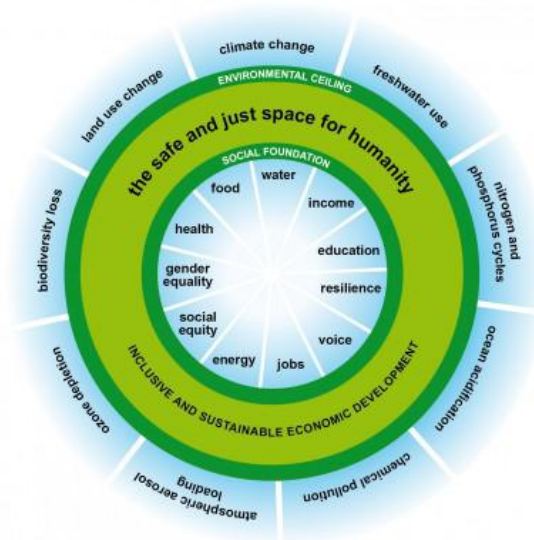
³ 17Goals (S.D.).

⁴ Quora (2019).

the BrainGain Magazine over a period of 9 years. Over this period there have been numerous discussions on primary education, higher education and career choices. Forms of interaction have been one-to-one discussions, forums as well as the application process of BrainGain Academy, which runs short term programmes for high school students all over the world. The research is preliminary and requires more in-depth and specific interaction with students and parents to collect hard empirical data to substantiate the findings showcased in this research.

The initial findings have taken into account the Sustainable Development Goals (SDGs) of the UN, which are a blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice.⁵ The progress of the SDGs are to be measured by indicators, divided into five categories: People; Money; Plans and Policies; Production and Consumption; and Planet. In short, the Indicators reflect the SDGs themselves: they put people at the heart of the SDG agenda.⁶ The so-called ‘2050 Energy Calculator’ can help us to understand the various pathways that can be taken to achieve the SDGs.⁷ For instance, the ‘doughnut model’ (see Figure 1) of the UN’s SDGs helps formulate the argument in this policy paper as a new way to think about economic growth and sustainability, by showing how all the different relevant aspects are connected to one another, highlighting the importance of a holistic approach including education.

Figure 1. The doughnut model.



Source: 17Goals (2015).

⁵ UN (S.D.)

⁶ 17Goals (2016).

⁷ Department of Energy and Climate Change of the British Government (S.D.).

Findings

The research conducted for this paper clearly shows that the sustainable human capital in India is rapidly depleting and needs to be addressed at the family, institutional and community level. In this report the focus is primarily on the depletion at the family level and the recommendations in the subsequent section will touch upon the other two aspects only briefly. The family and the role of parents in the life of the Indian youth is proportionately higher than in some European countries. The overarching finding is that decision-making is very much in the hands of the parents, not the students, and that the knowledge and resources available to parents to make these decisions are limiting Indian youth from being responsible citizens, nationally and globally. A holistic approach at all levels would be required to achieve the goal of reinvigorating sustainable human capital but this paper finds that the first step in this process is to engage with the parents who continue to be the primary source for monetary funds in most cases. To address this issue at the family level we need to understand that family plays a very critical role in the development of the child, specifically the parents. One of the biggest challenges is the ignorance on the part of the parents on the importance of sustainable human capital. Families need to understand the very definition of a “good citizen”, “success”, and that “wellbeing” should incorporate taking care of the environment and earth. The suggestions made in the next section are specifically oriented towards creating a multi-level framework which not only teaches young people of the benefits of leading a sustainable life fully cognisant of global challenges like climate change but also the older generation (parents) whose experiences were different and did not require the same engagement with the environment.

Recommendations

Based on these findings the following recommendations can be made:

1. At the family level, the discussion is focused on what parents know what is currently relevant to understand the requirements of protecting the environment. We need to update the notion of a good citizen, as the knowledge systems that the parents grew up in are fast losing relevance. This limits the advice they have for their children and even limits the intellectual development of children. However, parents continue to pay for their children’s education which makes them important in the decision-making process. In other words, parents decide the kind of education and career choices that are available to a young person and this selection is limited and/or disconnected from a world in crisis especially in terms of climate change.
2. At the institutional level, India provides a workforce for the globe but does not benefit from it. How can we change that? We could for instance emphasise the

value of research in India to enable the people to live, work and prosper in a sustainable community.

3. At the community level, we need to define wellbeing to include the environment and the importance of sustainability. Communities need to understand that if the environment dies, nothing remains. We know that the market economy destroys community living and therefore steps need to be taken to create awareness of the SDGs set out by international organisations. If communities adopt sustainability the positive impact would be great.

How can we create a sustainable environment and sustainable human capital?

The government must play a larger role by creating policies that support sustainability on a national level. In India, different Ministries need to drive sustainability within the industries which would hopefully trickle down to all the citizens. The government needs to support organisations that are helping to create a sustainable environment. Organisations and corporations always respond to financial incentives positively so these could be in the form of tax breaks and interest-free loans. Assertive campaigns on TV, radio, print media and social media channels and any other medium should be launched to create awareness at the grass roots level. The government should involve renowned Bollywood and regional actors, musicians and sports persons, to spread the message of the importance of sustainability across the citizens of India. Recognition for individuals, corporations, and educational institutions who have taken steps towards sustainability is also critical to motivate and encourage them. Curriculums in schools need to have more emphasis on the importance of sustainability and schools should engage regularly with parents on the importance of sustainability as they would be able to address the entire family on the same platform.

Conclusion

People are at the heart of the Sustainable Development Goals agenda and people will continue to play a very important role in what our world will look like going forward. The youth are the future custodians of the planet. Therefore, when considering the current environmental challenges faced globally, an easy solution is to influence how young people interact with the world around them. If we apply the Doughnut model to achieve sustainability it is clear that developing sustainable human capital impacts achieving of the SDG's more strongly.

The research presented in this paper points out how sustainable human capital is rapidly depleting in India and that the focus to create sustainable living in thought and practice is the most conducive way to build a sustainable world in the future. In other words, if the current and the future generations focus on developing sustainable human capital, the goal of 'inclusive and sustainable economic development' and creating 'a safe and just pace for humanity' will not be a difficult task.

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IVO BEREZIANKO¹ – Polymers and everyday life

Introduction

This report relates to the use of polymers in our everyday life and their contribution in solving global challenges. Today we have a lot of global problems starting from hunger to excessive CO² emission in the atmosphere. These can lead to substantial consequences for humanity and the Earth as a whole. The worldwide application of polymers (especially biopolymers) along with a number of other developing approaches can be called upon to solve at least a part of existing problems with regards to the use of polymers.

Polymers and their application

Polymers are a large molecule composed by many repeated subunits. Depending on the number and connection order of these units, polymers represent a variety of compounds possessing different properties. Consequently, they find an application in many spheres such as production of packaging, plastics, fuel additives, rubbers and glues, drug delivery, solar energetics, 3D-printing, etc. Thus, polymers represent an important class of materials.

The focus here is on examples of polymers application in solving global challenges. The first one is use of polymers in solar energetics. Manufacturing of polymer based solar cells nowadays is a useful trend. Compared to silicon-based devices, polymer solar cells are lightweight, potentially disposable and inexpensive to fabricate. They are flexible, can be customised on the molecular level and potentially have less adverse environmental impact than other materials do. Polymer-based solar cells have been the subject of more focused and continuous research in the last decade which saw a drastic increase in power conversion efficiencies from 6% up to 17% in less than a decade. Another example involving polymers to solve global challenges is the production of starch- and chitin containing plastics. The production of polymers from these materials is very promising because starch and analogous substances are cheap, abundant and renewable. Obtaining starch-based plastics enable a decrease in CO² emission in manufacturing of 3 tons per 1 ton of product compared to plastics obtained fully from organic materials. It should be noted that the chemical structure of starch and chitin allows them to participate in a metabolism cycle when plastics see degradation.

Widespread use of biodegradable polymers is another good solution for solving global challenges. These kinds of polymers are synthesised mainly from Lactic acid

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which is very affordable and can be easily extracted from maize, sugarcane etc. The products that result from their degradation are low molecular weight compounds which are digestible by simple life forms which helps solve the problem of waste. The main areas of application are drug delivery systems, surgery, packaging, 3D-printing and one-time usable tableware.

Policy recommendations

The right synthesis strategy of any kind of polymers is very important, as is rational application of polymers. So-called “green” manufacturing of polymers includes using environmentally friendly solvents (e.g. water) and recyclable catalysts (ionic liquids which can also be applied as solvents) for their production. But this approach requires a large intellectual resource because of difficulties related to the chemistry of these processes.

One more interesting approach for polymers manufacturing is to get them from carbon dioxide wastes. Recently, Covestro, a company in Germany, became the first company to start to gather carbon dioxide and produce materials from it. The carbon dioxide emitted during chemical production is collected and reprocessed and then used in polyurethane manufacturing which has a lot of applications.

Thus, it may be concluded that the role of polymers in solving of global challenges is quite significant. They continue to be involved in a number of important processes and applications. But further scientific developments in chemistry and polymers application are still needed. It is also necessary to increase the percentage of biodegradable polymers among all produced materials.

Conclusion

The kind of investment necessary for scientific development which is required for developing technologies to better use polymers can become part of a national strategy for developing countries. The countries in Eurasia find themselves in a particularly interesting place in order to benefit from investing in the kind of sciences which could lead to expanding polymer use. Polymer is a by-product of producing oil and developing countries like Kazakhstan and other post-Soviet countries with the legacy of Soviet science and money from exporting oil can have national policies which can utilise polymers in their different applications and produce a greener economy while still benefitting from exporting oil.

POLINA BISHENDEN¹ – What do the concepts of global and local mean in the context of women’s activism across Central Asia?

Introduction

Contemporary women’s activism stretches across borders. Activists from different locales engage with one another to form their thinking, agenda and strategies on acting for women’s rights. However, there is a tendency to view this kind of globalisation as a Western project. It is widely held that norms are formed on the global stage and then diffused, translated or localised into a domestic (or local) context. The juxtaposition of ‘local’ and ‘global’ reproduces stereotypes about these levels in the Eurasian space. ‘Local’ activism is particular and subjective, bound to a specific context. On the other hand, the ‘global’ is associated with a set of Western norms or a Western way of doing things. I too have previously reproduced such thinking by equating the concepts of global and Western in my work, thus suggesting that the norms and processes associated with the transnational feminist space are external to women’s movements across Central Asia.

Instead, people belong to multiple communities (both domestic and international) simultaneously.² Both “within-country and between-country structure shape people’s experiences” in our transnational world.³ Women’s activists do draw from transnational feminist discourse, but also create it in interactions on global stages and through “organising across borders”.⁴ Approaching a study on Central Asian women’s movements without challenging the constructed juxtaposition between ‘local’ and ‘global’ masks the creative, constitutive role that they play in the transnational feminist network. Accordingly, this short piece aims to unpack ways of accurately speaking about Central Asian women’s activism in the conceptual space between global and local.

Literature Review

The literature on feminism and activism in Central Asia is wide ranging and takes into account many different aspects of both the local and the international women’s movement in the Post-Soviet space. For example, Shakirova presents an example of collaboration between domestic women’s organisations and international actors

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² Mark Mulligan and Rogers 2018.

³ Purkayastha 2012, p. 59.

⁴ Naples and Desai 2002, p. 35.

on the gender question in Kazakhstan.⁵ In particular, she reflects on the similarities between gender equality discourse in Kazakhstan, the women's movements that promote it and the wider feminist ideology. She presents transnational and global actors in Kazakhstan as collaborators with the women's movement, attributing their role as "decisive during the first period of institutionalisation of gender equality".⁶ Indeed, Shakirova claims that "in Kazakhstan [...] a gender equality policy would be impossible without the strong support and influence of global feminism".⁷ This short piece demonstrates Shakirova's view that gender equality is shaped by actors at all levels *together* i.e. they co-create the space.

Similarly, Hoare's article on the donor organised framework in Kyrgyzstan's gender space contributes to the above discussion.⁸ Hoare reports on the active contestation practiced by activists against donors' normative hegemony.⁹ She notes that activists often chose work within the gender sphere for reasons that are "far more personalised and embedded in their own histories and experience, than motivated by a particular ideology or politics, or associated with ideals of 'civil society'".¹⁰ Therefore, the protection of 'local' (for want of a better word) agendas is achieved through positioning donors as collaborators, rather than teachers; "it was more of a question of exchange and learning from each other's knowledge and expertise".¹¹ Transnational donors are used by women's activists to uphold their *own* agenda. In this way, Hoare echoes Shakirova's description of activist relations across levels.

The literature that places a focus on intra-regional construction of gendered thinking and activism is also useful to consider in this regard. In particular, Tlostanova's work, entitled *Gender Epistemologies and Eurasian Borderlands*, addresses the primacy that is assigned to western modernity.¹² Tlostanova provides a decolonial feminist discourse relating to the Eurasian region, building on third world feminism. She notes that third world feminism "balances on the verge of similarity of experiences and their differences".¹³ This kind of feminism takes an "intermediary border position" between different Western and non-Western, universalist and particularist, gender discourses.¹⁴ In the conclusion to the text, Tlostanova questions, "Why cut the feet in order to fit the Western shoes?"¹⁵ and carves out a pathway towards "an independent and critical feminism" (rather than a "clone" of

⁵ Shakirova 2015.

⁶ *Idem.*, p. 211

⁷ *Idem.*, p. 221

⁸ Hoare 2016.

⁹ *Idem.*, p. 293

¹⁰ *Idem.*, p. 293.

¹¹ *Idem.*, p. 292

¹² Tlostanova 2010

¹³ *Idem.*, p. 5

¹⁴ *Idem.*, pp. 5-6.

¹⁵ *Idem.*, p. 187

existing Western discourse).¹⁶ Her decolonial option does not “reject the influence of Western feminism altogether” but rather endorses the right that women across the Eurasian borderlands have to produce (and practice) a gendered thinking built from their locale.¹⁷ The idea of feminism across borders and of international collaboration is placed within the region, which is a form of transnationalism.

It is problematic to (mis)understand feminist exchange across Central Asia as local. Simpson’s piece critiquing the primacy assigned to a Western development model in the process of “globalizing gender politics” engages with the various aspects of Central Asia’s feminism.¹⁸ She turns to the “common historical trajectory- pre-modernity, Soviet modernization, and post-Soviet development and democratization” shared by actors across Central Asia as a ground for regional activism.¹⁹ Simpson critiques the focus on local activism (bound to a very particular context) as having “shoved opportunities for exploring the possible importance of women-solidarity across borders and barriers, essential for tangible improvements in the lives of diverse women, to the background”.²⁰ Simpson’s recommendations for the future of gender activism are in line with the reconceptualisation of global, local, external and internal recounted above. She notes that “it is important to conceptualize the ‘local’ women not as a homogenous group, and the movements they comprise not as static” but “as processes [...] encompassing diversity and differences between class, ethnicity and other distinctions”.²¹ This facilitates the move away from an imagined Central Asia, and a misunderstood ‘localness’. Instead, the agency of individual activists with their unique positionality is considered and an accurate image of Central Asia is respected.

Recommendations

Rethinking the language used to speak about activists working on Central Asian women can allow academic work to capture the contributions that they make to the transnational feminist space. Activists co-create global gendered thinking. The work of Central Asian feminists is not particular to their locale. Instead, their claims constitute the transnational women’s movement. Further, when turning to activism in Central Asia, it is important not to place undue emphasis on the local. Throughout time, ideas have been exchanged and travelled across the space of Central Asia and wider Eurasia. The legacy stands the test of time. Intra-regional feminist collaboration is vibrant in Central Asia, with festivals and forums bringing women from different locales together. Placing focus only on the local and failing to explore

¹⁶ Tlostanova 2010, p. 203.

¹⁷ Idem., pp 205-206.

¹⁸ Simpson 2006.

¹⁹ Idem., p. 15

²⁰ Idem., p. 27

²¹ Idem.

such instances of exchange will mask the nuanced gendered thinking that is created across normative and geographical borders in Central Asia.

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SHERRY LAM¹ – Can the food industry help saving the environment?

Introduction

We have a ‘climate catastrophe’ on our hands, as many intergovernmental reports found that global warming is progressing at a much faster rate than previously thought. What does this mean to you all? We need to change the way we live, as a world and as individuals. This is a case study of a small business owner in the food industry who is thinking of what can be done to help saving the environment at an individual or a small business level.

Many researches showed that there are multiple ways that the food industry can help with the environment. There are at least five avenues where the food industry can make an impact, these are as follows: stop using plastic; reduce waste; buying local and seasonal food; cut out and/or reduce meat and dairy; and sustainable fishing. To explain how small businesses can help the environment first it is important to understand the type of business being considered.

Business Model

As an example, we could use the case of a small bakery that sells desserts, namely Japanese French turn over pastries.

The business owner plans to use various strategies based on research results and news readings to make an impact on the environment. The following is a list of what is planned: to stop providing straws; to use only paper and paper boxes for packaging; offer discounts to customers to bring their own paper boxes if they want more than a single piece of pastry or encourage them to eat on the spot when it’s freshly baked to avoid using plastic and/or throwaway packaging; and encouraging people to buy the amount that they can eat instead of wasting food.

Apart from using the environmentally friendly packaging, reducing food wastage in the food industry is a major concern for the business. According to statistics 1.3 billion tonnes of food ends up in a landfill costing the world \$940 billion a year. The Australian government estimates food wastage costs to the Australian economy as \$20 billion per year and/or 35% of average food for every household ends up as waste.² In 2019 alone the country threw away \$10.1 billion worth of food, according

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² <https://www.environment.gov.au/topics/environment-protection/nwp/reporting/organic-waste>, Accessed 6 April 2020

to the latest Rabobank Food Waste Report, making Australia the fourth-worst food waster in the world.³ In June 2018 Australia imported 19.9% more fruit and 8.8% more vegetables than previous years.⁴ In order to cut down the import of fruits and vegetables, the business owner buys fruits from local farmers instead of somewhere overseas or supermarkets which gets them from overseas or far away areas. As a way to work around the problem, the bakery goods chosen to be sold in the small business are items like Pafu and Cheese tarts which are designed to be eaten freshly baked or can be refrigerated to eat cold.

Recommendations

The main challenges continue to be how to reduce food wastage as a nation, as a community, as a business owner and as individuals. Other than working on saving food and using sustainable materials to make bakery items, the business owner would like to recommend the following to help achieve their goal of making the food industry more sustainable and environmentally friendly. First, the government can help business owners through financial schemes which can mitigate extra costs when moving to an environmentally friendly model which supports local communities of farmers and suppliers. There can be other financial schemes which make cheaper materials accessible in order to offer customers ease of use and still offer a quality product. Community wide schemes which allow for disposing unwanted and/or extra food to the homeless and deprived would also go a long way in helping in the reduction of food waste. More generally if local businesses can be supported to make the transition to environmentally responsible techniques and strategies would not only help protect the environment but would also help reduce health and other related problems of the food industry.

Conclusion

The food industry is a business which has seen growth by leaps and bounds in the previous decade. Food related businesses whether restaurants and/or TV shows have created a much bigger industry than just selling food for survival. Food occupies a much larger space in human activity than before. With increasing climate change and threat to forests and the environment, along with issues of food security mentioned in the UN's SDGs as an important Human Right, means that the government, society and the individual needs to reimagine the relationship with food. Everything from waste to sustainable and responsible sourcing needs to be considered. In addition, the use of disposable plastic materials from packaging raw materials to take-away food deliveries requires attention. This paper was an

³ <https://thenewdaily.com.au/finance/consumer/2019/11/27/food-waste-australia-rabobank/>

Accessed 20 February 2020

⁴ 1808 AHEIA Report

https://www.ftalliance.com.au/data/news_attachments/1808%20aheia%20statistics%5B363944%5D.pdf

example of what small businesses can do and how support from the state would be able to impact a global problem like food security.

MAVLUDA NURMETOVA¹ – Public administration reforms in Uzbekistan: Listening to citizens and public consultative councils

Introduction

For many decades, diplomacy has been a tool of states in conducting foreign policy. Diplomacy is the established method of influencing the decisions and behaviour of foreign governments and peoples through dialogue, negotiation, and other measures short of war or violence.² It can be differentiated as international and everyday diplomacy, as Alisher Faizullaev puts it.³ If international diplomacy refers to the relations between states, everyday diplomacy concerns every single person. In today`s globalised world both of them are considered to be of great significance. While researching diplomacy at the international level, different types can be found such as “guerilla”, “public”, “defence”, “economic”, “people`s diplomacy”, “digital”, “cultural” and so on. Each state uses different types of diplomacy depending on what they want to achieve. For instance, in digital diplomacy in order to promote foreign policy interests the Internet and communication technologies are used. Development of social networks and blogs is important in this case to reach the target as well.

Especially cultural diplomacy has been playing an ever more important role in international relations today, and that will be the main focus of this report.

Cultural Diplomacy

Cultural diplomacy has a broad meaning. Yet there are different opinions among scholars and practitioners towards its full and clear definition. Here is a common definition given by the Institute for Cultural Diplomacy:

“Cultural diplomacy may best be described as a course of actions, which are based on and utilize the exchange of ideas, values, traditions and other aspects of culture or identity, whether to strengthen relationships, enhance socio-cultural cooperation, promote national interests and beyond”.⁴

Cultural aspects of diplomacy did not appear recently, because culture exists as long as humankind has existed. Moreover, culture is inextricably linked with the identity of a person and today with the nation as well. Culture is considered to be a ubiquitous factor in diplomacy and international relations. As its scope is too broad

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² Encyclopaedia Britannica (S.D.).

³ Faizullaev, A. (2017).

⁴ Institute for Cultural Diplomacy (S.D.).

to cover in detail, in this paper we will try to look at only one aspect of cultural diplomacy, which helps to foster mutual understanding between different nations.

Today we live in a world where there are more than 200 independent states, promoting their national interests. Besides, there are many other nongovernmental actors as well. In order to resolve disputes among them and to collaborate in different spheres of life, including the social, political and economic, in order to face the global challenges together, different actors “talk” to each other. However, representatives of different cultures often come across difficulties in finding a common solution to an issue. Therefore, it is crucial for each of these subjects to be aware of “how” to negotiate to come to an agreement. In this case, they have to learn the “language” of their counterpart. Here cultural background defines the “language”. There is a big difference in how diplomats from Western countries (Anglo-Saxon countries and/or Europe) and those from Asian countries negotiate. Differences in cultures can be manifested in different styles in this negotiation process.

As in any other sphere of life, a diplomat will naturally tend to follow the communication style of their own culture. The so-called high-context cultures like Japan, India and China, are usually characterised by a non-direct, relational way of communication, where much depends on how well the communicators can read between the lines. Low-context cultures like the USA, Australia, and Germany mostly use straightforward, task-oriented styles and prefer to spell out every detail.⁵ High-context culture diplomats show their politeness and respect towards their counterparts by trying to convey what they mean by nonverbal behaviour, parables and stories, while low-context culture representatives act in a very straightforward and direct manner. In this perspective, for the representatives of high-context cultures, for instance, Japan, it is of great importance to build a good relationship with their counterparts. Consequently, for low-context cultures like the USA, establishing good relations does not play a huge role.⁶ This implies that the outcome of a meeting or negotiation in this situation is going to be a failure if the participants are not aware of the difference of their cultures and have not prepared for that beforehand. For this reason, representatives of states should not only be diplomats, but also be good cultural diplomats.

One of the well-known cases regarding culture in diplomacy of states is the Chinese ‘face culture’. In his book, Rui Zheng argues that ‘face’ is the definition of being fully human in the Chinese context, therefore it is the ticket to full membership in the community. To lose face would negatively affect the community and consequentially the loser would be ostracised by the community.⁷ One can find out

⁵ Korshuk, A. (2004).

⁶ Faizullaev, A. (2007).

⁷ Rui Zhang (2017).

that Chinese face saving has its roots from Confucian relationalism, which requires one to delve into the cultural background of this nation to fully understand it.

Therefore, before receiving an assignment to a mission, a diplomat has to be well-trained in terms of general diplomatic skills; along with economic, social and political knowledge about the country where they are going to represent their own state and promote its interests. Besides this, they have to be aware of the cultural background of that nation. A good cultural diplomat knows how to show respect to others in order to gain respect in response. This is also true for diplomats in and from Uzbekistan.

The case of Uzbekistan

For the past thirty years, Uzbekistan has expanded engagement with foreign partners and international institutions. In order to reach the goals shown in Uzbekistan's 2012 Foreign Policy Concept, the "Development Strategy for 2017-2021" and to improve the country's regional standing and influence, most of all, all-round professional diplomats need to be trained. As mentioned above, culture is a very powerful medium for international dialogue and mutual understanding. Therefore, it is important to train not only diplomats with professional knowledge, but also with strong cultural information and knowledge.

Recommendations

In this perspective, our recommendations to the University of World Economy and Diplomacy, where future diplomats of Uzbekistan are mainly taught, would be:

- To organise additional courses specifically on Diplomacy studies;
- To divide the third year students into several groups according to the regions they are interested in and give them in-depth knowledge about those regions' history, policy, culture and psychology of its nations;
- To involve more diplomats with first-hand experience in the teaching process.

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MATLUBAKHON SALIKHOVA¹ – Science - for sustainable and state development in Tajikistan, or how to involve young general in scientific activities

Introduction

Today, the definition of the term science is used differently. For many millennia, man has been extracting the truth through a difficult, painstaking and at the same time interesting, exciting process that aims to systematise objective knowledge about the real world. Science can be defined as “the intellectual and practical activity encompassing the systematic study of the structure and behaviour of the physical and natural world through observation and experiment”² The scientific sphere is one of those where a person's creative potential is revealed to the maximum: the result of this activity is the internal development of the researcher himself and the opening up of new horizons. This process includes several stages, such as data collection and regular updating, systematisation of the acquired knowledge and critical analysis. The first scientific works of humanity appeared five thousand years ago, when writing appeared. It was then that people were able to preserve their knowledge, analyse it and pass it on to others. Thanks to writing, people not only preserved their acquired knowledge, but also learned to write down historical facts and in this sequence human interest in the study of stars, fauna, the arrangement of mechanisms contributed in turn to the emergence of biology, mathematics, astronomy and humanities as well.

The article "Science in Tajikistan: Balanced Daughter or Unloved Stepdaughter?" by Mikhail Petrushkov, Chairman of the Business Development Center of the Republic of Tajikistan provides statistics on the number of scientific institutions and scientists in Tajikistan. Thus, for example, Jumakhonzod (2017) provides the following statistics (see also Figures 1 and 2). In Tajikistan, 87 research organisations are operating. The total number of staff of scientific research institutions for 2017 was 17,868 people. Of these, 3,769 have degrees (in various branches of science) in various areas of the country's economy. The highest concentration is in Tajikistan's higher education institutions, with 78 per cent or 2,942 employees. There are 557 doctors, and 2,385 candidates of science.³

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² Google dictionary

³ Petrushkov, M. (2018).

Figure 1 (Left): Number of staff in scientific research organisations in the Republic of Tajikistan.

Figure 2 (Right): Number of scientific staff with scientific degrees, working in different industries of the Republic of Tajikistan.



Source: Jumakhonzod (2017), in Petrushkov (2018).

History

Historical figures who were scientists and thinkers include Al-Khorezmi, Al-Marwazi, Zakaria al-Razi, Al-Farabi, Abuali ibn Sina, Al-Biruni, Omar Khayyam, Rumi and other medieval scientists and thinkers who made a huge contribution to the development of science. Even today, scientists around the world are guided by the fundamental knowledge that was laid down by them in the early Middle Ages.

In the middle of the 20th century, science was strengthened in society, because many scientific discoveries were made then. At that time, Tajikistan was part of the USSR and many Tajik scientists made huge contributions to the development of both natural and human sciences. Since 1929, when the Tajik SSR was formed, scientific institutions, particularly the Academy of Sciences of the Tajik SSR were established. The first scientists of the Academy of Sciences of the Tajik SSR were Sadridin Aini, Mirzo Tursun-Zade, I. N. Antipov-Karatayev, B. G. Gafurov and other prominent scientists.

Unfortunately, history has many turning points that negatively affect the development of the entire scientific process, from data collection to systematisation and critical analysis. Wars, conflict or depressive environments are social factors that prevent the scientific field from developing properly. It affects not only science and scientists, and today's youth, but also entire generations. War brings with it the destruction of all industries. Thus, mankind has gone through many wars and battles and here science has been subjected to great trials and difficulties.

Tajikistan, in turn, has also gone a difficult way towards establishing an independent state. As is known, after gaining independence, a civil war began, which lasted

several years (1992-1997). It brought many losses, including irreparable losses in scientific activity. In this war, many scientists and creative artists were deprived of their lives; the rest emigrated to other countries. According to certain calculations the war caused 1.2 million refugees, including scientists of Tajikistan, who left the country because of the civil war.

Today Tajikistan is a sovereign, democratic, legal, secular and unitary state, as it is spelled out in the basic law, the Constitution of the Republic of Tajikistan.⁴ It is this time in particular that caused science to collapse and Tajikistan has lagged behind in science and economic, social, political and overall development for decades. The reason behind this is the lack of motivation among the young population in Tajikistan who do not see scientific study as directly linked to development of the state or of the individual in society.

What are the reasons for this? Why is the youth not interested in this area of human activity and why does it not give it priority as a tool for achieving stability and sustainable economic and social development? Linked to these questions brings the question of state capacity and attention to the scientific development of the country. Two questions will be considered here to try to answer why the pursuit of science still lags behind in Tajikistan.

The first question is: why are today's young people not motivated to engage in science to systematise their knowledge in one area or another? Through in-depth study of science, a person can understand and work on their strengths and weaknesses. And the second question is how to engage young people in science to contribute to the world of science, rather than just to attain status and/or a certain position. There is a very interesting point here, namely that it is clear that many people are engaged in science in order to gain public or global recognition for scientific merit, because they find certain advantages in the activity being studied, to improve their academic status, to climb up the career ladder, etc. But as a scientist, one should not forget that the hallmark of a scientific approach in studying aspects of the world around us is honesty, impartiality and the desire to learn and understand the world we inhabit. In other words, the researcher must constantly nurture and develop these qualities otherwise the results of this kind of research cannot be considered as "real" scientific work.

There are many scholars in Tajikistan already demanding fundamental reforms. For example, Abdurakhmon Kurbonov, Doctor of Philosophy, Head of the Department for Analysis of Social Problems of the Center for Social Research under the President of Tajikistan, describes the modern scientific environment in Tajikistan, giving examples of very objective arguments that can be referred to here. In his

⁴ Of 6 November 1994, as amended by the law of 22.06.2003 (Attorney General of the Republic of Tajikistan, 2003).

2019 article he reports that back in 1996 the Decree of the President of the Republic of Tajikistan "On the establishment of the Presidential Foundation for Basic Research" was issued (number 422, dated 24 February 1996). According to the Regulations of the Fund, along with other sources of financing, 3% of the funding came from the state budget, providing for the sphere of science, which in 22 years of the Fund's existence should have significantly contributed to certain purposeful and useful research in Tajikistan's scientific institutions.

However, the state of the scientific environment in Tajikistan has not shown effective results despite the existence of the fund to support fundamental research supported by a presidential decree. Scientists were unable to make significant contributions and/or scientific discoveries, and they did not present innovative inventions. Moreover, we see a further deterioration of scientific activity in Tajikistan. For example, a scandal in the Russian independent online network "Dissernet" about accusations of plagiarism of scientific works of Tajik scientists attracted increasing attention of the public and the international community to the failings of Tajikistan's scientific community. This raises numerous questions. What is the reason for why the "scientists" have chosen this path? Why are there hundreds of accusations against the scientists at once? Is this really the case? What could be the reason for this attitude of some Tajik scientists? Do they understand what science is for and what purpose it is meant to fulfil? Do they understand the importance of scientific research and what does it mean for them personally?

Data Analysis

As the chairman of NGO "Peshraft" working in the public sector during the last five years I have conducted more than 1500 interviews with young people aged 15 to 35 years in various projects and scholarship programmes of the organisation. During the interviews various questions were asked in order to find out how they see themselves in the next ten years and what future they expect for themselves. Also, for the past two years, I have started working with the Tajik National University on the GCRF COMPASS project funded by the UK Government. The project has helped me articulate additional questions for interlocuters who have applied for Peshraft programmes, such as: how do you feel about science in Tajikistan? Do you want to engage in science? What is science in your understanding in general? The result is that out of 1,000 interviewees only five persons answered that they would like to study science, humanities and technology, but not in Tajikistan, mainly because the necessary conditions don't exist there.

Conclusion

At the moment there are many "scientists" in Tajikistan who are listed as scientists or research workers, but it is a pity that this figure does not inspire confidence, as the quality of work leaves much to be desired. After the collapse of the USSR there

were two turning points for the country: the collapse of the USSR itself and the civil war, which, apart from huge losses, led to a large generation gap and lack of continuity of knowledge between scientists. According to Munira Shahidi, Professor in Comparative Literature and Cultural Studies noted in one of her interviews with Sohiber Tolib, a radio journalist from Tajikistan, that she is concerned that there is a wide gap between young people and the older generation of Tajikistan. While the older generation remembers the civil war, there is a very controversial attitude towards National Unity Day among young people who grew up after the conflict. On the one hand, this patriotic holiday is a tribute to respect and gratitude for peace and harmony in the country. On the other hand, according to experts, in the current social and economic conditions, while the form has been preserved, the content of the National Unity Day has long run out. Young Tajiks want equal rights in society, first and foremost equal access to higher education and well-paid jobs. However, the sense of social injustice awakens discontent among young people and pushes them towards radicalisation. Hundreds are fighting on the side of militants in Syria and Iraq. Hundreds of thousands of young people are also in labour migration.⁵

Other factors also contribute to the demotivation of young people and today's Tajik scientists who are engaged in science, not to make scientific contributions to the global scientific activity, but for short-term purposes, such as career development in the civil service or simply obtaining the status of a scientist.

The issue of putting basic research at the right level in scientific and higher education institutions is important and relevant, and the timely removal of existing problems will contribute to a new stage of development of sciences in the industry. It should be noted that the development of fundamental sciences is inextricably linked with exact and experimental sciences and without the existence of the necessary scientific and technical base it is impossible to apply research and to obtain results in this direction.

It is no secret that the training of scientific personnel and the results of scientific research depend to a large extent not only on the salaries of employees and staff potential, but also on the state of material and technical base of scientific organisations. It must be admitted that both the equipment for conducting scientific research and the material and technical base of the vast majority of research organisations in Tajikistan are outdated.

In conclusion, in order to develop science in Tajikistan in the first place, radical reforms are needed, for example, a new strategy for the development of science in Tajikistan for the next ten years. Allocating more funds for the development of science is crucial, which includes the creation of decent conditions for scientists, taking into account a good monthly salary. If this is not possible, then as an

⁵ IWPR (S.D.).

alternative we can consider providing social benefits to improve the lives of researchers in Tajikistan; developing a system of motivation for the young generation who are interested in conducting scientific research. For this purpose it is necessary to study and possibly apply the example of developed countries, and international projects.

For example, Zuhursho Rakhmatullaev, co-founder of the Alif Bank in Tajikistan, says in an article that he was invited to a week-long educational trip to Singapore, where the conference on the Chinese Belt and Road Initiative was held. As part of the event, a week-long regional cooperation outreach in South-East Asia was organised for a group from Central Asia, Afghanistan and Mongolia to learn more about the Singapore Miracle. Singapore is a country where science is financed by 1,350 USD per capita. In comparison, in Tajikistan it is 1.5 USD, and in Russia it is 180 USD. Simple calculations show a 900-fold gap in science funding between Tajikistan and Singapore, which many officials and experts like to cite as an example.⁶ This raises very relevant issues for our country and the article gives some concrete recommendations for further economic development of Tajikistan, which may take the country to an entirely new level. After all, economic development is very closely linked to the level of science.⁷ That is to say, we cannot say that we should direct the entire budget to science, but using the model of countries that are developing despite the lack of natural resources like Singapore, we can say that in the future we could improve the situation in the country, in particular the development of science.

Recommendations

In the first place there is a need to show the benefits of scientific research, to attract the attention of young people to international internships that need to be organised so that they can see how real research work is done. A democratic research environment, free from hierarchies in which credit is only given to real achievements, is a prerequisite. If we want young researchers to follow the "right path", we need to give them due attention, because at a young age people still need emotional support and personal guidance, so scientists acting as their mentors must be willing to participate and actually spend enough time with them. Last but not least, students also gain a lot from personal experience that is unrelated to science or research. They are still looking for their place in society and are exploring their strengths and opportunities. If the government can give them the opportunity to intern in leading scientific institutions in developed countries, that is, the hope that when they return home with their research experience, they may become key figures who can influence public opinion from their own environment, i.e. among their peers, families and communities where they are listed as volunteers. We must

⁶ Petrushkov, M. (2018).

⁷ Rakhmatullaev, Z. (2019).

join forces to show young people the joy of science to support them. They are our future.

It is worth noting that on 31 January 2020 the President of the Republic of Tajikistan, Emomali Rahmon, announced 2020-2040 as the twentieth anniversary of exact sciences in Tajikistan. The decree states that:

"In accordance with Article 69 of the Constitution of the Republic of Tajikistan, in order to strengthen the process of the study of natural, exact and mathematical sciences, as well as the development of technical thinking of the younger generation and youth, the Ministry of Education and Science of the Republic of Tajikistan, the Academy of Sciences of the Republic of Tajikistan and other ministries and departments, which have educational institutions in their structures, are to develop an action plan within three months and submit it to the Government of the Republic of Tajikistan".⁸

The decree was issued, the initiative was launched and the President gave the start. I want to believe that these 20 years will be decisive for significant reforms that will contribute to the development of science in Tajikistan. Young and future researchers would like to wish perseverance, more motivation and creativity in their scientific work. Now is the chance to change all spheres of our state for the better, through science. Most importantly, we need to take careful, correct and at the same time wise steps on the way to scientific heights and be farsighted. To do science, to devote our lives to research, using the experience and results of fundamental knowledge of our ancestors and other scientists of the world community.

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