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Link to publication

Download date: 10 Jun. 2023

UNU-MERIT Working Paper Series

#2012-017

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Highly skilled temporary return, technological change and Innovation:

The Case of the TRQN Project in Afghanistan

January 2012

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Abstract:

Using the specific case of the International Organization for Migration's (IOM) Temporary Return of Qualified Nationals (TRQN) project, this paper illustrates the effect the short-term return of highly qualified migrants abroad can have on capacity building in the origin country through knowledge transfer, innovation and technological change. The paper specifically examines the needs, expectations and delivery of knowledge through the TRQN project in Afghanistan.

Key words: migration, return migration, innovation, technological change, migration and development, Afghanistan

JEL codes: Y, Z

Word count: 7677

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1. Introduction

This paper uses the case of the Temporary Return of Qualified Nationals (TRQN) Project implemented by the International Organization for Migration (IOM) in the Netherlands to illustrate how the short-term return of highly skilled migrants to their country of origin has contributed to technological change and innovation (through the transfer of knowledge). In this case, the specific project implemented between the Netherlands and Afghanistan is examined; more appropriately called the Temporary Return of Qualified Afghans (TRQA) Project. There are currently an estimated 215 million migrants around the world and a substantial number of these can be considered "highly-skilled". Highly-skilled emigration has led to the common term brain drain, which has historically been viewed as a negative impact on countries of origin. At the same time, a contrasting view, points out that an educated or highly skilled diaspora can help to simulate development through remittances, trade, foreign direct investment, and knowledge transfer (Gibson & McKenzie 2010). A success story in this area usually sited is the starting up of technological firms in India and China after return from Silicon Valley in the United States (Saxeenian 2002).

The objective of this paper is to highlight the role of technology and innovation in the capacity development of countries of origin through temporary return of the Diaspora. The second section of this paper will provide a background on innovation, technological change, and capacity building through temporary return. Section 3 of this paper describes the TRQA project and the methodology used for this study. Section 4 expands on examples and evidence of technological change and innovation in health and education, engineering and infrastructure development and work environment norms while first examining the needs and expectations of those involved in the project. Section 5 discusses and concludes.

2. Innovation, Technological Change, and Capacity Building through Temporary Return

This paper comes from the perspective that technology and innovation are vital to development. The role of technology, technological change and innovation has been well documented in the development literature (Soete 1985; Freeman & Soete 1997; Soete 2010). According to Soete (2010), it is in a developing country context that innovation can take on its true potential and ability not just in the sense of technological innovation but with regard to innovation more generally. Grandiose technological innovations are not even the ones that can make the largest difference for the rural poor, but instead smaller scale local solutions that implement small scale upgrades (Juma & Yee-Cheong

2005). It is actually the 'smaller and simpler' advancements that can fit the needs of the local community much better (Soete 2010). This paper illustrates many examples of these types of changes in the case of Afghanistan, specifically in the key areas of health and education, engineering and infrastructure and work culture.

The terms innovation, technological change, and capacity development are all used in this paper. Innovation is "the introduction of something new or a new idea method or device" (Mirriam-Webster Dictionary 2011). Technological change is "a phrase used to depict the overall process of invention, innovation and diffusion of technology or processes" (Metcalfe 2008). Thus, this paper will consider innovation and technological change to be inclusive of new inputs of ideas, tools, methods, or technologies brought by the participant that enable the overall process of innovation, that is, new ways of thinking and doing tasks for the participants students or colleagues. Therefore, capacity building will be defined as per the United Nations Development Programme (UNDP):

> *"The process through which the abilities of individuals, institutions, and societies to perform functions, solve problems, and set and achieve objectives in a sustainable manner are strengthened, adapted and maintained over time."*

Capacity building can occur in many ways and this paper will address how participants utilize their ideas, new tools, methods and technologies to enhance capacity building through the process of temporary return migration.

Temporary Return: The Origins and Application

Since the late 1990's, a new rhetoric of the 'brain gain' has emerged that views a system of "skills circulation by converting the loss of human resources into a remote although accessible asset of expanded networks" (Meyer et al. 2001). These new networks are comprised of highly skilled members of the Diaspora and numerous terms have emerged such as the scientific diaspora, intellectual diaspora, and Diaspora Knowledge Networks to encapsulate these networks. This paper will utilize the term scientific diaspora which can be defined as: "A self-organized community of immigrant scientists and engineers who live in developed countries and who organise to have an impact on the development of their homelands, especially in the fields of science, technology, and education" (Tejada and Wickramasekara 2010: 6).   In the case of TRQA, the IOM has worked with the scientific diaspora in the Netherlands to implement technological change and innovation in Afghanistan.

A growing field of research examines the relationship between Diasporas and technology and their role for development. Increasing research has been conducted on "digital

diasporas- diasporas organized on the internet" that examines the role of technology in connecting the diaspora for objectives such as human rights, integration, politics, information sharing, or knowledge sharing (Brinkerhoff 2009; Brainard and Brinkerhoff 2006; Brinkerhoff 2004). This work has illustrated how the internet can be critical to connect the Diaspora and create a sense of belonging and engagement when people are scattered around the globe. The Afghan Diaspora has been an active Digital Diaspora and its work has contributed to the reconstruction and development efforts in Afghanistan. The website Afghans4Tomorrow has promoted Afghans to volunteer and engage in short term return projects to Afghanistan to contribute to the country. Brinkerhoff (2004) has termed this website a "community of action" as the group seeks to mobilize and create change in Afghanistan.

The utilization of the scientific diaspora is particularly vital in post-conflict situations where the majority of the highly skilled have fled the country and where human capital is needed to rebuild (IOM 2005). In this situation, information, communication and technology (ICTs) are not only important in organizing the diaspora to become involved, but also in assisting the diaspora to contribute to their country of origin. Technological deficiencies can severely hinder growth and need to be addressed in the reconstruction process. Diasporas have been significant in "helping to bridge the digital divide in their countries of origin by incorporating technology transfer into social, economic, and political assistance activities" (Gueron and Spevacek 2008: 7). Examples of this include: providing new and/ or used information, communication, and technology equipment to businesses or schools in the country of origin, providing education on technology, and forging online research partnerships (ibid).

One method for bridging the digital divide and providing capacity development and technological innovation is through temporary return. Return migration, and more specifically the return of highly skilled or highly qualified migrants to their countries of origin, can play a key role in the development and growth process through the knowledge and innovation that is brought to the country. Dustmann and Kirchkamp (2002) show brain gain occurring in Turkey due to the return of migrants from Germany while Gang, Co, and Yun (2000) show positive returns to migration among female migrants returning to Hungary. The return of highly skilled migrants to their home country on a temporary or permanent basis is perceived as benefitting development (Ellerman 2003) as returnees can also bring much-needed capital and entrepreneurial insight with them (Skeldon 2009). Because of their familiarity with local customs and culture, highly skilled migrants can be in a more advantageous position in transferring skills and knowledge back home (World Bank 2006). In a case like Afghanistan, the return of highly qualified Afghans can be of great help in post-conflict reconstruction.

This paper bridges the application of temporary return for capacity development combined with a focus on technology and innovation applied by participants in their temporary return to enhance the capacity development process of their students and colleagues in Afghanistan. The following sections will demonstrate that by bringing new technologies to Afghanistan through the temporary return of the scientific diaspora, the capacity development process occurs in ways that lead to innovation for their students and colleagues in Afghanistan.

3. TRQN Netherlands-Afghanistan Project

The IOM Netherlands Temporary Return of Qualified Nationals (TRQN) project, funded by the Dutch Ministry of Foreign Affairs, has had two waves of implementation, TRQN1 and TRQN2. The objective of both of the projects is to contribute to capacity building and knowledge transfer in Afghanistan. TRQN 2 focused on the three specific sectors of Health, Education, and Infrastructure Development. TRQN 2 also focused on a 'train the trainer' component and all assignments were developed to act as training positions to further the knowledge transfer and build capacity. TRQN 1 positions lasted a maximum of 6 months, and TRQN 2 positions lasted a maximum of 3 months. TRQN 2 is implemented in cooperation with a project manager at IOM The Hague and at IOM Kabul. The project manager in The Hague advertises the project amongst the Afghan Diaspora and keeps a database of all applicants to the programme. The IOM Kabul project manager advertises the programme to host institutions in Afghanistan who then submit a Terms of Reference (TOR) for a position. Once the TOR is approved, a list of qualified CVs from IOM the Netherlands is sent to the host institution. The host institution is then able to select their preferred candidate and the logistics are put into place for the participant to commence their position.

Officially, all TRQN 2 participants are volunteers as they do not receive any official salary from the IOM for their work in Afghanistan. They do receive living, accommodation, and travel within Afghanistan allowances, which combined, total to 1600 Euros (USD 2000) per month. If the participant was on social assistance in the Netherlands, this is discontinued when they leave the country. The IOM also covers their travel insurance for the duration of their assignment.

The information for this paper was taken from 10 cases studied and more than 15 interviews. Interviews were conducted in both the Netherlands and Afghanistan with participants in the program, their employer and colleagues. Interviews were conducted between September and November 2010. Participants were involved in various projects ranging from curriculum development, building roads and infrastructure projects, IT and technical assistance to medical training.

4. Examples and Evidence of Knowledge Transfer , Technological Change and Innovation

> *"The most important thing is transferring, changing the new technology from abroad to Afghanistan, from Nederland to Afghanistan, transferring experiences, and some new technology to Afghanistan. It is about the benefit of this, and also the culture, how to contact, how to change the people, completely changing, transferring of knowledge, experiences, and sharing. Because Afghanistan is not in progress."*

This quote really brings out the essence of this paper. It discusses all of the key components of bringing knowledge from abroad to enact change in the origin country to help build capacity and create development. It also shows how necessary this innovation and technological change are to progress and development of the country.

The next section will look at the results of the technological change and innovation on capacity building. The first part of this section provides an overview of the needs and expectations for the TRQA project. This following section is divided into two key sectors: Health and Education and Infrastructure and Engineering. A discussion of the changing culture of work through 'soft' skills transfer is also included and how this new innovative environment is now working.

4.1 NEEDS AND EXPECTATIONS

Afghanistan has seen a marked drain in its skills for at least three decades due to the conflict that has ensued there. In the 1980s and 1990s, highly skilled migrants went mainly to Europe, North America or Australia and came from the upper class (Monsutti 2008). According to the World Bank, the emigration rate of the tertiary educated was 23.3 per cent in 2000 (World Bank 2011).

The last three decades of conflict has left the country with a strong skill deficiency. Although the country is officially in a stage of post-conflict reconstruction, Afghanistan still faces the challenge of attracting and retaining the highly skilled. Because of a mix of factors over the last 30 years, the education system in the country is in a dire state, worse than in the 1970s. The system has not been updated since the 1970s and is clearly out of date. Recently, new private Universities have begun to establish themselves mainly in Kabul. There is still a great need, however, for an infusion of skills knowledge and innovation into the country's educational system.

Another major challenge at the moment is the extremely rapid urbanization process that has gone on in Kabul since the US invasion in 2001. Before the ousting of the Taliban from power, the estimated population of the city was 500,000. In 2004, the population

had already grown to three million and is currently estimated at between five and seven million.

Ittig (2004) describes a situation in which the large urbanization combined with the increased international presence in Kabul has lead to a steady increase in prices in the city. The inflation rate in 2005 was 10.3%, 13% in 2009 and estimated at 30.5% in Afghanistan in 2010. This increase in prices along with the prospect of better job conditions has attracted many highly skilled Afghans to work for international organizations.

Yet another challenge at the moment in Afghanistan is the distortions in the labour market due to international organizations and companies. The higher wages and better working conditions in these institutions have caused a drain of the highly skilled from both local firms and the public sector. Combined with this, there has been a low level of permanent return of the highly skilled Afghan diaspora abroad (Kuschminder, 2011).

This skills deficiency has led to an estimated 5,970 doctors in Afghanistan corresponding to one physician for every 5,000 people according the World Health Organization (2009). So while the highly skilled continue to migrate abroad or put off return, the country is in desperate need of skills for innovation and reconstruction of the country. According to the employers that were interviewed, there are clear shortages of skills and technological change, which is why a project like the Temporary Return of Qualified Nationals can contribute so much to this process:

> *"Afghanistan has suffered a lot and at this stage most of our qualified afghans are living outside the country, the European country, American and some other countries, they are really necessary to come back to Afghanistan for a temporary base or a long term base, both options is good and important."*

Employers also explicitly stated the importance of technology in the development of Afghanistan: *"they should bring new technology from abroad here… international standard."*

In addition, participants highlighted the problem of the brain drain and how it has further impeded under development in Afghanistan:

> *"A new big problem for the under-developing country is the brain drain. There are too many going to America. The high knowledge and high experienced teacher, they came to Europe. I am also a part of such a brain drain."*

Finally, employers in both the public and private sector expressed that they find it extremely important that a knowledge transfer happens when highly skilled returnees are in the country.

> *"In my personal view – it should be done, because the transfer is important that they can use the material, resources everything that they have efficiently..."*

This section has illustrated that there is a clear need for development in Afghanistan and that through the brain gain and knowledge and technological transfer's capacity development can occur. The following sections will provide examples of how this has occurred through the TRQA.

4.2 HEALTH AND EDUCATION

This section will examine assignments that addressed the health and education sector. Technology is increasingly being used to revolutionize health care and to enhance learning in the education sector. In the TRQA, participants working in the health care sector and education sector utilized technologies to enhance the knowledge transfer process. One physician discussed his experience as follows:

> *"The most successful....was the transferring of new methods of treatment which I learned in the Netherlands, transfer to Doctors and also some lessons, some teaching through internet I made for them. And also use of good medicine, good quality, it was my success and also using of some equipment..."*

This physician highlights that not only did he use new methods of treatment, medicine, and equipment, but that he also utilized the internet for the teaching of the information. The internet provided a useful tool to aid in teaching that had rarely been utilized before.

In a second example the participant brought a new computer program to teach web design. Web design had not previously been taught at such an advanced level in Afghanistan. It required the use of a software programme that the instructor brought from the Netherlands for the teaching of the course in Kabul. It was evident from the teacher's experience that the students were not used to working with such advanced software or used to a method of learning where they also have to take their own initiative:

> *"They want that...everything should be taught for them; from A to Z. A to Z! In the beginning it was difficult. It was difficult for them to pick it up, but about a month later they started to understand, they started to understand and they started to understand how it works. For example I give web design classes and web design is a pretty big field, because you have for example web design we call CCIS that is a design style sheet, with*

that you design the style for how the webpage looks, we call it 'looking feel' and that part – for example you have about 100 tags, 100 possibilities of tags to use that and to design it. I just built a book made for them and just all the text, I list all the text what they are doing and an example of how you can use it and where you can use it and what the problem was. The student wanted that I use all the possibilities of every tag. I started to give them and that was the beautiful examples that I use, I told them for every tag you can use 100 possibilities and you have 100 tags and if you just do the math you can see about 10,000 and that's not possible...I teach you how to do it and you have to go home and use it in other ways' and at the moment they started to use it."

This example highlights how the software programmes also led to innovation in the learning process for the students. The format of learning brought from abroad was new to the students and pushed them beyond the boundaries of the lecture environment within which they were accustomed. The participant expressed that initially the students did not enjoy the course:

"the students didn't like how I give them the lectures, they didn't like it...they asked me every time: 'You should tell us everything'. I said 'That's not what a teacher is really for, they show you and you have to research it, you have to find things there by yourself'."

It was not possible for the TRQA participant to teach them all aspects of the software and as this became evident to the students, they were able to move beyond their comfort zones and learn the programme through experimentation. Through the technology the students were expanding their norms and ways of learning. Although there were difficulties in the beginning, in the end the students were satisfied with the teaching and the class, as each course at this institution underwent student evaluations. In the interview with the Director of the institution he stated:

"He [the participant] has given some good sessions for the developments of the IT department...The students were satisfied and he was able to speak in Dari as well. He had most of the students, you know they were coming, to the class, but about 70% of the students don't know English. What we did not expect from him was that he was able to speak Dari and to teach in the daily language well. This was very good."

The comments from the Director further highlight the importance of temporary return. It was vital for the instructor of the course to be fluent in Dari, and to not teach in English. This form of a course at this level had not been taught previously in Afghanistan and thus

provided the students with a unique opportunity that was only feasible through temporary return of a highly-skilled Afghan.

In a final case, the internet provided the vehicle for the learning through an internet based course taught by a participant in the Netherlands. This option is not normally available in Afghanistan as the internet is too slow and was only possible due to the specific satellite internet technology that was set-up by the participant on a previous trip. The courses and the instruction were being conducted on-line as the appropriate technological capacity was put in place:

> *"I install the program, the computer Centrum for this university, they have [a good internet] programme there. I stay in my home here [in The Netherlands] with a special program and I come in contact with the University. They accept my voice and I share my desktop with them. They have a laptop and with the projector on the walls and screen, they have my desktop and sound. What do I do? I teach, they looking."*

Through the internet course, the participant is able to bring high quality teaching to Afghanistan, while living in the Netherlands.

In addition, particularly in the area of education, the curricula often needed to be updated. One participant noted this necessity:

> *"they had a curriculum, but it was old system, but I revised it….. The new system curriculum with a new technology."*

The changing, adding-to and updating of the curricula, was then also transferred to other teachers so the innovation in the new curricula could be used by others. The knowledge that participant teachers brought with them with regard to language knowledge also helped to expand the horizons and the learning possibilities of the students:

> *"His key position is working for the curriculum of this faculty, the teaching of the – the teaching of the students and teachers and also for this Master program in future and also he has a full experience he can transfer something from abroad here. The main position is I think the teaching for curriculum, working a new system. Translation of some books from abroad for the students, he is able to translate for them, for the students. We have a lot of books, useful books, but in Dutch and German language, but our student cannot use this, and by help of [participant] we can translate it and they will use it."*

Further to amending the curriculum, in the field of teaching the fine arts, new tools and methods were brought to Afghanistan. For the fine arts, it is necessary to have the proper

equipment, such as moulds, and sculpting tools, in order to create art. The pupils were taught how to use the new tools and built their capacity in sculpting. The participant stated:

> *"because I brought some of the instrument for the stone…for the model and some of video from my work, from my studio…new experience for the student, for the teacher…when I came here I change the face, the method of the lesson, and it was very important for the teachers and for the students"*

This section has illustrated the use of innovation and technology for capacity development in the fields of health and education. The next section will explore the use of innovation and technology for capacity development in the infrastructure and engineering sector.

4.3 INFRASTRUCTURE & ENGINEERING

Infrastructure and engineering were clear areas of focus for the TRQA project as these are areas in need of development in Afghanistan as much of the infrastructure of the country had been destroyed during the years of war. Rebuilding or building infrastructure was thus of key importance to development. Given the low capacity for this work of the current Afghan population, specialists from an Afghan background were brought in from abroad to innovate and transfer technological know-how, through knowledge transfer.

In one TRQA case the participant taught teachers how to utilize the computer. This community was located in Northern Afghanistan and had the computers for over five years in the community, but no one knew how to turn them on. The technological knowledge of the TRQA participant, allowed the community members to utilize the computer for the first time. This also allowed them to explore the internet for the first time. One of the teachers who were trained on the computer and on how to use the internet highlight the impact of this experience:

> *"First learning of the computer, using of the computer, before we were typing by hand writing, but now we can able to write to read everything with computer. That is the most important thing that we learned…Also using of internet for working. That is a new thing here... we learn more things and new technology, new view"*

In the Western world it is difficult to conceptualize not having access to a computer; however, it is not difficult to envision the impact of using a computer for the first time. The technological knowledge that was transferred to this community led to innovation for the teachers and students in their ability to work and learn about the world. It is not possible to fully understand the impact that having this technology brought to this

community without further research. However, it is reasonable to assume it has profoundly affected the new computer and internet users.

Much of the technological change in Afghanistan has come from the set up and use of computers. Now there has been greater adoption of the new technology, such as the mobile phone, as is also seen in other parts of world. One participant stated:

> *"People before didn't know about the computer or using of the computer, now they are – everyone is interested in a computer like a mobile….It has really impacted the situation here."*

It is quite understandable that field of engineering, Afghanistan and the Netherlands are at different levels. The Netherlands is on the cutting edge of new technological advances while it is safe to say that Afghanistan is at least 20 years behind. For this reason, it can be extremely beneficial to bring the new technologies and innovations from the Netherlands to Afghanistan to help bridge this development gap and enable Afghanistan to catch up more quickly. One of the participants, who is an engineer, acknowledged this and discussed the transfer of technologies:

> *"The main thing was training, which I have done for the young engineers. I have brought experience from the Netherlands, the high technologies; I just come here and shared it with the colleagues, especially in the municipality and even here also."*

In some cases, the project participants took knowledge that the locals already had and enhanced the use of their knowledge. For instance, in one case, some of the engineers knew how to use a specific computer program but did not know how to use it to its fullest potential. By learning how to use the program to a greater extent, they were able to produce a product of higher quality: *"to go deeper and deeper – to produce of product with the higher quality."*

While we have seen a high level of technological change and innovation (often through knowledge transfer) with specific transfers from the Netherlands to Afghanistan, there are many other instances of innovation and change due to the specific skill set brought by the participant. We were able to witness evidence of this particularly in engineering. In the next example, we see that the environment is something that is considered and this knowledge is transferred to the engineers in Afghanistan. It is very innovative in Afghanistan to think about the environment when building.

> *"I am training three engineers regarding the environment on how to the foundation of the construction to avoid some dust… Especially to think about which kind of color we should use for the building, which kind of*

material we should use and which is better for the environment"-
participant, economist/environmental engineer

The engineering of infrastructure has been a key component in the post-2001
environment in Afghanistan as much infrastructure has to be rebuilt or built for the first
time. New technologies such as paving roads at night have helped to speed up this
process.

> *"Ok so the main achievement was to renew construction of Afghanistan
> with new technology and he achieved that....they can learn the new
> method of design, roads"*

In a second example:

> *"They have seen that during the night, they can bring the hot bitumen from
> outside the city, because our factories are always outside the city, it takes
> four hours to bring the bitumen to the city during the day, but during the
> night they can bring it in 50 minutes. Hot bitumen while paving the asphalt
> should be around 100 degree and during the night this is possible. That's
> why you can pave it nicely, but during the day, it will become cold. That's
> why they found this idea better and they are trying to do this at night,
> especially paving."*

This section has demonstrated the use of innovation and technological change in
infrastructure and engineering work in Afghanistan. It is evident that the input of
computers, the use of the internet, and the introduction of new ideas have led to changes
in the way people work in Afghanistan. The next section will examine further
innovations in the culture of work in Afghanistan that have enabled people to be more
productive and to compete in an international marketplace.

4.4 INNOVATION & THE CULTURE OF WORK

From the examples in health, education, infrastructure and engineering, it is clear that
there have been extremely helpful innovations and technological change in these areas.
Innovation in the culture of work has also been an important factor in increased
productivity in the country. The 'culture of work' here refers to the combination of
qualities in an organization and its employees that arise from what is generally regarded
as appropriate ways to think and act (Roberts and Rollins 1998). These are more 'soft
skills' that enable innovation in the way people work or see work.

We saw much evidence of the transfer of hard skills from abroad in the various sectors.
In this section, we examine the soft skills in work culture that have been transferred from
the Netherlands to Afghanistan. In the first example, we see the importance of

management and professional work environment. Engineers were trained on how to function in the global marketplace so that they would not only be able to work in a specifically Afghan setting but also with international organizations in an international setting.

> *"…there was something missing among the engineers, the management. I had to train them how to manage. There was a great gap between the office management, engineering documentation, technical documentation and site management. I have trained them how to combine those things and also some programs. .. I worked also here in the Netherlands and I used my experiences from the Netherlands as well to bring them up to the level of international organizations, how to deal with those organizations, how to be a global engineer."*

Often the innovation that was made was not through specific technical advancement but from an innovation in the way of working (habits/norms) that when brought back to Afghanistan from abroad led to increases in the efficiency of work. The concept of professionalism has played an important role here:

> *"Not only concerning my own professionalism, a lot of things I have learned in Netherlands. I have tried to teach them how they should proceed, how should be honest, how they should be at work, how they should be punctual. For instance, in Europe, they are starting 8 o'clock, they are finishing 4 o'clock and come to do their work and there is a clear outcome… you should do it like this. And besides that, there are also new techniques or maybe activities and everything.*"

The culture of working as a team or team work has also emerged from norms in the Netherlands that have now been transferred to Afghanistan through the TRQA project. While there may be some resistance to the changes in the beginning, slowly they emerge as a new work culture.

> *"Team work, team activities are important. I have learned this in the Netherlands and yes I brought it here. Always I am just trying my best to just teach them how to work as a team and this is not common here and even they would try to work individually, but I am just changing."*

As with the "hard" technology or innovation transfers, there are all of the soft transfers that are transferred through the knowledge of the TRQA participants. Innovation in a system of accounting, for instance, is knowledge that has been transferred through TRQA participants.

> *"..the system of accounting, there was also not so much there. By this time people didn't know how to record things. So I mean they were like for example sending 100 packs of cement and no one was recording where is it going and how it was used. And it`s like most people didn't know what to use. They didn't how much cement they should use and didn't know how much is the standard. So it`s like more on the professional side. It has changed a lot, so this is the biggest shock."*

An important feature of innovation is that information stays in the country. That is why it is even more important to build local capacity. In this way participants tried not to just do the new work for the locals but to oversee the process while the locals helped to create the innovative change. In the following case, new examination rules and regulations where put in to place and new teaching schedules were made that stayed with the university to be used for years to come by other teachers.

> *"So yes, so with this examination committee like they really want me to sort of to be in it, but I tried to be sort of like make them – make them organize everything and sort of just be there and sort of monitor it, so that in the end when I leave it would not be like wrong, so they could continue without me being there. With like – for example the schedule, I did that together with the vice chairman, so he is sort of still – I suppose he is continuing that with the... curriculum things – so when I sort of finished it, I sort of discussed it with the sort of the head of department where the curriculum belonged to and with the chancellor."*

This section has emphasized that innovation occurs not only through technology itself, but also through soft skills such as professionalism and team work. These 'soft' skills have also helped to create increased productivity and the ability to work in an international environment.

5. Discussion and conclusion

As Soete (2010) stated, it is often in a developing country context that innovation can take on its true potential and ability not just in the sense of technological innovation but with regard to innovation more generally. Afghanistan is a clear case where we see this. We saw in this case that grandiose technological innovations were not needed to make a big difference as suggested by Juma & Yee-Cheong (2005). We saw from the above examples that often it was the 'smaller and simpler' innovations that fit the needs of the local situation as Soete (2010) explained. For example, we saw instances where computers can and did make a big difference for the capacity of an area:

> *"Please don't through them away. Collect them and find a way to send it [the computers] to Afghanistan, because not only here in Kabul has the*

problem of computers and copy machine...but also other provinces of Afghanistan. Even we have schools in Afghanistan that they haven't heard the name of 'computer'."

This participant didn't even have the necessary basic equipment available to him for his work in Afghanistan so he brought his own equipment for the Netherlands.

"No I haven't got any computer myself, but I brought laptop from Holland, it's my own and I don't bring it here, I use it at home and I haven't any official computer from our institution."

This paper illustrated many examples of these types of needs and changes specifically in the key areas of health and education, infrastructure and engineering and work culture. In these cases, we saw that innovation and technological change led to local capacity building. There were very clear advances made in all sectors through this project. There were examples of technological change, like in the case of the new road paving system, teaching of how to use computers, and ability to collect tax revenue. At the same time innovation was made in the university curricula and the general running of the university systems. They also began to learn by example and the transfer of certain norms and values in the way of working were also extremely important, like showing up on time for work or being able to work in a team.

With the innovation and technological change, came resistance at some points in the process. In some cases there was resistance to change in the beginning and TRQA participants had a difficult time convincing those they worked with that they had knowledge that could help. After some time and perseverance by the participants, change could be implemented. This was the case in all of the sectors where participants worked, in particular with regard to the way of teaching, road paving and work culture. The changing in thinking was really a process:

"In the beginning it was difficult, because after long war in Afghanistan all our government was young or recovering. That time it was too difficult and a challenge to work with the people. After that I started training for people for this skill building for the staff, how to collect the income, how to behave with the people. I was using this training for the staff, for the capacity building of Kabul municipality...And in the beginning it was a bit strange for me, because after the war collecting income from the people was too difficult, because of violence and war, skill building of the people was low. After that I could improve this system to easily collect all the income and also the issue of the license for the shop keepers, for the business it was the best way for achievement. At that time 8 per cent of income of municipality was not in our labor force. 2 percent we were able to collect at the time. After working and training ...we could collect 98

percent. And also raise awareness through newspaper, advertisement, about the Kabul municipality activities I learned train them."

This paper has illustrated the importance of transferring knowledge from highly qualified nationals abroad to the home country and how this can have a particular impact in the case of a conflict ridden country with severe deficiencies in capacity, technology, and infrastructure. The paper has mapped the needs of the country, the expectations of employers and colleagues in the specific TRQN project and the delivery of the transfer of knowledge for innovation and technological change and therefore building capacity.

The needs and expectations of the participants receiving the knowledge transfer where clearly stated. They needed more capacity, training and tools. In particular, organizations have requested new technologies as they recognize the importance of technology in the advancement of capacity and innovation. At the same time, the participants coming to Afghanistan saw themselves in a perfect situation to institute change. Many of them had previously worked in Afghanistan prior to becoming refugees. The participants were both young and older but all had substantial knowledge of the language and culture to put them in the best possible position to introduce change.

The motivation for most of the participants to return was simple. They felt that Afghanistan was still their home and had a deep love and respect for the country. They also felt an obligation to help in the rebuilding of the country. The TRQN project gave them the perfect ability to do this as it actually gave them a high enough salary and other important things such as insurance to allow them to work in the country. Without these components, many of the participants would have not been able to return and contribute to innovation and change.

As stated in the introduction, some of the smallest innovative changes can make the biggest difference. In most of the cases stated above, the innovation was not large and complicated but it was indeed transformative. For instance, paving roads at night or learning to show up are time for meetings are not wildly innovative but have made an enormous difference in getting things accomplished in Kabul.

In many cases there was a "training of the trainer" concept implemented so that the innovation could be spread to more people in less time. At the same time, it was clear that the changes and innovations that were made were often through technology and ideas from abroad that were brought back by the highly skilled returnees. One participant moved all over the country training trainers and transferring knowledge to different parts of the country. He has trained 30 women and 30 men to train others.

"I brought a new system in [provinces] of Afghanistan and we can see it in all the fields, all experts that came to Afghanistan, they brought some

changes. Now you see some new technology in different field. I can say it's very useful, because we are recovering from war."

In some cases large changes had to be made, but in others, there were small changes that led to big improvements.

"Because you see like a lot of small things, which are very obvious for me, and they are like 'oh wow I have never thought of that or look at it that way'."

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