Position Paper on Innovation Challenge Funds
Lessons from the District Delivery Challenge Fund (DDCF) of the Sub-National Governance (SNG) Programme in Pakistan
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Executive Summary

Challenge funds have been used to promote a variety of development objectives. Their popularity has grown in recent years, but evidence of impact is patchy and variable. DFID’s Sub National Governance (SNG) Programme incorporated a District Delivery Challenge Fund (DDCF) that successfully drove innovation and service delivery improvements in Health and Education in Khyber Pakhtunkhwa and Punjab in close partnership with provincial and district government. Using evidence from the DDCF, parallel sector wide programmes in Pakistan, and wider literature on the use of funds, the paper seeks to identify the factors, which differentiated DDCF and contributed towards its success.

The idea of a Challenge Fund is to de-risk innovation and piloting. It can only be appropriate as an approach where counterpart administrations have fiscal space to take successful innovations to scale. In Pakistan, the SNG programme supported provincial administrations to create fiscal space for improved service delivery; increasing chances of successful DDCF pilots being taken to scale. SNG financial management work provided an intra-programme synergy not possible in a sector specific programme. DDCF’s manageable size ensured a high level of attention to detail both in design and implementation. This in itself increased the chances of pilots being successful in responding to and meeting local needs.

DDCF prioritised evidence and results. Large innovation funds risk setting up perverse incentives whereby implementers are encouraged to devote more time to ensure effective administrative process, oversight and achieving arbitrary disbursement targets at the expense of understanding the political economy of the environment in which the fund operates. Downward pressure on “administrative overhead costs” ignores the need for contextual awareness, attention to detail around political engagement and pilot design. Pressure from donors to disburse funds rapidly also leads to burn rates being prioritised over quality of design and in particular the design of Monitoring and Evaluation Frameworks, which may partly explain the dearth of evidence of impact from some major sector funds. A robust monitoring and evaluation framework and consideration of scale up potential was an integral part of the DDCF application process. DDCF team members worked with government and applicants to ensure applications were potentially scalable and were capable of monitoring and evaluation. The DDCF operations manual included guidance on scaling up along with monitoring and evaluation, which was mandatory for successful applications.

Public sector service delivery is a political as well as a technocratic process. Careful consideration must therefore be given to the political engagement strategy and the modalities around the promotion of a Fund and the way in which it engages with partners in government. Just because an idea is good and effective does not mean it is politically feasible for a scale up. DDCF was part of a governance programme as opposed to a sector specific service delivery programme. This enabled it to operate with deeper and clearer understanding of local government process and decision making – which ensured it achieved a higher level of visibility, engagement and ownership by key decision makers in provincial and district government beyond the concerned departments.

Careful adaptive design is necessary for delivery of processes that reflect context and the political economy in which the Fund will operate. Whilst the original DDCF design drew on best practices in fund management, it was also the product of an iterative consultation process that engaged provincial and district government representatives, sector experts, and implementers of other health and education challenge funds in Pakistan. The DDCF team incorporated lessons learned in other contexts both in Pakistan and globally. Most importantly, the team was able to benefit from the knowledge and expertise of the wider SNG team – which meant that DDCF was designed to maximise the likelihood of pilots being taken to scale by government.

Transparent processes for processing and evaluation of applications resulted in very few disputed decisions, and effective sharing of information on awards, as well as rapid feedback on applications enhanced the integrity of the process, in turn minimising the administrative and management burden for the fund. This meant the DDCF team had more time to devote to effective marketing and establishing strong relationships with partners in government and grantees. This ensured they received appropriate support through the grant process and subsequent implementation.

A joint marketing process with government maximised exposure of the DDCF to potential applicants and ensured that the fund was able to pick from a high quality range of applications. Both provinces sponsored the formal launch of each round of the DDCF which formed part of a dedicated marketing campaign designed to maximise credible applications.

Terms for each round were carefully defined in consultation with government providers of health and education services. This ensured that the DDCF generated demand driven ideas that were closely aligned with the public purpose of the district governments and likely to be appropriate to context.

Ensuring an iterative and adaptive process in implementation meant that DDCF was able to adapt based on the lessons that were learned in the first round of funding. Additionally, this flexibility meant that the DDCF was able to respond to the political economy in the provinces. For example in Round 2 the DDCF rules were adapted to allow District Administrations to submit their applications for DDCF and deliver their own pilots.

Strong partnerships with government and early and widespread dissemination of results increased the appetite of government to adopt promising pilots – an excellent example of this was showcasing DDCF innovation at the Punjab Information Technology Board’s innovation fair in Lahore – which exposed DDCF pilots to a wider audience and market. At a more basic
level, direct engagement of district government ensured pilots were closely aligned with the most urgent needs and subsequently designed with complete knowledge of the procedures that needed to be applied to ensure take up and adoption by government, including how to ensure they were able to be incorporated within local government planning and budgeting processes to maximise the chance of take up.

Aside from the immediate results from the fund itself, the DDCF’s approach, methodology and lessons have influenced the Government of Punjab’s approach to delivering the Punjab Population Innovation Fund (PPIF). A modest investment by DFID has not only delivered successful pilots, which changed the quality of public services at point of delivery, it has also influenced the management and implementation method for a larger indigenous innovation fund.

Innovation Funds are designed, implemented and evaluated in different ways. The DDCF was a successful hybrid model that was deeply embedded in local government and ideally placed to support pilots optimised to the needs of district government.
Introduction - The Problem with Funds

Challenge funds are increasingly popular delivery mechanisms employed by international development partners and aid agencies. The Department for International Development (DFID), the UK has been at the forefront of introducing various kinds of challenge funds to attain its development objectives. Foley (1999) reports that DFID started using challenge funds as early as 1979 under their ‘reinventing government’ policy agenda. By 1996/97, there were 56 government challenge funds, disbursing GBP 3.39 billion. University of Bath (UoB) (2013) reported that in 2013 DFID was running close to 40 challenge funds with some being managed in partnerships with other agencies. This figure includes over 20 challenge funds that were being managed by other donor agencies, including Australian Agency for International Development (AusAid), Swedish International Development Cooperation Agency (SIDA) and United States of America Agency for International Development (USAID). The combined value of these funds exceeded a billion pounds. Between 1999 to date, DFID alone invested over GBP 850 million in Challenge Funds.

The evidence above suggests that the use of challenge funds continues to grow; however, there is relatively little research available on their approach, design, cost, impact and usefulness. The evidence is even weaker on measuring success of challenge funds as typically these funds dissolve as soon as interventions are over, resulting in limited and untraceable adoption and scale-up.

The Sub-National Governance (SNG) Programme’s DDCF objectives went beyond innovation. Pilots focused on improving service delivery and enhancing governance. A key parameter of success was adoption by the public sector and subsequent scaling up. This paper aims to contribute to existing literature by looking at the lessons learnt from the DDCF, which is a component of the DFID Pakistan’s SNG programme that is currently being implemented (2013-2018) in the Punjab and Khyber Pakhtunkhwa (KP) provinces (See Box 1). The first part of the paper compares and contrasts the DDCF’s process and methodology with other funds to make recommendations for improvements effectiveness of future challenge funds. The second part of the paper provides a synthesis of the pilots that were funded under the DDCF. Further detailed analysis of each pilot is provided in an Annex. The DDCF has been widely successful in both provinces and early evidence shows that the government is not only adopting and scaling up the experiments, but also applying the DDCF process to implement reforms in other key areas.

District Delivery Challenge Fund Pakistan

Sub-National Governance (SNG) Programme is a 5-year DFID funded programme that works in the Punjab and Khyber Pakhtunkhwa provinces of Pakistan in the areas of public finance, governance and innovations. The programme aims to improve service delivery capacity of these sub-national governments to deliver public services that better meet the needs of citizens. The District Delivery Challenge Fund (DDCF) is a sub-component of the SNG programme and has used a competitive grant methodology to identify and test innovative solutions that address the challenges of poor quality and inadequate governance in public education and health sector. The DDCF on purpose has been aligned with the broader goals of the SNG programme and seek to embed solutions within the mainstream working of government departments. DDCF to date has launched 2 funding rounds and has allocated funding to 8 experiments in education and 6 in the health sector. The total financial size of the fund was GBP 5.4 million out of which approximately 50% has been allocated.

District Delivery Challenge Fund (DDCF)

At the beginning of the Pakistan Sub-National Governance programme’s implementation, the DDCF was established to fund innovative pilot projects aimed to improve the delivery of basic services in Khyber Pakhtunkhwa and Punjab. The first two funding rounds were focused on the education and health sectors and funded a total of 14 pilots. However, after the second round, and prior to the full availability of results, the remaining funding for the DDCF was redirected to other priority areas within the wider SNG programme.

Although the DDCF initially started out as a £5.4 million challenge fund, after all funds were disbursed, it was less than £4 million. At that scale, the DDCF was considered a relatively small fund. DFID operated over £10 million of worth education and health innovation funds, in Pakistan. The DDCF projects were restricted to a maximum of 18 months and ranged from £50,000 to £250,000. In comparison, the grant size under Ilm 2 in Pakistan could be as high as £2 million and for health could go up to £500,000.

Although challenge funds of this size typically bear overhead costs that are greater than 30%\(^1\), the DDCF’s effective fund management and emphasis on delivering value for money resulted in overhead costs of about 24%. The costs were managed by a small management team that controlled the impacts of other overhead costs, such as launch and marketing events were held in partnership with government using their facilities which did not attract any costs.

\(^1\)UoB (2013)
Comparing the DDCF with other Funds operating in Pakistan

The Table 1 below compares how the DDCF, the Global Girls’ Education Challenge (GEC) and the second phase of the Pakistan Education Innovation Fund (Ilm2), all of which are operating with Pakistan, fulfil the criteria of a challenge fund.

Table 1: Comparison of Challenge Funds in Pakistan

<table>
<thead>
<tr>
<th>District Delivery Challenge Fund</th>
<th>Girls Education Challenge</th>
<th>Pakistan Innovation Fund (Ilm2)</th>
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<tbody>
<tr>
<td>Matched Funding</td>
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<tr>
<td>DDCF provided majority of funding for pilot projects. Private sector grantees required to make a 10–15% contribution, bringing an added incentive for the projects' success.</td>
<td>Although the GEC had multiple funding windows each with a different approach to match funding, the variations of match funding included: 'in kind' cash contributions and matching funding of at least 50% of the requested grant.</td>
<td>Ilm2 does not require match funding. However, the programme does have a capacity building component around its M&amp;E, which provides a subsidy to the incubators’ own contribution in kind.</td>
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<td>Explicit Public Purpose</td>
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<td>DDCF created a terms sheet that outlined the specific intervention areas, which focused on improved access to primary education and healthcare. The criteria required innovations to be adaptable and scalable by the public sector.</td>
<td>GEC innovation window was designed to address a gap in education delivery and pilot new approaches to enable marginalised girls to achieve education outcomes that improve their life chances.</td>
<td>Ilm2 grants aimed to increase access, enrolment and retention for the improvement of learning outcomes for Pakistani children by taking proven innovative ideas in education to scale, and develop the right business and commercial capabilities in Pakistan that can continue to support education innovations beyond the life of the programme.</td>
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<tr>
<td>Inter-agency contract</td>
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<td>A grant contract was signed between the DDCF fund manager and the grantee. Prior to this agreement, the grantee was required to sign a MOU with the relevant public sector entity that was expected to support the scale up of the innovation.</td>
<td>While some GEC grantees had a relationship or formal agreements with the government or other NGOs doing similar work in education in the country, this was not a requirement in this fund.</td>
<td>The fund manager engaged with the private and NGO sector in Ilm2’s first year, which is a key element of the programme’s implementation plan. The fund manager will engage government actors in the second year of the programme.</td>
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<tr>
<td>Competitive selection</td>
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<td>The grantee selection process in both the first and second funding rounds was extremely competitive. After reviewing the grant applications, the DDCF agreed to fund a total of 7 grants (3 in Round 1 and 4 in Round 2) in Punjab and 7 grants in KP (5 in Round 1 and 2 in Round 2).</td>
<td>The GEC’s call for applications clearly outlined eligibility criteria, which included that projects must benefit at least 14,000 marginalised girls over three years.</td>
<td>To date, there has only been one cycle of grant applications in the in which over 150 organisations submitted expressions of interest. Short listed applicants were then invited to clarify the programme concepts and provide advice for the development of proposals to be submitted in the subsequent stage of the tender. Three organisations were eventually selected to receive funding.</td>
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1 In Punjab, the DDCF received 276 applications for funding in Round 1 and 210 applications for funding in for Round 2. In KP, the DDCF received 200 applications for funding in Round 1 and 100 applications for funding in Round 2.
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<tr>
<th></th>
<th>District Delivery Challenge Fund</th>
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</thead>
<tbody>
<tr>
<td>Open selection</td>
<td>DDCF advertised funding opportunity in media and hosted launch events at the provincial and district levels. The selection criteria and requirements were presented at these workshops and all information was also made available on the website.</td>
<td>GEC pilot projects were selected through an open and transparent process. The pilots were assessed on their ability to implement new effective ways to encourage girls to attend school, ensure they continue education and help them have access to a good quality education.</td>
<td>There was an open selection process for both scale up grantees and incubators through which the fund manager conducted outreach included taking out in local newspapers, social media, word of mouth for the scale up grantees as well as an identification and engagement with eligible and undertake engagement with eligible organisations for incubators.</td>
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<td>Autonomy in implementation</td>
<td>The Grantees were allowed full autonomy to design their implementation work-plans and strategies, however, DDCF worked very closely to guide the grantees of their own objectives and took a hands on approach to establish ‘theories of change’ relevant for the purpose.</td>
<td>GEC grantees were provided with the space to design their projects. However, the fund manager oversaw these activities and guided the grantees to effectively deliver projects.</td>
<td>Ilm2 fund manager has given the grantees autonomy over their staffing and programme decisions. They have prescribed M&amp;E requirements, which we need, so some of their data collection has been outsourced to a third party.</td>
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<tr>
<td>Risk sharing</td>
<td>Private sector grantees made cash contributions, while the NGOs/CSOs and public sector made in-kind contributions to mitigate risk and ensure financial discipline. Whereas, the grantees were not pressed to deliver success only and it was made clear that DDCF intends to pilot innovations some of which could fail as well. The ‘hands-on’ management approach of DDCF allowed incorporation of lessons as they were learnt for improvements during the course of project and hence in turn increased the chances of success.</td>
<td>Through its funding of the Step Change Window, Innovation Window and Strategic Partnerships, the GEC required match funding from grantees to share the financial risks. Also, unlike the DDCF, the Innovation Window grantees (the pilots) were asked to deliver impact in the same way as the large scale, non-pilot projects from the Step Change Window.</td>
<td>Based on the first funding round, Ilm2 does not have any risk sharing mechanisms.</td>
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DDCF’s Approach Reflects Recommended Best Practices

**Fund Management and Monitoring**

The majority of challenge funds are operated through a contracted-in fund manager whose core responsibility is proposal screening, financial and risk management. The donor often contracts out the responsibility for monitoring and evaluation to another service provider. Although the rationale behind this is partly due to the fund manager’s capacity constraints, it also ensures the presence of an independent monitoring body. However, the evidence on monitoring is mixed as some challenge funds impose their own self-contained monitoring and reporting mechanisms, while others rely on the grantees. The DDCF has a clearly defined process and a robust monitoring and evaluation mechanism, linked to M&E frameworks defined by the grantees at the application stage. The monitoring and evaluation within the DDCF relies on a hybrid strategy where both internal and external agents are involved, which offers a system of checks and balances. Additionally, each pilot is designed with an in-built evaluation criterion, which is a feature that is not common across other challenge funds.

The literature suggests that a ‘hands-on’ approach to challenge fund management, as opposed to ‘light touch’, is more beneficial primarily as it controls for the Principal-Agent Problem, something that has been borne out in the DDCF. The DDCF’s use of this type of management is exemplified in its team structure, which included a National DDCF Coordinator as well as a Challenge Fund Manager for each of the provinces (KP and Punjab) to ensure that managers were able to provide the ‘hands-on’ approach that was required. The ‘hands-on’ management approach enabled the DDCF’s Challenge Fund Managers to be in close contact with both the grantees who were delivering the projects, which allowed them to monitor and observe grantees’ progress within agreed time lines and budget. Although this ‘hands-on’ management ensures that greater discipline is practised by grantees to improve projects designs, it also means that changes can be made as needed to improve project design and its delivery.

**Effective Information Sharing**

Although some Challenge Funds use websites as a means for advertising and providing feedback to grantees that applied for funding, in general they do not provide information about application and acceptance rates. This lack of transparency has led to complaints from unsuccessful grantees, which in turn also restricted their ability to learn and obtain future funding as they are unable to receive feedback on how they might have improved their applications. The DDCF developed a website that included information on the challenge fund’s thematic focus, application procedures, evaluation criteria, results for each funding round, feedback for unsuccessful candidates, pilot project’s implementation status, fraud report hotline and documentaries. With all of this information in one, easily accessible location, this allowed the DDCF team to focus their time and efforts on supporting the pilot projects’ implementation instead of responding to questions on these matters.

**DDCF: Key Lessons**

A key feature of the DDCF has been its ability to build on the learning from the education pilot projects Round 1 to strengthen the processes and requirements for health pilot projects in Round 2. The DDCF’s adaptability has enabled it to respond to both changing donor requirements as well as the surrounding political environment. These iterative and flexible qualities have been a central component of the DDCF’s success.

**Supporting Evidence-based Reforms**

- The DDCF has been successful in identifying viable approaches to improved service delivery to the extent that most of the pilot projects have led to public sector adoption and scale-up. More specifically, the DDCF has been able to:
  - Impact policy space by generating evidence on what works and what does not;
  - Develop evidence for alternative options for public sector to improve governance, monitoring and accountability;
  - Enhance citizens’ experience on public delivery of basic services;

- Reduce the risks inherent in private sector partnership with public sector delivery units.

**Clear and Easy Communication Adds Credibility with Partners**

At the launch events of funding rounds, the DDCF management team provided potential applicants with clear communication on the guidelines of the application process and relevant time lines. Additionally, the DDCF website included detailed steps on the process for submitting applications for funding as well as clearly defined the evaluation criteria proposals. These clear lines of communication not only strengthened the respect that the grantees had for the process, but also supported the development of a credible reputation for the DDCF. As a result of this effective communication policy, there were only a handful of complaints about the decisions made out of more than 600 applications from the two funding rounds in Punjab and KP. For those applicants who were dissatisfied with the results of their applications, the DDCF had an established formal appeal procedure in place to respond to their concerns. The establishment of these types of formalised and well

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2. UoB (2013)
communicated processes is an important lesson that should be considered for future challenge funds as it not only improves time management by writing off the need to approach multiple individuals for the same set of questions repeatedly but it also allows them to focus on the engagements that will support the sustainability of the projects.

However, these clear lines of communication and strict time lines are not a feature in all challenge funds. For example, the Health and Nutrition Innovation Fund (HANIF) in Pakistan has a rolling deadline for funding applications and applicants are encouraged to continue to apply beyond the deadline. The DDCF has demonstrated that it is crucial to have clear processes as well as formal procedures to voice concerns about the delivery of the challenge fund to avoid disputes that can threaten the reputation of the challenge fund as well as hinder the programme’s sustainability.

Simple and Demand-driven Ideas Work

The thematic focus on education and healthcare delivery in Round 1 and 2, respectively was driven by evidence that there was a need to strengthen the delivery of public services in these sectors. To obtain a clear understanding of the gaps in service delivery, the DDCF team conducted field interviews in KP and Punjab to identify the focal areas in which citizens seek improved service delivery and assessed whether they matched the government’s priorities in education and health. The alignment of citizens’ needs with government’s priorities meant that the pilots’ focus areas were relevant and effective. For example, the DDCF team found evidence that there had been a strong emphasis in monitoring missing facilities in schools instead of focusing on achieving learning outcomes. Additionally, there was a focus on ensuring that teachers were physically present in a classroom and much less of an emphasis on how the teacher performed. As a result of this review, it became evident that there is a strong value in meeting parents, students and teachers. Similarly, when the DDCF conducted an assessment on citizens’ health requirements, it became clear that the improvement of Basic Health Units (BHUs), rural emergency services and the distribution as well as availability of medicines needed to be strengthened. The DDCF worked with the government to refine the selected pilots’ designs to ensure that the pilots responded to the public health challenges that the DDCF sought to address in Round 2.

Flexible, Adaptive Pilots are more likely to Succeed

The DDCF has revealed that flexibility and adaptability within challenge funds means that pilots could apply lessons learned to strengthen their projects and thus increase the likelihood of their success. To foster innovation, the DDCF team incorporated the lessons it learned in the first funding round and early pilot projects to refine its approach going forward. For example, in Round 2, the DDCF team worked as both a technical partner and a bridge between the public sector counterparts and grantees. At each stage of the pilots’ implementation, the progress and any products that had been developed to support the pilots were shared with the public sector counterparts to review and provide feedback. Where necessary, adjustments were made to the project’s implementation. This approach was particularly useful because it ensured that grantees stayed on course to address the problems that they set out to address as per their grant application. The close involvement of the Challenge Fund Manager with the grants meant that pilot projects and grantees received sufficient oversight that would enable them to identify and address any challenges as soon as they arise. This support means pilot projects were more likely to be successful, thus ensuring value for money.

Under the Har Zindagi E-vaccination project, a SMART vaccination card was introduced to assist medical practitioners who were administrating vaccinations trace children’s vaccination records. Although the introduction of the SMART vaccination card did lead to the pilot slightly exceeding its agreed timeline, the cost of the grant remained unchanged. Throughout the implementation of Har Zindagi, the DDCF management team encouraged the grantees to report their learning on a weekly basis as this learning could make the pilots more effective. Alternatively, any issues that were distracting from the pilot’s performance could be addressed immediately through the project’s flexible design. This resulted in revision of project designs during the implementation phase and hence increased the probability of success. Another example of the benefits of flexible adaptive project management is the Tele-diagnostic/medicine project. The district government originally designed the project based on procurement of technology and self-management. DDCF team realised that this implementation methodology would suffer from major issues and could jeopardise the entire pilot. The flexibility to redesign implementation even after signing of the contract allowed DDCF to introduce a more innovative approach that worked on a per patient service cost basis with the technology partner. This resulted in better implementation and stronger technical support. It also saved time as government procurement processes for technology would have wasted 2-3 months.

Technology Infusion Consciously Managed as an Aid rather than a Driver of Change

Technology is often used to fill gaps in service delivery. However, the technology that is designed to improve service delivery is usually managed through Information and Communications Technology (ICT) centres or laboratories. Under the DDCF, pilot projects were encouraged to establish workable solutions on the ground and once these had been proven effective, grantees were then supported to automate the solutions. For example, the initial proposal by the District Government Hafizabad was to set up a fully integrated ambulance control room. However, the DDCF advised that actual functioning of the ambulances was a bigger challenge. As a result, the government initially ran a test pilot using a manual system to run ambulances across the district for EmONC. Once the flow, location and staff management were perfected only then the technology solution was designed. The technology solution in operation now is specific to the context and responds to the real challenges.

Disseminate Results Early to Generate Interest

In mid-2016, the DDCF organised an Innovation Showcase, which was the first of its kind, in Punjab. The DDCF partnered with Punjab Information Technology Board (PITB) and showcased the innovative products that have been developed through its funding. A range of stakeholders, including policy
makers, service providers and citizens, were invited to attend the showcase. This event provided the DDCF and its team an opportunity to present its evidence on how to design successful challenge funds. Through this information and knowledge sharing, the DDCF raised an awareness about innovation funds and provided grantees with insights on how to make their interventions more successful. As a result of this information sharing across Punjab, PITB, Finance Department and the Planning & Development Department (P&DD) are in process of designing innovation challenge funds. The P&DD launched the Punjab Population Innovation Fund (PPIF) as a Section 42 Company by P&DD. SNG’s DDCF team sits on the technical committee, advising the fund design and process based on the DDCF process. The first-round of PPIF has committed PKR 200 million.

The early dissemination of results had a similar impact in KP. For example, the Health Department in KP has created an organisational structure to expand the use of the IDSRS model across the province even before the closure of the project. Similarly, the provincial government has established a task force, headed by the Senior Health Minister, to adopt, among other things, the diabetes control model tested under the DDCF for the whole province.

Political Economy Matters
A key element of ensuring a pilot’s success and scale up is the assessment of the political economy. As government stakeholders are central to supporting the adoption of pilots, it is crucial for the grantees as well as the DDCF management team to understand the existing political structures. For example, throughout its work in Punjab, the DDCF team maintained a strong link with the Punjab Information Technology Board (PITB), which is one of the key public sector entities working on innovations. All technology related solutions were presented to the PITB multiple times to develop their interest and feeling of ownership. Additionally, this regular engagement assisted the PITB in incorporating DDCF pilots into their existing programmes. This is best exemplified in the Har Zindagi E-vaccination pilot, which was designed as an upgrade of the PITB’s existing system and therefore, its adoption was natural. It is evident that targeting key stakeholders and presenting them with evidence that demonstrates results and success is a key component of encouraging change and promoting public sector investments for sustainability. In KP, both grantees are government entities and they keep political leadership engaged in the activities of the pilots. This has helped in generating and sustaining momentum for uptake as indicated earlier.

Public Sector Counterpart Engagement
Although most of the above features of the DDCF are evident to some extent in other challenge funds, one key factor that makes the DDCF unique is its strong linkages with the public sector counterparts. The DDCF made it mandatory for grantees to sign an agreement or an MOU with the relevant public sector counterpart before the inter agency grant agreement is signed. This was an extremely important part of the process as it ensured some form of sustainability and ownership from the design stage of the pilot.

Moreover, the DDCF’s engagement with District Governments in Punjab and provincial level entities in KP as grantees is another distinctive feature. This approach led to the development and testing of a new methodology of working with government directly rather than through the private sector (Round 1). The experience clearly showed that compared to grantees in the private sector, government sector grantees could develop better solutions to social sector issues provided that they receive the proper support in the design and implementation stages of the innovation process. In Punjab, this type of engagement also resulted in increased interest from the private sector to partner with the district government as this partnership provided an opportunity to lower the risk of investments. Overall, the DDCF employed an inclusive approach for engagement with public sector, which resulted in strong ownership of interventions. As a result, the government was fully aware of the DDCF and a trusted partner in the decision making process. The government’s close involvement in the process increased the likelihood of project’s adoption. Integrated Ambulance Services pilot project that was implemented by the District Health Department in Hafizabad, Punjab was one of the examples of Public Sector Counterpart Engagement.

Strengths and Challenges of DDCF Process

One of the main strengths of the DDCF has been its robust and transparent process. Although the process was developed at the beginning of the DDCF, there was still a level of flexibility that permitted adaptation within the process to improve it between first and second round. It is essential for this type of adaptability to be allowed and encouraged when designing challenge funds as this allows for the fund to grow, develop and improve. The clearly defined processes of DDCF established strong linkages between one step and the next, which enabled both the Challenge Fund Manager as well as the grantee to understand what was involved at each stage of the process. These features ensured strong traction for each pilot in the public sector, which led to their subsequent adoption and scale-up. The process also ensured adequate political economy management that is usually overlooked by most challenge funds as they take a ‘light touch’ approach. Table 2 shows the strengths & challenges that were identified in the DDCF process.
### Table 2: Key lessons from DDCF process.

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<th>Process Component</th>
<th>Strengths (S) and challenges (C)</th>
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| Pre-Launch: Prior to the launch of each funding round, the DDCF team conducted in-depth stakeholder meetings with the provincial/district decision makers and citizens to identify a clear thematic focus for the funding round. These discussions informed the requirements that were formally captured in the ‘Terms Sheet’, which was shared widely with interested applicants. The DDCF held focus groups with potential applicants both at the provincial and district level to create awareness and response to any queries. A database of potential applicants was electronically maintained. | • The amalgamation of citizen’s demand and government priorities resulted in very specific thematic focus for the fund resulting in strong need and ownership across the chain of agents. (S)  
• The pre-launch meetings resulted in a large number of applicants aware and interested to apply. (S)  
• Broader pre-launch dissemination enhanced the potential adverse selection problem of acting as a magnet for bidders unable to secure funding elsewhere. (C) |
| Launch: The DDCF held a launching ceremony for each funding round at the provincial and district levels. Invitations were sent to all potential applicants identified during pre-launch activities. The launch events were followed by formal issuance of ‘call for proposals’ in print media. | • Strong communication tools increased the level of interest and attracted strong competition. However, this also attracted ideas less likely to be successful. (S&C)  
• Transparency in processes ensured clarity to all potential applicants. (S) |
| Idea Screening: Applicants had 4 weeks to submit their ideas through a simple 2-page form downloadable from the SNG website. Hard copies of these forms were placed in the District Coordination Officers’ (DCOs) offices. Applicants submitted the forms electronically or in hard copy and received a confirmation email. Prior to the evaluation of concept notes, the DDCF team developed evaluation criteria by reviewing other challenge funds and discussing ideas with the SNG technical working group. 3 internal and 1 external (sector specialist) evaluators reviewed each concept proposal. The top 40 ideas were then further reviewed by other work stream advisors of SNG and also shared with public sector counterparts and other sister programmes. The combined feedback was then presented to SNG’s Technical Working Group, which was headed by the Secretary Planning, and viable ideas were short listed for full proposal stage. All unsuccessful candidates were sent a response detailing the reasons for their ideas not being accepted. | • Submitting an application was easy and required no significant cost. (S)  
• Each idea was individually scored on a pre-defined rubric and also externally evaluated, this resulted in strong evidence for short listing. (S)  
• Specific feedback on reasons for rejection was provided to all applicants. This approach increased transparency, however, at the same time invites discussion arguments that draw a lot of time in responding. However, this was migrated well by providing specific feedback and hence not many complaints were launched. (S&C)  
• Early ownership and clarity of public sector counterparts is established. (S) |
<p>| Proposal Development: The short listed candidates were provided with a complete application pack and invited to attend a workshop that provided a guideline on the project proposal cycle and required documentation. A second workshop enabled short listed candidates to present in their ideas to SNG, relevant department and Sector Expert who provided feedback. | • The feedback provided by DDCF/ Fund Manager and Sector Expert ensured adequate transformation that could mould the project design to support theory of change. For example, the vaccination pilot was modified to include vaccinator duty rostrum and child specific tracking. The Ambulance pilot was run on a test basis manually and then solution was automated. (S) |
| Evaluation of Proposals: The SNG team, in conjunction with a sector expert, conducted an initial evaluation of the proposals. The DDCF also established an evaluation committee, which was headed by the Secretary of the relevant sector and included other sector experts and representatives from sister programmes. The short listed candidates made detailed presentations to the evaluation committee, which shared feedback with grantees. | • The rigorous evaluation process and the direct feedback given from evaluation committee acted as a catalyst to improve project design and also establish ownership with public sector. (S) |</p>
<table>
<thead>
<tr>
<th>Process Component</th>
<th>Strengths (S) and challenges (C)</th>
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</tr>
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<td>Setting up Fund Flow: The fund manager and the grantee signed an inter-agency agreement that covered the financial relationships, reporting requirements, procurement regulations, maintaining records and asset registers and contract amendments. All templates were provided as Annexes to the grant agreement.</td>
<td>• A comprehensive inter-agency agreement allowed the grantee to be clear on all processes in advance. Consistent templates allowed all reporting elements to be identical. (S) • Initially the process involved payments based on milestone, however, it was also tracking expenditure – this resulted in some delays. (C)</td>
</tr>
<tr>
<td>Monitoring of Implementation: The DDCF team developed a robust monitoring framework with monitoring at provincial level and field verifications. Formal updates on progress were submitted through quarterly reports; however, weekly and monthly monitoring data was also captured.</td>
<td>• High frequency of monitoring and hands-on management allowed refinements in project designs while implementing, which led to stronger results. (S)</td>
</tr>
<tr>
<td>Capturing of Results: Each grant had an elaborate results framework and a defined quarterly milestone schedule. In addition, stories of change were captured during field visits.</td>
<td>• All pilots have clearly defined outputs that are not only tracked for payments, but also to display results. (S) • Each pilot also has a pre-defined evaluation assessment that is shared with the government counterpart. This is used to identify what features of the pilot worked and which did not. The design is then revised based on the learnings. (S)</td>
</tr>
<tr>
<td>Dissemination &amp; Demonstration: Each project/pilot had a defined communication and branding strategy. Overall as a fund, the DDCF had an elaborate communications strategy.</td>
<td>• DDCF showcased its interventions publically to a range of stakeholders. This wide scale demonstration worked toward creating better understanding and traction of project activities. (S)</td>
</tr>
<tr>
<td>Exit Strategy: Each pilot was required to have a pre-defined exist strategy and the grantee and fund manager worked closely to attain the goal of scale up and adoption.</td>
<td>• Early implementation of exit strategy resulted in traction and adoption of pilots. (S)</td>
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**Weaknesses within the DDCF**

While the DDCF has been successful, it also has a number of weaknesses that created challenges for its implementation. One of the key challenges has been a lack of clarity on DFID’s risk appetite. In general, the DDCF has been risk averse when approving grant proposals for funding. As a result, there was a strong need for the DDCF to establish the confidence in all stakeholders in the early stages of the programme. The lack of confidence in DDCF was exacerbated by the requirements to provide large cash advances to some of the grantees in Round 1. As the pilot projects matured and generated evidence of early results, these concerns were reduced. Although the concerns around the risk for funding pilot project activities was reduced, it persisted throughout the implementation of Round 1 and Round 2 and may have been a factor in DFID’s decision to redirect funds that had initially been earmarked for at least one additional funding round, to other components of the wider SNG programme. This decision indicated a prevailing lack of confidence and uncertainty around these types of programme delivery mechanisms.

Secondly, DDCF failed to finalise the template for the contract agreement between the Fund Manager and the Grantee before the Round 1 grants were approved. It took over 3 months for Fund Manager and DFID to agree with the language of the contract. The Grantees were not involved in this process. Consequently, delays were experienced in starting off Round one pilots as grantees were hesitant in signing off an alien document that they had not seen before they submitted their application. Learn While You Teach and Learning Boost Pilots missed out on school start dates due to this delay. For Round 2, the draft of the contract was shared with the short listed applicants as part of the full application process and hence the grants were signed off very quickly.
The third weakness in the structure of the fund was the change in the financial monitoring requirements a few quarters into the implementation of Round 1 grants. DFID requested the DDCF to closely monitor input costs and net off expenditure when making quarterly payments, which created a lot of challenges as the original contracts with the grantees were based on payment milestones. However, after numerous meetings with the DFID SNG team, it was agreed that the netting off will be done towards the end, while making the final payment to the grantee.

Other challenges stemmed from the engagement with Pakistan’s public sector. While these interactions helped to increase traction for the DDCF, it also exposed it to challenging political economy dynamics. The DDCF pilot projects provided strong evidence to challenge the status-quo, threaten vested interests of certain power groups and question parallel interventions. These issues were exacerbated by high staff turnover within the government as any ‘buy in’ from government actors could be lost with changes in personnel. Amongst that all, a key lesson from the DDCF’s success is attributed to the hands on management approach with the emphasis on the importance of strong relations with the appropriate levels of government. The successful management of these dynamics was demonstrated throughout, for example, Secretary Primary Health who evaluated all the projects in Punjab, who took full ownership of the DDCF, was replaced 2 months after the grants were signed. Similarly, 3 DCOs changed on the Tele-Diagnostics and the Integrated Ambulance Service – in all these cases significant repeat efforts were required to regain understanding and ownership of these key stakeholders.

### Pilot Projects’ Synthesis

Annex 1 summarises results and impact of each of the 14 DDCF pilots. It outlines the status of the pilots’ adoption and scale-up by the government. The snapshot on each pilot also provides an economic benefit analysis on those projects that have been scaled up. Within these snapshots, there are several common themes that have emerged and have become illustrative of why the DDCF has been so successful. These also highlight the lessons that can be applied to future challenge funds.

#### Preconditions to the grant: MoU between Grantees and Government

At every stage of its operations DDCF worked collaboratively with the government. The DDCF required every grantee to sign a Memorandum of Understanding (MoU) with its government counterparts. In Round 1, the grantees signed the MoU with the Directorate of Staff Development. In Round 2, the non-government grantees (two out of four grantees) signed similar MoUs with the Policy and Strategy Planning Unit, which is the government counterpart that will support grantees in testing the new service delivery models. Throughout the pilots’ implementation, the District Coordination Office held periodic meetings with the District Reform Group to review the pilots’ progress and make mid-course correction where required.

The government’s participation in oversight through the pilots’ implementation phase inspired and nurtured a strong internal ownership by the Health Department and Punjab Information Technology Board. Additionally, the MoUs ensured these new delivery models were supported within the government. Furthermore, the MoUs generated and sustained momentum for immediate uptake after some pilots began demonstrating that they would be successful. The fact that two out of three Round 1 pilots are now being considered for provincial adoption highlights the effectiveness and impact of this collaborative approach. Similarly, all four pilots of Round 2 are showing strong evidence that they will be adopted. In particular, the Chairman of the PITB also officially wrote to SNG with a time line to scale the Hafiz Zindagi E-vaccination project across Punjab. Additionally, the Secretary Health contacted SNG about the scale up of the Teermardar medicine inventory management pilot.

#### Explicit Public Purpose

The applicants for the funding responded to a specific call for projects to address gaps in basic service delivery in the education sector during Round 1 and in the health sector in Round 2. Within their applications, potential grantees were assessed on their ability to demonstrate a strong understanding of the existing challenges prevalent in the education or health sector. Additionally, they had to develop a strong argument for their pilot project’s ability to fill a gap within the service delivery. Unlike many challenge funds, the pilot projects were conceptualised as a result of the need to improve a particular aspect of education or healthcare delivery. Therefore, the grantees were able to develop bespoke solutions that sought to address specific challenges, which made them more likely to succeed and be scaled up.

#### Linkages with Public Sector Counterparts

The success of the District Delivery Challenge Fund (DDCF) can be partly attributed to its close collaboration and engagement with the government at every stage of its operations. The DDCF worked with the government to: identify themes for intervention, establish criteria for award, review and select ideas, award grants, implement and exercise oversight, and conduct evaluation. While advertising the funding opportunities available and selecting grantees for the fund’s Round 1 and Round 2 pilots, the National DDCF Coordinator consistently collaborated with the government to ensure that the DDCF’s selection criteria and its work remained in sync with government priorities throughout the pilots’ implementation. In Round 1, the DDCF’s pilots focused on the theme of demonstrating new teacher training/governance models, as a central government priority. In Round 2, the themes of emergency maternal and child healthcare services, vaccination, transparent and accountable management of medicine in Punjab, and control of communicable diseases and diabetes in Khyber Pakhtunkhwa were aligned with the provincial governments’ priorities. The provincial governments have expressed their interest in adopting the successful pilots because they are responsive to the governments’ needs.
Empowering Government Officials
Another central component to the DDCF’s success was its ability to identify and empower key government officials to lead reforms. For example, in Round 2, the DDCF identified a number of people who hold important positions within government institutions and have the ability to act as change agents. As a result, four of the six pilots are led by these individuals. Already half-way through the implementation of these pilots, there were strong signs for their early uptake and provincial adoption.

Honest Reflection on Trial and Error
Throughout the pilots’ implementation, the DDCF maintained the flexibility to support grantees to make changes to the design of projects, if necessary. Although the overall idea of the pilots stayed the same, incorporating these changes enabled the projects to generate evidence on what works. The DDCF continuously worked with the government and grantee to test out different methods of scaling up the project. For example, once the education pilots reached the stage for the adoption and scale-up, the projects were modified where necessary to reflect the lessons they had learned at the piloting stage to strengthen their delivery on a larger scale.

Education Pilots
Annex 1 (a) summarises key elements of the education pilots, all of which formed Round 1 of the DDCF. All of the pilots primarily focused on improving learning achievements, in some cases indirectly. Half of pilots targeted learning achievement by focusing on improving teaching: three through In-Service Teacher Training (INSET) and one by providing mentoring and lesson support. One pilot focused on improving girls’ interest in subjects such as science and mathematics. Two of the education pilots focused on digitally monitoring learning achievements. One of pilots also provided advocacy to parent teacher associations especially on female enrolment and retention. The remaining pilots focused on analysis of service delivery and social accountability to drive service improvements. All of the pilots made use of Information and Communications Technology (ICT). One of the INSET projects used the Internet and the other two used pre-recorded digital tablets. The mentoring pilot used interactive radio whilst the science camps focused on digital learning resources. Both data management projects used a digital approach – one directly using ICT for data gathering and the other for processing ‘bubble sheets’.

Health Pilots
Annex 1 (b) summarises key elements of the 6 health pilots of DDCF Round 2: 2 in Khyber Pakhtunkhwa (IDSRs and Diabetes treatment and lifestyle knowledge) and 4 in Punjab (Tele Medicine solution, IAS, Every life matters and Teemardar). The 6 pilot projects aimed to provide innovative ideas for the improvement of the delivery of primary health services at the district level in the provinces of Khyber Pakhtunkhwa (KP) and Punjab. It should be noted that the pilots are intended to be catalysts of change building on what works especially for the poor and marginalised groups, including women and girls. Although some the pilots are experimental in nature they are expected to produce significant results with the potential for longer-term impact, scaling-up and adoption by the provincial government.

Reflections on the Pilots in the Light of What Works Elsewhere Education Pilot Projects
All of the education pilots were relevant and appropriate in the light of evidence of what works elsewhere. As noted in the 2013/14 EFA Global Monitoring Report, there is a strong evidence base that emphasises the role of teacher in improving student learning. There is evidence that replacing an average teacher with a more effective teacher, or replacing an ineffective teacher with an average teacher, both have a very significant impact on students’ achievement in terms of earning potential after they leave school6. The evidence relating to the effectiveness of teacher development suggests that teacher training alone is not sufficient for improving pupil learning without parallel attention to teacher management, as noted by the MUSTER7, and TESSA research findings. Even where teachers have been exposed to child-centred and active learning methods, they often abandon them when in case of larger class sizes, a lack of resources and sceptical colleagues8. This is less of a risk when, as in the present pilots, the training is provided at school level, with mentoring. But it is not clear that this risk has been considered in the pilots.

Assessment of learning– The emphasis of the Education QA pilot is increasingly seen as a vital aspect of good education. One aspect is informing parents, children and policymakers about the state of learning within the system; another is for governments and DFID to know if their investments are making a difference and providing value for money9. Learning assessment helps teachers improve their teaching and allows students to be aware of their own strengths and weaknesses. Global research demonstrates a strong link between high-quality, formative classroom assessment activities and better student educational

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achievement. A synthesis of over 250 empirical studies from around the world shows student gains of 0.5 to 1 standard deviation on standardised tests where the largest gains were recorded by low achievers\(^1\). However, one danger with excessive testing is that teachers will teach to the test rather than the curriculum\(^2\).

ICTs are increasingly seen as an effective means of improving education delivery through various means: distance education support to teacher training; direct enhancement of student learning, and strengthening education management, planning and accountability through real-time data collection and processing, especially holding the school to account through community accountability. The prohibitive cost of internet and lack of infrastructure makes online learning challenging in many situations\(^3\) (Komba, 2009); the use of SMS, interactive radio and mobile learning and teacher monitoring through mobile phone applications appears to be having greater success overall\(^4\). The Somalia Interactive Radio Instruction Programme (SIRIP) is an example of the effective use of this approach in a situation of poor security, poor internet connectivity, unreliable electricity supply, and weak institutional capacity, whilst the text2teach programme in the Philippines, the Bridge IT programme in Tanzania and pilot studies from other mobile-based literacy learning interventions in India appear to have been reasonably successful examples of the use of mobile phones (Carlson 2013)\(^5\).

It is interesting that the DDCF education pilots do not appear to have included the ‘Electronic register’ referred to in the SNG Business Case, providing evidence of teacher attendance, posting budget data and staffing levels at schools – so that parents should know how many teachers they should expect to be present and how the school’s budget has been allocated. This intervention has been proved successful elsewhere and would appear to have been particularly appropriate DDCF pilots. Presumably proposals for such pilots were either not amongst those submitted, or if they were submitted, were proposed in a form that was less promising than the selected pilots and (correctly) rejected.

A major problem with ICT is its sustainability in conditions where there are inadequate facilities and funds for maintenance and the replacement of old or damaged equipment\(^6\). It is not clear to what extent this has been taken into account in these education pilots. The ‘Science Camps’ pilot reflects a global problem of girls losing interest in science compared to boys, which reflects in poor performance in the subject as well. This has been looked at in, for example, Nigeria\(^7\). An example of a study on this disparity of interest in favour of boys begin to appear at the upper primary school level and could be tied to performance. Evidence from several countries suggests that it is early positive exposure to science education that plays a significant role in reducing gender disparity\(^8\). Mobile laboratories are an appropriate means of sharing scarce science facilities with a number of schools and have been used in South Africa since 1998 and are now being used in a number of countries, for example in India\(^9\).

Two of the pilots involve community participation in schools and monitoring of schools. These have been found in some countries to be a particularly effective means of improving learning outcomes, shown for example in reports on projects in El Salvador\(^10\) and Uganda\(^11\). The ‘Improving Primary Education Accountability’ pilot was along the lines of the example of an education community –accountability pilot quoted in the SNG business case: ‘posting budget data and staffing levels at schools – so that parents know how many teachers they should expect to be present, and how the school’s budget has been allocated’. However, the approach, the pilot employed for community accountability did not appear to have been successful. Moreover, the intended benefit of improved learning achievement and/or retention for students does not seem to have been emphasised or assessed.

### Health Pilot Projects

The 6 health pilots were found to be relevant and appropriate in the context of what works in wider public health programming in developing countries globally. However, there are areas that could be strengthened and these are included in the discussion below:

The two pilot projects in KP addressed the problem of rapid transmission of communicable and non-communicable diseases that accounts for 88% of the national burden of disease. That was relevant to a global priority for improving public health\(^12\). The IDSRS pilot aimed to integrate disease outbreak systems to better facilitate the timely identification of and response to communicable diseases. That was wholly relevant and appropriate to global health and to Pakistan’s international commitment to the International Health Regulations\(^13\). The pilot also addressed the Sustainable Development Goal 3.3 to end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases\(^14\). Clearly, a well-functioning and locally accessible public health laboratory to conduct a range of tests for communicable diseases is an essential aspect of surveillance. However, this had reportedly not yet been established and specific data on the beneficiaries was not available although this should be operational soon and before plans to scale-up are approved.

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\(^5\) Carlson, S. (2013). “Using technology to deliver educational services to children and youth in environments affected by crisis and/or conflict”. USAID: Washington DC.


\(^7\) http://www.community-heart.org.uk/projects-home/mobile-science-laboratory/.


The ‘Diabetes treatment and lifestyle knowledge’ pilot aimed to improve screening, treatment and to influence behaviour change. Diabetes mellitus prevalence is rising most rapidly in middle- and low-income countries and is a major cause of blindness, kidney failure and lower limb amputation. Diabetes is a global health priority and the approach used by the pilot is appropriate to international best practice elsewhere focusing on primary healthcare and, importantly, educating people to change their unhealthy behaviours. The pilot addresses the Sustainable Development Goal 3.4 to reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.

Three of the pilot projects in Punjab, Tele Medicine solution, IAS and Every life matters, reflect ideas for improving the delivery of primary healthcare at the district level by using ICT technology. This is an innovative area in primary healthcare in which new ideas are being developed to take advantage of increasing access to mobile phones, for example, an initiative in Somalia used Short Message Service-based platforms to increase awareness about polio vaccination where on average 10 people shared the benefit of information delivered to one phone, even in remote areas. ’Every life matters’ pilot also uses SMS alerts sent to parents regarding vaccination dates and an e-immunisation card making it easier for low-literate users through visual instructions. The pilot created a unique card ID with a Quick Response code and traceable records in the field through digital scanning on smart phones. The use of ICT applications were a relevant approach, which is also advocated elsewhere as well. For Example, such applications are widely used for surveillance and monitoring in order to reduce misinformation and increase vaccination uptake and retention. However, as that was also the case for the education pilots. Sustainability and long-term impact can be an issue especially when the infrastructure and technology did not already exist and had a potentially high cost of usage. It was not clear in the health pilots to what extent that was taken into account in the start-up costs or if the technology was combined with existing channels of communication.

The Integrated Ambulance Service (IAS) used automated technology in an ambulance service dashboard to provide better and much needed Emergency Obstetric and New-born Care. The pilot addressed the Sustainable Development Goal 3.2 that is to prevent deaths of newborns and children under 5 years. Experiences elsewhere have shown that such life-threatening conditions in maternal and new-born health can be similarly tackled effectively with safe, low-tech interventions at the district healthcare level such as mobile phones, e-Learning, and other technologies, for example, digital health systems.

The Tele Medicine solution pilot equipped a Basic Health Unit (BHU) in a remote district with tele-diagnostic facilities for Anti Natal Clinics. The intervention was an experimental initiative to test tele-diagnostic equipment in remote locations with poor access for patients. That was a new approach and subsequently information of scaled-up success of similar initiatives elsewhere was not widely available in the context of the public service in low-income countries. However, there is some evidence that such facilities can make an immediate difference and with a large patient coverage although a rapid up-scaling to multiple health units should be considered with caution.

The other project, the Teemardar-Medicine Inventory Management pilot, in Punjab took a traditional approach to automate the inventory management system of medicines to reduce corruption and increase transparency and efficiency. Improving access to medical products through, for example, improved management systems, is relevant to the global goal of universal health coverage. Internationally accepted recommendations to improve the use of medicines also incorporate similar approaches in the use of inventory and tracking systems for procurement and budgeting. The focus of the Teemardar pilot to reduce corruption and improve transparency through such mechanisms is relevant to international development and a priority to promote good governance.

The 6 pilot projects are intended to build on what works elsewhere for the poor and marginalised, including women and girls. The focus on women and girls is relevant to the wider policy approach in international development. There is a strong evidence that engaging with women’s groups is an effective method for promoting participation and empowerment with a range of benefits in the context of improving maternal and child health. For example, women’s groups in poor rural populations in Nepal were able to reduce neonatal and maternal mortality, to strengthen social networks and improved social support, including in partnership with the providers of the local healthcare services. This has led to a greater sense of cohesion and support amongst women as well as an improvement in maternal and child health outcomes. All 6 pilot projects are implemented in districts with poor populations and therefore should benefit these groups as a part of the service delivery. However, only three projects: the Integrated Disease Surveillance and Response System (IDSRS); the Diabetes-Treatment and Lifestyle Knowledge in Punjab; and the Tele Medicine Solution in KP specifically targeted women as intended beneficiaries.

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Link between Results of the Pilot Project and the SNG's Theory of Change

The SNG programme’s Theory of Change (ToC) model aimed to increase government capability and responsiveness to deliver services which will lead to services better meeting the needs of poor people in Khyber Pakhtunkhwa and Punjab. The revised log-frame (2015) of SNG outcome indicator 1 measures this change through household satisfaction with basic health and education services. This assumes that the government continues to carry out the Pakistan, Social and Living Standards Measurement Surveys (PSLM) and that SNG districts are included in these surveys. The PSLM has changed the denominator for this indicator to include only individuals using services (rather than all respondents) and is therefore a partial measure for household satisfaction with the service delivery. It also assumes that poor people in Punjab and Khyber Pakhtunkhwa will self-report or respond to survey questions openly about whether services are better meeting their needs.

Education Pilot Results

In the ToC, the quality of service delivery was assessed by matching the pilot’s treatment schools (for the education pilots) with control schools having similar characteristics. ‘Progress in the quality of service delivery and satisfaction levels would then be monitored in both groups. All other things being equal, a faster rate of improvement in the treatment group and higher levels of satisfaction among patients [sic] would lead the evaluator to conclude that the intervention had been effective.’

In the SNG log frame, the education outcome indicator for services meeting people’s needs was ‘access to improved education services’ as measured by the net enrolment rate of girls in primary education. The Education QA pilot in Khyber Pakhtunkhwa was the only pilot directly targeting - and achieving - that, and then only as a side initiative; the main focus of this pilot was on improving learning achievement through enhanced monitoring and feedback. The project achieved a significant, 23% increase in female enrolment, which was well in excess of the 14% target increase in the SNG logframe, though the comparison may be inappropriate in comparing the immediate effect of an intensive input to an improvement of the system as a whole.

Apart from this, all pilots targeted improvements in learning achievement through one of the following approaches: teacher training; improving girls’ interest in learning science; or learning achievement.

None of the other three projects measured increase in enrolment, or learning achievement.

• The ‘Science Camps’ internal evaluation reported a positive impact on learning outcomes, but no details were given. The main measured results were a significant improvement in girls’ attitudes towards science.
• The objective of the ‘Education Data Management’ pilot was to improve the management of education data, especially from monthly student assessments, and especially to assist planning for teacher training. Improved education feedback and better-targeted teacher training was in turn expected, in due course, to improve student’s learning achievement. The measured results comprised 88-90% positive feedback from education managers on the new management system and training for the system.
• The ‘Improving Primary Education Governance’ pilot did not explicitly show improving learning achievement or enrolment as an objective, nor did it show how this would be achieved. Instead the objective, and result achieved, was improved education governance by strengthening the capacity of key stakeholders on budget analysis, advocacy and accountability. Although it could be argued that this increased accountability would in due course lead to improved learning achievement and enrolment, this does not seem to have been brought out in the project. For example, the results assessed were in terms of capacity for, essentially, public accountability.

The education pilots taken as a whole did well on the relevant SNG Output 2 indicator of achievement: provincial governments evaluated service improvement pilots and adopted the successful ones. Three of the five Khyber Pakhtunkhwa education pilots and all of the Punjab education pilots are being scaled up.

The ToC assumes that ‘poor people in Punjab and KPK report that services are better meeting their needs’ and this will lead to ‘more stable democracy in Pakistan (through increased trust in government)’. The ‘Improving Primary Education Governance’ pilot in particular was worrying in this context as it appeared to show that government officials did not welcome involvement of ‘poor people’ in assessing the extent to which education services were meeting their needs. The pilot was not recommended for a scale-up because it appeared that even if the model was replicated across the province, it was unlikely to generate favourable outcomes in the short run.

Health Pilot Results
 Outcome indicator 2 in the SNG revised log frame measures access to improved health services, specifically through an increased immunization coverage for children below five years of age. With the above changes, the ToC model finally will eventually lead to improved state-society relations and a more stable democracy in Pakistan. The ‘Every life matters’ pilot directly addresses improving immunization coverage in children by using a unique card ID with a Quick Response code and digital scanning on the smart phones of vaccinator’s to help increase retention. The pilot is targeting the inoculation of 10,500 new born babies and is a direct input into the programme outcome indicator 2. The IDSRS (identification of communicable diseases), Tele-diagnostics at ANC (access to pregnant women) and Teemardar (improved patient records and medicines including vaccines) pilot projects also provide a link to increasing the uptake of vaccination. In addition, all 6 pilot projects do contribute to the ToC through 1) strengthening capacity to increase service capability and responsiveness to deliver services and 2) better meeting the needs of poor people in Khyber Pakhtunkhwa and Punjab.

In practice, the ToC model aims to address specific service delivery bottlenecks at the local level by working with people through bottom-up approaches to increase demand for better governance and better services. At the same time local authorities were strengthened to be better able to respond to the needs of local communities. This means that the pilot projects must also achieve some form of social transformation or community involvement and action. However, none of the 6 pilot projects appeared to provide an opportunity for a bottom-up approach, for example, through active community participation in planning, decision-making or evaluation. This is an important aspect of the ToC and indicates that the projects did increase government responsiveness to deliver services which could better meet the needs of poor people in Khyber Pakhtunkhwa and Punjab. Engaging with people, consulting with them about their needs and the expectations that they have is a fundamental element of a bottom-up approach. There is therefore a gap between the discourse used in the SNG programme and what has happened in practice regarding community involvement and the responsiveness of government services to their needs.

Output indicator 1.2 of the SNG log frame focused on successful adoption of the pilot projects by the provincial governments. Therefore, it was already decided not to plan any future rounds of the DDCF. Instead, the DDCF teams focussed on consolidation of ongoing work within the assigned time frame. The programme should continue to support the demand for the adoption of successful pilots at scale. In particular, the IDSRS model was approved by the Health Minister to scale up to KP province level. The Integrated Ambulance Service (IAS) had a strong public-private partnership model, a clear trend towards governments across the globe making greater use of this type of an approach and was successful elsewhere⁶.

The Diabetes-Treatment and Lifestyle Knowledge pilot is on-track for adoption and the Tele Medicine solution is proposed for scale-up to 2,461 Basic Health Units. The Har Zindagi – Every Life Matters has received a favourable feedback and the government has decided to use the e-vaccination card and other activities of the pilot to upgrade the existing EVACCS system in the districts during the life of the pilot. Although the Teemardar-Medicine Inventory Management pilot has not received an end assessment there are plans to have a province wide replication, presumably if favourable results are reported.

Economic Cost-benefit Analysis of the Education Pilots

The cost-effectiveness ratio measure for pilots targeting enrolment or learning achievement is the unit cost for each child benefitting. This is shown in Annex 1(a) and varies from PKR 730 for the Learning Boost pilot in Khyber Pakhtunkhwa to PKR 3,440 for the Education QA pilot. This determines the cost of scaling up the projects. It does not take account of the scale of the project benefits during the course of the project. These benefits are similar for the two projects mentioned. However, the Learn while you Teach project, with a unit cost of PKR 3,150 had no measurable impact on pupils during the course of the pilot. On the other hand, the benefits to students of this and the data-management pilots could be significant in the longer term.

The appropriate benefit/cost ratio for the scaled up project is a key measure when considering scaling up - whether further investment is value for money. The benefits to be used for this analysis for education initiatives, reflecting the extent to which they meet people’s needs, are usually measured in terms of (a) Direct private market returns in the form of increasing potential earnings, and (b) Non-private market returns such as openings to more enjoyable jobs and leisure pursuits, enjoying a higher standard of health and nutrition, travel, and social, political and environmental benefits.

A typical wage return study used for cost-benefit analysis of education projects39 notes that ‘the evidence on wage returns to education in developing countries shows internationally, one additional year of education adds approximately 10% to a person’s wage, at the mean of the earnings distribution’. The current minimum wage in Khyber Pakhtunkhwa and Punjab is around PKR 170,000 per annum. Life expectancy in Punjab is 69. Assuming the average student works for 50 years after leaving school, his or her expected total earnings, not taking into account inflation, will therefore increase by around PKR 850,000 for each extra year of education. This gives a simple monetary estimate of the benefits, though the cost-benefit analysis of education projects normally uses a more complex analysis taking inflation among other factors into account.

This can be adapted to benefits from improving learning achievements by assuming that the findings from World Bank Egypt40 study can be applied to Pakistan such that a 33% improvement student achievement is equivalent to a 66% reduction in dropout. The extra number of children who would be retained is then the percentage reduction in dropout multiplied by the present number of children who were dropping out. This was naturally a highly simplistic assumption and can only be used where there were indications from the pilots on likely levels of student achievement. Even then, the benefits achieved during the pilot are likely to be well in excess of those that would be achieved on scaling up.

Monetising benefits other than earnings is not easy, and education economists typically use the findings of calculations by McMahon (2004)41 that the non-market returns amount to 80% of the direct market returns.

The cost-effectiveness ratio measure for pilots aiming to improve the delivery of primary health services at the district level in the provinces of KP and Punjab is expressed as a unit cost for each person/patient. This is shown in Annex 1b and varies from PKR 172 for the Teemardar project in Punjab to PKR 10,772 for the Integrated Ambulance Service and is based on the recorded results to date. These figures are therefore not final as some pilots have not yet reached their final expected results regarding coverage of services delivered and people/patients benefitting. These figures, in part, should also contribute to the consideration for the scaling up of the projects at the province level although political commitment and the popularity of the pilots are also important factors.

The appropriate cost/benefit ratio for the scaled up project is determined not only by the number of people that have gained access to the services provided, either as a patient or as a community member, but usually also in terms of improvements in health such as a reduction in morbidity or mortality. However, both the SNG ToC and the revised log frame do not state indicators to measure direct improvements in health. Instead, the SNG log frame, for example, uses indicators for household satisfaction in health service delivery and the coverage of the vaccination of children below 5 years of age. The assumption made is that this in turn will lead to improvements in morbidity and mortality levels. This is a simple but logical assumption that can be used, in this case for immunization, because the international evidence indicates a direct link between increased uptake and retention and improvements in health, for example, life expectancy and a reduction in morbidity. Only the provision of clean water performs better than immunization to improve health outcomes42. A comprehensive vaccination programme is a cornerstone of good public health and the benefits expected to be achieved during the ‘Every life matters’ project are a 5% increase in uptake for vaccination and a 25% increase in retention, offering good prospects for scaling up.

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41 Wash-ington, D.C., World Bank.
**DDCF: Way Forward**

On numerous occasions the DDCF presented its process to the Planning & Development Department (P&DD) and Punjab Information Technology Board (PITB), which were key government departments responsible for change and innovation in the province. As a result, the PITB has now launched an IT Innovation Fund and is in the process of finalising the financial allocation for the fund with the government. The fund will look at attracting venture capital funding for successful entrepreneurial innovations. The process and dynamics of this fund has been shaped and influenced by the learning from the DDCF. Secondly, P&DD has established the Punjab Population Innovation Fund (PPIF), which will test and scale-up innovative projects that address population issues of Punjab. The entire process of PPIF from launching to funding rounds to evaluation, selection and monitoring is being developed in close collaboration with DDCF. This is a clear indicator of sustainability as DDCF process has been infused in the working of public sector environment. DDCF will continue to work with the government to ensure the process is fully institutionalised and tested.

**Conclusion: How to Do Challenge Funds?**

The DDCF offered a unique example of a relatively small challenge fund that demonstrated significant success and delivered value for money. It was important to mention that the success in the context of challenge funds must be seen from the multiplier effects that were realised from replication, adoption and scale-up of pilot experiments. Although there is evidence for the scale-up of activities funded under enterprise funds, there is limited evidence of sustainability under funds targeting social outcomes. This has been the biggest critique on challenge funds (e.g. Elliot, 2013). The DDCF demonstrated that on one account it has convinced the government to use challenge fund methodology to identify innovative solutions to complex social problems, while on the other hand it has created a strong demand from the government to adopt and replicate its successful pilots. The returns on investments in case of successful scale-ups far outweigh the initial risks associated with challenge funds. However, the process of doing challenge funds should evolve based on lessons learned.

It is recommended that new challenge funds that seek to address social sector issues make it mandatory to have a public sector client prior to engaging the grantee. The needs of the society should be mapped on to the government priorities (especially those for whom fiscal space is already available) and focused areas of investment should be selected on this basis. No matter what the process cycle is, public sector actors should be made part of each key element of the process. Moreover, the hands-on approach to managing the DDCF has been instrumental in making the pilots more successful and suited to citizens’ need. This focus has resulted in the DDCF’s ability to gain strong traction in the public sector as the relevant government actors are able to see the improvements in the delivery of services. Another feature that has made the DDCF successful is its management of financial risk. As the initial investment is made by the DDCF it adds more credibility to the fund and as a result, the private sector is more confident and comfortable with developing partnerships with the public sector. The role of DDCF has been that of a funder, technical partner and a facilitator in managing political economy of complex agents to make pilots more successful. Finally, challenge funds such as DDCF should increase their risk appetite to divert more funding to public sector delivery units that can compete as grantees rather than over relying on the private sector.
Annex 1 (a) Summary of the DDCF Education Pilots

<table>
<thead>
<tr>
<th>Pilot</th>
<th>Nature</th>
<th>Objective</th>
<th>Number of children targeted</th>
<th>Result</th>
<th>Measured impact on children’s learning</th>
<th>Cost to (PKR million)</th>
<th>Cost per child (x1000 PKR)</th>
<th>Scale up</th>
</tr>
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<tbody>
<tr>
<td>Khyber Pakhtunkhwa</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Learning boost</td>
<td>ICT/distance education in service teacher training plus mentoring</td>
<td>Improve teachers’ and children’s numeracy and literacy</td>
<td>26,000 (11,700 girls)</td>
<td>Teacher and pupil gains in numeracy/literacy</td>
<td>32%/14% gains in numeracy/literacy</td>
<td>18.93</td>
<td>0.73</td>
<td>PSC recommended ESCE requested Discussions with grantee</td>
</tr>
<tr>
<td>Broad Class Listen to learn</td>
<td>Radio-supported lessons</td>
<td>Teacher mentoring</td>
<td>18,860 (8,490 girls)</td>
<td>Improved child literacy/numeracy</td>
<td>23% higher scores</td>
<td>21.7</td>
<td>1.17</td>
<td>PSC recommended ESCE limited scale-up</td>
</tr>
<tr>
<td>Science camps</td>
<td>Mobile laboratory</td>
<td>Improve girls’ interest in science</td>
<td>7,738 girls</td>
<td>19% improved view of science</td>
<td>None measured within the project</td>
<td>11.45</td>
<td>1.48</td>
<td>PSC recommended ESCE limited scale-up</td>
</tr>
<tr>
<td>Improving primary education governance Education QA</td>
<td>Analysis of service delivery plus social accountability</td>
<td>Test potential for social accountability</td>
<td>None directly</td>
<td>Community interest in social accountability</td>
<td>None measured within the project</td>
<td>17.66</td>
<td>N/A</td>
<td>Not recommended by PSC</td>
</tr>
<tr>
<td></td>
<td>Digitally-based monitoring of learning achievement (monthly testing, feedback to teachers, parents and district education officials); also advise PTCs on female enrolment and retention</td>
<td>Improve learning through performance feedback, and increased especially female enrolment &amp; retention</td>
<td>3,169 (1,426 girls)</td>
<td>Positive feedback from parents, but resistance from government staff</td>
<td>24% increase in enrolment (23% for girls)</td>
<td>10.9</td>
<td>3.44</td>
<td>Not recommended by PSC without significant investment in capacity-building and IT tools</td>
</tr>
</tbody>
</table>
## Annex 1 (a) Summary of the DDCF Education Pilots

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<tr>
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<tr>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Learning boost</td>
<td>ICT/distance education in-service teacher training plus mentoring; also encouraging outside-school learning</td>
<td>Improve teachers’ and children’s numeracy and literacy</td>
<td>26,000</td>
<td>Improved teaching and learning of literacy &amp; numeracy</td>
<td>78%/85% faster learning for early literacy/numeracy and 8% improved grade 5 math</td>
<td>43.3, o.w. 8% from TT</td>
<td>1.67</td>
<td>Being scaled up by Directorate of Staff Development</td>
</tr>
<tr>
<td>Learn while you teach</td>
<td>Using ICT and district teacher educators for n-service teacher training in science and mathematics</td>
<td>Improve teaching skills for science and mathematics</td>
<td>17,715 individuals benefitted. 16,000 teachers, 1,537 primary school teachers and 178 DTEs.</td>
<td>Teacher scores improved by 1.2% on average, 2.4% for least educated teachers</td>
<td>No improvement found in learning achievement</td>
<td>50.4 o.w. 14% from SAHE</td>
<td>3.15</td>
<td>Being scaled up by Directorate of Staff Development</td>
</tr>
<tr>
<td>Education Data Management System</td>
<td>Digitally-based monitoring of learning achievement (development of analytics dashboard)</td>
<td>Improved district planning and monitoring of education</td>
<td>None directly, Indirectly: 79,600 students, 4,800 primary school teachers and 114 DTEs</td>
<td>Used to improve identification of teacher training needs</td>
<td>None measured within the project</td>
<td>21.5 o.w. 11% from TT</td>
<td>N/A</td>
<td>Being scaled up as improvement to existing Director of Staff Development system</td>
</tr>
</tbody>
</table>
# Annex 1 (b) Summary of the DDCF Health Pilots

<table>
<thead>
<tr>
<th>Pilot</th>
<th>Nature</th>
<th>Objective</th>
<th>Number of people targeted</th>
<th>Result</th>
<th>Cost to (PKR million)</th>
<th>Impact/ Cost per person covered</th>
<th>Adoption and Scale up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khyber Pakhtunkhwa</td>
<td>Integrate Disease Surveillance and Response System (IDSRS)</td>
<td>Consolidate guidelines, trains staff and community groups Conduct tests for communicable diseases in compliance with IHR 2005</td>
<td>To integrate disease outbreak systems to facilitate timely identification of, and response to communicable diseases</td>
<td>Specific information and disaggregated data on beneficiaries will be available once the pilot is properly rolled out by June 2017</td>
<td>73.665</td>
<td>Cost of PKR 1244 per person or 12.3m per district. Covered 59,190 to date</td>
<td>IDSRS model approved by Health Minister to scale up to province. Funds required (PKR 195m)</td>
</tr>
<tr>
<td>Diabetes Treatment and Lifestyle Knowledge (D-Talk)</td>
<td>Develop a manual of procedures for medical and paramedic staff and a registration and referral system. Behaviour change communication to raise awareness about diabetes</td>
<td>To reduce the burden of non-communicable disease, specifically diabetes, through screening, treatment and behaviour change</td>
<td>D Talk-34,000</td>
<td>Diabetes task force established. D-Talk 54,000 people reached (60% more)</td>
<td>58.8</td>
<td>6 districts at cost of PKR 1088 per person or 9.8m per district to date</td>
<td>D-Talk on-track for adoption. Scale up to all districts. Significant funds required (PKR 195m)</td>
</tr>
</tbody>
</table>
## Annex 1 (b) Summary of the DDCF Health Pilots

<table>
<thead>
<tr>
<th>Pilot</th>
<th>Nature</th>
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<th>Adoption and Scale up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punjab</td>
<td>An experimental initiative to test the use of remote tele-diagnostic equipment for Antenatal Clinics</td>
<td>To equip a Basic Health Unit (BHU) in 1 remote district with tele-diagnostic facilities and adequate training</td>
<td>82,000 patients</td>
<td>17% include ANC scans for pregnant women. Increased ANC follow-up from 15% to 60% and increase in patients using BHU by 50%</td>
<td>30.771</td>
<td>Cost of PKR 809 per patient and 38,000 patients covered to date</td>
<td>Proposed scale-up to 600 / 2,461 BHUs. Perpetual Value of fixed cost based on 3 year lease is 1.2 billion PKR</td>
</tr>
<tr>
<td>Integrated Ambulance Service (IAS)</td>
<td>Establishing an innovative ambulance service for managing the delivery of services and training paramedics</td>
<td>To establish an automated ambulance service dashboard to cater to Emergency Obstetric and Newborn Care (EmONC) needs</td>
<td>5,500 deliveries 915 medical emergencies</td>
<td>To date 2500 deliveries have benefited from the service</td>
<td>26.931</td>
<td>Cost of PKR 10,772 per delivery to date</td>
<td>A strong public-private partnership model with plans to extend to the whole province as Mahfooz Maa</td>
</tr>
<tr>
<td>Har Zindagi – Every Life Matters (HZ)</td>
<td>Enhancing the coverage of child immunization by using innovative technology such as a unique card ID with a Quick Response code, digital scanning vaccinators’ smart phone and making accessible to the illiterate</td>
<td>To redesign the immunization card to achieve significant performance improvements in immunization admin such as increased uptake and retention of children</td>
<td>16,383 new babies born babies vaccinated in Sahiwal and SKP district</td>
<td>Seeking a 5% increase in uptake for vaccination, 25% increase in retention</td>
<td>46.947</td>
<td>Cost of PKR 1,490 per event (vaccination and delivery of service) to date</td>
<td>Favourable feedback from DG Immunisation. Government to use the e-vaccination card to upgrade the existing EVACCS system in the districts during the life of the pilot</td>
</tr>
<tr>
<td>Teemardar Medicine Inventory Management</td>
<td>Improving the management of medicines through better inventory, procurement and tracking systems</td>
<td>To automate the inventory management system of medicines to reduce corruption and to increase transparency and efficiency</td>
<td>With 3,500 patients per day at each medical unit, the pilot benefitted 1.3 million patients</td>
<td>Increased transparency, better monitoring and a more efficient inventory medicine service. Improved patient records</td>
<td>51.819</td>
<td>Cost of PKR 172 per patient</td>
<td>End assessment not yet available but plans to have a province wide replication</td>
</tr>
</tbody>
</table>
Annex 1 (c) Snapshot of the DDCF pilots
Round 1: Education Pilot Projects
Khyber Pakhtunkhwa

Pilot Project: Learning Boost
Grantee: TeleTaleem (Pvt.) Limited

Project Description
The Annual Status of Education Report (2015) notes that 49% of boys and 57% of girls aged 5-16 cannot read simple words in English. 51% boys and 59% girls cannot do simple subtraction. Basic literacy and mathematics skills are the building blocks of learning that need to be cultivated at early stage of schooling. The Learning Boost pilot focused on improving teachers’ capacity and children’s learning outcomes in numeracy, literacy and grade 5 math skills. The model used an ICT-based remote teachers’ training model in which a Master Trainer based in Islamabad trained and mentored teachers of target schools in different teaching-learning strategies. A fully equipped van was used to provide internet connectivity and other technical support for teachers training in hub schools where teachers from nearby locations gathered for training. Teachers were given tablets loaded with learning contents, lesson plans, assessments, exercises etc. The teachers and children were assessed continuously during the interventions and results of these assessments shared with them. The results were also shared with parents.

Project Cost
The project was implemented during September 2014-May 2015 in 100 schools of Haripur with a DDCF grant of PKR 18.93 million.

Beneficiaries
The beneficiaries included 26,000 children (45% girls), 4000 PTC members (76% mothers), and 218 teachers/government officials (40% women).

Results
Results indicate that the teachers in the treatment group scored 29% higher in numeracy and 16% higher in literacy compared to their counterparts in the control group. The impact of new teaching methods on children’s learning outcome was also found to be statistically significant. Even for struggling students, the net gains in numeracy and literacy skills worked out to be 32% and 14% higher for children of treatment group compared to those of control group.

Adoption and Scale up Status
The pilot was well received by all stakeholders, including teachers, education authorities and children. The Provincial Steering Committee (PSC) of the SNG programme recommended this model for provincial adoption in August 2015. The Elementary and Secondary Education (E&SE) Department reviewed these results in January 2016 and asked the SNG team to prepare a proposal for future funding. The DDCF submitted in March 2016 a proposal for limited scale-up of this model in 500 schools of Nowshera at an estimated cost of PKR 87 million. The DDCF is currently working with the grantee to prepare a modified proposal, which only uses “teachers’ training suite” and “established labs” rather than “vans” for teachers’ training purpose.

Economic Cost-Benefit Analysis of Scale-up
The wage return study most frequently used for education cost-benefit notes that ‘the evidence on wage returns to education in developing countries shows internationally, one additional year of education adds approximately 10% to a person’s wage, at the mean of the earnings distribution’. Rate of return analysis depicts improvement in basic education service which will narrow achievement gap facing the poor and help them get out of poverty. Currently, the drop-out rate is approximately 15% and a World Bank Research shows that improving learning outcomes reduces dropout rate by 66%. Improved learning outcomes will, thus, cause retention of about 297,000 children in schools from out of 450,000 children that dropout annually. This will, in turn, enable these children to earn by up to 18% (approximately PKR 9 billion/annum) over and above the minimum wage rate (PKR 14,000/month) starting from 10 years from now. Improved teaching quality will increase enrolments and size of this annuity. Implementing all design aspects of this model will cost approximately PKR 1 billion in three phases. In case government implements one or two design parts of the model, the cost will be much less.

Pilot Project: Broad Class—Listen to Learn
Grantee: Haripur - Communicators Private Limited

**Project Description**

Poor teaching practices handicap children, who struggle to learn under any discipline as they progress to higher classes. This sets them on the course to failure in life. Broad Class uses a radio set and a teacher trained as inter-mediator between radio-based instructions and children to deliver learning contents to address this problem. The instructions, broadcast through a radio channel every day, include interesting activities, games, and exercises. The short pauses, built into radio scripts, allow a teacher and children to interact. The learning contents are designed to sharpen children’s ability in identification of sounds, words formation, identification of things, counting tasks, completing sequences and drawing shapes etc.

**Project Cost**

The project was implemented during September 2014–May 2015 in 500 classrooms, covering 165 schools of Haripur. The DDCF awarded a grant of PKR 21.720 million for this experiment.

**Beneficiaries**

The pilot reached out to 23,925 beneficiaries- 12% including 18,860 children, 4,370 PTC members and 591 teachers/government officials. 61% of the beneficiaries were women and girls.

**Results**

Comparison of the baseline and end-line results data show that the children of treatment schools achieved 23% higher scores than their counterparts in control group. The baseline and endline data track children performance in identification of sounds, words formation, identification of things, counting tasks, completing sequence, drawing shapes. In addition, the intervention led to improved enrolments, retention, and socialising skills among children of target schools.

**Adoption and Scale up Status**

The pilot was well received by all stakeholders including teachers, education authorities and children. The Provincial Steering Committee (PSC) of the SNG programme recommended this model for provincial adoption in August 2015. The Elementary and Secondary Education (E&SE) Department reviewed these results in January 2016 and approved limited scale-up of this pilot in Phase-1. The DDCF submitted a proposal of PKR 65.286 million for a limited scale-up of this model in 3100 primary schools (KG, Grade-I and Grade-II) of district Abbottabad in phase-1. In a meeting with SNG team in October 2016, the E&SE Department reiterated its commitment to adopt this model.

**Economic Cost-Benefit Analysis of Scale-up**

Scaling up this model across the province will benefit around 1.8 million children annually. Research confirms that children completing additional one year of high quality education realise up to 18% (median) increase in their income. The dropout rate for early graders (KG, Grade-I and Grade-II) is around 16% and the highest dropout rate is for KG. Roughtly 323,000 children drop out of schools in these grades and improved learning environment would reduce dropout by 66%. This means that an estimated 213,000 children get back to schools to generate an additional income stream of PKR 6.4 billion per annum during their lifestyle at current wage rate of PKR 14,000/month. Improved teaching quality will also lead to an increase in enrolments and size of this annuity while also helping the poor get out of poverty. Provincial scale-up will cost around PKR 805 million in three phases (average cost per classroom for one academic session being PKR 35,000). Airing of lessons through radio Pakistan can reduce this cost by approximately one-half. Radios purchased once will be good for five years.

Pilot Project: Science Camps
Grantee: Comcept (Pvt.) Limited

**Project Description**

Science education at an early stage in children’s life encourages them into asking questions, making discoveries, developing and sharpening critical thinking skills among children. However, primary schools lack teachers and other physical facilities to inspire and nurture critical thinking in children. Further, children do not develop interest in science subject which explains why the province is unable to produce renowned scientists in numbers that it needs. The model uses “science camps” to fill up this gap. A van, fully equipped for organising such camps, visits target schools as per a schedule agreed between the organizer of camps and the district education office. In each camp, children are exposed to carefully selected set of digital learning resources including games, live experiments and scientific reading. Teachers are also trained while first camp is organized in their school and they organize 2nd camp on their own. The service provider records the proceeding of camps organized by teachers and provides feedback for improvements.

**Project Cost**

The project was implemented during September – December 2014 in 69 schools of Nowshera at the cost of PKR 11.45 million.

**Beneficiaries**

The model was implemented in 69 girls’ schools of Nowshera and the intervention benefited 7,738 students (all girls) and 201 teachers (almost all women).

**Results**

Preliminary data recorded 15% improvement in children’s learning.

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*The report “the Investment Case for Education and Equity” by UNICEF is available at http://www.unicef.org/publications/files/Investment_Case_for_Education_and_Equity_FINAL.pdf*
Attitude towards science and 19% improvement in children's view of science vis-à-vis children who did not participate in science camps.

Adoption and Scale-up Status

The pilot was well received by all stakeholders, including teachers, education authorities and children. The Provincial Steering Committee (PSC) of the SNG programme recommended this model for provincial adoption in August 2015. The Elementary and Secondary Education (E&SE) Department reviewed these results in January 2016 and approved limited scale-up of this pilot in Phase-1 with the intent to roll out the model across the province in subsequent phases. The DDCF has submitted a proposal for a limited scale-up of this model in 1500 schools of Mardan in phase-1 with an estimated cost of PKR 49.4 million. In a meeting with SNG team in October 2016, the E&SE Department reiterated its commitment to adopt this model.

Economic Cost-Benefit Analysis of Scale-up

Scaling up of this model across the province will benefit 1.8 million children annually. Research confirms that children getting an additional one year of high quality education could earn up to 18% more than what they would without this education\(^4\). Currently, the drop-out rate is approximately 15%\(^4\) and a World Bank Research shows that improving learning outcomes reduce dropout rate by 66%\(^4\). Improved learning environment will, thus, retain an approximately 104,000 children in schools from out of 157,000 children that drop out from Grades: 3rd, 4th and 5th annually. This will, in turn, increase the income of these children by up to 18% (approximately PKR 3.14 billion/annum) beyond the minimum wage rate of PKR 14,000 starting from 10 years from now. The cost of organising science camps in a school (9 camps in one school/academic year) works out to be PKR 27,000. At this rate, it would require PKR 621 million to cover 23,000 primary schools in KP. The intervention can be funded through different means, including the use of the PTC funds.

Pilot Project: Improving Primary Education Governance in Khyber Pakhtunkhwa

Grantee: Centre for Governance and Public Accountability (CGPA)

Project Description

Absence of (a) evidence based planning and budgeting and (b) social accountability culture are two reasons for poor basic education services. Governments and donors agree that use of planning and budgetary data and rights based advocacy can generate pressure for improved service delivery. The pilot tested if a government could be a partner in facilitating data-driven and rights-based social accountability culture in service delivery. The grantee reviewed district planning and budgeting processes and identified gaps that are partly responsible for poor service delivery. The evidence on gaps so collected was shared with the district/provincial officials with the aim of promoting a common understanding of the need for better planning and budgetary practices. Further, the grantees used the Rights to Information Act 2013 and the Rights to Public Service Act 2014 along with empirical data on gaps in planning and budgetary practices to mobilise communities for social accountability of government officials. The experiment tests “community participation in improving the use of district planning and budgeting (Output 2.1, SNG log frame), and capacity building of local government officials in the process (Output 2.2, SNG log frame).

Project Cost

The project was implemented during September 2014 – May 2015 in five districts (D.I.Khan, Karak, Lakki Marwat, and Buner). The DDCF awarded a grant of PKR 17.66 million.

Beneficiaries

The pilot benefited 9,751 individuals - 6% more than the target of 9,130. The beneficiaries included government officials, PTC members, journalists, members of CSOs, etc. Roughly 40% of the beneficiaries were women.

Results

The pilot generated evidence that the existing district planning/budgetary practices are faulty and responsible for poor quality of primary education services. It also empowered non-government actors to use evidence and awareness of rights as a tool for social accountability. The pilot received mixed feedback: the parents, communities and civil society groups appreciated the initiatives taken by the project to provide interface for service providers and service receivers while the education authorities had reservations on the nature of the project which had limited interaction with teachers and children.

Adoption and Scale-up Status

The pilot achieved intended results. A number of lessons have been drawn from this experiment. First, while the communities of the districts where this model has been implemented advocate the need to scale-up this model across the province, the district government officials do not support this since its replication puts them under tight management controls or community’s scrutiny. The scale up of the model at grassroots level requires that the highest level office in the province should lead the experiment and ensure its replication. Secondly, changing the accountability culture requires a long term commitment and budget. Even if the model is replicated across the province, it is unlikely to generate favourable outcomes in the short run. The Provincial Steering Committee of the SNG programme did not recommend scale-up of this model for the reasons shared.

\(^{4}\) The report “The Investment Case for Education and Equity” by UNICEF is available at http://www.unicef.org/publications/files/Investment_Case_for_Education_and_Equity_FINAL.pdf


Pilot Project: Improved Education through Quality and Results in Primary Schools in Lakki Marwat
Grantee: Community Motivation and Development Organisation

Project Description
Historically, the E&SE Department has used an Education Management Information System (EMIS) to track different education sector indicators. A major problem with the EMIS is that it does not capture the learning outcomes of children. An Independent Monitoring Unit (IMU), established recently under KESP, too does not address this gap. The model introduced the practice of monthly and quarterly testing of students' reading, writing and math skills against pre-defined quality indicators and sharing of the results with teachers, parents, and district education officials. Teachers were given feedback on how to improve performance. The pilots also engaged PTC members and village organisations to increase enrolment and retention especially of girls.

Project Cost
The project was implemented during September 2014 – May 2015 in 25 schools of a district Lakki Marwat. The DDCF awarded a grant of PKR 10.896 million.

Beneficiaries
The pilot benefited 5,292 individuals—33% more than the target of 4,000. The beneficiaries, included 20 government officials, 72 primary school teachers (38 women), 225 PTC members, 3,169 students (45% girls), 50 members of CSOs and 1056 poor families and households.

Results
The pilot led to the enrolment of 771 (348 girls) out-of-school children in the target schools. The pilot received a positive feedback from beneficiaries, including children of selected schools, teachers and communities. The education authorities showed interest in the children's performance assessment tool used by the project. However the District Education Mangers' capacity to use such tool is not up to the desired level, which needs to be addressed.

Adoption and Scale up Status
The pilot delivered intended results but the Provincial Steering Committee did not recommend its provincial adoption for two reasons. First, the pilot covered 25 schools and with the limited evidence generated through this experience, it was difficult to make a strong case for the government to adopt this model. Second, the model that used IT based monitoring system, was implemented in one of the remotest and most backward districts of the province. The teachers and officials, who participated in the experiment, argued that the model cannot be adopted without significant investment in capacity building of officers in the use of IT tools.
Punjab

Pilot Project: Learning Boost
Grantee: Comcept (Pvt.) Limited

Project Description
LB project aimed at improving student learning outcomes by strengthening and improving the delivery of teacher training in the province. The pilot was implemented by TeleTaleem (TT) (private sector) in close partnership with the Directorate of Staff Development (DSD), School Education Department, and Government of the Punjab. The experiment focused on improving teachers’ capacity and children’s learning outcomes in numeracy, literacy and grade 5 mathematics skills. The teachers were trained at a hub-school (teachers from 10-15 adjacent schools were gathered there) connected to a remote trainer via digital classroom. Teachers were given tablets loaded with required contents and supporting material. They were mentored throughout the intervention period to make sure they master the skills required to deliver contents effectively in classrooms. Further, parents were engaged in their children’s progress through continuous parenting sessions. Weekly Reading/Math Camps for children inside communities are held to seed the culture of reading and taking learning beyond school hours and boundaries. The pilot also included formative assessment of teachers and children. The results of these assessments were available to parents and teachers immediately after the assessment. Weekly Reading/Math Camps for children inside communities are held to seed the culture of reading and taking learning beyond school hours and boundaries. The project tried to establish an alternative way of training teachers to improve teaching quality and learning outcomes in primary education. An MoU detailing roles and responsibilities and adoption agreement was signed between TT and DSD prior to award of the grant to ensure sustainability.

Project Cost
Total Cost of the Pilot was PKR 43,329,265 out of which PKR 3,360,000 was TT’s matching contribution. That translated into a cost of PKR 500/beneficiary over 15 months.

Beneficiaries
The experiment was carried out in districts of Vehari & Mandi Bahauddin, covering 200 schools. During the experiment a total of 86,992 individuals benefitted. These included, 373 teachers, 30 DSD Staff, 26,000 children of treatment schools, 46,226 children in community schools, 14,240 parents and 53 community workers. 40% of beneficiaries were females.

Results
Children in target schools gained 32% in early grade literacy as compared to 17.97% for control, 39.1% in early grade numeracy versus 21.1% for control and 20% for Grade V Mathematics versus 15.9% for control group over the one academic year. DSD’s independent evaluation confirmed the learning gains of 6% for grade 5 mathematics.

Adoption & Scale-up
An assessment of intervention design was carried out by DSD and supported by SNG post completion of the pilot. Certain changes were made to the design of the experiment, which was then adopted and replicated by DSD in the same two districts and schools. This adoption phase ensured that all the learning and implementation capabilities were transferred on to DSD.

The experiment has now been presented to the Chief Minister at the last stock take meeting where the project is now titled ‘Khadrin-e-Ala Teacher Training Programme’. School Education Department led the presentation and as a follow-up from the meeting has been instructed to prepare a PC-1 to implement the LB programme in all 36 districts. DSD has launched a proposal to initiate phase 1 buy covering 3 full districts including Rahim Yar Khan, Faisalabad and Rawalpindi. This will cover around 433 DTEs, 4,882 Schools, 14,411 Teachers and over 700,000 students. The cost of this will be PKR 650 million.

Economic Viability of Scale-up
To develop the economic viability analysis, the following results have been used to develop assumptions:

1. Labour Force Survey (Regression) suggests that 1 year of additional education increases monthly income by 7.7% (Pakistan Labour Force Survey 2013-14)
2. A World Bank Research shows improving learning outcomes reduced dropout rate by 66% (Egypt)
3. Punjab’s dropout rate (PSLM 2013) is about 15% resulting 15% of what? Dropout rate is annually calculated? in 3 million dropouts. A 66% improvement would mean 1.98 million students attaining extra education – at minimum we assume 1 additional year.
4. Assuming minimum wage of PKR14,500, a 7.7% improvement caused by 1 additional year of schooling will translate into an PKR 1,116.5 additional income per month.

Total Benefit: 1.98 million * 1,116.5 * 12 = PKR 26.5 billion of income, for 20 years (assuming that this will at least impact first twenty years of a student’s life) perpetuity the PV equals PKR 260.5 billion (assuming 10% rate of discount and 2% growth)-Assume benefits start in 10 years: PKR 100.4 billion.

Cost of Province Wide Scale-up over 5-year phased investments:

1. PV Fixed Cost of CAPEX: PKR 2.6 billion
2. PV of Variable Cost: PKR 5.0 billion (this includes a perpetual cost of PKR 89 million after year 5)

DSD currently spends about PKR 3 billion on teacher training over 5 years at constant value that is PKR 15 billion. Therefore, it can be seen that this will result into an overall NPV of over PKR 85 Billion which exhibits that the benefits are significantly higher than the cost and the intervention is economically viable.

Pilot Project: Improving Teacher Quality:
Innovative use of technology and mentoring in the cluster approach to teacher training (referred to as 'Learn While you Teach')
Grantee: Society for the Advancement of Education (SAHE)

Project Description
The LWYT project aimed at improving student learning outcomes by strengthening and improving the delivery of teacher training in the province. The pilot was implemented by SAHE (NGO) in close partnership with the Directorate of Staff Development (DSD), School Education Department, Government of the Punjab. The experiment relied on the use of District Teacher Educators (DTEs) to improve learning in science and mathematics for students of Grade IV. The experiment at a first step identified why children performed poorly on science and mathematics and based on that developed 20 videos for improving teaching quality. DTEs were trained in using new ways of teaching mathematics and science through videos on tablets. The DTEs trained primary school teachers (PSTs) who, in turn, taught differently in their classrooms. The grantee provided mentorship for the PSTs to ensure they apply better ways of delivering lessons. Performance of target schools was compared with the performance of other schools not covered in the intervention to assess impact. The project established an alternative way of training teachers to improve teaching quality and learning outcomes in primary education. An MoU detailing roles, responsibilities and adoption agreement was signed between SAHE and DSD prior to award of the grant to ensure sustainability.

Project Cost
Total Cost of the Pilot was PKR 50,436,885 out of which PKR 7,301,250 was SAHE’s matching contribution. This translated into a cost of PKR 475/beneficiary/month of intervention.

Beneficiaries
The experiment was carried out in districts of Hafizabad, Sahiwal and Bahawalnagar benefitting 178 District Teachers Trainers (DTEs), 1537 teachers and approximately 16,000 students.

Results
Impact was measured by an RCT. The overall improvement of teacher knowledge was not statistically significant, but there was a 2.7% improvement for the least educated teachers as compared to the untreated group. There was no impact on student learning during the course of the pilot.

Adoption & Scale-up
The Directorate of Staff Development (DSD) has endorsed the scale-up of the intervention and jointly applied for a grant from Ilm Ideas 2. DSD based on the learnings and in collaboration with SNG and SAHE have made the following amendments to the design:

- To ensure exposure to the training content for longer periods of time, each treatment teacher will be directly provided with a digital tablet.
- The pedagogical knowledge deficit of teachers will be addressed through the development of videos that contain edited recordings of live training sessions involving a mathematics expert and a small group of teachers and DTEs.
- Selected treatment teachers will be incentivised to discuss the training content in monthly peer group circles and compare teaching strategies to arrive at a consensus about effective pedagogical techniques.

LWYT would be replicated in 3 more districts of Punjab at a total cost of PKR 90.735 million benefitting 75,600 students. The Programme will run for 3 years resulting in per student per month cost of PKR 33.34 only.

Economic Viability of Scale-up
To develop the economic viability analysis, the following results have been used to develop assumptions:

1. Labour Force Survey (Regression) suggests that 1 year of additional education increases monthly income by 7.7%.
2. A World Bank Research shows improving learning outcomes reduce dropout rate by 66%11.
3. Punjab’s dropout rate (PSLM 2013) is about 15% resulting in 3 million dropouts. A 66% improvement would mean 1.98 million students attaining extra education – at minimum we assume 1 additional year.
4. Assuming minimum wage of PKR14,500, a 7.7% improvement caused by 1 additional year of schooling will translate into an PKR1,063 additional income per month.

Total Benefit: 1.98million * 1,063 * 12 = PKR 25.2 billion of

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income. For 3 years at 0 growth PV of PKR 75 billion. Assuming benefits begin to accrue in 5 years reduced the PV to PKR 46.5 billion.

Cost of Province Wide Scale-up over 3 year phased investments:
1. PV Fixed Cost of CAPEX: PKR 0.0621 billion

2. PV of Variable Cost: PKR 0.922 billion
DSD currently spends about PKR 3 billion on teacher training – over 5 years at constant value that is PKR 15 billion. The intervention will cost PKR 300 M year for next 5 years. The benefits are significantly higher.

Pilot Project: Education Data Management System (EDMS)
Grantee: TeleTaleem (Pvt.) Limited

Project Description
EDMS project aimed at improving evidence based policy making in the education sector by developing an analytics dashboard that captures student learning outcomes. The pilot was implemented by TeleTaleem (TT) (private sector) in close partnership with the Directorate of Staff Development (DSD), School Education Department, Government of the Punjab. The experiment promoted the use of educational data and information for evidence based planning and monitoring at district level. The experiment established an Education Data Management System. The DSD conducted student assessment 6 times a year from grade 3-5. This process of student assessment was fully automated where students used bubble sheets to fill in their responses and assessment were marked and uploaded using scanners placed at CTSCs. The staff that was involved in planning and monitoring at the district level have been given hands-on training so that they can use the system in their work. The project provided an analytical tool to correlate learning outcome data with missing facilities and other monitoring data for better planning and management. An MoU detailing roles, responsibilities and adoption agreement was signed between TT and DSD prior to award of the grant to ensure sustainability.

Project Cost
Total Cost of the Pilot was PKR 21,552,000 out of which PKR 2,352,000 was TT’s matching contribution.

Beneficiaries
The experiment was carried out in District of Sheikhupura, directly benefitting 114 DTEs, and indirectly 4,800 Primary School Teachers through improved identification of their training needs, where 41% of these beneficiaries were women. The pilot was also expected to indirectly benefit the children taught by the teachers that is approximately 79,600 children of primary schools of which 48% are girls.

Results
DSD/Education Department is now able to track on a click of a button student level attendance, examination results, subject wise performance, teacher performance, cluster performance and any other data cut required. As a test, DSD has used the EDMS to identify its teacher training needs in Sheikhupura.

Adoption & Scale-up
The pilot automated the existing process of DSD for conducting student assessments with an added feature of an analytics tool of data management and representation. The DSD took full ownership of this intervention and jointly with SNG presented the intervention to PITB. PITB also conducted field visits to verify the design of the technology and agreed to scale up the system across the province and link it with the existing education monitoring indicators. The pilot was also presented to Education Department where a strong interest was shown. However, in material terms the progress is still lagging.

Economic Viability of Scale-up
To develop the economic viability analysis, the following results have been used to develop assumptions:
1. Total children to benefit around 9.8 million (primary) from better policy measures.
2. Reduction in time of District Teacher Educators by at least 30%: PKR 810 million saving (Total of 4,500 DTEs in Punjab, average cost per year is PKR 600,000. This is monetisation of time freed up for DTEs to work on teacher training and mentoring. This is value per year. The gain in twenty years will be around PKR 7.9 billion.
3. School Education Department Development Budget is close to PKR 50 billion. According to a study efficiency gains of education spending using the same resources varies between 1.6% to 9.1% for OECD countries. Therefore even if one assumes the minimum gain of 1.6% it will translate in a quantifiable gain of a gain of PKR 800 million per year.
4. Indirect impact of one year additional education due to better learning environment is: PKR 48 billion of increased earnings per year assuming earning start with a lag of 10 years.

Cost of Province Wide Scale-up over 5 year phased investments:
1. PV Fixed Cost of CAPEX: PKR 160 million – can be reduced to 90 million by further clustering
2. PV of Variable Cost: PKR 15 million per year; so in perpetuity PKR 187 million (10% discount 2% growth)

The cost is insignificant in comparison to benefits that it can accrue.

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Round 2: Health Pilot Projects
Khyber Pakhtunkhwa

Pilot Project: Integrated Disease Surveillance and Response System (IDSRS)
Grantee: Directorate General Health Services Khyber Pakhtunkhwa
(referred to as Health Department)

Project Description
Communicable diseases account for 50% of all deaths at national level and an approximate loss of US$ 662 million (PKR 68 billion) to the province annually\(^5\). A number of Health Information Systems (HIS) are operational under Health Department (HD) to handle such diseases effectively but they work in silos – each monitoring the activity or disease of its own interest. The province frequently faces emergency situations but it does not have system to provide regular, timely, and valid information on disease outbreaks and other health related disasters. The IDSRS has integrated these systems to facilitate timely identification of, and response to the outbreaks of communicable diseases. The project has developed consolidated guidelines and trained professional/staff and community groups run the system, effectively. A public health lab is also getting established to conduct tests for communicable diseases. The establishment of the IDSRS shall facilitate compliance with International Health Regulations (IHR 2005) as per Pakistan’s international commitment.

Project Cost
The project started in September 2015 and ran until June 2017. The DDCF awarded a grant of PKR 73.665 million of which PKR 52.7 million (71% of the grant) has already been disbursed till the end of December 2016.

Beneficiaries
All public sector hospitals/health facilities service users were the direct beneficiaries of the pilot. Around 5% of the population (285,000) people living in target districts irrespective of ages and gender directly benefited from the intervention\(^6\). Till the end of December 2016, the pilot already reached out to 59,190 individuals (more than 50% women) including healthcare professional/support staff indirectly.

Results
Specific information and disaggregated data on beneficiaries will be available soon.

Adoption and Scale up Status
Health Minister KP, in a meeting held on November 25, 2015, directed that the IDSRS model be expanded to all districts in the province. Health Department has created permanent positions of Director Surveillance, and Dy. Directors Surveillance to manage the IDSRS beyond the project’s life. Similarly, positions of District Surveillance Officers were approved to be made permanent later. Health Department also held a series of meetings with Public Health England (PHE) and, as a result, the latter would fill up the gap between the closure of IDSRS project under the DDCF and the full adoption of this model within government.

Cost-Benefit Analysis of Scale-up
It costed the HD approximately PKR 73.66 million to develop the model and implement it in six (6) districts (PKR 12.3 million/district). Replicating the model across the province required an expenditure of PKR 195 million (PKR 7.8 million/district). The average cost was less because the system was already developed in the pilot phase. Therefore, many other costs decreased because of the economies of scales and other savings. Effective deployment of the IDSRS system significantly reduced the burden of disease in KP, estimated at PKR 68 billion, annually. The data shared by the HD suggests that the scale-up will generate direct or indirect public benefits for an estimated 1.6 million visiting primary healthcare facilities in districts, annually.

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\(^5\) Please visit [http://www.who.int/chp/working_paper_growth%20model29may.pdf](http://www.who.int/chp/working_paper_growth%20model29may.pdf) to see how figures are worked out.

\(^6\) In its application for funding to the DDCF, Health Department pointed out that 30% of population in the six target district would benefit from this intervention.

We are using 5% of population in target districts as beneficiaries instead.
Pilot Project: Diabetes-Treatment and Lifestyle Knowledge (D-Talk)
Grantee: Department of Diabetes and Endocrinology Postgraduate Medical Institute Hayatabad Medical Complex

Project Description
Non-Communicable Diseases (NCD) account for 38% of all deaths at national level and an approximate loss of US $ 328 million (PKR 34 billion) to the province, annually. Diabetes remains a major contributor of this burden of disease. The prevalence rate of disease in KP is the highest in Pakistan and growing, consistently. The disease is covered in the essential services packaged to be provided at primary healthcare facilities (PHC) but an effective system to prevent and facilitate the treatment of the disease at this level is not operational. As a result, in a majority of cases, people get to know they are suffering from disease when they begin developing complications. The pilot tested a new system to detect pre-diabetic/diabetic patients through screening at PHC level and refer them for treatment where required. A manual of procedures was developed, doctors and paramedic were staff trained, and a registration and referral system were operationalised for that purpose. The model also included behaviour change interventions to promote awareness of the disease.

Project Cost
The DDCF awarded a grant of PKR 58.8 million, which was disbursed to the granteetill the end of December 2016.

Beneficiaries
The D Talk pilot targeted about 34,000 beneficiaries, of which about 52% were women belonging to around 85.7% rural populations in the 6 districts. Till the end of December, the pilot had already reached out to 54,300 (42% male, 58% female) individuals which was 60% more than the target.

Adoption and Scale-up Status
Health Department also signed a Memorandum of Understanding (MoU) with SNG to adopt D-Talk model if it proved successful. A Steering Committee headed by Secretary Health at provincial level and District Oversight Committees headed by Deputy Commissioners review project implementation, periodically. The government established a task force on diabetes headed by Senior Minister, Health in November 2016. The task force constituted an executive committee in December 2016 to identify options to scale-up the D-talk model across the province. The Project Director, D-Talk Pilot was both secretary/member of the task force and head of the executive committee. The project was on track for adoption.

Economic Cost-Benefit Analysis of Scale-up
It costed the HD approximately PKR 58.8 million to develop the model and implement it in six (6) districts (PKR 9.8 million/district). Replicating the model across the province would require an expenditure of PKR 175 million (PKR 7 million/district). The screening will help around 175,000 (7000 people/district) annually in early diagnosis and treatment of disease. In the absence of such screening and treatment facility at primary healthcare level, health system will fail to detect an estimated 7,000 people with pre-diabetic conditions. Treatment of these people, if early detection opportunity is missed, is estimated to cost PKR 465.5 million per annum. Additional reduction in the burden of disease would occur since people would be educated to take preventive measures and provided timely and appropriate treatment—which would minimise the risk of disease getting complicated and too expensive to handle by public health system.

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16 The numbers have been worked out on the basis of (a) the estimation of the economic impact of chronic NCD in selected countries by WHO (http://www.who.int/chp/working_paper_growth%20model29may.pdf) and (b) WHO NCD Country Profile (Pakistan) for 2014 (http://www.who.int/nmh/countries/pak_en.pdf?ua=1)
Punjab

Pilot Project: TeleMedicine Solution
Grantee: Health Department District Sheikhupura

Project Description
The TeleMedicine Solution project aimed at filling the gap of a doctor at remote Basic Health Unit (BHU) by equipping the BHU with key diagnostic facilities and connectivity with a remote doctor. The pilot was implemented by District Government of Sheikhupura in partnership with a US based technology provider J&B Medicals. The experiment tested the use of Tele-diagnosis equipment that can conduct 17 primary tests simply by the touch of a stroboscope. Available paramedics or LHWs at basic health units were trained to use the equipment.

The equipment had a capacity of being solar powered and worked on simple GPRS to connect to a consultant sitting at a senior district hospital. The results of the tests were immediately sent to the consultant and patient could engage with the consultant in real time over video connectivity. The system also had the capacity to centrally store the patient data that could be used to predict disease patterning which can generate evidence to inform planning and budgeting for staff and medicines. The equipment was capable of conducting almost all initial gynaecology tests, including ANC scans. This experiment was a unique example where the government itself is the grantee, which ensured full ownership and sustainability.

Project Cost
Total Cost of the Pilot was PKR 30,771,353, in addition to the cost of using government facilities, office space and staff was taken as in kind contribution.

Beneficiaries
The experiment was carried out in the District of Sheikhupura and benefitted 82,000 patients.

Results
The key impact has been an increase in ANC follow-up from 15% to 60% and inflow of patients to BHU that have increased by more than 50%. Survey results showed that this service was successful in decreasing the inflow of patients at senior hospitals as they were getting good quality treatment at BHU level.

Adoption & Scale-up
The pilot gained a lot of traction from various stakeholders, including donors, district government and provincial government counterparts. The Chief Minister has taken a policy decision that he intends to have Tele-medicine facilities across the province, especially the BHUs where despite all efforts government has failed to place credible doctors. Several meetings have been held with PITB and learnings have been shared. PITB is not testing only one of the component of the technology (audio-video) in 5 districts to further pilot and test its effectiveness. Moreover, a low cost version has been installed by PRSP in Vehari based on the experiences shared by SNG in Sheikhupura. PRSP has replicated some components of the project in district Vehari. Moreover, district Hafizabad would be implementing full scale telemedicine.

Economic Viability of Scale-up
To develop the economic viability analysis, the following results have been used to develop assumptions: Punjab currently has over 2,461 BHUs, however, around 20% of these may be considered as most ineffective on the basis of non-availability of doctors\(^\text{16}\). The scale-up viability is considered on expanding the full solution (Audio-Video, Diagnostics & Patient health Records) in 600 BHUs.

Benefits of Providing the Service at 600 BHUs
1. Perpetual Value of Service Provided is equivalent to PKR 52.6 billion. This value has been estimated considering the perpetual cost of provision of 3 specialists and 1 MO per BHU.
2. Value of medical tests Performed: PKR 1 billion a year, or PKR 20 billion in perpetuity. This is equal to about PKR 1,680,000 worth of tests and diagnostics at each BHU – much higher than the 350,000 per unit cost stated above.
3. Moreover, increased patient flow at BHU will reduce flow at senior hospitals resulting in further cost savings.

Cost of Province Wide Scale-up over 3 year phased investments (600 BHUs):
1. PV Fixed Cost of CAPEX: PKR 1.2 billion – leased over three years.
2. PV of Variable Cost: PKR 8.5 billion in perpetuity (Annual around PKR 700,000 per BHU) – Current cost per BHU is around PKR 350,000 – so existing cost would double, but per patient cost will be lower as it is expected that the patient load will double. (The cost includes establishment of call centres, doctors salaries, internet and other running expenses)

The benefits rendered through provision of telemedicine services at 600 BHUs are far greater than the costs, which makes this scale up economically viable.

Pilot Project: Integrated Ambulance Service (IAS)
Grantee: District Health Department Hafizabad

Project Description
IAS project aimed at filling the gap of timely availability of medical service for EmONC. The pilot was implemented by District Government of Hafizabad in partnership with Ufone, a telecommunications service provider in Pakistan. Previous research and empirical evidence shows that a mother or her child life is lost every 37 minutes in Pakistan due to delays caused by: (i) decision making by family members to transport the mother to hospital; (ii) affordability and availability of suitable transportation and; (iii) provision of immediate medical services. It can be reasoned that the second factor somewhat affects the other two. This experiment addressed this critical second factor of delay. The pilot developed a GIS enabled ambulance dashboard that provided doorstep facilities for EmONC. The ambulances were managed centrally by the DCO office and located through GIS mapping covering the entire rural area of Hafizabad. The paramedic/LHW associated with the ambulance was trained to provide basic services and at the same time will be trained to notify the nearest hospital about the patient’s condition to ensure appropriate readiness. All of this communication between patient, driver and medical facility was tracked and recorded by a central control room.

Project Cost
Total Cost of the Pilot was PKR 26,931,353, in addition the cost of using government facilities, office space and staff, which was taken as in-kind contribution. Ufone’s contribution was approximately PKR 10 million.

Beneficiaries
The experiment was carried out in District of Hafizabad and have handled 5,500 deliveries, 1098 medical emergencies and 240 road traffic accidents.

Results
The project was expected to increase accessibility of EmONC by at least 25%. Almost 63.3% of MNCH complications were due to the transport barriers, IAS focused on eliminating this barrier and bring down the IMR and MMR.

Adoption & Scale-up
The pilot displayed a strong public-private partnership model where initial seed funding by DDCF paved way for a private mobile provider to come in a work with the district government. The integrated system was developed by Ufone, keeping in mind the easy scale-up and deployment across the province. The provincial government of the Punjab has scaled up the pilot across the government under the project Mahfoz Maa.

Economic Viability of Scale-up
To determine the economic viability of an ambulance service the common estimate is based on people’s willingness to pay. The following assumptions were used to estimate the demand for the service across the province.

1. It was assumed that the population of Punjab is around 100 million. The population growth rate is 2.05%, which means that approximately 2,050,000 new children are born. The MMR is 227/100000, this means that around 4,600 mothers expire during pregnancy. The IMR is 88/1000 live births implying that 180,400 children die during pregnancy. Adding all these numbers, one can estimate that the number of pregnancies a year would equal around 2,235,000. 60% of the Punjab’s population is in rural areas resulting in a target demand group of around 1,340,000 pregnant mothers.

2. Another estimate of the benefits that can be rendered can be on the basis of number of lives that could be saved through the provision of EmNOC services and statistical value of human life.

a. Respectively it was estimated that that 14,205 lives (mother or her child life is lost every 37 minutes) could be saved through provision of EmNOC services
b. Minimum statistical value of human life in Pakistan was around PKR 27.67 million

Benefit of Province Wide replication:
1. It is reasonable to assume that the family of a pregnant mother will be willing to pay a minimum of PKR1,000 for an ambulance. This will result in an economic benefit of around PKR 1.34 billion per year or PKR 16.8 billion in perpetuity.

2. The benefit is estimated at a very low value for willingness to pay, it is rational to assume that willingness to pay in this situation will be much higher than PKR 1,000 (as private ambulance service charges a minimum of PKR 2,000 to PKR 3,000) resulting in much higher economic value.

3. Another estimate of benefits based on number of lives that could be saved through provision of EmNOC services and statistical value of human life is over PKR 393 Billion.

Cost of Providing the Service across the Province
1. The costs of ambulances and their running cost as that is part of the existing set-up have been excluded.

2. The scale-up cost of the IAS in each district will be around PKR 3 million a year or PKR 105 million for remaining 35 districts for the first year. Beyond the first year the variable cost for 35 district will be around PKR 60 million.

The benefits of EmNOC surpass the costs which makes this a viable option with a positive NPV.

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[60] Research and advocacy fund documentry, DFID.
**Project Description**

HZ project aimed at enhancing the coverage and completion of child immunisation cycle by deploying innovative use of technology to make each child traceable. The pilot was being implemented by Information Technology University in partnership with PITB and PSPU, Health Department. The Har Zindagi experiment aimed to achieve significant performance improvements in immunisation administration, such as increased uptake, retention and quality of immunisation, by addressing low resource communities. The key innovation under the HZ project was redesigning of the immunisation card, to make it more intuitive for low-literate users (by adding visual instructions, graphic illustrations, etc). The functionality of the card has also been improved by adding a Quick Response (QR) code and an NFC reader (electronic memory card) so that the unique child ID of each card can be digitally scanned by the vaccinator’s smartphone and data transferred to and fro. Other project components include (i) creating digital immunisation records in the field; (ii) ICT based Monitoring, Evaluation and Learning (MEL) for vaccine administration (iii) data-driven policy prescriptions for decision makers; (iv) vaccinators’ duty rostrum and; (v) robo-calls and sms to reduce defaults. The pilot is an extension of the existing EVACCS programme of the provincial government.

**Adoption & Scale-up**

The HZ project is a natural extension of the existing EVACCS programme and PITB agreed that the components relating to sms alerts, robo-calls and vaccinator duty rostrum was scaled up across the province by November 2016, whereas the e-vaccination books and HZ application replaced the existing EVACCS by March 2017.

**Economic Viability of Scale-up**

To determine the economic viability of E-vaccination the following assumptions were used to estimate the benefit for the service across the province.

1. Number of epidemic cases that that lead to life threatening diseases are estimated to be over 30,000 in a year\(^1\).
2. The current level of immunisation coverage is 76%, which translates into 7,200 children who do not receive vaccination\(^2\).
3. Minimum statistical value of human life in Pakistan is around PKR27.67 million.

**Benefit of Province Wide replication:**

Estimated benefit based on number of lives that could be saved through provision of E-vaccination services and statistical value of human life is over PKR 199 Billion.

**Cost of Providing the Service across the Province**

Based on the current population growth approximately 2 million children are born in the Punjab, PITB has estimated that it will cost around PKR 250 million/year. This includes the cost of printing booklets, hosting data, and other operational costs. However, this cost will replace the need for EVACCS and that cost will be subtracted.

The benefits of E-vaccination services exceed the costs which makes this a viable option with a positive NPV.

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Pilot Project: SMART Procurement, Supply Chain and Distribution of Medicines at Government Health Facilities (referred to as Teemardar – Medicine Inventory Management (TM))
Grantee: Shahid Javed Burki Institute of Public Policy (BIPP)

Project Description
Corruption and misuse of medicines at government health facilities result in a substantial loss to the provincial exchequer. This also impacts the timely availability of affordable and reliable medicine. The TM pilot has automated the inventory management system to reduce pilferages, improve availability, maintain visible inventory and create data for informed procurement and distribution of medicine at district level. The pilot is designed to vertically integrate with PITB (which is working on standardized procurement of medicines in the districts) and with the work of district planners to provide evidence based needs assessment of medicine requirements. Additionally, the pilot has created display spots of inventory for public view to increase transparency. Finally, by tracking exact use of medicine the pilot has developed a disease patterning in the district that will inform planning and budgeting. The pilot has used district government staff for implementation to ensure uptake – these have be trained within the pilot. The project is being implement by Burki Institute of Public Policy (BIPP) who have signed an MOU with PSPU, Health Department to be responsible technical guidance and sustainability.

Project Cost
Total Cost of the Pilot is PKR 51,819,709, out of which BIPP has contributed PKR 13,125,000 as a matching amount.

Beneficiaries
The project operated in Sheikhupura and benefitted almost 1.3 million patients who received medicine from the electronic desks. All the historic data of stocks was uploaded to ensure daily inventory record was visible.

Results
Inventory management component of the project led to controlling pilferage, transparency, better monitoring and evaluation and efficient service delivery. Similarly, Electronic Record Management (ERM) resultantly improved patient record, disease records and patient disease history. The end assessment is not yet available which will provide more quantifiable impact numbers.

Adoption & Scale-up
A detailed presentation was made to Secretary Primary Health, who instructed to start developing a PC-1 to present the project in the next year’s ADP.

Economic Viability of Scale-up:
Benefit of Province Wide replication: Punjab government is spending around PKR 17 billion a year on medicine. An improvement of 5%, 10%, 15% or 20% may result in efficiency gains through reduction in pilferages, improved availability and improved transparency [i.e. reduction in wastage] from the scale up will result in an annual respective benefit of PKR 0.85 billion, 1.7 billion, 2.55 billion or 3.4 billion with a respective perpetual value of PKR 10.63 billion, 21.25 billion, 31.88 billion or 42.5 billion. Assuming discount rate to be 10% and growth of 2%.

Cost of Providing the System across the Province
1. The fixed cost of providing the system across the province will be PKR 3.4 billion
2. The VC of running the system will be PKR 41.5 million per year, or PKR 520 million in perpetuity.
The benefits are far greater than the costs in all scenarios with positive NPV, therefore the invention is viable for scale-up.
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