

Innovations for Sustainable Infrastructure – Experience from Azerbaijan Rural Investment Project (AZRIP)

Over the past decade plus, Community Driven Development (CDD) has proven to be an effective strategy for promoting the development of small-scale infrastructure. Indeed, by involving community members in decision-making processes and project implementation, the CDD approach increases community ownership of investments projects and enhances their sustainability. However, despite its successes in the realm of small scale infrastructure, CDD's track record in promoting sustainability for more complex infrastructure projects (such as roads and water supply systems) is mixed at best and the connection between community ownership and sustainable infrastructure is not well established for larger scale projects.

In order to ensure that the “triple bottom line” of sustainable infrastructure is met in the context of CDD operations, infrastructure investments need to be selected and implemented using an integrated approach that combines sound economics, solid engineering and attention to social dynamics and environmental sustainability . By successfully incorporating a variety of innovations, the Azerbaijan Rural Investment Project (AZRIP) demonstrates how adopting a comprehensive approach—including a focus on life-cycle costs, private sector

participation, and participatory processes—is critical for achieving sustainable infrastructure investments. As such, AZRIP serves as a good example of how close engagement with communities and attention to sustainability in project design and implementation can lead to positive development outcomes and the achievement of the “triple bottom line”.

Background

AZRIP was designed to put communities at the forefront of promoting rural infrastructure development in order to improve their living standards and enhance their access to infrastructure services. By building the capacity of communities and governments to engage in participatory planning and project implementation, AZRIP significantly improved rural communities' access to infrastructure services. For instance, the travel time to school and markets was reduced by 47% and 26% through the rehabilitation of rural roads. Similarly, beneficiaries' livelihoods have also improved significantly as a result of the project. For example, the rehabilitation of irrigation systems resulted in an increase of production by more than \$1 million in project areas while primary school enrollment

increased by 25% after school rehabilitation. Moreover, where AZRIP rehabilitated roads 78% of farm products are now brought to markets in nearby towns by farmers themselves (as opposed to 18% in non-beneficiary areas) and farmgate prices increased by 20% for various crops in project areas (while the corresponding prices in non-project areas decreased).

As the figures above demonstrate, AZRIP has achieved success in a wide range of areas. Perhaps as notable as these accomplishments, however, is the strategies that the project has applied to achieve these goals. Indeed, AZRIP's integrated approach to infrastructure development has improved the way in which rural infrastructure projects are selected and maintained in Azerbaijan and created a framework that the country can draw upon for its future infrastructure development. to help arrest this sharp rise in poverty levels.

Balancing Choice and Sustainability

The maintenance of rural infrastructure is often challenging as governments frequently do not have sufficient budgets to maintain these investments. As such, community ownership is critical for the sustainability of rural infrastructure. By using a variety of innovative methods to ensure the sustainability of infrastructure investments, AZRIP successfully strengthened the capacity of communities so that they could contribute to maintaining the infrastructure that is critical for their livelihoods.

One innovative facet of AZRIP is that the Participatory Rural Appraisal (PRA) conducted for the project included a simple economic analysis aimed at helping

communities identify sustainable investments and make well-informed investment decisions. In similarity to most CDD projects, communities identified and prioritized infrastructure needs during the community mobilization phase. However, in order to help AZRIP's roughly 340 communities decide which investments to prioritize, the project hired technical design firms that were responsible for identifying alternative technical solutions (e.g. gravel vs. paved roads) for each of the top three or four priorities and informing communities of associated life cycle costs and distributional impacts (e.g. investment costs, maintenance costs, number of beneficiaries, etc)

Providing communities with this type of information was critical to AZRIP's success because it helped beneficiaries identify optimal technical solutions that balanced distributional impacts and future maintenance outlays. Whereas before the economic analysis was introduced communities usually elected to adopt a lower cost solution that would maximize the number of beneficiaries (even though it would require higher maintenance costs), the introduction of the easy to understand economic analysis led communities to select projects that optimized the balance between investment costs, future maintenance outlays and the number of beneficiaries. For example, in many cases communities discarded their initial first choice when it became clear through the economic analysis that other investments would have higher distributional impact or be more feasible from a sustainability perspective. In this respect, AZRIP's provision of information helped communities more effectively select projects that balanced short-term needs with longer term financial realities.



Rural Roads after Rehabilitation

In the process of enhancing communities' awareness about life cycle costs and the cost effectiveness of different projects, AZRIP's approach also successfully minimized elite capture. Indeed, poor and vulnerable groups could more easily advocate for design solutions with higher distributional impacts because the cost effectiveness ratio of alternative investments was clearly presented to communities in a simple table. As such, AZRIP's presentation of quantitative data through the economic analysis helped the poor find a voice in the decision making process, ensuring that investments would benefit the entire community (as opposed to narrow interests).

Planning for Sustainability

After communities made the decision about which infrastructure projects to invest in, they worked with the regional technical design firms to develop the maintenance plan, conduct the environmental assessment, etc. Critically, since the maintenance plans are based on actual maintenance needs over the life of investments (that are calculated as part of the economic analysis), the design firms are able to provide clear cut estimates of what the future maintenance costs will be. As such, they can inform communities how

much maintenance funds need to be saved on an annual basis to prepare for future maintenance expenses.

Moreover, and as mentioned previously, the maintenance plans allow communities to devise a strategy for longer term maintenance requirements. As part of their strategy, some communities have even set up a maintenance contribution fee structure according to usage. For example, in some communities, households contribute to the portable water supply system depending on the number of family members, which roughly correspond to the level of consumption. Similarly, owners of heavy vehicles (e.g. trucks, tractors) are expected to contribute more than owners of light vehicles and those who do not own a vehicle. This arrangement ensures that community members' maintenance contributions reflect the extent to which they contribute to causing damage to the roads (which need to be repaired through maintenance). As these examples demonstrate, the simple economic analysis (and resulting maintenance plan) used by the project has allowed communities to both identify potential financing gaps and devise their own financing mechanisms that are fair and feasible.



Schools After Rehabilitation

The maintenance plan is also particularly important because it outlines maintenance

responsibilities and the division of costs among communities, municipalities, and service providers. Each maintenance plan has three columns that clearly outline who will contribute, how much they will contribute and what their responsibilities are. The plan also outlines the activities that need to be done to maintain the investments over time. Once finalized, the operations and maintenance plan is approved by the community, municipality and relevant department (water department, health department, etc). The approval of the agreement by the parties confirms that the operations and maintenance plan is feasible and that the relevant agencies/communities will take responsibility for their maintenance obligations.

Our family's main source of income is agriculture. We were suffering from the problems of acute water shortage for irrigation. We heard about the activities of AZRIP from our community. All the people of the village participated in the mobilization process. The very interesting part of that process was 'priority problem' definition and identification. A vast majority of the villagers voted for irrigation water supply project as the priority number one....[As a result of the project] our farm income has increased by more than 30%. Thank you very much.

-Aliyev Mahir

Garamanli village, Yevlakh rayon

Building Long Term Capacity

In order to build their long-term capacity, communities organize community project committees that are in charge of project implementation. In addition to community members, someone from the municipal council and a representative of the district council also sit on the committee to ensure government buy-in.

As project implementation moves forward, communities are supported by both the

design firms and a community engineer who represents the community on technical aspects of project planning and implementation (and works closely with the design firms). In order to promote technical quality, AZRIP introduced design standards that investments supported by the project are required to adhere to. For example, AZRIP prepared design standards for the most popular types of investments—including roads, portable water/ electricity supply systems, irrigation, drainage, schools and clinics—and strengthened the capacity of the PMU engineers and design firms to oversee these projects.

Community engineers, community members and technical design firms share responsibility for supervising contractors during the construction of civil works. The day-to-day supervision provided by these stakeholders is particularly important for ensuring the quality of civil works. Design firms also visit project sites regularly to ensure contractors comply with technical requirements, something that it is often difficult for unskilled community members to do. Finally, community oversight minimizes fraudulent behavior by contractors, since community members are fully informed about project costs and involved in the planning and implementation of civil work. Complaint boxes installed in community halls provide communities with the opportunity to report incidences of corruption and provide suggestions for improvement.

Another notable feature of AZRIP is that the project has taken explicit steps to strengthen the capacity of regional design firms. Given that design firms have the capacity to decrease costs and increase the quality of infrastructure in the long run, the project held a variety of technical workshops to build their capacity. Moreover, AZRIP deliberately selected regional design firms

that are easily accessible to community members. Community members are encouraged to contact design firms for technical advice regarding maintenance or additional capital investments. While design firms are required to respond to such calls, they are generally responsive since it creates potential business opportunities for them. Indeed, while the design firms generally answer communities' questions free of charge, they charge fees for further technical assignments such as the design of maintenance works or additional investments. By strengthening the capacity of regional design firms and generating connections between the private sector and communities, AZRIP was able to improve the quality of regional technical expertise and raise the overall capacity for sustainable rural infrastructure management.



Community Cross-Visit

The fact is that rural infrastructure investments are very difficult to maintain without local ownership. All of the innovations described above were designed to help beneficiaries make better decisions and increase their level of involvement in the project. In short, by linking ownership to action, the AZRIP approach has empowered communities to become actively involved in ensuring that their rural infrastructure is maintained. In combination, all of the measures discussed in the sections above have helped expand the positive benefits of

infrastructure rehabilitation and ensure their sustainability. Indeed, almost all infrastructure rehabilitated in the previous four years of project implementation is still operational, as community members and local governments have successfully provided sufficient funding for maintenance.

Forging Connections and Changing Mindsets

In addition to its innovative approach to sustainability, AZRIP's multifaceted knowledge sharing program is another of the project's major strengths. To begin with, AZRIP organizes cross-visits between communities. It is important to note that the educational component for these visits is prepared for communities by communities. The cross-visits, in which members of one community typically stay overnight in another village, provide beneficiaries with the opportunity to learn from one another regarding investment plans, capacity building experiences, innovations, experiences with different contractors and maintenance activities. These visits were critical to the project's success because they allowed community leaders who were just getting started with AZRIP to learn from those who were further along with the project. Indeed, the project found that this type of peer to peer training was more effective than training done by project staff or other outside actors.

The project also holds an annual investment conference which brings together community members, government, donors and NGOs. At the event, communities have the opportunity to make presentations about their ongoing activities and lessons learned. Moreover, the conference also allows communities to leverage the skills they have developed through AZRIP to build connections with other potential donors. For

example, AZRIP communities applied to the Japanese embassy for funding after meeting embassy representatives at the national conference. As these examples demonstrate, in addition to building bonds between communities, the conference is important for promoting best practices and fostering relations between government bodies, communities and donors.

Interestingly, prior to AZRIP there was very little previous experience with community-based approaches to development in Azerbaijan. As such, many government officials were unfamiliar with the multitude of ways that community based approaches could be used to produce positive results in the realm of rural infrastructure. However, after observing the positive results achieved by AZRIP in the realm of sustainable rural infrastructure, decision makers in the ministries have gradually warmed up to the approach.

Moreover, the project forged connections between government officials and community members by holding field visits in communities. When government officials saw that communities were effectively implementing projects, they were often so impressed that they committed additional

funds to community projects. For example, when one community invited the education department to see its school project, education officials were so impressed that they decided to commit funds to the community's work. In a testament to the project's effectiveness, AZRIP communities received over \$700,000 in matching funds from the government between 2005 and 2008; these contributions were made on a voluntary basis (and not as part of AZRIP).

As these examples in this section demonstrate, AZRIP has used its knowledge sharing program as way to foster connections between communities, share lessons learned and strengthen the bonds between citizens and the state. As importantly, the project has succeeded in changing mindsets about the viability of CDD and laid the groundwork for new approaches to infrastructure development and maintenance in Azerbaijan.

Lessons Learned

The project's successes in promoting sustainable infrastructure provide a variety of lessons learned that could be applied to benefit future CDD operations including:



Community Meeting

Invest in Core Activities: For AZRIP, roads, potable water, irrigation, electricity, schools and clinics accounted for 80% of financing. While the project did not limit communities' choices in terms of project selection, it developed design standards and specifications for the most popular types of investments. By creating rigorous technical design standards, the project was able to deliver high quality infrastructure projects.

Community Ownership is Key, but Building Capacity is also Critical: While community ownership is key, even the most committed communities will have difficulty maintaining investments if they are not provided with the skills necessary to do so. AZRIP's approach was successful because it provided communities with the knowledge, connections and capabilities required to plan and implement long-term maintenance strategies.

- 1) *Enable Communities to Choose Sustainable Solutions:* The results of the project demonstrate that a simple economic analysis can be used to provide communities with the information that they need to make informed decisions about infrastructure investments. By providing an accurate picture of the costs, number of beneficiaries, and maintenance requirements, the economic analysis allowed communities to choose projects that effectively optimized the balance between inclusion and sustainability.
- 2) *Establish Clear Maintenance Plans Based on Credible Information:* Often times, complex infrastructure projects done using CDD are not sustainable because there is no ex ante understanding about potential maintenance requirements. By providing a clear sense of maintenance costs to both communities and the government alike, the project was able to fill potential funding gaps and generate a

long term commitment to maintenance activities.

It is more than one year since AZRIP completed its activities in our village. We are very satisfied with the conditions now. I can make quite a bit of savings in the transportation cost. Due to the bad road conditions before, I used to sell the farm products right in my village or to the middle men who come to our village. I knew that the prices offered were very low. However, I did not have any choice. Currently, I am taking the over 75% of the crop and livestock products to the near town market. On an average, I am getting 25% higher prices for the crops and 35% higher prices for the livestock products. Thanks to 'AZRIP Road Rehabilitation Micro-project', my income has risen substantially and I am able to support my family better Now I am sure that the "good road is an indicator for succesful business".

Quliyev Ilham Muhammed
Oglu, Navai village, Hajiqabul rayon

- 3) *Knowledge Sharing is Key:* Providing communities with the knowledge and capacity required to maintain infrastructure investments is critical for promoting local ownership and sustained involvement in the project. The project implemented a comprehensive knowledge sharing strategy that not only improved the project's effectiveness, but also built connections between different communities, the government, and the private sector. In the long run, these types of bonds are likely to lead to new approaches to infrastructure development and maintenance in Azerbaijan.
- 4) *Develop Local Capacity:* When possible, it is also important to improve overall regional technical capacity by involving, and investing in, the private sector. Given that regional design firms are

closer to communities than international firms, developing local capacity can lead to lower costs, higher technical quality and ultimately more sustainable investments.

For Further Information

Visit AzRIP homepage to learn more about the Project at www.azrip.org, or contact Satoshi Ishihara, Social Development Specialist (sishihara@worldbank.org)

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