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Nepal, Factor 20: Farm to Market

Nepal: Reducing Food Insecurity by Improving Market Access in Rural Areas

A landlocked country between two big neighbors India and China, and only marginally larger than the state of Arkansas, Nepal's population totals over 28 million people. Nearly a quarter of these people live under the poverty line. Thirty eight percent of the Nepali population is considered food energy deficient. After a decade of civil war that just recently ended in 2006, the government is still weak and struggling to rebuild the nation. With the recent earthquakes and ensuing aftershocks that affected 31 out of 75 of Nepal's districts, the situation of food security has become an even more pressing issue with both long and short-term implications.

Family unit is very important in Nepal, especially in rural villages. Traditionally, large, extended families were preferred. The average family size ranges from 4.32 in the urban districts to 5.02 in the rural areas. The nationwide average family size has dropped from 5.44 to 4.88 in the past 10 years (Ghimire, 2012). A traditional meal of a rural family consists of rice and lentil soup, complimented with seasonal vegetables. Where rice is unavailable, a thick porridge of ground millet, buckwheat, or corn known as *dhindo* is eaten with curried vegetables (Pathak, 2013). Meat is consumed only on occasion and does not constitute a major portion of the diet. Consumption of meat is also regulated by religion as many people are devout Hindus and do not consume the meat of cows. Most rural families are dependent on what they can produce themselves. For example, eggs, milk and other dairy products are consumed when a family has the ability to raise livestock and poultry. The majority of the residents in urban area still consume the same traditional foods, however their access to market and the influence of western culture adds more variety to their diets (ProQuest, 2015).

On average, fifty nine percent of family's income is spent on purchasing food, leaving less than half for clothing, healthcare, and education ("Market," 2008). With a GDP per capita of \$698 per year, the average family has a very limited income to indulge in balanced diet (World Bank, 2015). Most adversely affected by food insecurity are children, who must rely on any nutrition their family can provide. Only 1.5% of children in Nepal are considered overweight, while 11.2% are considered wasting, which is the most severe form of undernutrition. These children can hardly focus on obtaining an education when they are not developing properly. Other children never attend school or cease education after 5th grade because their parents' time and incomes are focused on feeding the family. Only 74.2% of boys and 66% of girls continue their education by enrolling in secondary school (grades 6-10) and even fewer consider attending college (Unicef, 2015). The overall literacy rate is 65.9%, but there is a disparity between men (75.1%) and women (57.4%) who can read and write (Government of Nepal Central Bureau of Statistics, 2014). Without a proper education, these families cannot break the cycle of poverty in which they have become ensnared.

Additionally, malnutrition weakens people's immune systems and puts a large portion of the population at a higher risk for diseases and infections. Due to lack of sanitation and better health education, intestinal parasites and outbreaks of cholera are common occurrences (Rai, Hirai, Abe, & Ohno, 2002). Diseases and infections that cause diarrhea account for about 3.3% of all deaths and is the 5th largest causes of death in Nepal ("Nepal: WHO," 2015). Access to healthcare facilities and providers is limited, especially in rural and remote areas where they are the most needed. Nationwide, healthcare resources are dreadfully inadequate. Latest figure show that there are only 7,285 hospital beds in the country and only 4 doctors and 23 nurses available per 100,000 population ("Delivering," 2012). Only 6% of Nepal's GDP is spent on healthcare, compared to 9.1% in the UK and 17.1% in the USA (Central Intelligence Agency, 2015).

Agriculture is the traditional way of life in Nepal where roughly four-fifths of the population is involved in some form of agricultural production, whether it is farming, livestock production or food processing. The agricultural sector contributes one-third of the nation's GDP (Smith, 2009). However, agricultural productivity is low leaving the country as a net importer of food. The growth in productivity is slower than population growth, production is concentrated in isolated pocket areas and access to market is very limited. The average family farm is less than half a hectare (less than the size of a soccer field) and most of them are subsistence farms, barely producing enough for a single family to survive (Karkee, 2008). Whatever a family is unable to produce must be purchased from local markets, which are difficult to reach and inadequate in terms of products. Lack of infrastructure and transportation are major factors impacting market access, therefore, food security in Nepal.

Majority of farmers follow traditional farming methods operating animal powered plows to prepare the land for planting and use no chemical or commercial fertilizers. An assortment of crops are generally planted near each other to maximize land space and are regularly rotated to maintain the integrity of the soil. Seeds are retained from previous harvests or are traded with neighbors, with very few farmers planting commercial or high yielding varieties of plants ("The village network portal," n.d.).

Agriculture production is unique as a result of three distinct geographical regions - the fertile plains in the south known as the terai, the central hills, and the northern mountain region that includes the Himalayas. The terai region is the most productive due to the sub-tropical climate and fertile soils. The moist soils and favorable climate are perfect for growing rice. Cash crops such as oilseed, tobacco, sugarcane, and pulses such as lentils are also common (Upadhyay & Joshi, 2003). The central hills are known for their varying climates and wide variety of terraced crops. Maize and wheat are the most common crops, while rice is grown in limited areas with irrigation facilities. Temperate fruits and vegetables are also produced in the central hill region, but their cultivation in the mountain region is very limited ("Planning," 2011). The rocky land and high elevations in the mountain region greatly limit the cultivation to a handful of hardy grains and staple foods such as barley, buckwheat and potatoes. This region is mostly suitable for raising livestock such as mountain goats, sheep and hill cows because pasture is more abundant than arable land (Smith, 2009). The difficult topography poses significant challenges for creating road networks and market access in the hill and mountain regions.

The level of food insecurity in Nepal varies regionally due to the agricultural productivity and infrastructure of the area. The lack of reliable electricity and usable roads makes storage and transportation of crops from areas of surplus to areas of need incredibly difficult. This has the greatest impact on the mountain region where only 3.9% of the land is suitable for cultivation. Occasionally, roads may be completely blocked off or severely damaged by floods and landslides. Clearing these roads requires time and resources, which further causes difficulty in providing food and access to markets. These natural occurrences also impact planted crops and influence the food prices. Since most production areas are near the streams and river banks, floods can damage entire harvests and submerge essential land, which leads to food shortages and skyrocketing prices. On the other hand, only 37% of agricultural land is irrigated and a major drought can cause significant decrease in yields. While agricultural productivity in general has increased over time, most rural farmers have not increased their production by investing in new equipment, irrigation systems, fertilizers, and improved seeds. Modern agricultural equipment such as tractors and motorized plows and tillers are a rarity on Nepali farms. Poverty-stricken rural farmers lack the funds necessary to invest in improving their farms and increasing their productivity (National Planning Commission, 2013).

Delivering products to market from the areas of production surplus is a struggle of its own. Nepal has only about 12,500 km of roads under its Strategic Road Network, half of which are paved and mainly concentrated in few major metropolitan areas. The road density is incredibly low at only 8 km of road per

100 square kilometers (Government of Nepal Department of Roads, 2014). With seven vehicles per one thousand people, transportation from rural areas remains an issue even with well-maintained roads (World Bank, 2015). For almost a third of rural farmers it is necessary to walk over two hours to reach the nearest market (Karkee, 2008). This adds to per unit cost of the produce through transportation loss, added expenses and opportunity cost of labor that could be used in production. This cuts sharply into the operational margin of the poor farmer and provides no incentive to invest in production technology. An investment in road infrastructure today will have a long-term impact on the food security in the years to come. Road access will reduce the time and labor needed to transport produce to the market and lower the cost. This will increase the return to an average smallholder farmer and increase household income. Lower food prices due to fewer risks, losses, and transportation expenses increases the affordability of food and promotes greater consumption.

There is great need of developing and maintaining market infrastructure. With limited storage space and refrigeration equipment, perishable fruits and vegetables must be delivered to market and sold quickly to avoid major losses. Even though electricity is available to 76.3% of people, it is inconsistent and unreliable due to production shortages and scheduled blackouts (World Bank, 2015). This hinders the development of market and storage facilities. Increased hydropower production would eliminate the scheduled blackouts and development of storage and distribution facilities that would encourage more production and improve productivity. Construction of major hydropower plants requires access to the area by road for flow of materials. Once opened to the public these roads allow access to goods and services, which leads to development in areas previously left alone.

Providing access to improved market for producers and consumers will enhance production, however, the productivity must also be improved that can provide for the rapidly increasing population. Maximizing the electricity production potential would allow for the operation of more advanced and efficient agricultural equipment. Mechanized mills can process grains faster and more efficiently. Utilization of irrigation technology would be more widespread, reducing reliance on local weather patterns and losses during mild droughts. Additional production would reduce food imports, leading to lower prices. Small sustainable farms benefit from being able to produce enough of a surplus to sell for income. This extra income could then be used by the family for education, paying for health care, or for reinvestments in the farm. As agriculture comprises a major portion of Nepal's GDP and employs millions of people, any increase of profits in this sector would simultaneously boost the overall economy (National Planning Commission, 2013).

Before the earthquake that recently devastated Nepal the quality of infrastructure had been increasing slowly but steadily. The number of districts not connected by roads dropped from nine to two between 2003 and 2013 ("About DOR," 2012). Maintained relations with China, India, and Japan have been advantageous to Nepal by allowing access to financial aids and loans. Construction of bridges with the help of foreign aid has allowed vehicle access to areas where people previously relied exclusively on carts and ferries ("Nepal plans," 2014). However, construction work is time consuming, limiting the rate at which road access can be improved. Current roads, even in major cities, are mostly limited to two lanes. Rural roads are only seasonally accessible, being either gravel or compacted dirt that easily floods or turns to mud during the heavy monsoon rains.

Infrastructure development improves people's access to food, but it is important to be aware of the role of other factors. Changes in the timeframe or the overall rainfall during the monsoon season significantly impact crop yields. Excessive rainfall causes runoff and soil erosion that leads to major landslides and loss of agricultural land. Melting of glaciers due to global warming also induces flooding of glacial lakes that damage surrounding farmland, roads, and equipment. In addition to causing extensive damage, flooding and landslides endanger the lives of rural farmers and their families. Loss of lives not only devastates families and friends, it also diminishes the labor force. Inversely, reduced rainfall lowers

agricultural production by causing droughts. The reluctance of farmers to utilize irrigation intensifies losses in unexpected dry spells (Dixit, 2013).

The amount of precipitation impacts more than food supply because of Nepal's reliance on hydroelectricity. Droughts reduce rivers and hinder electrical production while heavy rains can damage equipment through flooding during excessive rainfall. With increased variation in precipitation patterns, electricity will become more unpredictable and unreliable (Rai, 2014). Shortages and electric load-shedding will continue as production will be unable to match need. Increasing urbanization has been escalating the demand for energy, which will only continue to grow. A larger population in cities is also causing strain on already weak and unmaintained roads and buildings. Waste collection and environmental degradation is another concern of growing urban areas. Much of the waste collected from cities is deposited along river banks which leads to pollution of water supplies. The general urban population is not conscientious when it comes to proper disposal of personal waste, leading to large amounts of pollution and buildup of trash along roads and surrounding lands (Pant, 2012).

Without proper development, the situation in Nepal will only continue to worsen. There has been a recent influx of funds and aid after the earthquakes in late April and early May, however a lack of coordinated effort is slowing the recovery. With major damage to homes, roads, power plants, and the land itself, getting the country back on its feet will be a challenge. Food aid will only last until it is consumed (R. Shrestha, personal communication, July 19, 2015). However, this time is a perfect opportunity to improve and strengthen the overall infrastructure of Nepal so that the country can remain stable in the years to come. Attention should be given to building and maintaining transportation infrastructure, increasing production and availability of electricity, and promoting the use of mobile technology.

With the convenience of mobile phones speed of communication and spread of information across long distances has been greatly expedited, even as physical transport is lacking. The most important aspect of mobile technology is that it connects people. While computer use is limited to urban areas, mobile technology has been gaining popularity even in rural villages. One out of a hundred people has a fixed broadband subscription, yet seventy-seven out of a hundred people own a mobile phone (World Bank, 2015). The situation of electricity load-shedding in Nepal gives mobile phones an advantage over landlines because they can be charged beforehand and function during blackout periods.

Recently, mobile phones have been utilized in improving healthcare by creating instant communication between health care volunteers in rural villages, the community, and health care centers, a concept of Telehealth or Telemedicine ("Mobile," n.d.). Just as phones were given to the volunteer health workers, phones could be given to agricultural workers in rural areas such as farmers and veterinarians. Instead of traveling with an ill animal to a veterinarian which would require many hours, the veterinarian would be able to offer advice over the phone or by assessing pictures sent by the farmer. Farmers could also communicate with agricultural specialists or other farmers on improving crop yields, dealing with pests, and reducing losses. These practices would allow farmers to save time and money, and increase their farm productivity. Once they are able to produce enough to feed their families, they can then consider selling their surplus for income. With improved communication, farmers could also work together to bring their products to market. Since transportation is difficult and expensive, the farmers could divide the costs of renting a truck or other equipment to transport all of their products to a larger market where they are able to increase their profits.

The Rural Access Program has been working for construction of roads in four districts where roads are nonexistent. By working with local governments and the Nepali Department of Local Infrastructure and Agricultural Roads, they have gained continued support and cooperation. This program is limited to regions in the northwest corner of Nepal, but has shown potential of being incredibly beneficial by involving more local people in the construction and maintenance of roads ("RAP 3 Overview," 2013).

Even so, there are more districts and isolated areas within seemingly developed districts in need of similar development. Through additional aid and funding, this program could be expanded to include more than just the poorest districts of Nepal. In addition to road construction and maintenance from outside help, the local people should also be encouraged to become more involved. The idea that the roads are a community responsibility should be promoted and yearly work days should be organized that involve the entire village. More funding should be allocated for training a handful of people in basic construction and also leadership. With this training they will have the knowledge necessary to lead their community in properly utilizing their new road system even when the project has moved on to another location. The Rural Access Program does currently provide vocational training and creates temporary employment for the people as they assist in road work (“RAP 3 Overview,” 2013). Due to the geography of Nepal, it is difficult to construct paved roads to reach every last area. Therefore, when it is not possible to provide a paved road to every village, or any road at all, roads should lead to a common area of a cluster of villages. This way food can still be transported to the general area to be sold at local village markets when needed and exported out when there is a surplus. Once roads have been strategically developed, electricity and technology can begin to spread to previously isolated areas.

Nepal’s electricity generation is well below the demand and nowhere near the total potential. To meet the needs of the country, energy is purchased from neighboring countries, when it could have been produced domestically with more hydropower equipment. Big hydroelectric plants would reverse the trend, however, they require large funds and years to complete (Rai, 2014). A short term solution in the rural areas would be small scale or micro hydropower plants. Rivers fed by snowmelt from the Himalayan mountain range are abundant in Nepal, providing perfect locations for hydropower plants. In 2007 Nepal’s Alternative Energy Promotion Center began a project with financial aid from various organizations and support from the World Bank to construct micro hydropower plants in rural villages (World Bank, 2014). These power plants produce energy for a small group of surrounding villages, and are constructed and operated by villagers themselves. These power plants promote new businesses as well as a more sustainable lifestyle. With cheaper and reliable light source, villagers have more productive time at home, or they can operate new machinery to produce higher quality products in their homes and businesses. This project has almost reached its goals in terms of plant construction, and is to end in December of 2015 (World Bank, 2014).

Even with the increase in rural electricity, the total electrical production of Nepal is still deficient. This ongoing problem could be resolved by implementation of projects similar to Village Micro Hydro project, but on a wider scale and with focus on hydropower plants with higher production potential. Larger plants allow for surplus energy production that could then be sold to the Nepal Electricity Authority and provided to areas where hydropower is not feasible. This would generate more income for the villages to pay back loans required to construct larger facilities. When electricity is available efficient mills for grinding grains can be operated, decreasing the amount of labor necessary in agricultural production. Equipment for raising poultry can be utilized and meats can be refrigerated or frozen to extend their shelf life. Families can invest in refrigeration for storage of perishable products, allowing them to store more foods and improve their diets (World Bank, 2014). Children can focus on their education with access to electric lighting and reduction of labor as many minor tasks can be completed by machinery. The arrival of electricity is also what allows the utilization of mobile technology in rural areas. Development of one specific infrastructure opens the doorway for others to be improved as well.

Accomplishing the goal of increasing market access requires support from multiple agencies as well as the cooperation of the local government, communities, and individual families. No single group can complete such a task alone. If the agricultural families do not accept or properly utilize the resources that they have been given, their access to food will not improve. To first provide these resources, financial aid and leadership is necessary. Organizations such as USAID, various UN agencies, and World Bank have organized projects and provided loans and donations to help millions of Nepali people. Even so, more can

be done to improve infrastructure that will improve food access and assist Nepal in developing itself. No-interest loans from the World Bank and the United Nations Development Program would allow to focus on development projects. Since these projects strengthen the economy by increasing transportation and potential to export energy and agricultural products, these loans can be repaid in the future. Mobile technology promotion, distribution, and utilization could be managed through a project by the International Fund for Agricultural Development. The IFAD is already focused on improving the livelihoods and opportunities of rural farmers, especially in the hill and mountain regions (IFAD, 2013). This is where farming families will most benefit from mobile phones and the connection they provide.

It is the government of Nepal's responsibility to promote the development of the country using the resources that it has. The duty of The Department of Roads' is to develop plans and employ workers for road improvement ("About DOR", 2012). Hydropower is also managed by the Department of Electricity Development, but it does not have any projects in place to improve the hydropower situation (Department of Electricity Development, n.d). Instead, recent projects have been initiated by Nepal's Alternative Energy Promotion Center with support from the World Bank (World Bank, 2014). Nepal's Energy Authority and the Department of Electricity should be pushed to increase their involvement in rural electricity production as well as hydropower for the entire country. Improving food security is listed as a priority of the government of Nepal, but considerations have not been given to improvements such as mobile technology and electricity that will have a long term impact on food production and availability of services. The government needs to increase support for small rural farmers in gaining access to mobile phones and service, as well as increase their awareness of improved technologies.

The attitude and involvement of the people also contributes to the success of any program or project. It is the responsibility of communities to cooperate to bring about change. Families need to take advantage of opportunities they are given. Distributing phones will have no effect if the farmers do not utilize them properly. Electricity has the potential to improve the lives of the people in little ways every day, but if the community does not manage its production and use, the issue of underproduction will remain. As mentioned before, the rural roads system would be much improved if the community came together to repair and maintain their roads with the guidance and management of a handful of knowledgeable and trained professionals. Farmers can also improve the situation of food security by investing in improved seeds and better equipment so that their yields increase and they have surplus product to sell and feed other people. This is especially important in isolated areas where villagers rely on what they and their neighbors can produce.

As said by Norman Borlaug, "food is the moral right of all who are born into this world" ("Norman," n.d.). Many steps have been taken towards providing this moral right to the people of Nepal, but that is not enough. Rural villagers need year round access to market and food products from other regions when they cannot produce enough themselves. Without transportation infrastructure, neither producer nor consumer can reach an established market. Development is also hindered when new technology is not able to spread to areas where travel takes days. Connection to the rest of the country, by road or phone, allows farmers to cooperate to increase their yields and profits. With a surplus being produced by small farmers, more can be sold to neighbors who cannot produce their own food. Agricultural output of farming families affects the entire country, influencing food prices and balance of trade with neighboring countries. This agricultural output is influenced by road connection and quality of roads in rural areas, as well as availability of electricity and mobile technology.

Sufficient infrastructure is a necessity in all countries. Just as one cannot build upwards without a strong foundation, a country cannot support its population without basic infrastructure. Smooth paved roads, constant electricity, and mobile phones are all usually taken for granted in developed countries. It is not always realized that these are also essential to increasing access to and production of food. Food security will only increase with the proper investments that will lead to long term improvements in agricultural

production. These investments require the combined effort of many outside organizations, the government, and the people. Market access will not reduce poverty without increased agricultural productivity, both of which can be obtained by providing transportation, electricity, and mobile technology to the people. The advancement of market infrastructure does not matter if the people cannot first reach it, or if there are no products to sell. The potential exists for Nepal to be self-sufficient in food production, all the people need is connection to market.

Works Cited

- About DOR. (2012). Retrieved July 29, 2015, from Department of Roads website: <http://www.dor.gov.np/>
- Central Intelligence Agency. (2015). Nepal. In *World Fact Book*. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>
- Delivering health [Editorial]. (2012, December 24). *Kathmandu Post*. Retrieved from <http://www.ekantipur.com/the-kathmandu-post/2015/07/30/editorial/sixty-years-strong/279021.html>
- Department of Electricity Development. (n.d.). Retrieved July 29, 2015, from Department of Electricity Development website: <http://www.doed.gov.np/>
- Dixit, A. (2013, September 23). Climate change in Nepal: Impacts and adaptive strategies. Retrieved July 29, 2015, from <http://www.wri.org/our-work/project/world-resources-report/climate-change-nepal-impacts-and-adaptive-strategies>
- Ghimire, B. (2012, December 1). The rise of the nuclear family. *Kathmandu Post*. Retrieved from <http://www.ekantipur.com/the-kathmandu-post/2012/11/30/on-saturday/the-rise-of-the-nuclear-family/242311.html>
- Government of Nepal Central Bureau of Statistics. (2013). *Statistical year book of Nepal- 2013* [PDF].
- Government of Nepal Department of Roads. (2014). *Road network data* [PDF]. Retrieved from <http://dor.gov.np/documents/5.%20Road%20Network%20Data.pdf>
- IFAD. (2013). IFAD in Nepal. Retrieved July 29, 2015, from IFAD website: <http://operations.ifad.org/web/ifad/operations/country/home/tags/nepal>
- Karkee, M. (2008, August). *Nepal economic growth assessment agriculture*. Retrieved from http://pdf.usaid.gov/pdf_docs/PNADN016.pdf
- Market and price impact assessment Nepal* [PDF]. (2008, July). Retrieved from <http://documents.wfp.org/stellent/groups/public/documents/ena/wfp185782.pdf>
- Mobile phone technology: bridging the health communication gap in rural Nepal. (n.d.). Retrieved July 29, 2015, from <http://jsi.com/JSIInternet/Results/article/display.cfm?thisSection=Results&thisSectionTitle=Results&thisPage=stories&ctid=1030&cid=245&tid=20&id=563>
- National Planning Commission. (2013). *Nepal thematic report on food security and nutrition*. Retrieved from <http://documents.wfp.org/stellent/groups/public/documents/ena/wfp256518.pdf>
- Nepal plans road infrastructure expansion. (2014, January). Retrieved July 29, 2015, from World Highways website: <http://www.worldhighways.com/sections/key-projects/features/nepal-plans-road-infrastructure-expansion/>
- Nepal: WHO statistical profile [Chart]. (2015, January). Retrieved from <http://www.who.int/gho/countries/npl.pdf?ua=1>

- Norman Borlaug quotes. (n.d.). Retrieved July 29, 2015, from BrainyQuote website:
http://www.brainyquote.com/quotes/authors/n/norman_borlaug.html
- Pant, B. (2012). *Issues of urban governance in Nepal: With special reference to Kathmandu Metropolitan*.
- Pathak, J. (2013, March 29). Nepali Dhindo (Cornmeal Porridge) [Blog post]. Retrieved from Taste of Nepal website: <http://tasteofnepal.blogspot.com/2013/03/nepali-dhindo-cornmeal-porridge.html>
- Planning and costing agriculture's adaptation in Nepal. (2011, December 12). Retrieved July 29, 2015, from weADAPT website: <https://www.weadapt.org/knowledge-base/economics-of-adaptation/planning-and-costing-agricultures-adaptation-in-nepal>
- ProQuest. (2015). Nepal. *CultureGrams World Edition*. Retrieved July, 29, 2015, from http://online.culturegrams.com/world/world_country.php?contid=3&wmn=Asia&cid=110&cn=Nepal
- Rai, O. A. (2014, April 29). Climate change will affect Nepal's hydropower capacity, says report. *My Republica*. Retrieved from http://www.myrepublica.com/portal/index.php?action=news_details&news_id=73723
- Rai, S. K., Hirai, K., Abe, A., & Ohno, Y. (2002). *Infectious diseases and malnutrition status in Nepal: an overview* [PDF]. Retrieved from http://nutriweb.org.my/publications/mjn008_2/mjn8n2_art6.pdf
- RAP 3 Overview (RAP Nepal, Comp.) [Leaflet; PDF]. (2013). Retrieved from <http://www.rapnepal.com/report-publication/rap3-overview-brochure>
- Smith, G. (Ed.). (2009, September). Country profile - Nepal. Retrieved July 29, 2015, from New Agriculturist website: <http://www.new-ag.info/en/country/profile.php?a=935>
- Upadhyay, M. P., & Joshi, B. I. K. (2003). *Status of plant genetic resources in Nepal* [PDF]. Retrieved from <http://www.narc.org.np/publication/pdf/book/PGR%20PDF/Food%20crops%20final.pdf>
- The village network portal [Traditional and Modern Day Farming in Nepal]. (n.d.). Retrieved July 29, 2015, from The village network portal website:
<http://www.sasecrtn.edu.np/index.php/en/resources/usefulinfo/how-to-grow-harvest-food-cash-crops/traditional-versus-modern-day-farming/traditional-farming-in-nepal>
- Unicef. (2015). State of the world's children country statistical information [data file]. Retrieved from: <http://data.unicef.org/resources/the-state-of-the-world-s-children-report-2015-statistical-tables>
- World Bank. (2014, February 4). Renewable energy powers rural Nepal into the future. Retrieved July 29, 2015, from World Bank website:
<http://www.worldbank.org/en/news/feature/2014/02/05/renewable-energy-powers-rural-nepal-into-the-future>
- World Bank. (2015). World development indicators [custom cross tabulation of data]. Retrieved July 29, 2015, from:
<http://databank.worldbank.org/data//reports.aspx?source=2&country=NPL&series=&period=>