

Watershed Development Policies' Correspondence with the Reduction in Poverty and the Creation of Self-Sustenance in Himachal Pradesh, India: Local Involvement, Horticulture Development, Income Diversification, and Increased Communication Between Locals and Institutions

Tejasri Kilari
Biology
Virginia Commonwealth University – Honors College
701 W Grace St
Richmond, Virginia 23220

Faculty Advisor: Professor Mary C. Boyes

Abstract

The state of Himachal Pradesh, India (HP), experienced a fourfold decline in rural poverty from the early 1990s to 2011. This was primarily due to the state government's commitment to sustainable economic development driven by hydropower, tourism, and especially watershed management. Although poverty declined on the basis of government policies, the rural citizens of HP are still reliant on government initiatives for poverty reduction. This research analyzes primary case studies regarding the implementation and outcomes of Integrated Watershed Development Programs (IWDPs) in HP, from the 1990s to the mid-2000s, in order to determine how the execution and structure of these policies made the projects effective in reducing poverty rates. The observed case studies and IWDPs, which were conducted by HP government officials and principal academics in sustainable development and natural resource management, disclosed the growth and/or reduction of impact indicators such as crop yield, forage yield, horticulture plantation, forest plantation, and employment opportunities, before and after watershed management in specific regions throughout HP and other states of Northern India. The common factors (found between case studies of the IWDPs) that contribute directly poverty reduction are local involvement, horticulture development, and income diversification. A common problem highlighted in the case studies is the lack of documentation of villager feedback on the programs, which could be what is preventing self-sustenance and further poverty reduction in HP. Therefore, this study suggests that in order to continue poverty reduction and promote self-sustenance in HP, future IWDPs must consider increasing local involvement, enhancing agricultural production, promoting job diversification, and strengthening communication between locals and institutions through the documentation of qualitative data.

Keywords: Watershed Development Programs, Himachal Pradesh, Poverty Reduction

1. Introduction

Himachal Pradesh (HP) is a northern state in India that is located in the Western Himalayas. Due to its location in the north, the state is isolated from the main body of India and also encompasses a wide range of geographical assets. The Himalayas, Shiwalik Hills, forests, and especially the catchments of the Sutlej, Beas, Ravi and Yamuna rivers of the state remain largely preserved since 90% of the population lives in rural areas, according to India Today¹. In fact, the rivers of HP are such a prevalent part of sustaining North India that according to the Sustainable Development Department - Environment and Water Resources Unit of Himachal Pradesh, the catchments of the Sutlej, Beas, Ravi and Yamuna rivers provide over 200 million people their water, especially in Punjab and Haryana, among other states².

The wide geographical diversity and location of HP helped the state achieve its “specialized state” status from the Indian national government in 1971³.

As a result, the central Indian government has always provided the state with federal grants, so much so that in the fiscal year of 2011-2012, the grants were almost 25% of the budget of the Government of Himachal Pradesh (GoHP)⁴. However, other poverty-stricken states have also received equivalent federal aid and more (in the form of relief programs, NGOs, grants, etc.), but have not had the same success as HP in reducing poverty and raising the standard of living for citizens⁵. Some of the primary reasons for HP’s success in reducing poverty are the Land Reform Acts, which redistributed land amongst rural citizens regardless of socioeconomic status⁶. Though these acts gave citizens the opportunity to elevate themselves from poverty, relief came in the form of investments, both by the GoHP and foreign investors, that sponsored sustainable development programs. According to Nandita Roy, one of the most famous programs that took place in HP was the World Bank Project from 2012-2015, in which a total of \$200 million was invested (in two phases) into HP’s infrastructure to study the social inclusion of the state and promote sustainable development⁷. The World Bank observed that the growth and development of HP was due primarily to its four main drivers of growth: energy, tourism, industry, and watershed management.

While hydropower is currently being harnessed to expand the state’s industrial sector, rural poverty has historically been reduced primarily by micro-watershed management. In fact, as of 2005, community-based micro-watersheds cover over half of HP’s cultivated land⁸. Watershed development and management are usually implemented in the form of GoHP policies called Integrated Watershed Development Policies (IWDPs), which are meant to reduce poverty and encourage sustainable development. The policies involve educating locals regarding benefits and proper maintenance of a watershed, constructing the watershed, and managing the area after the watershed has been established.

In order to find factors that directly contributed to poverty reduction, case studies of IWDPs in various regions within HP and other North Indian states with access to Himalayan water resources were analyzed. To find quantitative trends, common statistics from each case study, such as crop yield, forage yield, horticulture plantation, and forest plantation were collected and compared with respect to time (before and after watershed development) as well as village and region. To find qualitative trends, IWDP implementation strategies from each case study were compared. Both the quantitative and qualitative comparisons and analyses revealed that watershed development policies from the late 1990s to the mid-2000s were most effective in reducing poverty in HP when they considered increasing local involvement, enhancing agricultural production, and promoting job diversification. Therefore, it was concluded that future IWDPs should integrate local involvement, profitable farming, and income diversification with increased communication between locals and institutions through documentation of qualitative data to create self-sustenance in HP. If implemented correctly, these enhanced IWDPs could also potentially lower poverty rates in other North Indian states with access to the same water resources.

2. Self-Made Community Groups: Promoting Self-Sustenance Through Local Autonomy Over Finance And Watershed Management

Because the direct involvement of local villages and citizens in IWDPs empowers locals to take initiative, citizens develop enough confidence to address funding, jobs, and issues related to micro-watersheds, which creates a cycle of self-sustenance regarding local economies.

According to a World Bank report by Das et al., Himachal Pradesh’s relative isolation to other states forces a state of social cohesion, regardless of gender, caste, or religion. A divisive social dynamic (based heavily on the caste system) between the Rajput overlords and the lower-class Kohlis existed in HP until the Land Reform Acts of 1947, which fostered equality through the redistribution of Rajput lands to all people, regardless of caste or creed. Although lower castes did receive land with lower arability and rockier soil, Das et al. emphasize that land reform acts made in the 1980s gave 80% of the state’s population at least 1 acre of land to work on⁹.

Diduck, et al. also highlight the importance of religion as another inclusion factor by stating that, specifically in the Phojal Nalla region, castes are undermined by the overarching inclusion provided by Hinduism¹⁰. Although there are people of differing religions, such as the countless isolated hill tribes and indigenous groups in the Shiwalik Hills (whose religious beliefs can best be categorized as forms of animism) within Himachal Pradesh, almost all groups’ reverence and respect for nature has made the implementation of sustainable development policies and projects significantly easier for the government. Due to the pre-existing communal support between citizens regardless of social status and caste, as the Government of Himachal Pradesh (GoHP) began the implementation of IWDPs, the

programs were able to further reduce disparity by encouraging local participation in the construction and maintenance of watersheds.

Perhaps the most popular form of a local autonomous group that forms after the implementation of IWDPs, is the Village Development Committee (VDC). Negi establishes that the VDC is the basic functional unit of any IWDP and is responsible for development and implementation of the Village Development Project with the project being sponsored by a partner (most often the GoHP). All households falling in the micro-watershed constitute the general house of the VDC and they generally have one male and one female representative. The VDC is also made of an executive body consisting of a President, Vice-President, General Secretary, Treasurer, and eight other members elected by the general house¹¹. VDCs are generally formed within a specific region where the construction of the watershed has begun.

Berkes, et al. claim in their report "Institutional Responses to Development Pressures: Resilience of Social-Ecological Systems in Himachal Pradesh, India" that the general resilience of social-ecological systems in any region depends on the preservation of a basic system of organization that is self-made and adaptable with direct interaction between the people in need and the institutions and departments put in place by state/local governments to help them¹². VDCs are organizations that are independently formed by citizens when a government-issued IWDP begins in a certain region, so in order to make HP resilient, the GoHP should encourage the creation of self-help groups such as VDCs and Panchayats in future IWDPs.

Sanan also states throughout his report, "Development Lessons from the Himachal Pradesh Experience", that regulatory actions should be conducted by the state-level governments while delivery and execution of actual services and products should be left to the local governments in order to efficiently instigate sustainable development. Sanan claims that through constant foreign intervention, HP will become too reliant on government-led initiatives as opposed to directly involving locals in solving problems¹³.

As a result, the GoHP provides the locals with resources such as materials and money in order to finish watershed construction, but the VDC is in charge of the actual construction. As the watershed is established in the region and construction finishes, watershed management falls to the VDC. The whole process is monitored by the GoHP through the collection of quantitative data. As locals become more confident in their abilities regarding watershed management, the general house begins to develop communal resources for the sole purpose of supporting the households that fall under the VDC.

For example, Kapoor and Kapoor expand on Sanan's views of community engagement by providing a case study of the Chambidhar watershed (a subset of the Giri river), in which 75% of the region's income is from agriculture. Kapoor and Kapoor discuss the Kisan Sangh Dhimman, a community group, formed by the region in 1997, in order to help with the maintenance of Chambidhar's watershed¹⁴. The empowerment that watershed management provides often manifests itself in the form of local autonomy.

In Chambidhar, for example, Kapoor and Kapoor emphasize that before the IWDP, only 113 hectares out of the available 1,871 hectares of land in the area were properly irrigated and functional. By the end of the three-year program, 114 additional hectares were also irrigated and the Chambidhar VDC grew powerful enough to encourage the growth of new crops and implement new farming techniques including gully plugging, contour trenching, and bench terracing¹⁵.

Due to the watershed's success in increasing crop yields and creating surpluses, the region became prosperous enough to create communal assets that needed maintenance without outside intervention and as a result, the Sangh group stepped up to regulate funds and resources. Kapoor and Kapoor describe that 2000 rupees were saved per asset and that those funds would be given to the Sangh, which would then spend the money on plants and seeds. The Sangh was also put in charge of distributing the plants and seeds to individuals who made up the general house, so that they could farm and care for plants¹⁶. Through this particular IWDP, locals of the Chambidhar watershed were able to create significant income from the watershed and, therefore, autonomously decided to engage in creating communal benefits.

In fact, even outside of the three-year IWDP, the people of Chambidhar decided to keep the community fund going for individuals in need in the region by having each household and/or member of the organization donate 50 rupees a month. The members of the Sangh continued supporting one another by issuing loans to individuals that needed them for cattle, seeds, or other personal uses¹⁷. The VDC, which was originally put in place for watershed management, turned into a sovereign self-help group that promotes self-sustenance. The results from this case study suggest that, in order to continue making HP self-sufficient, project partners should regulate overall watershed construction in future IWDPs by providing necessary resources to locals, but overall distribution of resources and implementation of the IWDP should be left to locals.

3. Sustainable Development: Expanding Horticulture Through Disaster Risk Reduction, Reliable Irrigation, And Profitable Farming

Watershed development significantly diminishes the risk of soil erosion, increases crop yield rates due to manageable irrigation, and leads to the expansion of horticulture, which strengthens the surrounding environment and helps the agrarian economy develop in an environmentally sustainable manner.

According to Sanan, sustainable development includes the ability of a region to develop in an environmentally efficient way, along with the locals' drive to develop without the help of a larger power, such as the state/national government's policies and/or funds¹⁸. Diduck et al. state from their study of Phojal Nalla village in HP that villagers already adapt their farming strategies to accommodate for local disasters, such as mud slides and flooding without the help of the GoHP¹⁹. IWDPs, however, increase citizens' exposure to disaster reduction plans because the programs require locals to learn about the watersheds' interaction with the environment.

Approximately 9 million hectares of land go unused in Asia and Africa due to soil erosion caused by monsoons, heavy rainfall, runoff and flooding. Soil erosion is the most prominent environmental problem faced by farmers in the Shiwalik Hills region of the Himalayas, which includes the states of Punjab, Haryana, Jammu, Kashmir, and Himachal Pradesh. In their study of the Haryana state of India, Sharma et al. conducted a survey of 45 close-ended questions about socioeconomics, agriculture, livestock, and environment and also included focus groups to discuss progress in terms of implemented projects and whether or not locals disagree, agree, or strongly agree with the effectiveness of the watershed in their region. Sharma et al. conducted this survey with 120 locals (both female and male, ranging from 25 to 74 years old) in eight villages: Morni, Ghajan, Balag, Jabial, Chamla, Behlon, Ramsar, and Khrog²⁰.

Sharma et al. conveyed that farmers' dependency on rain-fed agriculture has significantly decreased due to the availability of water in watersheds, and that soil loss has been reduced due to gullying and terracing; traditional practices which locals modified to incorporate the watershed as their primary water source²¹. The IWDP, therefore, prepared locals for disaster risk reduction by teaching them to alter pre-existing strategies to include the watershed, which is a more reliable source of water. The locals' feedback also indicated that watershed development improved soil quality, which in turn, allowed farmers to start practicing double-cropping. Double-cropping increased crop yield and diversification and became a new agricultural practice that further strengthened disaster reduction planning in the eight villages. Sharma et al. reported that locals were satisfied overall in the development of socioeconomics, agriculture and livestock, and environment in the villages of Morni, Ghajan, Balag, Jabial, Chamla, Behlon, Ramsar, and Khrog²².

In general, watersheds can be characterized by a clearly defined topographical region, where different types of precipitation – rainfall, snowfall, melting glaciers, etc. – aggregate in a man-made or natural basin that collect all the water in a clean and relatively safe area. The water basins collect the water, but vegetation and wetlands that develop within the watershed work to remove pollutants naturally by filtering out excess sediments and runoff while also keeping the soil firmly in place, which prevents soil erosion. The natural filtration system, therefore, encourages the downstream flow of water (especially in mountainous regions) and also allows for the growth of clean groundwater reserves. Watersheds can then be utilized immediately for irrigation.

For example, Negi observed the village of Katola in the Sirmour district of HP before and after its IWDP. Negi found that Katola's problems initially consisted of severe soil erosion and water scarcity for cattle and irrigation. However, following the construction of the sub-watershed number eight of Moginand-Wali-Khad and a small dam, Katola can now successfully irrigate enough water to sustain 19 hectares of farmland. Their flooding and soil erosion have both decreased as well. In the same study, mirroring Katola village, the Gol Jamala village of the sub watershed number four of the Solan district had problems with high levels of erosion and water scarcity. In order to maintain the watershed, a ten-meter-high dam was constructed in the village in 1996. As a result, the village now has enough clean water to irrigate more than 20 hectares of land²³.

Jha and Singh conclude that the development of watersheds in rural areas increases agricultural productivity and savings, which shifts locals' focus from subsistence agriculture to profitable farming²⁴. Both Jha and Singh and the Sustainable Development Department of Himachal Pradesh agree that watershed management is the most efficient way to encourage the economic development of any region within HP. This is due to the fact that water is the primary pathway to rural agricultural activities. Water quality and activity is the most important determining factor of the success of agriculture because of its close relationship to soil, especially regarding arability, nutrients, and erosion.

The availability of water from a clean and reliable source also enhances the development of horticulture/orchards, which helps the region develop from relying heavily on primary economic activities to secondary activities that primarily consist of profitable and specialized farming. For example, according to the Sustainable Development

Department, the state is now known as the apple state of India due to its specialization in apple farming, which developed as a result of the implementation of an IWDP put in place by the GoHP in the late 1990s²⁵. Additionally, the construction of a watershed in the Chambidhar district of HP led to the development of peach and kiwi orchards and the diversification of 3-4 cash crops per year²⁶.

Case studies of villages before and after the implementation of IWDPs suggest that watershed management is a form of sustainable development that allows farmers to adapt pre-existing farming techniques to augment disaster risk reduction and develop horticulture, thereby empowering rural citizens to move from subsistence agriculture to profitable farming. The stimulation of local economies creates a sense of independence and security, which can potentially boost self-sustenance in HP, therefore, future IWDPs should consider enhancing farming techniques to instigate a better crop yield.

4. Job Diversification: Creating A Sense Of Security And Stability Through Varied Economic Activities

Because watershed construction provides temporary and permanent jobs pertaining to the watershed maintenance, fishing, and waste management, and also provides a steady water source with access to larger markets, local citizens can diversify their occupations, leading to sustainable job and food security.

Diversification of income allows for specialization in multiple primary economic activities and expansion into secondary economic activities, which make the region's economy efficient and independent since locals have multiple sources of income. Job diversification also ensures stability for the region and reduces the likelihood of exhaustion of a natural resource²⁷. In their survey of eight villages of the Morni Hill area, Sharma et al. concluded that though the majority (over 60%) of respondents agreed or strongly agreed that their job opportunities increased with watershed development, locals also noticed that occupations in dairy farming, rates of immigration, and availability of Panchayat funds stayed relatively the same. However, approximately 90% of all respondents felt their standard of living increased due to creation of NGOs, self-help groups, and enhancement of wages as well as job opportunities²⁸.

Similarly, in another region, Negi relays that the micro-watershed development project in the Gol Jamala village also helped farmers expand their areas of specialization. Beforehand, farmers could not even properly water their plants, but after development of the watershed, the village was able to diversify its occupations. The diversification came in the form of horticulture – specifically that of grass. The grass would be used as fodder for cattle, and/or fuel for fires when dried²⁹. This shows that the watershed not only increased crop yield, but also enhanced farmers' occupations regarding cattle and dairy farming. Due to the diversified sources of income, the VDC in the area was able to independently develop micro-loans and the concept of rentals. The Gol Jamala VDC also began encouraging maintenance in regard to natural resources, such as controlling irrigation from the watershed³⁰.

While studying the Katola village experience before and after the IWDP, Negi shares that the Katola VDC's assets are now a conglomeration of each household's assets. The VDC is responsible for the maintenance of these assets and distribution of the irrigation water from the watershed amongst its members, as in Gol Jamala. This encourages locals of both Katola and Gol Jamala to leave agriculture as their primary source of income and turn to secondary activities such as resource management. However, unlike in Gol Jamala, the Katola VDC has also diversified their occupational portfolio by introducing fishing in the reservoir of the dam they constructed on an experimental basis to enhance their local watershed³¹.

In addition to enriching water-based activities, watershed development also has the power to enhance cattle-based economic activities. For example, Baba et al. reveal that harvesting facilities also improved as crop yield did due to the watersheds, while milk yield and livestock populations grew. Additionally, Baba et al. explain that 164 bio villages (villages that decided to take up organic farming) and 76 VDCs developed in HP with 1778 farmers benefitting through the World Bank program's educational training on organic farming as well as the output. Baba et al. describe that bio villages are also a new wave of change because though organic farms produce less yield overall, the products fetch a higher price in the market³².

In conjunction with Negi and Baba et al.'s findings, Diduck, et al. assert that watershed development in regions such as Phojal Nalla expanded sources of income to include other activities such as manufacturing of goods (wool, baskets, etc.), tourism, trade, and government participation. Generally, the availability of a range of jobs within an area will eventually attract people to the region, which also improves the infrastructure of the area, leading to the creation of more jobs. In Phojal Nalla, for example, Diduck et al. highlight that the village's population of 492 people is increasing following the construction of the regional watershed. The village's amenities have also come to include primary and middle schools, a pharmacy, and sub post office among other services. Diduck, et al. also claim that the developing

basic road infrastructure in Phojal Nalla will increase the importance of trade, further diversifying interregional economic activities³³.

Watershed development also raises the question of implementing hydropower in the region. HP (specifically the Upper Himalaya regions) supplies water through rivers, streams, and watersheds to over 200 million people in North Indian states³⁴. Since this is a significant amount of the North Indian population, hydropower investment in HP could lead to the creation of higher paying jobs, with better regulation of clean water supply and power supply to North India. According to the World Bank, hydropower production is also already considered one of the fastest growing sectors that contributes directly to the private sector of HP's economy³⁵.

Evidence from villages before and after the implementation of IWDPs suggests that watershed management promotes income diversification through creating construction and management jobs, which shifts the economy's reliance on primary activities to secondary activities. The local economy is then stabilized, since job diversification ensures that no exact natural resource is exhausted while also attracting more people to a specific, which creates more jobs. The cyclical nature of job diversification, therefore, can help create self-sustenance in HP, so future IWDPs should consider creating even more jobs for locals.

5. Improved Communication: Documenting Official Qualitative Data

Because watershed policies in the past were implemented without consulting or educating locals about problems and practical solutions, they ultimately failed at making villages self-sufficient, which suggests that miscommunication amongst locals and government institutions is a common issue that should be addressed and solved in future IWDPs.

According to Das et. al, watershed development policies were put in place by the government as early as the 1960s, in order to augment the quality of the soil and also prevent its erosion while also trying to reduce poverty³⁶. Though they were effective, the policies' maximum potential was not realized. According to Negi, the first phase of the IWDP in the 1990s was not productive due to the lack of communication between state authorities and locals. Negi relays that many state initiatives were put into place between 1990 and 1999 without the consideration of specific, local needs and as a result, represented local citizens as beneficiaries rather than stakeholders in their own land. Negi conveys that following the midterm assessment of the project, the second phase of the IWDP was implemented in a way that allowed villages to become involved in their infrastructure and policy implementation³⁷.

Saravanan explains in "Decentralisation and Water Resources Management in the Indian Himalayas: The Contribution of New Institutional Theories" that the Rational Choice and Historical Institutionalism ideals focus on the constraining effects of structures in framing the water-related problems, which reveal that the absence of information for locals and governments shape misinformed water-related decisions³⁸. In terms of poverty reduction, the central government of India prefers a decentralized approach, since state governments can address and solve the issues regarding their citizens more effectively than a large, consolidated power. Therefore, according to the Rational Choice Theory (which states that individuals make decisions based off of what will give them the most benefit for the lowest cost), the citizens of HP will know what is best for their respective local economies. The Rational Choice Theory is a part of New Institutionalism, which also encompasses decentralization as a way that different institutions within a society interact. As a result, Saravanan asserts that the process of New Institutionalism involves a combination of natural and political goals and ambitions of actors (leaders) and agents (locals) to draw on existing structures to negotiate and renegotiate the existing unequal power relations to manage water. Agents are defined as individuals with an affinity for helping the development of rural areas. They often serve as the main drivers of communication between the government and the locals and are unofficially appointed by village leaders and populations³⁹.

Saravanan says that in order to bring different types of institutions together, actors must lead agents in reforming the rules that govern actions. Saravanan points out that agents should, in addition to local forces such as VDCs, be leading forces in the implementation of these programs, which reinforces the concept of decentralization as the most effective method in poverty reduction⁴⁰. The decentralizing approach was also stressed by Jha and Singh, Negi, and Sharma et al. previously. Similarly, Baba et al. claim that decentralization of natural resource management through the creation of VDCs, Self Help, and User groups, is the best way to eradicate systemic corruption as well as enhance local sustainability, since the strategy places most of the power in locals' hands as opposed to abstract institutions⁴¹.

6. Conclusion: What Can Be Done For Future IWDPs?

According to Berkes et al., current policies regarding forestry, agriculture, and other environmental practices are not taking the villagers' opinions into account⁴². Therefore, more research must be conducted into the benefits and hindrances that the IWDPs brought to different villages in which qualitative, descriptive data is gathered instead of quantitative data. More extensive, qualitative data in the form of villager feedback has the potential to address and resolve the issue of miscommunication between citizens and the government.

For example, Negi states that in the first phase of the Integrated Watershed Development Program (in the late 1990s), officials who were implementing the program did not take local feedback into account until the very end of the phase, rendering the project ineffective in integrating watersheds into local economies⁴³. However, the project was revised to include locals as the primary leaders of integration, which empowered citizens to create local forces such as VDCs and Panchayats to address funding, jobs, and issues related to micro-watersheds and other economic factors in the area. This made the second phase a success in creating a form of sustainable development in Himachal Pradesh.

The communication issues between locals and the GoHP (which is in charge of implementing IWDPs) can potentially be resolved through conducting regional conferences, which locals could attend to discuss problems with their officials and representatives. However, there needs to be some form of record-keeping in order to hold officials accountable for their actions and claims within these meetings. For example, joint forest programs could be reformed in a manner that allows local citizens to actually understand the process of filing and pleading special cases to their state representatives and officials. The timber distribution process in Manali is so inaccessible to villagers that multiple villages in the region participate in smuggling timber; in fact, there is a black market for it, but the GoHP has done next to nothing to redistribute timber because villagers are not educated enough to file effective complaints against the Manali Forest Department⁴⁴.

Since there is no physical documentation of the issue, the GoHP does not know to fix it, but hearing about it through Berkes et al.'s documentation of villager feedback (via local discussions and surveys) has made the issue public knowledge⁴⁵. On the other hand, the VDC of Katola holds regular meetings and keeps detailed records, which keeps the community engaged, but also holds elected VDC leaders accountable for their actions regarding distribution of funds and services⁴⁶. With VDCs and other self-help groups in villages already in place, the implementation of regional conferences would be easier, since a typical VDC is already comprised of a female and a male representative that lead most meetings. The representation of various villages would ensure honest feedback and discussion amongst different regions, which could lead to consensual state-wide policies synthesized directly by citizens in need of help.

This involvement in government and administrative positions would also diversify the occupations available in the region while simultaneously helping locals develop their economy from just primary activities (farming, fishing, mining, etc.) to secondary and even tertiary sector jobs, such as marketing and providing public goods and services. As Baba et al. point out, watersheds can be connected in an interregional fashion to expand product markets⁴⁷. This form of empowerment for locals will give them the confidence to re-invest their savings into VDCs and Panchayats, starting a cycle of self-sustenance.

Therefore, if future IWDPs maintain their affiliation with increasing local involvement, agricultural production, and job diversification, but also conduct regional conferences that emphasize qualitative local feedback, HP would be able to end systemic corruption and further reduce poverty and create self-sustenance. The documentation of the data would also reinforce locals as stakeholders in the land (rather than beneficiaries) and would give them authority over future policies that they would trust the GoHP to implement.

7. Acknowledgements

The author wishes to express their appreciation to faculty advisor Professor Mary C. Boyes for providing feedback and support throughout the research process. The author also extends their appreciation to the VCU Honors College and NCUR, as well as to the Government of Himachal Pradesh for providing an opportunity to conduct and share research.

8. References

1. Ian S., "In Himachal, where 90 per cent people live in villages, female literacy rate touches 80 per cent," *India Today*, May 26, 2013, <https://www.indiatoday.in/india/north/story/himachal-female-literacy-rate-touches-80-per-cent-164452-2013-05-26>.
2. Sustainable Development Department - Environment and Water Resources Unit of Himachal Pradesh. "Implementation Completion and Results Report on a Loan in the Amount of US \$100 Million and a Loan from the Clean Technology Fund in the Amount of US \$100 Million to the Republic of India for a Development Policy Loan to Promote Inclusive Green Growth and Sustainable Development in Himachal Pradesh I and II," The World Bank Projects & Operations Database, 2016, <http://projects.worldbank.org/P143032/?lang=en&tab=documents&subTab=projectDocuments>.
3. Maitreyi Bordia Das et al., "Scaling the Heights: Social Inclusion and Sustainable Development in Himachal Pradesh," The World Bank, January 2015, <https://openknowledge.worldbank.org/handle/10986/21316>.
4. Maitreyi Bordia Das et al., "Scaling the Heights: Social Inclusion and Sustainable Development in Himachal Pradesh," The World Bank, January 2015, <https://openknowledge.worldbank.org/handle/10986/21316>.
5. "Fourfold Decline in Himachal Pradesh's Poverty Rate, Greatest Gains in Rural Areas," The World Bank, 2015, <https://openknowledge.worldbank.org/bitstream/handle/10986/21316/93729.pdf?sequence=5&isAllowed=y>.
6. Maitreyi Bordia Das et al., "Scaling the Heights: Social Inclusion and Sustainable Development in Himachal Pradesh," The World Bank, January 2015, <https://openknowledge.worldbank.org/handle/10986/21316>.
7. Nandita Roy, "Government of India and World Bank Sign \$100 Million Agreement to Support Himachal Pradesh in its Green Growth Agenda," *The World Bank News*, June 11, 2014, <http://www.worldbank.org/en/news/press-release/2014/06/11/india-and-world-bank-sign-usd-100-million-agreement-to-support-himachal-pradesh-in-its-green-growth-agenda>.
8. Maitreyi Bordia Das et al., "Scaling the Heights: Social Inclusion and Sustainable Development in Himachal Pradesh," The World Bank, January 2015, <https://openknowledge.worldbank.org/handle/10986/21316>.
9. Maitreyi Bordia Das et al., "Scaling the Heights: Social Inclusion and Sustainable Development in Himachal Pradesh," The World Bank, January 2015, <https://openknowledge.worldbank.org/handle/10986/21316>.
10. Alan P. Diduck et al., "Community Vulnerability and Resilience in Disaster Risk Reduction: An Example From Phojal Nalla, Himachal Pradesh, India," *Regional Environmental Change* 18, no. 7, (2018): 2073-2087. <https://doi.org/10.1007/s10113-018-1326-6>.
11. Sharad Singh Negi, "Experiences of Participation in Integrated Watershed Development Project in Himachal Pradesh," *Indian Journal of Public Administration* 47, no. 1 (2001): 26-37, <https://doi.org/10.1177/0019556120010104>.
12. Fekret Berkes et al., "Institutional Responses to Development Pressures: Resilience of Social-Ecological Systems in Himachal Pradesh, India," *International Journal of Sustainable Development and World Ecology* 11, no. 1 (2004): 99-115. doi:10.1080/13504500409469815.
13. Deepak Sanan, "Development Lessons from the Himachal Pradesh Experience," *ASCI Journal of Management* 37, no. 2 (2008):109-121.
14. A.K. Kapoor and Satwani Kapoor, "Natural Resource Management: A Case Study of Chambidhar Micro-Watershed in Himachal Pradesh," *Himalayan and Central Asian Studies* 11, no. 1 (2007): 69-80.
15. A.K. Kapoor and Satwani Kapoor, "Natural Resource Management: A Case Study of Chambidhar Micro-Watershed in Himachal Pradesh," *Himalayan and Central Asian Studies* 11, no. 1 (2007): 69-80.
16. A.K. Kapoor and Satwani Kapoor, "Natural Resource Management: A Case Study of Chambidhar Micro-Watershed in Himachal Pradesh," *Himalayan and Central Asian Studies* 11, no. 1 (2007): 69-80.
17. A.K. Kapoor and Satwani Kapoor, "Natural Resource Management: A Case Study of Chambidhar Micro-Watershed in Himachal Pradesh," *Himalayan and Central Asian Studies* 11, no. 1 (2007): 69-80.
18. Deepak Sanan, "Development Lessons from the Himachal Pradesh Experience," *ASCI Journal of Management* 37, no. 2 (2008):109-121.
19. Alan P. Diduck et al., "Community Vulnerability and Resilience in Disaster Risk Reduction: An Example From Phojal Nalla, Himachal Pradesh, India," *Regional Environmental Change* 18, no. 7, (2018): 2073-2087. <https://doi.org/10.1007/s10113-018-1326-6>.
20. Tejpal Sharma et al., "Farmers' Perceptions and Satisfaction Levels on the Performance of Watershed Development Activities in the Morni Hill area of the Shiwalik Himalayas in India," *Human Ecology* 44, no. 1 (2016): 91-104, doi: 10.1007/s10745-015-9801-x.

21. Tejpal Sharma et al., "Farmers' Perceptions and Satisfaction Levels on the Performance of Watershed Development Activities in the Morni Hill area of the Shiwalik Himalayas in India," *Human Ecology* 44, no. 1 (2016): 91-104, doi: 10.1007/s10745-015-9801-x.
22. Tejpal Sharma et al., "Farmers' Perceptions and Satisfaction Levels on the Performance of Watershed Development Activities in the Morni Hill area of the Shiwalik Himalayas in India," *Human Ecology* 44, no. 1 (2016): 91-104, doi: 10.1007/s10745-015-9801-x.
23. Sharad Singh Negi, "Experiences of Participation in Integrated Watershed Development Project in Himachal Pradesh," *Indian Journal of Public Administration* 47, no. 1 (2001): 26-37, <https://doi.org/10.1177/0019556120010104>.
24. R.B Singh and Sandeep Jha, "Agriculture and Forestry Based Livelihood Capital Assessment," *Livelihood Security in Northwestern Himalaya* (2014): 95-106. doi:10.1007/978-4-431-54868-3_8.
25. Sustainable Development Department - Environment and Water Resources Unit of Himachal Pradesh. "Implementation Completion and Results Report on a Loan in the Amount of US \$100 Million and a Loan from the Clean Technology Fund in the Amount of US \$100 Million to the Republic of India for a Development Policy Loan to Promote Inclusive Green Growth and Sustainable Development in Himachal Pradesh I and II," *The World Bank Projects & Operations Database*, 2016, <http://projects.worldbank.org/P143032/?lang=en&tab=documents&subTab=projectDocuments>.
26. A.K. Kapoor and Satwani Kapoor, "Natural Resource Management: A Case Study of Chambidhar Micro-Watershed in Himachal Pradesh," *Himalayan and Central Asian Studies* 11, no. 1 (2007): 69-80.
27. R.B Singh and Sandeep Jha, "Agriculture and Forestry Based Livelihood Capital Assessment," *Livelihood Security in Northwestern Himalaya* (2014): 95-106. doi:10.1007/978-4-431-54868-3_8.
28. Tejpal Sharma et al., "Farmers' Perceptions and Satisfaction Levels on the Performance of Watershed Development Activities in the Morni Hill area of the Shiwalik Himalayas in India," *Human Ecology* 44, no. 1 (2016): 91-104, doi: 10.1007/s10745-015-9801-x.
29. Sharad Singh Negi, "Experiences of Participation in Integrated Watershed Development Project in Himachal Pradesh," *Indian Journal of Public Administration* 47, no. 1 (2001): 26-37, <https://doi.org/10.1177/0019556120010104>.
30. Sharad Singh Negi, "Experiences of Participation in Integrated Watershed Development Project in Himachal Pradesh," *Indian Journal of Public Administration* 47, no. 1 (2001): 26-37, <https://doi.org/10.1177/0019556120010104>.
31. Sharad Singh Negi, "Experiences of Participation in Integrated Watershed Development Project in Himachal Pradesh," *Indian Journal of Public Administration* 47, no. 1 (2001): 26-37, <https://doi.org/10.1177/0019556120010104>.
32. S.H. Baba et al., "Sustainable Hill Agricultural Practices Through Watershed Development Programmes and Their Impact in Himalayan States," *Indian Journal of Agricultural Economics* 65, no. 3 (2010): 344-366.
33. Alan P. Diduck et al., "Community Vulnerability and Resilience in Disaster Risk Reduction: An Example From Phojal Nalla, Himachal Pradesh, India," *Regional Environmental Change* 18, no. 7, (2018): 2073-2087. <https://doi.org/10.1007/s10113-018-1326-6>.
34. Sustainable Development Department - Environment and Water Resources Unit of Himachal Pradesh. "Implementation Completion and Results Report on a Loan in the Amount of US \$100 Million and a Loan from the Clean Technology Fund in the Amount of US \$100 Million to the Republic of India for a Development Policy Loan to Promote Inclusive Green Growth and Sustainable Development in Himachal Pradesh I and II," *The World Bank Projects & Operations Database*, 2016, <http://projects.worldbank.org/P143032/?lang=en&tab=documents&subTab=projectDocuments>.
35. Maitreyi Bordia Das et al., "Scaling the Heights: Social Inclusion and Sustainable Development in Himachal Pradesh," *The World Bank*, January 2015, <https://openknowledge.worldbank.org/handle/10986/21316>.
36. Maitreyi Bordia Das et al., "Scaling the Heights: Social Inclusion and Sustainable Development in Himachal Pradesh," *The World Bank*, January 2015, <https://openknowledge.worldbank.org/handle/10986/21316>.
37. Sharad Singh Negi, "Experiences of Participation in Integrated Watershed Development Project in Himachal Pradesh," *Indian Journal of Public Administration* 47, no. 1 (2001): 26-37, <https://doi.org/10.1177/0019556120010104>.
38. V.S. Saravanan, "Decentralisation and Water Resources Management in the Indian Himalayas: The Contribution of New Institutional Theories," *Conservation and Society* 7, no. 3 (2009): 176-191, doi: 10.4103/0972-4923.64735.

39. V.S. Saravanan, "Decentralisation and Water Resources Management in the Indian Himalayas: The Contribution of New Institutional Theories," *Conservation and Society* 7, no. 3 (2009): 176-191, doi: 10.4103/0972-4923.64735.
40. V.S. Saravanan, "Decentralisation and Water Resources Management in the Indian Himalayas: The Contribution of New Institutional Theories," *Conservation and Society* 7, no. 3 (2009): 176-191, doi: 10.4103/0972-4923.64735.
41. S.H. Baba et al., "Sustainable Hill Agricultural Practices Through Watershed Development Programmes and Their Impact in Himalayan States," *Indian Journal of Agricultural Economics* 65, no. 3 (2010): 344-366.
42. Fekret Berkes et al., "Institutional Responses to Development Pressures: Resilience of Social-Ecological Systems in Himachal Pradesh, India," *International Journal of Sustainable Development and World Ecology* 11, no. 1 (2004): 99-115. doi:10.1080/13504500409469815.
43. Sharad Singh Negi, "Experiences of Participation in Integrated Watershed Development Project in Himachal Pradesh," *Indian Journal of Public Administration* 47, no. 1 (2001): 26-37, <https://doi.org/10.1177/0019556120010104>.
44. Sharad Singh Negi, "Experiences of Participation in Integrated Watershed Development Project in Himachal Pradesh," *Indian Journal of Public Administration* 47, no. 1 (2001): 26-37, <https://doi.org/10.1177/0019556120010104>.
45. Fekret Berkes et al., "Institutional Responses to Development Pressures: Resilience of Social-Ecological Systems in Himachal Pradesh, India," *International Journal of Sustainable Development and World Ecology* 11, no. 1 (2004): 99-115. doi:10.1080/13504500409469815.
46. Sharad Singh Negi, "Experiences of Participation in Integrated Watershed Development Project in Himachal Pradesh," *Indian Journal of Public Administration* 47, no. 1 (2001): 26-37, <https://doi.org/10.1177/0019556120010104>.
47. S.H. Baba et al., "Sustainable Hill Agricultural Practices Through Watershed Development Programmes and Their Impact in Himalayan States," *Indian Journal of Agricultural Economics* 65, no. 3 (2010): 344-366.