

PAYMENT FOR ENVIRONMENTAL SERVICES:
SUSTAINABLE DEVELOPMENT OF WATER RESOURCES IN RWANDA

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Abstract

Rwanda aims to become an environmentally sustainable middle-income country. The problem is how the country will implement projects that alleviate poverty without increasing environmental degradation, or alternately, implement projects that protect the environment without hindering economic development. One policy approach that has been found to be effective in financing sustainability policy is Payment for Environmental Services (PES). PES is a financial policy intended to value ecosystem services, such as the regulation of water for hydroelectric and domestic use, as positive environmental externalities. This is achieved by structuring payments to land managers in return for their effective management of a specific natural resource. To ensure financial sustainability, Rwanda's PES should follow a model where PES is a transaction between provider and buyer, with the national government in the middle creating the rules, regulations, and framework. Based on the political will it has demonstrated in implementing innovating environmental policy measures and supporting pilot projects and studies, Rwanda can and should implement PES at a national level to incentivize sustainable water provision.

Capstone Advisor: Paul Weinstein

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April 1, 2016

To: Dr. Rose Mukankomeje, Director General of
Rwanda Environment Management Authority (REMA)

From: Rowan Braybrook

Subject: Creating a PES Policy Framework

Action Forcing Event

In February 2016, Rwandan President Paul Kagame met with Li Yong, the Director General of the United Nations Industrial Development Organization (UNIDO) to discuss how to advance Rwanda's path of sustainable development. Following these discussions, UNIDO and Rwanda signed a cooperation framework agreement focused on financing Rwanda's development in the context of the UN Sustainable Development Goals (SDGs), which were agreed to in September 2015.¹ The programs stemming from this partnership will be implemented over the next three years. As Vincent Biruta, Rwanda's Minister of Natural Resources stated after the adoption of the SDGs: "for Africa, the challenge remains to lift our people out of poverty and at the same time ensure our natural resources are managed sustainably."² Recent international agreements - from the 2015 Paris Climate Agreement to the Convention on Biological Diversity's Aichi Targets to the SDGs for 2030 - make it clear that policymakers around the world are aware of environmental issues in the context of development and want to take steps to solve them. Rwanda has the political will and focus in place to create sustainable development projects that could be models for other countries in development.

¹ Triphomus Muyagu. Rwanda: Kagame, Unido Director Hold Talks on Achieving SDGs. All Africa 04 February, 2016. Accessed February 21, 2016. <http://allafrica.com/stories/201602081070.html>

² Remarks by Vincent Biruta, Rwanda's Minister of Natural Resources at the Opening of the 2015 Poverty–Environment Initiative Africa Annual Regional Meeting. Kigali, October 26, 2015. REMA Press Portal. Accessed February 21, 2016. <http://www.rema.gov.rw/>

Statement of Problem

The 17 goals that comprise the SDGs, agreed to by all countries, attempt to address the issue of alleviating poverty while ensuring a healthy environment. Rwanda's own national development plan, "Vision 2020," outlines the need and process for the country to improve and grow its economy and implement sound environmental management techniques for its upcoming 2020 milestone for measuring progress against goals.³ Rwanda hopes to become an environmentally sustainable middle-income country. The problem is how to identify and finance projects that alleviate poverty without increasing environmental degradation, or alternately, implement projects that protect the environment without hindering economic development. Historically, countries have tended to identify and carry out projects that address one goal or the other, but not both goals.⁴

Rwanda, like many other countries, has not internalized the services that are provided by the positive externalities of the natural environment, making it economically and politically difficult to justify the protection of the environment and natural infrastructure in a development context. Part of this is an understandable unwillingness to divert expertise and investment from development goals to achieve environmental goals. Sacrificing economic progress or redirecting funding away from poverty alleviation initiatives are not viable options for achieving environmental policy goals, and it's rare to

³ Republic of Rwanda, Ministry of Finance and Economic Planning. Rwanda Vision 2020. Kigali, July 2000. Accessed February 6, 2016.

http://www.gesci.org/assets/files/Rwanda_Vision_2020.pdf

⁴ Mark Ambler, Tom Beagent, and Andrew Thurley. Deciding by Impact: Balancing Economic and Environmental Resilience. PricewaterhouseCoopers. Accessed March 31, 2016.

<http://www.pwc.com/gx/en/services/advisory/consulting/risk/resilience/publications/balancing-economic-environmental-resilience.html>

find effective policy solutions that attain both development and conservation aims.⁵

Developing countries often are forced to choose between providing human and development services to their citizens or financing environmentally focused projects, and they often and rightly choose the former. But in many cases, identifying and financing good environmental management provides long term benefits to human services. The World Health Organization explicitly states that “cross-sectoral policies that promote ecologically sustainable development and address underlying driving forces” will be essential to achieving development outcomes including goals in human health and life expectancy.⁶

The benefits that people, particularly the rural poor, derive from natural resources are termed ecosystem services. In the Millennium Ecosystem Assessment (MA), ecosystem services are defined as benefits that people obtain from ecosystems - benefits that include food, water filtration, climate regulation, soil formation, and timber.⁷ Water is arguably the most vital of these resources, and coincidentally one of the ecosystem services that is easiest to objectively measure and track, which makes it a useful focus area for looking at this issue more in depth, particularly in the context of Rwanda and its goal of achieving sustainable development.⁸

⁵ Heather Tallis, Peter Kareiva, Michelle Marvier, and Amy Chang. An Ecosystem Services Framework to Support Both Practical Conservation and Economic Development. PNAS, 105(28), pp. 9457-9464. July 15, 2008. <http://www.pnas.org/content/105/28/9457.full.pdf+html>.

⁶ Carlos Corvalan, Simon Hales, Anthony McMichael. Ecosystems and Human Well-Being: Health Synthesis. A Report of the Millennium Ecosystem Assessment. World Health Organization. P. 10.

⁷ Millennium Ecosystem Assessment (MA). 2005. Ecosystems and Human Well-Being: Synthesis. Island Press, Washington.

⁸ Ina Porras, Maryanne Grieg-Gran, and Nanete Neves. All that Glitters: A Review of Payments for Watershed Services in Developing Countries. Natural Resource Issues. International Institute for Environment and Development, London. 2008. <http://pubs.iied.org/pdfs/13542IIED.pdf>

Take the management of water in Rwanda, for instance. While not yet universally available, Rwanda has made significant progress in ensuring its citizens have a consistent water supply.⁹ The Rwandan government reports that in 2010, 74.2% of Rwandans had access to clean water.¹⁰ However, getting to 100% clean water access as outlined in Vision 2020 will require additional effort. Existing natural ecosystems that supply water will face several stressors, including water variations in the face of climate change and the encroachment of agricultural expansion due to population growth.¹¹ Vision 2020 points out that “the average population growth of 3% per annum during the 80’s to 90’s period was faster than that of agricultural production, estimated at 2.2%. This has led to the occupation of more and more marginal areas and to the rapid and continuous soil degradation of the fragile ecosystems of the country.”¹² These confounding factors, which place additional stress on natural infrastructure, will need to be taken into account in the drive for comprehensive water management. Achieving Rwanda’s development goal of universal potable water supply will require environmental management that involves the protection of water sources.¹³

Part of the challenge of creating and funding projects that integrate environmental as well as development goals stems from how the environment is valued: globally, environmental externalities are rarely addressed in mainstream markets. As a result,

⁹ World Bank. Rwanda - Rural Water Supply and Sanitation Project. Washington, DC: World Bank. 2008. Accessed March 4, 2016.
<http://documents.worldbank.org/curated/en/2008/06/9735324/rwanda-rural-water-supply-sanitation-project>

¹⁰ Republic of Rwanda. Rwanda Vision 2020, Revised 2012. Accessed February 6, 2016.
http://www.rdb.rw/uploads/tx_sbdownloader/Vision_2020_Booklet.pdf

¹¹ G. Andrew. and Michel Masozera. Payment for Ecosystem Services and Poverty Reduction in Rwanda. Journal of Sustainable Development in Africa (Volume 12, No.3). 2010. Clarion University of Pennsylvania, Clarion, Pennsylvania.
http://www.fao.org/fileadmin/user_upload/kagera/resource/Rwanda%20PES.pdf

¹² Rwanda Vision 2020.

¹³ African Development Bank. Payment for Environmental Services: A Promising Tool for Natural Resources Management in Africa. May 2015.

communities are economically incentivized to exploit, rather than protect, natural resources that support livelihoods and development. This has a particularly negative effect on people in poor rural communities, who often depend on environmental resources for their livelihoods.¹⁴ And as 65-75% of people in the world's poorest regions live in rural areas, the number of people dependent on these systems is significant.¹⁵

Rwanda may run into issues in defending their choice to invest in natural resource management, and will need to be prepared to make the objective relevant and fiscally sound to achieve sustainable development objectives. The challenge is how to create stable and protected environmental systems that will support long term development while remaining financially viable. Most well-meaning systems of ecosystem protection, however well-structured, are the first to disappear in times of economic stress as they are unsustainably funded through grants or other external sources of funding. Few environmental projects can function for long periods of time when grants are the financial basis for their continuity, as development projects tend to take priority when funds are more limited.¹⁶

History

For Rwanda, looking forward to a vision of middle-income sustainable development comes in the wake of a history of poor governance. The Kingdom of Rwanda was put under German control after the 1884 Berlin Conference, and then following World War I, Rwanda was given to Belgium as a trustee territory. Rwanda

¹⁴ Martín-López, B., Montes, C. and Benayas, J. Economic Valuation of Biodiversity Conservation: the Meaning of Numbers. *Conservation Biology*, 22(3), pp.624-635. 2008. <http://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2008.00921.x/pdf>.

¹⁵ Dasgupta, Partha. The Place of Nature in Economic Development. South Asian Network for Development and Environmental Economics. Working Paper No. 38-09. January 2009.

¹⁶ Mark Ambler, Tom Beagent, and Andrew Thurley.

gained independence in 1962 but then came to global attention in 1994 when up to 1 million people, estimated at 20% of Rwanda's population, died in mass killings during the Rwandan civil war and many others migrated over the border into the Democratic Republic of Congo.¹⁷ 1994 is a sharp divider in Rwandan governance and policy, as the country had to rebuild itself following the mass killings.

Rwanda underwent a large number of policy changes at the turn of the millennium, as the nation worked to create a stable governmental structure after the 1994 breakdown of civil order. The fact that many of these development policies were formulated in a short period of time allowed for a significant amount of overlap and cross-referencing between policies. Additionally, many of these policies took Rwanda's sustainability goals into account when they were formulated. Specifically, the national constitution was put into place in June 2003, the National Environmental Policy has been in place since November 2003 with oversight of natural resources and environmental management, and the legal framework for the management of environment was put into place in April 2005.¹⁸ Adding Vision 2020 and the Millennium Development Goals, or MDGs, to this mix of legal and policy frameworks gives the country a relatively comprehensive and nationally relevant set of governance and guidance frameworks, especially notable in comparison to other countries in the region. The World Bank notes that part of Rwanda's success relative to the MDGs was due to "a strong focus on

¹⁷ BBC. Rwanda: How the Genocide Happened. May 17, 2011. Accessed March 6, 2016. <http://www.bbc.com/news/world-africa-13431486>

¹⁸ European Commission and Government of Rwanda. Environmental Profile of Rwanda. July 2006. Accessed March 6, 2016. <http://www.vub.ac.be/klimostoolkit/sites/default/files/documents/rwanda-environmental-profile.pdf>

homegrown policies and initiatives.”¹⁹ These policies are an essential piece in achieving Rwanda’s goals.

The MDGs are eight international development goals that were agreed to in 2000 by the member states of the United Nations with the ambitious aim of being fulfilled by 2015. While progress has varied by country, Rwanda embraced the goals in its national planning and policy formulation processes, and saw notable progress in the period covered by the MDGs. Looking at indicators tracking the progress on MDG Goal 7, which includes indicators on water and the environment, the percentage of the Rwandan population using an improved source of drinking water increased from 64.1 percent in 2000 to 74.2 percent in 2015.²⁰

Vision 2020 was launched in 2000, the same year as the start of the MDGs. A 2011 evaluation rated 66% of the Vision 2020 goals as on track to being achieved.²¹ Vision 2020, coupled with related policy initiatives, aims to create a knowledge-based economy to move away from the geographical constraints that Rwanda faces. Poverty in Rwanda has historically been due to a combination of factors, including high rural population, low agricultural development, and lack of access to major ports. Still, the percentage of people living in poverty has dropped steeply and steadily since the turn of the millennium, from 56.7% in 2005 to 44.9% in 2010 to 39.1% in 2014.²²

Louis Michel, a member of the European Parliament, noted that Rwanda is one of the few countries in Africa that is close to achieving many of its development goals,

¹⁹ World Bank. Rwanda Overview. Last Updated: October 6, 2015. Accessed March 6, 2016. <http://www.worldbank.org/en/country/rwanda/overview>

²⁰ MDG Monitor. Fact Sheet on Current MDG Progress of Rwanda (Africa). Updated December 5, 2015. Accessed March 6, 2016. <http://www.mdgmonitor.org/mdg-progress-rwanda-africa/>

²¹ Rwanda Vision 2020.

²² UNDP. About Rwanda. Accessed March 5, 2016. <http://www.rw.undp.org/content/rwanda/en/home/countryinfo.html>

progress that stems “from a determination to use them to develop an ambitious but concrete programme rooted in the principle of shared responsibility with the international community and within Rwandan society itself... Rwanda has demonstrated how agreed goals and determined action can deliver real improvements for a country’s citizens.”²³ Policymakers hope that Rwanda can continue to build on its progress over the coming years and be a case study in effective development country for the region.

The end of the MDGs and adoption of the SDGs has increased discussions around national policies and financing around sustainable development. The UNDP notes that Rwanda saw notable development success under the 15-year period of the MDGs in the 2000-2015 period of implementation, and that the Rwandan government, having already “incorporated many of the SDG targets into policies and strategies for the future, including ... Vision 2020” and that the government is now in the process of incorporating SDG-aligned policies into their national framework.²⁴ Rwandan policymakers have offered vocal support of the policy integration of the SDGs, and for exploring policy integration into its existing national planning. One writer noted that Rwanda would be “embracing economic and social transformation and aiming to tackle head on the challenges posed by climate change and environmental degradation” while noting that any effective implementation will require significant financial resources, “but there is emphasis this time on recourse to funding avenues other than external aid, including more

²³ Michel, Louis. Rwanda’s Track Record on MDGs Should Inspire Others. September 26, 2013. Accessed March 4, 2016. <http://www.euractiv.com/section/development-policy/opinion/rwanda-s-track-record-on-mdgs-should-inspire-others/>

²⁴ UNDP. The Global Goals: The new face of sustainable development. October 2, 2015. Accessed February 22, 2016. <http://www.rw.undp.org/content/rwanda/en/home/presscenter/articles/2015/10/02/the-global-goals-the-new-face-of-sustainable-development.html>

activist approach to domestic resource mobilization, trade promotion and private sector financing.”²⁵

The implementation period of Vision 2020 finds the country “moving from the humanitarian assistance phase associated with the 1994 genocide into one of sustainable development.”²⁶ The strategy notes the need to lessen the country’s dependence on foreign aid during this period of development, implementing policies of “trade liberalisation, privatisation, tax reforms, competitive exchange rates and market driven interest rates.”²⁷ The World Bank concurs, noting that 30% to 40% of the Rwandan national budget is currently dependent on foreign aid, and reducing dependency through domestic resource mobilization is critical.²⁸ Foreign aid has been critical in Rwanda’s development success but will not be available indefinitely.

Another notable factor in Rwanda’s development success is the strong leadership of its “highly motivated, disciplined ruling party, the Rwandan Patriotic Front (RPF), which is the main reason that Rwanda has rebuilt so effectively.”²⁹ The RPF is hierarchical, with high internal cohesion and low levels of corruption, particularly in comparison with the ruling parties in neighboring countries. Their continued dominance of the political sphere in Rwanda is a double-edged sword, as they are able to effectively implement policy that closely aligns with their goals, but tend to be somewhat autocratic and are suspicious of opposing views and dissenting opinions.³⁰

²⁵ Manneh, Lamin M. SDGs and What They Mean for Rwanda. July 3, 2015. The New Times. Accessed February 22, 2016. <http://www.newtimes.co.rw/section/article/2015-07-03/190271/>

²⁶ Vision 2020 p.6

²⁷ Vision 2020 p. 11

²⁸ World Bank. Rwanda Overview. Last Updated: Oct 06, 2015. Accessed March 6, 2016. <http://www.worldbank.org/en/country/rwanda/overview>

²⁹ Clark, Phil. After Genocide: Democracy in Rwanda, 20 Years On. April 3, 2014. Accessed March 7, 2016. <http://www.ippr.org/juncture/after-genocide-democracy-in-rwanda-20-years-on>

³⁰ Ibid.

The government of Rwanda has demonstrated the political will to implement environmentally inclined development through its policy and legal structures. For example, Article 49 of the Rwanda constitution from 2003 includes the obligation to protect the environment. The national Economic Development and Poverty Reduction Strategy (EDPRS), which was created in concert with Vision 2020, emphasizes the importance of ecosystem management for human development. Rwanda has explicitly connected natural capital and a healthy environment to its development goals, saying:

Judicious and innovative use of the remaining environment asset can enable the country to make substantial contributions to the attainment of [Vision 2020's] goals, the MDGs and the New Partnership for Africa's Development (NEPAD) objectives...the intricate links between the country's natural resources, such as water, land, air, plants and animals requires that Rwanda institutes policy and structural changes for more effective resolution of the challenges to sustainable development.³¹

With the political will in place, the challenge is to identify projects that can meet these development goals in a way that is both environmentally and financially sustainable.

Background

The key to achieving both goals of sustainable development, the environmental and the economic, is to find a balance between the exploitation of natural resources for socio-economic development and protecting the ecosystem services that are vital to

³¹ Rwanda State of Environment and Outlook Report. Chap XI. Policy analysis and options for action. Accessed March 7, 2016. <http://www.rema.gov.rw/soe/chap11.php>

human well-being and livelihoods.³² This idea is not new, and is widely acknowledged and discussed in both environmental and development circles. However, studies following The Millennium Ecosystem Assessment (MA) found that at least 15 out of the 24 major ecosystem services that were evaluated were either already degraded or subject to unsustainable use.³³

Furthering sustainable development policies in Rwanda will require identifying projects and actions that address both economic and environmental issues. The MA noted that use of ecosystems and natural resources led to notable gains in economic development, but that the gains have led to widespread ecosystem degradation and increased poverty for some who have seen the availability of natural resources dwindle. More seriously, the MA notes that if unaddressed, future development initiatives will be unable to utilize degraded ecosystems and could prove a barrier to achieving the SDGs. The MA noted that “particularly in sub-Saharan Africa, the condition and management of ecosystem services is a dominant factor influencing prospects for reducing poverty.”³⁴

Most ecosystem services are common-pool resources, and without reasonable management can be overexploited, especially in a high population density country like Rwanda. Some economists have made attempts to put a price on various ecosystem services, most notably in a study in 1997 that put the combined global worth of

³² Falkenmark, M. et al. Agriculture, Water, and Ecosystems: Avoiding the Costs of Going Too Far. In: Water for Food, Water for Life: A Comprehensive Assessment of Water Management in Agriculture, ed., Molden, D. London, UK. International Water Management Institute (IWMI). P. 233-277.

³³ Rashid Hassan, Robert Scholes, and Neville Ash, eds. Ecosystems and Human Well-Being, Vol. 1: State and Trends (Washington DC: Island Press). 2005. Accessed March 26, 2016. <http://www.millenniumassessment.org/documents/document.766.aspx.pdf>

³⁴ Millennium Ecosystem Assessment (MA). Ecosystems and Human Well-Being: Synthesis. Island Press, Washington. 2005. 155pp. Accessed March 26, 2016. <http://www.millenniumassessment.org/documents/document.356.aspx.pdf>

ecosystems at US\$33 trillion.³⁵ UNEP estimates that “the potential global benefits to be reaped from ecosystem restoration projects are hard to overestimate. Services provided by biodiversity and ecosystems are estimated to be worth over US\$21-72 trillion every year - comparable to the World Gross National Income of US\$58 trillion in 2008.”³⁶

Natural resources and ecosystems in Rwanda have been exploited to bolster the country’s economic development. Since Rwanda’s 1962 independence, the total areas under park protection have been halved: from 4,115 km² to 2,073 km². Outside of national parks, losses are greater in a number of areas: Of the 280 km² of natural habitat within the Gishwati Forest Reserve in 1980, only 7 km² remain.³⁷ Marshlands and other water ecosystems are “threatened by siltation and reduced water retention due to continued land degradation through vegetation loss, soil erosion, and the pressure of more people practicing unsustainable land use on elevated lands and hills adjacent to the wetlands.”³⁸ This degradation of wetlands and deforestation of forests has “resulted in soil erosion, landslides, and flooding inducing the relocation of people and sedimentation of hydropower plants leading to power shortages and water scarcity in much of the country.”³⁹ The degradation of ecosystems and their services affects not only the rural communities that rely on resources directly, but also the larger population that relies on the products of ecosystems, such as electricity generated by hydropower.

³⁵ Costanza, R., et al. (1997). The Value of the World's Ecosystem Services and Natural Capital. *Nature*, 387 (6630), 253-260.

³⁶ UNEP News Center. May 21, 2014. Rwanda Restores Ecosystems, Generating Record Tourism and New Opportunities for Growth. Accessed March 7, 2016. <http://www.unep.org/newscentre/Default.aspx?DocumentID=2788&ArticleID=10861>

³⁷ W. Weber, Michel Masozera, and Anna Behm Masozera (Eds.). *Biodiversity Conservation in Rwanda: Collected Works of the Protected Areas Biodiversity Project 2004-2005*: Rwanda Ministry of Lands, Water, Forestry, and Mines. 2005.

³⁸ The National Institute of Statistics of Rwanda (NISR). *Millennium Development Goals: Towards Sustainable Social and Economic Growth. Country Report 2007*.

³⁹ Dasgupta p. 124

More specifically in the case of Rwanda's water infrastructure, electricity generation from two hydropower stations, Ntaruka and Mukungwa, declined from 11.25 MW to 2.5 MW and from 12.45 to 5 MW respectively over the course of two decades because of reduced water flow. Additionally, increased sedimentation from erosion due to the cultivation of the Gishwati forest led to rising treatment costs of drinking water and higher maintenance costs of water and hydropower plants.⁴⁰ Andrew notes that the "failure to formally recognize, protect, and manage the water purification and sediment control services provided by the watersheds has led to the incremental deterioration in these services over the last two decades due to agricultural land pressure."⁴¹ The Rwandan government has responded to water scarcity issues by focusing on law enforcement of existing regulations, but has not made significant progress in enforcing existing management approaches.⁴² The cost to the national economy, primarily from the fuel cost to run generators when hydroelectric power drops below normal levels due to water shortages, is approximately US\$65,000 per day, and has the negative side effect of increasing carbon emissions and pollutants.⁴³ So in addition to affecting water supply and erosion, loss of ecosystem services in a Rwandan context is also a threat to energy, as 65% of Rwanda's electricity as of 2010 stemmed from hydroelectric power plants.⁴⁴ These issues are projected to continue over the coming years, and may be exacerbated by the threat multiplier of climate changes as well as rising populations.⁴⁵

⁴⁰ Safari, B.K. A Review of Energy in Rwanda. *Renewable and Sustainable Energy Reviews*; 14(1): 524-529. January 2010.

⁴¹ G. Andrew and Michel Masozera p. 131.

⁴² G. Andrew and Michel Masozera p. 132.

⁴³ The National Institute of Statistics of Rwanda (NISR). p. 47.

⁴⁴ *Ibid.*

⁴⁵ Working Group on Climate Change and Development. *Africa – Up in Smoke 2: The Second Report on Africa and Global Warming from the Working Group on Climate Change and Development* (p. 20). 2006. <http://www.preventionweb.net/publications/view/1833>

Another factor in the need for Rwanda's ecosystem protection is the growth of tourism, which has led to additional support for protecting healthy ecosystems. Rwanda's Ministry of Trade and Industry notes that "tourism has been identified as a priority sector to achieve Rwanda's development goals as set out in Vision 2020" and accounts for a significant portion of revenue.⁴⁶ Wetlands in Rwanda cover about 7% of the country's surface areas and are home to a number of bird species. The country is also home to one of the rarest gorilla species in the world. These natural draws coupled with Rwanda's relative stability and economic progress in comparison with neighboring countries has meant that tourism is growing in Rwanda – gorilla tourism alone brings in US\$3 million per year.⁴⁷

Rwanda has a number of departments and offices that contribute to development and environmental projects. Principal actors in the space of Rwandan sustainable development policy include:

- the Rwanda Environment Management Authority (REMA), which has been supportive innovative mechanisms for environmental protection;
- the Ministry of Infrastructures (MININFRA), which oversees energy and water supply projects and therefore has an interest in maintaining both water and hydroelectricity supplies;
- the Rwanda Utility Regulatory Authority (RURA), which regulates water and energy tariffs;

⁴⁶ MINICOM. Rwanda Tourism Policy. November 2009. Accessed March 30, 2016. www.minicom.gov.rw/fileadmin/minicom_publications/policies/Tourism_Policy_Cleaned_.pdf

⁴⁷ UNEP News Center.

- the Rwanda Development Board (RDB), which manages commercial projects and works with REMA works closely with on a number of sustainable development projects;
- The Rwanda Ministry of Trade and Industry (MINICOM) oversees the development and regulation of tourism;
- the Ministry of Environment and Lands (MINELA), which engages with REMA on Environmental Fiscal Reform projects with the aim to integrate environmental concerns into national policies and budgets;
- the Ministry of Mining and Forestry (MINIFOR), which has oversight over use of a number of natural resources in the country; and
- the Ministry of Finance and Economic Planning (MINECOFIN), which oversees resources and certain tax systems.⁴⁸

These departments operate under similar goals and strategies that are conducive to sustainable development projects, but are not closely enough integrated to coordinate on projects that require the expertise of multiple agencies.⁴⁹ This lack of integration has begun to change in certain critical areas. For example, REMA and MINECOFIN, with support from foreign partners, started Rwanda's National Environmental Fund (FONERWA) in October 2014 as a cross-sectoral financing mechanism intended to finance environmentally friendly development. While the fund is new, it's expected to streamline funding access for both development and environmental projects.⁵⁰

⁴⁸ FAO. Positioning the Kagera TAMP Project in the PES Landscape of East Africa. FAO Internship Report, Davila Bertram. May 2011. Accessed March 21, 2016. <http://www.fao.org/3/a-au279e.pdf>

⁴⁹ FAO 2011 p. 8.

⁵⁰ CIDT. Rwanda's Fund for the Environment and Climate Change, FONERWA (DFID). Accessed March 23, 2016. <http://cidt.org.uk/portfolio/foonerwa/>

Clearly, examples of projects and policies that are able to meet both conservation and development objectives should be studied for the ability to be replicated in other contexts. To be sustainable, national policy to protect ecosystems need to address the root market failure and provide mechanisms for consumers to internalize value of the ecosystem service. Identifying and replicating policy frameworks that are able to respond to respond to environmental policy issues at a national scale in a financially sustainable way is key to achieving these international policy goals. Finding domestic sources of funding for sustainable development will be essential to seeing progress toward policy goals.

Description of Policy Proposal

One policy approach that has been found to be effective in addressing environmental externalities is Payment for Environmental Services (PES), alternatively known as Payment for Ecosystem Services. PES is an innovative tool generated to implement a national policy for issues such as water conservation. Decisions around resource management are generally made on the margin, and PES programs are designed to provide incentives for ecosystem services to be incorporated in decisions around how people manage these resources.⁵¹ Researcher Sven Wunder offers helpfully specific criteria for this type of project, noting that a PES is a voluntary transaction where a well-defined environmental service is being ‘bought’ by a buyer from a provider if the environmental service provider secures the environmental service.”⁵² Put more

⁵¹ G. Andrew and Michel Masozera p. 125.

⁵² Sven Wunder. Payments for Environmental Services: Some Nuts and Bolts. CIFOR Occasional Paper 42. Center for International Forestry Research, Bogor. 2005.
http://www.cifor.org/publications/pdf_files/OccPapers/OP-42.pdf

succinctly, PES is a financial policy intended to value ecosystem services as positive environmental externalities.

The idea behind PES is to bring ecosystem services like water regulation and other types of ecosystem provision into the wider economy. It involves a series of payments to land managers in return for their effective natural resource management above and beyond what they would normally provide in the absence of payment. As such, it is able to provide land management outside of government-protected areas through financial incentives for sustainability.⁵³ It is intended to complement the provision of services by the government and existing regulations. PES is not an appropriate response to all environmental problems. It has been most commonly used to address three environmental issues: carbon, water, and biodiversity - in part because these issues have more quantifiable indicators, a necessary ingredient in setting up a system of financial incentives or penalties. Water is the most tangible and measureable of these environmental issues and is therefore the most commonly implemented of the PES approaches.⁵⁴

There are several ways to set up the payment systems associated with PES, including governmental payments or private payments. Following the successful example of Costa Rica, which has arguably created the most financially sustainable national PES mechanisms, Rwanda's PES should follow a model where PES is a private transaction between provider and buyer, with the national government in the middle creating the

⁵³ S. Smith, P. Rowcroft, M. Everard, L. Couldrick, M. Reed, H. Rogers, T. Quick, C. Eves, and C. White. Payments for Ecosystem Services: A Best Practice Guide. Defra, London. 2013.

⁵⁴ United States Agency for International Development. (2007) USAID PES Sourcebook: Lessons and Best Practices for Pro-Poor Payment for Ecosystem Services. <http://www.katoombagroup.org/details.php?id=56>.

rules, regulations, and framework.⁵⁵ The buyer in this case would be water utility companies, the provider would be wetland and watershed landowners, and the beneficiaries would be industries and Rwandans who purchase their water and electricity from municipal utilities. The Rwandan government would set water tariffs and regulatory framework, and utilities would be able to decide whether to pass these prices onto their customers.

Policy Authorization Tool

PES is an incentive policy mechanism that can be implemented by the Rwanda Environment Management Authority (REMA). REMA has a broad mandate to implement environmental policy. REMA is already the designating implementing authority for similar development projects and works in collaboration with other departments, including RDB and MINAGRI.⁵⁶

Rwanda has policy and legislative gaps in natural resources management, notably the lack of policies on resource management outside protected areas.⁵⁷ This is a gap that an effective PES policy could help bridge, by providing a policy response to ecologically sensitive areas outside lands such as national parks that are directly regulated by the government. The protection of water sources outside protected areas, including wetlands, water catchment areas, and buffer zones, is delineated in Rwanda's National Water

⁵⁵ Carlos Manuel Rodriguez (Costa Rican Minister of the Environment, 1998-2006). Interviewed by Rowan Braybrook in San Jose, Costa Rica, January 20, 2016.

⁵⁶ Davina Bertram, Payments for Ecosystem Services – A Feasible Mechanism for Natural Resource Management in East Africa? Taking Stock and Preparing to Advance. Master's Thesis, Utrecht University. May 13, 2011.

⁵⁷ Melissa Thaxton. Population Reference Bureau Policy Brief. Integrating Population, Health, and Environment in Rwanda. February 2009. Accessed March 7, 2016. <http://www.prb.org/pdf09/phe-rwanda.pdf>

Policy.⁵⁸ Rwanda's Organic Law, Article 73 includes a clause for potential individual or industry tax incentives to promote the environment, which could be used to frame PES tariffs.⁵⁹

Policy Implementation Tool

One of the largest initial costs for this policy would be the baseline studies to determine target areas for protection and determine fair tariffs. Rwanda could get financial support for these initial costs from international grants or loans while working toward the implemented project being self-sustaining through tariff income. This funding would be acquired and managed by Rwanda's National Environmental Fund (FONERWA). Once the initial research is completed and the structure of the payment mechanism is set up, water utility companies will implement with governmental regulation and oversight.

While dependent on the pace of research and effectiveness of government outreach to the public, the timeframe for laying this groundwork would likely take about two years and will need several million dollars for staff time and baseline research. Once operational, this incentive to landowners will be paid for by a tariff or tax for certain activities, namely volume of water use. The tariff will use a differentiated structure to place the main cost burden on industry, such as hydroelectric plants, a cost structure that is already integrated into current utility payments for economic costs.⁶⁰

⁵⁸ Rwanda Ministry of Infrastructure. National Policy and Strategy for Water Supply and Sanitation Services. February 2010. Accessed April 1, 2016.

http://www.rura.rw/fileadmin/docs/Board_Decisions/WATSAN_Policy_Strategy.pdf

⁵⁹ FAO 2011. p. 39.

⁶⁰ Tashobya, Athan. New Water, Power Tariffs Come Into Force Today. The New Times. September 01, 2015. Accessed March 27, 2016. <http://www.newtimes.co.rw/section/article/2015-09-01/192094/>

The goals of this mechanism are to protect the natural infrastructure that provides ecosystem services to the population without overwhelming the implementing government agency with administrative burdens. Funds collected by electric and water utilities would be paid to smallholder farmers located in critical watersheds to implement conservation practices on their land that would improve water quality. These practices would likely include planting buffer strips of vegetation and utilizing agroforestry.⁶¹

Policy Analysis

An estimated 63 countries have some level of experience with PES, and these examples run the gamut of size and types of ecosystem services. Countries that have implemented PES at a national level include Costa Rica, Ecuador, Mexico, and to a lesser extent Sweden and China.⁶² PES has been shown to be a flexible and innovative policy response to the issue of unaddressed environmental externalities around water resources.

Looking at possible sustainable development trajectories that Rwanda could take, it's informative to examine a nation of a similar size that has been successful in achieving middle income status in a sustainable way. Costa Rica has been one of the most successful in national-level implementation of PES. Therefore, while there are a number of case studies that can be reviewed for project- and local- level PES policies, the policy framework in Costa Rica is the best policy example to study to determine how national-level PES policies can be structured to address crucial environmental externalities in a financially sustainable way.

⁶¹ G. Andrew and Michel Masozera. p. 133

⁶² Carlos Manuel Rodriguez.

Costa Rica has been held up as an example for sustainable development, particularly in its success in reducing deforestation rates. It has become a middle-income country (a stated goal of Rwanda's Vision 2020) while maintaining healthy ecosystems. Looking at policies that have shaped Costa Rica, ODI notes three phases of policy reform that underpinned Costa Rica's success in becoming a leader in sustainable development:

The policy framework can generally be divided into: first generation policies that were implemented in the late 1970s and created the first national forest policy and the system of Protected Areas; second generation policies that deepened the previously established laws in the 1980s; and third generation policies established in the 1990s that focused on the provision of environmental services.⁶³

An observer in the 1990s noted that Costa Rica's success around protected areas policy was due to several factors, including the ability to demonstrate benefits through environmental education, watershed protection and ecotourism, so that Costa Ricans were actively engaged in the idea of sustainability.⁶⁴ While Rwanda is not as developed as Costa Rica was when it launched its PES programs, the countries share an emphasis on environmentally sustainable development and similar use of hydroelectricity. Rwanda generates over half of its electricity from hydroelectricity, while Costa Rica generates nearly three-quarters of its electricity from hydroelectric sources.⁶⁵

One area of immediate concern is to formulate the policy so that the tariff does not negatively impact the poor, particularly in rural areas. Angel-Urdinola and Wodon suggest that rather than applying a uniform rate to all consumers, policies can incorporate

⁶³ Jessica Brown and Neil Bird. *Costa Rica's Sustainable Resource Management: Successfully Tackling Tropical Deforestation*. Overseas Development Institute, Development Progress. ODI publications. 2011.

⁶⁴ *Ibid.*

⁶⁵ Trading Economics. *Electricity Production from Hydroelectric Sources*. Accessed March 30, 2016. <http://www.tradingeconomics.com/>

a Volume Differentiated Tariff (VDT) structure so those consuming a volume of water or electricity below a certain threshold would be charged lower prices.⁶⁶ This would allow rural populations in particular to benefit from PES payments if they are in a watershed area, without being unduly burdened by costs. Differentiated costs are already incorporated into water tariffs, as low-use residences are charged starting at RWF323 per cubic meter and industries are charged RWF736 per cubic meter, so a PES charge structure could use these existing prices to guide setting the price point. Researchers Andrew and Masozera put forward reasonable PES policy proposals for implementation in Rwanda, noting that the two industries in Rwanda that would be the largest consumers of water (and therefore pay the most into a PES system) would be the Rwanda Electricity Company, due to hydropower generation, and tea factories, as tea processing is a water-intensive industry.⁶⁷ Their proposals around PES implementation can be strengthened by tying the mechanism more explicitly into the government's goals around sustainable development and by shifting the model to a private transaction to ensure that government agencies aren't overburdened by policy implementation as well as oversight.

PES would not be effective in a country in extreme poverty, but is ideally situated for a country in transition, where expanding utilities can most easily implement innovative methods of pricing. Finding the right price point for a resource is essential, and one of the first steps in creating this type of policy is to work on an economic study on the actual worth of the good being provided. The results of these studies generally put the worth of the ecosystem service at a much higher price point than buyers are willing to pay. Therefore, the next step will need to be a negotiation for providers and buyers to

⁶⁶ Diego Angel-Urdinola and Quentin Wodon. Do Utility Subsidies Reach the Poor? Framework and Evidence for Cape Verde, Sao Tome, and Rwanda. *Economics Bulletin*, 9(4), 1-7. 2007.

⁶⁷ G. Andrew and Michel Masozera p. 132

agree on a fair price. This process will create a greater understanding among beneficiaries around the benefits of this type of policy mechanism, and more importantly, go a long way in having beneficiaries internalize the value of a resource like water and understand the long-term cost savings of conservation. Additionally, if the process is transparent and the beneficiaries are fully bought in to the value of the policy, there will also be more political will supporting the mechanism in the future, as was the case in Costa Rica, where the public resisted a potential reduction in the water tariff during the recession, an indication of how a well-run PES mechanism can become financially sustainable.⁶⁸

To be successful, it's vital to ensure beneficiaries and stakeholders perceive the same level of resource scarcity and resource value as lawmakers and policymakers do. Otherwise, the beneficiaries whose payments are essential to make effective long-term policy changes will balk at paying for a resource that has always been seen as free. Therefore, it's imperative to have a business case to drive demand. It's also important to agree on specific and tangible metrics so that beneficiaries know what they are paying for and what they are receiving as a result. This is why water is a good starting point for this type of policy tool – water is a universally used but deeply undervalued resource that is needed by all stakeholders. In Rwanda, it will be useful to highlight the additional benefits of maintaining the natural resource base for hydropower and the resulting electricity generation, as this is a concrete benefit of effective water management that people can see as a tangible example of the benefits of ecosystem services in sustainably managed areas.

In the initial process of determining if PES is the right mechanism in a given areas, it's essential to evaluate if the value of service exceeds service provider's

⁶⁸ Carlos Manuel Rodriguez.

opportunity costs. Sven Wunder notes that, “a PES system is likely to be most cost-effective in the middle range of activities marginally more profitable than the desired land use. For less profitable activities, PES is likely to be irrelevant; for substantially more profitable activities, finite funding tends to fall short of the compensation needed.”⁶⁹ PES works best at the margin, where additional input can change land use to more sustainable practices without incurring high costs.

A major benefit of PES are the co-benefits, as the protection of natural resources for one explicit purpose generally has the benefits of protecting other positive externalities. Specifically, protecting ecosystems for water purposes can benefit Rwanda with carbon sequestration and biodiversity, two other ecosystem services where PES can make financial sense.⁷⁰ This also offers the potential for expansion if the water PES is successful, enabling Rwanda to take steps on other environmental policy commitments. We can again look at Costa Rica as an example, as the country has national-level policies in place to implement PES for three environmental issues PES can respond to – water, biodiversity, and carbon – as well as landscape beauty, which bolsters income generation from tourism.

Rwanda already has some project-level experience with PES, including a carbon management PES near Nyungwe National Park and related data gathering around ecosystem services that was implemented with the World Conservation Society (WCS) and the University of East Anglia (UEA).⁷¹ While local rather than national, these

⁶⁹ Sven Wunder. p.11.

⁷⁰ FAO. Case Studies on Remuneration of Positive Externalities (RPE)/ Payments for Environmental Services (PES). Rewarding Water-Related Ecosystem Services in the Canete Basin, Peru. Prepared for the Multi-stakeholder Dialogue September 12-13, 2013 FAO, Rome. Accessed March 7, 2016. <https://www.cbd.int/financial/pes/peru-pes-fao.pdf>

⁷¹ Nicole D. Gross-Camp, Adrian Martina, Shawn McGuire, Bereket Kebedea and Joseph Munyarukazaa. January 2012. Payments for Ecosystem Services in an African Protected Area:

projects indicate further willingness from the government to integrate this approach into Rwandan policy and additionally indicate in-country expertise that will be needed for project sustainability in a national context. Gross-Camp, of the UEA researchers, called the initial work with PES “an intriguing concept that could marry these two aims of development and conservation,” further noting that payments need to be guaranteed beyond the end of the project in order to make lasting changes.⁷² This is the gap that the tariff implementation is intended to fill, by making the project long term and the financial flows predictable.

The government would need to play a major role in oversight and implementation. A number of other countries have relied on civil society actors to assist with setting up and acting as intermediaries in PES schemes. However, Rwanda’s civil society would likely not be able to handle processing large-scale PES projects. UNDP notes that:

Rwanda’s civil society is extremely weak, partly due to the destruction caused by the war and the general lack of human, financial and administrative capacity in the country....As Rwanda enters its sustainable development phase, efforts will have to focus on strengthening the capacity of civil society to operate as a positive and constructive engine of progress in Rwandan society, while preventing the re-emergence of polarised politics.⁷³

While local civil society may not be able to assist with setting up the PES mechanism, international civil society organizations may be able to step in to help, and in the process

Exploring Issues of Legitimacy, Fairness, Equity and Effectiveness. Oryx, Volume 46, Issue 01, p. 24-33. January 2012.

⁷² Davies, Catriona. Does Paying to Protect the Environment Work? CNN. August 29, 2010. Accessed March 6, 2016. <http://www.cnn.com/2010/WORLD/africa/08/27/rwanda.pes/index.html>

⁷³ UNDP, ‘Turning Vision 2020 into Reality: From Recovery to Sustainable Human Development. National Human Development Report’, Kigali, 2007.

could potentially build the capacity of local level civil society. For example, WCS has already met with potential buyers to discuss what enabling conditions they would need to see before being willing to invest. The buyers noted the importance of stable and predictable signals from the government.⁷⁴

The preparatory work that the government of Rwanda and its international civil society partners have done to evaluate the feasibility of a national PES policy is a good indication of not just political will, but also preparedness. The government, WCS, and a number of other bodies have done PES feasibility studies and pilot projects in Rwanda, including the example mentioned with UEA at Nyungwe National Park. The next step is to take PES to the national level to ensure expanded benefits and financial sustainability.

Political Analysis

The challenge for Rwanda will be to harness the political will brought about by their numerous development and environmental policy processes. The international policy milestones for sustainable development – the end of the MDGs, the start of the SDGs, international agreements on biodiversity and climate change, and framework agreements like the one with UNIDO – will only assist with momentum if Rwanda is able to identify environmentally sustainable development projects that work in its national context. And perhaps more importantly, the country needs to be able to finance these projects for the long term.

A strong governmental framework is essential to PES implementation, and while Rwanda has made astonishing progress in creating stable governmental institutions, the structure is still recent and fragile. Rwanda has made progress in strengthening rule of

⁷⁴ G. Andrew and Michel Masozera. p. 136.

law and creating a positive policy environment, both essential to create this type of public policy. It is worth taking note of critics of the government, who contend that the central government and dominant Rwandan Patriotic Front (RPF) party have stifled opposition and freedom of speech. However, supporters call President Paul Kagame a visionary leader and credit much of Rwanda's rapid growth to his policies.⁷⁵ His party's opposition could easily halt policies in development, but RPF support could also give new policies the push needed to have them implemented at the national level. And so far, his support has inclined toward policies that move sustainable development forward and increase Rwanda's economic resilience.

There is limited data on public support for environmental initiatives, so it's hard to know how the public will react to the implementation of a PES scheme. However, the government has already instituted a number of sustainable development policies and reactions have been mainly positive as people have seen their incomes rise and quality of life improve. President Kagame and his party routinely receive over 90% of votes in elections, which despite criticism for lack of opposition voices are generally peaceful and democratic.⁷⁶ Additionally, as the central government tends toward autocratic and centralized measures for development, the support of governmental bodies is significant for the success of implementation. Support from the private sector, such as hydroelectric companies, would certainly help the strength of this policy implementation. And since this program would support the maintenance of private sector value chains, they have a business incentive to support the creation of this policy.

⁷⁵ BBC. Rwanda Country Profile. February 4, 2016. Accessed March 21, 2016. <http://www.bbc.com/news/world-africa-14093238>

⁷⁶ BBC News. Rwanda President Kagame wins election with 93% of vote. August 11, 2010. Accessed April 1, 2016. <http://www.bbc.com/news/world-africa-10935892>

Rwanda's government has demonstrated an awareness of the need to incorporate economic considerations in its policy formulation. Rwanda Environment Management Authority (REMA) noted that:

Market failures and market distortions partly account for the ineffectiveness of environmental policies and laws despite increased efforts in applying the command and control approach in enforcement. Invest, therefore, in strengthening the capacity to assess the costs of environmental degradation...and how the various taxes and subsidies affect the achievement of environmental sustainability, with the view to developing suitable economic instruments to complement the command-and-control management regime.⁷⁷

This level of political recognition of the need to internalize environmental externalities is extremely promising for the creation of a PES mechanism, as PES directly responds to this need for an economic instrument to address these issues.

Further demonstrating the national political will around creating a PES system, Rwanda created a national working group in 2010 to begin studying how PES can be introduced.⁷⁸ In that same year, REMA included PES in the Environmental Fiscal Reform documents, so it is able to be considered an official economic instrument to environmental management. The report noted that land reform programs, including use of land titles and lease agreements for investments in sustainable land use, will create an enabling environment for such payments systems.⁷⁹ The document specifically references

⁷⁷ Rwanda State of Environment and Outlook Report. Chap XI. Policy Analysis and Options for Action. Accessed March 7, 2016. <http://www.rema.gov.rw/soe/chap11.php>

⁷⁸ World Conservation Society (WCS). National Workshop on Payment for Environment Services (PES): Draft Report. December 17-18, 2010. Musanze, Rwanda.

⁷⁹ Rwanda Environment Management Authority (REMA). Existing and Potential Environmental Fiscal Reform in Rwanda: Final Report. p. 15. August, 2010.

Costa Rica’s example of implementing PES policies and financial instruments, saying, “Costa Rica provides an inspiring case study to Rwanda that a package of [Environmental Fiscal Reforms and Economic Instruments] can lead to afforestation, reforestation and conservation.”⁸⁰

These references show that several of the governmental actors that would be necessary to implement a PES mechanism are aware of the potential to address some of the country’s environmental issues in a fiscally sustainable way, and are willing to engage on the creation of a PES mechanism at the national level. REMA has been supportive of PES being used as a mechanism for environmental protection. Additionally, the Rwanda Development Board (RDB), which REMA works closely with on a number of development projects, has worked on several PES pilot projects and studies.

There was some resistance to initial attempts by the government to increase water tariffs for any reason as there were political concerns around stifling economic growth. REMA did see some upsides to this resistance, as expected competition for water can put pressure on the government to integrate water management between implementing authorities.⁸¹ However, new water and energy tariffs were implemented in September 2015 (the first time in ten years, for water tariffs).⁸² The water tariff is now likely to be reviewed annually to reflect the economic value of water, offering an opportunity to include additional economic considerations like PES.

One potential barrier in Rwanda is that while there are numerous initiatives to move environmental policy forward and relatively good integration in the policy itself,

⁸⁰ Ibid, p. 26

⁸¹ Rwanda State of Environment and Outlook Report. Chap XI. Policy Analysis and Options for Action. Accessed March 7, 2016. <http://www.rema.gov.rw/soe/chap11.php>

⁸² Athan Tashobya.. New Water, Power Tariffs Come Into Force Today. The New Times. September 01, 2015 Accessed March 27, 2016. <http://www.newtimes.co.rw/section/article/2015-09-01/192094/>

the implementation authority of the policy is scattered among several decision making bodies, including the Ministry of Agriculture and Animal Resources (MINAGRI), the Rwanda Development Board (RDB), the Rwanda Environment Management Authority (REMA), and the Ministry of Infrastructure (MININFRA). While REMA would have the most authority over this type of policy implementation, it would be nearly impossible to move it forward without sufficient coordination between government ministries to maximize efficiency, particularly for administrative oversight. REMA will need a clear mandate for implementation, but will also need to actively work with a number of other agencies to implement effectively. Rwanda's rapid formulation and implementation of policy has a downside, as the agency has been overwhelmed by requirements for integrating environmental policies across sectors and at multiple levels of government.⁸³

Another barrier to implementation is Rwanda's limited expertise in PES and finite administrative capacity. Several local-level PES schemes have been implemented, and departments at the national level have considered policy guidelines for PES mechanisms, but expertise remains limited and abstract, and administrative capacity to implement is limited. However, the incentive can be structured so the private sector buyers can play a role in administration, and in any case the scheme will need to be created to utilize existing government systems as much as possible to avoid overburdening personnel. Additionally, relying on multilaterals and international civil society partners for initial support could help with technical gaps in the initial, more burdensome stages of mechanism formulation, though for the sake of sustainability and nationally appropriate

⁸³ Thaxton p.6

formulation and implementation government officials would need to assume continuous and ultimate responsibility for the project.

Recommendation

PES is a promising policy mechanism for countries with the political will and structure to implement it, and Rwanda should implement this mechanism to meet its sustainable development goals around water resources. Due to its rapid development, environmental focus, and strong central government, Rwanda is one of the few countries in the region where this type of policy can be implemented at the national level in pursuit of its goals in sustainable development.

Rwanda has laid groundwork for innovative environmental policy and can now capitalize on its success by implementing innovative measures. The Rwandan government has already taken several steps toward PES implementation, including several feasibility studies and local pilot projects. These studies and pilots have been carried out in coordination with civil society and academic institutions, indicating broad support for the PES approach. Rwanda has demonstrated it has the political will to carry out this type of project by instituting several policy initiatives, including incorporating PES in the Environmental Fiscal Reform documents as a potential tool for the country to use at a broader level. Its highly centralized governmental structure will enable it to carry out this type of innovative policy mechanism in a relatively efficient manner.

The strength of PES over other similar conservation incentive programs lies in its ability to respond to multiple threats to Rwanda's sustainable development, including developing financial flow in rural areas, protecting sources of clean water for a

population in development, and helping to protect the reliable flow of hydroelectricity. Additionally, the actions of PES have numerous co-benefits and positive externalities, including carbon sequestration, erosion control, and protection of the biodiversity and animals that have the potential to increase tourism in the country.

The agreement of the SDGs and the resulting funding that is flowing into the country from outside sources make now the ideal time to take action on these ideas and finance the creation of a national water PES policy. Interest from external funding sources in assisting Rwanda in the creation and financing of new sustainable development policy will provide the financial leverage needed to overcome initial startup costs and implement a mechanism that will create predictable finance flows to rural communities and critical ecosystems. Implementing water PES is an excellent opportunity for Rwanda to take action on its goals of becoming a sustainable middle-income country.