



**BRIEF**

**Living Himalayas  
2016**

# **WATER IN BHUTAN'S ECONOMY: IMPORTANCE TO PARTNERS**

# PARTNERSHIPS FOR A SUSTAINABLE FUTURE

Bhutan today is well-positioned to consolidate and build on the recent economic growth, in a sustainable manner and with foresight, to ensure the country attains its medium and long-term goals. Bhutan has come a long way on its own terms, driven by its own spirit and determination. It has done a great deal, but moving forward it cannot do it all.

Bhutan needs partners to help achieve the national vision of prosperity – prosperity that does not come at the price of its natural resources, including its river systems, which are its most important economic assets. The country has put in place the right policies, but now needs to both strengthen and implement them. It has identified the right water resources management frameworks and strategic planning instruments, but now needs to operationalize them. It has highly skilled human resources in place to make decisions about its economy as well as its water resources, but now needs to capacitate them further to enable integrated decision-making that brings the two streams together. As it seeks to do so, there is a role to play for those who share Bhutan's vision of a green, sustainable, inclusive future, to join hands with Bhutan on its journey towards a shared, and happy, destination.

Support from Bhutan's development partners is integral to Bhutan's continued growth along sustainable, environmentally sound, inclusive pathways. Bhutan has taken great strides in its transition from a Least Developed Country (LDC) to a middle income country, without deviating from its core values and ethos of well-being. It remains steadfastly committed to the pursuit and preservation of Gross National Happiness, as opposed to the more limited metric of Gross Domestic Product. However, it is poised at a critical juncture where it will make a range of economic decisions about its future, which could affect its ability to stay the course. As Bhutan continues to climb up the development ladder, the country faces trade-offs – particularly in the context of the freshwater resources – and is not fully equipped to manage on its own. Identification of such trade-offs and managing them requires tools and methods that Bhutan does not yet have access to or extensive experience with. Development partners can play a crucial, enabling role by assisting Bhutan with stronger, data-driven, integrated management of its most important economic resource: the river systems.

## WHY WATER MATTERS ?

It is critical that all entities that influence and are involved with Bhutan's development agenda understand the role of freshwater resources in the country's economy, and become acquainted with key actions that can help preserve this natural capital. Given the extent to which Bhutan's economy – present and future – is underpinned by its river systems and the ecosystems the rivers support, it is the responsibility of every partner working with Bhutan's government to help maintain the health of the country's water resources, so that these resources can continue to support sustained economic growth and the achievement of Bhutan's national development aspirations.

The importance and interconnectedness of water resources in Bhutan for the economy and the environment is something that all stakeholders involved in Bhutan must take heed of. Furthermore, they should help the realization of a holistic approach to water resources management that takes into account all economic, environmental and social considerations both for the present and for the future. This is consistent with the Royal Government of Bhutan's vision of development, which is about the creation of prosperity that does not come at the expense of societal and ecological well-being, and one that safeguards the wealth of the natural world.



# WATER IN BHUTAN'S ECONOMY

Bhutan is a country rich in natural resources, and relative to most other nations has an abundance of fresh water in terms of per-capita availability. Water plays an essential role in all four of Bhutan's major economic drivers – agriculture, hydropower, tourism and small-scale industry. Agriculture – which consumes over 90% of water resources used in Bhutan – employs over half of Bhutan's population and contributes over 15% of the country's GDP. The energy sector in Bhutan, comprised almost wholly of hydropower, accounts for a fifth of the nation's GDP and almost the same share of all revenue earned. Bhutan's strong performance on poverty reduction has been driven almost entirely by hydropower export revenues.

Tourism in Bhutan, which is both an important source of employment and an estimated 20% of non-hydropower revenues, depends on tourists who come, in large part, to see Bhutan's pristine natural landscapes – which in turn are maintained in their lush and verdant state due to ample water availability. Even the growing small-scale industry sector in Bhutan is heavily dependent on forest-based products like wood, beeswax, resins, sticklac, and cordyceps. River systems are central to the health of Bhutan's forests. Although the current level of water availability in Bhutan appears impressive (according to 2014 World Bank data on renewable internal freshwater resources per capita, Bhutan had the fifth highest availability in the world), as these sectors grow and demand more water, and as climate change makes freshwater supply less consistent, Bhutan will face challenges in providing an adequate water supply to sustain its population and economy.

Early signs of this are already emerging, as several areas have witnessed streams drying up. Water shortages are being reported in several towns and population centres. Farming communities are reconsidering their reliance on agriculture in part due to the lack of assurance of adequate water. Bhutan's heavily monsoon-fed river systems already run low in the dry season, but with climate change impacts exacerbating variability, the rivers could display even more extreme flows in the years ahead, with floods in the monsoon season converting into mere trickles in the dry season. Increasing urbanization and population pressures in cities have also started affecting water quality, with growing concerns about water pollution.

Thus, Bhutan's water resources are starting to feel some stresses, and this could have serious implications for its major water-dependent economic sectors. The analysis that informs this policy brief (captured in full in two volumes published by National Environment Commission and WWF's Living Himalayas Initiative) was initiated at a particularly important moment in time for Bhutan. As this young democracy nears the end of its first decade, the country is poised at a metaphorical crossroads in its development choices.

**Water is  
Agriculture  
Over 90%**  
of water used in  
Bhutan is  
in the Agricultural  
sector.

**Water is  
Power  
A Fifth**  
of Bhutan's GDP  
results from  
hydropower  
revenue

**Water Risk  
Scenarios and  
Opportunities  
for Resilient  
Development**

**Complete  
Reports Are  
Available with  
the NEC and  
WWF Bhutan**

## FUTURE DEVELOPMENT AND WATER RISKS

At this very time, Bhutan's historically agrarian character is being transformed by urbanization, increased connectivity between population centres, and linear infrastructure development to facilitate the growth of its major economic sectors – agriculture; hydropower; tourism; and small-scale industry. While this continued development will bring greater levels of wealth and disposable income to the people of Bhutan, it also poses some serious medium and long-term risks and challenges, in particular to Bhutan's most significant natural capital – its rivers. Regardless of what sectors of the economy Bhutan chooses to prioritize for future growth, there are some risks to Bhutan's water systems that cannot be avoided.

For development partners, these risks are important to take into account. No matter what specific type of development programme or initiative a development partner supports, and no matter what the sector of focus or the target beneficiaries, the damaging consequences of water resources-related risks can negate many development gains. Thus, as development partners invest in Bhutan, it is in their interest to ensure their investments face diminished risk. This can be accomplished in part by enabling Bhutan to better manage water risks and tradeoffs in economic decision-making.

In a future development pathway that involves agricultural intensification, risks include damage to water quality through agricultural runoff; heightened water demand and competition between water users within and outside the farming sector; and loss of biodiversity. A future that sees Bhutan ramp up hydropower development brings with it reputational risks; risks to wildlife, vegetation, and aquatic ecology; as well as internal socio-political risks. A highly industrialized and urbanized future involves risks like water quality degradation, and increased water stress or even scarcity in high demand areas.

For any one of these futures, expansion of linear infrastructure such as roads, electricity transmission lines, combined with growing population pressure in certain catchments is likely to cause watershed degradation. If watersheds are not carefully managed, risks include landslides from loose slopes and soil; erosion, causing sedimentation in rivers that could affect hydropower generation and aquatic fauna; and an increased risk of flooding from flash floods.

Overlaid on this range of risks is the impact of climate change. For Bhutan, climate change means warmer temperatures and greater climate variability. This is expected to lead to less snow and more rainfall, which would exacerbate the existing trend in the Brahmaputra River of too much water in the wet season (when monsoon rains and meltwater flows coincide), and too little water in the dry season (compounded by a lack of water storage). This poses a direct risk to Bhutan in the form of increased likelihood of flooding in the wet season; lower flows in the dry season; and increased threat of Glacial Lake Outburst Floods (GLOFs). All such risks have economy-wide ramifications.

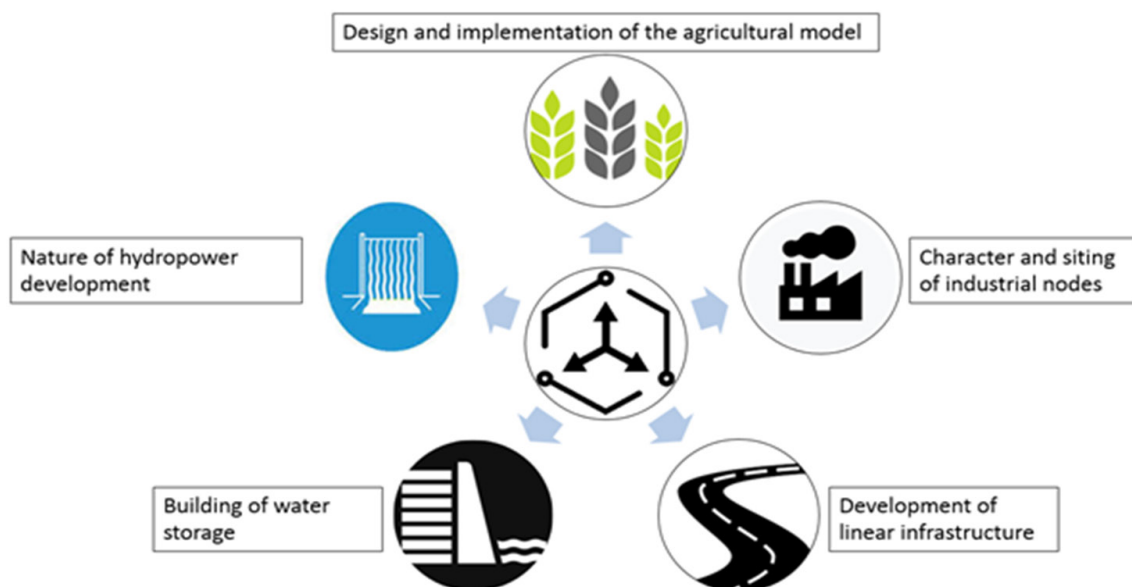
# OPPORTUNITIES TO MANAGE RISKS AND TRADEOFFS

As Bhutan pursues a combination of various economic and development goals, it is likely that it will see the manifestation of risks emanating from the water use of major economic sectors. As each sector expands, its claim on Bhutan's water resource base will also grow, and given the finite nature of water resources these competing claims will give rise to trade-offs: choices about the extent to which any one sector's water needs may be prioritised over another's.

Four major areas where the government will have to consider water-related trade-offs are:

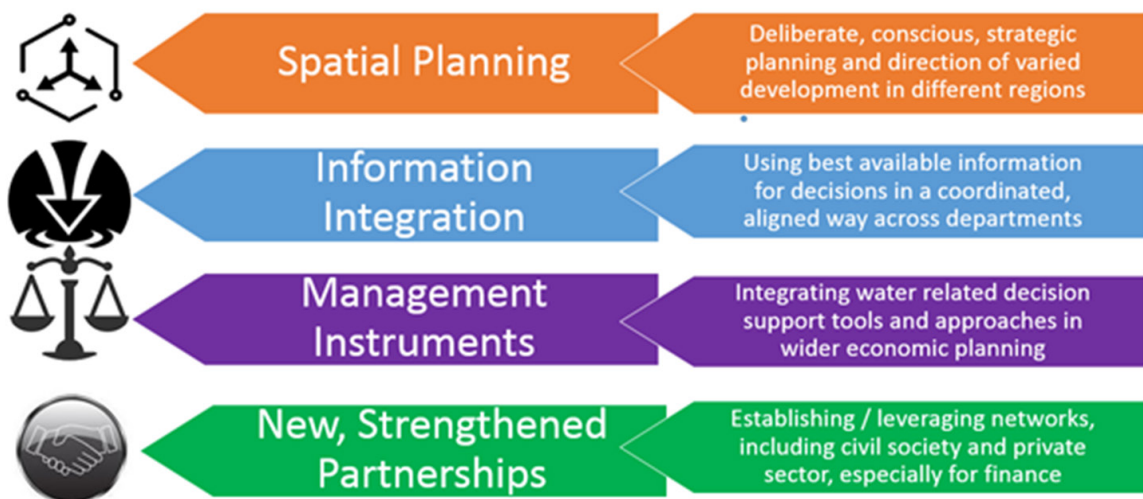
- Reliability of and Access to Water Supply
- Downstream Water Quality
- Watershed Integrity and Stability
- Natural Disaster Vulnerability and Impact

Fortunately, Bhutan has opportunities to consider interventions, i.e. actions or measures that can support a positive outcome and reduce negative consequences and trade-offs. The opportunities are likely to present themselves as key pivot points, i.e. moments calling for decisions, or processes that result in important determinations. These pivot points can be grouped into five broad areas:



Each of these pivot points represents a chance for Bhutan to manage its natural resources – particularly water resources – in a sustainable manner, to the benefit of key economic sectors, people, and in keeping with the country's core values and principles. However, for Bhutan to be able to decisively and strategically utilize the decision points to influence more favourable outcomes, it needs to be equipped with the right tools.

These tools, which Bhutan's policymakers would be well placed to adopt, strengthen, and integrate into existing decision making processes and structures, are as follows:



As Bhutan starts entering uncharted territory in terms of its economic growth and the evolution of various sectors, the partnerships it builds and leverages will play an important role informing and assisting decision-making, as well in identifying innovative approaches to finance the country's efforts at integrated water resources management.

Thus, forging the most relevant and beneficial partnerships is a key opportunity, not only for wider economic decision-making but also for the management of Bhutan's water resources. This means bringing in more relevant external expertise to provide input where required, drawing on civil society, academia, international development finance institutions, and the private sector. This will enable decisions to be made based on a wider range of know-how and reflect the views and priorities of all the concerned actors.

In particular, Bhutan needs partnerships focused around technology and finance. Spatial planning, for instance, requires a host of technological tools that Bhutan does not currently have. Technical capacity building of government officials and decision-makers is also needed, to be able to develop and implement the management instruments for water resources and wider economic planning.

The creation of an integrated data-gathering and information-sharing mechanism or platform, to inform decisions about water uses, allocations, and trade-offs is another area where partnership support would be valuable. Such an integrated platform would enable to support more strategic and long-term decisions about water resources in Bhutan's economy, by holistic analysis of the two-way linkages between water resources and water-dependent economic sectors.

On the finance side, Bhutan needs the insights of development partners to identify, harness, structure or even create new and innovative financing solutions that can support sustainable management and utilization of water resources, without creating a dependency on lenders or investors, including other countries. This includes funding to integrate water resources related information into broader economic planning and decision-making.

# A CALL TO ACTION AND NEXT STEPS

The risks and opportunities identified are a call to action for Bhutan's government, and all those partnering with it to help realize Bhutan's development goals. The motivation of this discussion is not to be prescriptive in terms of the economic direction of the country but rather to create a dialogue around the types of decisions that will significantly impact the economy (by impacting Bhutan's water resources). Development partners are critical to this dialogue, and by joining in can assist Bhutan effectively mitigate the risks, and maximize the opportunities.

Specifically, development partners can support Bhutan's government to undertake certain concrete and achievable key actions in the short term that will allow for more sustainable and holistic decision-making processes:

- **Strategic Basin Planning:** Integrating strategic basin planning into Bhutan's basin planning process, which crucially recognizes and is aligned with broader economic development and planning objectives. This includes water allocation planning and greater stakeholder involvement in the stewardship of the basin.
- **Designing and Implementing Cumulative Impact Assessments:** Bhutan has already taken an affirmative stance on Cumulative Impact Assessments (CIA) at the basin or sub-basin level. The next step is for CIAs to be carried out and implemented for which development partners can provide guidance on how to design and give effect to a CIA, including technical experts and donor agencies.
- **Water Security Index Indicators:** The process of identifying and adopting Bhutan's Water Security Index Indicators underway currently lead by NEC. It is now exploring how to explicitly and formally incorporate many cross-sectoral indicators that would help better identify trade-offs and cross-sectoral impacts on water security. The NEC could benefit from expert guidance to ensure that the indicators cover a wide variety of economic sectors, enabling sectoral trade-offs to become more apparent within the Water Security Index framework.
- **Spatial Planning Technical Tools:** Bhutan needs technical assistance – in terms of both technology and training – to implement integrated spatial planning. To identify, procure, and integrate the appropriate spatial planning tools into economic decision-making, the Government of Bhutan welcomes support to investigate and recommend the tools needed for ecosystem based spatial planning.

## NEXT STEPS

**Platform for Continued Engagement and Partnership:** The NEC, along with WWF will continue to create a platform for continued cross-sectoral, participatory, multi-stakeholder engagement on risks to and opportunities related to Bhutan's water resources, and their role in the evolution of the country's economy. WWF is committed to continuing this process of engagement with all the stakeholders and using this as the launching pad for defining projects, research, partnerships and support as we move ahead together on this journey.

## KEY TAKEAWAY

Bhutan has achieved remarkable success in its environmental stewardship thus far, as well as its reduction of poverty and inequality. In order to continue its unique story of growth while judiciously managing its water resources – so as to preserve its foundation for future growth – Bhutan can benefit from strategic partnerships that better equip it to maintain the balance. Development partners who work with Bhutan's government and its people have a responsibility to ensure their efforts are designed and implemented in a manner that strengthens Bhutan's management of its water resources. Their support is welcome to help leverage Bhutan's biggest economic asset, while ensuring that development decisions made do not result in consuming or otherwise damaging the principal. As is support that helps better integrate water resources related considerations into economic decision-making and planning.

# WWF Living Himalayas in Numbers

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We work in three countries: India (North-East), Bhutan & Nepal.

2009

The programme, earlier known as the Living Himalayas Initiative, was established in 2009.

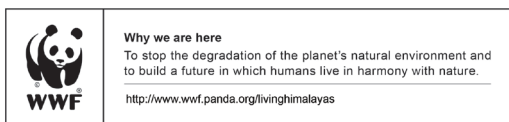


+15M

By 2020, a mosaic of 15 million hectares of East Himalayan Ecosystems (freshwater and terrestrial) is ecologically connected, sustainably resourced and well managed.

500M

About 500 million people live in the Ganga and Brahmaputra basins, which are the geographic focus of the Living Himalayas Initiative.



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